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PATENT OFFICE NOTICES

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Interferences

A proposal was published at 36 F.R. 18002 to amend, revise, or redesignate §§ 2.27, 2.61, 2.80–2.82, 2.91, 2.92, 2.98, 2.101, and 2.103. Pursuant to this notice, a number of comments have been received from interested persons, and due consideration has been given to all matter presented. Only editorial changes have been made in the rules as proposed.

Effective date. This revision shall become effective on March 1, 1972, and will apply to all applications except those in which a notice of publication was mailed prior to March 1, 1972.

§ 2.27 [*Amended*]

1. Section 2.27 is amended by changing "2.81" in paragraph (b) to read "2.80."

§ 2.61 [*Amended*]

2. Section 2.92(c) is redesignated as § 2.61(c).
3. Section 2.81 is redesignated as § 2.80 and revised to read as follows:

§ 2.80 *Publication for opposition.*

If, on examination or reexamination of an application for registration on the Principal Register, it appears that the applicant is entitled to have his mark registered, the mark will be published in the OFFICIAL GAZETTE for opposition. The mark will also be published in the case of an application to be placed in concurrent use proceedings, if otherwise registrable.

§§ 2.81, 2.82 [*Redesignated*]

4. Sections 2.82 and 2.83 are redesignated as §§ 2.81 and 2.82, respectively.
5. A new § 2.83 is added and reads as follows:

§ 2.83 *Conflicting marks.*

(a) Whenever an application is made for registration of a mark which so resembles another mark or marks pending registration as to be likely to cause confusion or mistake or to deceive, the mark with the earliest effective filing date will be published in the OFFICIAL GAZETTE for opposition if eligible for the Principal Register, or issued a certificate of registration if eligible for the Supplemental Register. A notice will be sent, if practicable, to the applicants involved informing them of the publication or issuance of the earliest filed mark.

(b) In situations in which conflicting applications have the same effective filing date, the application with the earliest date of execution will be published in the OFFICIAL GAZETTE for opposition or issued on the Supplemental Register. A notice will be sent, if practicable, to the applicants involved informing them of the publication or issuance of the application with the earliest date of execution.

(c) Action on the conflicting application which is not published in the OFFICIAL GAZETTE for opposition or not issued on the Supplemental Register will be suspended by the Examiner of Trademarks until the published or issued application is registered or abandoned.

6. The heading for §§ 2.91–2.99 entitled "Interferences" is revised to read "Interferences and Concurrent Use Proceedings."
7. Section 2.91 is revised to read as follows:

§ 2.91 *Interferences.*

(a) An interference will not be declared between two applications or between an application and a registration except upon petition to the Commissioner. Interferences will be declared by the Commissioner only upon a showing of extraordinary circumstances which would result in a party being unduly prejudiced without an interference. In ordinary circumstances, the availability of an opposition or cancellation proceeding to the party will be deemed to remove any undue prejudice.

(b) Registrations and applications to register on the Supplemental Register, registrations under the Act of 1920, and registrations of marks the right to use of which has become incontestable are not subject to interference.

8. Section 2,92 is revised to read as follows:

§ 2.92 *Preliminary to interference.*

Before the declaration of an interference, the marks which are to form the subject matter of the controversy must have been decided to be registrable by each party except for the interfering mark.

9. Section 2.98 is revised to read as follows:

§ 2.98 *Adding party to interference.*

If, during the pendency of an interference, another case appears involving substantially the same registrable subject matter, the Examiner of Trademarks may request the suspension of the interference for the purpose of adding said case. Such suspension will be granted as a matter of course if no testimony has been taken. If any testimony has been taken or is about to be taken, the case will not be added except upon approval of a member of the Trademark Trial and Appeal Board. If the case is not added, the Examiner of Trademarks may suspend action on such case pending termination of the interference proceeding.

§ 2.101 [*Amended*]

10. Section 2.101 is amended by changing "2.81," to read "2.80."

§ 2.103 [*Amended*]

11. Section 2.103 is amended by changing "2.81" in the second sentence to read "2.80."

Dated: February 2, 1972.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary for
Science and Technology.

[FR Doc. 72–1863; Filed 2–8–72; 8:46 am]

Pub. 37 F.R. 2880, Feb. 9, 1972

Removal From Register

Pursuant to the provisions of Rule 347 of the Rules of Practice of the United States Patent Office in Patent Cases, a letter was directed on May 15, 1971, to the last post office address furnished to the Committee on Enrollment by each of the persons whose name and address appear on the following list. With respect to some of the letters, no reply was received within the period of forty-five days therein set. Other letters were returned by the Post Office with notations to the effect that the addressee was deceased, unknown, or had moved and left no forwarding address. Accordingly, the names of the following persons are being removed from the Register of Patent Attorneys and Patent Agents.

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Feb. 10, 1972. *Chairman, Committee on Enrollment.*

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Patent Suits

Notices under 35 U.S.C. 290 ; Patent Act of 1952

(C.A. Tex.) Lees Patent No. 2,659,212 (62—106), for METHOD OF AND MEANS FOR FORMING FLAKE ICE. *Held* not infringed. *V & S Ice Mach. Co.* v. *Eastex Poultry Co. Inc. et al.*, 437 F.2d 422, 168 UCPQ 389.

(C.A. Ill.) Rockwell Patent No. 2,708,451 (137—620), for GROMMET VALVE MEANS. *Held* claims 1, 8 and 9 invalid and not infringed. *Rockwell et al.* v. *Midland-Ross Corp.*, 438 F.2d 645, 169 USPQ 5.

(C.A. Calif.) Griswold et al. Patent No. 2,710,649 (155—189), for COMBINATION SHOULDER AND LAP SAFETY BELTS. *Held* claims 1–5, 7 and 8 invalid. *Volvo Inc.* v. *Cummings & Sanders, Inc.*, 435 F.2d 981, 168 USPQ 832.

(C.A. Tex.) Lees Patent No. 2,712,534 (260—28.5), for ICE MAKING MACHINE. *Held* invalid. *V & S Ice Mach. Co. Inc.* v. *Eastex Poultry Co. Inc. et al.* 437 F.2d 422, 168 USPQ 389.

(D.C. Fla.) Pohland Patent No. 2,728,779 (260—326.3), for ESTERS OF SUBSTITUTED AMINOBUTANES. *Held* claim 2 valid. *Eli Lilly & Co.* v. *Generix Drug Sales Inc. et al.*, 324 F. Supp. 715, 169 USPQ 18.

(D.C., N.D. Ill., E. Div.) Trow et al Patent No. 2,753,694 (62—106), for ICE DISINTEGRATING AND CHIP DELIVERING SPIRAL ICE CHIP PRODUCING MACHINE. *Held* claim 5 valid and infringed. *King-Seeley Thermos Co.* v. *Reynolds Products, Inc.*, 322 F. Supp. 713, 167 USPQ 519.

(C.A. Ill.) Rockwell Patent No. 2,787,287 (137—620), for FLUID CONTROL VALVE CONSTRUCTION. *Held* claim 1 invalid and not infringed. *Rockwell et al.* v. *Midland-Ross Corp.* 438 F.2d 645, 169 USPQ 5.

(C.A. Ill.) Rockwell Patent No. 2,794,320 (60–54.5), for POWER AUGMENTATION APPARATUS FOR HYDRAULIC MOTOR SYSTEMS. *Held* claim 10 invalid and not infringed. *Id.*

(C.A. Calif.) Stukenborg Patent No. 2,843,408 (287—60), for LOCK FOR TURNBUCKLES. *Held* claims 5–7 invalid and not infringed. *Stukenborg et al.* v. *Teledyne, Inc.*, 441 F.2d 1069, 169 USPQ 584.

(D.C.R.I.) Lewis et al. Patent No. 2,867,001 (18—6), for MEANS AND METHOD FOR FORMING INDICIA ON THE SURFACE OF CONTINUOUS VULCANIZED PRODUCTS. *Held* invalid and not infringed. *Teledyne Mid-America Corp.* v. *International Tel. & Tel. Corp.*, 325 F. Supp. 424, 170 USPQ 9.

(D.C.N.J.) Worthington Patent No. 2,869,460 (101—366), for ROTARY LETTERPRESS INK FOUNTAIN. *Held* invalid and not infringed. *Worthington* v. *Southern New Jersey Newspapers, Inc.*, 323 F. Supp. 443, 167 USPQ 598.

(D.C. Pa.) Hermann et al. Patent No. 2,884,288 (308—213). for NEEDLE ROLLER BEARINGS. *Held* claims 1, 2, 4, 5, 7, 9 and 10 invalid. *Roller Bearing Co. of America* v. *Bearing, Inc.*, 322 F. Supp. 703, 168 USPQ 648.

(C.A. Calif.) Wagner Patent No. 2,934,932 (72—18), for HYDRAULIC CEMENT MORTAR COMPOSITIONS AND METHODS OF USE. *Held* claims 1, 2, and 4 to 9 valid. *Ceramic Tilers Supply Inc.* v. *Tile Council of America, Inc.*, 439 F.2d 1124, 169 USPQ 268.

(C.A.N.Y.) Holtje Patent No. 2,942,172 (321—18), for METHOD OF AND SYSTEM FOR SUPPLYING POWER. *Held* invalid. *General Radio Co.* v. *Kepco, Inc.*, 435 F.2d 135, 168 USPQ 65.

(D.C. Idaho) Stephan Patent No. 2,951,761 (99—3), for FISH BAIT. *Held* claims 1 to 19 valid, claims 1 to 6 and 13 to 19 infringed. *Puget Sound Salmon Egg Co.* v. *Shoshoni, Inc. et al.*, 321 F. Supp. 104, 168 USPQ 154.

(C.A. Ill.) Junkunc Patent No. 2,954,073 (155—125), for FOLDING TABLET ARM CHAIR. *Held* claims 1 to 7, 10, 12, 14 and 15 valid and infringed. *Bela Seating Co.* v. *Poloron Products, Inc.*, 438 F.2d 733, 168 USPQ 548.

(D.C.N.Y.) Lemelson Patent No. 2,962,837 (46—175), for TOY GUN CONTAINING RICOCHET NOISE MECHANISM. *Held* valid but not infringed. *Lemelson* v. *De Luxe Reading Corp. et al.*, 321 F. Supp. 1281, 168 USPQ 636.

(C.A. Calif.) Wagner et al. Patent No. 2,990,382 (260—17), for COMPOSITION COMPRISING HYDRAULIC CEMENT, METHYL CELLULOSE AND RE-EMULSIFIABLE POLYVINYL ACETATE. *Held* claims 1, 2, and 4 to 10 valid. *Ceramic Tilers Supply, Inc.* v. *Tile Council of America, Inc.*, 439 F.2d 1124, 169 USPQ 268.

(D.C.N.Y.) Boivin Patent No. 3,002,868 (154—49), for SPONGE BACK FLOOR COVERING. *Held* not infringed. *Flintkote Co.* v. *Armstrong Cork Co. et al.*, 321 F. Supp. 22, 169 USPQ 165.

(C.A. Ill.) Brandon et al. Patent No. 3,011,213 (18—20), for APPARATUS FOR LUBRICATING MOLD CAVITIES. *Held* invalid. *Magnetics, Inc.* v. *Arnold Engineering Co.*, 438 F.2d 72, 168 USPQ 392.

(D.C.N.Y.) Hubner Patent No. 3,027,507 (320—2), for POWER PACT MEANS FOR ELECTRICAL APPLIANCE. *Held* claims 1 and 7 invalid. *Hubner* v. *Sunbeam Corp.*, 320 F.2d 298, 167 USPQ 227.

(D.C. Ill.) Nelson Patent No. 3,034,311 (62—320), for ICE MAKING APPARATUS. *Held* claim 9 valid and infringed. *King-Seeley Thermos Co.* v. *Reynolds Products, Inc.*, 322 F. Supp. 713, 167 USPQ 519.

(C.A. Ohio) Caplan Patent No. 3,050,087 (138—121), for FLEXIBLE HOSE. *Held* claims 1 and 2 valid and infringed. *H. K. Porter Co.* v. *Goodyear Tire & Rubber Co.*, 437 F.2d 244, 168 USPQ 449.

(C.A.R.I.) Torti Patent No. 3,089,310 (61—41), for TRENCH SHORING MACHINE. *Held* not infringed. *Shields-Jetco, Inc.* v. *Torti*, 436 F.2d 1061, 168 USPQ 385.

(C.A. Ill.) Edwards Patent No. 3,091,360 (220—97), for NESTABLE CUP. *Held* infringed. *Illinois Tool Works, Inc.* v. *Sweetheart Plastics, Inc.*, 436 F.2d 1180, 168 USPQ 451.

(D.C.N.Y.) Goldstein et al. Patent No. 3,096,224 (154—45.9), for CORRUGATED PAPER BOARD PRODUCT. *Held* claims 1 to 3 invalid. *Tri-Wall Containers, Inc.* v. *Continental Can Co., Inc.*, 323 F. Supp. 700, 169 USPQ 212.

(C.A. Calif.) Holsman Patent No. 3,175,330 (50—165), for BEAD FOR PLASTER, STUCCO AND THE LIKE. *Held* claims 1 and 4 invalid. *Stockton Wire Products, Inc.* v. *K-Lath Corp.*, 440 F.2d 782, 169 USPQ 327.

(C.A. Tex.) Kelly Patent No. 3,185,228 (175—410), for ROTARY-PERCUSSION DRILL BIT WITH HEEL ROW INSERTS TO PREVENT WEDGING. *Held* claims 3 and 7 invalid. *Hughes Tool Co.* v. *Ingersoll-Rand Co.*, 437 F.2d 1106, 168 USPQ 545.

(D.C. Idaho) McDonald Patent No. 3,193,300 (280—11.37), for SKI POLE RINGS. *Held* claims 1–7 invalid. *Scott U.S.A., Inc.* v. *McDonald*, 321 F. Supp. 339, 167 USPQ 526.

(C.A. Ohio) Caplan Patent No. 3,194,705 (156—143), for METHOD AND APPARATUS FOR MAKING REINFORCED CORRUGATED HOSE. *Held* claims 1 to 3, 5, 6 and 13 to 16 valid and infringed. *H. K. Porter Co.* v. *Goodyear Tire & Rubber Co.*, 437 F.2d 244, 168 USPQ 449.

(D.C. Minn.) Foote et al. Patent No. 3,217,648 (102—42), for COMBINATION WAD COLUMN AND SHOT LINER. *Held* claim 1 invalid and not infringed. *Remington Arms Co.* v. *Herter's, Inc.*, 324 F. Supp. 760, 169 USPQ 805.

(C.A. Ill.) Eyberger Patent No. 3,244,782 (264—11); for TOROIDAL CORE PRESSURE FORMING METHOD. *Held* void because of public use. *Magnetics, Inc.* v. *Arnold Engineering Co.*, 438 F.2d 72, 168 USPQ 392.

(D.C. Mich.) Jendrisak Patent No. 3,103,430 (65—290), for GLASS BENDING APPARATUS. *Held* claims 1, 3 and 7 invalid. *Shatterproof Glass Corp.* v. *Guardian Glass Co. Inc.*, 322 F. Supp. 854, 168 USPQ 212.

(C.A. Ill.) Fredman Patent No. 3,118,151 (5—238), for ONE-PIECE BELT-TYPE BEDDING CARRIER. *Held* claim 3 invalid, claim 4 not infringed. *Fredman* v. *Harris-Hub Co., Inc.*, 442 F.2d 210, 169 USPQ 768.

(C.A. Fla.) Kardulas Patent No. 3,128,882 (211—13), for HAIR ROLLER HOLDER. *Held* invalid for lack of invention. *Kardulas* v. *Florida Mach. Products Co.*, 438 F.2d 118, 168 USPQ 673.

(C.A. Ill.) Edwards Patent No. 3,139,213 (220—97), for NESTABLE CUP. *Held* valid and enforceable. *Illinois Tool Works, Inc.* v. *Sweetheart Plastics, Inc. et al.*, 436 F.2d 1180, 168 USPQ 451.

(D.C. Ill.) Kalke Patent No. 3,156,541 (34—181), for APPARATUS FOR STIRRING GRAIN AND SIMILAR PARTICULATE MATERIAL. *Held* claims 3 and 4 valid and infringed. *David Mfg. Co. et al.* v. *Specialized Products, Inc. et al.*, 324 F. Supp. 588, 168 USPQ 511.

(D.C. Del.) Omholt Patent No. 3,271,916 (52—393), for UNIFORM RESILIENT FLOORING SYSTEMS. *Held* invalid. *Powerlock Floors, Inc.* v. *Robbins Flooring Co. Inc.*, 327 F. Supp. 388, — USPQ —.

(D.C. Ill.) Hansen et al. Patent No. 3,285,752 (99—107), for METHOD OF PREPARING A POULTRY PRODUCT. *Held* invalid and not infringed. *Armour & Co.* v. *Swift & Co.*, 320 F. Supp. 433, 168 USPQ 269.

(D.C. Calif.) Norwood Patent No. 3,304,435 (250—237), for PHOTOMETRIC DEVICE HAVING GREATER RESPONSE TO A PREFERENTIAL CENTRAL PORTION OF A SCENE. *Held* claims 1–4, 6, 7 and 9 invalid and not infringed. *Norwood* v. *Ehrenreich Photo-Optical Industries Inc.*, 322 F. Supp. 898, 168 USPQ 73.

(D.C. Calif.) Glass et al. Patent No. 3,325,981 (56—23), for HAY HARVESTING MACHINE. *Held* invalid. *Deere & Co.* v. *Sperry Rand Corp.*, 322 F. Supp. 397, 168 USPQ 150.

(C.A. Tex.) Stamps et al. Patent No. 3,326,232 (239—10), for FERTILIZER APPLICATION AND APPARATUS THEREFOR. *Held* not infringed. *Inject-O-Meter Mfg. Co.* v. *North Plains Fertilizer & Chemical, Inc.*, 439 F.2d 1138, 169 USPQ 70.

(D.C. Ill.) Perry Patent No. 3,335,092 (252—158), for OVEN CLEANER AND METHOD OF USING THE SAME. *Held* invalid. *Shelco, Inc.* v. *Dow Chemical Co.*, 322 F. Supp. 485, 168 USPQ 395.

(D.C. Ala.)Pyke et al. Patent No. 3,341,955 (38—144), for PRODUCING WRINKLE-FREE PERMANENTLY CREASED GARMENTS. *Held* invalid. *Everprest, Inc.* v. *Phillips-Van Heusen Corp.*, 325 F. Supp. 1293, 168 USPQ 489.

(C.A. Oreg.) Silvey Patent No. 3,349,645 (76—40), for SAW CHAIN GRINDING MACHINE. *Held* invalid. *Silvey* v. *Nielsen Corp.*, 437 F.2d 1159, 168 USPQ 679.

(D.C. Calif.) McCarty et al. Patent No. 3,375,643 (56—23), for HARVESTING DEVICE. *Held* invalid. *Deere & Co.* v. *Sperry Rand Corp.*, 322 F. Supp. 397, 168 USPQ 150:

(C.A. Tex.) Stamps et al. Patent No. 3,375,976 (239—10), for FERTILIZER APPLICATION PROCESS. *Held* invalid for obviousness. *Inject-O-Meter Mfg. Co.* v. *North Plains Fertilizer & Chemical, Inc.*, 439 F.2d 1138, 169 USPQ 70.

(D.C. Calif.) Glass et al. Patent No. 3,383,844 (56—23), for DEFLECTOR STRUCTURE. *Held* invalid. *Deere & Co.* v. *Sperry Rand Corp.*, 322 F. Supp. 397, 168 USPQ 150.

(D.C. Calif.) Glass et al Patent No. 3,386,233 (56—23), for IMPLEMENT FRAME. *Held* invalid. *Id.*

(C.A. Tex.) Sanderson et al. Patent No. 3,397,522 (56—30), for COTTON HARVESTER. *Held* claims 15, 16, 18 and 19 invalid. *Deere & Co.* v. *Hesston Corp. et al.*, 440 F.2d 904, 169 USPQ 132.

(D.C. Ohio) Cheney et al. Patent No. 3,421,290 (55—101), for INDOOR SMOKE REMOVAL SYSTEM. *Held* invalid. *Enviro Air, Inc.* v. *United Air Specialists, Inc.*, 322 F. Supp. 633, 168 USPQ 91.

(C.A. Ill.) Eyberger Reissue Patent No. 25,441 (18—42), for PRESSURE FORMING APPARATUS. *Held* void because of public use. *Magnetics Inc.* v. *Arnold Engineering Co. et al.*, 438 F.2d 72, 168 USPQ 392.

(D.C. Fla.) Brose Reissue Patent No. 26,368 (152—370), for TIRE REPAIR INSERT. *Held* claims 1, 11, 14 and 16 valid, but not infringed. *Brose* v. *Sears, Roebuck & Co. et al.*, 326 F. Supp. 1015, 168 USPQ 497.

Dedications

2,715,562.—*John F. Les Veaux*, Middleport, N.Y. INSECTICIDAL CALCIUM ARSENATE AND METHOD OF MAKING SAME. Patent dated Aug. 16, 1955. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,715,599.—*John F. Les Veaux*, Middleport, and *Calvin M. Tidwell*, Medina, N.Y. METHOD OF MAKING INSECTICIDAL CALCIUM ARSENATE BATCH. Patent dated Aug. 16, 1955. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,758,955.—*Oscar H. Johnson*, South Charleston, and *Allan M. Harvey*, Charleston, W. Va., and *Harry West*, Middleport, N.Y. PROCESS OF PROTECTING ORGANIC MATTER AGAINST FUNGUS GROWTH BY APPLYING A CHLORINE SUBSTITUTED THIA- OR DIHYDROTHIANAPHTHENE DIOXIDE. Patent dated Aug. 14, 1956. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,786,009.—*John A. Pianfetti*, Charleston, and *Oren F. Williams*, and *James Forrest Allen*, South Charleston, W. Va. INSECTICIDAL COMPOSITIONS COMPRISING CARBONYL BISDITHIOPHOSPHATE COMPOUNDS AND METHOD OF APPLYING THE SAME. Patent dated Mar. 19, 1957. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,841,520.—*Joe R. Willard* and *John F. Henahan*, Middleport, N.Y. PESTICIDAL PHOSPHORUS ESTERS. Patent dated July 1, 1958. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

3,264,536.—*Harold B. Robinson*, Chatham, N.J., and *David J. Valley*, Cleveland, Ohio. CAPACITOR WITH A POLYARYLENE POLYETHER DIELECTRIC. Patent dated Aug. 2, 1966. Dedication filed Jan. 25, 1972, by the assignee, *Union Carbide Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimers

2,629,827.—*John Presper Eckert, Jr.* and *John W. Mauchly*, Philadelphia, Pa. MEMORY SYSTEM. Patent dated Feb. 24, 1953. Disclaimer filed Nov. 3, 1971, by the assignee, *Sperry Rand Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3 and 30 of said patent.

2,862,369.—*Edward W. Simons*, San Francisco, Calif. AIR CONDITIONED DISPLAY COMPARTMENT AND METHOD. Patent dated Dec. 2, 1958. Disclaimer filed Nov. 24, 1971, by the assignee, *Dualjet Corporation.*

Hereby enters this disclaimer to claims 1, 3, 4, 8, 9 and 10 of said patent.

3,136,248.—*James R. Anderson*, Winnetka, Ill. PROCESS AND APPARATUS FOR TEMPORARILY INDICATING CORRECTIONS IN TEXT OF PRINTED MATTER. Patent dated June 9, 1964. Disclaimer filed Oct. 27, 1971, by the assignee, *La Salle Street Press, Incorporated.*

Hereby enters this disclaimer to claim 2 of said patent.

3,223,587.—*Samuel Wilkinson*, London, England. CARDIAC ACTIVE ACYL CYMAROLS. Patent dated Dec. 14, 1965. Disclaimer filed Nov. 19, 1971, by the assignee, *Burroughs Wellcome Co.*

Hereby enters this disclaimer to claims 5 and 6 of said patent.

3,227,554.—*Charles R. Barr, John Williams*, and *Keith E. Whitmore*, Rochester, N.Y. PHOTOGRAPHIC ELEMENTS AND PROCESSES UTILIZING MERCAPTAN-FORMING COUPLERS. Patent dated Jan. 4, 1966. Disclaimer filed Nov. 5, 1971, by the assignee, *Eastman Kodak Company.*

Hereby enters this disclaimer to claims 1, 2, 6, 7, 8, 9, 10, 15, 17, 18, 20, 22, 28, 29 and 30 of said patent.

3,301,541.—*Harold N. Ipsen*, Rockford, Ill. HEAT TREATING FURNACE WITH CIRCULATED GAS QUENCH. Patent dated Jan. 31, 1967, Disclaimer filed Nov. 5, 1971, by the assignee, *Alco Standard Corporation.*

Hereby enters this disclaimer to all the claims of said patent.

3,304,739.—*Edward H. Erath*, Los Angeles, Calif. COOLING SYSTEM FOR PASSENGER COMPARTMENTS OF VEHICLES. Patent dated Feb. 21, 1967. Disclaimer filed Oct. 26, 1971, by the assignee, *McDonnell Douglas Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

3,324,553.—*John V. Borden*, Washington, D.C. DENTAL HANDPIECE. Patent dated June 13, 1967. Disclaimer filed Nov. 26, 1971, by the inventor.

Hereby enters this disclaimer to claims 15, 34, 35, 37 and 38 of said patent.

3,368,972.—*Ferdinand P. Otto*, Woodbury, N.J. HIGH MOLECULAR WEIGHT MANNICH BASES AS ENGINE OIL ADDITIVES. Patent dated Feb. 13, 1966. Disclaimer filed Oct. 22, 1971, by the assignee, *Mobil Oil Corporation.*

Hereby enters this disclaimer to claim 6 of said patent.

3,386,855.—*Addison B. Scholes*, Muncie, Ind. LUBRICOUS COATING FOR GLASS. Patent Dated June 4, 1968. Disclaimer filed Nov. 12, 1971, by the assignee, *Ball Corporation.*

Hereby enters this disclaimer to claims 8 and 9 of said patent.

3,420,693.—*Addison B. Scholes*, Muncie, and *John E. Pickard*, Selma, Ind. GLASS HAVING DUAL PROTECTIVE COATINGS THEREON AND A METHOD FOR FORMING SUCH COATINGS. Patent dated Jan. 7, 1969. Disclaimer filed Nov. 12, 1971, by the assignee, *Ball Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Nov. 14, 1984.

3,441,761.—*Richard Clarence Painton* and *Clarence Albert Burke*, Rochester, N.Y. IRONLESS ROTOR FOR ELECTRIC MOTOR. Patent dated Apr. 29, 1969. Disclaimer filed Dec. 7, 1971, by the assignee, *Eastman Kodak Company.*

Hereby enters this disclaimer to claims 5 and 7 of said patent.

3,451,493.—*James C. Storm*, Corpus Christi, Tex. DRILLING APPARATUS AND METHOD. Patent dated June 24, 1969. Disclaimer filed Dec. 10, 1971, by the inventor.

Hereby enters this disclaimer to claims 27, 34 and 41 of said patent.

3,485,814.—*Stanley Brooke Speck,* Wilmington, Del. DISAZO SULFONIC ACID DYES. Patent dated Dec. 23, 1969. Disclaimer filed Dec. 9, 1971, by the assignee, *E. I. du Pont de Nemours and Company.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

3,525,171.—*Harry S. Gilman,* Marblehead, Mass. DISPLAY MEANS. Patent dated Aug. 25, 1970. Disclaimer filed Dec. 2, 1971, by the inventor.

Hereby enters this disclaimer to the remaining term of said patent.

3,537,363.—*George E. Long,* Monroe, and *Howard G. Anson,* Seattle, Wash. SERVO-CONTROLLED HYDRAULIC SYSTEM. Patent dated Nov. 3, 1970. Disclaimer filed Jan. 17, 1972, by the inventors.

Hereby enters this disclaimer to claims 1, 5 and 7 of said patent.

3,579,198.—*John A. Giunta,* Long Branch, N.J. MICROPROGRAMMED WIRED LOGIC MEMORY. Patent dated May 18, 1971. Disclaimer filed Dec. 6, 1971, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to claim 10 of said patent.

3,606,418.—*Paul S. Buker, Richard D. Shepard* and *David P. Wenaas,* Middletown, Ohio. STRUCTURAL MEMBER. Patent dated Sept. 20, 1971. Disclaimer filed Nov. 4, 1971, by the assignee, *Armco Steel Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

Disclaimers and Dedications

3,068,528.—*John Edward Owens,* Wilmington, Del. METHOD FOR CONVEYING AND STRETCHING THERMOPLASTIC FILM. Patent dated Dec. 18, 1962. Disclaimer and dedication filed Nov. 11, 1971, by the assignee, *E. I. du Pont de Nemours and Company.*

Hereby enters this disclaimer to all remaining claims in said patent and dedicates said patent to the Public.

3,363,862.—*Harold Lee Walter* and *Jean Arthur Malthaner,* San Diego, Calif. VARIABLE CAMBER LONGITUDINAL CONTROL SYSTEM FOR AIRCRAFT. Patent dated Jan. 16, 1968. Disclaimer and dedication filed Nov. 1, 1971, by the assignee, *General Dynamics Corporation.*

Hereby enters the disclaimer to claims 1–15 and dedicates said patent to the Public.

Certificates of Correction for the Week of Mar. 7, 1972

Re. 27,148
Re. 27,182
3,482,525
3,489,901
3,506,724
3,527,773
3,528,479
3,532,499
3,534,274
3,545,683
3,551,678
3,552,031
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3,620,552

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 8, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-06-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-04-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-23-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-25-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	8-10-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	6-08-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-20-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-03-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-04-71
PHYSICS, GROUP 280—R. L. EVANS, Director Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	1-04-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	1-04-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	1-06-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	12-08-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-02-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	2-11-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	1-04-71

Expiration of patents: The patents within the range of numbers indicated below expire during February 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,700,764 to 2,702,900, inclusive
Plant Patents	Numbers 1,345 to 1,354, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED MARCH 7, 1972

Published at the request of the applicant or owner in accordance with Notice of Apr. 11, 1968, 849 O.G. 1221. The abstracts are identified by serial number of the applications and arranged in chronological order. The heading of each abstract of application published herein indicates the number of pages of specification, including claims and sheets of drawing contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Applications published under the Defensive Publication Program have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T896,001
HIGH PURITY POLYESTER DEPOLYMERIZATION PRODUCTS FROM POLYESTER SCRAP BY COMPLETE HYDROGENATION

George Miller Stevenson, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation of application Ser. No. 676,724, Oct. 20, 1967. This application Nov. 24. 1969, Ser. No. 873,728
Int. Cl. C07c *35/02;* **C08g** *17/08*
U.S. Cl. 260—617C
No Drawing. 15 Pages Specification

A substantially colorless cyclohexanedimethanol solution is produced by depolymerizing scrap polyesters of difunctional glycols and difunctional aromatic dicarboxylic acids in the presence of a C_2 to C_8 aliphatic alcohol at a temperature of at least about 125° C. so as to obtain a depolymerized reaction product comprising a diester, subjecting the diester to a first catalytic hydrogenation reaction under conditions sufficient to saturate the aromatic ring of the diester, and then subjecting the resulting diester to a second catalytic hydrogenation reaction under conditions sufficient to reduce the ester groups and to produce the substantially colorless cyclohexanedimethanol.

T896,002
FRICTIONAL COMPOSITIONS

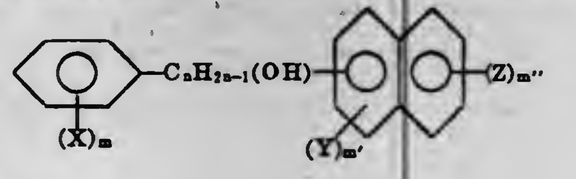
Paul H. Richard, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 27, 1970, Ser. No. 32,449
Int. Cl. C09d *3/78;* **F16d** *13/60*
U.S. Cl. 117—161 UF
No Drawing. 9 Pages Specification

Standard frictional compositions such as brake and friction clutch materials, having a multiplicity of surface pores ranging from 1 to 100 microns in size when modified by impregnating the pores with a solid polymer of tetrafluoroethylene, having a molecular weight of at least 2000 and a melting point of at least 265° C., demonstrate improved resistance to high temperature fading and noise. The polymers are conveniently applied as dispersions in liquids such as tertiary hydrocarbons, aliphatic ethers and alcohols and the like with the polymer particle size ranging between about 0.1 and 50 microns. A standard frictional composition can be composed of, for example, rubber dust, asbestos and an adhesive binder.

T896,003
BACTERIOSTATIC ARALKANOLS

Joseph W. Baker, 421 Greenleaf St. 63122, and Ignatius Schumacher, 1009 S. Elm 63119, both of St. Louis, Mo.
Filed May 11, 1970, Ser. No. 36,383
Int. Cl. C07c *31/14*
U.S. Cl. 260—618 R
No Drawing. 7 Pages Specification

Certain aralkanols represented by the formula



wherein:

C_nH_{2n-1} is a saturated hydrocarbon chain;

n represents an integer selected from 1 to 4;

X, Y and Z individually represent chloro, bromo or nitro; and

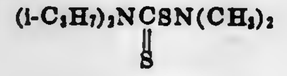
m, *m′* and *m″* each represent an integer selected from 0 to 3, provided that the sum of $m+m'+m''$ equals at least 2,

are prepared by reacting a naphthaldehyde with a Grignard reagent. The aralkanols effectively control the growth of gram-positive microorganisms.

T896,004
COMPOSITION OF MATTER AND METHOD

Adel F. Halasa, 1568 Larch St., Akron, Ohio 44301
Continuation of application Ser. No. 868,647, Oct. 22, 1969. This application July 13, 1970, Ser. No. 56,212
Int. Cl. C08f *27/06*
U.S. Cl. 260—79.5 B
No Drawing. 10 Pages Specification

N,N - diisopropylthiocarbamyl - N,N′ - dimethylsulfenamide in an accelerator of the vulcanization of diolefin rubbers, including butadiene-styrene, polybutadiene and polyisoprene rubbers, said sulfenamide represented by the structure



$$(i\text{-}C_3H_7)_2N\underset{\underset{S}{\|}}{C}SN(CH_3)_2$$

T896,005
SANDWICH WIRE COATING CONSTRUCTION

Joseph F. Parsons, Folcroft, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of application Ser. No. 755,394, Aug. 26, 1968. This application Aug. 19, 1970, Ser. No. 65,288
Int. Cl. B44d *1/16, 1/18*
U.S. Cl. 117—218
No Drawing. 6 Pages Specification

A multi-layered sandwich insulating construction in which a low thermally rated enamel is sandwiched between thin upper and lower layers of a polyimide is provided for use as an electrical insulating material for electrical conductors.

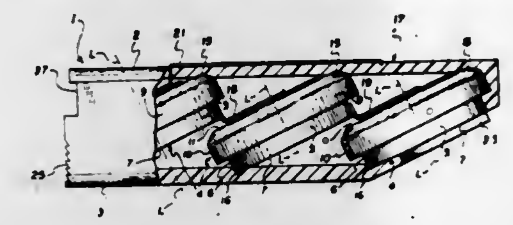
T896,006
ANTISTATIC POLYOLEFIN COMPOSITION

Alan B. Glanvill, "Broad Hinton" Beechfield Road, Alderley Edge, Cheshire, England
Filed Sept. 28, 1970, Ser. No. 76,322
Claims priority, application Great Britain, Sept. 30, 1969, 47,941/69
Int. Cl. C08f *29/02, 29/04, 37/00*
U.S. Cl. 260—93.7
No Drawing. 12 Pages Specification

Effectiveness of antistatic additives such as hydroxyalkyl substituted amines and long chain fatty acid amides in polyolefins is improved by incorporating therein a C_{12}–C_{20} aliphatic alcohol.

T896,007
BATTERY HOLDER

Jeffrey R. Stoneham and Benjamin B. Adams, both of 901 Elmgrove Road, Rochester, N.Y. 14650
Filed Sept. 30, 1970, Ser. No. 76,836
Int. Cl. H01m *1/04*
U.S. Cl. 136—173
2 Sheets Drawing. 12 Pages Specification



A holder for disc-like electrical batteries includes a set of support surfaces for engaging the side and end walls of a plurality of the batteries to position them in a shingled relationship.

T896,008
ESTERS OF 4-METHYLCYCLOHEXANEMETHANOL

David L. Valentine, 4508 Chickasaw Road, Kingsport, Tenn. 37664
Filed Oct. 5, 1970, Ser. No. 78,297
Int. Cl. C07c *69/80*
U.S. Cl. 260—475 R
No Drawing. 15 Pages Specification

Esters of 4-methylcyclohexanemethanol are useful as plasticizers for vinyl polymers. The esters may be synthesized from 4-methylcyclohexanemethanol alone or in combination with other alicyclic or aliphatic alcohols, and dicarboxylic acids or anhydrides thereof.

T896,009
HIGH FRICTION ARTICLE BASED ON A POLYIMIDE RESIN

Frank Clyde Starr, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of application Ser. No. 711,487, Mar. 8, 1968, which is a continuation-in-part of abandoned application Ser. No. 415,458, Dec. 2, 1964. This application Oct. 19, 1970, Ser. No. 82,118
Int. Cl. C08g *51/10, 51/12*
U.S. Cl. 260—37 N
No Drawing. 18 Pages Specification

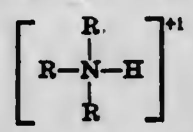
A molded article especially adapted for use as high-friction articles such as brake linings, is provided wherein the molded article is characterized by a co-efficient of friction of from 0.4 to 0.8 and a wear constant of at least 50, and consists of between about 20% and about 60% by weight of a linear aromatic polyimide resin, from between about 15% and about 50% by weight of a fibrous filler such as asbestos fibers, from between about 5% and about 20% of a metal such as copper in elongated form, from between about 2% and about 10% of an abrasive filler such as aluminum oxide in a silicon-containing dispersion wherein said abarsive is characterized by a hardness of at least about 8 on the Moh scale, and up to about 25% by weight of a siliceous glass.

T896,010
EMULSIONS AND USES THEREOF

Wayne W. Lochmaier, 312 Hamilton Drive, Kingsport, Tenn. 37663
Filed Nov. 18, 1970, Ser. No. 90,811
Int. Cl. C09k *3/28*
U.S. Cl. 117—136
No Drawing. 20 Pages Specification

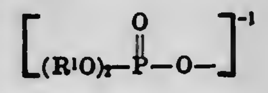
A process where an emulsion containing a flame retarder is applied to the surface of a polyester fiber and the fiber is subsequently heated to diffuse the flame retarder into the fiber. The emulsion consists essentially of:

(A) water,
(B) an emulsifier system which is a positive and negative ion in dissociation equilibrium wherein:
  (1) the positive ion is an alkali metal ion, or an ion corresponding to the structure

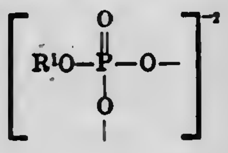


$$\left[R-\overset{\overset{R}{|}}{\underset{\underset{R}{|}}{N}}-H\right]^{+1}$$

  wherein R is H or an organic radical having from 1 to 20 carbon atoms, and
  (2) the negative ion is an ion corresponding to the structure

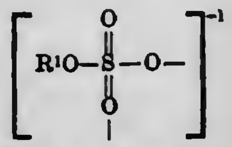


$$\left[(R^1O)_2-\overset{\overset{O}{\|}}{P}-O-\right]^{-1}$$



$$\left[R^1O-\overset{\overset{O}{\|}}{\underset{\underset{|}{O}}{P}}-O-\right]^{-2}$$

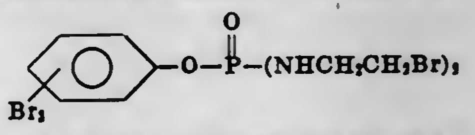
or



$$\left[R^1O-\overset{\overset{O}{\|}}{\underset{\underset{|}{\overset{\|}{O}}}{S}}-O-\right]^{-1}$$

  wherein R^1 is a monovalent aliphatic radical having 8 to 20 carbon atoms, and
(C) based on the weight of (A), (B) and (C), from 50–90 weight percent of a flame retarder which can be
  (1) an aliphatic, alicyclic or aromatic compound of at least 6 carbons and containing from about 40–85 weight percent halogen, or
  (2) an aliphatic, alicyclic or aromatic phosphorus compound of at least 6 carbon atoms and containing from about 40–85 weight percent halogen,

wherein the pH of the emulsion is in the range of 1–7, the viscosity of the emulsion is in the range of 2,000–50,000 centipoise, and the emulsion is stable for at least 100 days. The flame retarder can be tris(2,3-dibromopropyl)phosphate, bis(2 - bromoethyl) 2,5 - dibromophenyl phosphate, bis(bromochloropropyl) bromochloropropyl phosphonate, tris(dibromophenyl) phosphate, di(2,3-dibromopropyl) tribromophenyl phosphate, N,N′,N″ tris-(2,3-dibromopropyl) phosphoric triamide or

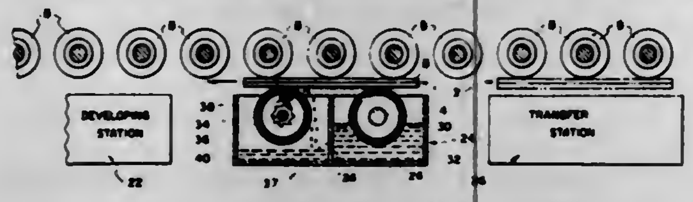


According to the process, the fiber is heated in a temperature range of about 175–220° C. for a sufficient time to cause a portion of the flame retarder to diffuse into the fiber structure. The fiber can be poly(ethylene terephthalate) or poly(1,4-cyclohexylenedimethylene terephthalate).

T896,011
CLEANING METHOD AND APPARATUS FOR REMOVING DEVELOPER FROM PHOTOSENSITIVE ELEMENTS

William C. York, Rochester, and Ivan B. Ville, Spencerport, N.Y. (both % Kodak Park, 1669 Lake Ave., Rochester, N.Y. 14615)
Filed Dec. 14, 1970, Ser. No. 97,757
Int. Cl. G03g *13/10, 15/10*
U.S. Cl. 117—37 LE
2 Sheets Drawing. 15 Pages Specification

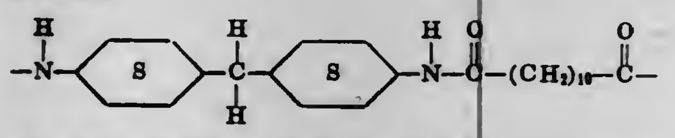
A roller of soft absorbent, open celled, plastic material such as polyurethane is provided to remove the residual developer image from a liquid developed photoconductive surface after image transfer. In one embodiment such roller is free to rotate as the photoconductive member passes thereover in a first direction towards the transfer station, but is prevented from rotation during passage of the element thereover in the reverse direction after transfer. Another embodiment utilizes a single such roller both to apply developer during movement towards the transfer station and to remove residual developer during reverse movement. Other embodiments utilize various arrangements of such rollers to develop and clean the photoconductive element in conjunction with a supply of carrier solution such as Isopar G.



T896,012
PROCESS OF MODIFYING POLYCARBONAMIDE FIBERS WITH ORTHOPHENYLPHENOL

Jose J. Rufino, Geneva, Switzerland, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 16, 1970, Ser. No. 98,876
Int. Cl. D06m *13/00*
U.S. Cl. 8—130.1
No Drawing. 14 Pages Specification

A process for finishing a fabric containing highly twisted continuous filament polycarbonamide yarns wherein at least 50 mol percent of the repeating units are of the formula:



with at least 70% by weight of the diamino constituent of the repeating units being a trans-trans stereoisomeric configuration, comprising:

(A) stabilizing the fabric by heating it in open width in a medium selected from the group consisting of steam, air or water to induce from about 5 to 20% shrinkage in both warp and filling based on greige fabric dimensions;
(B) exposing the fabric to an acidic aqueous bath containing o-phenylphenol near the boil;
(C) removing the o-phenylphenol from the fabric by treating the same with an aqueous alkaline bath at a temperature near the boil, rinsing the fabric and drying the same,

the amount of o-phenylphenol in the bath being between ½ to ¾ of the total amount of o-phenylphenol indicated by the following equation:

$$Y=10.1X-250$$

wherein Y is the bath-to-fabric weight ratio and X is the percent by weight of the amount of o-phenylphenol in the bath based on the weight of the fabric.

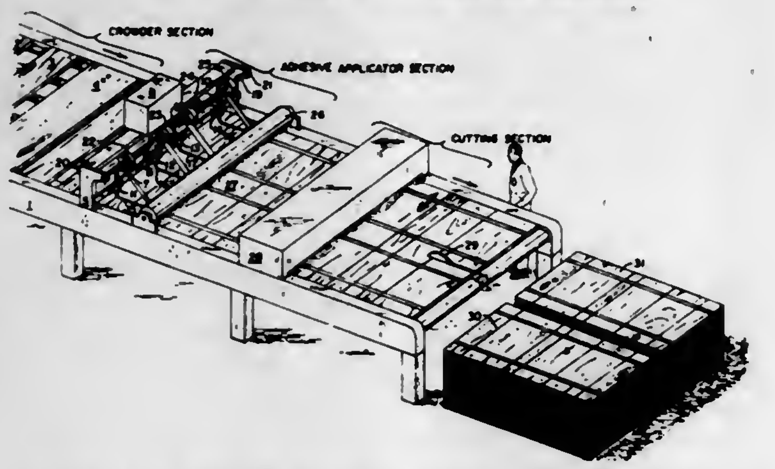
T896,013
COPOLYMERS OF METHYL METHACRYLATE

Eugene P. Reilly, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 18, 1970, Ser. No. 99,514
Int. Cl. C08f *15/18*
U.S. Cl. 260—86.1 R
No Drawing. 9 Pages Specification

Copolymers of methyl methacrylate and 2-phenylallyl alcohol are provided wherein the copolymers are derived from between about 99% and about 99.9% by weight of methyl methacrylate and between about 0.1% and about 1% by weight of 2-phenylallyl alcohol. The copolymers have an inherent viscosity of at least 0.44 and may be molded into shaped structures such as lenses.

T896,014
METHOD OF MAKING PLYWOOD CORES

James Edward Huffaker, 1117 Radcliffe 37664, and Brian Douglas Dillon, 2120 Gary St. 37660, both of Kingsport, Tenn.
Filed Jan. 11, 1971, Ser. No. 105,397
Int. Cl. B32b *5/12*
U.S. Cl. 161—60
2 Sheets Drawing. 19 Pages Specification



Method of making plywood veneer cores or sheets by continuously bringing a succession of thin random with wood veneer sections of substantially the same length into edge-to-edge contact, extruding a plurality of continuous beads of a hot melt adhesive onto the upper surface of each of the abutting sections and simultaneously pressing a strong, porous paper tape onto each of the adhesive beads in such a manner that the adhesive is caused to adhere to the undersurface of each tape, whereby strong adhesive bonds are formed between each of the tapes and the underlying surfaces of each of the sections. Alternatively, the tapes may be precoated with the adhesive and continuously applied to the sections with the adhesive side down and the adhesive melted and reactivated in situ by pressing the tape into contact with the sections by means of a heated roll. In either case the resulting product is a multi-section thin veneer core sheet which unexpectedly has sufficient strength and other desirable properties to enable it to be cut into 4 x 8 foot sheets or plys for use in standard plywood laminating operations.

T896,015
PREVENTION OF FIBER SHEDDING FROM NAPPED POLYESTER BLANKETS

Howard M. Lewis, 14525 S. Pines Cove, Dallas, Tex. 75234
Filed Jan. 11, 1971, Ser. No. 105,633
Int. Cl. B32b *27/08, 27/36*
U.S. Cl. 117—138.8 F
No Drawing. 10 Pages Specification

Fiber shedding of a napped polyester blanket is prevented by treating the napped fabric with an aqueous dispersion or emulsion of a resinous composition containing a plurality of self cross-linking acrylic polymers such as methylacrylate and ethylacrylate. Upon evaporation of the aqueous medium and curing by application of heat minute amounts of resinous copolymer formed in the curing stage find their way between the polyester fibers at points of contact and serve to spot weld these fibers at the contact points. The resulting napped blanket product is immune or highly resistant to fiber shedding in normal use or laundering and capable of retaining its original inherent loft, fluffiness and resiliency under such conditions.

T896,016
FOOD PACKAGE

Roland Gordon Harris, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of abandoned application Ser. No. 838,485, July 2, 1969. This application Jan. 14, 1971, Ser. No. 106,572
Int. Cl. B65b *9/04*
U.S. Cl. 99—171 LP
1 Sheet Drawing. 10 Pages Specification

A sealed package useful in packaging, storing and vending foodstuffs consisting essentially of

(a) a tray having a bottom panel with side walls and a continuous outwardly extending flange having a width of at least ¼-inch connected to the upper edge of the side wall wherein the tray is prepared from a foam composite of
  (1) a core of oriented closed cell foam having an elongation of less than about 50% consisting essentially of styrene polymer having a tensile modulus greater than 150,000 p.s.i., and
  (2) a thermoplastic film preferably polyvinyl chloride or unoriented butadiene-modified polystyrene bonded to both sides of the core wherein the thermoplastic film has a tensile modulus greater than 150,000 p.s.i., an elongation percentage greater than 5% and is thermoformable within a temperature range of about 50° to 230° C.;
(b) a foodstuff contained in the tray; and
(c) a polymeric film having a thickness of about 1 to 10 mils prepared from polymers such as polyesters, polyolefins, regenerated cellulose, and elastomeric polymeric films attached to the outwardly extending flange of the tray with a heat-sealed adhesive, preferably an ethylene/vinyl acetate or an ethylene/vinyl acetate-wax blend adhesive having a bond strength of about 150 to 200 grams wherein the polymeric film cover has a tab portion extending beyond at least a portion of the perimeter of the flange with the remainder of the cover substantially coextensive with the remainder of the perimeter of the flange.

The package provides good hermetic protection for its food contents thereby significantly reducing the possibilities of spoilage and dehydration. The tab portion of the polymeric film cover over the tray provides easy opening of the package by pulling on the tab and the tray exhibits improved cut-through and puncture resistance, making it useful as an eating utensil.

T896,017
THERMOFORMING LAMINAR FOAM STRUCTURES

Leon Edward Wolinski, Buffalo, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of abandoned application Ser. No. 861,478, Sept. 26, 1969. This application Jan. 28, 1971, Ser. No. 110,769
Int. Cl. B29d *27/00*
U.S. Cl. 264—321
No Drawing. 8 Pages Specification

Process for thermoforming film/foam/film laminar structures by heating the laminar structure, forming it with at least one mold, heating the resulting formed structure to at least the second order transition temperature of the foam and less than the temperature at which the foam undergoes cellular collapse, and restraining the expansion of the laminar structure while maintaining the outer walls thereof at a temperature at least 10 centigrade degrees below the second order transition temperature of the foam.

T896,018
SCUFF-RESISTANT URETHANE COATED FABRICS

Bernard Taub, Williamsville, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Feb. 1, 1971, Ser. No. 111,654
Int. Cl. B32b *27/40*
U.S. Cl. 117—76 T
No Drawing. 16 Pages Specification

Novel urethane coated fabrics of enhanced resistance to scuffing and abrasion are prepared by applying to a urethane-coated fabric a top coating consisting of a flexible heat-cured silicone polymer. The sequence of bonding the coating to the fabric is not critical. An adhesive may be applied directly to the fabric and the urethane coating may be subsequently applied thereto and cured by heating with preliminary use of release paper for the coating. Or, the urethane-coating composition may be applied directly to the fabric without prior use of adhesive or release paper. Heat-curable silicone resin polymers are known articles of commerce and are used in the form of aqueous emulsions or solutions. They typically include solutions of organosilioxanes, organosilanes and siloxane condensation catalysts. Suitable urethane coating compositions are known in the art and are preferably organic solvent solutions of fully reacted polyurethane urea resins. The coating compositions may be pigmented with a variety of inorganic or organic pigments such as titanium dioxide, phthalocyanine green, phthalocyanine blue, carbon black, bone black, chrome yellow, cadmium red and toluidine red. Fabrics suitable for coating include linen, nylon, cotton, rayon, silk, wool, polyester, polyacrylonitrile, modacrylic, or mixtures thereof. The novel urethane coated fabrics are particularly useful for automotive and furniture upholstery.

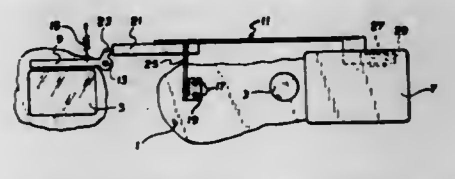
T896,019
LITHOGRAPHIC REPRODUCTIONS

Ralph Donald Zaffrann and Gale Francis Nadeau, Jr., both of 1669 Lake Ave., Rochester, N.Y. 14650
Filed Feb. 5, 1971, Ser. No. 113,106
Int. Cl. G03f *7/02*
U.S. Cl. 96—33
No Drawing. 13 Pages Specification

The press latitude of lithographic plates having gelatin printing surfaces is widened by contacting the printing surface with an acidic stop bath containing 0.5 to 10% by weight of polypropylene glycol having an average molecular weight in the range from about 200 to about 2000. The stop bath is otherwise conventional and, preferably, does not contain benzyl alcohol, diethylene glycol or triethylene glycol.

T896,020
LENS COVER AND SIGNAL DEVICE

David E. Beach, 901 Elmgrove Road, Rochester, N.Y. 14650
Filed Feb. 9, 1971, Ser. No. 113,874
Int. Cl. G03b *17/20*
U.S. Cl. 95—11 V
3 Sheets Drawing. 17 Pages Specification



A camera having a picture taking lens and a view-finder includes a cover 7 for protecting the lens, and a signal device 9 which becomes visible in the viewfinder whenever the cover blocks the lens.

PATENTS

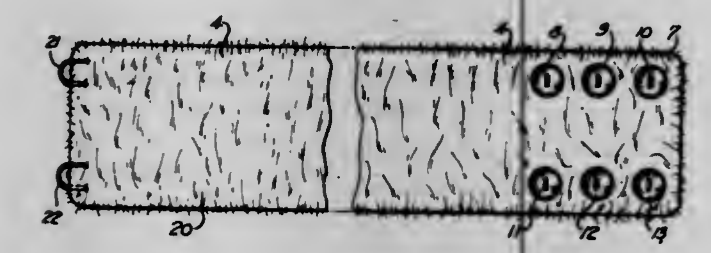
GRANTED MARCH 7, 1972

GENERAL AND MECHANICAL

3,646,614

ADJUSTABLE SHAWL COLLAR

Karl Engelmann, Roonstrasse 49-51, 54 Koblenz, Germany
Filed Jan. 4, 1971, Ser. No. 103,489
Int. Cl. A41d *23/00*
U.S. Cl. 2—91 **4 Claims**

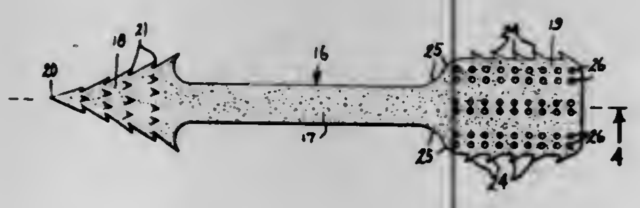


An adjustable shawl collar consists of a length of material provided with pile or fur on both sides. One end of the collar is provided with buttons arranged in alinement in rows on both sides. The other end of the collar carries loops adapted to engage these buttons.

3,646,615

REINFORCING ELEMENT FOR MUSCLES

Richard A. Ness, 714 S. Mill Street, Fergus Falls, Minn.
Filed Jan. 26, 1970, Ser. No. 5,534
Int. Cl. A61f *1/00*
U.S. Cl. 3—1 **5 Claims**



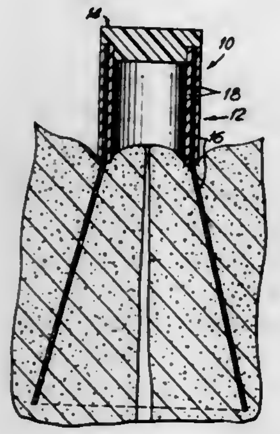
A reinforcing element for connection to a muscle to add pulling power to the muscle. An elongated elastic body member has a head end provided with means for anchoring the same to a portion of a muscle, and an opposite tail end portion having transverse openings for reception of a suture whereby the tail end portion is sewn to the muscle in longitudinally spaced relation to the anchoring means on the head end portion.

3,646,616

PROSTHESIS FOR IMPLANTING AROUND A BODY DUCT SUCH AS THE URETHRA AND METHOD OF TREATING URINARY INCONTINENCE

Jesse G. Keshin, 175 Crary Avenue, Mount Vernon, N.Y.
Filed July 23, 1969, Ser. No. 844,071
Int. Cl. A61f *1/00, 5/44*
U.S. Cl. 3—1 **5 Claims**

Prosthesis consisting of a mesh material impregnated with an antibiotic, antiseptic, antispore medication or a combination of these which surrounds a conduit leading to the skin, such as the urethra, and having an end portion thereof embedded in a water-repellent substance which protrudes from the end of the conduit and the surface of the skin and a cap therefor.

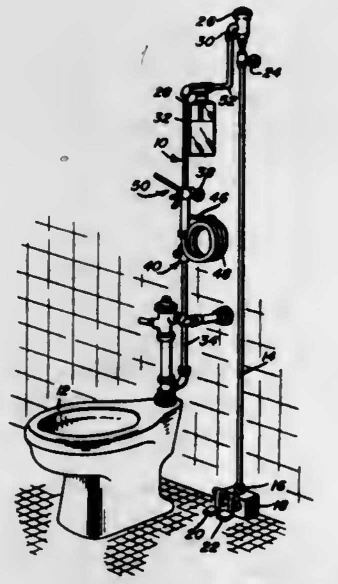


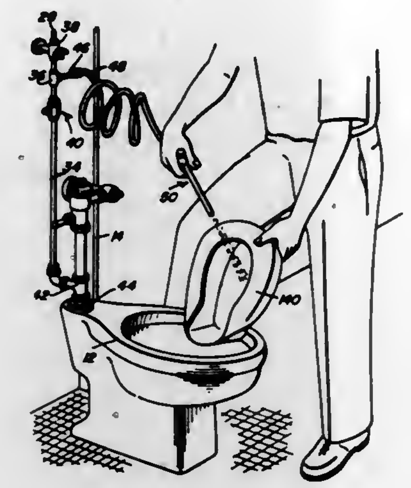
3,646,617

BEDPAN WASHER WITH PISTOL-TYPE NOZZLE

Jerome Ingles Heald, 903 East Wardlow, Long Beach, Los Angeles County, Calif.
Filed Sept. 24, 1970, Ser. No. 75,176
Int. Cl. A47k *17/00, 11/08, 3/22*
U.S. Cl. 4—1 **11 Claims**

A water and liquid additive control system including a valved outlet and operable to automatically discharge only water therefrom when the valve controlled outlet is actuated to flow liquid therepast at a rate not exceeding a predetermined rate and to discharge water as well as metered amounts of additive liquid therefrom when the valve controlled outlet is actuated to discharge water therefrom at a rate exceeding the aforementioned predetermined rate. The valve controlled outlet of the system is further carried by the outlet end of a flexible hose including spring means biasing the hose into a coiled state and the biasing action of the spring means on the hose as well as the valved outlet carried thereby is sufficient to at least partially coil the hose and therefore shorten its effective length when the hose and the valved outlet are allowed to hang free.

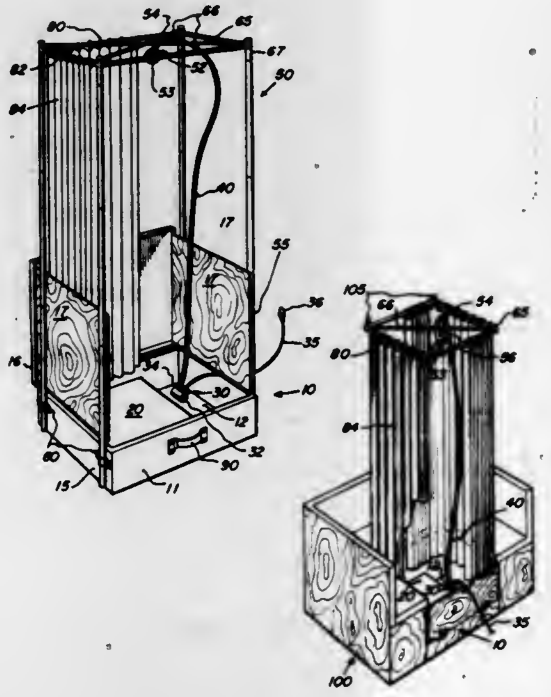




3,646,618

RECIRCULATING PORTABLE SHOWER FOR CAMPERS, TRAILERS OR AUTOMOBILES

Glenn J. Johnson, Route 1, Box 145, Powell, Wyo.
Filed Oct. 2, 1970, Ser. No. 77,564
Int. Cl. A44k *3/22;* F24h *1/06*
U.S. Cl. 4—147 **10 Claims**

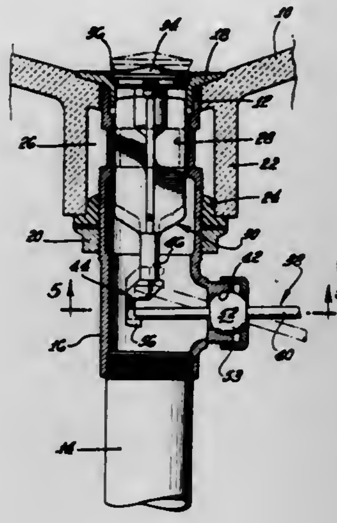


A portable and collapsible shower for campers which includes a base structure forming a step portion and reservoir for water to be used in showering. The base structure includes a submersible pump connected through a flexible or rubber hose to a shower head which would be suspended above the reservoir to direct water therefrom back to the reservoir and onto the user. In the portable version, the shower includes a demountable frame for mounting an enclosing curtain for privacy, with the frame being modified in the case of a camper to be suspended directly from the ceiling thereof.

3,646,619

LAVATORY POPUP WASTE VALVE

Walter Rokitenetz, Granada Hills, Calif., assignor to Price-Pfister Brass Mfg. Co., Pacoima, Calif.
Filed Mar. 30, 1970, Ser. No. 23,863
Int. Cl. A47k *1/14*
U.S. Cl. 4—203 **6 Claims**

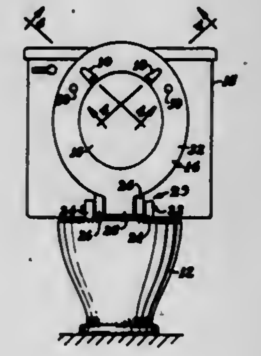


The popup plunger has an offset connector at its lower end cooperable with the end of a ball-mounted lever. In one mode of connection, the ball-mounted lever positively interlocks the plunger, preventing its being lifted out of the plunger casing. In the alternate mode of connection, an interlock is provided as in the first mode; however, unknown to the vandal or unadvised person, the interlock is released by a simple angular movement of the plunger resulting from the flexibility and resilience of the plunger connector itself.

3,646,620

TOILET SEAT GUIDE

Joseph F. McCawley, 1101 North Drexel Avenue, Indianapolis, Ind.
Filed Mar. 16, 1970, Ser. No. 20,005
Int. Cl. A47k *13/00, 13/04*
U.S. Cl. 4—237 **10 Claims**



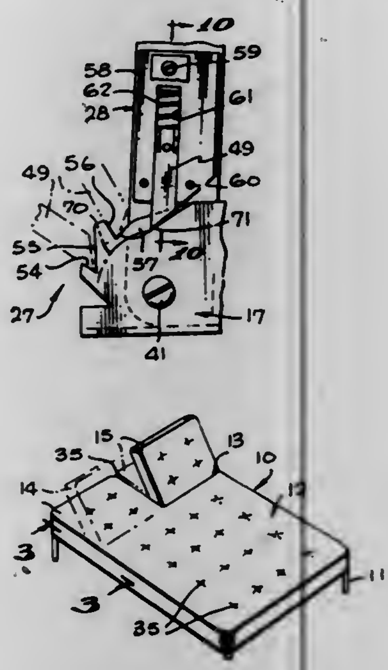
A position guide means for a toilet seat, preventing objectionable wobbling of the toilet seat even though the hinge may be rather loose, as is the case with many toilet seats.

3,646,621

MATTRESS STRUCTURE OR THE LIKE

Restituto R. Fragas, 7035 Templeton Street, Huntington Park, Calif.
Filed Aug. 3, 1970, Ser. No. 60,570
Int. Cl. A61g *7/00, 7/02*
U.S. Cl. 5—66 **21 Claims**

A bed structure or the like having a head supporting portion which is mounted to swing upwardly and downwardly to positions of different inclination relative to the main part of the bed, and which is held in its different positions by a spring pressed latch mechanism, with the latch being releasable automatically to an inactive condition in response to arrival of the head section at a predetermined upper position, so that after such release the head section can swing downwardly without restraint by the latch mechanism and past one or more of the support positions to a predetermined lowermost setting. In a double bed structure, two of the head sections may be provided, and may be mounted for movement separately to different settings so that two different persons may have individual control of their different halves of the bed.



3,646,622

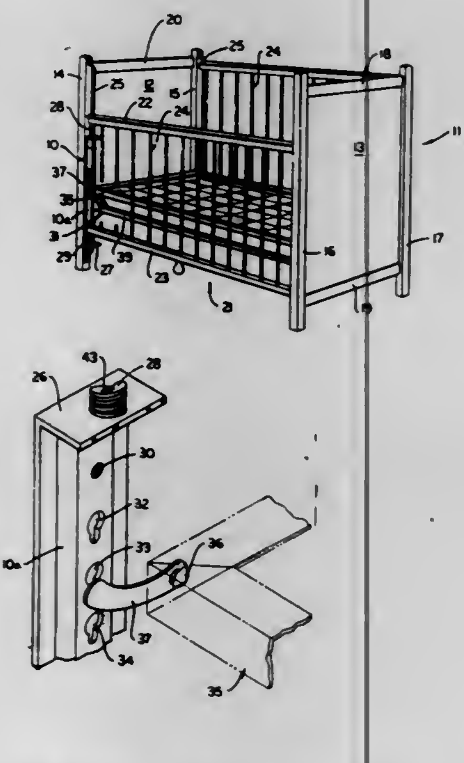
APPARATUS TO FACILITATE THE MOUNTING, SUPPORTING AND ASSEMBLING OF A CRIB-TYPE BED

Richard W. Van Riper, Jr., Crawfordsville, Ind., assignor to Ingress-Plastene, Inc., Crawfordsville, Ind.

Filed Oct. 15, 1969, Ser. No. 866,606

Int. Cl. A47d *7/03*

U.S. Cl. 5—100 **8 Claims**



Apparatus preferably molded of synthetic resin and mounted directly to the corner post of a bed such as a crib or the like. The apparatus is a one-piece unit that combines the hardware that is necessary to mount, adjust and lock the movable sides of such a bed, as well as the longitudinal framing members of the bed itself, and the support and adjustment members of a mattress carrier used with the bed.

3,646,623

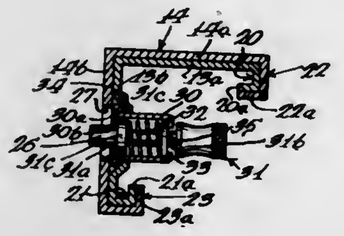
BEDFRAME ASSEMBLY

Allan E. Harris, and Wilbert E. Behnke, both of Chicago, Ill., assignors to Harris-Hub Company, Inc.

Filed May 4, 1970, Ser. No. 34,061

Int. Cl. A47c *19/00*

U.S. Cl. 5—181 **7 Claims**



A bedframe assembly including an improved cross frame member comprising a first cross frame element slidably engaged within a second cross frame element. The second cross frame element includes a flange configuration defined by reentrant flange portions that confine the first cross frame element for slidable movement within the second cross frame element. Releasable locking means is positioned for securing the cross frame elements at one of a plurality of selectable positions relative to one another. The locking means includes a male element that is resiliently biased outwardly from one cross frame element, and a female element defined by a plurality of apertures in the other cross frame element with the apertures being positioned to receive the male element and hold the cross frame elements in the selected position.

3,646,624

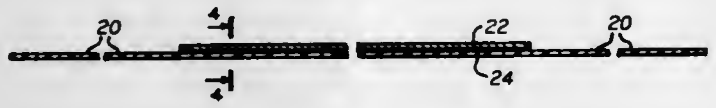
DISPOSABLE DRAWSHEET

Frederick W. Zipf, III, Rumson, N.J., assignor to Blessings, Inc., Bound Brook, N.J.

Filed Sept. 24, 1969, Ser. No. 860,564

Int. Cl. A47g *9/02*

U.S. Cl. 5—334 **7 Claims**



A drawsheet, suitable for hospital use, is made with a plastic film to which is laminated a highly absorbent nonwoven fabric over only the portion of the sheet that is on top of the mattress when in use. By using low-cost plastic and fabric, and by making the article by a continuous and low-cost method of manufacture, the drawsheet of this invention is suitable for use as a disposable item. Embossed polyethylene film is used and is bonded to a nonwoven cellulose fabric by adhesive applied to the plastic web with the latter folded into a flattened tube so that the adhesive contacts with only one-half of the width of the tube.

3,646,625

INFLATABLE SUSPENDERS

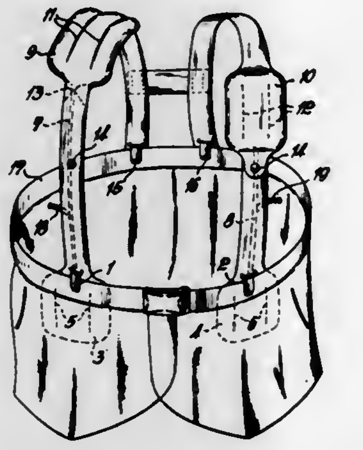
Walter Geier, Nurnberg, Germany, assignor to Ing. Adam Geier KG, Nurnberg, Germany

Filed Aug. 14, 1970, Ser. No. 63,803

Claims priority, application Germany, Oct. 11, 1969, G 69 39 642.5

Int. Cl. B63c *9/16*

U.S. Cl. 9—335 **6 Claims**



Each suspender strap of a pair of suspenders is provided with a flat relatively thin inflatable air chamber on the front terminal end depending inside and concealed by the garment to which they are connected, and a similar air chamber at the shoulder portion of the strap connected in communication with the first-mentioned chamber by an inflating hose extending between the chambers. The shoulder portion air chambers can be folded down and snapped in a deflated nonuse position which crimps the inflating hose and prevents inflation of the shoulder air chambers, and enables inflation of only the first-mentioned air chambers, until the shoulder portion air chambers are moved to the unfolded position.

3,646,626

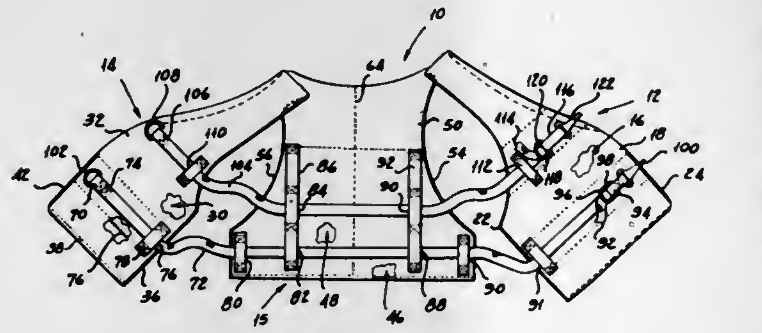
SAILING JACKET

Leonard P. Frieder, Clarks Green, Pa., assignor to Gentex Corporation, New York, N.Y.

Filed Feb. 26, 1970, Ser. No. 14,450

Int. Cl. B63c *9/10*

U.S. Cl. 9—342 **12 Claims**



A buoyant jacket especially adapted for use by persons such as sailboat crewmen engaged in strenuous physical activity in which each of two integral differentially buoyant right and left bodies has a thin waist portion leading up to a chest portion having a vertical slit in its outer skin and a thicker shoulder portion having transverse slits in its outer skin with a hollowed inner surface area in each body below the shoulder and in which the jacket back comprises right and left buoyant bodies each of which tapers in thickness from a shoulder area toward the waist and each of which has an outer transverse groove in the region of a shoulder blade of the wearer. A fabric covering, the inner portion of which is a fishnet fabric, houses all of the bodies, joins the back bodies along the spine of the wearer and joins the back bodies respectively to the front bodies at the shoulders. Straps, one of which is vertically adjustable, extend entirely around the outside front and back bodies securely to hold the jacket on the wearer's body.

3,646,627

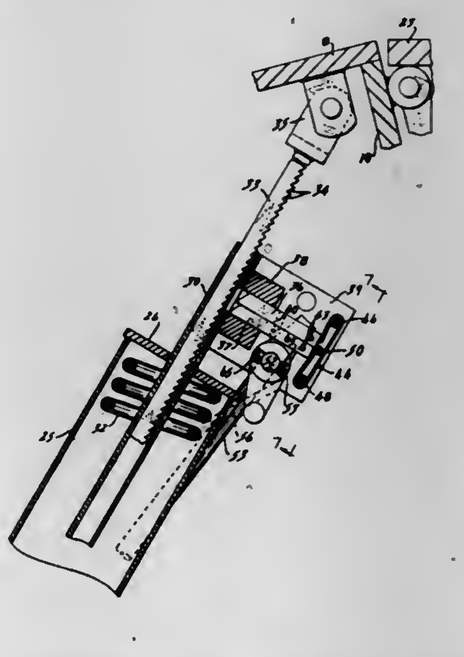
HOLDDOWN MECHANISM FOR THE RAMP OF A DOCKBOARD

Roderick B. Potter, Milwaukee, Wis., assignor to Kelley Company, Inc., Milwaukee, Wis.

Filed June 1, 1970, Ser. No. 42,006

Int. Cl. B65g *11/00*

U.S. Cl. 14—71 **16 Claims**



A holddown mechanism for the ramp of a dockboard. The rear edge of the ramp is hinged to the dock and a counterbalancing member is connected to the ramp and serves to counterbalance the weight of the ramp and pivot the ramp upwardly to an inclined position. The holddown mechanism, which is manually releasable, serves to restrain the counterbalancing member from raising the ramp and includes a tubular housing pivotally connected to the dock. A spring is mounted in the housing and the force of the spring acts against the end of a concentrically mounted tube and urges the tube to a retracted or telescoped position with respect to the spring and housing. A ratchet bar is mounted for sliding movement within the tube and the outer end of the ratchet bar is connected to the ramp. To prevent relative movement between the ratchet bar and the tube, a double-pawl mechanism is associated with the tube and is engageable with the teeth of the ratchet bar. The pawls are manually released by a pivotable operating handle which operates through a lost motion connection to move the pawls out of engagement with the ratchet bar teeth and enable the force of the counterbalancing member to elevate the ramp.

3,646,628

COMBINATION TOOTHBRUSH AND PICK

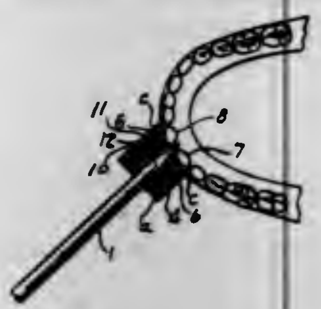
George C. Halford, Mentor, Ohio, assignor to Halbrand, Inc., Willoughby, Ohio

Filed Jan. 21, 1970, Ser. No. 4,568

Int. Cl. A47k *7/02;* A61c *15/00*

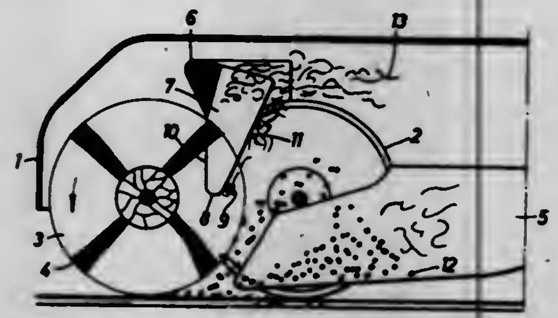
U.S. Cl. 15—118 **3 Claims**

The disclosure herein is of a sanitized, disposable, tooth cleaning article which includes a nonsplintering handle, having a pick portion formed at one end, which portion is normally confined within a foamed plastic scrub member, designed to scrub and clean the teeth as a toothbrush, the handle being adhered to the member in such manner as to facilitate projection of the pick portion therefrom when the member is manipulated to cause the pick to enter the interstices between teeth for particle removal whilst the scrub member conforms to and moves over the surfaces of the



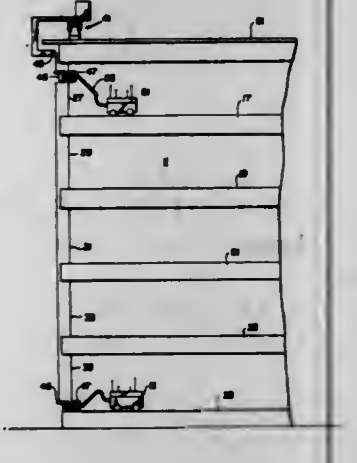
teeth adjacent such interstices simultaneously cleaning those surfaces.

3,646,629
CLEARER FOR A CARPET SWEEPER BRUSH
Gunter Bienek, Wilhelm-Leuschner-Str. 35, Trier, Germany
Filed June 16, 1969, Ser. No. 833,297
Claims priority, application Germany, June 15, 1968, B 76132
Int. Cl. A47l *11/32*
U.S. Cl. 15—48 **1 Claim**



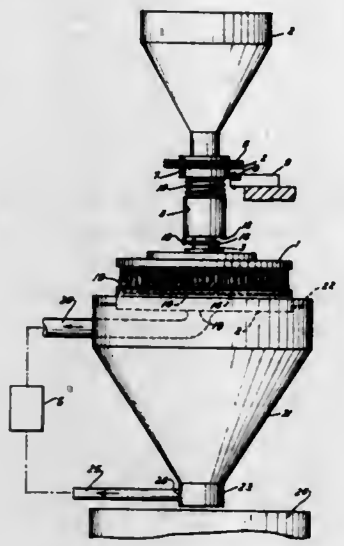
The invention provides, for the unidirectionally rotatable brush of a carpet sweeper, a clearer comb whose teeth are spaced-apart parallel triangular plates having tips that project into the bristles of the brush.

3,646,630
REMOTE CONTROL WINDOW CLEANING DEVICE
Carl D. Russell, Tulsa, Okla., assignor to Crafton D. James and Mary Lea James, part interest to each
Filed Apr. 10, 1969, Ser. No. 815,087
Int. Cl. A47l *1/03, 7/02, 11/38*
U.S. Cl. 15—302 **21 Claims**



This invention relates to remote control cleaning apparatus, primarily for use in cleaning both the exterior and interior sides of windows of tall buildings. Hoisting apparatus is adapted to move along a track on the roof of the building and to raise or lower a cleaning unit to a selected window. Control means which may comprise a second or master cleaning unit is provided for manual operation inside the building and electromagnetically couples to the exterior unit. Manual movement of the interior unit causes the exterior unit to follow it, the exterior unit being rendered substantially weightless through suspension by springs. Controls of the positioning, application of the cleaner, and removal thereof are provided at the interior unit and are effective at the exterior unit by electromagnetic coupling through the window and/or by wireless through a switching station at the hoisting apparatus and down to the suspended unit over the suspending wires which comprise electrical leads.

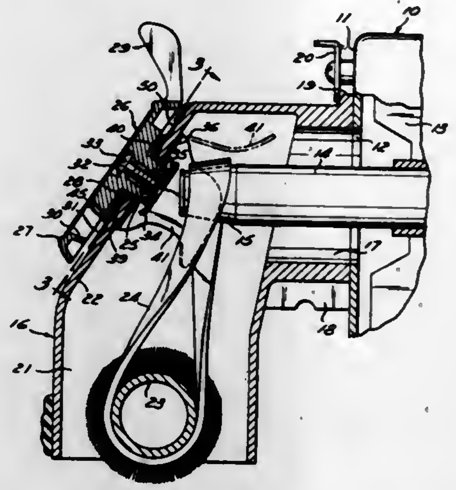
3,646,631
POLISHING OF DISCRETE ARTICLES
Helmut Wurst, Winnenden, and Hans Matthis, Kleinheppach, both of Germany, assignors to Hoefliger & Karg, Waiblingen near Stuttgart, Germany
Filed Aug. 13, 1969, Ser. No. 849,633
Claims priority, application Germany, Aug. 22, 1968, P 17 82 374.4
Int. Cl. A47l *7/02*
U.S. Cl. 15—308 **9 Claims**



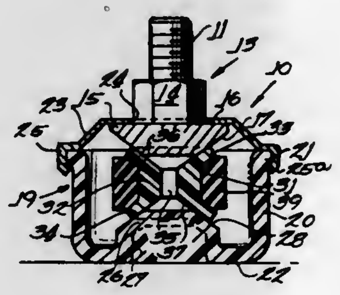
Powder-filled capsules or other articles, to whose surface excess powder tends to adhere, are cleaned and polished by advancing them into the space between two juxtaposed disk-shaped elements one of which rotates in alternately opposite directions with respect to the other, moves towards and away from the surface of the other and tilts with respect to the other element. The articles are cleaned, that is the contaminating powder is removed from their surfaces, by frictional contact with the surfaces of the two elements. During movement of the articles towards and between the surfaces, and while the articles are between the surfaces of the elements, suction is maintained to remove loosened powder.

3,646,632
INDICATING MEANS FOR A BELT LIFTER
Charles H. MacFarland, Rocky River, Ohio, assignor to The Scott & Fetzer Company
Filed Oct. 30, 1970, Ser. No. 85,478
Int. Cl. A47l *5/00*
U.S. Cl. 15—339 **2 Claims**

A device for removing a belt from the fan shaft of a vacuum cleaner motor and for replacing the belt on the shaft so that a nozzle casing may be detachable and replaceable with respect to the motor housing. The device includes a member which is pivotally mounted on the outer face of the nozzle casing and operates an arm within the nozzle casing. The arm, upon rotation of the member in a first direction, removes the belt from the shaft and, upon rotation of the member in a second direction, replaces the belt on the shaft. The member has a flange which extends over a portion of the outer face of the nozzle casing. An aperture is provided in the flange which provides an opening to expose a first area of an underlying portion of the nozzle casing when the arm and the member are in a first position and to expose a second area of the underlying portion when the arm and its member are in a second position. Indicia means are provided at the first and second areas to indicate the condition of the belt when the arm is at its first and second conditions.



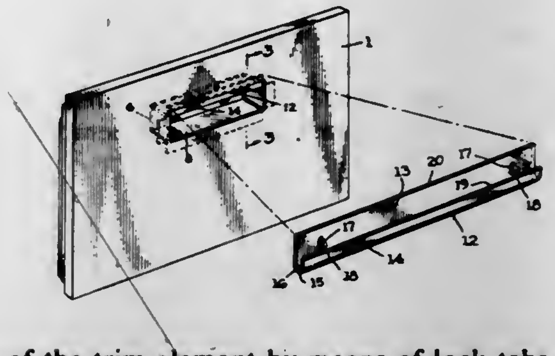
3,646,633
ADJUSTABLE SWIVEL GLIDE
James R. Meinhardt, Evanston, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.
Filed June 10, 1970, Ser. No. 45,075
Int. Cl. A47b *91/00*
U.S. Cl. 16—42 **9 Claims**



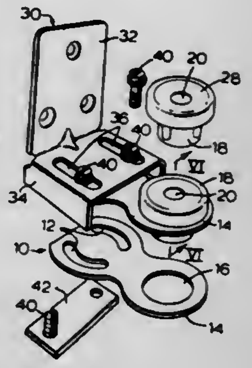
An automatic height and angle adjusting swivel glide for use on furniture, such as tables, chairs, etc., or other equipment, having an upper and a lower shell or housing part secured together, a multisectioned collet within the assembled shells resiliently held together by means of an elastic ring, and a cam with a stem for securing to the furniture or equipment. The collet is provided with opposed concave generally conical surfaces receiving a cam surface on the lower end of the stem and a second cam surface on the raised central portion of the lower floor-engaging shell. Interaction between the cam surfaces and the collet allows the glide to rise, lower and tilt relative to the stem and compensate for irregularities of the floor surface.

3,646,634
PULL
Robert M. Fusselman, Youngstown, Ohio, assignor to The General Fireproofing Company, Youngstown, Ohio
Filed May 7, 1970, Ser. No. 35,349
Int. Cl. A47b *95/02*
U.S. Cl. 16—124 **9 Claims**

A pull for a panel front includes a panel opening having an elongated J-shaped trim element secured to its upper edge. Formation of this upper edge permits acceptance and rigid retention of the trim element by means of lock tabs integral with the trim element.

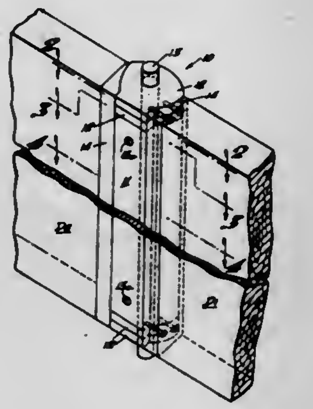


3,646,635
ADJUSTABLE JOURNALLING MEANS
Boris Stermac, Metropolitan, Ontario, Canada, assignor to Premium Forest Products Limited, Toronto, Ontario, Canada
Filed Apr. 23, 1969, Ser. No. 818,565
Int. Cl. E05d *5/06*
U.S. Cl. 16—129 **7 Claims**



A jamb bracket providing a bearing for a pivot pin projecting from the lower edge of a swinging door panel; said bracket including a pair of respectively fixed and movable plates held together in superposed relation by a pair of screws engaged in registering slots in the plates; the slots in the movable plate being concentrically arcuate and mutually confronting while those in the fixed plate are elongated, rectilinear and parallel; the bearing being mounted in an exposed and cantilevered lobe of the movable plate.

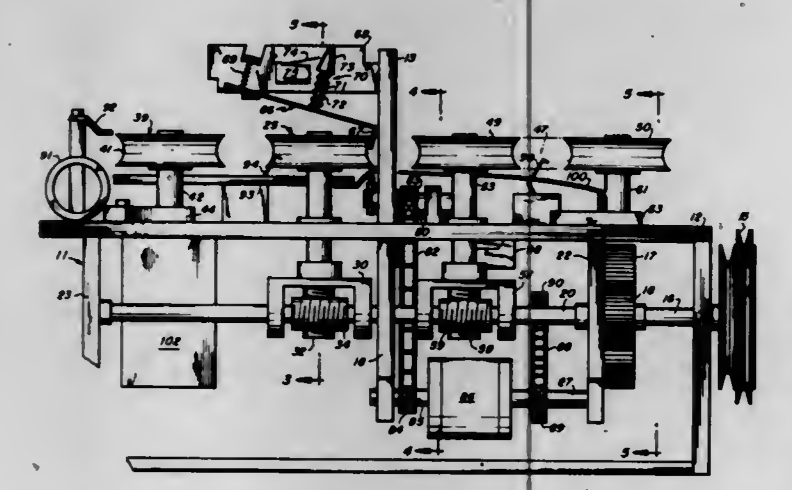
3,646,636
DOOR HINGE
Paul M. Hives, 770 N.E. 128th Street, North Miami, Fla.
Filed July 20, 1970, Ser. No. 56,310
Int. Cl. E05d *11/08*
U.S. Cl. 16—140 **10 Claims**



An elongated single- or double-acting hinge is described wherein extruded hinge column members and hinge pivot ring members of identical or substantially identical cross-sectional shape are coaxially supported in registering and mutually journaled relation on a common center rod. Door attachment bracket members extending along one or both sides of the hinge and affixed to a plurality of the pivot rings interspaced by one or more hinge column members permits swinging of a door secured to an attachment bracket with respect to the hinge column member or members and/or the center rod.

3,646,637
LINK SEPARATOR

Gerald C. Berendt, 32 Dale Drive, Chatham Township, N.J., and Leslie B. Melanson, Bay Isle Drive, Point Pleasant, N.J.
Filed July 30, 1969, Ser. No. 846,042
Int. Cl. A22c *13/00*
U.S. Cl. 17—1 F **10 Claims**

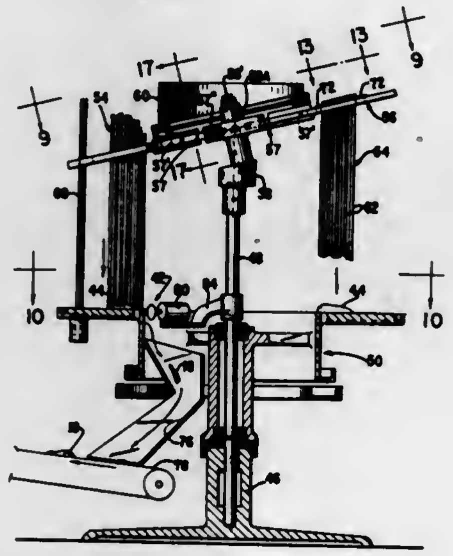


A link separator for severing a continuous link or chain of frankfurters or similar articles at successive joining segments comprising a pair of opposed, spaced-apart idler or drag wheels followed by a pair of opposed, spaced-apart, floating, powered feed wheels, the said wheels defining a generally axial path through which a chain of unsevered frankfurters feeds, a mechanical finger on the emergent side of the feed wheels engageable with the frankfurters passing therethrough, the finger deflecting as joining segments pass, a rotary knife positioned to sever the joining segments proximal to the finger, the finger being operatively connected to means controlling the rotary knife in timed relationship to the passage of joining segments, and a pair of spaced-apart, floating, power driven continuous belts on the emergent side of the knife to discharge the severed frankfurters from the apparatus.

3,646,638
METHOD AND APPARATUS FOR CLEANING CLAMS

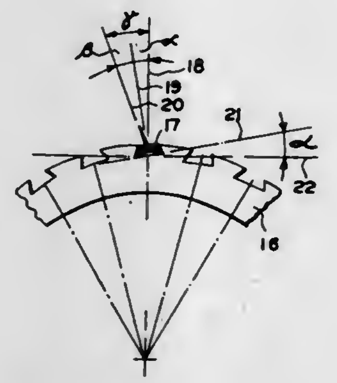
Harold Forest Snow, Scarboro, Maine, assignor to Borden Inc., New York, N.Y.
Filed Sept. 8, 1970, Ser. No. 70,433
Int. Cl. A22c *29/00*
U.S. Cl. 17—53 **21 Claims**

A method of removing undesirable parts of clam or extracting selected parts for specific purposes such as for removing the liver, or a similar area, includes applying substantially uniform biasing pressure to the clam gradually over selected areas and proceeding in a manner and in a direction to force the part chosen for removal to move in the force applying direction gradually away from the remaining portions of the clam. An apparatus for carrying out the method of the invention comprises a receiving surface or table having a guide outline over which the clam may be positioned and which is associated with a plurality of movable members for example, rodlike weights. The weights are suspended on an apparatus for example, a rotatable tilted disk mounted above the table and each is of a length selected to bring the associated weight into engagement with a selected area of the clam placed on the table in a succession, in respect to all of the other weights, which will cause the gradual applying of the weights in a direction to cause the disassociation of a certain part of the clam from the remainder. The tilted disk which carries the rods advantageously supports the rods for vertical displaceable movement and during the rotation of the disk with the table from a position at which the rods are supported well above the clam to the lowermost position of the tilted disk. The rods move into successive engagement with the clam and force the movement of the undesired part of the clam away from all of the rest of the clam and without damaging the clam. Additional severing means may sometimes be necessary for cutting away the connecting tissues of the removed part.



3,646,639
PORCUPINE ROLLERS

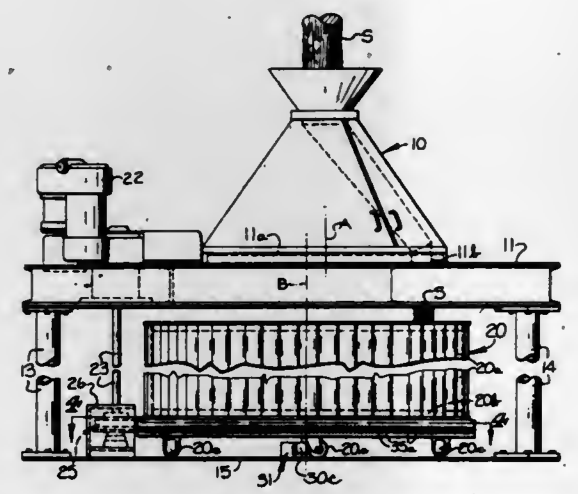
Christoph Burckhardt, Binningen, and Walter Glaser, Allschwil, both of Switzerland, assignors to Chr. Burckhardt, Basel, Switzerland
Filed Jan. 30, 1970, Ser. No. 7,082
Claims priority, application Switzerland, Jan. 31, 1969, 1557/69
Int. Cl. D01b *19/00*
U.S. Cl. 19—97 **7 Claims**



A porcupine roller wherein the roller body has needle bars releasably attached to the surface. Outwardly pointing needles are mounted on the needle bars. The roller body has on its outer surface a plurality of retaining grooves extending substantially parallel to the axis of rotation of the roller body. The cross section of the needle bars fits the cross section of the grooves so that the needle bars may be inserted into the grooves and held securely against displacement in the direction of rotation of the roller body. Means are provided for adjusting the position of the needle bars in the axial direction of the roller body.

3,646,640
TEXTILE COILER WITH COOPERATING DRIVE MEANS AND SLIVER CAN LOCATING MEANS

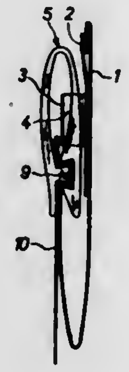
Herman S. Johns, Johnsonville, S.C., assignor to Wellman Industries, Inc., Johnsonville, S.C.
Filed July 6, 1970, Ser. No. 52,408
Int. Cl. B65h *54/80*
U.S. Cl. 19—159 R **13 Claims**



The textile coiler and sliver can disclosed herein are provided with mating means for locating the sliver can in a predetermined position beneath the coiler head, and drive means cooperating with the mating means to maintain the mating relationship thereof while rotating the sliver can.

3,646,641
CLAMPING CONNECTION FOR CURTAINS AND THE LIKE

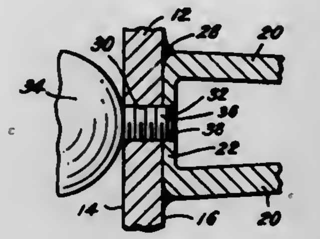
Lucas Wilhelmus Roben, Uithoorn, Netherlands, assignor to Elka Trust Reg., Vaduz, Liechtenstein
Filed May 14, 1970, Ser. No. 37,115
Claims priority, application Switzerland, May 16, 1969, 7250/69; Sept. 11, 1969, 13719/69
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 CH **10 Claims**



For adjusting the length of a finished curtain or the like to the height of a window, door etc. of less height than the length of the curtain a clamping connection is provided for holding a transverse fold of required width made in the upper portion of the curtain and adjusting the curtain to the desired height. The clamping connection comprises a number of clamping devices attached in transversely spaced relation along the upper marginal portion of the curtain, the clamping devices having coacting clamping members adapted to engage and lock therebetween the fold of the curtain to hold the curtain in the required position.

3,646,642
ARTICLE WITH REMOVABLE ORNAMENT THAT ALSO SERVES AS A FASTENER

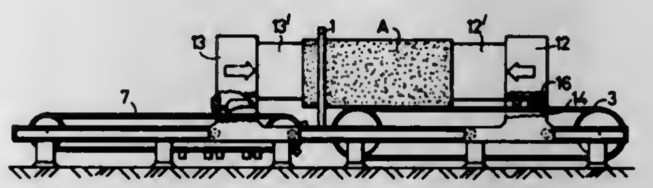
Eddie Sitt, 20 West 37th Street, Brooklyn, N.Y.
Filed Apr. 27, 1970, Ser. No. 31,908
Int. Cl. A44b *1/18*
U.S. Cl. 24—97 **2 Claims**



An article of jewelry comprising a base member adapted to removably receive an ornamental member whereby different ornamental members may be selectively utilized with the same jewelry article, the ornamental member having a threaded stud and the base member having a threaded aperture for threadedly receiving said stud.

3,646,643
APPARATUS FOR CUTTING SEMIPLASTIC BODIES OF CELLULAR LIGHTWEIGHT CONCRETE

Stig Olof Godin, Enskede, and Karl Robert Larsson, Solna, both of Sweden, assignors to International Siporex Aktiebolaget, Stockholm, Sweden
Filed Oct. 9, 1970, Ser. No. 79,390
Claims priority, application Sweden, Oct. 24, 1969, 14569/69
Int. Cl. B28b *11/14*
U.S. Cl. 83—112 **4 Claims**

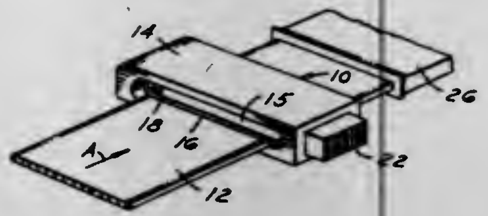


In an apparatus for cutting semiplastic bodies of unhardened cellular lightweight concrete, each body is passed through a cutting frame while being transferred from a first to a second conveyor under the actuation of a positively driven pusher movable along the first conveyor, which is a free-running belt conveyor, and while being pressed against the pusher by a counterholder movable along the second conveyor, which is an endless, free-running one having a body-receiving surface composed of spaced transverse bars of a sufficient height to permit the free prongs of a fork lifter forming part of the apparatus to enter between them for lifting away the body when cutting thereof is accomplished.

3,646,644
RELEASABLE STRAP ENCIRCLING MEMBER

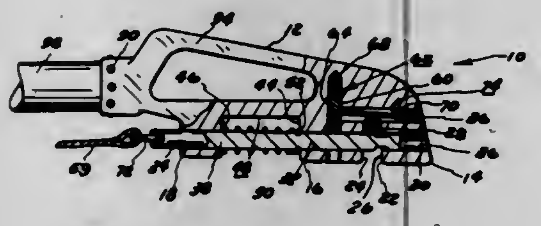
Wilson J. Watts, Inkster, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed June 8, 1970, Ser. No. 44,372
Int. Cl. A44b *11/16, 11/06*
U.S. Cl. 24—114.5 **1 Claim**

This device disables an automatic strap retraction apparatus from retracting a strap from an extended position to an unextended position. This device may be utilized with an automatically retracted seatbelt employed in a motor vehicle. The device includes a member which encircles at least a portion of the strap. The encircling member carries an element which engages the strap in order to lock the encircling member to the strap. A releasing device is provided which cooperates with the engaging element to unlock the element



from the strap so that the strap is movable with respect to the strap encircling member.

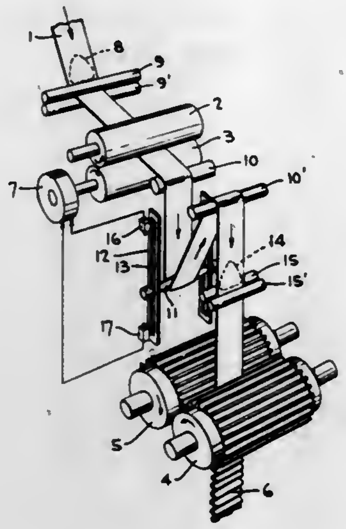
3,646,645
LOCKING DEVICE
Russell E. Bauer, Warren, Mich., assignor to KDJ-Bauer Corporation, Warren, Mich.
Filed Oct. 30, 1969, Ser. No. 872,651
Int. Cl. A44b *13/00*
U.S. Cl. 24—241 SL **6 Claims**



A remotely operable locking device having a block with a stud receiving slot which cooperates with a shiftable locking rod to form a locking engagement with the stud, the block having a plurality of bores, one of which is disposed transversely of the slot and having the locking rod slidably movable therein from a first position for retaining the stud within the slot to a second position for releasing the stud from the slot and another of the bores being disposed transversely of the first bore and having a detent mechanism slidably movable therein for engaging the locking rod when the same is moved to its second position. A third bore disposed transversely of the detent mechanism has a pivotably mounted lever which is adapted to disengage the detent mechanism from the locking rod in response to the positioning of the stud within the slot whereupon a biasing means shifts the locking rod to its first position whereby the stud is retained within the slot.

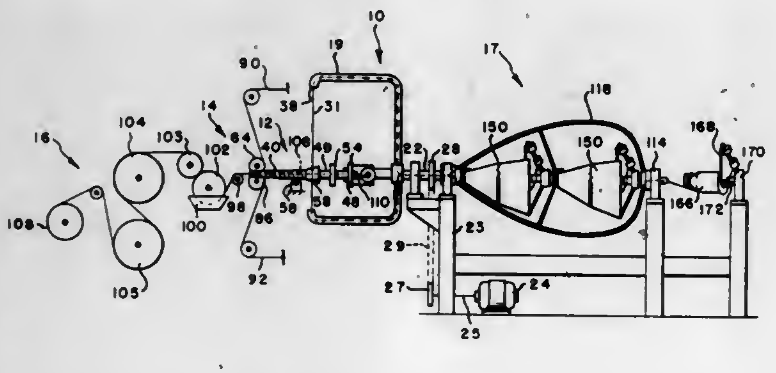
3,646,646
APPARATUS FOR SETTING STITCHES OF TUBULAR KNITTED FABRICS FOR DEKNITTING
Takao Koizumi, and Takao Kajita, both of Komatsu-shi, Japan, assignors to Teijin Limited, Osaka, Japan
Filed Feb. 24, 1969, Ser. No. 801,477
Claims priority, application Japan, Feb. 26, 1968, 43/12151
Int. Cl. D06c *23/00*; **D02g** *1/14, 1/20*
U.S. Cl. 26—69 R **2 Claims**

Apparatus for crimping and heat setting a deknittable knitted fabric of thermoplastic filaments under tension between hot toothed rolls, characterized by the provision of stitch loop-density regulating means at at least two positions and a device for imparting a uniform tension to the fabric running between fabric feed rolls and the hot toothed rolls,



whereby a uniform heat-setting effect is given to the fabric and the obtained yarns have an excellent crimp fastness.

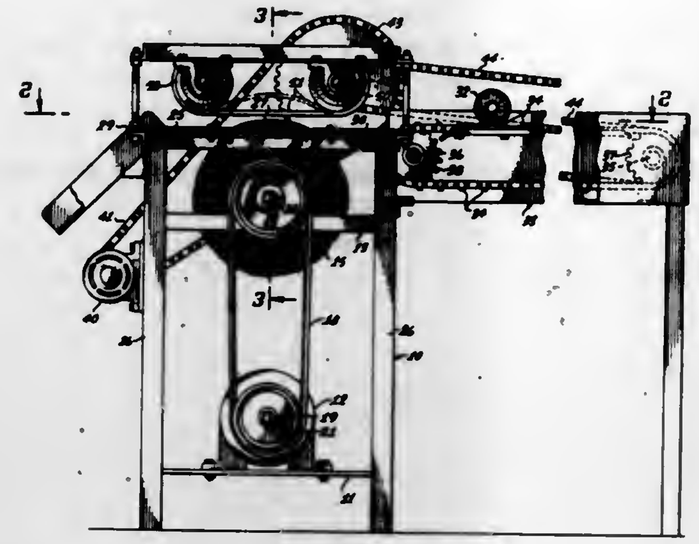
3,646,647
APPARATUS FOR THE PRODUCTION OF NONWOVEN MATERIALS
Norman E. Klein, Inman, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Mar. 19, 1970, Ser. No. 21,089
Int. Cl. D02g *3/00*; **D04h** *3/08*
U.S. Cl. 28—1 CL **16 Claims**



An improved apparatus for forming textile nonwoven net fabrics composed of a sheet of weft threads adhesively secured to one or more sheets of warp threads, the weft sheet being formed by continuously winding two or more threads about a pair of spaced thread supporting screws to form a plurality of reaches therebetween, and wherein the screws are rotated about their longitudinal axes such that the helically threaded surface of the screws support the loop ends of the thread reaches to laterally advance the reaches in spaced relation along the screws to form the weft sheet. The weft threads are delivered from a nonrotating creel and supported for transfer creel operation.

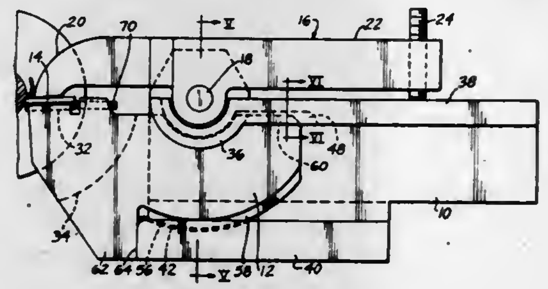
3,646,648
APPARATUS FOR FORMING ROLLERS FOR PRODUCING A REPETITION OF DESIGNS
Benjamin O. Kappelman, 1042 E. Campus, Tempe, Ariz., and Charles T. Myers, 174 W. Elm, Phoenix, Ariz.
Filed June 24, 1970, Ser. No. 49,402
Int. Cl. B23d *67/00, 69/00*
U.S. Cl. 29—76 **9 Claims**

An apparatus for repetitively deforming the surface of rollers so that they can repetitiously reproduce predetermined



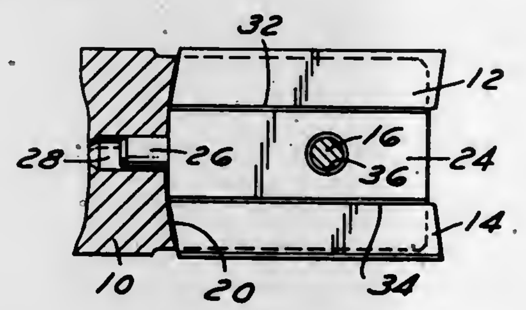
outlines.

3,646,649
GROOVING AND CUTOFF TOOL
Selbert S. Oaks, Everett, and John F. Kita, Greensburg, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.
Filed Sept. 5, 1969, Ser. No. 855,704
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **14 Claims**



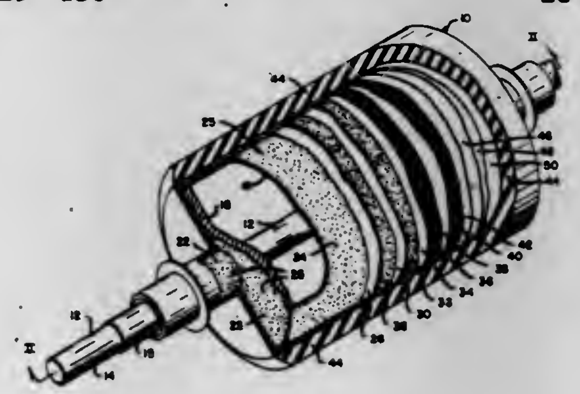
A grooving and cutoff tool having a support body with an arcuate recess formed in one side adapted for receiving a tool support having one end curved to fit in the groove and having the other end extending beyond the end of the support block. A lever pivoted on the support block is adapted for clamping an insert on the tool support while simultaneously clamping the tool support on the support block.

3,646,650
MILLING CUTTER CONSTRUCTION
Victor Milewski, Troy, Mich., assignor to The Valeron Corporation
Filed Dec. 30, 1969, Ser. No. 889,170
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 **9 Claims**



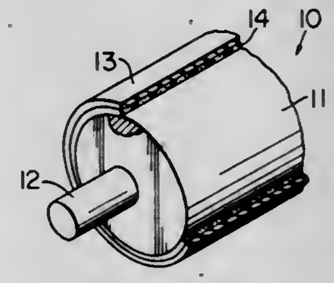
An end mill that uses a pair of flat sided diametrically opposed throwaway cutting inserts and is made by cutting a slot opening comparable to the thickness of inserts used, through the end of a shank member and then fixing a slightly thinner anvil locator centrally within the slot opening to provide insert receptive pockets on relatively opposite sides of the tool shank while still retaining a clevis space to be closed by a cross screw to clamp and hold the inserts in place.

3,646,651
ABRASION AND CORROSION RESISTANT COMPOSITE STRUCTURAL MATERIALS AND THE LIKE
Robert S. McGaughey, Indiana, and Paul Simboli, Pittsburgh, both of Pa., assignors to McCreary Tire & Rubber Company, Indiana, Pa.
Filed Oct. 29, 1965, Ser. No. 505,692
Int. Cl. B21b *31/08*
U.S. Cl. 29—130 **26 Claims**



Structural materials, specifically rolls for use in steel-fabricating processes, are disclosed for use in corrosive and erosive environments. In one arrangement the roll includes a base member or substrate to which is adhered a resin coating. A reinforcing mat or cloth is adhered to and partially embedded in the resin coating, before the latter hardens. A second resin layer is coated upon and partially impregnates the reinforcing mat. A second mat is then adhered to the second resin layer in a similar manner followed by a third coating of the resin material. A greater or lesser number of resin layers and reinforcing mats can be employed as required. The specific materials employed for the resin or plastic layers and the reinforcing cloths or mats can be varied according to the specific environment in which the roll will be used. For example, in presence of hydrofluoric acid the reinforcing mat may be Dynel cloth. For resilient contact with the work a suitable elastomeric layer is placed over the last resin or plastic coating.

3,646,652
ROLLER STRUCTURE
Harry E. Heiligenthal, Butler, Pa., and Arthur E. Nichols, Jr., Kalamazoo, Mich., assignors to Dayco Corporation, Dayton, Ohio
Filed May 15, 1969, Ser. No. 824,927
Int. Cl. B41n *7/00*
U.S. Cl. 29—130 **2 Claims**

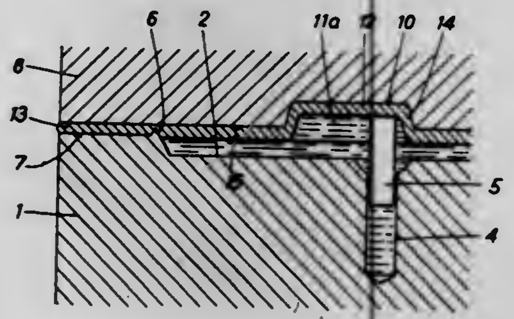


A precision roll, having a substantially rigid core, an outer plastic sleeve, and filler means made of an elastic material and provided between the core and sleeve, whereby the plastic sleeve and filler means cooperate to enable the provision of a precision outside surface for the roll while assuring such outside surface has a resilient character.

3,646,653
METHOD AND TOOL FOR MAKING A WATCH DIAL WITH RAISED SYMBOLS

Pierre Richard, Porrentruy, Switzerland, assignor to Jap S.A., Berne, Switzerland

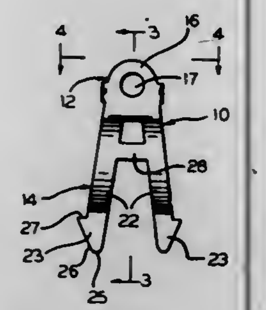
Filed Apr. 21, 1969, Ser. No. 817,970
Claims priority, application Switzerland, Apr. 26, 1968, 6236/68
Int. Cl. B23p *13/00*
U.S. Cl. 29—177 **8 Claims**



A depression in the die is filled with a liquid or pasty substance which supports the dial blank. A descending punch pushes the blank part way into the depression causing the substance of the cushion to force the blank into the punch hollows corresponding to the symbols to be raised. The die depression is surrounded by an upstanding rim that penetrates part way into the blank when the latter is pressed by the punch.

3,646,654
CLIP

Joseph J. Cervenka, 428 E. Crescent, Elmhurst, Ill., and Marvin E. Hetzel, 177 Michaux Road, Riverside, Ill.
Original application Feb. 12, 1968, Ser. No. 704,606, now Patent No. 3,558,289. Divided and this application May 26, 1970, Ser. No. 40,679
Int. Cl. B21d *53/36*
U.S. Cl. 29—190 **4 Claims**

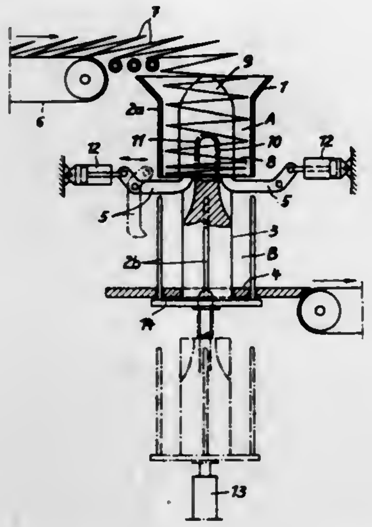


Clips to be attached to a shield can for attaching the can to a support, where the clip may be formed in continuous chain form, and each clip includes metal-piercing ears or tabs that pierce the can and are bent over to secure the clip to the can.

3,646,655
DEVICE FOR COLLECTING TURNS OF ROD OR WIRE

Hans Geipel, Oberhausen-Sterkrade; Alfred Schulz, Kaarst near Neuss, and Helmut Huber, Solingen-Wald, all of Germany, **assignors to Schloemann Aktiengesellschaft, Dusseldorf and Huttenwerk Oberhausen Aktiengesellschaft, Oberhausen, Germany**

Filed Aug. 11, 1970, Ser. No. 62,971
Claims priority, application Germany, Aug. 6, 1969, P 19 40 016.9
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 B **4 Claims**

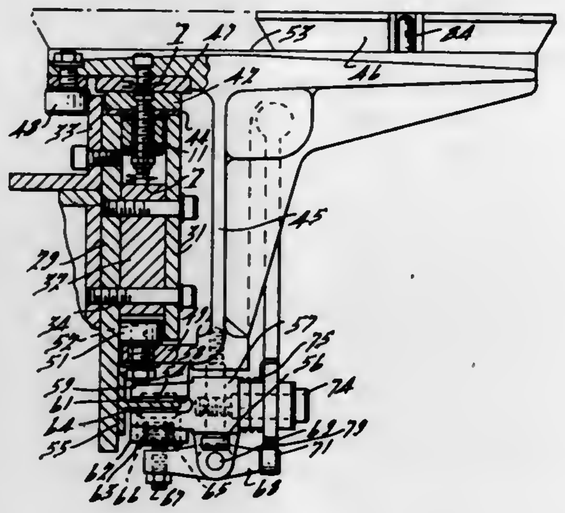


The device is for collecting runs of rod or wire to form coils after for instance the finishing stand of a rod mill or a heat treatment line or plant. The device has inner centering means and outer centering means for the turns to form a dimensionally stable coil, and there is a retractable member in the path of fall of the turns so that the device is divided into an upper collecting zone and a lower collecting zone. The inner centering means is divided so that there is inner centering both in the upper collecting zone and in the lower collecting zone. The upper part of the inner centering means is alternately supportable on the lower part of the inner centering means and upon the retractable member.

3,646,656
MACHINE HAVING OVERHANG SUPPORTS FOR PALLETS

Zoltan E. Zilahy, Nutley, and Anthony L. Dato, River Vale, both of N.J., assignors to Standard Tool & Manufacturing Co.

Filed Apr. 30, 1970, Ser. No. 33,440
Int. Cl. B23p *19/04*; **B23q** *5/22*
U.S. Cl. 29—200 A **15 Claims**

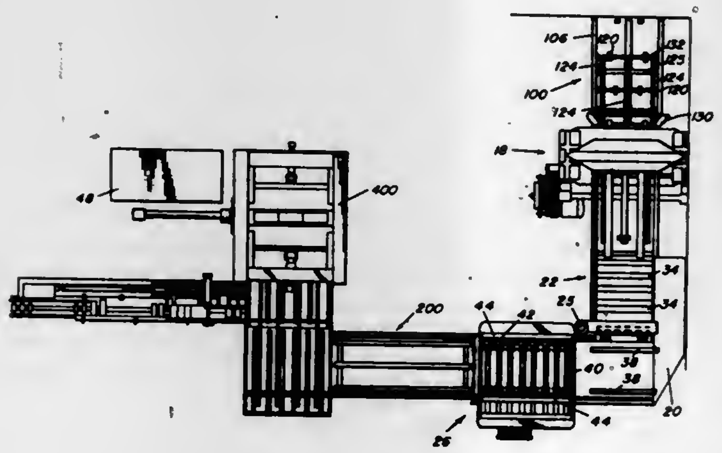


Carriers are suspended on vertical rails providing a cantilever support for pallets which permit a machining operation to be performed on the bottom face of a workpiece as well as the other surfaces thereof. A further novelty resides in the drive for the carriers by a single strand hollow pin conveyor chain which is bendable in a horizontal plane so that it may assume any configuration depending on the type of machining to be performed and the area which the machine is to occupy. The pallet may be movably supported on the carrier or may be fixed thereto and when movably supported, the pallet is shifted in two directions and secured in fixed position at a station. The chain has wear plates thereon and wear plates are mounted on the carrier in engagement with those on the chain which frictionally drives the carriers until one carrier is stopped as the chain continues to advance.

3,646,657
APPARATUS AND PROCESS FOR FORMING TUBULAR BODIES

Bernard J. Small, 8343 South Winchester Avenue, Chicago, Ill.

Filed Aug. 8, 1969, Ser. No. 848,512
Int. Cl. B23p *19/00*; **B21d** *53/00*
U.S. Cl. 29—200 **11 Claims**



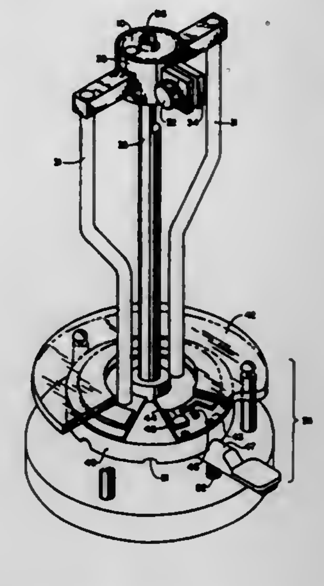
An apparatus and process for the automatic fabrication of tubular bodies from an inner core and a blank of outer wrap material to envelop the core which is stationarily secured within the wrap and bounded by a pair of end caps. The process and the apparatus for carrying out the process includes cutting means for dimensioning the blank, flanging means for forming opposed side flanges on the blank, wrapper seamer means for wrapping with the blank a properly oriented inner core and seaming the flanged sides, second flanging means for flanging the ends of the tubular body and end cap mounting means and seamer means all of which operate in an automatic production line.

3,646,658
WINDING FIXTURE

James E. Bloch, Montevideo, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Sept. 2, 1970, Ser. No. 69,084
Int. Cl. H02k *15/06*
U.S. Cl. 29—205 R **20 Claims**

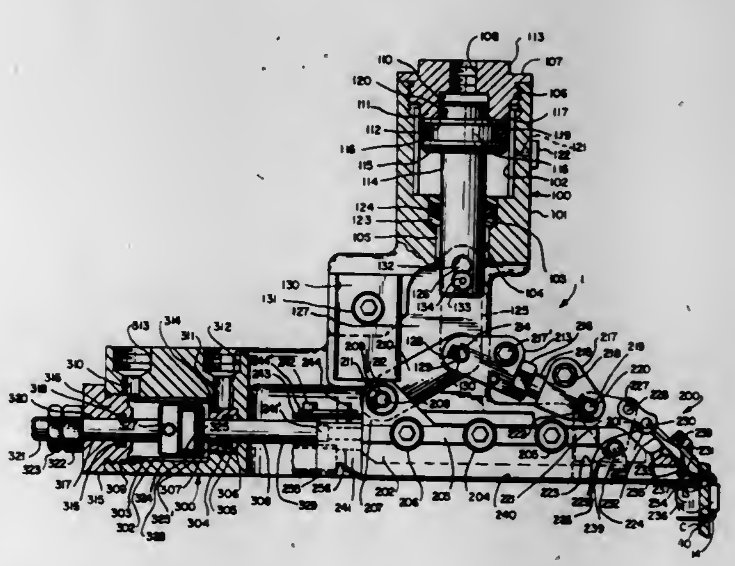
Apparatus for assisting an operator in the assembly of stators, primarily for synchronous motors. The apparatus is a fixture which holds the stator and a curved mask in a series of positions which direct the operator's attention to the proper slots of the stator in which prewound coils should be placed. The correct sequence of insertion is indicated by instructions which appear in a window on the fixture. These instructions show the operator both the current step of the assembly process and the step to be next completed.



3,646,659
LEAD CUT AND CLINCH MECHANISM

Phillip A. Ragard, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,367
Int. Cl. H05k *13/04*; **H01r** *43/04*
U.S. Cl. 29—203 B **11 Claims**



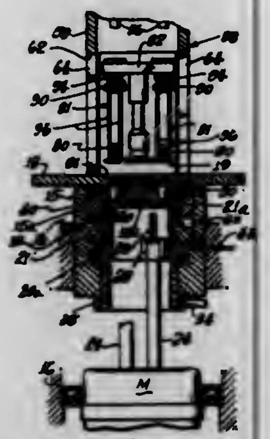
An electronic component lead cutting and clinching mechanism having a linkage arrangement whereby the component leads are severed and a channel carries them out of the cutting and clinching area. The mechanism has a linkage attached to a cutting rod, the linkage being attached, in turn, to two pneumatic cylinders, which respectively power an anvil in which the cutting rod is located to bring it up to position beneath a circuit board and operate the cutting rod.

3,646,660
MACHINE FOR RIVETING NUTPLATES TO SUPPORT STRUCTURES

Ralph L. Sheffer, Jr., Arcadia, Calif., assignor to Omark-Winslow Aerospace Tool Co., Portland, Oreg.

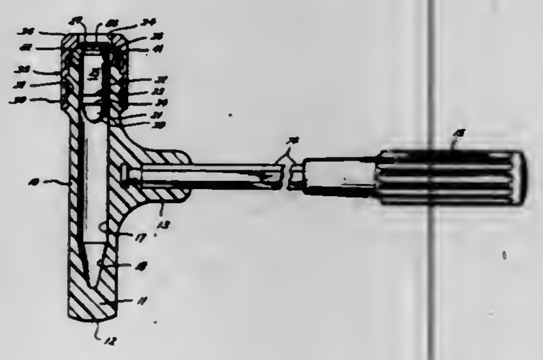
Filed Apr. 22, 1970, Ser. No. 30,772
Int. Cl. B23p *11/00*
U.S. Cl. 29—243.53 **9 Claims**

A machine for riveting nutplates to workpieces. A clamp means acts under hydraulic pressure to hold a workpiece down against a horizontal work table. A pair of drills rise from the work table to drill holes in the workpiece to receive the rivets which will secure the nutplate thereto, and are then retracted. An elevator then rises from the workhead to elevate the workpiece a short distance, after which the retracted drills are rotated out of position and replaced by a pair of anvils against which the lower rivet heads can be upset. The nutplate with a pair of rivet slugs in the holes thereof is then fed into position over the holes in the workpiece. Upsetting rams are then lowered against the upper ends of the rivet slugs, moving the slugs first down against the anvils, and then forced on down, the elevator under this force progressively lowering the workpiece to its original level at the workhead while heads are upset on both end portions of the rivet slugs.



3,646,661
BULLET PULLER

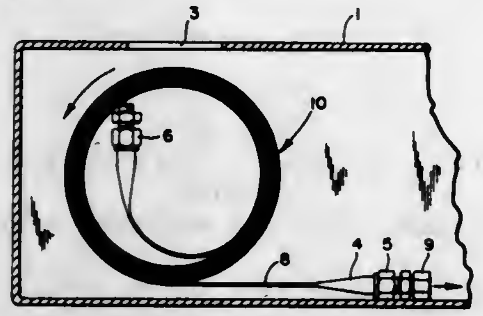
Clifford L. Ashbrook, 5410 North Braeswood, Houston, Tex.
Filed Mar. 2, 1970, Ser. No. 15,777
Int. Cl. B25b *27/14*
U.S. Cl. 29—275 12 Claims



An inertial bullet puller includes a rigid tough transparent plastics material carrier tube having an opening at its upper end adapted to receive a cartridge and head means at its lower end adapted to be struck against a hard surface. The carrier is affixed transversely at the end of a handle similarly to the construction of a hammer. At the upper end of the tube is disposed annular segmented support means. A garter spring provides resilient means urging the support means segments radially inwardly into the cannelure of a cartridge. When the cartridge is inserted through the support means into the opening at the upper end of the tube, the support means expands to pass the larger diameter portions of the cartridge and then contracts into the cannelure. A screwcap at the upper end of the carrier tube having a tapered inner end provides cam means for positively moving the support segments radially inwardly and holding them in position. In use the lower end of the tube is repeatedly struck against a hard surface until the bullet is observed to pull free of the cartridge case. The lower end of the tube is closed forming a pocket to receive the bullet and case contents when the bullet is freed from the case. Tapered surfaces on the interior of the support segments provide means for moving the segments radially outwardly when the cap is backed off and the cartridge components are shaken out of the upper end of the carrier tube.

3,646,662
TUBE INSTALLATION METHOD

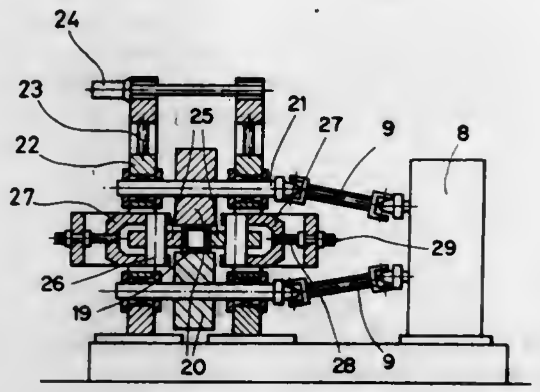
Kelvin D. Green, Culver City, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Dec. 15, 1969, Ser. No. 884,834
Int. Cl. B23p *17/00*
U.S. Cl. 29—421 5 Claims



A method of installing a length of metal tube into a space which is accessible for insertion of the tube only by bending the tube to a radius which will buckle it, comprising flattening the tube between its ends to render the same flexible for bending or coiling for insertion into such space in generally straight form and subjecting the flattened tube in the space to internal fluid pressure to further straighten the same and to restore it to generally its initial cross section shape. Prior to the flattening operation the tube ends will be connected to appropriate fittings to maintain the tube ends of circular cross section and to facilitate the plugging of one end of the tube and the connection of a fluid pressure source to the other end of the tube.

3,646,663
A PROCESS FOR THE MANUFACTURE OF BOX-TYPE TUBULAR STRUCTURAL MEMBERS HAVING SELECTIVELY DIFFERENT CROSS-SECTIONAL DIMENSIONS

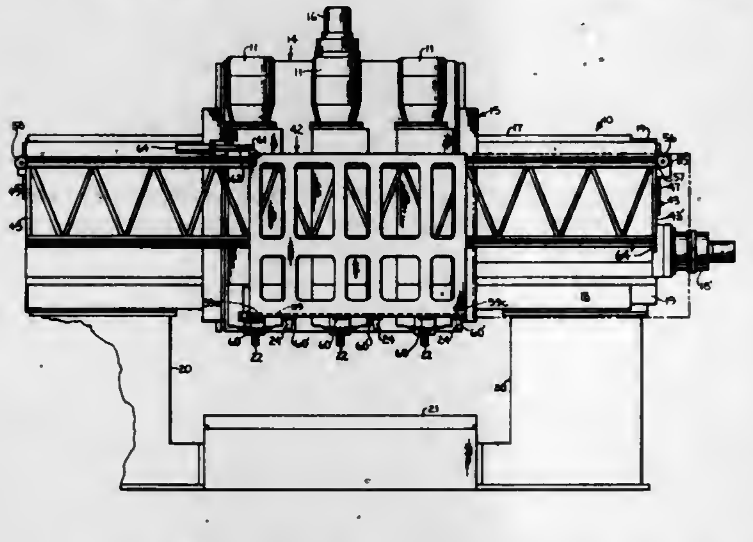
Javier Sario Vidal, Santa Engracia 2, Pamplona (Navarra), Spain
Filed Jan. 12, 1970, Ser. No. 2,187
Claims priority, application Spain, Jan. 7, 1970, 375,233
Int. Cl. B21d *39/02*
U.S. Cl. 29—463 2 Claims



A process and related system for readily and economically manufacturing structural tubes such as box girders of a variety of different sizes, even in relatively small production amounts, and which process and system comprise transporting and placing of elongated channellike members or profiles so that every consecutive two members are placed in an open face-to-face and oppositely inclined manner, whereby the opposed members are then collectively fed into one or more welding stations where the abutting edges of the flange portions are welded together. Apparatus is used for pulling or driving the welded members into a weld finishing station and also to apparatus for substantially simultaneously effecting straightening of the welded together members which may tend to distort while being subjected to welding. The apparatus is readily adjustable to handle variable size channel members in the selective manufacturing of tubular structural members having varied cross-sectional sizes.

3,646,664
TOOL EXCHANGER FOR A PLURALITY OF SPINDLES OF A MACHINE TOOL

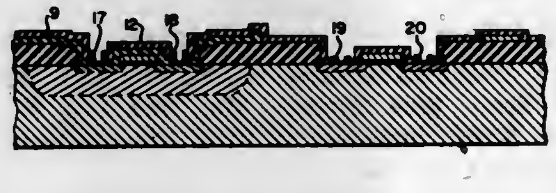
Wayne L. Vearil, Milford, and Lewis A. Dever, Cincinnati, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed May 28, 1970, Ser. No. 41,422
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 14 Claims



A shuttle, which has first means to support a first set of tools for disposition in a plurality of vertically disposed spindles and second means to receive a second set of tools in the spindles for support by the shuttle, is moved from a home position to a first position in which the tools in the spindles are transported to the shuttle for support by the second means. After the second set of tools has been removed from the spindles by a separate interchange arm for each spindle and received by the second means, the shuttle is moved to a second position in which the first set of tools can be transferred to the spindles by the interchange arms. The shuttle is then returned to its home position where the second set of tools is removed from the second means and a new set of tools is disposed in the first means to repeat the operation.

3,646,665
COMPLEMENTARY MIS-FET DEVICES AND METHOD OF FABRICATION

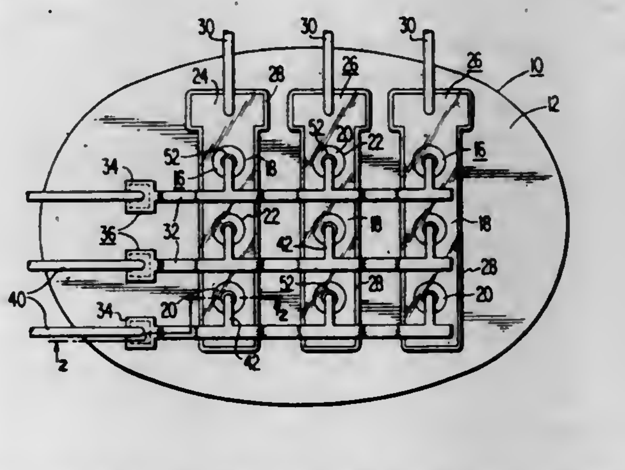
Man Jin Kim, Liverpool, N.Y., assignor to General Electric Company
Filed May 22, 1970, Ser. No. 39,659
Int. Cl. B01j *17/00;* **H01g** *13/00*
U.S. Cl. 29—571 12 Claims



Complementary MIS-FET devices are fabricated with accurately controlled geometric and electrical properties so as to provide improvement in matching composite characteristics of device pairs, resulting in reduced power dissipation and increased speed of operation. As a related consideration, fabrication of these devices is described providing improved temperature-bias stability and radiation resistant properties. To realize the noted improvements self-aligning registration techniques are employed coupled with a simultaneous diffusion of drain and source regions. Further, improved gate dielectric compositions are employed.

3,646,666
FABRICATION OF SEMICONDUCTOR DEVICES

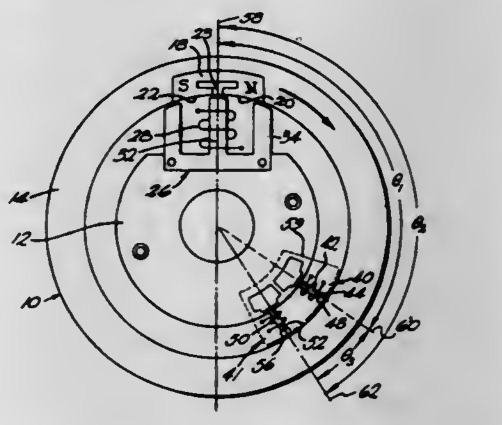
Edward Joseph Boleky, Cranbury, and Joseph Richard Burns, Trenton, both of N.J., assignors to RCA Corporation
Filed Jan. 2, 1970, Ser. No. 206
Int. Cl. B01j *17/00;* **H01l** *1/16*
U.S. Cl. 29—577 5 Claims



Information-storing devices, such as read-only-memories, comprise an array of semiconductor components on a substrate, each component being connected into the array by a fusible element. To disconnect selected ones of the components from the array, to store information, two sources of heat are applied to the fusible elements connected to the selected components to open-circuit the elements. One of the sources comprises the passage of current through the selected elements. The other comprises a general heating of the entire device.

3,646,667
IGNITION CIRCUIT

Douglas G. Janisch, Mequon, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.
Original application Nov. 17, 1967, Ser. No. 684,051, now Patent No. 3,524,438, dated Aug. 18, 1970. Divided and this application June 18, 1970, Ser. No. 47,218
Int. Cl. G01r *4/00;* **G05f** *4/00;* **H01h** *4/00*
U.S. Cl. 29—593 7 Claims

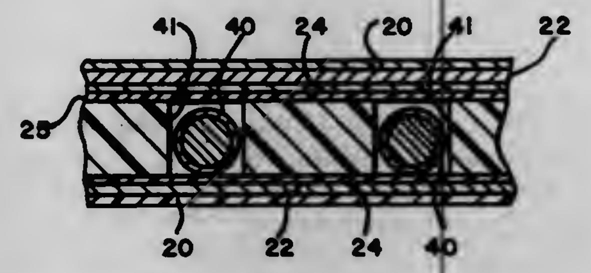


A single-cylinder internal-combustion engine is provided with an ignition system of the capacitor discharge-type having a magneto for its source of electrical energy. The magneto comprises a rotor which carries a permanent magnet and is driven by the crankshaft of the engine. A main charging coil, a first trigger coil and a second trigger coil are mounted on the stator of the magneto. The position of the first coil on the stator is correlated to the engine cycle to provide an advanced ignition timing pulse and the position of the second trigger coil on the stator is correlated to the engine cycle to provide a retarded ignition timing pulse. During each revolution of the rotor a capacitor in the ignition circuit is charged from the main coil and then discharged through an ignition transformer by a silicon-controlled rectifier. Discharge of the capacitor through the rectifier is selectively timed by either the advanced ignition timing pulse of the retarded ignition timing pulse depending on the speed of the engine. The second coil is connected directly across the gate-cathode of the rectifier and the first coil is connected in series with a resistor across the second coil. The first and second coils are substantially identical within manufacturing tolerances and they are mounted on the stator with substantially identical airgaps. The value of the resistor connected in series with the first coil is such that during relatively low-cranking speeds during starting the gate voltage applied from the first coil is substantially below the critical gate voltage required to fire the rectifier. At cranking and at running speeds the retarded ignition timing pulse from the second trigger coil exceeds the critical voltage. Hence at low-cranking speeds during starting the retarded ignition timing pulse generated at the second coil fires the rectifier to initiate discharge of the capacitor at or about top dead center in a compression stroke. After the engine starts, the increased velocity of the rotor at running speeds causes the amplitude of the advanced ignition timing pulse generated in the first coil to exceed the critical gate voltage to initiate discharge of the capacitor and advance the spark.

3,646,668
METHOD OF MAKING A PLATED WIRE MEMORY USING A SHEET OF FILM ADHESIVE

Amedeo Qualich, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed July 8, 1969, Ser. No. 839,879
Int. Cl. H01f *7/06*
U.S. Cl. 29—604 **10 Claims**



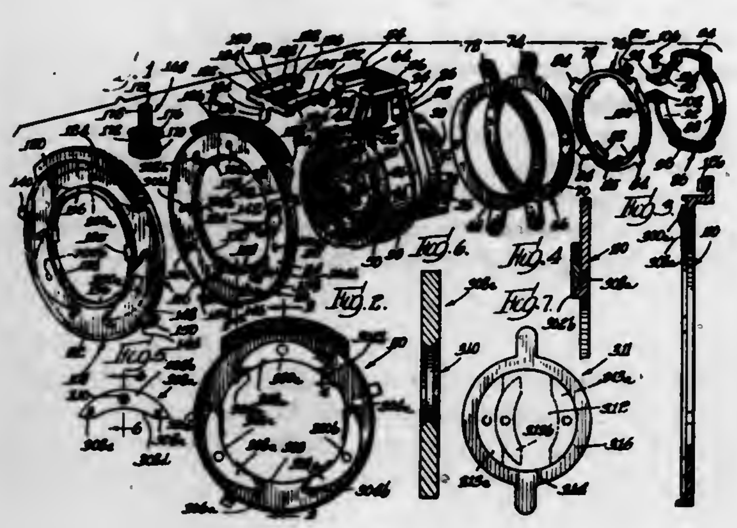
An array of parallel spaced insulating lands are cast on a thin sheet of insulating material having spaced parallel conductive strips so that the lands and strips are mutually perpendicular. The lands define a plurality of parallel grooves for receiving magnetic memory wires. A film adhesive of semicured epoxy is placed on the lands to extend across the grooves. A second such insulating sheet is placed over the film adhesive with its conductive strips in parallel registration with the conductive strips on the first sheet. The combination is then processed so that the film adhesive bonds the second insulating sheet to the lands.

3,646,669
METHOD OF MAKING BLUE LATERAL AND PURITY MAGNETS

Lloyd A. Erickson, Niles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 10, 1969, Ser. No. 883,938
Int. Cl. H01f *7/06*
U.S. Cl. 29—607 **8 Claims**

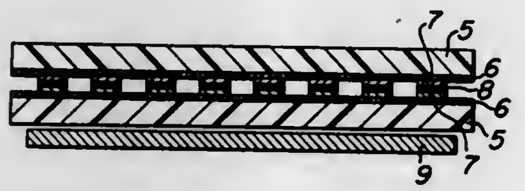
A plurality of lateral magnets and purity magnets for use in a magnetic correction device and a method for making the same. The purity magnet comprises a ring and the lateral magnets are stamped from what would normally be the scrap from the center of the ring.



3,646,670
METHOD FOR CONNECTING CONDUCTORS

Yo Maeda; Satoshi Suzuki; Yoshiharu Nakamura; Yorimitu Masubuchi; Tamotsu Ueyama; Naoki Fukutomi, and Hiroshi Takahashi, all of Shimodate-shi, Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

Filed July 17, 1969, Ser. No. 842,620
Claims priority, application Japan, July 19, 1968, 43/50518; Feb. 3, 1969, 44/7315
Int. Cl. H01r *43/00*
U.S. Cl. 29—627 **5 Claims**



Terminals of a large number of conductors bondedly laid on an insulating sheet are connected to the corresponding number of counterpart terminals of conductors bondedly laid on another similar insulating sheet by laying, by plating, a solder layer of readily weldable metal having a low-melting point onto the individual surfaces of the terminals on at least one of the insulating sheets, disposing said sheets one upon another so that the terminals of one of the sheets can coincide with the corresponding counterpart terminals of another sheet in a face-to-face position, and heating the disposed sheets from the outside of at least one of the sheets thereby to weld the solder layer to the counterpart terminals. An adhesive layer can be laid on the surfaces of the insulating sheets to heat-weld the insulating sheets to one another before welding the solder layer to the counterpart terminals. Conductors of one part can be thereby connected to those of the counterpart with less resistance at joints for a very short period of time without any contact of one conductor with another due to migration and bridging of molten solder.

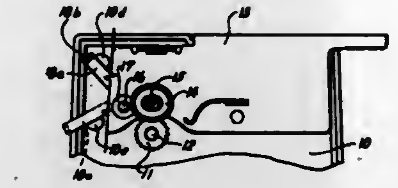
3,646,671
ELECTRIC CAN OPENER WITH REMOVABLE HAND LEVER AND FRAME-ENGAGING PIN ASSEMBLY

Robert J. Scott, Blue Springs, Mo., and Leo F. Aberer, Shawnee, Kans., assignors to Rival Manufacturing Company, Kansas City, Mo.

Filed Dec. 19, 1969, Ser. No. 886,576
Int. Cl. B67b *7/38*
U.S. Cl. 30—4 R **8 Claims**

An electrically powered can opener has a cutter wheel carrying hand lever pivotally attached to its forward upright

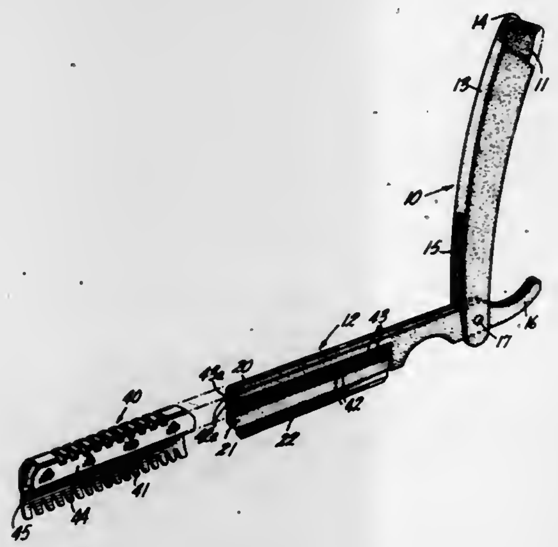
frame by an elongate pin member, said pin member having a transverse locking bar fixedly attached to the inner end portion thereof for engaging an inner portion of the frame. The pin member is rotatably mounted within a portion of the hand lever and has a pivot arm extending therefrom. The pivot arm is movable between a locked and a release position; the release position allowing said transverse locking bar to align with a keyed bearing opening in the upright frame so that the pin member and hand lever may be withdrawn from the upright frame.



3,646,672
ADJUSTABLE FOLDING RAZOR

Paul A. Braginetz, Augusta County, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Apr. 20, 1970, Ser. No. 30,080
Int. Cl. B26b *21/02*
U.S. Cl. 30—32 **9 Claims**



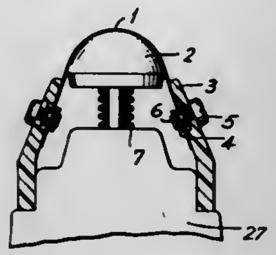
A folding razor comprising a handle part and a shank member of plastic material in which is mounted a cutting blade, the razor having a guard member slidable over the shank member and blade, the two faces of the generally flat shank each having a series of longitudinal grooves and the guard member having a rib portion selectively slidable into any one of the grooves for positioning the guard on either side of the shank and in various laterally adjusted positions relative to the cutting edge to vary the edge exposure.

3,646,673
ELECTRIC DRY SHAVER WITH MOVABLE COMB

Goichi Yamaoka, Okayo-shi, Japan, assignor to Kabushiki Kaisha Suwa Seikosha

Filed Aug. 26, 1969, Ser. No. 853,016
Int. Cl. B26b *19/10*
U.S. Cl. 30—43.92 **6 Claims**

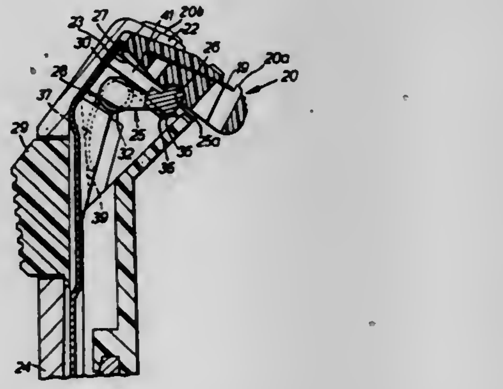
An electric dry shaver in which the comb is movably or slidably mounted to the head frame and pressed thereagainst by holding plates so that the resistance of the comb to movement is substantially constant. The reciprocating cutter is biased into engagement with the comb whereby the comb and cutter can move together during shaving to assure constant engagement between the comb and cutter.



3,646,674
HOLDERS FOR SHAVING DEVICES

James Fitzpatrick, West Drayton, England, assignor to Wilkinson Sword Limited, London, England

Filed Jan. 28, 1970, Ser. No. 6,385
Claims priority, application Great Britain, Jan. 28, 1969, 4,754/69
Int. Cl. B26b *21/16, 21/54*
U.S. Cl. 30—64 **2 Claims**



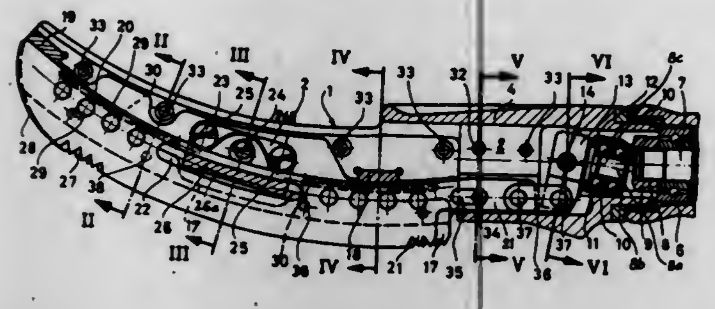
A holder for a shaving unit, the shaving unit consisting of a substantially rigid member to which a razor blade is secured in a permanent manner with the rigid member having a guard surface located at a preset spacing from the cutting edge of the blade, comprising a catch which is movable between a first position at which it retains a shaving unit in the holder and a second position at which it no longer retains the shaving unit in the holder, and means for initiating movement of the shaving unit out of the holder when the catch is moved to the second position.

3,646,675
MOTOR-DRIVEN CUTTING DEVICE

Hans Georg Wezel, Maulbronn am Wurttemberg, Germany, assignor to Firma Schmid & Wezel, Maulbronn am Wurttemberg, Germany

Filed May 18, 1970, Ser. No. 38,148
Claims priority, application Germany, May 20, 1969, G 69 20 258
Int. Cl. B26b *19/02*
U.S. Cl. 30—217 **21 Claims**

The back of the reciprocating blade of a motor-driven knife is supported for sliding movement near its ends by two wear-resistant abutments, and has a central cutout in which a wear-resistant guide means is located in sliding engagement with a longitudinal guide edge of the cutout. By transverse



adjustment of the guide means, play-free guidance of the blade is obtained.

3,646,676

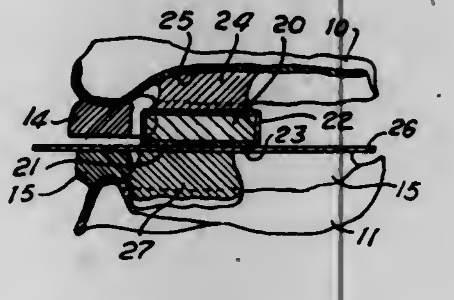
MAGNETIC DENTAL APPLIANCES AND METHODS FOR USING SAME

John Pat Mitchell, 3301 Greenville Avenue, Dallas, Tex.

Filed Feb. 24, 1970, Ser. No. 13,548

Int. Cl. A61c *13/00*

U.S. Cl. 32—2 **5 Claims**



Magnetic dental appliances and materials therefor, magnetic denture teeth, magnetic transfer apparatus and method magnetic denture material; and particularly magnetic methods and apparatus for making full dentures and bridges providing an accurate functional balance of occlusion and centric relation for use in the full denture and bridge construction, including the use of magnetic holding means for transferring the upper baseplate and lower bite rim in proper locked relationship to an articulator. Also, a method of retention of the dentures and bridges in place in the mouth during use by magnetic means is provided, including magnetic core artificial teeth, magnetic denture base material, and magnetic alloy inserts for implanting under the soft tissue along and into the alveolar ridge.

3,646,677

COLLET CHUCK FOR A DENTAL INSTRUMENT

Martin Saupe, Mittelbiberach, and Gerhard Farian, Biberach/Riss, both of Germany, assignors to Kaltenbach & Voigt, Biberach/Riss, Germany

Filed Sept. 8, 1969, Ser. No. 855,898

Claims priority, application Germany, Oct. 18, 1968, P 18 03 919.5

Int. Cl. A61c *1/08*

U.S. Cl. 32—26 **5 Claims**

The invention relates to a collet chuck for a dental instrument and comprises two sleeves arranged concentrically within one another in play-free and force-locking relation. The outer sleeve is of an elastic material such as rubber. The inner sleeve is of a plastic composition, such as polyamide, which has less adhesion ability than the material of the outer sleeve. The outer sleeve is shorter in length than the inner sleeve whereby it may expand axially in response to radial pressure thereon.

3,646,678

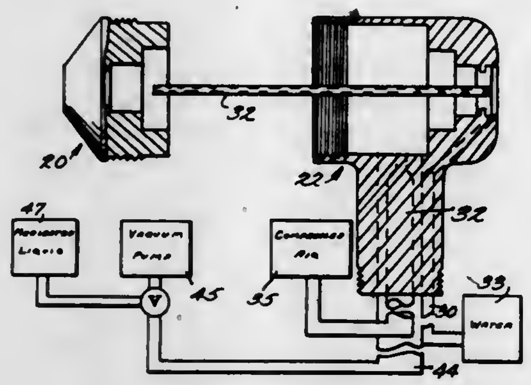
DENTAL DRILL

Roy E. McAlister, 5285 North Red Rock Drive, Phoenix, Ariz.

Filed Oct. 23, 1969, Ser. No. 868,757

Int. Cl. A61c *1/10*

U.S. Cl. 32—26 **12 Claims**



A dental drill for milling tooth animal and bone material wherein the burr removing the material is cooled by evaporation taking place at the burr-tooth interface as liquid continually supplied to that interface is evaporated due to reduced pressure caused by the turbine driving the burr and connection to a vacuum pump or similar device. The burr-turbine may be formed as a unitary member and back flushing of solution such as medicated liquids can be accomplished cyclically or at the operator's will by reversed flow through the passage removing the vapor resulting from the evaporation at the interface.

3,646,679

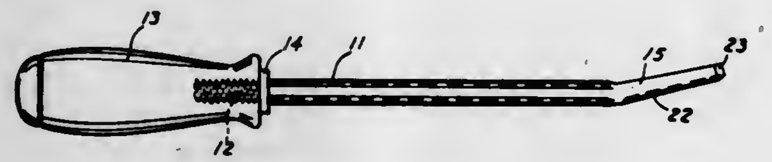
TOOTH EXTRACTING INSTRUMENT

Gene O. Naugle, 1360 Mears Drive, and Billie R. Harding, 721 Powers Boulevard, both of Colorado Springs, Colo.

Filed Mar. 10, 1971, Ser. No. 122,901

Int. Cl. A61c *3/02*

U.S. Cl. 32—47 **10 Claims**



A hand-held instrument suitable for removing a wolf tooth from the upper jaw of a horse includes an elongated shank having a handle mounted on the rear end and provided with an extractor heat at the other forward end. The extractor head is preferably inclined at an angle to the axis of the shank to afford better leverage in prying and has a unique configuration terminating in a forward beveled cutting edge which permits the head to be slid between the wolf tooth and an adjacent tooth to loosen the root and pry the wolf tooth loose by applying a force to the handle outside the mouth of the animal with only two positions for the extractor head relative to the wolf tooth.

3,646,680

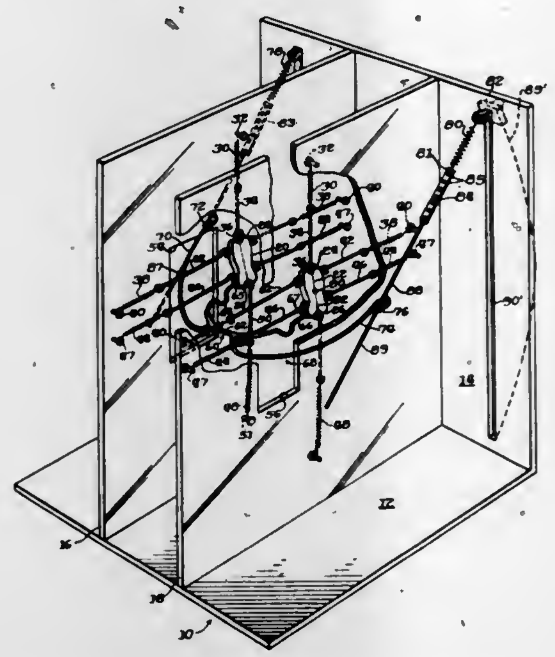
ORTHODONTIC FORCE MODEL

John L. Wollney, 1 South Ardmore Avenue, Villa Park, Ill.; Ronald W. Jawor, 5425 W. Ferdinand, Chicago, Ill., and Norman L. Sanders, 8001 Edgewater Drive, North Riverside, Ill.

Filed July 30, 1970, Ser. No. 64,905

Int. Cl. G09b *19/00*

U.S. Cl. 32—71 **23 Claims**



An orthodontic force model comprising a pair of simulated teeth suspended by springs and a conventionally shaped orthodontic face bow for applying a variable force to the teeth simulating the force which may be applied by extra-oral orthodontic apparatus. Application of the external forces causes tooth displacement which may be observed and compared to the normal tooth position. The model may be used for demonstrating and explaining the orthodontic process to an orthodontic patient and is also a useful experimental tool for the orthodontist.

3,646,681

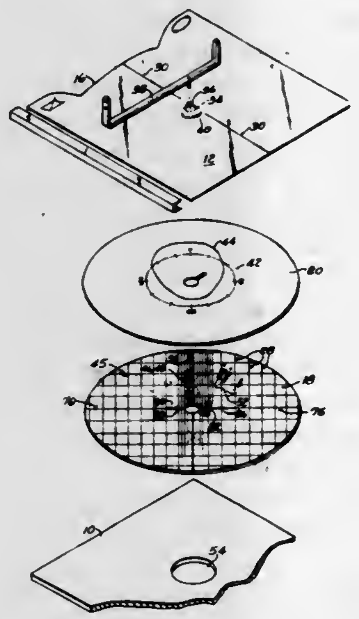
NAVIGATIONAL COMPUTER AND PLOTTING DEVICE

Francis L. Koenig, 6819 Elm Street, McLean, Va.

Filed Dec. 31, 1969, Ser. No. 889,364

Int. Cl. G01c *1/02*

U.S. Cl. 33—1 SD **4 Claims**



A transparent-overlay combined navigational computer and plotting sheet usable directly upon any map, chart or the like, or, when secured to a rigid support panel, forming a pocket to receive such chart for portable or open-cockpit use; removably pivoted to the underside of the cover sheet are discs providing a compass rose protractor, a grid of distance lines and a series of parallel locating lines, a novel arrangement for magnetic deviation corrections with its reading auxiliaries, a series of azimuth locators, and axial graduations for vector diagram construction, all facilitating course, distance and location estimation and plotting, with allowances for compass variation and deviation error, current vector construction, and the solving of standard coastwise navigating problems and the like, together with protection of the chart against weather abuse, and windblown loss. A pelorus arm with sighting vanes, pivot, and hairline coinciding with the compass rose protractor is also provided.

3,646,682

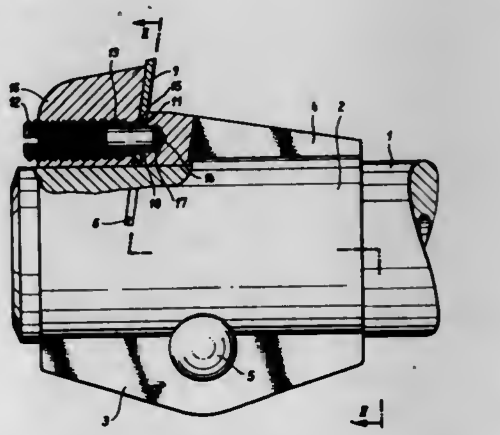
INTERCHANGEABLE FRONT SIGHT FOR HAND FIREARMS

Wohrstein Edwin, Altoberndorf, Germany, assignor to Feinwerkbau Westinger & Altenburger KG

Filed July 23, 1969, Ser. No. 844,097

Int. Cl. F41g *1/22, 11/00*

U.S. Cl. 33—47 **9 Claims**



An interchangeable front sight for hand firearms including a front sight holder to be secured to the weapon barrel and a front sight blade inserted into the holder. The front sight blade having integral flexible legs which engage the weapon barrel to force the sight blade into contact with the holder and thereby hold the blade in place.

3,646,683

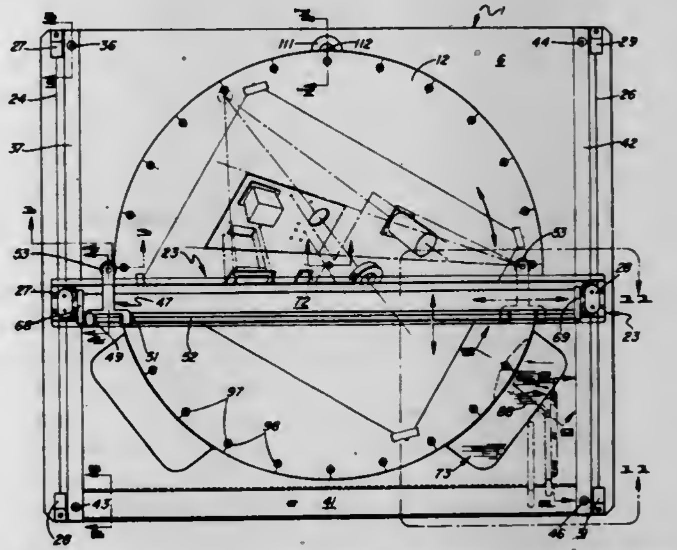
PERSPECTIVE DRAFTING SYSTEM

Verl N. Barzee, 708 Knickerbocker Dr., Sunnyvale, Calif.

Filed May 20, 1970, Ser. No. 39,049

Int. Cl. B43l *13/14*

U.S. Cl. 33—77 **11 Claims**



A device for making one-, two- or three-point perspective drawings consisting of a rotatable drafting surface, a parallel straightedge and the rotating surface for conjoint movement.

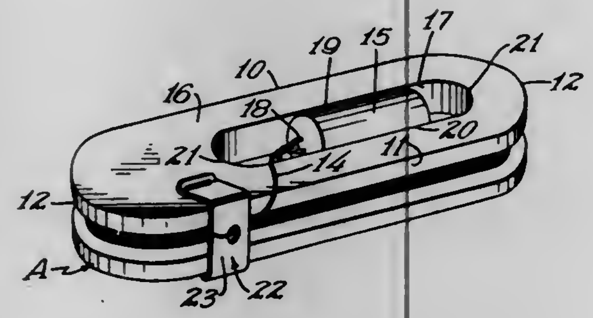
3,646,684
DEPTH-FINDING DEVICE

Glen E. Paulsen, Minneapolis, Minn., assignor to T.O. Plastics, St. Paul, Minn.

Filed Oct. 2, 1969, Ser. No. 863,102

Int. Cl. G01b *3/00*

U.S. Cl. 33—126.5 9 Claims



A depth finder comprises a float body having a peripheral continuous groove encircling the same, the groove corresponding in length to a standard length unit. A line is anchored to the float at one end, and a weight is attached to the other end of the line. The number of turns of line unwound from or wound upon the float as the weight is drawn from, or dropped into a body of water may serve to indicate the depth of the body of water.

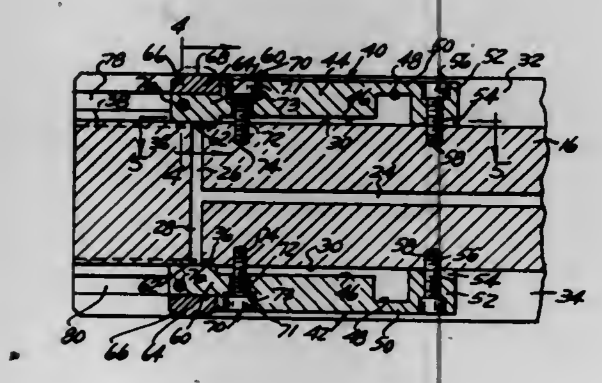
3,646,685
GAGING HEAD FOR PNEUMATIC BORE GAGING DEVICES

Walter E. Goodenough, Detroit, Mich., assignor to Etronic Corporation, Detroit, Mich.

Filed July 10, 1969, Ser. No. 840,620

Int. Cl. G01b *5/00, 13/08*

U.S. Cl. 33—143 9 Claims



A gaging head having a central bore to permit the passage of pressurized air therethrough and being connected by passages to opposite longitudinal surface slots provided on the gaging head. A feeler blade is carried in each of the slots and is adapted to contact the internal surface of the bore in the workpiece upon introduction of pressurized air into the gaging head. The outer ends of the feeler blades are mounted in the gage head in a manner which permits only limited outward movement. Pins are fitted into the outer end of the feeler blades which pins extend into channels provided in the longitudinal slots. The movement of the feeler blade assembly is limited by the distance the pins can move in the channels.

3,646,686
MEASURING DEVICES FOR ROLLING MILLS

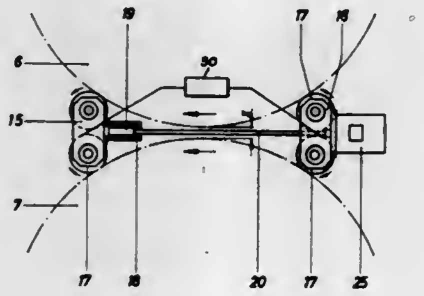
Heinz A. Kreiskorte, Darmstadt-Eberstadt, Germany, assignor to Moeller & Neumann G.m.b.H.

Filed Aug. 8, 1969, Ser. No. 849,303

Claims priority, application Germany, Aug. 10, 1961, P 17 52 947.4

Int. Cl. G01b *5/14*

U.S. Cl. 33—182 1 Claim



The invention discloses a measuring device for determining the width of the rolling gap of a rolling mill, wherein variation of the spacing between two work rolls during rolling is detected by means of the correspondingly varying spacing of two roller holders urged into contact with the work rolls on opposite sides of the rolling gap, a stator winding being attached to the one roller holder and a displaceable core in the winding being attached to the other roller holder by means of a rod extending through the rolling gap. Electrical output signals obtained from the winding in consequence of relative displacement of the core may be used for keeping the rolling gap constant. The spacing between the roller holders may be adjustable to cover a range of rolling gap widths.

3,646,687
PROCESS FOR PACKING AND DRYING SOLID WOOD AND A PLANT FOR ACCOMPLISHING SAME

Gunard Valdemarovich Berzin, ulitsa Yaunsaules, 12; Arvid Yanovich Kalnin, ulitsa Sverdlova, 8, kv. 3, both of Riga; Alexandr Fedorovich Sushkov, Gogolevsky bulvar, 17, kv. 1, Moscow; Voldemar Petrovich Skrupsky, ulitsa Aptiekas, 13, kv. 1; Andris Eduardovich Ziemelis, ulisa Stopinju, 50, kv. 1, both of Riga; Boris Fedorovich Soloviev, ulitsa Kalarash, 11, kv. 31, Ljubertsy; Karl Mikhailovich Leeniex, ulitsa Parka, 4, Elgava; Vladimir Kirilovich Sovetin, ulitsa Moskovskaya, 1, kv. 94, Ljubertsy; Yan Karlovich Gulbis, ulitsa Lomonosova, 12, kv. 9; Yan Yanovich Dalbinsh, ulitsa Raunas, 45, korpus 5, kv. 221, both of Riga; Bruno Andreevich Priede, ulitsa Rainya, 116, kv. 1, Jurmala; Karl Kristapovich Upman, ulitsa Fr. Engelsa, 20, kv. 10; Vitold Iosifovich Muzhit, ulitsa Unias, 31, kv. 8; Yan Petrovich Junga, ulitsa Dzelzaves, 13, kv. 13; Ivar Arnoldovich Krogzem, ulitsa Talivalzha, 28, kv. 1; Zigurd Boleslavovich Greitan, ulitsa Aglonas, 28, kv. 100, and Karl Arturovich Rotsen, ulitsa N. Ostrovskogo, 2, kv. 2, all of Riga, U.S.S.R.

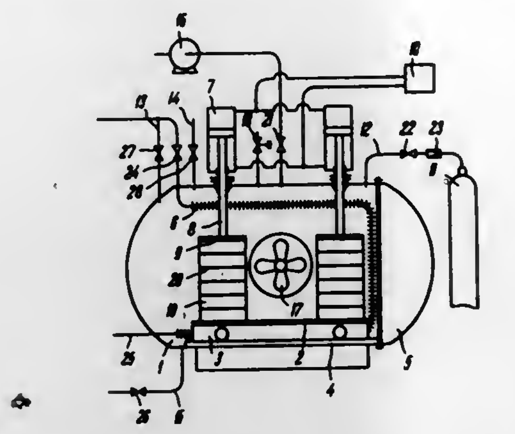
Filed May 7, 1970, Ser. No. 35,502

Claims priority, application U.S.S.R., May 12, 1969, 1331274

Int. Cl. F26b *7/00*

U.S. Cl. 34—13.8 4 Claims

A process for packing and drying solid wood, wherein the wood is treated with ammonia at elevated temperatures and under pressure, and simultaneously packed, thereby producing wood which features uniform density over its entire cross section. A plant for accomplishing the process of the invention, which helps simultaneously effect in a single chamber both ammonia treatment and forced packing.



3,646,688
APPARATUS FOR COUNTERCURRENT HEAT TREATMENT OF BIOLOGICAL TISSUE

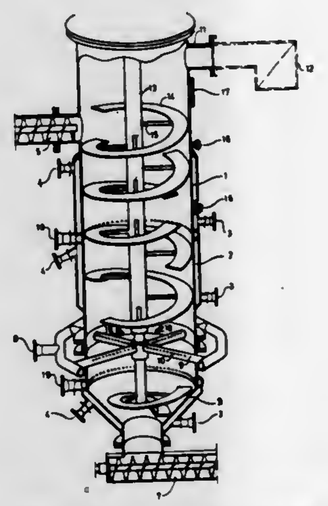
Sven Olof Osterman, Molndal, Sweden, assignor to Astra Nutrition Aktiebolag, Molndal, Sweden

Continuation-in-part of application Ser. No. 662,819, Aug. 23, 1967, now Patent No. 3,565,634. This application July 1, 1968, Ser. No. 741,511

Claims priority, application Sweden, June 30, 1967, 10215/67

Int. Cl. F26b *17/12*

U.S. Cl. 34—168 14 Claims



A device and a method for a continuous heat treatment of biological tissue material that may or may not be disintegrated, such material comprising, e.g., fish, wherein the material is treated with heat in countercurrent to the material flow using a vertically arranged container provided with at least one vertically arranged shaft mounted for rotation. The shaft is provided with stirrers each having a vertical and helical pitch and being adapted to work the material zone by zone in vertical and horizontal directions.

3,646,689
CONTINUALLY OPERATING FLUIDIZED BED DRYER FOR DRYING LOOSE MATERIAL

Gunther Kuchenthal, Ludwigsburg-Pflugfelden, and Wolfgang Hentzschel, Stuttgart-Sud, both of Germany, assignors to Werner & Pfleiderer, Stuttgard-Feuerbach, Germany

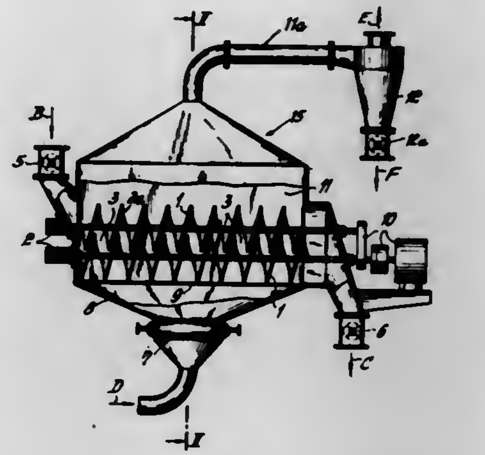
Filed Sept. 11, 1970, Ser. No. 71,547

Claims priority, application Germany, Sept. 17, 1969, P 19 46 997.7

Int. Cl. F26b *17/20*

U.S. Cl. 34—182 8 Claims

A continuously operating fluidized bed dryer for loose material such as granulated material comprises a housing in which the fluidized bed is generated by feeding the material into the housing and fluidizing the same by a flow of pressurized air directed upon the material in the housing. Two or more meshing conveyor screws are rotatably mounted in the housing substantially occupying the space therein within which the fluidized bed is generated. The meshing turns or windings of the screws define a plurality of individual fluidizing chambers by which the material fed into the housing at the intake end thereof is conveyed to the discharge end of the housing.



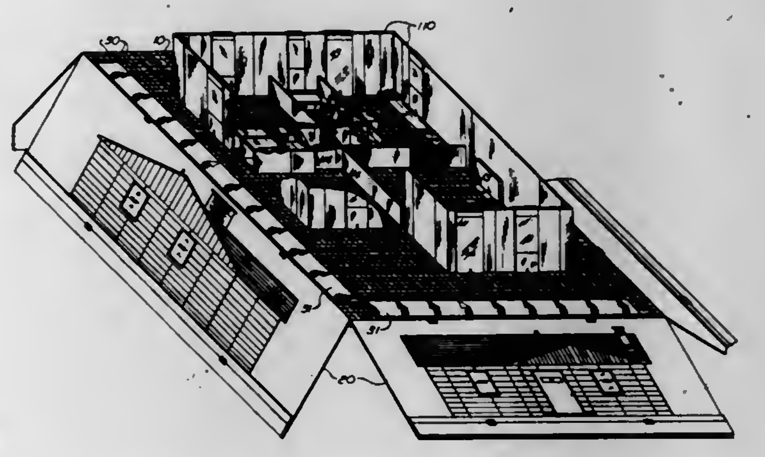
3,646,690
APPARATUS AND METHOD FOR CONVEYING INFORMATION

Robert L. Feagan, 4905 Lindell, St. Louis, Mo.

Filed Nov. 14, 1969, Ser. No. 876,664

Int. Cl. G09b *25/04*

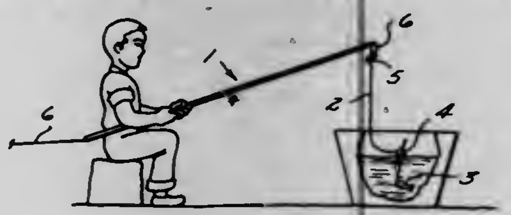
U.S. Cl. 35—16 23 Claims



Information relevant to proposed construction is conveyed by mounting planning element representations on a base or bases in unambiguous relation to reference lines on the base or bases. A mensuration strip is removably mounted in direct identifying relation to particular identified reference lines. The base has a multiplicity of holes consistently positioned with respect to and spaced along the reference lines. Representations of planning elements in the form of model pieces, dimensionally stable and self-supporting, each has a plurality of pegs projecting from an edge, the pegs being spaced to fit into spaced ones of the holes in the base. Saddle-shaped opening designations are removably mounted on dimensionally stable self-supporting model wallpieces. A flat pattern of a building model may be used, scale related to spacing of holes in a base, suitable for penetration by model piece pegs. Indicia of reference standard details are mounted in unambiguous relation to at least one reference line on the base and in clear relation to a representation of a planning element. Construction details may be a part of a representation of a planning element. Exterior building (facing) elements, e.g., outside wall surfaces, doors, windows, roof surfaces, on a common scale, mounted in projective relationship, in the relation of elevation to plan, to model pieces on the base. Information conveyed by the reference lines, mensuration strip and indicia of reference standard details being assimilable by a digital computer.

3,646,691
FISHING SIMULATOR

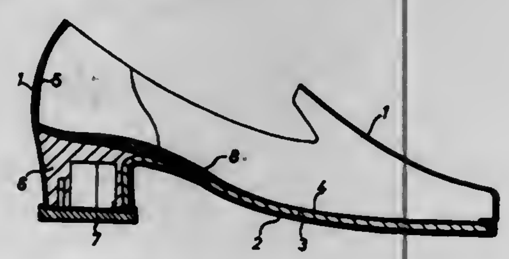
Roy E. French, 12644 Peacock Road, Bath Township, Clinton County, Mich.
Filed Oct. 30, 1969, Ser. No. 872,495
Int. Cl. G09b *9/00*
U.S. Cl. 35—29 R **10 Claims**



A device for simulating the sport of fishing which can be used as an educational toy for children or as a novelty item for fishing enthusiasts. It comprises a fishing rod, fishing line, float, and a nonbuoyant first weight as a fish. A second weight, slidably attached to the fishing line, is releasably maintainable so that its weight does not come to bear on the buoyancy of the float and first weight when immersed in water. Upon its release, the second weight falls along the fishing line, causing the float to sink, thereby simulating the striking of a fish at the end of the fishing line.

3,646,692
SHOES

Herbert Glogg, Zurich, Switzerland, assignor to Willy Glogg AG, Zurich, Switzerland
Filed Mar. 24, 1970, Ser. No. 22,241
Claims priority, application Switzerland, Apr. 1, 1969, 5117/69
Int. Cl. A43b *9/02*
U.S. Cl. 36—2.5 R **5 Claims**

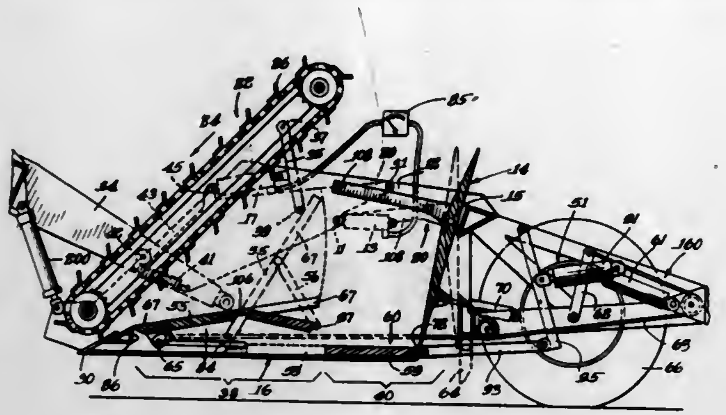


A shoe or slipper of the turnshoe-type, that is, a shoe which is manufactured by stitching together the outsole and upper inside out, and then turning the construction so formed right side out. The shoe is provided after being turned right side out with a heel, to the front side of which portions of the insole and outsole are secured. The upper incorporates a heel covering portion which, together with an end of the outsole, is retained within a cavity in the heel underside by means of a heel lift.

3,646,693
IMPROVED ELEVATOR CONTROL FOR EARTH-MOVING APPARATUS

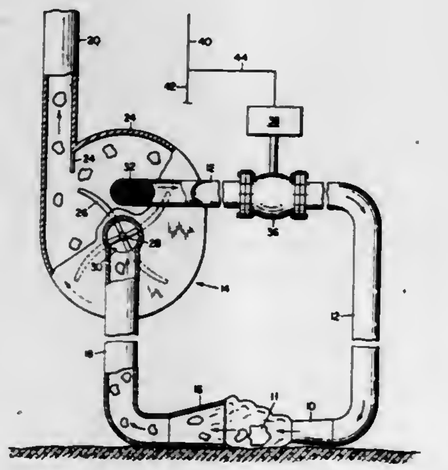
Lovel R. Simmons, M-R-S Manufacturing Co., Flora, Miss.
Original application Nov. 22, 1967, Ser. No. 685,009, now Patent No. 3,521,388. Divided and this application Feb. 2, 1970, Ser. No. 12,489
Int. Cl. E02f *1/00;* **B60p** *1/38*
U.S. Cl. 37—8 **15 Claims**

Apparatus for loading and emptying earth-moving and scraping vehicles of a mobile type, the vehicle comprising a front opening container or bowl with a loading elevator structure in the forward end and an operable bottom or floor for dumping materials from the bowl. The elevator is carried by arms pivoted to the bowl such that the elevator is free for both pivotal and translatory movement relative to the arms.



3,646,694
DREDGING METHOD EMPLOYING INJECTION AND SUCTION NOZZLES

Earl J. Beck, Jr., Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Dec. 17, 1969, Ser. No. 885,764
Int. Cl. E02f *3/92*
U.S. Cl. 37—195 **1 Claim**



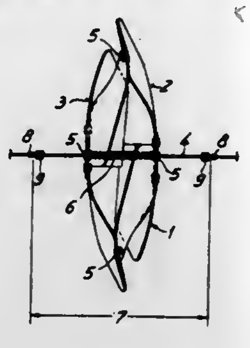
A dredging method and apparatus employing high-velocity directed injector nozzles which hydraulically dislodge and drive discrete bodies of large inertia from a position at rest on an aqueous floor into a cooperating vacuum device which collects such bodies and removes them to another area for further treatment.

3,646,695
ARTICLE OF DECORATION

Peter-Michael Pfeiffer, Munich, Germany, assignor to REFEKA Reklame-, Fest- und Karnevals-Artikelfabrik GmbH, Munich, Germany
Filed June 4, 1970, Ser. No. 43,412
Claims priority, application Germany, June 9, 1969, G 69 22 957.8; Oct. 30, 1969, G 69 42 265.7; Jan. 2, 1970, G 70 00 029.2
Int. Cl. G09f *11/15*
U.S. Cl. 40—39 4 Claims

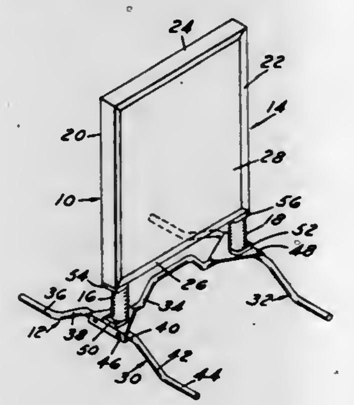
An article of decoration having two juxtapositioned elastically flexible parts which are supported on a flexible rope or wire and are interconnected at points circumferentially spaced along their peripheral edges, and a spacer member

located on the rope between the parts for spreading the two parts apart when the article is in an operative position, and for permitting the two parts to collapse or close together when the article is in an operative position.



3,646,696
POSTER DISPLAY DEVICE

Robert Sarkisian, 8644 Woodside Park Drive, Oak Park, Mich.
Filed Sept. 11, 1967, Ser. No. 670,511
Int. Cl. G09f *7/00*
U.S. Cl. 40—125 H **5 Claims**



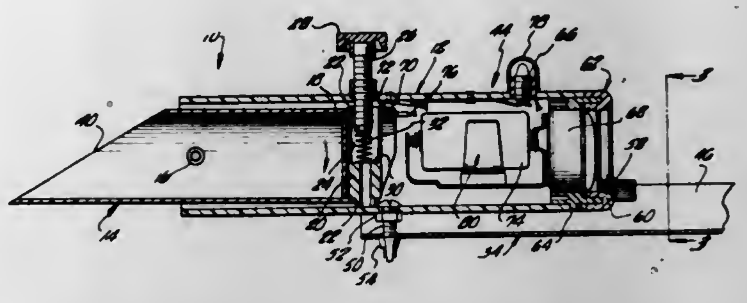
The poster display device includes a base upon which is mounted a poster frame. The means for mounting the poster frame onto the base comprise a spring structure interconnecting the lower portion of the poster frame to the base. In one embodiment, the spring structure comprises a pair of spaced-apart coil springs which extend between the frame and the base. In another embodiment, the spring structure is an elongated torsion spring mounted transversely of the base. The poster frame has a pair of spaced-apart brackets on the lower edge thereof which engage the torsion springs.

The poster frame, which normally extends vertically upwardly from the base, has a backing member mounted thereon for receiving posters or like advertising or other media. The surface area of the backing member is relatively large. The spring structure upon which the frame is mounted permits the frame and backing member to deflect downwardly upon the application of a force thereto, as for example, the wind when the structure is located out of doors. The frame may deflect in either direction without danger of tipping the base. The stronger the applied force, the more the frame will deflect downwardly thus reducing the component of any force tending to topple the display device.

3,646,697
FISH ALARM

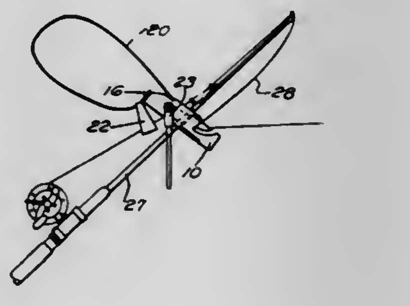
George H. Jennings, 4821 North LaSena, Baldwin Park, Calif.
Filed July 6, 1970, Ser. No. 52,576
Int. Cl. A01k *97/12*
U.S. Cl. 43—17 **12 Claims**

A fishing accessory includes an outer tubular body pivotally mounting an inner spring biased tubular socket having an open upper end projecting through an open upper end of the body to receive the handle of the fishing rod in a manner such that a tug on the fishing line tends to rotate the socket from its normal position against the spring bias on the socket. The body contains an electrical signalling circuit for signalling this rotation of the socket from normal position to alert the fisherman of a fish bite. The disclosed inventive embodiment has a ground stake removably attached to the body for supporting the latter in a generally upright fishing position.



3,646,698
SIGNALLING DEVICE FOR A FISHING LINE

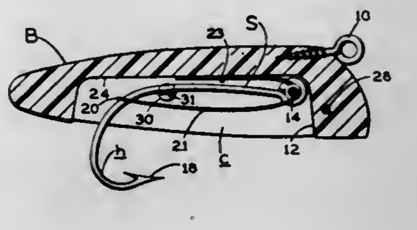
Gottfried Zachae, 23 Pratt Street, Norwich, Conn.
Filed Oct. 8, 1969, Ser. No. 864,824
Int. Cl. A01k *97/12*
U.S. Cl. 43—17 **8 Claims**



A device which can be mounted on a stake embedded in the ground or mounted in the oarlock holder on a rowboat comprising a slidable member which serves to retain the signalling device in a spring tension position. The slidable member also holds the line from the end of the rod to the hook in confinement. When the fish pulls on the hook and line the slidable member releases the line and this releases the spring tension device which springs upwardly to provide the necessary signal.

3,646,699
ARTIFICIAL FISH LURE

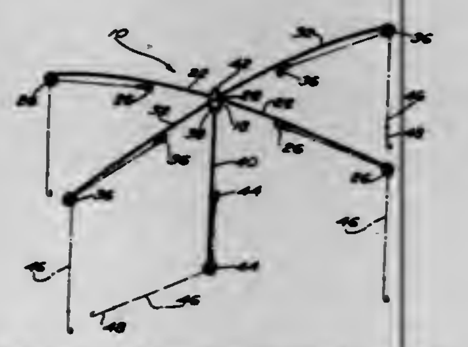
Jack R. Zeman, P.O. Box 10, 167 Wilton Manor Branch, Ft. Lauderdale, Fla.
Filed Feb. 27, 1970, Ser. No. 15,128
Int. Cl. A01k *83/02*
U.S. Cl. 43—35 **7 Claims**



An elongated lure body having a pivotal mounting for one end of a conventional hook shank, the shank being swingable through 90° or more between a retracted position adjacent to the lure body and parallel therewith and an extended position in which the hook is disposed well away from the lure body. Spring means is associated with the hook to bias the hook to the extended position. A spring-biased catch, is mounted on the lure body and has a locking bolt movable from a tensioned cocked position blocking the movement path of the shank and frictionally engaging the shank to a relaxed position wherein it is disengaged from the shank to permit outward swinging movement of its hook end to a fish-impaling position. Triggering of the catch is caused by a striking fish applying opposing pressures to the lure body which reduces the frictional pressure between the catch and shank to free the shank for swinging movement to the fish-impaling position.

3,646,700
TAKE-APART FISH HOOK OR LURE SUPPORT

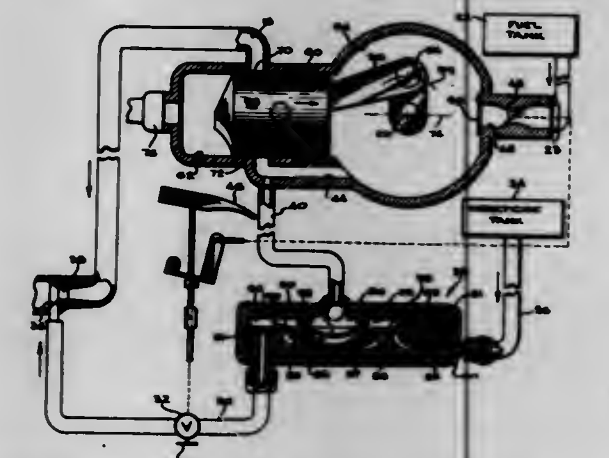
Robert B. Pond, South Attleboro, Mass., assignor to Atom Manufacturing Company, South Attleboro, Mass.
Filed Dec. 22, 1969, Ser. No. 886,917
Int. Cl. A01k *91/00, 83/00*
U.S. Cl. 43—42.74 **10 Claims**



A fish hook or lure support of "take-apart" construction is disclosed which is formed from a plurality of laterally directed wire arms each of which is provided with an integral loop from which hooks, filaments or lures may depend. The device assumes the shape of the so-called "umbrella" spreaders and includes in releasably connected to the laterally directed arms. Each of the laterally directed arms is embedded in a centrally located, slotted plug element preferably of metal. The vertical arm is embedded, at its uppermost end, in a plug element from which a vertical loop extension projects upwardly. The latter is fitted within the slots of the other plug elements to effect an assembled relationship of parts. The frictional contact of these parts assures the maintenance of the elements of the device in the aforesaid assembled relationship.

3,646,701
PORTABLE THERMAL FOGGER

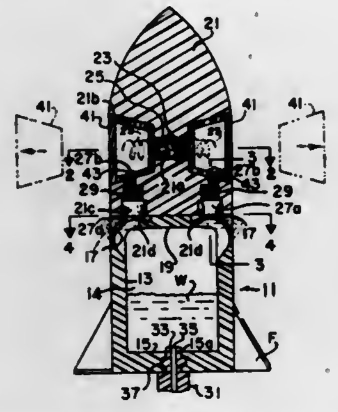
Arthur Pfaffenbach, Watertown, Wis., assignor to McGraw-Edison Company, Elgin, Ill.
Filed May 4, 1970, Ser. No. 34,054
Int. Cl. A01m *19/00*
U.S. Cl. 43—129 **6 Claims**



A portable thermal insecticide fogger including an internal combustion engine for generating hot exhaust gases that discharge from an outlet, a supply of liquid insecticide, and a diaphragm pump operated off the changing pressures of the internal combustion engine for pumping the liquid insecticide to a location upstream of the outlet for admixture and common discharge with the exhaust gases.

3,646,702
PROPELLED TOY ARRANGEMENT

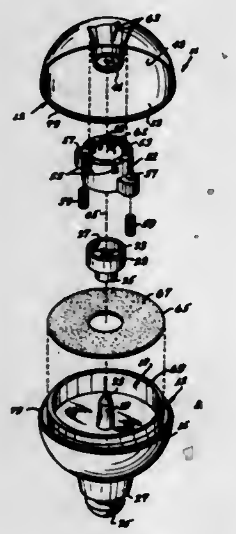
Reginald F. Pippin, Jr., Towson, Md.
Continuation-in-part of application Ser. No. 504,299, Oct. 24, 1965, now Patent No. 3,510,980, dated May 12, 1970. This application May 11, 1970, Ser. No. 36,120
Int. Cl. A63h *27/06*
U.S. Cl. 46—74 A **13 Claims**



A missile arrangement including a first missile-launching unit having one or more female openings for receiving one or more separable propellable missile units. This first missile-launching unit is disclosed in the preferred form of a self-propelled missile having a fluid discharge orifice and a pressurizable fluid-pressure responsive flexible diaphragm which enables retention of the propellable missile unit within the female opening and release therefrom by respectively pressurizing and depressurizing the first unit. Embodiments with two separable propellable missile units are illustrated, embodying both self-propulsion of the separable propellable missile unit or units, and passive propulsion by external propulsion means on, and/or effected by motive action of, the first launching unit.

3,646,703
SPARKING TOY TOP

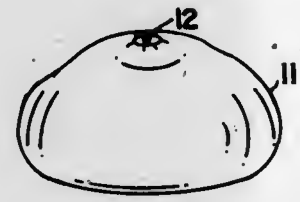
Albert R. Baginski; Jacob De Gelder, both of Torrance, and Gabriel Marason, Jr., Los Angeles, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 9, 1970, Ser. No. 96,378
Int. Cl. A63h *33/36*
U.S. Cl. 46—48 **4 Claims**



A toy top having a housing with a gyroscopic-type rotor mounted on a freely rotatable shaft that extends below the housing and terminates at a spinning tip which supports the top in spinning engagement with a playing surface, the toy including pyrophoric means such as flints mounted on a shaft-encircling casing which has axial freedom but which is keyed to the housing, the flints slidably resting upon abradant means such as a sandpaper disc mounted on top of the top's rotor so that sparks are created by the rotation of the shaft with respect to the housing which are visible to its user through a transparent portion of the top's housing.

3,646,704
MANIPULABLE AMUSEMENT DEVICE

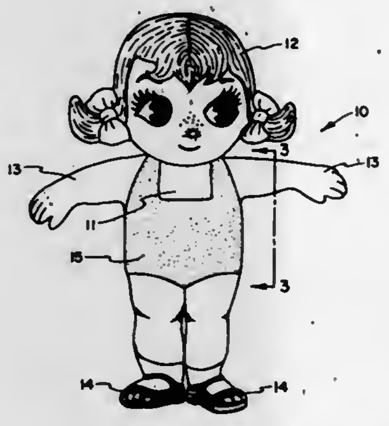
Orval T. Ellsworth, 840 Miranda Green, Palo Alto, Calif.
Filed July 13, 1970, Ser. No. 54,265
Int. Cl. A63h *3/06*
U.S. Cl. 46—90 **11 Claims**



A manipulable amusement device formed of a substantially airtight flexible enclosure having an opening, particulate matter loosely filling the enclosure, and a one-way valve seated in the enclosure opening for evacuating air from the enclosure and preventing air from reentering through the enclosure. The enclosed particulate material exhibits a range of conditions from fluid through moldable to hard, depending upon the extent to evacuation of the enclosure.

3,646,705
DOLL CUTOUTS AND PROCESS OF MAKING SAME

Iver Val Nicholson, Salt Lake City, Utah, assignor to Kiddie World Toys, Ltd., Salt Lake City, Utah
Filed June 10, 1970, Ser. No. 45,120
Int. Cl. A63h *9/00*
U.S. Cl. 46—157 **2 Claims**

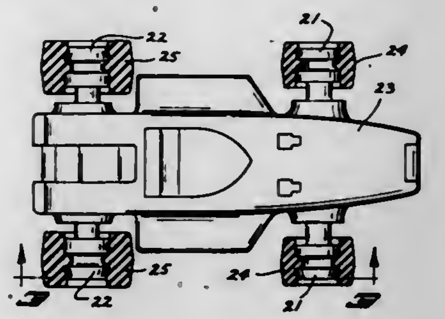


A process of making a low-cost doll cutout having a realistic appearing undergarment to which fabric outer garments can be attached and from which they can be removed; and the doll cutout so produced.

3,646,706
TOY VEHICLE

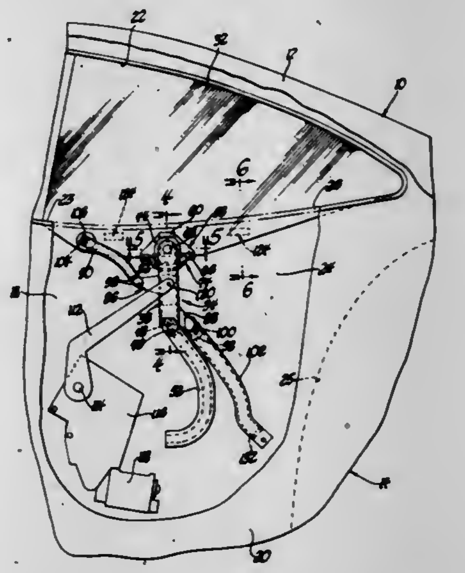
Cecil F. Adickes, Playa Del Rey, Calif., assignor to Tonka Corporation, Mound, Minn.
Filed June 25, 1970, Ser. No. 49,599
Int. Cl. A63h *17/00*
U.S. Cl. 46—201 **4 Claims**

A miniature toy vehicle having front and rear wheels and adapted to be propelled over a hard floor surface wherein the rear wheels are formed of a material having a higher coefficient of friction than the front wheels with respect to said floor surface to aid true tracking of the vehicle over the surface.



3,646,707
WINDOW REGULATOR

Leonard A. Lystad, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 2, 1970, Ser. No. 86,098
Int. Cl. E05f *11/52*
U.S. Cl. 49—227 **4 Claims**

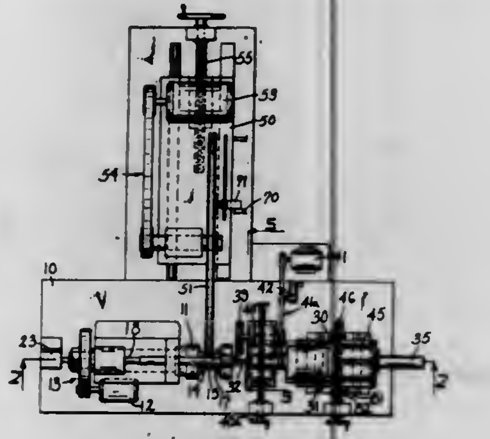


A vehicle window regulator which combines in a single unit means for supporting a window on a vehicle body for bodily movement between open and closed positions and means for laterally stabilizing the window, the window regulator including a first arm attached to the window for lateral rigidity and for pivotal movement about a fixed axis of the window, a second arm connected to the window and to the first arm, and a lift arm connected to both the first and second arms. The first arm laterally stabilizes the window in the closed position thereof and the lift arm cooperates with guide means on the vehicle body in defining separate curvilinear paths of motion for the first and second arms, the curvilinear path of motion of the window between the open and closed positions being the resultant of the curvilinear paths of the first and the second arms.

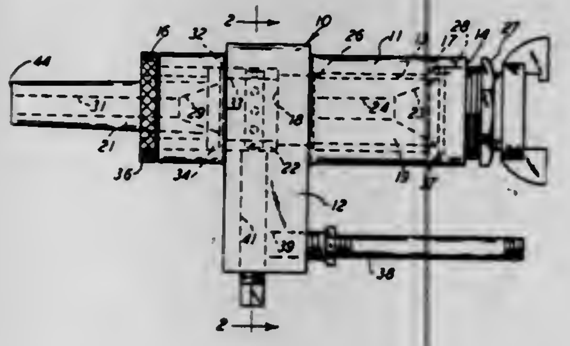
3,646,708
GRINDING MACHINERY AND METHODS

Robert S. Jones, Springfield, Vt.
Original application Jan. 9, 1967, Ser. No. 607,957, now Patent No. 3,524,283, dated Aug. 18, 1970. Divided and this application May 8, 1970, Ser. No. 35,804
Int. Cl. B24b *7/00*
U.S. Cl. 51—5 **7 Claims**

A grinding machine for grinding the external and internal surfaces of a workpiece, comprising a grinding wheel which is rotated about its axis and moved to simultaneously contact a first cutter wheel rotating about its axis and a workpiece rotating about its axis, such that the axis of the workpiece and the axis of the cutter wheel lie in substantially the same vertical plane and are spaced less than 180° from each other about the circumference of the first grinding wheel. The apparatus may also include a second grinding wheel which is adapted to be rotated and moved to operate on the internal surface of the workpiece or to contact a second cutter wheel.



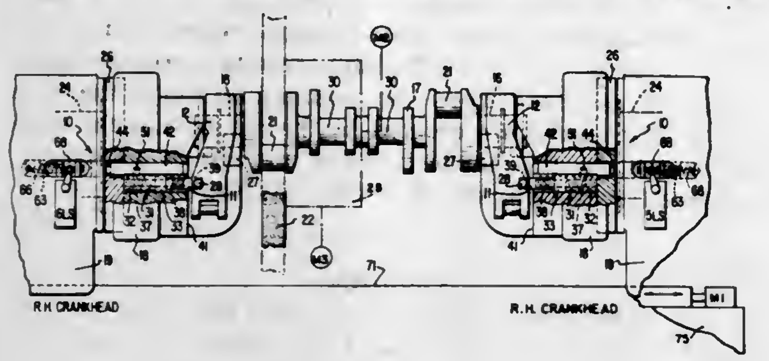
3,646,709
WET SANDBLAST GUN
Matthew P. Nolan, Route 1, P.O. Box 673, Antioch, Ill.
Filed Dec. 17, 1970, Ser. No. 99,123
Int. Cl. B24c *3/06*
U.S. Cl. 51—8 **3 Claims**



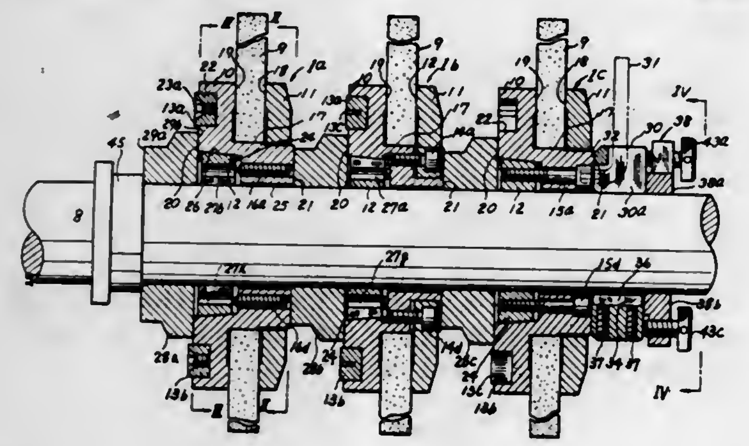
A gun housing including a barrel having a cylindrical opening extending through the barrel. Replaceable parts are located within the barrel for receiving sand in one end of one of the parts and for directing it to the other parts for flow through the gun. A water jacket part is provided in the barrel and a water inlet opening and a water connection are incorporated in the housing for introducing water into the chamber where the sand and water are mixed for flow of the wet sand from the outlet end of the gun.

3,646,710
SAFETY DEVICE FOR PRECISION ROTARY LOCATION OF CRANK FIXTURES IN A MACHINE TOOL
William P. Flohr, Jr., Waynesboro, Pa., and John A. Boller, Thurmont, Md., assignors to Landis Tool Company
Filed Mar. 25, 1970, Ser. No. 22,614
Int. Cl. B24b *5/42*
U.S. Cl. 51—105 SP **18 Claims**

A latch blocks the opening of workpiece clamping arms in a machine tool, such as a crankpin grinding machine, until the crank fixtures are precisely angularly located. As the latch releases the clamping arms, a plunger is urged into an aperture in each crankhead positively locking the crank fixtures to the crankhead in the proper angular position for loading and unloading workpieces. Movement of the plunger into the crankhead closes a switch completing a circuit to open the clamping arms.

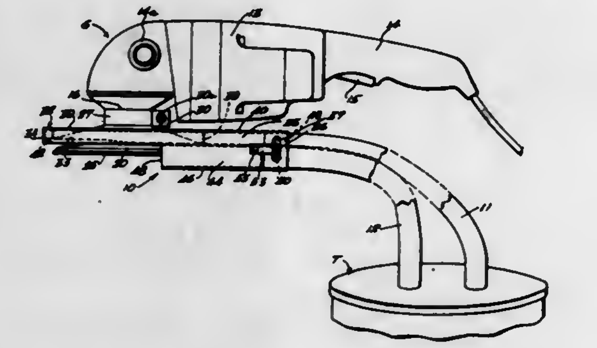


3,646,711
MOUNTING ADAPTER ASSEMBLY
Kenzaburo Oishi, and Osamu Toyozumi, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Japan
Filed Aug. 10, 1970, Ser. No. 62,538
Claims priority, application Japan, Aug. 12, 1969, 44/77002
Int. Cl. B24b *41/00*
U.S. Cl. 51—168 **9 Claims**



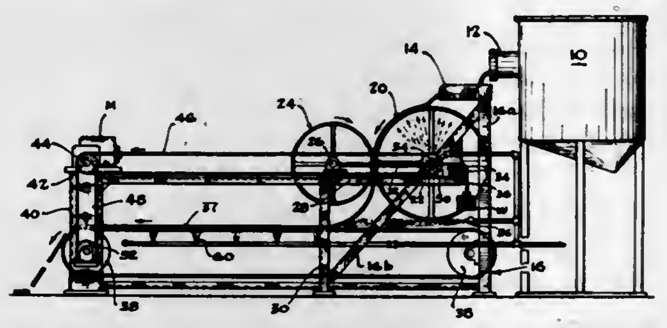
A wheel sleeve having a grinding wheel is securely mounted on a wheel spindle through a resilient collet member received in a tapered bore portion thereof such that wheel sleeve is accurately positioned at a right angle relative to the wheel spindle by a spacing collar having end surfaces which are perpendicular to the wheel spindle.

3,646,712
DUST-REMOVING ATTACHMENT DEVICE FOR POWER GRINDERS
Pedro Quintana, 7211 Cortez, North, Tampa, Fla.
Filed Aug. 24, 1970, Ser. No. 66,284
Int. Cl. B24b *55/06*
U.S. Cl. 51—273 **10 Claims**



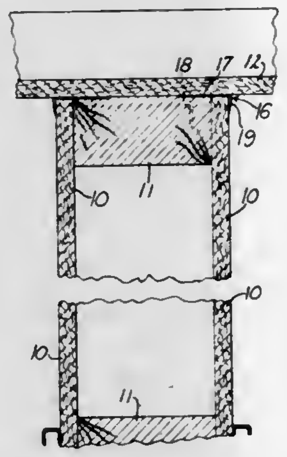
A dust-removing attachment device for rotary disk power grinders or sanders is described wherein a continuous current of air is maintained over and around the grinding or sanding surface to capture and withdraw dust particles and the like into a vacuum chamber. Filtered and pressurized exhaust air from a vacuum cleaner tank is directed through a first plenum to discharge forcefully about the rotary disk at one side, and a vacuum plenum open at the other side of the disk and leading to the input of the vacuum cleaner serves to maintain a strong current of dust capturing circulating air.

3,646,713
METHOD OF MAKING FRAGMENTED CRYSTALLINE MATERIAL
Douglas Woodworth Marshall, Niagara Falls, Ontario, and Edgar A. Pett, Chippawa, Ontario, both of Canada, assignors to Norton Company, Worcester, Mass.
Continuation-in-part of application Ser. No. 679,277, Sept. 22, 1967, now abandoned , which is a division of application Ser. No. 482,654, July 8, 1965, now Patent No. 3,377,660, which is a division of application Ser. No. 104,317, Apr. 20, 1961, now abandoned. This application Mar. 16, 1970, Ser. No. 19,736
Int. Cl. B24d *3/02*
U.S. Cl. 51—309 **12 Claims**



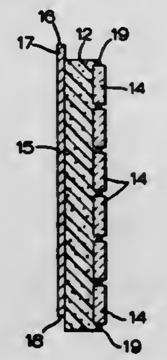
A method utilizing a trough for flowing molten abrasive material from a furnace onto a cool rotating casting cylinder, rapidly solidifying it into a thin semisolid curved sheet, densifying the semisolid material with a pressure roll, and then partially fracturing the strip of semisolid material by reversing its curvature by pulling it away from the cylinder with a driven rapidly cooled conveyor means whereupon the partially fractured strip is deposited onto collecting means in the form of large fragments which upon being rapidly cooled and solidified break up into smaller fragments well adapted to be reduced in size to form conventional abrasive particles.

3,646,714
CLOSURE MOLD FOR BUILDING PANELS
Marshall O. Groat, Fort Payne, Ala., assignor to Kingsberry Home Corporation
Filed June 22, 1970, Ser. No. 48,011
Int. Cl. E04b *1/00*
U.S. Cl. 52—241 **2 Claims**



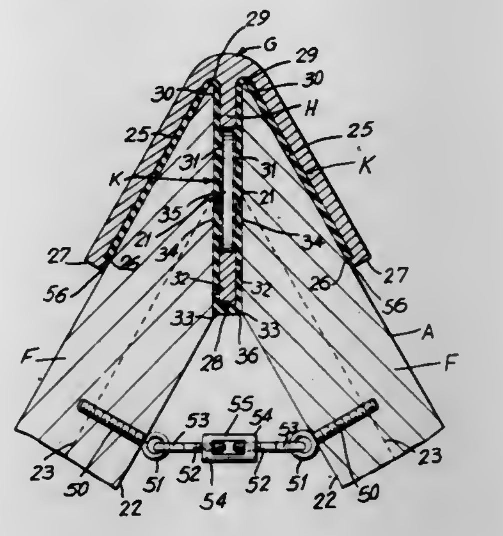
Closure mold between flat surface of building and adjacent edge of building panel having structural member along edge thereof. First flexible strip spans edge of panel with one side of strip along and secured to adjacent portion of structural member. Second flexible strip integral with side of first strip opposite said one side and extends angularly therefrom alongside and inwardly of edge of building panel.

3,646,715
PREFABRICATED BUILDING PANEL
Kenneth W. Pope, Kitchener, Ontario, Canada, assignor to Du Pont of Canada Limited, Montreal, Quebec, Canada
Original application Aug. 31, 1967, Ser. No. 664,752, now abandoned. Divided and this application Apr. 6, 1970, Ser. No. 31,056
Int. Cl. E04c *2/10*
U.S. Cl. 52—309 **7 Claims**



A prefabricated building panel having a layer of cellular plastic such as polyurethane foam, to one face of which are bonded bricklike facing elements spaced from one another. A granular material, such as sand, is adhered to and embedded in the cellular plastic between the facing elements to give the appearance of mortar between the facing elements.

3,646,716
WEATHER SEAL FOR BUILDING STRUCTURES
Myron Jenner, c/o Jen Products, Inc., Bethel, Vt.
Filed Feb. 11, 1970, Ser. No. 10,464
Int. Cl. E04b *1/68*
U.S. Cl. 52—403 **7 Claims**

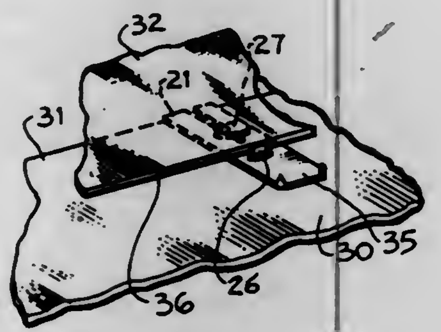


Two elements of a building structure, such as upright modules or upwardly converging frame sections, are separated by an elastic joint including a rigid member with a three-legged profile, the central leg of the profile lying between confronting faces of the building elements while the two other legs extend laterally thereof on the outside of the structure. An insert of elastomeric sheet material is interposed between the building elements and the adjoining lateral legs of the rigid member, a tongue of this insert enveloping the central leg thereof and penetrating under pressure into cutouts of that leg.

3,646,717

ROOFING CLIP

Eddie R. Parker, 1515 Winfield Avenue, Indianapolis, Ind.
Filed Oct. 17, 1969, Ser. No. 867,302
Int. Cl. E04d *1/22, 1/34*
U.S. Cl. 52—548 **3 Claims**

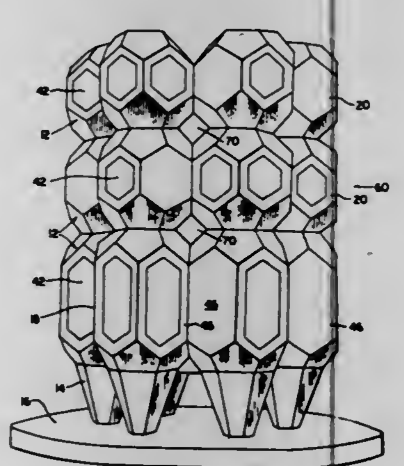


A roofing clip having a slot at one end which is slipped over the shank of a nail holding a roofing shingle in place prior to driving the nail home. The clip has a locating tab positioned centrally of its length which, in one embodiment, is received in a roofing shingle slot to position the clip, and which, in the other embodiment, is used for positioning a further overlapping shingle. The clip is centrally bendable over the overlapping shingle to clamp it in place and at the distal end of the bent over portion has one or more gripping projections which hold the overlapping shingle in place.

3,646,718

POLYHEDRAL STRUCTURAL SYSTEM AND SPATIAL ENCLOSURE

John E. McKenna, 740 Shotwell, San Francisco, Calif.
Filed July 3, 1969, Ser. No. 838,811
Int. Cl. E04b *1/348*
U.S. Cl. 52—79 **2 Claims**

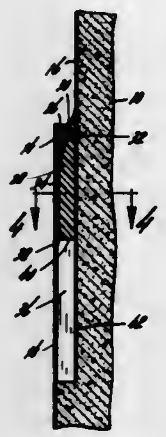


A structural system and spatial enclosure defined by a new polyhedron, the isoicosahedron, having 20 faces consisting of eight hexagons and 12 pentagons, 54 straight line elements, and 36 vertices, which, in a preferred form, lie on the surface of an imaginary sphere circumscribing the polyhedron. In the preferred form, the hexagons are regular and congruent while the pentagons though congruent are irregular having three sides equal in length to the side length of the hexagons and two sides equal to said length divided by the 2. In other forms, the 36 vertices of the polyhedron lie on the surface of an imaginary enclosing spheroid, oblate, elongate, or irregular. The isoicosahedra form modular units which can be reiterated in a building structure. The packed modular polyhedra define unique polyhedral spaces each having nine faces consisting of six pentagons and three squares, the endoenneahedron.

3,646,719

COLUMNAR JOINT

Bill Archer, Meridian, and John Low, III, Laurel, both of Miss., assignors to Arlo, Inc., Laurel, Miss.
Continuation-in-part of Ser. No. 23,216, Mar. 27, 1970
Filed May 15, 1970, Ser. No. 37,819
Int. Cl. E04h *12/34*
U.S. Cl. 52—115 **2 Claims**

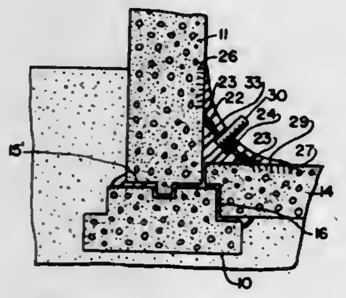


Development of a concrete-filled column by pumping concrete into interlocking tubular sections, particularly an interlocking joint which seals the concrete within the columns while aligning the sections with respect to each other and anchors the bottom telescoping section to its base within the ground.

3,646,720

MOISTUREPROOFING PROCESS

Leonard Watts, 623 Branch Blvd., Cedarhurst, N.Y.
Filed Sept. 10, 1969, Ser. No. 856,592
Int. Cl. E02d *31/02;* **E04g** *23/02*
U.S. Cl. 52—744 **2 Claims**



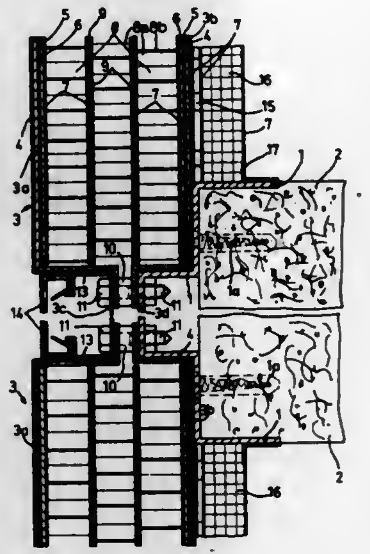
Cracks or joints in below ground level concrete construction are sealed by the process of bonding a strip of material over the crack to form a channel extending along the crack, pumping air into the channel under the strip to indicate the rate of leakage through the crack, and pumping a more or less viscous sealer into the channel according to the indicated rate of leakage through the crack, the sealer flowing into the crack to seal and waterproof the concrete construction.

3,646,721

WALL UNITS WITH INSULATION

Otto Alfred Becker, 59 Robert Koch Strasse D-6600, Saarbrucken 6, Germany
Filed May 22, 1969, Ser. No. 826,958
Claims priority, application Germany, May 22, 1968, P 17 59 635.9
Int. Cl. E04b *1/74*
U.S. Cl. 52—618 **5 Claims**

A wall unit comprising panels lying at opposite faces of said unit, a seal arranged between the margins of said panels, and an insulation occupying the cavity between said panels, wherein the improvement comprises at least one insulating group extending parallel to said panels and comprising two foils capable of reflecting thermal radiation and chambers

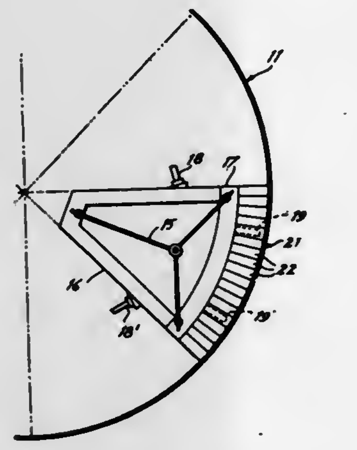


lying between said foils, the walls of which consist of insulating material.

3,646,722

PREASSEMBLY OF REFRACTORY BRICK AND LINING FURNACES THEREWITH

Victor John Salmi, III, Langhorne, Pa., assignor to General Refractories Company, Philadelphia, Pa.
Filed Sept. 2, 1969, Ser. No. 854,634
Int. Cl. E04g *21/14, 23/02*
U.S. Cl. 52—745 **9 Claims**



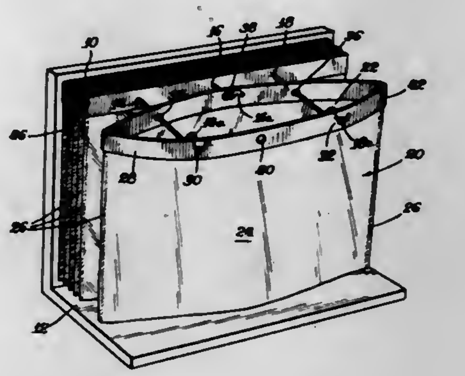
Refractory brick are preassembled into configuration matching a furnace to be lined and are retained together for transporting into place in the furnace. The resulting assembly is releasably secured mechanically or magnetically to suitable transporting means.

3,646,723

SYSTEM FOR FILLING A FLEXIBLE SEALABLE CONTAINER

Albert H. Meroney, 5628 South Washington Street, Hinsdale, Ill.
Filed Oct. 23, 1968, Ser. No. 771,384
Int. Cl. B65b *67/12*
U.S. Cl. 53—390 **8 Claims**

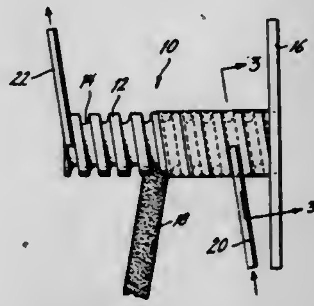
A flexible bag and device for supporting such bags in an open position to facilitate rapid filling. The device includes adjustable support means to enable its use with bags of various sizes. The bag includes means to cooperate with the support means and prevent variations in the size of the bag opening during filling.



3,646,724

CENTRIFUGAL FILTER

Thomas W. Peck, Horseheads, N.Y., assignor to Powers Manufacturing, Inc., Elmira, N.Y.
Filed Jan. 9, 1970, Ser. No. 1,659
Int. Cl. B01d *45/12*
U.S. Cl. 55—274 **4 Claims**

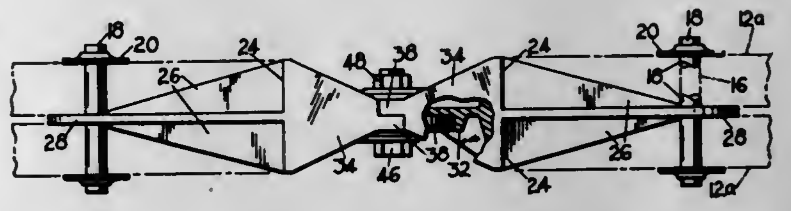


A centrifugal filter is disclosed wherein solid matter entrained in a fluid can be separated by centrifugal force into contact with an adhesive surface such as a pressure-sensitive tape which partially defines a fluid flow path.

3,646,725

HEAVY DUTY PITCHED TRUSS AND RIDGE CONNECTOR THEREFOR

Arthur L. Troutner, Skyline Drive, Boise, Idaho
Filed Dec. 29, 1969, Ser. No. 888,417
Int. Cl. E04c *3/292;* **F16b** *1/00*
U.S. Cl. 52—641 **3 Claims**



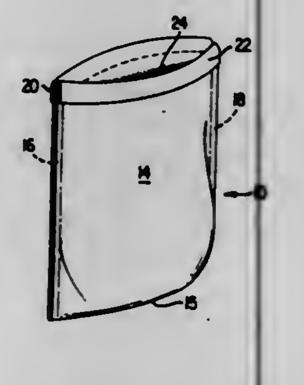
A heavy duty pitched truss comprises upper and lower chords interconnected by a lacing of link members. The pitched upper chord is formed in two end-to-end sections interconnected by a ridge connector. The ridge connector is formed in two pieces each comprising a bearing support, securing means for securing the bearing support on the end of one of the upper chord sections, and concavely arcuate and convexly arcuate bearing members projecting outwardly from the support and laterally offset from each other. The convexly arcuate bearing member of one piece overlaps the like member of the companion piece, both being in mating, bearing engagement with the concavely arcuate members of the respective pieces. A suitable connector such as a pivot pin interconnects the two overlapped bearing members. In this manner the stresses applied to the truss are transferred to the truss members through bearing areas of substantial magnitude.

3,646,726
METHOD OF OBTAINING DRY, UNCONTAMINATED SEALS ON FLEXIBLE POUCHES

James L. Hutcheson, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Mar. 31, 1970, Ser. No. 24,127
Int. Cl. B65b *43/02*

U.S. Cl. 53—29 **2 Claims**



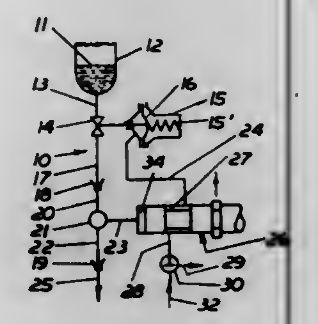
A method of obtaining dry uncontaminated seals on flexible pouches. The longitudinal side seams of the pouch are sealed to within about three-quarters of an inch of the top thereof leaving a pair of free flaps. The latter are then folded rearwardly and downwardly through 880° against the front and rear panels of the pouch. The flaps are then immobilized in this position by opening the pouch which is then filled with a product. The flaps are then returned to an upright position such as by pulling the top of the pouch flat in a togglelike action and sealed preferably with a slight overlap of the original side seam seal.

3,646,727
AUTOMATIC COMPRESSOR DRAIN SYSTEM

Erich A. Wachsmuth, 1810 Ridgemoor Drive, Long Beach, Michigan City, Ind.

Filed June 2, 1969, Ser. No. 829,369
Int. Cl. B01d *57/00;* **F16t** *1/16*

U.S. Cl. 55—21 **10 Claims**



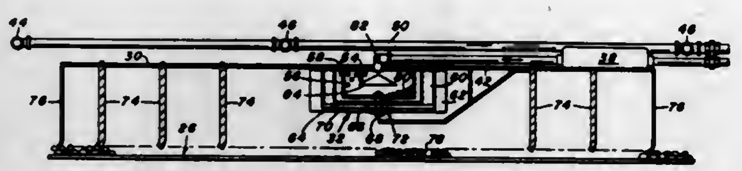
Method and apparatus for automatically draining liquid condensate from a body of compressed gas wherein a condensate drain valve is automatically opened at stated intervals causing liquid to pass through a drain system which is provided with a sensing chamber inserted between a pair of orifices so that the pressure change accompanying the end of liquid flow and the beginning of gas flow can be employed to cause immediate closure of the drain valve with a minimum loss of air.

3,646,728
FILTER ASSEMBLY AND SYSTEM FOR THE REMOVAL OF COAL DUST

George J. Holler, Jr., 210 S. Marietta Street, St. Clairsville, Ohio

Filed May 16, 1969, Ser. No. 825,317
Int. Cl. B01d *47/02*

U.S. Cl. 55—233 **4 Claims**



Described is a filter assembly, particularly adapted for use in a system for the removal of coal dust particles from air in a mine. In one embodiment of the invention, dust-laden air is passed through a filter assembly containing a filter bed comprised of slag particles, preferably blast furnace slag, that is continuously washed by means of a water spray. The water and dust particles washed from the filter bed form a slurry which flows from the filter bed onto a conveyor where it is conveyed out of the mine. The dust-laden air, after it passes through the filter bed, passes back into the atmosphere as filtered air substantially free of dust particles. In another embodiment of the invention, the dust-laden air is passed through a liquid bath, preferably a continuously circulating stream of water, whereby the coal dust will become trapped within the water while clean air bubbles upwardly out of the water and to a clean air duct.

ERRATUM

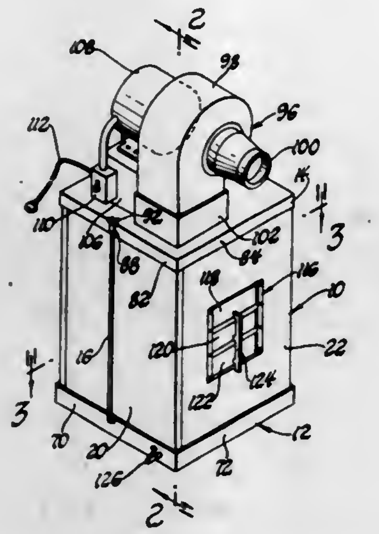
For Class 55—274 see:
Patent No. 3,646,724

3,646,729
AIR CLEANING APPARATUS

Donald B. McKechnie, 2843 Middlebelt Road, Pontiac, Mich.

Filed Apr. 23, 1970, Ser. No. 31,214
Int. Cl. B65b *1/00, 3/00, 5/00*

U.S. Cl, 55—278 **4 Claims**



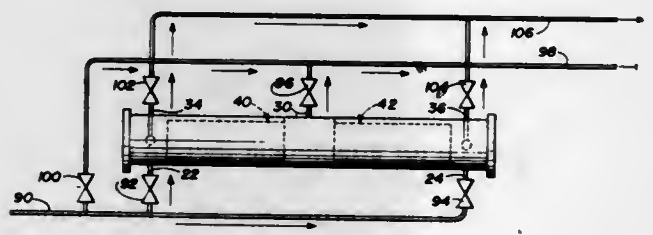
An air cleaning apparatus has a wire-basket body with a layer of filter material placed therein against the sidewalls and bottom to define a chamber which communicates with the discharge side of a blower assembly mounted atop a cover which is situated over the upper open end of the wire-basket body and chamber; tensioning type of bolts serve to hold the wire-basket body and cover in assembled condition permitting the apparatus to be moved to selected locations; the intake side of the blower assembly is exposed to atmosphere or atmospheric mist to be filtered in order to pump such atmosphere into the chamber and through the filter material to thereby clean the air of the atmosphere and return such cleaned air to a designated area.

3,646,730
NATURAL GAS FILTER

Laurance S. Reid, 601 Broad Lane, Norman, Okla.

Filed Apr. 1, 1969, Ser. No. 811,779
Int. Cl. B01d *46/04*

U.S. Cl. 55—302 **6 Claims**



A filter for natural gas having an elongated cylindrical shell capped by a pair of quick-opening end closures. Gas enters through inlets adjacent the opposite ends of the shell and passes inwardly through a pair of filter assemblies to a centrally located main outlet. A blowdown outlet is provided at each end of the shell. Flow through each of the two inlets and each of the three outlets is selectively controlled by separate valves so that gas can be selectively passed in the reverse direction through either of the filter assemblies during low flow rate periods to backflush and clean the filter assembly without taking the system out of operation. Each of the filter assemblies comprises a plurality of cylindrical filter elements extending longitudinally from the upstream face of a pressure bulkhead within the vessel to permit easy replacement of the filter elements through the quick-opening end closures. In normal operation, gas flows from the exterior to the interior of the filter elements to provide maximum filter surface area and a higher blowout pressure.

ERRATUM

For Class 55—314 see:
Patent No. 3,646,734

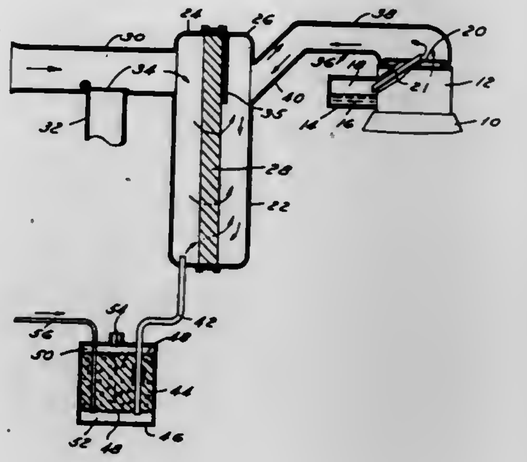
3,646,731
AIR CLEANER AND FUEL VAPOR STORAGE ASSEMBLY REMOTELY ASSOCIATED WITH AN ENGINE

Gunnar W. Hansen, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sept. 2, 1970, Ser. No. 68,834
Int. Cl. B01d *53/04;* **F02m** *59/00*

U.S. Cl. 55—316 **14 Claims**

The engine air cleaner is essentially vertically disposed in a side-by-side relationship to the carburetor. The two are connected by a conduit in a manner that the lower portion of the air cleaner acts as a vapor trap to prevent excess carburetor float bowl vapors from passing out through the air cleaner air inlet into the atmosphere. A bed of activated carbon is connected to the lower portion of the air cleaner casing to store the excess fuel vapors at times, the vapors being purged therefrom back into the engine during normal engine operation.

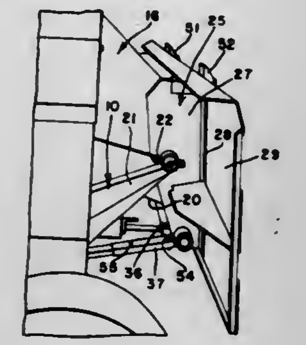


3,646,732
CROP HARVESTER

Glenn Dale Head, Des Moines, Iowa; Howard C. Hadley, Dallas Center, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 28, 1971, Ser. No. 138,109
Int. Cl. A01d *45/02*

U.S. Cl. 56—2 **6 Claims**



In a pull-type crop harvester having a main frame and a forwardly directed tongue adapted for connection at its forward end to a tractor drawbar, there is provided on the frame a crop-treating mechanism with a rearwardly directed elevator. The elevator has a housing extending to a forwardly opening inlet and surrounding the inlet is a housing extension that is carried on a transverse horizontal axis and which has a hydraulic cylinder connected thereto for moving the extension about the axis. The extension has means thereon for connecting it to a forwardly positioned harvesting unit.

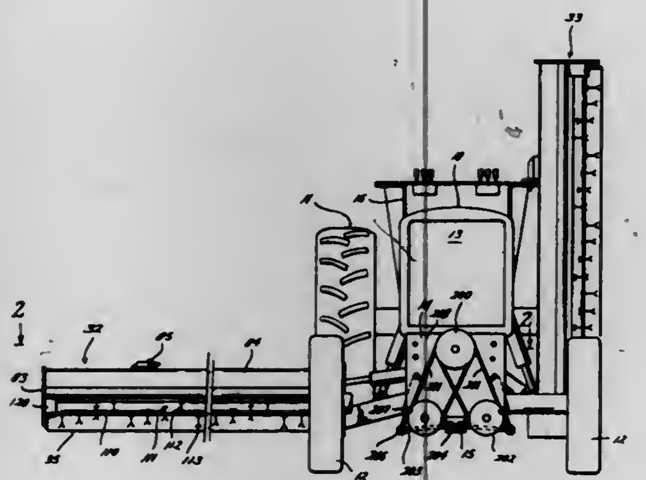
3,646,733
SIDE FLAIL MOWER

George Sherl Clapsaddle, Jr., c/o Clapsaddle Sales and Services, Whitten, Iowa

Filed Mar. 17, 1970, Ser. No. 20,251

Int. Cl. A01d *35/24*

U.S. Cl. 56—7 **9 Claims**



Outrigger is longitudinally hinged at inner edge to tractor and at outer edge to ground-supported cutter unit. Outrigger positions cutter as far to side of tractor as tractor wheels or beyond. Outrigger hydraulic cylinder connects outrigger to tractor to swing outrigger up and down, about inner hinge axis, thereby to raise and lower outer hinge axis to adapt cutter to terrain. Cutter hydraulic cylinder connects cutter to tractor at inner hinge axis to swing cutter up and down about outer hinge axis without preventing independent operation of outrigger cylinder. Cutter can be swung up to near vertical position with cutter cylinder and then hook on cutter can be dropped into eye on tractor by lowering outrigger with outrigger cylinder, thereby mechanically locking cutter in elevated position. Cutter is of flail type and is powered from front end of tractor crankshaft through a drive train. Inner end of flail shaft is above inner hinge axis by radial distance from shaft to cutter at end of flail, thereby to maintain inner edge of swath cut by cutter unit fixed at outer edge of outrigger regardless of angle of cutter to horizontal.

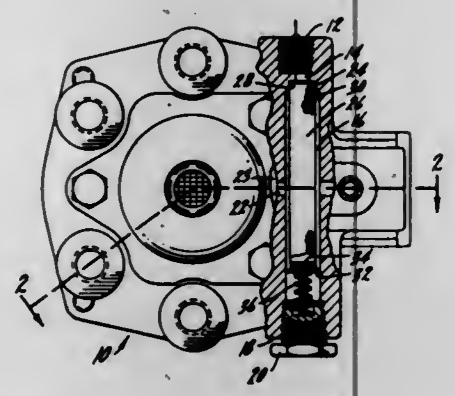
3,646,734
EMERGENCY FILTER FOR FLUID BRAKING SYSTEMS

Joseph L. Cannella, Melrose Park, Ill., assignor to The Berg Manufacturing Company, Des Plaines, Ill.

Filed Apr. 9, 1970, Ser. No. 27,087

Int. Cl. B01d *46/42*

U.S. Cl. 55—313 **1 Claim**



An emergency filter means for use with an airbrake system relay valve or the like. A filter of a cylindrical shape is located in a filter chamber communicating with the emergency line inlet and a valve chamber so that fluid enters the inlet, passes through the filter to the relay valve chamber. In the event the filter becomes blocked by foreign matter, the force of the flow of fluid will unseat the filter by compressing a spring holding it in place, thereby permitting the fluid to bypass the blocked filter.

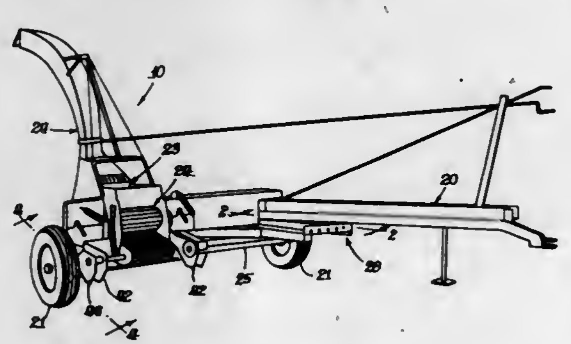
3,646,735
FORAGE HARVESTER COMBINATION

Edward A. Fritz, Hinsdale, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed May 11, 1970, Ser. No. 36,199

Int. Cl. A01d *69/00*

U.S. Cl. 56—14.7 **10 Claims**



A forage harvester combination including a basic harvester unit such as a chopper, adapted for securement to a draft implement and adapted for attachment thereto of each of a plurality of attachment harvester units, of different weights, such as a hay pickup unit, row crop unit, etc., each different attachment unit having respective points for anchoring it with the basic unit positioned according to its weight; means for raising and lowering the attachment unit for positioning it at different parallel operating levels, and for raising it to a higher tilted transport position; and resilient means for cushioning the lowering of the attachment unit to prevent breakage in the event it encounters a nonyielding obstacle.

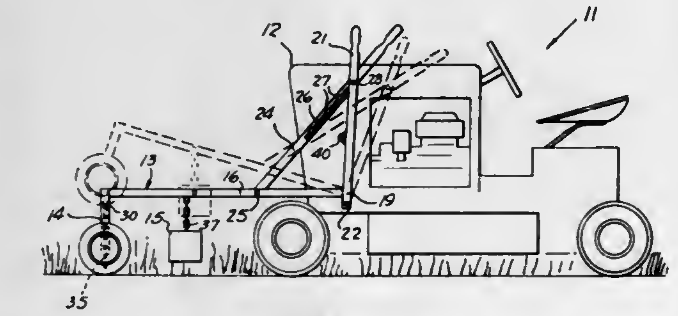
3,646,736
ATTACHMENT FOR A RIDING-TYPE LAWNMOWER

Frank B. Hutchins, 67 Pinedale Road, Asheville, N.C.

Filed Jan. 6, 1970, Ser. No. 944

Int. Cl. A01d *35/26*

U.S. Cl. 56—16.9 **8 Claims**



A riding lawnmower provided with a wheeled pivoted forward extension carrying a transverse depending rake assembly and a freely suspended transverse magnet bar assembly spaced behind the rake assembly. The extension has a slotted pivoted lever which can be interlocked with another lever pivoted to the lawnmower to at time support the extension in an elevated inoperative position.

3,646,737
HARVESTING ATTACHMENT

Benjamin M. Grant, Route 1, Box 43, Pasco, Wash.

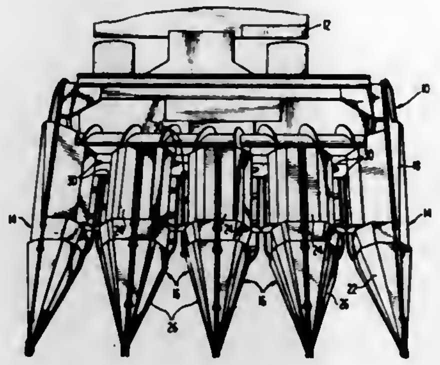
Filed Oct. 20, 1970, Ser. No. 82,333

Int. Cl. A01d *45/02*

U.S. Cl. 56—106 **24 Claims**

A down corn attachment for mounting on the row dividers of a corn head for a combine. The row dividers have a

pointed snout mounted on their forward end for vertical pivotal movement to accommodate ground irregularities. The down corn attachment includes a conveyor chain driven about an endless path including a conveying run extending from the forward point of the snout along the top surface of the row divider to the rear thereof. The conveyor chain is employed to apply a moment to the snout about its pivot axis to support a portion of the cantilevered weight of the snout.



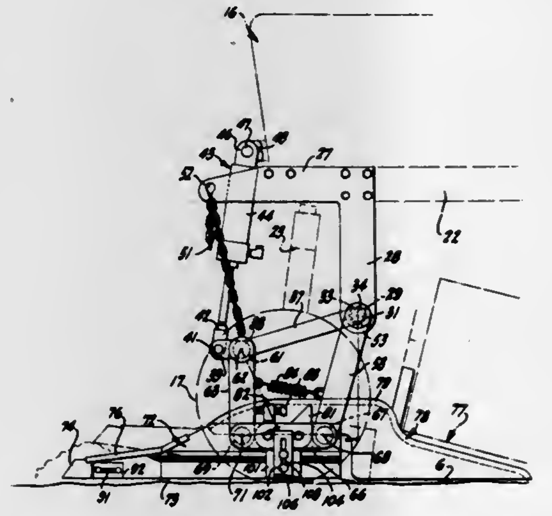
3,646,738
PLANT POSITIONER FOR HARVESTERS

George O. Tiura, Modesto, Calif., assignor to AgMac Inc., Ripon, Calif.

Filed Dec. 29, 1969, Ser. No. 888,735

Int. Cl. A01d *63/04*

U.S. Cl. 56—314 **7 Claims**



A harvesting vehicle for bean plants growing in rows in the earth has a plant positioner including, for each row harvested, a four bar linkage mounted at the front of the vehicle and adjustable up and down. One link is a generally horizontal lift plate carrying a leading point running along the ground and a following plant lifter. The linkage permits the point to move rearwardly against a spring and to rise when an obstacle is encountered. Also, a pusher is furnished for pushing aside plants in adjacent rows, for positioning earth near plant stems and for fully lifting partly lifted plants.

3,646,739
SAFETY LAWN MOWER

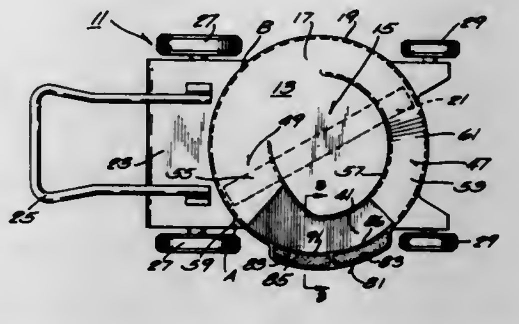
Einar S. Dahl, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 21, 1969, Ser. No. 878,865

Int. Cl. A01d *35/26*

U.S. Cl. 56—320.1 **22 Claims**

A lawn mower including a part of a housing for capturing solid particles thrown by action of the cutting blade. In one embodiment, the part of the housing comprises a penetrable liner extending adjacent to the path of the tip of the cutting blade and cooperating with the housing to form a series of pockets for receiving solid articles which penetrate the wall of the liner. In another embodiment, one or more pads of cellular material are carried by the housing in position to be struck by objects thrown by action of the cutting blade. Upon striking of the cellular material, the objects become imbedded, to thereby remove them from the whirling mass of material within the blade housing. In accordance with the third embodiment, a trap door and a trap are provided whereby solid objects are permitted to pass out of the circular area of the path of travel of the blade, but are intercepted within a trap formed inside of the blade housing.



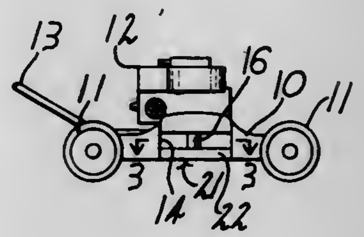
3,646,740
LAWNMOWER PROTECTIVE GUARD

John J. Grimes, Route 4, Box 554A, Selma, Ala.

Filed Aug. 12, 1970, Ser. No. 63,176

Int. Cl. A01d *35/26*

U.S. Cl. 56—320.2 **4 Claims**



Lawnmower having a guard extending across lower portion of discharge opening and embodying vertical flange outwardly of and in alignment with tip of rotary cutter blade and horizontal flange extending inwardly from upper edge of vertical flange over and in spaced relation to tip of cutter blade. Rear end of guard extends beyond trailing edge of discharge opening and forward end of guard extends forward from leading edge of discharge opening a distance equal substantially the distance from said leading edge to first tangent of exposure of cutter blade less the height of horizontal flange above cutter blade.

3,646,741
FRUIT HARVESTING APPARATUS

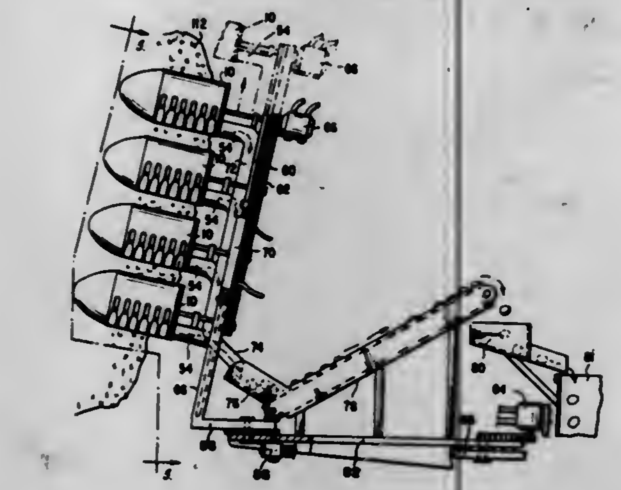
John W. Edwards, 208 Riverside Drive; John W. Eason, Jr., 206 Riverside Drive; Adrian R. Chapman, Route One Herd Bridge Road, and Emerson M. Clavel, 900 W. Palmetto Street, all of, Wauchula, Fla.

Continuation-in-part of application Ser. No. 860,329, Sept. 23, 1969, now abandoned. This application Feb. 13, 1970, Ser. No. 11,277

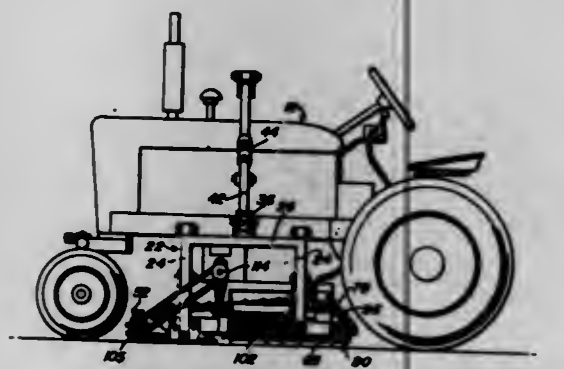
Int. Cl. A01g *19/00*

U.S. Cl. 56—328 R **11 Claims**

A crop harvesting apparatus particularly suited for the picking of tree-borne crops such as fruit and nuts. An elongated hollow cylindrical shell has a plurality of openings for the entry of fruit. Each opening terminates in a stem severing edge. The shell is thrust among the crops to be harvested and is rotated, removing the crops from the plants. An internal auger urges the fruit to a discharge from which it moves to a suitable storage location. Means are provided to prevent mature ripened fruit from leaving the shell except through the discharge and to permit immature green fruit to pass out the openings without being severed from the plant.



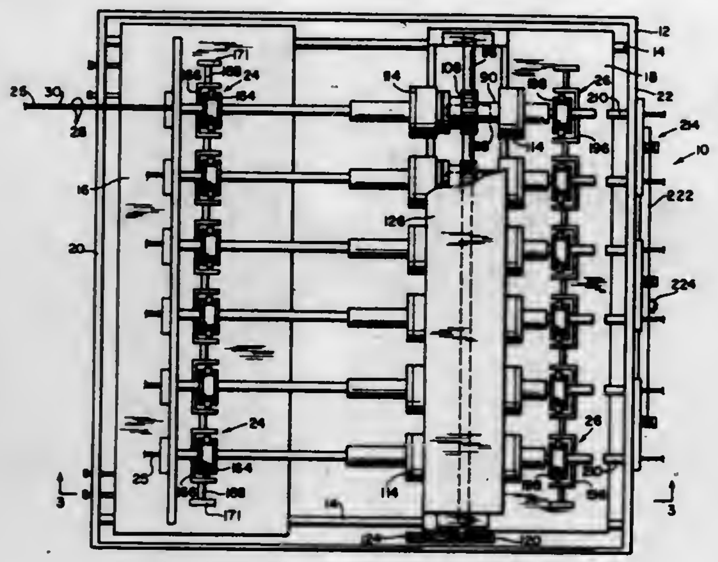
3,646,742
CUCUMBER PICKER
Lloyd E. Knutson, Route 1, Frederic, Wis.
Filed Nov. 20, 1970, Ser. No. 91,463
Int. Cl. A01d *45/00*
U.S. Cl. 56—327 R **14 Claims**



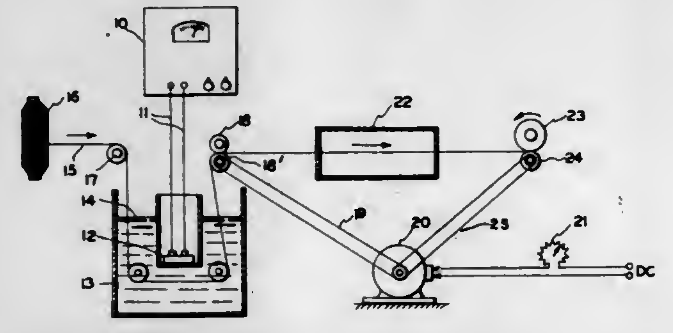
A picker, usually including a pair of picking units, mountable on a tractor through a hydraulically controlled support system whereby a selective raising and lowering of the units can be effected. Each unit includes a supporting framework mounted at one end so as to cantilever laterally in a manner which allows the vines to be raised, moved along and discharged from the individual units without a severing of the vines from the plant. Each unit includes a forward finger mounting pickup roller which raises the vines. The elevated vines are moved rearwardly over a carrier portion in a manner whereby the crop is suspended below the carrier portion and severed from the overlying vines by a cutter bar. The severed produce falls on a conveyor for a lateral discharge thereof while the vines are returned to the ground.

3,646,743
RECIPROCATING TWISTER PIPE CLEANER MACHINE
Eugene J. Boyd, Elmhurst, Ill., assignor to United States Tobacco Company, Nashville, Tenn.
Filed July 13, 1970, Ser. No. 54,483
Int. Cl. B21f *77/00;* **A24f** *9/06;* **B21f** *45/00*
U.S. Cl. 57—5 **15 Claims**

A machine for the continuous production of pipe cleaners includes first and second carriage members slidably mounted on a frame and adapted to be reciprocated between a first position wherein the carriages are located at opposite ends of the frame and a second position wherein the carriages are located adjacent each other and has chuck members thereon for gripping the pipe cleaner components in accordance with the respective positions of the carriages and mounted for rotation on the carriages whereby the wires of the pipe cleaners are twisted about each other to lock short cotton fibrils therebetween and advance the pipe cleaner strand through the machine.



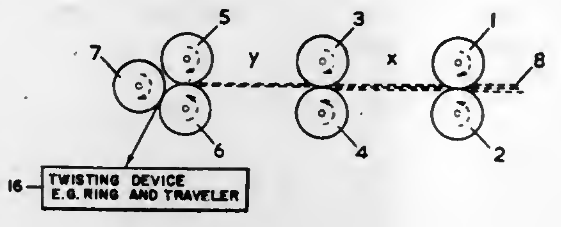
3,646,744
METHOD AND APPARATUS FOR BULKING YARN
Ralph A. Rusca, New Orleans, La., assignor to The United States of America as represented by the Secretary of Agriculture
Filed Dec. 22, 1969, Ser. No. 886,861
Int. Cl. D02g *1/02;* **D02h** *1/20, 13/00*
U.S. Cl. 57—34 B **4 Claims**



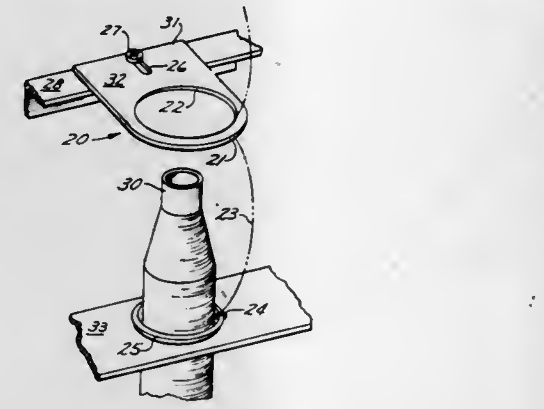
An apparatus utilizing ultrasonic components was designed and used in combination with select chemicals to produce permanent bulking in cotton and other yarns. The method constitutes immersing the yarns in cross-linking formulations and subjecting these while immersed to ultrasonic irradiation. An extension of the method comprises imparting resiliency to the bulked yarns. This is accomplished both by mechanical and by chemical means.

3,646,745
METHOD AND APPARATUS FOR MAKING STAPLE-FIBER YARNS
Tony Lewis Baldwin, and Roy Harold Burton, both of Harrogate, England, assignors to Imperial Chemical Idustries Limited, London, England
Filed Oct. 27, 1969, Ser. No. 869,778
Claims priority, application Great Britain, Nov. 8, 1968, 53,061/68
Int. Cl. D01h *5/22, 5/26*
U.S. Cl. 57—36 **16 Claims**

A method and apparatus for making "cracker"-free staple fiber yarns from staple-fiber rovings provide one or two drafting stages for the roving and a final stage which is a substantially zero draft stage and which wholly supports the roving during its passage therethrough. The length of the final stage is less than the effective staple length of the fibers in the roving.



3,646,746
BALLOON CONTROL RING
Coyt E. Murray, and Walter C. Boyter, both of Gastonia, N.C., assignors to Impact Plastics Inc., Gastonia, N.C.
Filed Mar. 12, 1970, Ser. No. 18,879
Int. Cl. D01h *13/04, 13/12*
U.S. Cl. 57—108 **5 Claims**



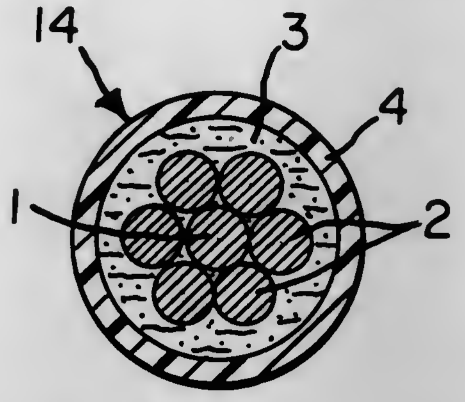
A balloon control ring made from an ultrahigh molecular weight polymer having a nonabrasive surface and both friction and heat resistant properties; thus, the ring, when adapted to a spinning frame processing synthetic yarns, permits the attainment of higher spinning speeds without the usual deleterious effects on the balloon control ring.

3,646,747
FALSE TWISTED RIBBONS
Alfred J. Strohmaier, Seaford, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 1, 1969, Ser. No. 846,711
Int. Cl. D02g *3/06*
U.S. Cl. 57—140 **5 Claims**

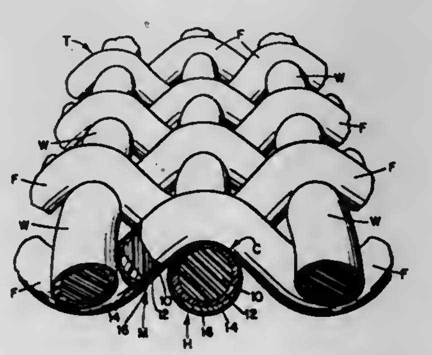
False twisting ribbons of from 100 to 2,000 denier using a mechanical false twisting spindle rotating at from 10,000 to 500,000 r.p.m. to produce a false twisted ribbon in which the ribbon is longitudinally folded on itself from both sides but contains substantially no twist but rather has embossed striations which give the appearance of a twist.

3,646,748
TENDONS FOR PRESTRESSED CONCRETE AND PROCESS FOR MAKING SUCH TENDONS
Frederic A. Lang, R.D. #1, Landenberg, Pa.
Filed Mar. 24, 1970, Ser. No. 22,249
Int. Cl. D07b *1/16, 7/14*
U.S. Cl. 57—149 **9 Claims**

A tendon suitable for posttensioning concrete and for use in other applications comprising a multiple-wire strand incased in a corrosion inhibitor in an amount sufficient to provide a circular enclosure greater than the outside diameter of the strand and having a seamless plastic jacket tightly covering said incased strand. A process of making said tendon which comprises the steps of coating and filling the interstices of a multiple-wire strand with a corrosion inhibitor, passing same through a circular die of a diameter greater than the strand to remove excess corrosion inhibitor and to form a circular enclosure of said inhibitor around said strand, and melt extruding a plastic jacket around said incased strand.



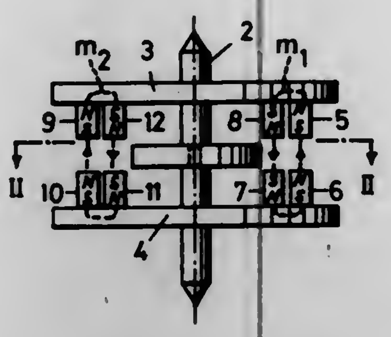
3,646,749
MACHINE-WASHABLE METALLIZED FIBROUS ARTICLE AND METHOD OF MAKING SAME
Philip J. Clough, Cape Elizabeth, Maine, and Allen H. Keough, Sudbury, Mass., assignors to King-Seeley Thermos Co., Ann Arbor, Mich.
Filed Dec. 24, 1969, Ser. No. 888,002
Int. Cl. D02g *3/36;* **B44d** *1/14*
U.S. Cl. 57—153 **10 Claims**



Fibrous article with heat-and-light reflecting quality provided by a metal coating on synthetic fiber substrates. The metal coating is undercoated and overcoated with resin systems. The article thus produced has functional heat and light-reflecting quality and decorative quality due to the metal coating of the fiber substrates due to the consistent with substantially retaining hand and softness of the fibrous article. The article is machine washable (i.e., retains its metal coat), abrasion and mar resistant, water repellent and dry cleanable consistent with high-moisture vapor transmission of the article (breathability).

3,646,750
ELECTRONIC CLOCKWORK DRIVE
Robert W. Reich, Merzhauserstr. 143, Freiburg im Breisgau, Germany
Filed Mar. 27, 1970, Ser. No. 23,263
Int. Cl. G04c *3/04;* **H02k** *33/02*
U.S. Cl. 58—28 A **15 Claims**

The specification discloses an electronic clockwork drive in which an oscillator, which is oscillatable relative to a stationary coil, has two circumferentially spaced magnet systems, each comprising two circumferentially spaced respectively oppositely polarized magnetic axes and each having an airgap. As the oscillator oscillates, each magnet system induces actuating voltage pulses in the coil when the respective magnet system is substantially centered over the coil and moving in a respective direction. The voltage pulses induced in the coil actuate a coil energizing circuit to supply a pulse of current to the coil, which delivers a drive impulse to the oscillator. Each magnet system thus develops a single drive impulse on the oscillator during each period of oscillation of the oscillator.

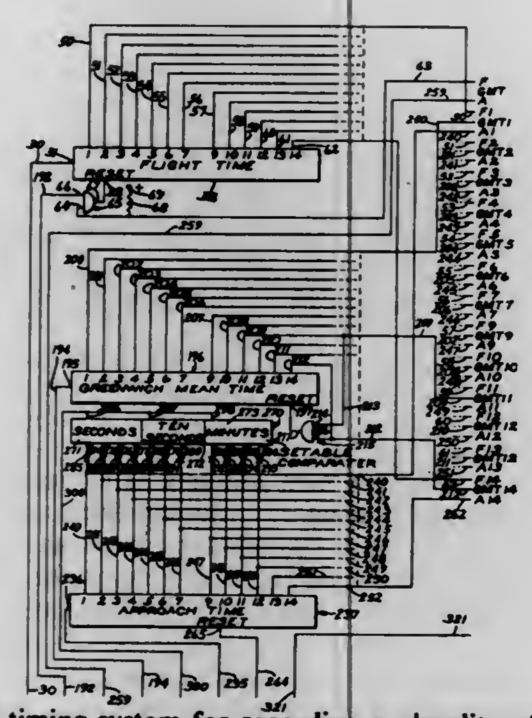


3,646,751
DIGITAL TIMING SYSTEM

Donald A. Purland, Eden Prairie, and Alan M. Gustafson, Minneapolis, both of Minn., assignors to Detection Sciences, Inc., Minneapolis, Minn.

Filed Dec. 5, 1969, Ser. No. 882,413
This application filed under Rule 47.
Int. Cl. G07c *1/00;* G04b *19/00*

U.S. Cl. 58—152 **12 Claims**



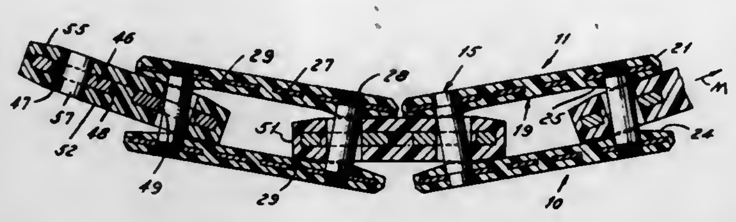
A digital timing system for recording a plurality of timing functions and displaying these functions in digital form. A high-frequency crystal control oscillator provides timing pulses which are fed to a pulse rate divider circuit which provides a plurality of outputs at different time rates. Each of the outputs of the divider circuit are fed to an individual counter circuit which counts the pulses to record a specified timing function. A digital display circuit is switchably connected between the outputs of each of the counter circuits to individually display the time recorded in each counter without disturbing the continued counting of the counters. The output of one of the counters is compared with a variable comparative circuit which can be preset over a range of predetermined times. When the output of the counter is equal to the preset time in the comparator, a signal is produced which will reset the counter and initiate an overtime count.

3,646,752
PLASTIC ENCASED METAL RIBBED FLEXIBLE CONVEYOR CHAIN

David H. Kampfer, St. Paul, Minn., assignor to Conveyor Specialties Company, St. Paul, Minn.

Filed Sept. 28, 1970, Ser. No. 75,998
Int. Cl. F16g *15/12*

U.S. Cl. 59—78 **4 Claims**



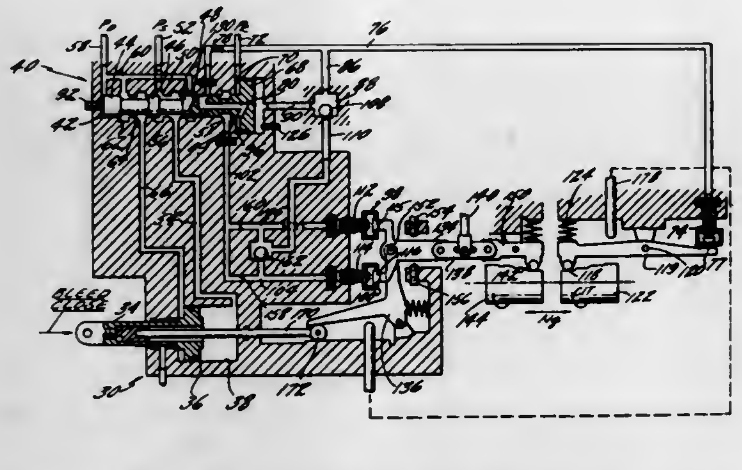
An improved flexible conveyor chain with side flexing capability while retaining good cross-sectional areas at stress positions. The chain structure is made of metal rib sections encased in plastic material which provides positive positioning and even cooling effects during manufacturing and strength in useage. The plastic material reduces or eliminates the need for chain lubrication. The edges of the chain elements have ramp edges to assist in ease of loading and unloading material to be moved by the conveyor chain.

3,646,753
ENGINE COMPRESSOR BLEED CONTROL SYSTEM

Michael E. Colman, Manchester, Conn., and Charles F. Stearns, East Longmeadow, Mass., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 28, 1970, Ser. No. 32,688
Int. Cl. F02c *9/14;* F02k *5/00;* F02c *9/04*

U.S. Cl. 60—39.27 **10 Claims**



Control means for a compressor bleed for a turbine-type of power plant judiciously schedules the opening and closing thereof in accordance with a predetermined schedule while also assuring that the acceleration and deceleration limits controlled by the fuel control are not reached until the bleeds are in the full open position.

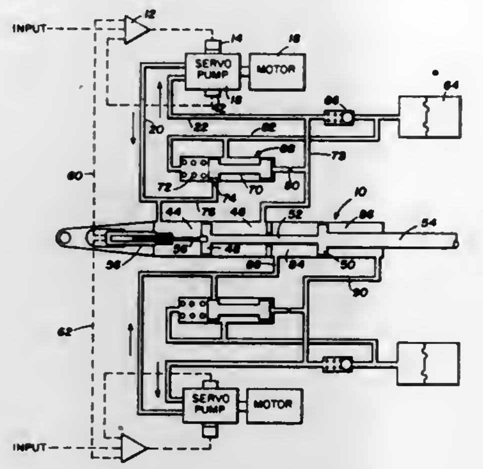
3,646,754
MOTOR OPERATED SERVO PUMP

Werner G. Koch; Robert H. Marchell, both of Arlington, and William G. Redmond, Dallas, all of Tex., assignors to LTV Electrosystems, Inc., Greenville, Tex.

Filed May 22, 1970, Ser. No. 39,732
Int. Cl. F15b *15/18*

U.S. Cl. 60—52 VS **13 Claims**

A power actuator in a hydraulic system is controlled in accordance with an electronic control signal energizing a variable displacement servo pump interconnected to the power actuator. In the hydraulic system, the variable displacement servo pump includes a swash plate directly coupled to and positioned by an electric motor. A transducer responds to the position of the swash plate and generates a feedback signal to balance out the effect of the electronic control signal. A pressurized reservoir supplies a base pressure to the hydraulic system when the swash plate of the variable displacement servo pump is in a neutral or null position. This reservoir is protected against an over pressure by a check valve. To compensate for unequal chamber volumes in the power actuator, a shuttle valve diverts excess fluid from the larger volume chamber to the reservoir.

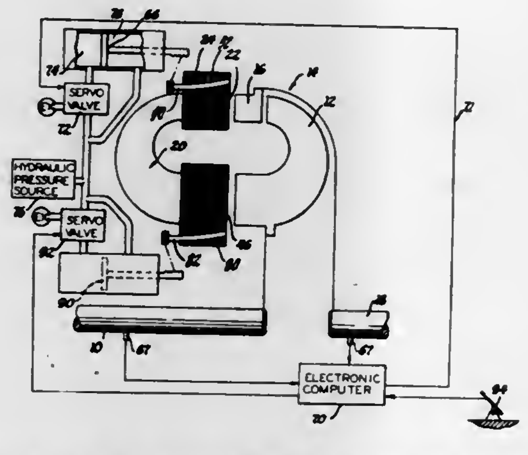


3,646,755
VARIABLE GEOMETRY TORQUE CONVERTER

Warren S. Sherman, Indianapolis; Dennis L. Troth, Speedway, both of Ind., and William A. Bennett, Danville, Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 14, 1970, Ser. No. 71,992
Int. Cl. F16d *33/00*

U.S. Cl. 60—54 **5 Claims**



This torque converter has a fluid flow control member with separate entrance and exit sections formed by packs of relatively movable discs with flow control passages therein. Controls are provided to relatively move the discs to vary converter geometry and the flow path through the entrance section to improve converter operating efficiency. Additional controls are provided to relatively move the discs of the exit section to vary converter geometry and change the fluid flow path through the exit section to provide for converter capacity control.

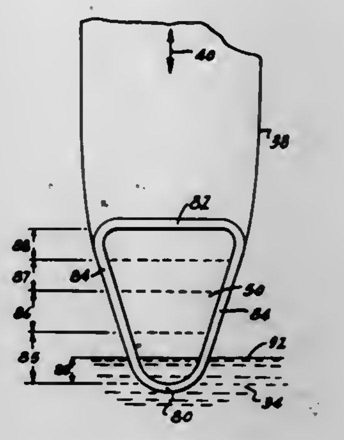
3,646,756
TRAPEZOIDIAL SCOOP TUBE

Henry J. Langlois, Detroit, Mich., assignor to American Standard Inc., New York, N.Y.

Filed Feb. 12, 1970, Ser. No. 10,759
Int. Cl. F16d *31/06*

U.S. Cl. 60—54 **4 Claims**

A variable speed fluid coupling having a scoop tube which has a trapezoidial fluid entrance opening such that the tube penetrates deeper into the fluid ring than conventional scoop tubes during constant speed operation; deeper penetration is believed to minimize bounce of the tube from the liquid ring.



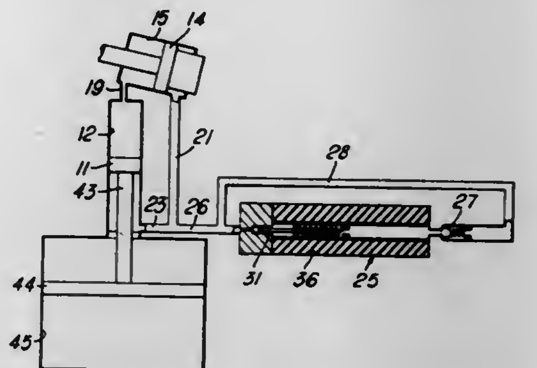
Further penetration of the scoop tube into the ring (as for deceleration) exposes relatively large areas of the opening to the fluid so that fluid ring thickness is rapidly diminished for rapid declutching of the coupling.

3,646,757
LOCK BOLT PLACING APPARATUS

John Stewart Sanders; Donald Stanley Savage, both of St. Albans, and Frederick Arthur Summerlin, Harpenden, all of England, assignors to Aerpat A.G.

Filed Sept. 29, 1969, Ser. No. 861,960
Int. Cl. F15b *7/00;* B25c *1/12;* F15b *15/18*

U.S. Cl. 61—54.5 HA **8 Claims**



The invention relates to a hydraulically operated lock bolt placing tool of the type comprising a double-acting master piston and cylinder and a double-acting slave piston and cylinder, connected together by two conduits to form a hydraulic intensifier. The relative size of the pistons is such that, on the return stroke, an excess of hydraulic fluid is generated in the return conduit. Connected to the return conduit is a hydraulic reservoir with a pressurized inlet valve. This ensures that, on the return stroke of the tool, pressure builds up in the return conduit to provide a force to pull the anvil off the swaged lock bolt collar. The hydraulic reservoir contains resilient sponge rubber.

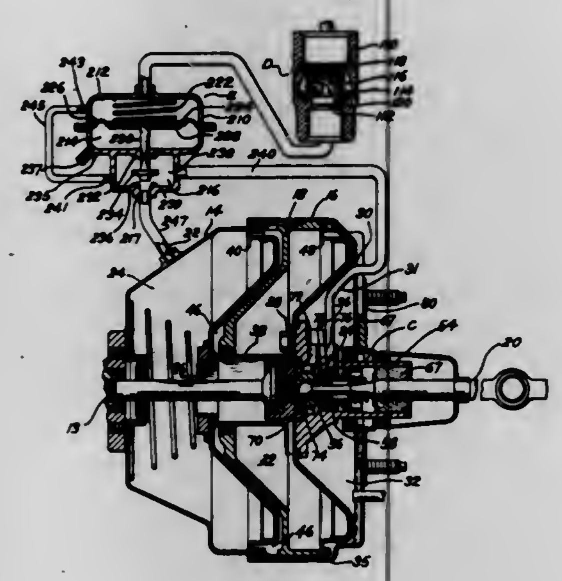
3,646,758
VACUUM CONTROL FOR SERVOMOTOR

Maxwell L. Cripe, South Bend, Ind., assignor to The Bendix Corporation

Filed Mar. 30, 1970, Ser. No. 23,638
Int. Cl. F15b *7/00*

U.S. Cl. 60—54.6 P **2 Claims**

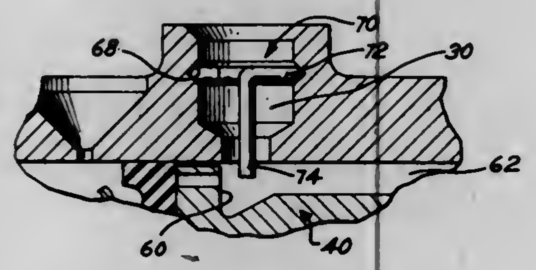
A control for a power brake system having a servomotor as the source of power. The servomotor has a housing with a diaphragm dividing it into front and rear chambers. Vacuum from the intake manifold of a vehicle is supplied to the front and rear chambers to suspend a power piston attached to the diaphragm member. A valve member secured to the rear chamber and responsive to movement of the brake pedal closes the vacuum communication in the rear chamber creating a pressure differential across the diaphragm member. This pressure differential causes the diaphragm member to move the power piston of the servomotor. A relay valve is placed in the vacuum line supplying the front and rear chambers. When the vacuum in the servomotor is below a predetermined value, the communication to the front chamber is sealed thereby assuring a pressure differential across the diaphragm upon brake application. A check valve is placed between the intake manifold and the relay valve which allows flow of air from the chambers but prevents backflow when the intake manifold vacuum is low. A vacuum reservoir has been provided to help maintain the vacuum level in the system when the manifold vacuum is low. In this brake system a number of brake applications are assured with power assist when the motor of the vehicle is not running.



3,646,759
SECONDARY PISTON STOP-WIRE RETAINER RING

Harold W. Hughes, and Paul B. Shutt, both of St. Joseph, Mich., assignors to The Bendix Corporation

Filed Aug. 7, 1970, Ser. No. 61,884
Int. Cl. F15b *7/00*; F16k *51/00*
U.S. Cl. 60—54.6 R **4 Claims**

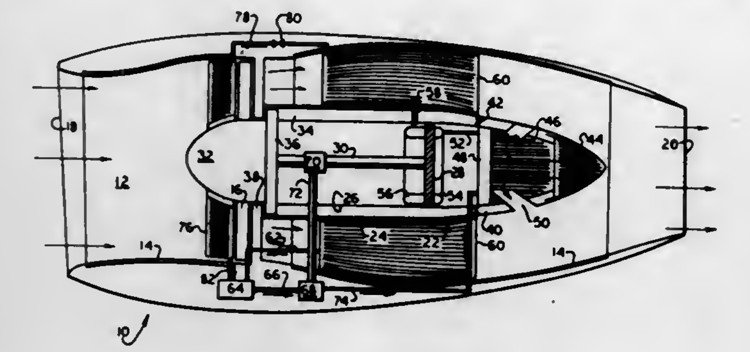


A novel stop for the secondary piston of a split master cylinder is disclosed. The stop includes a radially expandable, circumferentially extending portion received in a circumferentially extending groove provided in the secondary fill port of the master cylinder and another portion extending coaxially with the axis of the port that projects into the master cylinder bore. Movement of the secondary piston past the portion of the piston stop that projects into said bore is thereby prevented.

3,646,760
VAPOR CYCLE PROPULSION SYSTEM

Jack P. Waidelich, Bonita, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed June 1, 1970, Ser. No. 41,925
Int. Cl. F02k *3/06*
U.S. Cl. 60—204 **15 Claims**

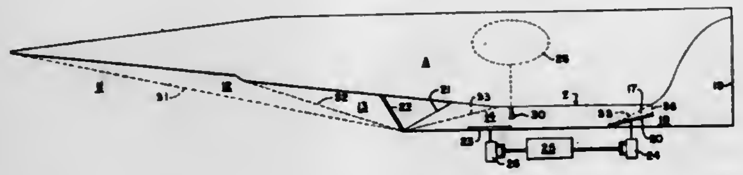


System comprises duct with entire power plant within a duct. Axial flow compressor driven by vapor turbine produces entire thrust in form of airflow. Combustor combines minor portion of airflow with fuel and burns mixture to produce heat for vaporizing suitable working fluid. Latter may be water, mercury, or one of the alkali metals. Vaporized fluid goes to turbine and operates it to drive compressor. Exhaust from turbine goes to condenser located in airflow so that all rejected heat is added to airflow within duct to increase its energy. The vaporizer and turbine may be located within a center body to conserve heat for shaft horsepower. Combustion gases mix with air within duct so there is no primary combustion gas jet. High velocity of airflow is still much lower than turbojet, producing considerable noise reduction. Lower temperature of air further reduces noise and makes possible maximum use of acoustic surfaces inside duct. All heat rejected or lost goes into airflow to produce maximum efficiency. High cycle efficiency results in low hydrocarbon exhaust emission.

3,646,761
METHOD AND APPARATUS FOR STARTING DETONATION COMBUSTION ENGINES

Leslie W. Norman, Scottsdale; Skillman C. Hunter, and George L. Perrone, both of Phoenix, all of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 7, 1961, Ser. No. 94,022
Int. Cl. F02k *7/10*
U.S. Cl. 60—204 **8 Claims**

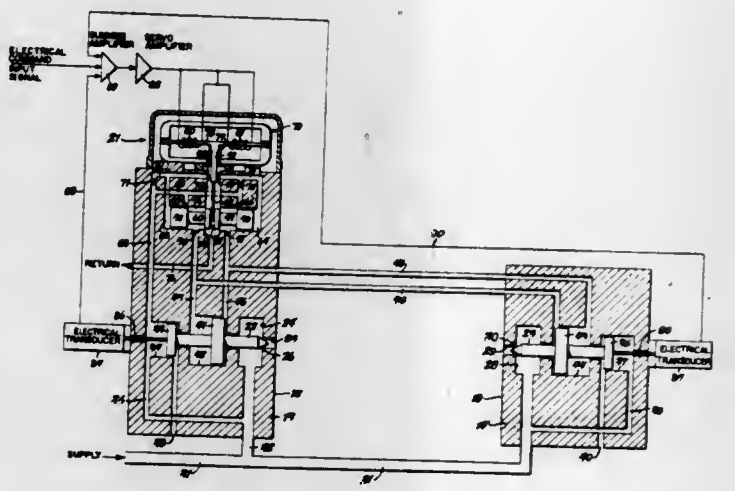


1. In a method of starting a detonation combustion engine having an aerothermodynamic duct which includes an adjustable inlet and an adjustable throat adjacent the combustion zone and is adapted to receive a hypersonic stream of air during normal operation, the steps comprising reducing the amount of air supplied by the inlet to the throat while simultaneously opening the throat until at least sonic velocity of the fluid stream is attained at the combustion zone, then gradually increasing the amount of air supplied by the inlet to the throat, feeding fuel into the fluid stream, and restricting the throat so as to adjust the flow to obtain the desired velocity, temperature and pressure for detonation in said combustion zone.

3,646,762
SECONDARY INJECTION THRUST VECTOR CONTROL

George W. Hawk; Lewis H. Geyer, both of East Aurora, N.Y.; Alfred J. Mastropole, Allendale, N.J., and Kenneth D. Garnjost, West Falls, N.Y., assignors to Moog, Inc., East Aurora, N.Y.

Filed Sept. 4, 1962, Ser. No. 221,079
Int. Cl. B63h *11/00*
U.S. Cl. 60—204 **31 Claims**

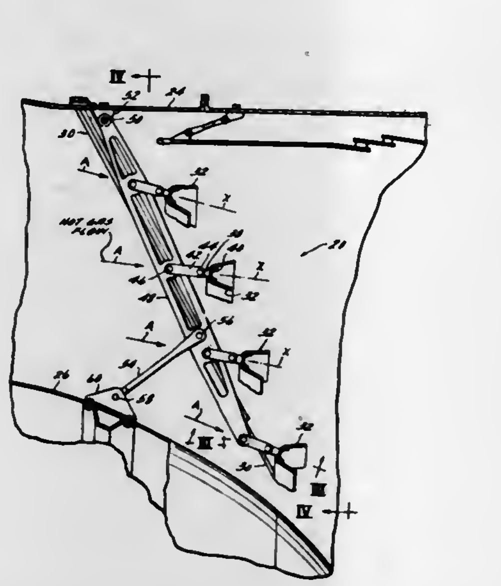


This invention relates to a method and apparatus for controlling the angular deflection of the thrust vector of a fluid stream discharged from the divergent section of a supersonic nozzle. In particular, the stream discharging from the nozzle is deflected by a fluid jet which is injected at a substantially constant velocity regardless of the amount of fluid injected.

3,646,763
GAS TURBINE ENGINE WITH IMPROVED AFTERBURNER

John K. Arand, Palos Verdes Peninsula, Calif., assignor to General Electric Company

Filed May 25, 1970, Ser. No. 40,298
Int. Cl. F02k *3/08*
U.S. Cl. 60—261 **4 Claims**

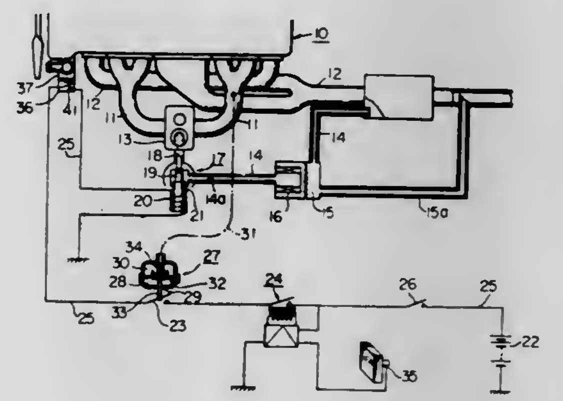


The disclosure shows an afterburner for a gas turbine engine comprising fuel injectors and concentric, annular, V-shaped gutters which function as flameholders. Links are pivotally mounted at their opposite ends to the gutters and to beams. The beams are pivoted on the outer casing of the afterburner and align the pivot axes of the links and the bisectors of the gutters with the direction of hot gas flow toward the gutters in the "hot" condition of the afterburner to prevent twisting of the gutters when their material strength is weakest.

3,646,764
AIR POLLUTION PREVENTIVE SYSTEM FOR MOTOR VEHICLES

Yasuo Nakajima, Yokosuka, and Yoshimasa Hayashi, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 27, 1970, Ser. No. 32,248
Claims priority, application Japan, May 30, 1969, 44/41638
Int. Cl. F01n *3/12*; F02m *25/06*
U.S. Cl. 60—279 **3 Claims**

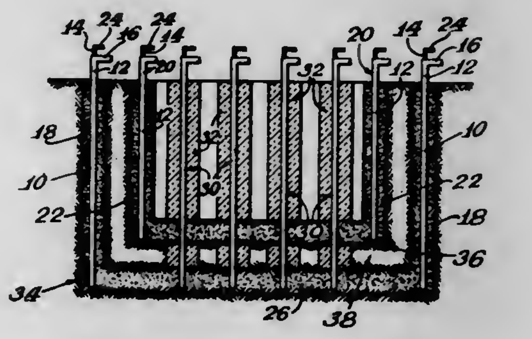


A vehicular air pollution preventive system with a unit or units constructed to reduce the quantity of nitrogen oxides and/or hydrocarbons under the control of means responsive to the engine temperature, and either one of the intake manifold vacuum, vehicle or engine speed, or a combination of any of these, which system includes control means responsive to a relatively cool temperature of the engine to deactuate the unit for reducing the quantity of nitrogen oxides in the exhaust gases and to actuate the unit for reducing hydrocarbons, and responsive to a relatively hot temperature of said engine to actuate the unit for reducing the quantity of nitrogen oxides and to deactuate the unit for reducing hydrocarbons.

3,646,765
LIQUID STORAGE CHAMBER

William W. Bodle, Bannockburn, and Phillip J. Anderson, Deerfield, both of Ill., assignors to Institute of Gas Technology

Filed May 19, 1969, Ser. No. 825,687
Int. Cl. B65g *5/00*
U.S. Cl. 61—.5 **10 Claims**

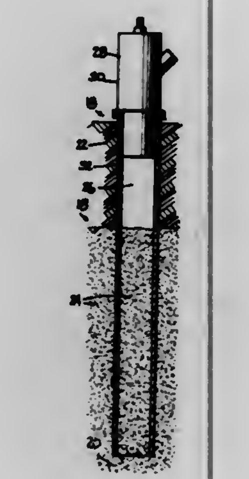


A below ground chamber for the storage of liquid gas at cryogenic temperatures and a method for constructing the same. An outer shell is formed and an inner shell is spaced interior of the outer shell so formed. The space between the two chambers is frozen under a controlled pressure for providing an internal stress in the frozen space. The unfrozen earth central of the frozen space is excavated to form the storage chamber and a roof is constructed over the chamber.

3,646,766
INSTALLATION OF SAND DRAINS

Joseph Lawrence Hilton, Oakland, N.J.; Charles Russell Graff, Incline Village, Nev., and Lewis Fred Cavin, San Lorenzo, Calif., assignors to Raymond International Inc., New York, N.Y.

Filed Aug. 23, 1968, Ser. No. 754,845
Int. Cl. E02b *11/00*
U.S. Cl. 61—11 **11 Claims**



Methods and equipment for installing sand drains in water-bearing earth; an open-ended tubular shell is lowered into the earth while allowing the water-bearing earth to freely enter into the interior of the shell; a close-fitting auger is used to remove the water-bearing earth from the shell and then the shell is filled with sand and subsequently withdrawn from the earth thus leaving the sand to provide the desired sand drain.

3,646,767
DITCH BUILDING APPARATUS

Ned R. Shelley, 119 W. Jackson, Riverton, Wyo.

Filed Apr. 29, 1969, Ser. No. 820,223
Int. Cl. E02f *5/02*
U.S. Cl. 61—41 **15 Claims**

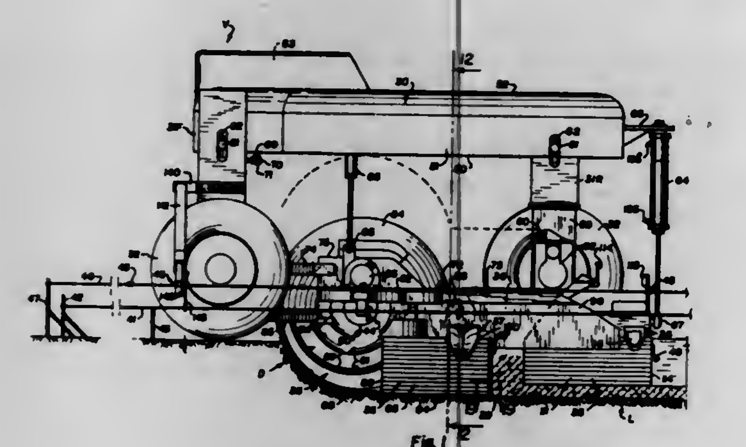


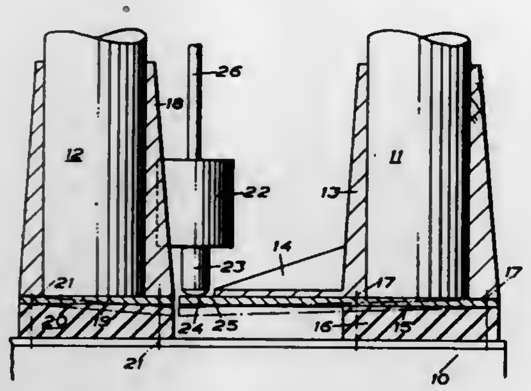
Fig. 1

A ditch building apparatus adapted to excavate a ditch trench and to line the same with concrete. The apparatus combines a digger, a concrete hopper and a forming section adapted to finish off the concrete. The apparatus is suspended from a vehicle with adjustable suspension means to hold the same at a proper depth and grade and to hold it level even with the movement of the vehicle over an irregular ground surface. A pocket forming and pocket finishing apparatus is carried on the digger and forming section. The pocket forming apparatus includes a ram which cuts a pocket in the earth at the side of a ditch trench which is then filled with concrete. The notch finishing apparatus includes a ram which extends into the pocket to form a notch in the concrete therein.

3,646,768
MINE ROOF SUPPORTS

Michael E. Whitaker, Altrincham, England, assignor to Gullick Dobson Limited, Ince, Wigan, Lancaster, England

Filed Mar. 31, 1970, Ser. No. 24,171
Claims priority, application Great Britain, Apr. 8, 1969, 17,849/69
Int. Cl. E21d *15/44*
U.S. Cl. 61—45 D **8 Claims**

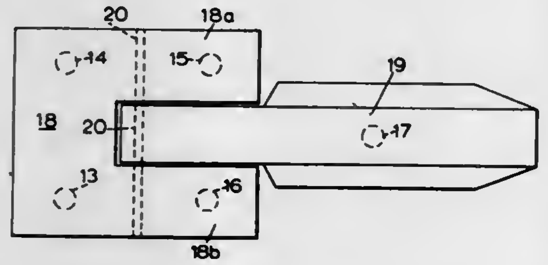


A self-advancing mine roof support has at least two extensible hydraulic props, mounted on blocks of elastomeric material, and a prop aligning or positioning means. The latter comprises a retractable and extendable device operative between the props of the support so as to be responsive to angular movement thereof and operative or operable to give the props an initial setting attitude when the support has been relieved of the roof load. A preferred form of retractable and extendable device is a hydraulic ram having a pressure fluid cylinder attached to one prop and a piston working in said cylinder and acting substantially vertically on a foot or member projecting laterally from the other prop. A single prop aligning or positioning means may be arranged to align or position three, four or more props of a support.

3,646,769
MINE ROOF SUPPORT

Thomas Pollard, Chorley, England, assignor to Gullick Limited, Wigan, Lancashire, England

Filed Sept. 16, 1969, Ser. No. 858,379
Claims priority, application Great Britain, Oct. 1, 1968, 46,434/68
Int. Cl. E21d *15/44*
U.S. Cl. 61—45 D **2 Claims**

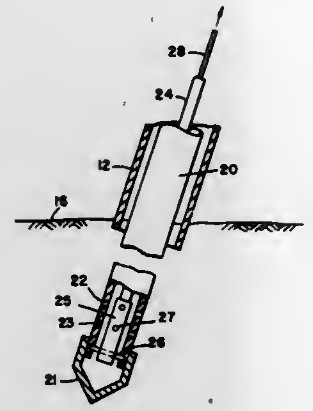


A mine roof support comprises a base structure, extensible prop means mounted on said base structure and a roof-engaging structure mounted on said prop means. The roof-engaging structure includes a canopy of U-shape or having a U-shaped part and a roof-engaging bar or member positioned or having a part positioned between or partially between the limbs of said U-shaped canopy or U-shaped part thereof. In one preferred embodiment of the invention the canopy is supported on at least one front prop and on at least one rear prop and the roof-engaging bar or member is pivotally connected to the canopy by a pivot having its axis positioned between said front and rear props.

3,646,770
METHOD AND APPARATUS FOR STABILIZING AN OFFSHORE DRILLING PLATFORM STRUCTURE

Francois Van Daalen, The Hague, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed June 5, 1970, Ser. No. 43,875
Int. Cl. E02d *21/00, 3/10*
U.S. Cl. 61—46.5 **8 Claims**

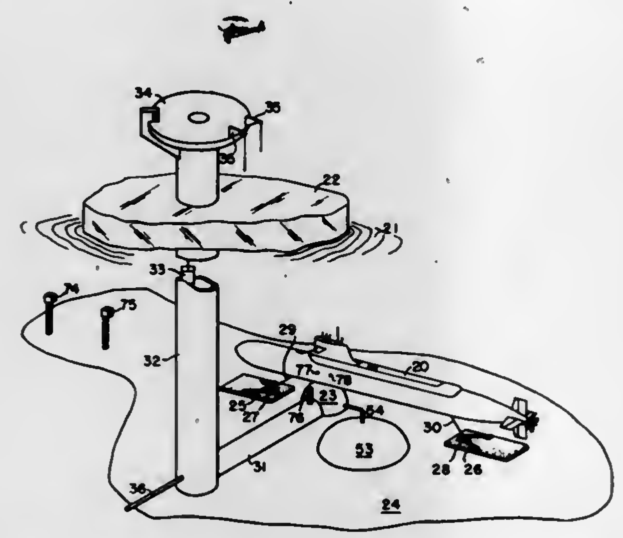


A method and apparatus for stabilizing an offshore drilling platform structure adapted to rest on the floor of a body of water by perforating at least one of the piles of the structure, thereby establishing fluid communication between the soil surrounding the pile and the interior of the pile. The fluid level in the pile is then maintained at a relatively constant low level.

3,646,771
UNDERWATER COMMUNICATION BETWEEN A VESSEL AND A STRUCTURE AND VESSEL-POSITIONING MEANS

Clarence Kirk Greene, 115 Woodside Road, Berkeley, Calif.

Filed Feb. 11, 1970, Ser. No. 10,321
Int. Cl. B63c *11/00;* **B63g** *8/04*
U.S. Cl. 61—69 A **24 Claims**

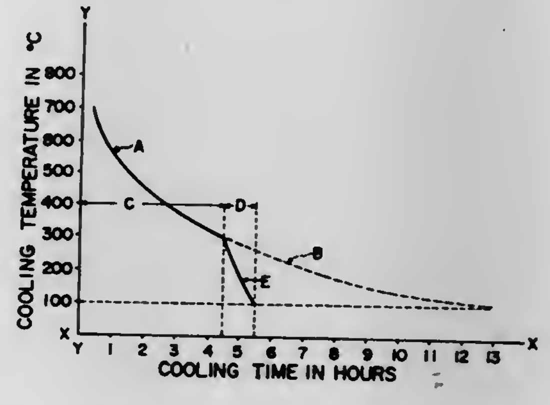


An underwater communicating connection between a marine vessel, such as a submarine, and a structure, such as a dock or underwater caisson or another marine vessel, for the passage of personnel, is formed by juxtaposing the vessel and structure to isolate a water-containing space between watertight doors on the vessel and structure, removing water from the space, and admitting air at subaqueous pressure, whereby the vessel is forced against the structure by hydrostatic pressure; the doors are then opened. A flexible sealing member outside of the connection on the vessel or structure may engage a sealing surface on the other for additional sealing. The dock may include a tower extending to the water surface. The vessel can be positioned by anchors resting on a platform or engaged to a frame fixed to the ground.

3,646,772
METHOD OF COOLING MOLDS

Hideo Ogi; Haruo Ozaki; Masaru Mishiro; Yoshikazu Horikawa, and Shunji Mori, all of Kitakyushi, Japan, **assignors to Nippon Steel Corporation, Tokyo, Japan**

Original application Sept. 16, 1968, Ser. No. 762,230, now Patent No. 3,548,845. Divided and this application Aug. 13, 1970, Ser. No. 63,580
Claims priority, application Japan, Sept. 22, 1967, 42/60482; Nov. 2, 1967, 42/70266
Int. Cl. F25d *31/00*
U.S. Cl. 62—62 **1 Claim**

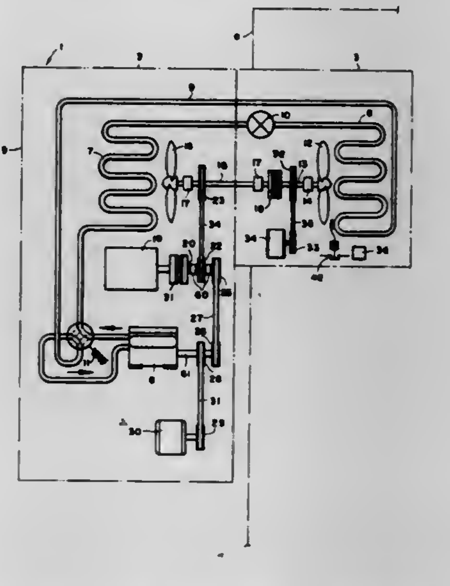


A method of water-cooling molds for casting steel ingots in which the molds are air-cooled in a cooling pit until their surface temperature is between about 500° C. and about 300° C., and then water-cooled by jetting cooling water onto the molds.

3,646,773
MOBILE REFRIGERATION SYSTEM

George L. Falk, and Daniel F. Jones, both of La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Sept. 26, 1969, Ser. No. 861,318
Int. Cl. F25b *13/00*
U.S. Cl. 62—160 **14 Claims**

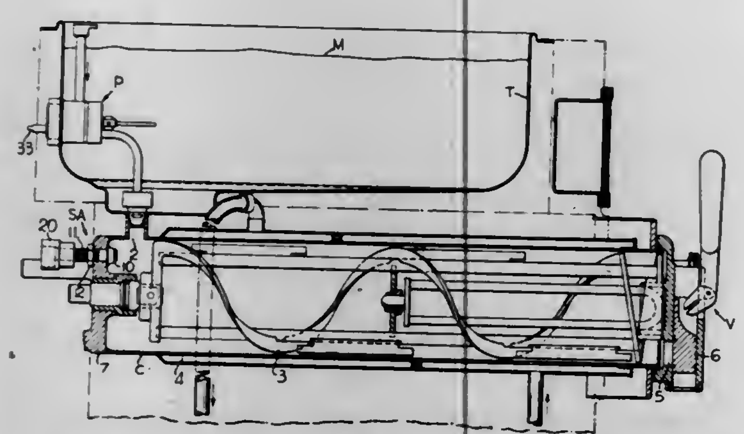


The compressor and evaporator and condenser fans of a mobile refrigeration system are driven by a continuously operating internal combustion engine. Temperature control of the refrigeration system when powered by the internal combustion engine is obtained by cycling the refrigeration system between heating and cooling cycles. A defrost cycle clutch is provided for disengaging the evaporator fan when the evaporator coil is defrosting. When an alternating current power source is available, the condenser fan and compressor may be driven by a standby electric motor, which is cycled off and on to obtain temperature control. A separate electric motor is provided to continuously drive the evaporator fan during this cycling of the standby electric motor. Means is provided to disengage the defrost clutch during operating of this separate electric motor. When the system is connected for standby motor operation, this separate electric motor is deenergized during the defrost cycle.

3,646,774
PRESSURE-SENSITIVE SWITCH ASSEMBLY

Bernfried M. Werner, Pompano Beach, Fla., assignor to Louis A.M. Phelan, Pompano Beach, Fla.

Filed July 29, 1970, Ser. No. 59,192
Int. Cl. F25c *7/10*
U.S. Cl. 62—188 **19 Claims**

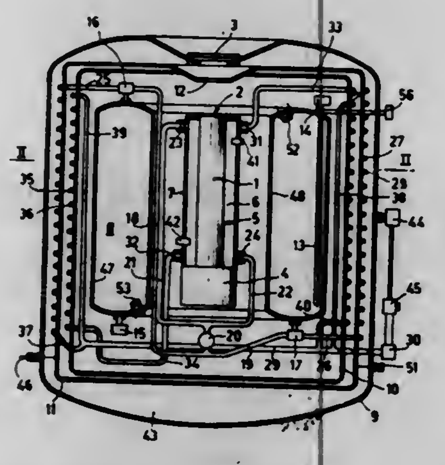


A pressure-sensitive switch assembly for measuring the pressure of material and having a measuring head which is in direct contact with the material to be measured. The head includes a flexible diaphragm to which is attached a rod that engages an electric contact switch. The assembly is an integral and self-contained, sealed unit which can be readily mounted on a supporting wall with the head on the interior of the vessel containing the material to be measured. The invention finds particular utility when used in a continuous freezer for measuring the pressure within the cylinder and then stopping the operation of the pump which pumps material into the cylinder, when a predetermined pressure is reached, thus the pump is turned off and no longer pumps material into the cylinder.

3,646,775
CRYOSTAT

Jacques Bonnerot, St-Cloud, and Henri Paradan, Meudon, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 9, 1970, Ser. No. 17,560
Claims priority, application France, Mar. 10, 1969, 6906690
Int. Cl. F25b *19/00*
U.S. Cl. 62—216 **10 Claims**

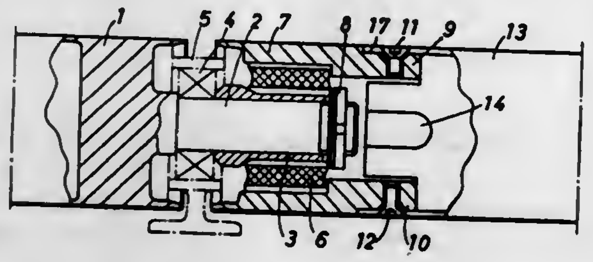


Cryostat for keeping an object at a constant low temperature, comprising an outer container which can be evacuated and in which a liquid container for cryogenic cooling liquid is disposed, the liquid container being annular and closed and substantially surrounding the object to be cooled, an inner container being present in the space between the annular liquid container and the object to be cooled, which inner container likewise substantially surrounds the object to be cooled and is in thermal contact therewith, a system of liquid ducts and a system of vapor ducts present for communicating between said containers with a blowoff valve in a vapor duct opening to the atmosphere outside the cryostat, and a control device present for controlling the pressure in at least the liquid container and the temperature in the inner container.

3,646,776
DRIVE SHAFT COUPLINGS

Lars-Goran Gustavson, Linnevagen 37, Aby, and Per-Erik Lindqvist, Stjerneldsvagen 1, Norrkoping, both of Sweden

Filed Apr. 1, 1970, Ser. No. 24,518
Int. Cl. F16d *3/16*
U.S. Cl. 64—11 R **6 Claims**

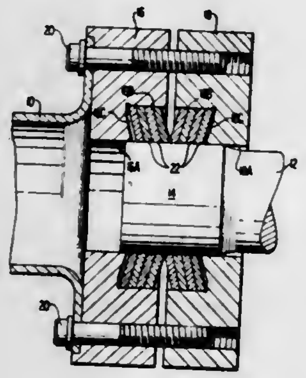


A device for coupling together coaxial parts or sections of a drive shaft, which parts are arranged in series, the coupling device including a sleeve containing a resilient or compressible ring. One of the shaft sections, in one embodiment of the invention, has a shaft that extends through the resilient ring. A second shaft section has a tubular end portion that fits over one end of the sleeve and is attached to the sleeve by means of screws. The resilient ring permits a slight axial movement of the sleeve when the assembly or separation of the shaft sections is required, while also taking up any small linear deviations that may arise between the two coupled shaft sections.

3,646,777
TORQUE TRANSMITTING COUPLING

James H. Anderson, and James H. Anderson, Jr., both of York, Pa., assignors to Coupling Corporation of America, New Hope, Va.

Filed Mar. 31, 1970, Ser. No. 24,095
Int. Cl. F16d *3/52*
U.S. Cl. 64—15 R **5 Claims**

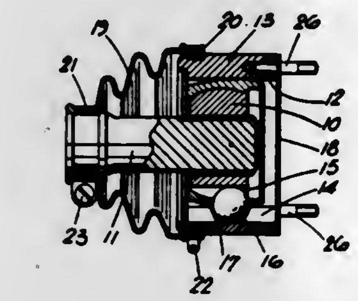


A coupling for transmission of torque between adjacent substantially aligned shafts includes a pair of bolting flanges carried at the end of one shaft and a smooth cylindrical section at the adjacent end of the other shaft. Each bolting flange includes a bore sized to snugly surround the end of the other shaft and a counterbore of larger diameter to enclose one or more Belleville springs in the annular space between the counterbore and the adjacent end of the other shaft. Reducing the axial spacing between the flanges flexes the Belleville springs to reduce their internal diameter and increase their external diameter thus increasing the torque transmitting capability of the coupling.

3,646,778
SEALED-TYPE UNIVERSAL JOINT

Leslie George Fisher, Birmingham, England, assignor to G.K.N. Birfield Transmissions Limited, Erdington, Birmingham, England

Filed Apr. 20, 1970, Ser. No. 29,882
Claims priority, application Great Britain, Apr. 22, 1969, 20,371/69
Int. Cl. F16d *3/84*
U.S. Cl. 64—32 **3 Claims**

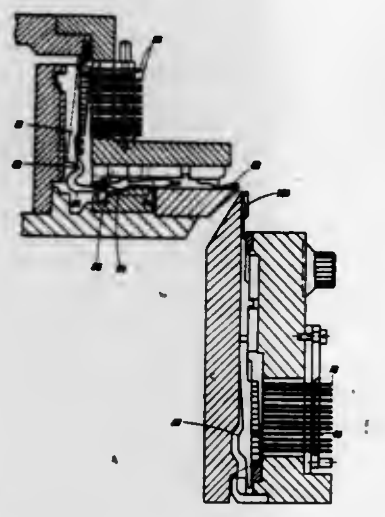


One end of the bore formed in the cylindrical outer member of a universal joint of the kind which includes torque-transmitting balls located in oppositely facing grooves in the inner and outer members is closed by a closure plate which is held in engagement with an end face of the outer member by mechanical interlocking engagement with thread formations on attachment fasteners for securing the outer member to a flange on the drive line of a vehicle.

3,646,779
KNITTING MACHINE FOR KNITTING DOUBLE FACE JACQUARD PATTERN MATERIAL

Otto Nuber, Tubingen, and Richard Norz, Rottenburg, both of Germany, assignors to Fouquet-Werk, Frauz & Planck, Rottenburg Neckar, Germany

Filed Sept. 24, 1968, Ser. No. 762,075
Claims priority, application Germany, Sept. 26, 1967, F 53 595
Int. Cl. D04b *9/08, 9/28*
U.S. Cl. 66—25 **2 Claims**

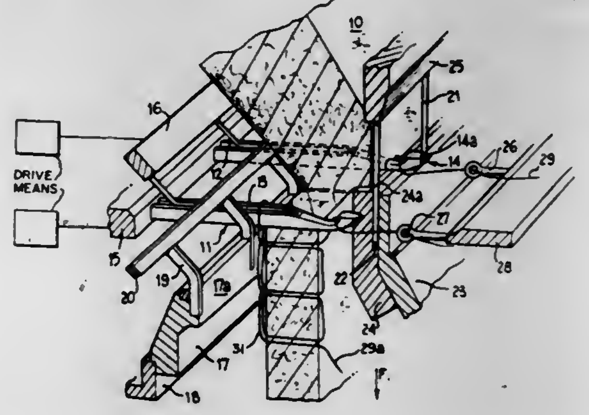


Plain single Jersey stitches are first formed, in accordance with a predetermined Jacquard pattern, with yarn of a first color with cylinder needles, then with dial needles, the yarn being supplied to respective needles alternately when the needles are in knitting position, selected needles (in accordance with the pattern) of the dial, (or cylinder) being disabled when pattern selected cylinder (or dial) needles are knitting; then the needles of the dial (or cylinder) are caused to knit with yarn of a different color, the previously knitting needles being disabled; the yarns of the first and second colors are interknitted at crossover points by transferring yarn of one color from the needle of one group (i.e., cylinder) to needles of the opposite group (i.e., dial), and vice versa. A pair of similar Jacquard pattern controllers are located, in radial alignment, in such a manner that one controller selects the cylinder needles and the other the dial needles simultaneously, the needles of the dial and cylinder being, in accordance with the pattern, brought to knitting position alternatingly.

3,646,780
APPARATUS AND METHOD FOR MAKING A STITCH-BONDED FABRIC

Arno Edgar Wildeman, Bowdon, England, assignor to Cosmopolitan Textile Company Limited, Chester, England

Filed Oct. 17, 1969, Ser. No. 867,331
Claims priority, application Great Britain, Oct. 19, 1968, 49,695/68
Int. Cl. D04b *23/10*
U.S. Cl. 66—85 A **4 Claims**



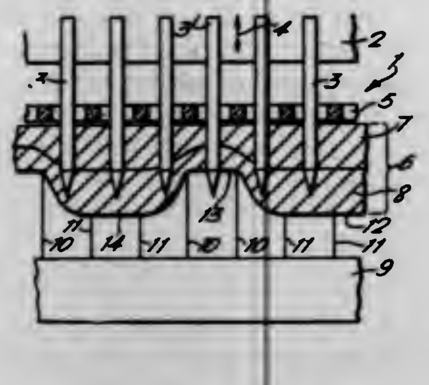
Method and apparatus for the production of a stitch-bonded fabric in which the stitches are locked by the formation of tufts or loops of fiber which are interlocked into the stitches of thread produced by the reciprocation of a series of tubular or slide needles. The invention also provides timing of the movements of the slide or tubular needles relative to the movements of the closing wires or rods for these needles and to the control of the distance moved by the needles and the closing wires or rods so that the wires or rods do not penetrate the fibrous batt completely and the degree of penetration of the needles is controlled to prevent the creation of voids in the batt which will prevent the formation of fiber loops when the needles are retracted to form stitches.

3,646,781
METHOD AND APPARATUS FOR PRODUCING KNITTED FLEECES ON MULTINEEDLE KNITTING MACHINES

Walter Scholtis; Siegfried Ploch; Friedrich Schattauer, all of Karl-Marx-Stadt; Martin Schonfuss, Hohenstein-E., and Horst Heilmann, Karl-Marx-Stadt, all of Germany, assignors to Forschungsinstitut fur Textillechnologie, Karl-Marx-Stadt, Germany

Filed June 17, 1970, Ser. No. 47,493
Int. Cl. D04b *21/00*
U.S. Cl. 66—85 **22 Claims**

The present method teaches the production of knitted fleeces on multineedle knitting machines from a plurality of strand layers by entering the needles to different depths and thus into different strand layers and then forming stitches about bunches of strands seized by the needles out of different strand layers. The present apparatus comprises pressure means especially in the form of a plurality of pressure bars of different length or having contoured zones, which

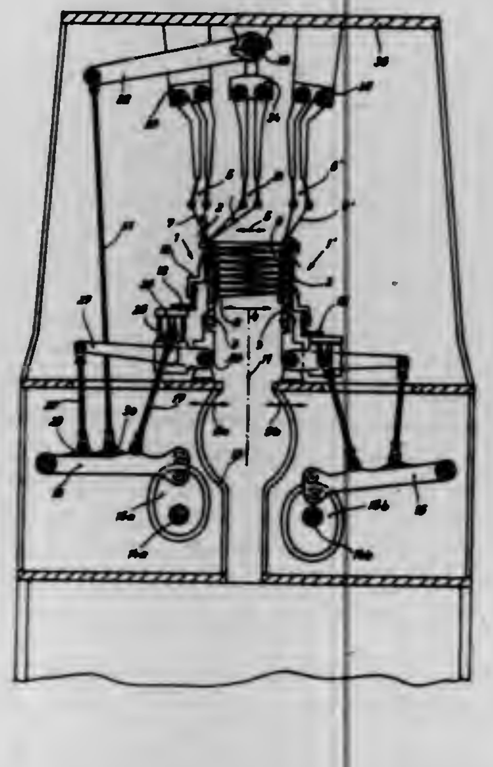


press the strand layers against the needles to different extents in different places whereby different needles enter to different depths into the strand layers.

3,646,782
WARP KNITTING MACHINE FOR PILE FABRICS

Karl Kohl, Chlorodonstrass 10, 6053 Obertshausen, near Offenbach am Main, Germany

Filed Oct. 28, 1970, Ser. No. 84,862
Claims priority, application Japan, Nov. 1, 1969, 44/88031
Int. Cl. D04b *23/02*
U.S. Cl. 66—87 **3 Claims**

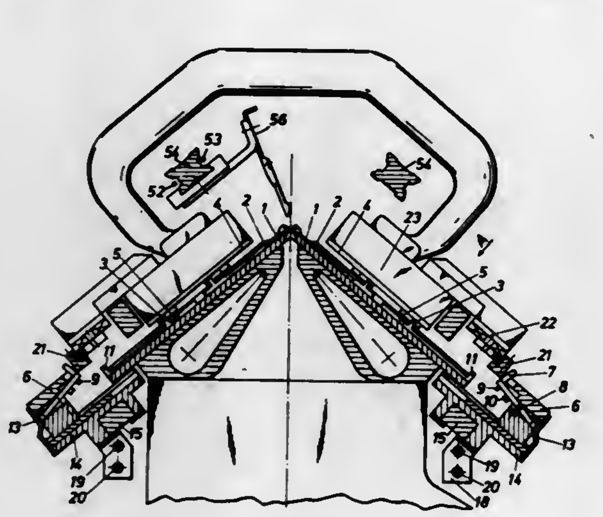


In a warp knitting machine for making pile fabrics, the two groups of first guide bars supplying yarn to knitting needles on two needle bars for respectively knitting ground fabrics on the needles perform the usual shogging motions, but do not rock, the necessary relative movement of yarn guides and knitting needles transverse to the needle bar elongation being provided by oscillation of the needle bars. One or more second guide bars arranged between the groups of first guide bar are rocked in the usual manner to connect the two ground fabrics by means of pile loops which are later cut to separate two pile fabrics.

3,646,783
KNITTING MACHINE WITH NARROWING AND WIDENING MECHANISM

Erich Krause, Bopfingen, Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber KG, Westhausen, Germany

Filed June 5, 1970, Ser. No. 43,781
Int. Cl. D04b *15/02*
U.S. Cl. 66—95 **5 Claims**

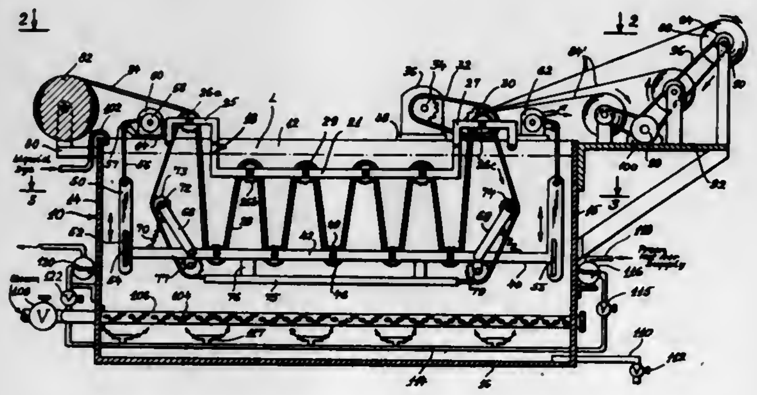


Carriers are mounted on brackets which may be shifted along each needle bed of a V-bed flat knitting machine for alignment with jacks and needles in each bed and may be moved in the direction of knitting needle elongation on the brackets by solenoids and return springs. A control arm pivotally mounted on each carrier engages an aligned jack and moves the jack toward and away from a level on which it may be engaged by cams on the knitting machine carriage, and thereby select needles whose selvage loops are to be transferred to needles of the other needle bed.

3,646,784
DYE MACHINE WITH FABRIC TENSION ADJUSTMENT

Thomas Zarrello, 80 Passaic Road, Passaic, N.J.

Filed Apr. 27, 1970, Ser. No. 31,930
Int. Cl. B05c *3/132, 9/14*
U.S. Cl. 68—20 **7 Claims**

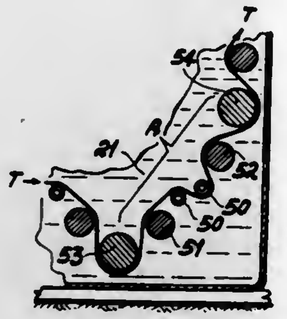


A dyeing machine comprises a tank for containing liquid dye. Upper and lower rollers are rotatably supported in the tank for carrying fabric to be dyed. The lower rollers can be adjusted in the tank for adjustably tensioning the fabric. An apertured steam pipe passes steam into the tank for heating the liquid dye and keeping it stirred. Two pumps are connected to another pipe having nozzles opening into the tank. One pump exerts suction for draining the liquid dye. The other pump feeds hot air into the tank to dry the dyed fabric. The rollers are driven by endless chains provided with laterally extending pins to engage margins of the fabric for holding it transversely taut and smooth.

3,646,785
APPARATUS FOR FINAL IMMERSION WASHING OF CONTINUOUS PIECES OF FABRIC

Roberto Arioli, 2, Via Pagoni, 82501 Saronno, Italy

Filed Aug. 10, 1970, Ser. No. 62,290
Claims priority, application Italy, Aug. 13, 1969, 20882 A/69
Int. Cl. B05c *3/132*
U.S. Cl. 68—175 **8 Claims**

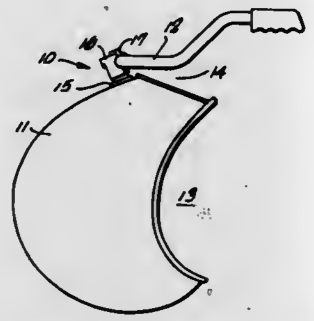


The disclosure describes an apparatus for continuous immersion washing of pieces of fabric and more particularly of knitted fabric, which comprises a plurality of washing tanks provided with a sequence of groups of rollers, each group comprising closely spaced washing, widening and feed rollers which are arranged for guiding the progressing fabric through the liquid baths within said tanks, said rollers alternatively acting on said fabric to exert a gentle transversal and longitudinal pull to ensure complete maintenance of the fabric in its full width while being processed.

3,646,786
EQUIPMENT ACCESSORY LOCKING APPARATUS

Paul I. Baker, 15018 Moorepark, Sherman Oaks, Calif.

Filed Mar. 6, 1970, Ser. No. 17,165
Int. Cl. E05b *73/00*
U.S. Cl. 70—59 **15 Claims**



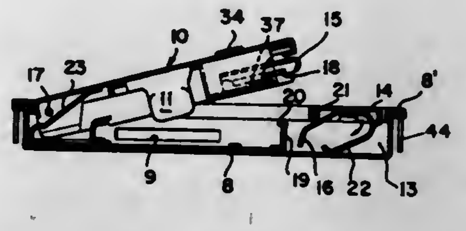
A releasable locking arrangement is disclosed herein having a receptacle portion mounted on the shell of a helmet which includes a central opening defined by a circular flange. A latch mechanism including a slidable shaft carrying an expandable means is utilized which is adapted to be inserted through the central opening of the receptacle and subsequently expanded into gripping and holding relationship with the flange. The latch mechanism is mounted on a part of a vehicle and includes a lock for selectively operating the latch mechanism into and out of engagement with the receptacle portion.

3,646,787
CLOSURE FOR SUITCASES AND THE LIKE WITH JIMMYPROOF LOCKING MECHANISM

Ernst Norrenberg-Sudhaus, Iserlohn, Germany, assignor to Heinrich Sudhaus Sohne Metallwarenfabrik, Iserlohn, Germany

Filed July 14, 1969, Ser. No. 841,362
Claims priority, application Germany, July 13, 1968, S 65 510
Int. Cl. E05b *65/48;* **E05c** *19/08*
U.S. Cl. 70—70 **11 Claims**

A swingable or slidable latch in a housing secured to the body of a suitcase, adapted to engage a cooperating tongue on the suitcase lid, is indexable in or spring-urged into an engaged position from which it can be released by depression of a swingable flap except when blocked by a locking

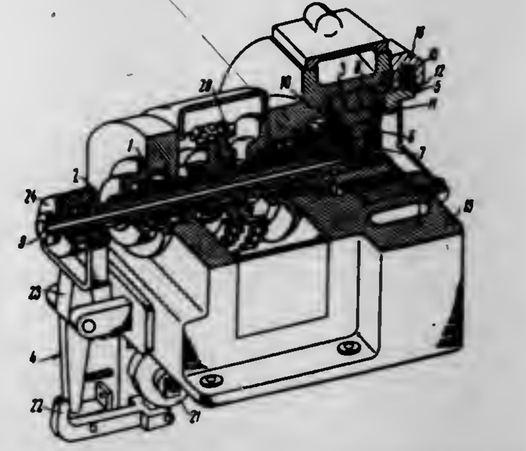


mechanism. The release may be effected through the intermediary of a resilient member which yields ineffectually in the blocked condition of the latch.

3,646,788
REDUCER HEAD OF AUTOMATIC ROTARY-SWAGING MACHINE FOR REDUCING METAL WIRE PARTS

Naum Iosifovich Beletsky, ulitsa Postysheva, 5, kv. 9, and Mikhail Lvovich Chepovetsky, Brest-Litovsky prospekt, 23, kv. 83, both of Kiev, U.S.S.R.

Filed Aug. 26, 1969, Ser. No. 853,061
Int. Cl. B21b *37/12*
U.S. Cl. 72—8 **3 Claims**

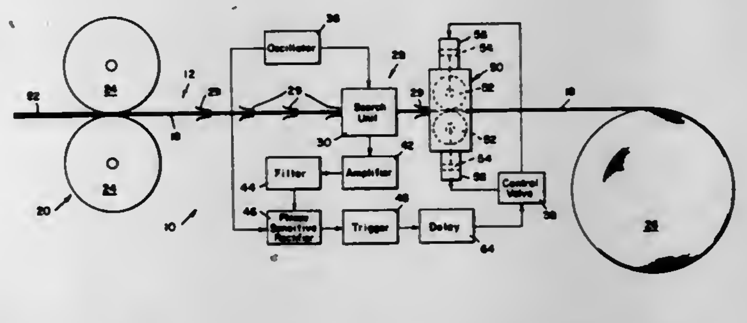


A reducer head for rotary-swaging machines, wherein an inner and an outer shaft together hold therebetween a working tool including a plurality of axially spaced ring members. Means are provided for effecting an output signal pulse upon each rotation of the head, such means including an insulating insert in one of the rings to chop a DC current fed through such ring and a current collector in sliding contact with the ring, the ring member and current collector rotating relative to each other. In this manner a direct readout may be made of the rotational speed and hence the number of swaging operations per unit time.

3,646,789
NONDESTRUCTIVE TESTING SYSTEM

Friedrich M. O. Forster, Der Schoene Weg 144, 741 Reutlingen, Germany

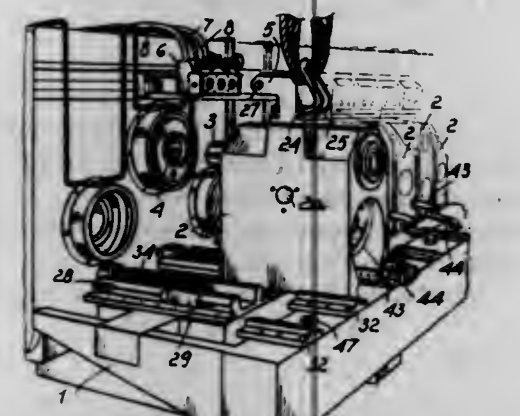
Filed July 22, 1969, Ser. No. 843,439
Int. Cl. B21b *37/00;* **B21d** *43/28;* **B26d** *5/38*
U.S. Cl. 72—10 **5 Claims**



A system and method are disclosed for nondestructively testing materials such as wires, rods, bars, etc., while they are very hot (for example red hot or even white) and to mark and/or separate any defective segments of the material.

3,646,790
APPARATUS FOR A MULTIHEAD ROLLING UNIT ARRANGED TO ENABLE THE RAPID REMOVAL AND REPLACEMENT OF SAID UNIT

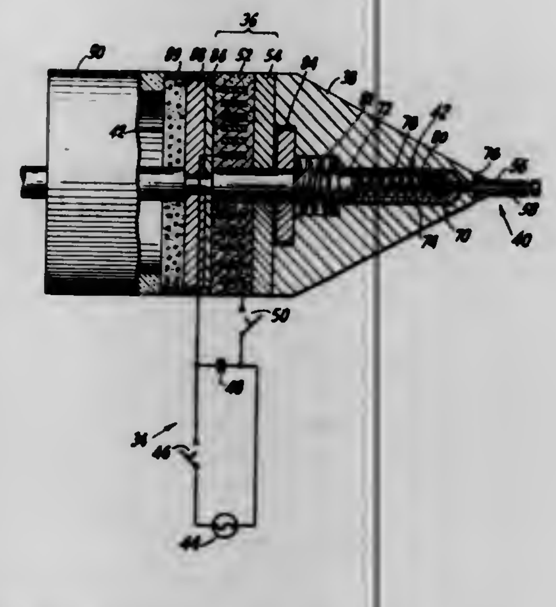
Ilario Properzi, c/o Continuus S.p.A. Via Cosimo del Fante 10, Milan, Italy
Filed Nov. 7, 1969, Ser. No. 870,556
Claims priority, application Italy, Nov. 21, 1968, 24035 A/68
Int. Cl. B21b *45/02*, *27/06*
U.S. Cl. 72—43 **3 Claims**



An apparatus for multihead rolling units in which each unit is removably mounted on a fixed bed and provided with a lubricating and cooling fluid distributor. Said distributor comprises two portions fast with the fixed bed and the unit, respectively. Said portions include direct operation valve means arranged to automatically open and close the fluid flow passage in the engagement and disengagement phases, respectively, during the sliding movement of said unit along respective guides.

3,646,791
METHOD AND APPARATUS FOR DEFORMING A METAL WORKPIECE, FOR UPSETTING RIVETS, AND FOR BLIND RIVETING

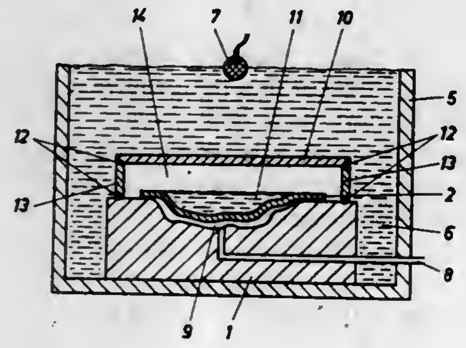
Basil P. Leftheris, East Northport, N.Y., assignor to Grumman Aerospace Corporation, Long Island, N.Y.
Continuation-in-part of application Ser. No. 863,045, Oct. 2, 1969. This application Nov. 6, 1970, Ser. No. 87,483
Int. Cl. B21d *26/14*; **B21j** *15/24*
U.S. Cl. 72—56 **7 Claims**



Method and apparatus for deforming a metal workpiece, for upsetting rivets, and for blind riveting which is accomplished by passing a stress wave through the metal workpiece or rivet sufficient to render it momentarily plastic and simultaneously forming it. The apparatus is basically comprised of means for generating a stress wave and a stress wave focusing device or amplifier. In operation, a workpiece is placed in a die or shaping means. The stress wave amplifier is then arranged to direct or focus the stress wave to the metal workpiece. Next, a stress wave is generated and passed through the stress wave focusing device, imparting a momentary state of plasticity to the metal workpiece. The momentarily plastic metal workpiece is then formed or shaped as desired.

3,646,792
APPARATUS FOR SHOCK-DEFORMATION OF WORKPIECES

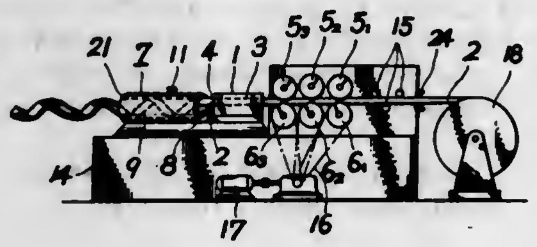
Heinrich Hertel, and Dietrich Ruppin, both of Berlin, Germany, assignors to said Hertel, by said Ruppin
Filed Dec. 31, 1969, Ser. No. 889,587
Claims priority, application Germany, Nov. 15, 1968, P 18 09 866.3
Int. Cl. B21d *26/08*
U.S. Cl. 72—56 **24 Claims**



A die is located in a receptacle and has an exposed surface of predetermined contour which it is desired to impart to a workpiece. Support means is provided for supporting a workpiece proximal to the exposed surface in such position relative to the latter as to be deformable into conformance with the exposed surface. A shock energy transmitting medium is accommodated in the receptacle surrounding the die and the workpiece. Shock-energy producing means is provided for producing shock-energy in the medium. Shock-energy transfer means is interposed between the medium and the workpiece for receiving shock energy from the former and for transmitting on optimum amount of the shock energy to the latter.

3,646,793
DEVICE FOR MANUFACTURING A HELICALLY PREFORMED ELEMENT

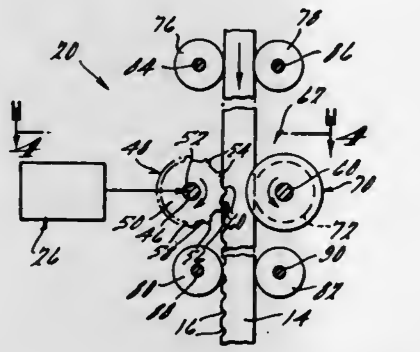
Tatsuo Teraoka, No. 198, 3-chome, Higashi-toyonaka-cho, Toyonaka-shi, Osaka, Japan
Filed Sept. 22, 1969, Ser. No. 859,946
Claims priority, application Japan, Sept. 9, 1968, 43/64759; June 9, 1969, 44/45564
Int. Cl. B21f *35/02*; **B21b** *15/00*; **B21d** *5/08*
U.S. Cl. 72—137 **13 Claims**



The invention relates to a device for continuously manufacturing a helically preformed element of any desired length by unwinding a flat bar from a drum on which the bar is wound in coils, feeding the bar between a group of rolls and into a first die and extruding the same therefrom into a flat bar of arcuate section and forming the flat bar thus formed arcuate in section into a helix by extruding same from a second die.

3,646,794
METHOD FOR COLD-ROLLING GRATING WORKSTOCK

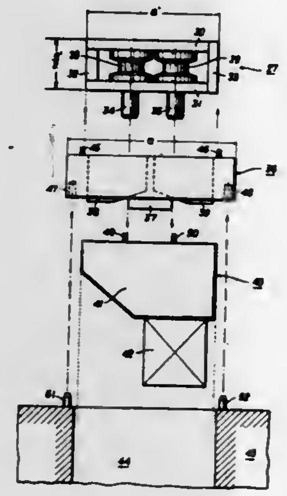
Paul Tishken, Birmingham, Mich., assignor to Tishken Products Co., Detroit, Mich.
Filed Apr. 8, 1969, Ser. No. 814,289
Int. Cl. B21h *8/00*
U.S. Cl. 72—187 **9 Claims**



A method of forming grating material from elongated, generally flat workstock, comprising the steps of cold-forming a series of adjacently oriented notches or recessed portions along at least one edge of the workstock by peripherally engaging a rotatable externally ribbed or toothed roller element with the workstock, and thereafter passing the workstock between a plurality of spaced rollers and thereby straightening and flattening the workstock, and finally cutting the workstock into preselected lengths preparatory to assembling the same into a unitized grate structure.

3,646,795
ROLLING STAND, PARTICULARLY FOR SHAPING A CAST BAR IMMEDIATELY UPON LEAVING A CONTINUOUS CASTING PLANT, AND ROLLING MILL

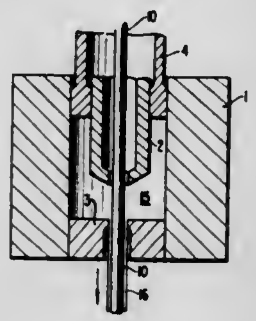
Ernst Hinterholzl, Linz, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria
Filed July 24, 1969, Ser. No. 844,322
Claims priority, application Austria, Apr. 23, 1969, A 3912/69
Int. Cl. B21b *31/08*, *35/00*
U.S. Cl. 72—238 **7 Claims**



A unitized construction system for rolling stand assemblies and rolling mills, particularly intended for shaping cast bars immediately upon leaving a continuous casting plant, is proposed. In the rolling stand assemblies of the invention, which are mounted on base frames or baseplates, the rolling stand, or the rolling stand with part of its driving gear system, is vertically removably mounted on the base frame or plate, the driving gear system, or a part thereof, is detachably mounted on the base frame or plate, and the base frame or plate is vertically removably mounted on the base so that either the base frame or plate together with the driving gear system or with part thereof is removable from the base following removal of the rolling stand or of the rolling stand with part of the driving gear system, or the base frame or plate together with the rolling stand and the driving gear system is vertically removable as a compact unit. The multibar rolling mill comprises several adjacent trains of such rolling stand assemblies having base plates and base frames uniformly dimensioned with respect to the size of the rolling stands, so that they can be interconnected to structural units up to the size of the entire rolling mill.

3,646,796
A PROCESS FOR THE MANUFACTURING OF COMPOSITE METAL WIRE

Eihachiro Tanaka, Sendai-shi; Takeji Fukuda, Kanuma-shi; Kenkichi Yamaji; Yasuhiko Miyake; Hiroshi Ota, and Katsuo Kimura, Hitachi-shi, all of Japan, assignors to Hitachi Cable Limited, Chiyoda-ku, Tokyo, Japan
Filed Sept. 26, 1969, Ser. No. 861,392
Claims priority, application Japan, Sept. 28, 1968, 43/70353
Int. Cl. B21c *23/22*, *25/02*
U.S. Cl. 72—258 **1 Claim**

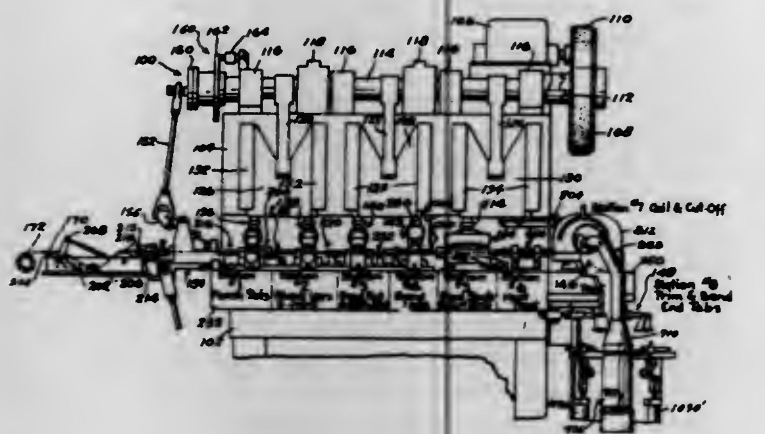


The process for manufacturing a composite metal wire comprises extruding and coating a metal onto a metallic core wire. By this method, a traction force is added to the produced composite wire and said core wire is heated, making possible the production of a composite metal wire provided with a metal layer which can be extruded at lower temperature than the core wire and increasing the corrosion resistance of the core wire.

3,646,797
MACHINE FOR FORMING PISTON RING SPACER-EXPANDERS FROM STRIP STOCK

Roy E. Overway, Grand Haven, Mich., assignor to Sealed Power Corporation, Muskegon, Mich.
Filed May 21, 1970, Ser. No. 39,498
Int. Cl. B21d *31/00*, *28/00*; **B21j** *13/10*
U.S. Cl. 72—326 **12 Claims**

A machine for making spacer-expanders for piston oil rings of the type described in U.S. Pat. No. 3,477,732. The machine comprises a punch press having a plurality of stations through which strip stock is fed progressively in accurately predetermined increments, the strip stock being worked between dies at each station to transform the strip stock into completed rings. The press includes one or more punching stations where the strip stock is pierced and blanked, one or more forming stations where the pierced and notched strip is bent to form the spring legs of the spacer-expander and then curled into a channel-shaped cross section, a coiling station where the channel-shaped stock is fashioned into a coil, and a cutoff station where each coil is sheared from the strip to form the semifinished ring. The press also includes a special transfer apparatus for transferring the semifinished ring to a final work station wherein the end joints are trimmed and formed to final configuration, after which the finished rings are loaded automatically in stacked relation on a cylindrical mandrel.



3,646,798

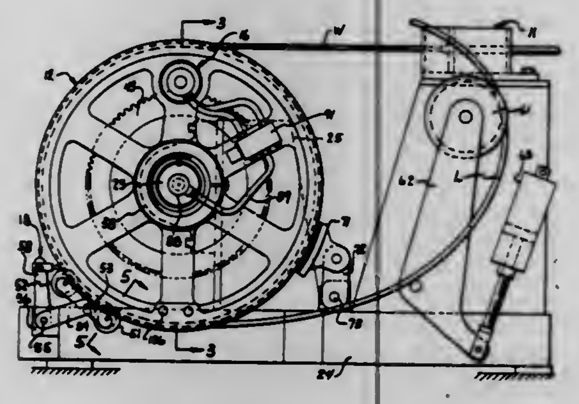
WIRE DRAWING APPARATUS AND METHOD

Richard A. Alcock, Rockford, Ill., assignor to Fastener Engineers, Inc., Rockford, Ill.

Filed Feb. 9, 1970, Ser. No. 9,669

Int. Cl. B21c *1/02*

U.S. Cl. 72—289 **19 Claims**



A drum-type wire drawing apparatus and method wherein an intermediate coil of wire is wrapped in a single layer on a drawing drum assembly having inlet and outlet portions, the inlet portion is drivingly rotated with a sufficiently high torque to pull the wire through the die and wrap the drawn wire on the inlet portion, and the coil of wire is forced axially along the inlet portion onto the outlet portion where it is unwrapped from the drum assembly, and the wraps of wire on the outlet portion of the drum assembly are driven in the same direction and relative to wraps of wire on the inlet portion of the drum assembly to maintain the coil of wire tightly wrapped around the drum assembly.

3,646,799

METHOD OF MAKING MOLDS FOR CONTINUOUS CASTING MACHINES

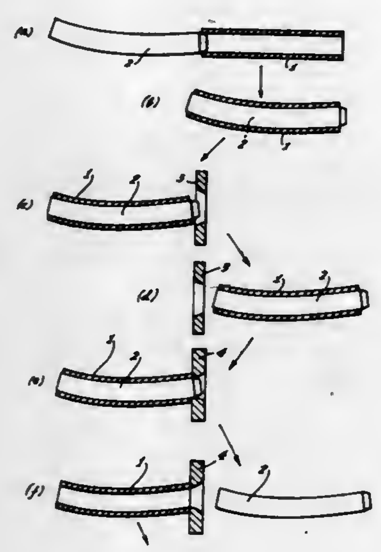
Adolf Kipp, and Heinz Payk, both of Osnabruck, Germany, assignors to Kabel-und Metalwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Dec. 15, 1969, Ser. No. 885,126

Int. Cl. B21d *51/00*

U.S. Cl. 72—370 **5 Claims**

A method of making molds for use in continuous casting machines is disclosed, wherein a mandrel is forced into a pipe for the latter to assume overall configuration of the mandrel. The pipe is cold-worked on the mandrel to assume contour thereof in detail of surface configuration, the pipe is removed therefrom subsequently.



3,646,800

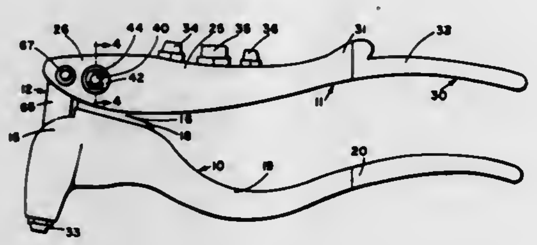
MANDREL RIVET-SETTING TOOL

Alan Martin, 44 Lantern Lane, Sharon, Mass.

Filed Feb. 12, 1970, Ser. No. 10,891

Int. Cl. B21d *9/05*

U.S. Cl. 72—391 **7 Claims**



A mandrel rivet-setting tool which provides for ready adjustment in the gripping strength of the jaws and provides, if desired, means for collecting the mandrels. The tool may be used for rivets having mandrels formed over a wide range of diameters and of a range of materials.

3,646,801

STAPLER DEVICE

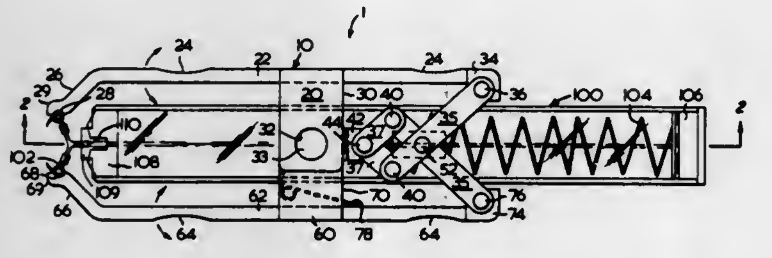
Italo Caroli, Westmount, Quebec, Canada, assignor to DMS Industries Limited, Lachine, Quebec, Canada

Filed Dec. 9, 1969, Ser. No. 883,383

Claims priority, application Canada, July 4, 1969, 056,155

Int. Cl. B21d *9/08*

U.S. Cl. 72—410 **3 Claims**



A stapler device is described which can house a magazine containing surgical staples or clips for closing an open wound. Preferably the magazine will be disposable. The stapler device has two complementally formed jaws which have

flanges thereon for enabling such jaws to be connected together so as to be pivotable about a common axis. A set of lever arms are joined at one end thereof to the two jaws, and at the other end to the magazine containing the surgical staples. These lever arms function to convert pivotal movement of the jaws about the common axis to reciprocal and preferably substantially linear movement of the magazine relative to the stapler device. This reciprocal movement of the magazine enables one surgical staple to be advanced at a time preparatory to application to the open wound. Receding of the magazine enables the staple-applying nose portion of the jaws to come substantially together to effect closing of the surgical staple as it is applied to the wound. A scissors-type spring can be provided, if desired, on the jaws to return the same to a neutral rest position, automatically. If this return spring is omitted, two positive squeezing actions are required, one to apply the surgical staple, and the other to open the jaws apart and advance the magazine forwardly to dispense the next surgical staple in readiness for application thereof to the wound. Either way, complete control over the operation of the stapler device remains with the person who is holding such device in his hand.

3,646,802

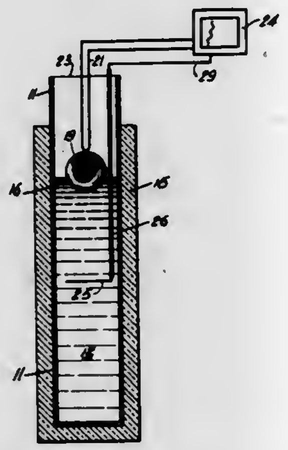
AUTOMATIC POUR-POINT-MEASURING METHOD AND APPARATUS

Jerry L. Nolting, Fishkill, and Alan D. Rouse, Pawling, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 11, 1970, Ser. No. 18,426

Int. Cl. G01n *25/02*

U.S. Cl. 73—17 **13 Claims**



A method and apparatus for determining pour point of a substance. The substance is first cooled below its pour point and a temperature-measuring probe is placed resting on the top surface. Then the substance is warmed from the top down while the probe temperature is continuously measured. The temperature will remain constant from the time the probe begins to sink until it is no longer free to do so. This is the pour point temperature.

3,646,803

PARAMAGNETIC GAS-MEASURING DEVICE

Emilio G. Meyer, Milan, Italy, assignor to Mine Safety Appliances Italiana, S.p.A., Milan, Italy

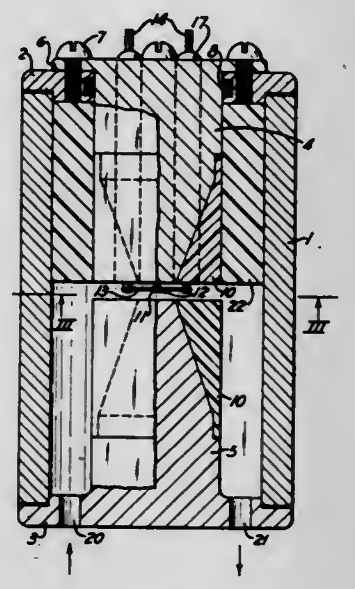
Filed Mar. 6, 1970, Ser. No. 17,146

Claims priority, application Italy, Dec. 1, 1969, 25193 A/69

Int. Cl. G01n *27/18*

U.S. Cl. 73—27 A **9 Claims**

The ends of a hollow cylindrical magnet are closed by closures, from which pole pieces extend toward each other with their inner ends spaced apart to form an airgap. The device is provided with an inlet and an outlet for a gaseous mixture that may contain a paramagnetic gas, such as oxygen or nitricoxide. Four electrical resistance heating elements are spaced along a substantially diametric line extending through the gap, with a pair of the elements disposed at each side of the gap. Wires lead from each element out of the magnet for connecting them in an electric circuit to heat them and the surrounding gaseous mixture. This heating, when a paramagnetic gas is present, creates a magnetic wind that moves the gaseous mixture into the gap between the two pairs of heating elements and out of it across them for removing heat from the two innermost elements and transferring it to the outermost elements. The difference in temperature between the inner and outer elements is a measure of the concentration of the paramagnetic gas in the mixture.



3,646,804

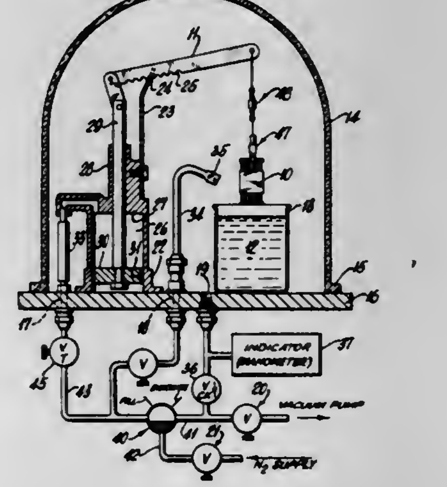
GROSS LEAK DETECTOR AND METHOD

Lester W. Myers, Seminole, Fla., assignor to Electronic Communications, Inc., St. Petersburg, Fla.

Filed Jan. 21, 1970, Ser. No. 4,701

Int. Cl. G01m *3/10*

U.S. Cl. 73—45.5 **26 Claims**



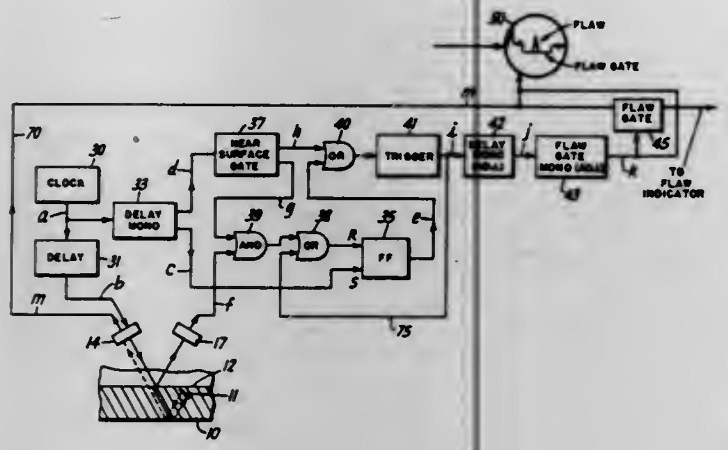
The invention contemplates observing the gross-leak condition of an article by immersing the same in a liquid inert to the material of the article. A chamber defines a limited volume surrounding the liquid and the article, and the chamber is evacuated while the article is immersed. As pressure reduces to a substantially evacuated condition, the immersed article is observed for the onset of telltale bubbles. The article is then promptly removed from the liquid while still at reduced pressure, thereby allowing the article to begin to dry immediately. The volume is then returned to ambient pressure as drying proceeds. Various specific refinements and embodiments are described.

3,646,805

ULTRASONIC FLAW DETECTION CIRCUIT

William T. Walters, Houston, Tex., assignor to AMF Incorporated

Filed Oct. 3, 1969, Ser. No. 863,599
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.9 8 Claims



EXEMPLARY CLAIM

1. Ultrasonic inspection apparatus for directing ultrasonic energy into a member to be inspected and for producing output signals only during that time when true flaw signals would be expected to occur. the apparatus comprising: a source of recurring pulses. a first transducer coupled to said source of recurring pulses for producing corresponding pulses of ultrasonic energy. said transducer directing ultrasonic pulses along a single path that is oblique to a near surface of the member and also producing flaw pulses in response to received ultrasonic pulses reflected from flaws within said member. a second transducer located adjacent said near surface and disposed to receive pulses of ultrasonic energy transmitted by the first transducer along said path and reflected from the near surface. said second transducer producing near surface reflected pulses in response to the received ultrasonic pulses reflected from the near surface. means coupled to said source of recurring pulse for producing a gating pulse at a time after the occurrence of each transmitted ultrasonic pulse. each gating pulse having a time duration that includes the expected time of arrival at said second transducer of an ultrasonic pulse reflected from the near surface. a first gating means for gating each near surface reflected pulse that occurs simultaneously with a gating pulse. means responsive to near surface reflected pulses passed by the first gating means for producing corresponding flaw gating pulses. said flaw gating pulses having a time duration to include the expected time of arrival of a corresponding ultrasonic pulse received at the first transducer after having been reflected from a flaw in said member. a flaw gate coupled to said first transducer and controlled by said flaw gating pulses for passing flaw pulses from said first transducer. and output means responsive to the occurrence of flaw pulses passed by said flaw gate.

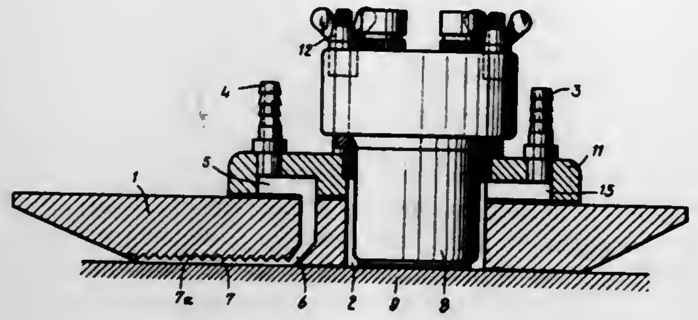
3,646,806

ULTRASONIC PROVE SYSTEM FOR FLAW-DETECTION OF MATERIAL

Yoshio Yamaguchi, and Osamu Watanabe, both of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Chiyoda-Ku, Tokyo, Japan

Filed June 3, 1970, Ser. No. 43,020
Int. Cl. G01n *29/00*
U.S. Cl. 73—71.5 1 Claim

An ultrasonic flaw-detecting system comprising a storing chamber for liquid formed between a shoe and cover therefor, a flaw-detecting opening and a precooling passage provided through said cover and said shoe, the shoe-side face of said precooling passage having a sawtooth configuration, an ultrasonic flaw-detecting device positioned in said flaw-detecting opening, and inlets for supplying liquid mounted through said cover.

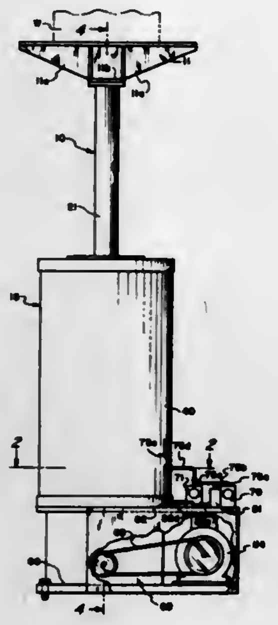


3,646,807

TRANSMISSIBILITY CONTROLLED VIBRATION TESTING APPARATUS AND METHOD

Robert P. Gray, Pebble Beach, and John O. Beal, Pacific Grove, both of Calif., assignors to Monterey Research Laboratory, Inc., Monterey, Calif.

Filed May 18, 1970, Ser. No. 38,162
Int. Cl. G01m *7/00*
U.S. Cl. 73—71.6 16 Claims



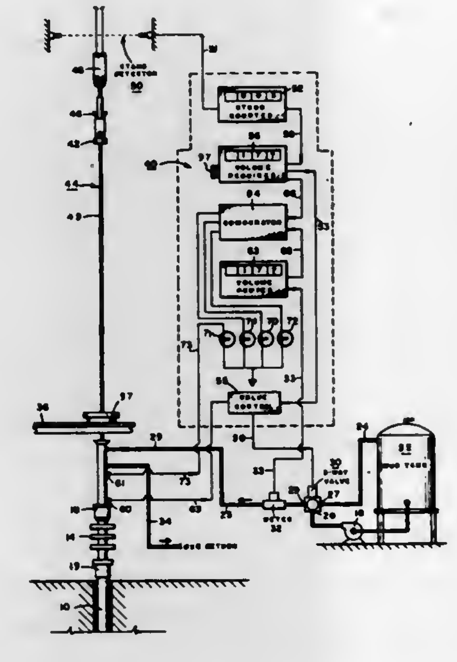
Apparatus and method for the sinusoidal vibration testing of articles in which a fluid spring of an adjustable stiffness is disposed between a test table with a test specimen thereon and a mechanical reciprocator. The stiffness of the fluid spring controls the amplitude of vibration transmitted to the test specimen. By adjusting the opposing fluid pressure on either side of a piston or by adjusting volumetric capacity of the chamber on either side of the piston, the stiffness of the fluid spring can be regulated.

3,646,808

METHOD FOR AUTOMATICALLY MONITORING AND SERVICING THE DRILLING FLUID CONDITION IN A WELL BORE

Loren W. Leonard, 8345 Triola, No. 33, Houston, Tex.

Filed Aug. 28, 1970, Ser. No. 67,706
Int. Cl. E21b *47/10*
U.S. Cl. 73—155 12 Claims



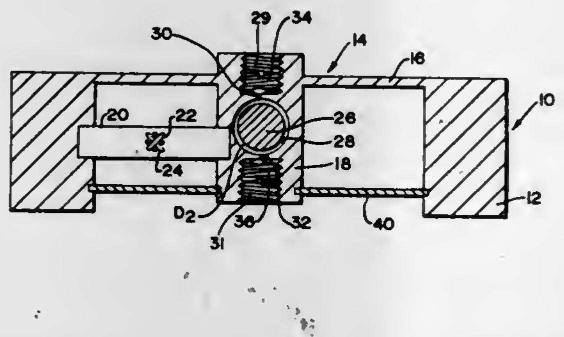
This invention automatically monitors and services the drilling fluid condition of a well bore during drill pipe withdrawal by determining the amount of fluid required to replace the amount of steel removed therefrom. The required volume of fluid is then compared with the volume of fluid pumped into the borehole during the fluid refilling operation. The result of this comparison is used, among other things, to monitor kick or loss conditions which may occur during drill pipe withdrawal.

3,646,809

ADJUSTABLE TRANSDUCER OVERLOAD STOP

Jean-Pierre A. Pugnaire, Arlington, Mass., assignor to Bytrex, Inc., Waltham, Mass.

Filed Jan. 16, 1970, Ser. No. 3,472
Int. Cl. G01l *1/26*
U.S. Cl. 73—141 A 5 Claims



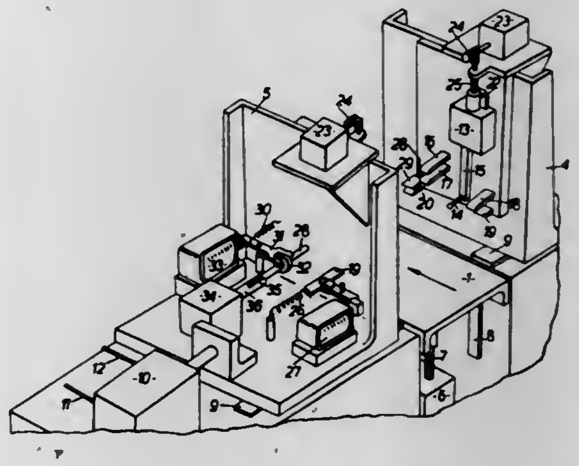
An overload stop for a transducer. A pin extends through and is spaced from an aperture in a load-deflectable element thereby limiting the travel of the deflectable element to the adjusted clearance between the pin and the sides of the aperture.

3,646,810

CANTILEVERED SPRING PRESSURE MEASUREMENT AND ADJUSTMENT

Patrick Arnold Taysom, Tonbridge, Kent; Brian Mark Lewis, Winchmore Hill, London, and Clive Francis Kittel, Pinner, Middlesex, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed July 8, 1969, Ser. No. 60,782
Claims priority, application Great Britain, July 10, 1968, 32,910/68
Int. Cl. G01l *5/00*
U.S. Cl. 73—161 12 Claims



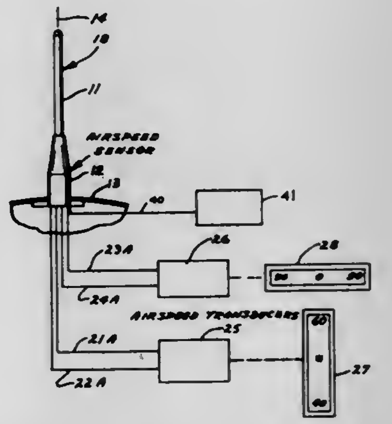
Apparatus for automatic measurement of the pressure provided by a cantilevered spring against a restraint and for the adjustment of said pressure to within desired limits. A probe is pressed against said spring lifting it from its restraint and the amount of force applied by the probe to lift the spring from its restraint is measured. If this measured force is not within predetermined limits, a bifurcated member is placed about the spring near the support from which it is cantilevered and said bifurcated member rotates so as to deform the spring in a direction such that the spring pressure will be within desired limits.

3,646,811

PRESSURE SENSOR FOR DETERMINING FLUID VELOCITIES

Richard V. DeLeo, Hopkins, and Floyd W. Hagen, Minneapolis, both of Minn., assignors to Rosemount Engineering Company, Minneapolis, Minn.

Filed Sept. 22, 1969, Ser. No. 859,804
Int. Cl. G01c *21/10*
U.S. Cl. 73—182 15 Claims



A fluid-measuring system comprising an orthogonal velocity sensor utilizing fluid pressures which can be adapted for use in flight or mobile or fixed installations. The sensor comprises a probe that is internally divided into four compartments with the longitudinal axis at right angles to the plane of orthogonal measurement, and with sensing ports oriented in proper relationship to sense the orthogonal directions of velocity moving past the sensor. By measuring pressure differences between chambers on opposite sides of the probe, and using suitable pressure instrumentation the relative airspeed in the orthogonal directions can be determined.

3,646,812

APPARATUS AND METHOD FOR AUTOMATIC QUANTITATIVE ANALYSIS OF SUBSTANCES BY SLIGHT ENTHALPIMETRIC DIFFERENCE

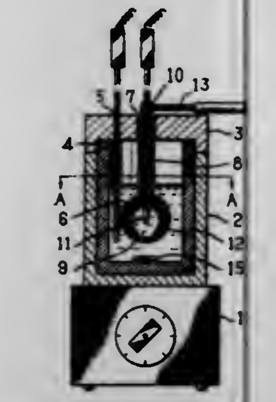
Teruji Ishii, 26-2, Totsukamachi, Shinjuku-ku, Tokyo, Japan

Filed Aug. 8, 1969, Ser. No. 848,473

Claims priority, application Japan, Aug. 26, 1968, 43/61002

Int. Cl. G01k *17/08*

U.S. Cl. 73—190 R **9 Claims**



This invention relates to an apparatus and method for quantitatively analyzing a test sample based on an enthalpogram obtained by automatic recording wherein the test sample and an additive solution, such as a dissolving, diluting or reacting solution, are brought to the same temperature and then rapidly mixed to give rise to such dissolving, diluting and reacting heat respectively and the slight temperature changes be caught as said enthalpogram in an adiabatic system.

3,646,813

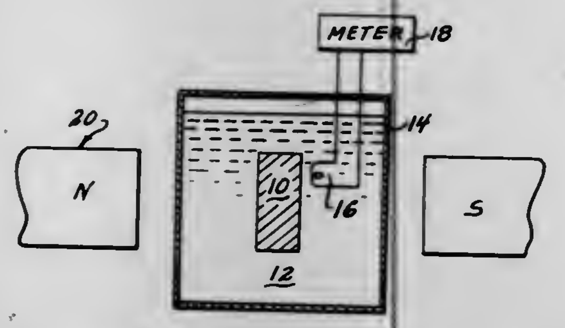
CRYOGENIC-SENSING DEVICE USING URANIUM MONOPHOSPHIDE-URANIUM MONOSULPHIDE

Moshe Kuznietz, Chicago; Gerard H. Lander, Clarendon Hills, both of Ill., and Yehuda Baskin, Shaker Heights, Ohio, assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 9, 1969, Ser. No. 856,428

Int. Cl. G01k *7/36*; G05d *23/20*; G01r *29/08*

U.S. Cl. 73—359 **8 Claims**



The sensor of the present invention includes a solid solution of uranium monophosphide and uranium monosuplhide having a composition of $UP_{1-x}S_x$ where $x=0.2$ to 0.3. The uranium monophosphide-uranium monosulphide solid solution is coupled to a temperature environment and a DC magnetic field, either of which may be varied and sensed. A sense coil is mounted adjacent the uranium monophosphide-uranium monosulphide solid solution to sense the magnetization of the uranium monophosphide-uranium monosulphide solid solution relative to the values of the temperature environment and magnetic field.

3,646,814

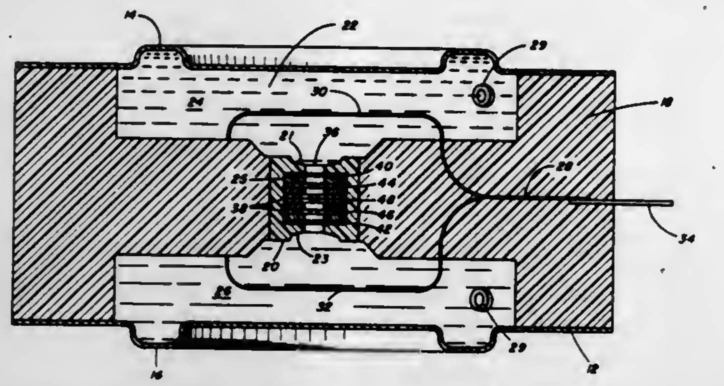
PRESSURE DETECTOR

Walter R. Christoph, Riverdale; Jim B. McQuitty, Adelphi, and Lewis A. Vendetti, Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 16, 1970, Ser. No. 72,682

Int. Cl. G01l *9/18*

U.S. Cl. 73—398 R **6 Claims**



An electrochemical pressure transducer having a pressure-responsive, compliant diaphragm on either face of a cylindrical body. Pressure on either diaphragm produces movement of electrolyte fluid within the body past a series of electrodes which are connected to external electrical circuitry. As the electrolyte flows past these electrodes I_3^- ions are converted into I_1^- ions, thereby causing a current flow in the external circuitry indicative of the direction and amount of pressure. Two electrodes are provided which substantially eliminate bias currents produced by freezing of the electrolyte solution at low temperatures, and a third electrode is provided that enhances the linearity of the transducer and ensures proper indication of the direction of pressure at high flow rates.

3,646,815

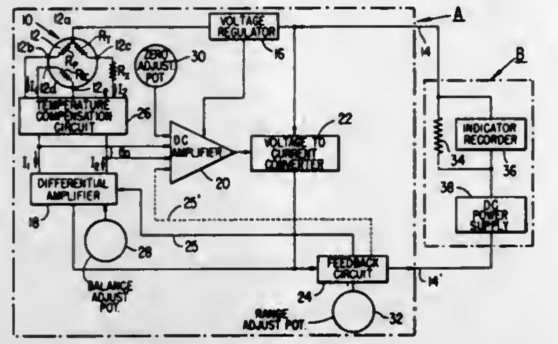
SILICON PRESSURE TRANSDUCER CIRCUIT

John C. Martin, Lyndhurst, and William L. Thompson, Alliance, both of Ohio, assignors to Bailey Meter Company

Filed Mar. 26, 1970, Ser. No. 22,977

Int. Cl. G01l *9/08*

U.S. Cl. 73—398 AR **15 Claims**



A remote coupled transducer circuit having a pair of conductors extending to the remote location from which the pressure transducer circuit is energized and to which an output current signal proportional to the pressure applied to a diaphragm of semiconductor material is transmitted on the pair of conductors. The transducer circuit includes an L-type resistance bridge formed of a piezoresistor and a second resistor diffused into the diaphragm, and the piezoresistor is linearly pressure sensitive while the second resistor is pressure insensitive. The resulting change of resistance in the piezoresistor due to pressure applied to the diaphragm is voltage amplified in a differential amplifier. The pressure transmitter circuit is temperature compensated against the effects of temperature variations of the resistance bridge. The output signal from the differential amplifier is used to proportionally change the output current signal. The output current signal controls a feedback transistor in the transducer circuit which rebalances the differential amplifier while sustaining the output current signal at the value proportional to the applied pressure.

3,646,816

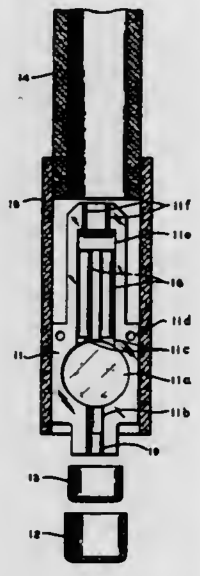
IMMERSION MOLTEN METAL SAMPLER

Richard J. Hance, Philadelphia; John R. Wiese, Dresher, both of Pa., and Harry G. Clauss, Jr., Beverly, N.J., assignors to Leeds & Northrup Company, North Wales, Pa.

Continuation-in-part of application Ser. No. 850,961, Aug. 18, 1969, now abandoned. This application July 22, 1970, Ser. No. 57,125

Int. Cl. G01n *1/12*

U.S. Cl. 73—425.4 **3 Claims**



An immersion-type molten material sampling unit comprised of a body of refractory material including an entrance passage, a first cavity for the production of a flat disclike sample, one or more additional cavities for the production of one or more pin-type samples, and an air compression chamber vented to atmosphere which facilitates rapid filling of the sample cavities. The unit is mounted in one end of a protection tube to form a low-cost expendable assembly which may be readily slipped onto the end of a piece of pipe which serves as a handle for immersing the unit in a bath of molten material. In a preferred embodiment the first cavity desirably includes a pair of chill plates to produce more rapid freezing of the disclike sample and a pair of smoother surfaces which require less clean-up prior to use of the disc for spectrographic analysis.

3,646,817

PIPETTE

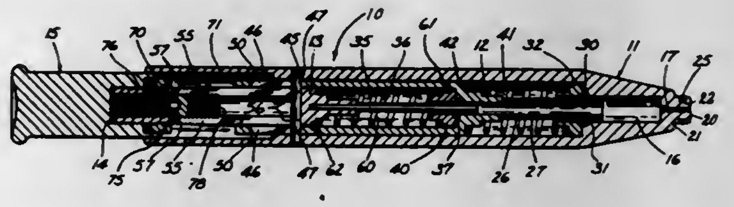
Gerald V. Hinchman; James L. Sommerville, and William D. Schmitz, all of Indianapolis, Ind., assignors to Bio-Dynamics, Inc., Indianapolis, Ind.

Continuation-in-part of application Ser. No. 770,663, Oct. 25, 1968, now abandoned. This application Sept. 30, 1969, Ser. No. 864,280

Int. Cl. G01n *1/14*; B01l *3/02*

U.S. Cl. 73—425.6 **10 Claims**

A pipette pump having two pistons therein with a smaller one of said pistons telescoped and movable within a larger of said pistons. The pistons are normally held in projected position by a pair of springs one of which is much stronger than the other so that the larger piston against which it acts is depressed after the smaller piston. The travel of each piston is adjustable and the pistons are both depressed by depressing a cap which is fixed to the smaller piston.



3,646,818

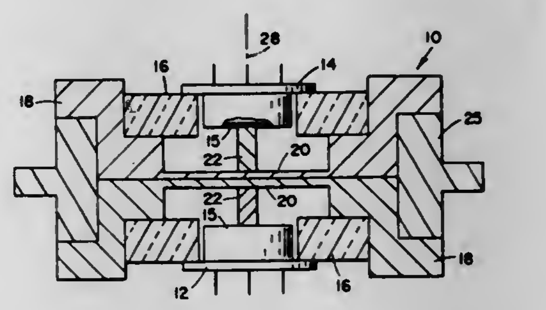
COMPENSATED OUTPUT SOLID-STATE DIFFERENTIAL ACCELEROMETER

Little J. Little, and Joe S. Hunter, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army

Filed Jan. 8, 1970, Ser. No. 1,481

Int. Cl. G01p *15/08*

U.S. Cl. 73—517 R **5 Claims**



A solid-state differential accelerometer employing piezotransistors for measuring acceleration or velocity of a body along a specified axis of the accelerometer. A pair of substantially identical piezotransistors are arranged back-to-back along the axis through which tension and compression forces of acceleration are applied. A piezoelectrical emitter-base junction of each transistor is mechanically linked to a diaphragm portion of the transistor case that is normal to the acceleration axis. A force transferring bar links the outer surface of the transistor case diaphragm with a pliable surface of a nickel alloy protective housing of each transistor, the bar being aligned along the acceleration or force axis. The pliable housing surfaces are held together by a support ring and maintain the physical arrangement of the transistors back-to-back. A change in velocity along the force axis causes an opposing reaction by the pliable surfaces which convey changes through the force transferring bar to flex the piezotransistor diaphragms, stressing the emitter-base junction of each transistor.

In related electrical circuitry, the piezotransistors have collector outputs coupled to noninverting and inverting terminals of a differential amplifier. The emitters are coupled through a common current source which allows constant conduction through the piezotransistors. Acceleration forces coupled to the transistors produces a change in output voltage proportional to the specific force input over the linear range of operation. The predominant error-producing quadratic term and the bias component of the signal are canceled and the linear output is doubled without additional amplification.

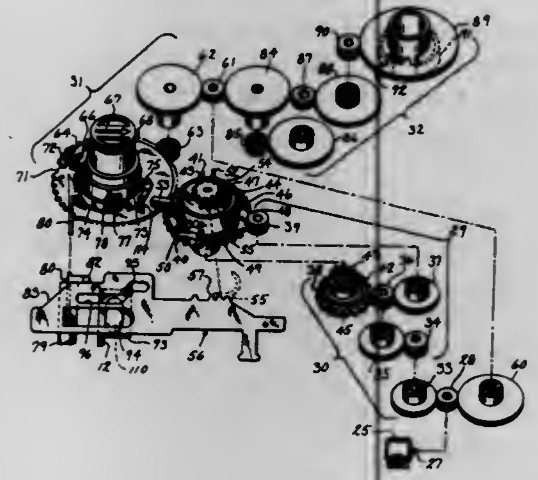
3,646,819
ROTARY POWER TRANSMISSION

David G. Prosser, Mequon, Wis., assignor to Autotrol Corporation, Milwaukee, Wis.

Original application Apr. 23, 1969, Ser. No. 818,763, now Patent No. 3,574,330, dated Apr. 13, 1971. Divided and this application Sept. 2, 1970, Ser. No. 69,056

Int. Cl. G05g *21/00*

U.S. Cl. 74—3.5 **7 Claims**



A power-transmitting gear having a space which interrupts the gear portion is disposed in engagement with a power-driven pinion. A trigger member having a peripheral gear segment is arranged in coaxial relationship on the power-transmitting gear for rotation with the power-transmitting gear and for limited rotation relative to it. A circular spring normally operates to maintain the angular relationship between the power-transmitting gear and the trigger member in a manner that the gear segment on the trigger member is positioned with respect to the gear portion of the power-transmitting member adjacent to one end of the space which separates the gear portion. The power-transmitting gear is provided with a second gear which is adapted to be meshed with a gear formed on the element to be driven. An input force applying member is movably disposed adjacent to the trigger member is operative to apply a force to the trigger member to effect its limited rotation relative to the power-transmitting gear so that the gear segment of the trigger member is moved into meshing engagement with the power-driven pinion. The trigger member being driven by the pinion effects rotation of the power-transmitting gear to mesh the gear portion thereof with the pinion. Thus, the drive from the pinion is transmitted to the power-transmitting gear that in turn operates to drive the element which it is desired to move.

3,646,820
WORM DRIVE FOR STARTER MOTORS FOR INTERNAL COMBUSTION ENGINES

Erich Vogel, Bernhausen; Gunter Ullmann, Schwieberdingen; Gerhard Pfluger, Markgroeningen, all of Germany, and Robert Bosch GmbH, Stuttgart, Germany

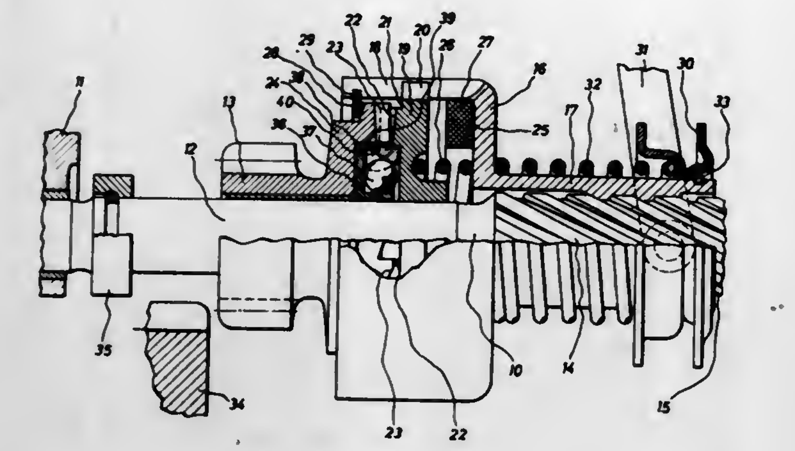
Filed June 19, 1970, Ser. No. 47,803

Claims priority, application Germany, June 21, 1969, P 19 31 582.3

Int. Cl. F02n *11/00*

U.S. Cl. 74—6 **9 Claims**

An overrunning clutch connects the start pinion to an axially movable coupling member coupled to the armature-shaft-rotated drive member by an ear that freely engages a longitudinal groove in the drive member, which has an internally threaded sleeve that meshes with the threaded portion of the armature shaft and is turned thereby.



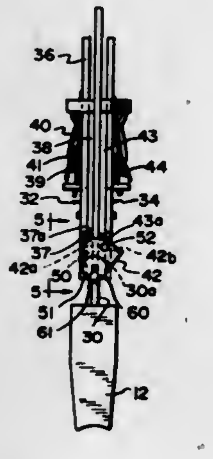
3,646,821
AM-FM TUNER HAVING FIVE PUSHBUTTONS WITH TEN SELECTIONS

Alfred J. Clark, Palatine, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 18, 1970, Ser. No. 20,496

Int. Cl. F16h *35/18*

U.S. Cl. 74—10.33 **8 Claims**



A tuning mechanism for AM-FM radio receivers of the pushbutton-type wherein first and second groups of slide bar assemblies are positioned to be selectively actuated by a single group of pushbutton actuating bars. Actuation of the pushbutton actuating bar will actuate one or the other of the slide bar assemblies to change the station on the radio depending on the position of a selector means. A fingered lever is pivotally secured to the pushbutton actuating bar to have a finger portion engage a notch in one or the other of the slide bar assemblies on one side or the other side of said pushbutton actuating bar. The finger portion moves within a guide channel to prevent jamming when the locking member is in an unlocked position.

3,646,822
MECHANICAL TRANSMISSION SYSTEM

Luis Alberto Pocaterra, 845 Boylston St., Boston, Mass.

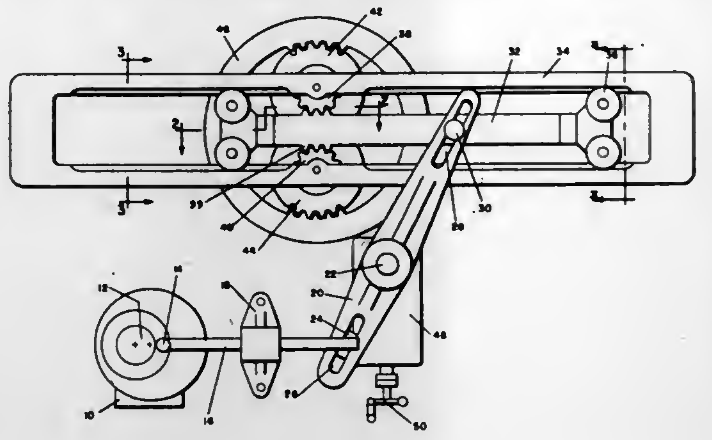
Filed Apr. 30, 1969, Ser. No. 820,443

Int. Cl. F16h *25/08, 25/12*

U.S. Cl. 74—53 **18 Claims**

A mechanical power transmission system is provided for machines including vehicles wherein a power source, e.g., a

gear or a shaft transmits power to a receiver such as wheels by way of an oscillating transmission member. The oscillatory path of the transmission member is varied to change the power-speed ratio applied to the receiver.



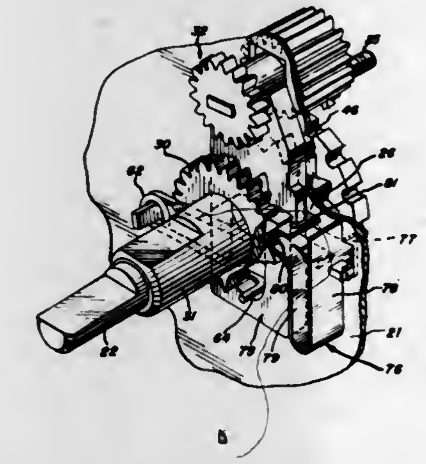
3,646,823
FINE TUNE MECHANISM

Henry H. Tap, Cary, Ill., assignor to Oak Electro/Netics Corp.

Filed Oct. 12, 1970, Ser. No. 79,963

Int. Cl. F16h *35/18*

U.S. Cl. 74—10.45 **21 Claims**



A multiple-channel VHF television tuner with memory or preset fine tuning. A channel selector shaft provides for the connection of the circuits of the desired channel and to position a fine tuning member for the selected channel at an adjustment position. The fine tuning members are rotatably mounted on the carrier fixed to the shaft and each has a gear head for engagement with a gear drive from the fine tuning control. An idler gear which interconnects the fine tuning control with the channel adjustment screws is mounted on a carrier plate which is slidable on the front plate of the tuner chassis. A spring urges the slider to bring the gears into engagement. When the channel selector shaft is turned, the slider is moved to disengage the gears and is latched in an inoperative position so that the settings of the fine tuning members are not disturbed during channel changes. The latch is released by a cam on the fine tuning control and the slider moves the idler gear into engagement for tuning adjustment.

3,646,824
PNEUMATIC SPINNER FOR LAND VEHICLE TIRES

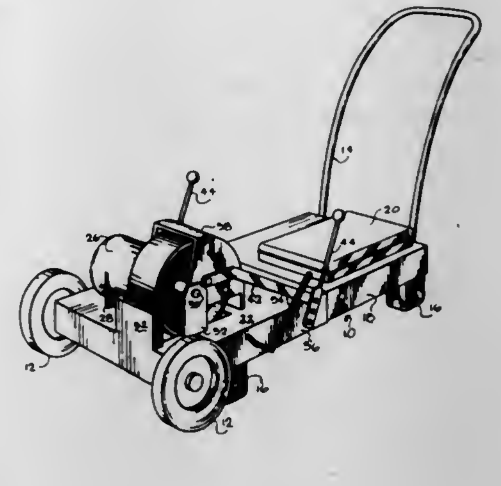
Weldon B. Dillard, Lubbock, Tex., assignor to Boyd Smith and Landon Smith, Lubbock, Tex., part interest to each

Filed Aug. 28, 1970, Ser. No. 67,680

Int. Cl. F16m *3/00*

U.S. Cl. 74—16 **5 Claims**

In spinning auto tires for the purpose of balancing same, a radial vane, expansible chamber, rotary pneumatic motor is used.



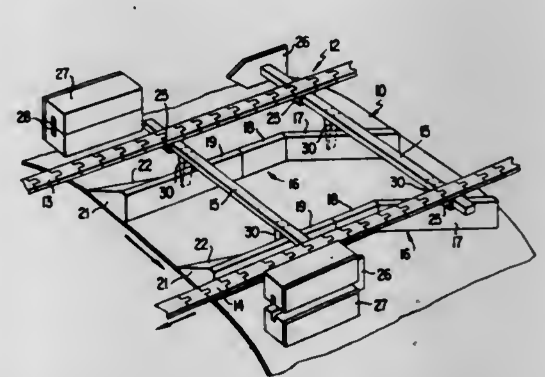
3,646,825
STEPLESS VARIABLE TRANSMISSION

Ernst Marcus, Casilla 258, La Paz, Bolivia

Filed Nov. 10, 1970, Ser. No. 88,421

Int. Cl. F16h *21/12, 27/04, 9/00*

U.S. Cl. 74—63 **11 Claims**

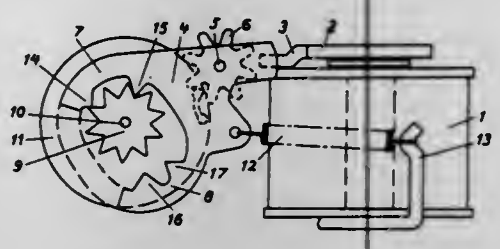


An infinitely variable transmission has a pair of track members movable along separate paths which intersect one another. Each track member has a plurality of longitudinally spaced-apart elements projecting therefrom, the elements of one track member meshing with the elements of the other track member at the region of intersection. Each of the elements of one of the track members has dimensions which continuously vary from a point adjacent one edge toward the center of that track and from the base toward a free extremity of the respective element itself, to provide a surface along that element which is angled laterally to the edge of the track and transversely to the surface of the track from which that element projects. As the other track member is put in motion along its respective path, the elements projecting therefrom mesh with the elements projecting from the first track member along the region of intersection, and as a result of the configuration of each projecting element of the first track member, the motion imparted to that member is in the direction of its respective path. The depth of engagement of the elements in the region of intersection is selectively variable to control the relative extent of motion of the first track member as its elements are encountered by elements of the other track member. The elements on the other track members are guided to encounter the elements of the first track member at a consistent preselected point for a given extent of engagement between the elements, regardless of the extent of movement of either track member. The elements mesh by undergoing sliding contact with one another in the region of the intersection, and when in such sliding contact, the motion of the engaged elements is restricted to substantially longitudinal motion along the respective paths of the track members.

3,646,826
STEPPING DEVICE

Rolf Ake Sahlgren, Tyreso, and B. Ingvar Wiljanen, Bandhagen, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Apr. 6, 1970, Ser. No. 25,944
Claims priority, application Sweden, Apr. 23, 1969, 5777/69
Int. Cl. G05g *1/00*
U.S. Cl. 74—142 **3 Claims**

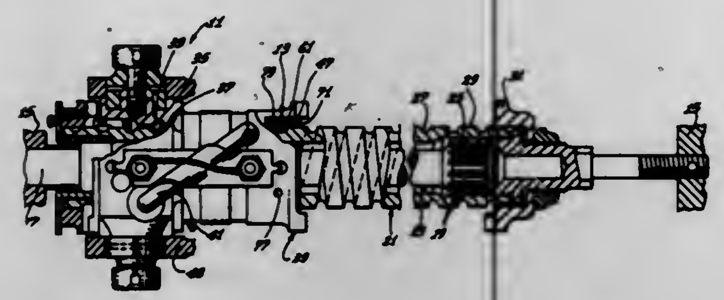


Stepping device for a comptometer provided with a ratchet wheel and a pawl. An oscillating or reciprocating movement of the pawl is changed to a unidirectional rotary movement of the ratchet wheel. The pawl is forked or bifurcated to form shanks on diametrical opposite sides of the ratchet wheel, which shanks are each provided with a projection cooperating with the teeth of the ratchet wheel. A least one of the shanks is provided with another projection situated at a circumferential distance from the projection on the same shank which is greater than the gear pitch of the ratchet wheel and so chosen that when the two projections of the said shank are in contact with the sides or flanks of two teeth of the ratchet wheel then the resultant force of the forces acting at these sides is directed through the rotary axis of the ratchet wheel.

3,646,827
ASSEMBLY ADAPTED FOR USE WITH BALL SCREW ACTUATOR

Donald S. Patterson, Corona, Calif., assignor to Sargent Industries, Inc., Los Angeles, Calif.

Filed Feb. 12, 1970, Ser. No. 10,873
Int. Cl. F16h *1/18, 55/22;* **F02f** *5/00*
U.S. Cl. 74—424.8 **30 Claims**



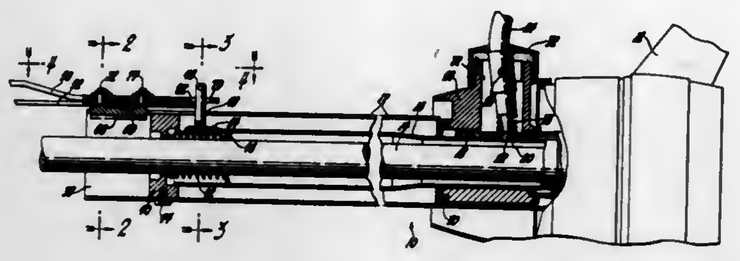
A tubular housing for receiving a screw and having a seal therein adapted to cooperate with the screw. A scraper is formed on the housing for removing foreign material from the screw. A helical rib is formed on the housing for cooperation with the groove of the screw to act as a safety feature.

3,646,828
TRANSMISSION CONTROLS

Thomas J. Milton, Bay City, and Lehman J. Connell, Frankenmuth, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 21, 1970, Ser. No. 82,746
Int. Cl. G05g *9/12*
U.S. Cl. 74—484 **5 Claims**

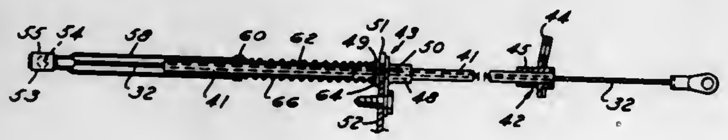
Transmission control in which shaft tube is mounted in a steering column jacket for limited axial and rotary movement. There is a radially extending drive pin which is secured to the external portion of the shaft tube by a tongue and groove connection with a mount. The drive pin is selectively engageable with drive portions formed in the heads of first-reverse and second-third shift levers which extend alongside of the shift tube and are rotatably mounted by a pivot pin radially extending from a mount secured to the jacket by tongue and groove means.



3,646,829
VEHICLE ACCELERATOR LINKAGE ASSEMBLY

Frederick Reno, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 2, 1970, Ser. No. 42,644
Int. Cl. F16c *1/10*
U.S. Cl. 74—513 **5 Claims**

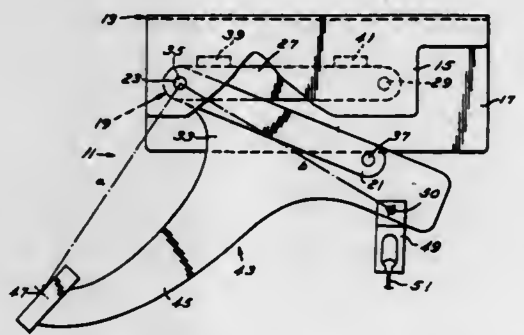


A cable-type vehicle accelerator linkage connects the conventional vehicle accelerator pedal to a carburetor throttle valve, the cable being surrounded by a variable length, expandable-contractible linkage means including a compression spring to urge the linkage parts apart so that the accelerator pedal and throttle valve are always biased in a direction toward engine idle speed position; breakage of the spring providing no interruption to the biasing force but merely multiplying the number of springs operating in series.

3,646,830
VARIABLE RATIO LEVER MECHANISM

Larry R. Shrock, Westland, Mich., assignor to Larry R. Schrock, Dearborn, Mich.

Filed June 1, 1970, Ser. No. 42,408
Int. Cl. G05g *1/14*
U.S. Cl. 74—516 **5 Claims**

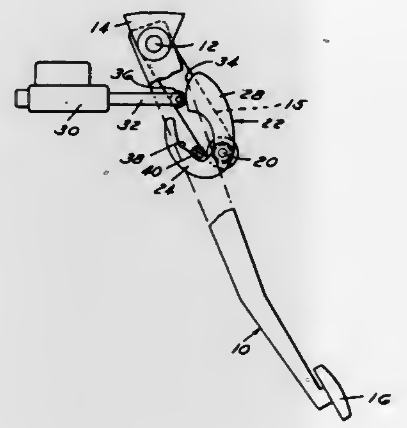


A variable ratio lever mechanism adaptable for use as a parking brake control pedal assembly. The mechanism includes a control lever pivotally connected to a support structure by a pair of links. The pivotal connections between the lever and first link and between the support structure and the second link have a common first axis; the pivotal connections between the lever and the second link and between the support structure and the first link have a common second axis. The mechanism provides a lesser mechanical advantage during initial application of the parking brake and a greater mechanical advantage following initial application.

3,646,831
VARIABLE RATIO BRAKE PEDAL

Francis L. Janosi, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 6, 1970, Ser. No. 52,234
Int. Cl. G05g *1/04*
U.S. Cl. 74—518 **3 Claims**

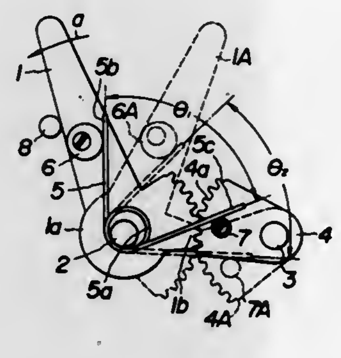


A variable ratio brake pedal assembly including a foot-operated pedal lever, a brake-applying means and an intermediate lever interposed between the pedal lever and the brake-applying device. The intermediate lever has cam surfaces that engage both the brake-applying device and the foot-operated pedal lever whereby a change in mechanical advantage ratio occurs as force is transmitted from the pedal lever through the intermediate lever to the brake-applying device when the pedal lever pivots and the intermediate lever is angularly displaced.

3,646,832
CORDED-SPRING ENERGY CONTROL DEVICE

Ban Hirafuji, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1970, Ser. No. 31,328
Claims priority, application Japan, May 31, 1969, 44/42788
Int. Cl. G05g *1/04*
U.S. Cl. 74—519 **4 Claims**

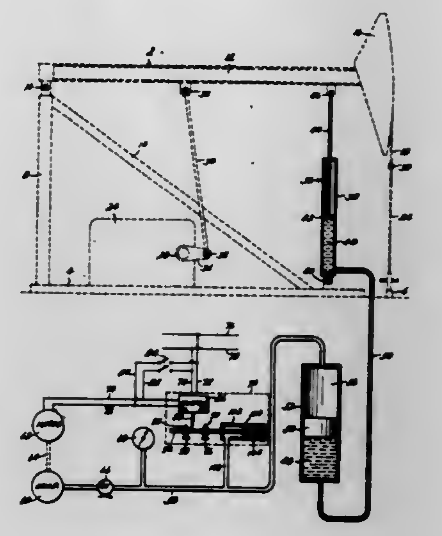


A device for automatically controlling the elastic energy of a coiled spring when an operation lever pivotally supported by a shaft and normally urged in one direction by one end of the coiled spring is caused to move in the other direction against the biasing force of the spring. The device comprises means to relieve the other end of the coiled spring when the operation lever is moved in the other direction as aforementioned so as to thereby restrict an increase in the elastic energy of the coiled spring.

3,646,833
COUNTERBALANCING SYSTEM FOR OILFIELD PUMP JACKS

Earnest B. Watson, Osawatomie, Kans., assignor to Raymond S. Bowers, Jr., Osawatomie, Kans., a part interest

Filed Aug. 28, 1969, Ser. No. 871,463
Int. Cl. G05g *1/24*
U.S. Cl. 74—589 **3 Claims**

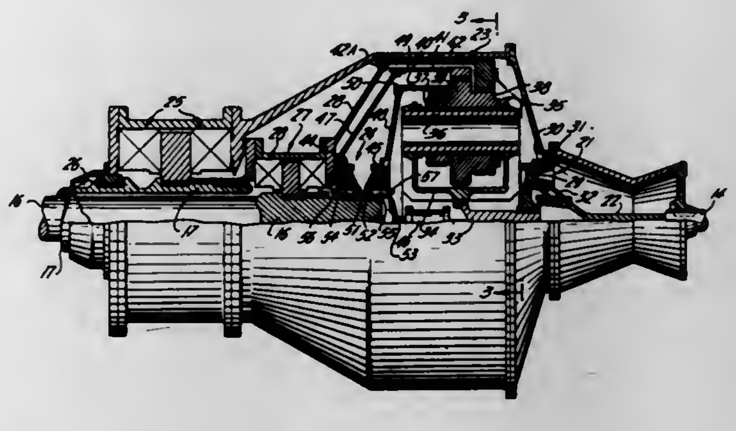


A counterbalancing system for an oilfield pump jack including a walking beam reciprocable by power means to operate the pump, said counterbalancing system comprising a hydraulic ram interconnected between said walking beam and a fixed support, said ram being hydraulically interconnected with an accumulator vessel of larger diameter than said ram and means for maintaining a counterbalancing air pressure in that portion of said accumulator vessel not occupied by hydraulic field.

3,646,834
COUNTERROTATING OUTPUT TRANSMISSION

Charles S. Davis, New York, N.Y., assignor to Curtiss-Wright Corporation

Filed Oct. 28, 1970, Ser. No. 84,565
Int. Cl. F16h *37/06, 1/28*
U.S. Cl. 74—674 **11 Claims**



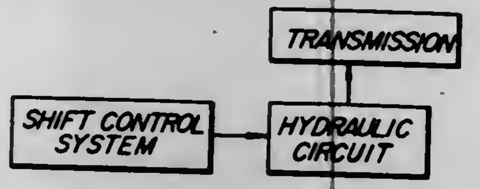
The counterrotating output transmission comprises a planetary gear assembly connected to be rotatively driven by a source of rotary power and having three different sized output ring gears. The intermediate-sized ring gear is connected to rotate a first output shaft while the smallest and the largest ring gears are alternatively connected to rotate a second output shaft in a direction counter to the first output shaft. A clutch assembly is provided to coact with the smallest and largest ring gears to alternately connect the ring gears to the second output shaft and thereby shift the reaction load of the planetary gear assembly radially and cause reverse rotation of ring gears and, hence, change the direction of rotation of each of the first and second counterrotating output shafts.

3,646,835

SHIFT CONTROL SYSTEM FOR VEHICLE AUTOMATIC TRANSMISSION

Shin Ito; Seitoku Kubo, and Takakazu Mori, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed May 8, 1970, Ser. No. 35,787
Claims priority, application Japan, Oct. 18, 1969, 44/83412
Int. Cl. B60k *21/08*
U.S. Cl. 74—860 **17 Claims**



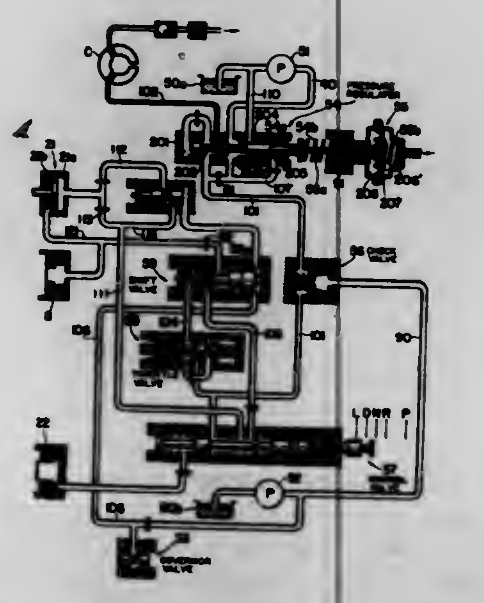
A shift control system for a vehicle automatic transmission including a transmission gear assembly and gear engaging means. The shift control system comprises both electrical and hydraulic controls and associated shift lever means, whereby the gear changing operation of the transmission is automatically controlled by the electrical control system according to the driving conditions thus providing a highly variable ratio transmission, while provision is made for the semiautomatic control of the transmission by means of the hydraulic circuit. The important features of both automatic and semiautomatic transmissions are thus embodied in one system.

3,646,836

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSIONS

Seitoku Kubo; Kiyoshi Ohnuma, and Koichiro Hirosawa, all of Aichi-ken, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-cho, Toyoda-shi, Aichi-ken, Japan

Filed June 2, 1970, Ser. No. 42,844
Claims priority, application Japan, June 5, 1969, 44/44182
Int. Cl. B60k *21/00*
U.S. Cl. 74—864 **10 Claims**



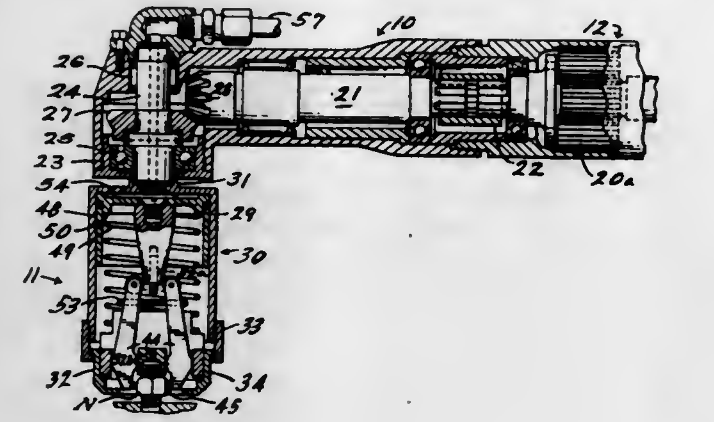
A hydraulic control system is provided for a fluid-type automatic transmission of the type including a fluid torque converter and speed change gearing coupled to the converter and operated by hydraulic servomechanisms. The system includes a pressure regulator valve which regulates the pressure of the hydraulic fluid, supplied from a pump or pumps driven by the engine, to a predetermined line pressure applied to the hydraulic servomechanisms. When the engine is operating at a low speed, the line pressure is sharply increased using only the hydraulic pressure fluid from a front oil pump driven by the engine. When the engine speed is increased slightly, the line pressure is maintained at a constant high value by controlling discharge of the hydraulic fluid under pressure to correspond with the supply of hydraulic fluid under pressure through a flow restriction. When the speed of the engine is increased further, the rate of fluid flow through the flow restriction becomes increasingly less than the rate of fluid discharged, so that a hydraulic pressure differential is provided between two regulator valve chambers interconnected by the flow restriction. As a result, the line pressure is gradually decreased. When the speed of the engine is increased even further, the rate of discharge of the fluid is controlled independently of the flow restriction, so that the line pressure is maintained continuously at a constant low value. The relation between the line pressure and the engine speed is made proportional to the opening of an engine throttle valve by applying, to the pressure regulator, the negative pressure of a vacuum pipe connected to the engine.

3,646,837

TOOL FOR APPLYING AND LOCKING THREADED FASTENERS

Harold C. Reynolds, Athens, Pa., assignor to Cooper Industries, Inc., Houston, Tex.

Filed May 18, 1970, Ser. No. 38,168
Int. Cl. B25b *27/00*
U.S. Cl. 81—10 **28 Claims**



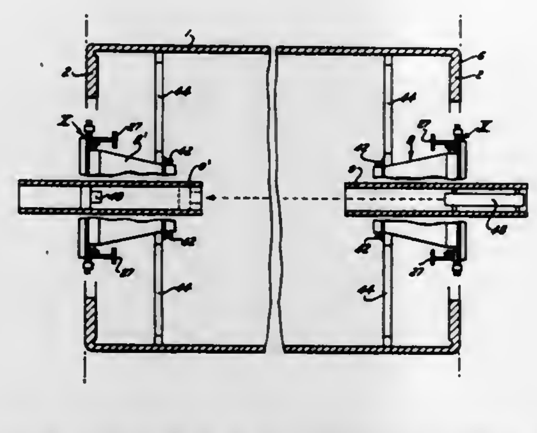
A fluid-powered tool for applying a threaded fastener on a correspondingly threaded shank to a predetermined tightness and then locking it in place by deforming or swaging the fastener upon the shank to interlock their threads. The tool includes a rotatably driven nut socket, a fluid motor for driving the socket, and a torque responsive shutoff device effective to stop rotation of the socket when a predetermined torque has been reached. The locking or deforming mechanism includes a plurality of reciprocating jaws positioned radially adjacent the nut socket which jaws are movable in a remote position external of the socket to a deforming position extending into the socket. A control means is provided which will cause the jaws to automatically move to their deforming position after the torque-responsive shutoff device has stopped rotation of the nut and to return the jaws to their remote position so that the tool may be removed.

3,646,838

METHOD OF MACHINING CYLINDRICAL SHELLS

Axel Brix Andersen, Larchmont, N.Y., assignor to F. L. Smidth & Co., New York, N.Y.

Original application Sept. 25, 1967, Ser. No. 670,243, now Patent No. 3,550,488. Divided and this application Apr. 17, 1970, Ser. No. 33,136
Int. Cl. B23b *1/00*
U.S. Cl. 82—1 C **3 Claims**



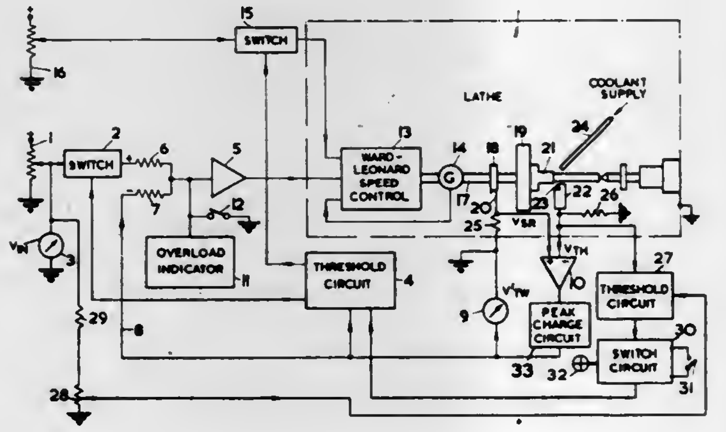
The faces or heads of large cylindrical vessels or shells are machined so that their surfaces are precisely parallel and have a common centerline. For example, ball mill or rod mill shells too large to place in any lathe, are machined to receive the conventional trunnions at their opposite ends. The operation is accomplished with great precision, the faces being machined parallel and any shoulders being machined on a common centerline, i.e., the axis of the shell. Two machining mechanisms are temporarily mounted within and one at each end of the shell. The tool shafts of these mechanisms are hollow and are aligned by the use of a laser or other suitable radiation beam.

3,646,839

MACHINE TOOL CONTROL SYSTEMS

Norman Frederick Shillam, Farnborough, England, assignor to National Research Development Corporation, London, England

Filed May 7, 1970, Ser. No. 35,520
Claims priority, application Great Britain, May 12, 1969, 23,998/69
Int. Cl. B23b *25/06*
U.S. Cl. 82—1 **6 Claims**



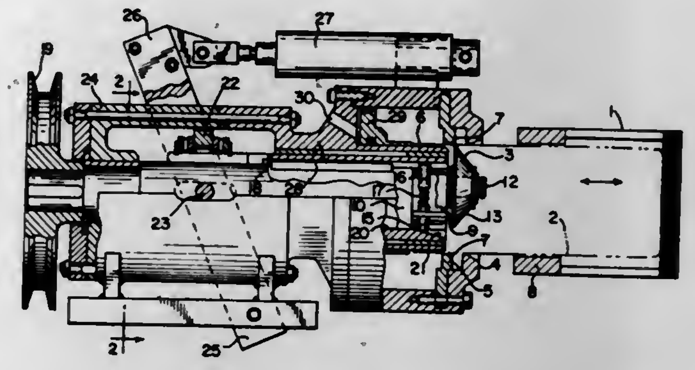
A control system for a metal cutting machine tool in which a thermally generated e.m.f. developed between a cutting edge and a workpiece is used to control the cutting speed within desired limits. The system comprises a servo having a speed control loop which responds to the thermal e.m.f. and is arranged to adjust the cutting speed continuously so as to bring the thermal e.m.f. to within predetermined limits.

3,646,840

TRIMMING HEAD FOR METAL CANS

John S. Bozek, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Oct. 27, 1969, Ser. No. 869,694
Int. Cl. B23b *3/04, 5/14, 1/00*
U.S. Cl. 82—82 **8 Claims**



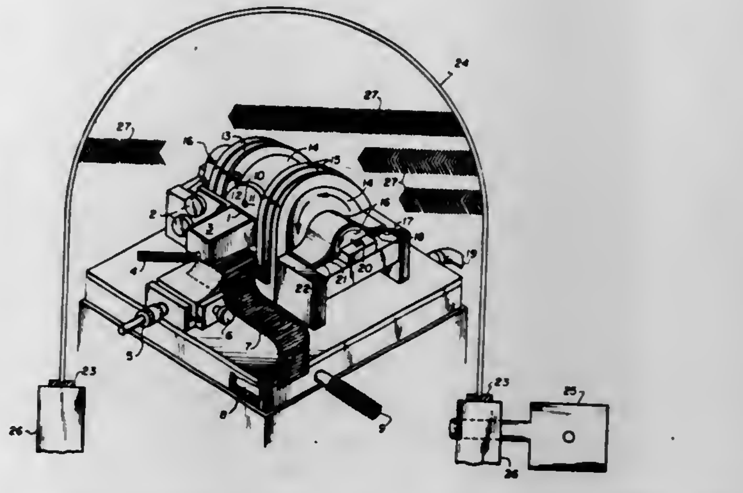
A trimming head for metal cans having a cutter rotating against a stationary cutter ring. The can end to be trimmed is fitted inside the stationary exterior cutting ring. As the interior cutter rotates, it cuts the can end off to leave the can at a uniform length. A knockout ring ejects the scrap, and the trimming head is ready for the insertion of another untrimmed can end.

3,646,841

APPARATUS USING ULTRASHARP DIAMOND EDGE FOR ULTRATHIN SECTIONING

Humberto Fernandez-Moran Villalobos, 5807 Dorchester Ave., Chicago, Ill.

Continuation-in-part of application Ser. No. 466,877, June 22, 1965, now Patent No. 3,447,366. This application June 2, 1969, Ser. No. 829,267
Int. Cl. B26d *4/44*
U.S. Cl. 83—171 **10 Claims**



Ultrasharp diamond edge is used for molecular and submolecular sectioning at ultralow temperature and as a high-intensity point source for the emission of electrons, ions and neutrons.

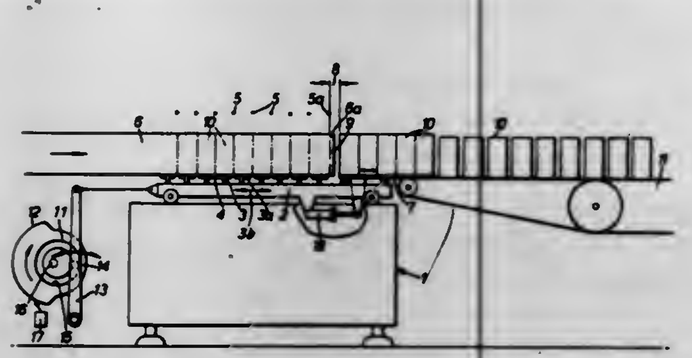
3,646,842

APPARATUS FOR THE REMOVAL OF CLAY WEB WASTES IN A CLAY-SHAPING MACHINE

Dieter Keck, Westphalia, Germany, assignor to C. Keller Und Co., Laggenbeck, Germany

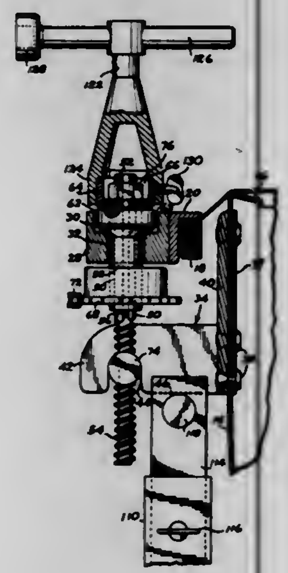
Filed Nov. 3, 1969, Ser. No. 873,545
Int. Cl. B28b *11/14*
U.S. Cl. 83—104 **1 Claim**

A cutter for producing green shapes includes a carriage movable reciprocally in the length direction of a green clay web, the carriage mounting a divided cutting table, the dividing gaps of which correspond to one dimension of the shapes to be formed. Cutter wires pass through the green clay web as the carriage is moved forwardly, a mounting wheel of the



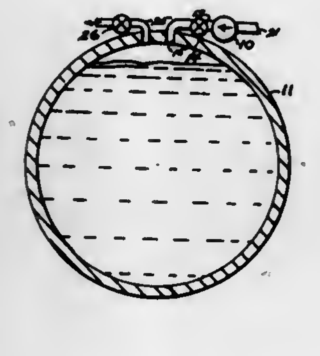
wires being mounted rotatably on the cutter carriage. When a fresh strip of clay web is received on the cutter table an end portion at the leading edge overhangs the leading edge of the table and is cut off by the leading cutter wire, thus ensuring that at each operation the shapes have identical dimensions.

3,646,843
KETTLEDRUM
Jesse N. Kregal, 6244 Washington Ct., Lake Grove, Oreg.
Filed Dec. 12, 1969, Ser. No. 884,455
Int. Cl. G10d *13/04, 13/02*
U.S. Cl. 84—419 **16 Claims**



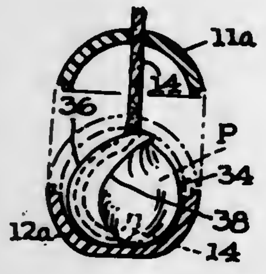
A kettledrum comprises a hollow, substantially hemispherical body, a hoop supporting a taut head over the open end of the body, a counterhoop in operative engagement with the hoop, and head tensioning means interengaging the body and counterhoop. The tensioning means comprise a plurality of pairs of spaced thrust bearings and brackets extending radially from the body at peripheral intervals. First clamp means associated with each pair and flexible drive means interconnecting all of the pairs adjust the tension of the head uniformly across its surface. Second clamp means associated with each first clamp means selectively adjusts the tension of the head in the area immediately adjacent. The drum is supported on the brackets, certain of which are freely supported interconnecting all of the pairs adjust the tension of the head uniformly across its surface. Second clamp means associated with each first clamp means selectively adjusts the tension of the head in the area immediately adjacent. The drum is supported on the brackets, certain of which are freely supported on associated leg members. The resulting drum suspension imparts a clear, unmuffled tone to the drum.

3,646,844
METHOD AND APPARATUS FOR FILLING CONTAINERS WITH EXPLOSIVE SLURRY
Robert B. Clay, Bountiful, Utah, assignor to Intermountain Research & Engineering Co., Inc.
Filed Jan. 14, 1970, Ser. No. 2,785
Int. Cl. F42b *33/02;* **B67d** *3/00*
U.S. Cl. 86—20 **8 Claims**



Blasting slurries which contain aeration in the form of finely dispersed bubbles of gas are filled into bombs and other containers under pressure, using a fluid force pump and a check valve arrangement, including a special gas vent, to insure complete filling for storage, compensating for shrinkage of the slurry due to cooling. The gas vent is designed to release air or other gas in the container, to facilitate filling, but its outlet openings are closed by check valves or are so fine that slurry cannot escape through them.

3,646,845
METHOD OF MAKING PRACTICAL JOKE SMOKE-EMITTING ARTICLES
Bernard J. Semel, 1441 Okie St., N. E., Washington, D.C.
Continuation-in-part of application Ser. No. 685,194, Nov. 22, 1967. This application July 17, 1969, Ser. No. 842,566
Int. Cl. C06d *1/08;* **F42b** *3/02*
U.S. Cl. 86—20 A **7 Claims**

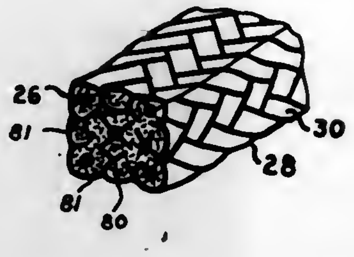


A practical joke smoke ball item of the pyrotechnic-type having an impact and pressure-resistant casing containing a smoke-producing charge and open aperture means which initially accommodate at least one ignition fuse, said aperture means subsequently serving as a smoke emission port or chimney of the smoke ball during combustion of said charge.

3,646,846
FIBROUS GRAPHITE PACKING
George E. Houghton, Palmyra, and Sudhakar G. Dixit, Rochester, both of N.Y.
Filed Jan. 19, 1970, Ser. No. 3,743
Int. Cl. F16j *15/22;* **B65d** *53/00;* **D04c** *1/02*
U.S. Cl. 87—1 **4 Claims**

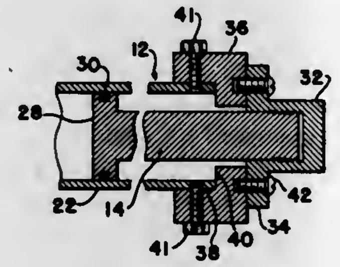
A packing material comprising graphite strands of fibrous material, said strands and interstices therebetween, being

thoroughly impregnated with impregnating material compris-



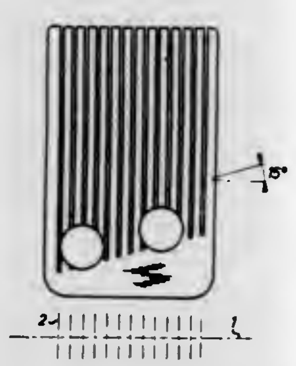
ing a fluorocarbon resin and a solid lubricant, such as graphite.

3,646,847
SLUG-THROWING DEPLOYMENT APPARATUS
Gene R. Drew, El Centro, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Jan. 26, 1970, Ser. No. 5,827
Int. Cl. F41f *1/00*
U.S. Cl. 89—1 G **4 Claims**



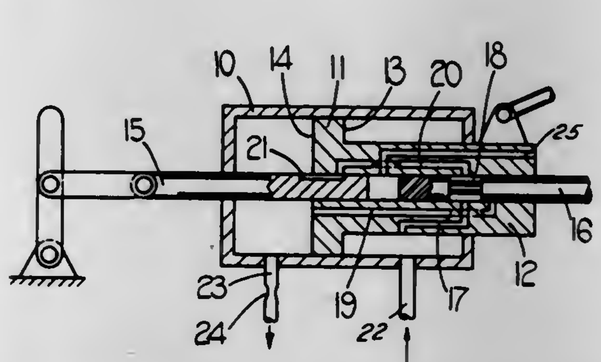
A general purpose deployment gun utilizing a projectable slug for propelling a load. The load is attached to the slug by a movable connection which enables the slug to be propelled by a symmetrical application of forces without the need for reversing its course thereby providing a smooth, stabilized flight.

3,646,848
METHODS OF MACHINING COMBS FOR MUSICAL MECHANISMS
Emile Matthey, Vuiteboeuf, Switzerland, assignor to Matthey S.A., Vuiteboeuf, Switzerland
Filed June 12, 1970, Ser. No. 45,726
Claims priority, application Switzerland, June 16, 1969, 9137/69
Int. Cl. B23c *3/00*
U.S. Cl. 90—11 C **7 Claims**



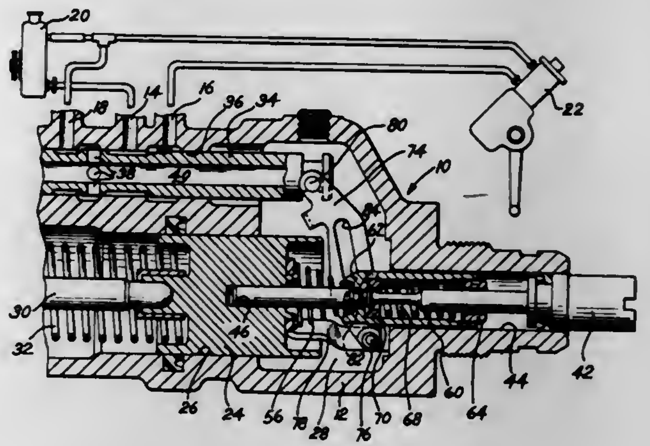
A comb blank is given two inclinations relative to the rotational axis of a spindle carrying a plurality of spaced rotatable tools of equal diameter. The comb blank is then passed relative to the tools when rotating so that a plurality of parallel tongues are formed in the comb blank from one end of the comb blank towards the opposite end. The relative inclinations are so arranged that a line joining the roots of the tongues where the tongues join the remainder of the comb blank forms a predetermined angle with the one end of the comb blank.

3,646,849
SERVOMECHANISM
Trevor Stanley Smith, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Feb. 10, 1970, Ser. No. 10,132
Int. Cl. F15b *9/10, 12/17*
U.S. Cl. 91—52 **5 Claims**



The invention relates to a fluid-pressure operated servomechanism and includes a piston and an associated control member which combine to form a followup servo. There is additionally provided a further control member, whereby movement of the piston to follow the first control member is possible only if the second control member is within prescribed limits of position relative to the piston.

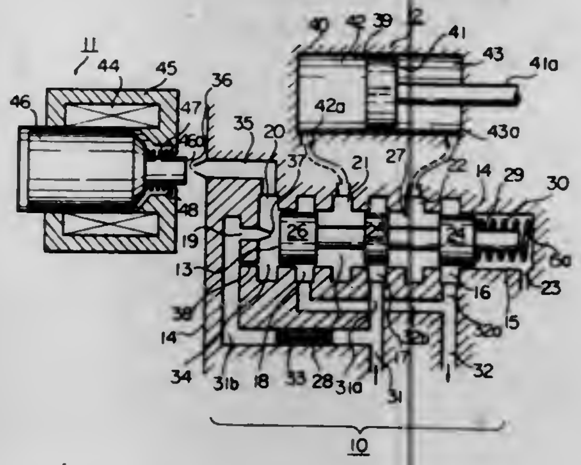
3,646,850
DETENT MECHANISM FOR BRAKE BOOSTER
Peter W. Boyer, South Bend, Ind., assignor to The Bendix Corporation
Filed Mar. 16, 1970, Ser. No. 19,579
Int. Cl. F15b *13/10*
U.S. Cl. 91—391 **7 Claims**



A hydraulic brake booster is disclosed which includes a housing, a piston slidable in the housing and operatively connected to a master cylinder for actuating the latter, and valve means for admitting pressurized fluid into the housing for shifting the piston. A sleeve is slidably mounted on an operator-operated control rod that is slidably mounted in the housing, ans a pair of levers pivotally interconnect the piston, the sleeve, and the valve mechanism. A releasable coupling device joins the sleeve to the rod for movement therewith when the valve mechanism is functioning normally, but permits the rod to move relative to the sleeve when a malfunction prevents movement of the valve means.

3,646,851
HYDRAULIC SHIFT VALVE

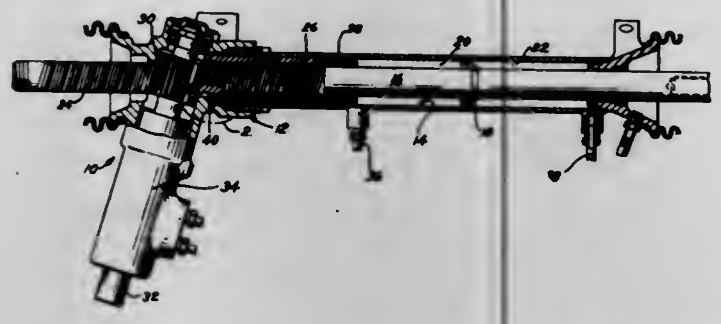
Yoichi Mohri, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed May 6, 1970, Ser. No. 35,101
Claims priority, application Japan, May 16, 1969, 44/37596
Int. Cl. F15b *13/043;* F16k *31/02*
U.S. Cl. 91—459 **1 Claim**



A hydraulic shift valve for shifting relative positions of an actuating element such as for gear elements of an automotive transmission system, which shift valve includes a spool valve unit having a spool valve element moved by a fluid pressure in a hydraulic fluid circuit, a solenoid device to control the movement of the spool valve element in accordance with electric signals that it receives, and a servo unit connected to and controlled by the valve unit thereby to shift positions of the actuating element in relation to the relative positions of the spool valve element.

3,646,852
DETENT MECHANISM FOR RACK AND PINION POWER STEERING

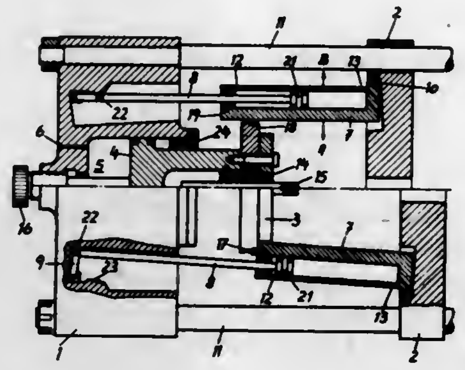
Martin A. Shields, South Bend, Ind., assignor to The Bendix Corporation
Filed Aug. 17, 1970, Ser. No. 64,537
Int. Cl. F15b *11/08, 13/04;* F01b *7/20*
U.S. Cl. 91—467 **9 Claims**



A rack and pinion power-steering unit is disclosed which includes a detent mechanism that couples the sleeve used in units of this type to the rack when the vehicle wheels are turned in one direction, but permits relative movement between the rack and the sleeve when the vehicle wheels are turned in the opposite direction. The detent includes a spherical force transmitting element which is normally carried in a recess in the housing, but which is urged into a position interconnecting the sleeve and the rack when the wheels of the vehicle are turned in the one direction. When the vehicle wheels are turned in the opposite direction, the force-transmitting element couples the sleeve to the housing.

3,646,853
CLOSURE APPARATUS

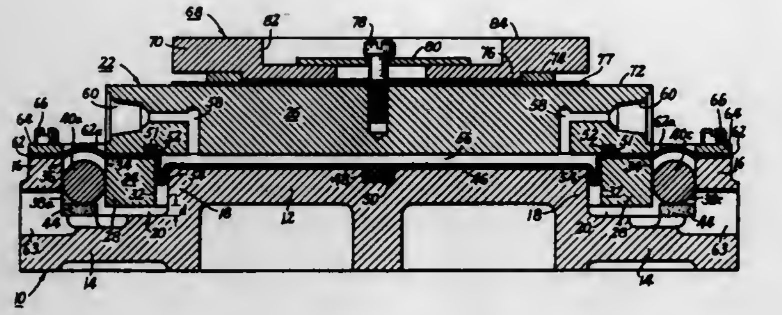
Peter Florjancic, St. Martinstr. 12, Garmisch-Partenkirchen, Germany
Filed Apr. 27, 1970, Ser. No. 32,165
Claims priority, application Austria, Apr. 28, 1969, A 4080/69
U.S. Cl. 92—76 **8 Claims**



A reciprocating rapid acting high-pressure closure apparatus is described for use in injection molding applications and the like. A closure plate is reciprocatingly mounted for movement towards and away from a high-pressure working region to a frame and is moved by a pair of spaced piston and cylinders located alongside a high-pressure force-producing device. A pair of braces are mounted to respective piston and cylinders which are pivotally mounted to the closure plate. The advance of the closure plate by piston-cylinder action is accompanied by a corresponding swivel action of the braces which are swiveled into positive engagement between the closure plate and the force-producing device when the closure plate has neared the end of its advancing stroke at the working region. At the working region the high-pressure force is actuated to produce a high force through the swiveled brace onto the closure plate.

3,646,854
LOAD CELL WITH HIGH CROSS LOADING CAPACITY

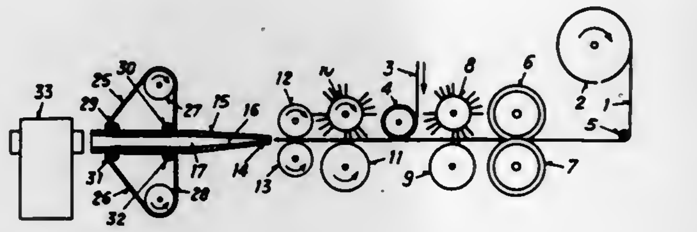
Chester D. Bradley, Darien, and Malcolm C. Tate, Stamford, both of Conn., assignors to The A. H. Emery Company, New Canaan, Conn.
Filed Mar. 18, 1970, Ser. No. 20,665
Int. Cl. F16j *3/00*
U.S. Cl. 92—98 **11 Claims**



An hydraulic load cell of the piston-cylinder type capable of withstanding high levels of cross loading. The piston and cylinder carrying members are assembled about roller bearings for free relative axial and angular telescopic movement. The cell is also provided with a flexible diaphragm which is extended over the roller bearings and secured to form an integral dust jacket, and with a sliding load head structure to absorb lateral thrust.

3,646,855
METHOD AND APPARATUS FOR PRODUCING A TOBACCO FILTER ROD OR CORD FROM A WEB OF FIBROUS MATERIAL

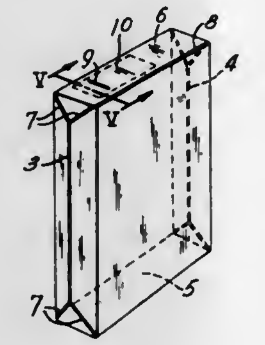
Paul Adolf Muller, Herrliberg, Switzerland, assignor to Celfil Company Establishment, Vaduz, Liechtenstein
Original application Jan. 22, 1957, Ser. No. 635,470, now Patent No. 2,916,039, dated Dec. 8, 1959, and a continuation-in-part of 502,016, Apr. 18, 1955, now Patent No. 2,995,481, dated Aug. 8, 1961, and a continuation-in-part of 504,647, Apr. 28, 1955, now Patent No. 3,161,557, dated Aug. 8, 1961; said 635,470, , and 504,647, , which is a continuation-in-part of application Ser. No. 502,016, , which is a continuation-in-part of application Ser. No. 447,478, Aug. 3, 1954, now Patent No. 2,847,086, dated Aug. 12, 1958. Divided and this application Sept. 1, 1959, Ser. No. 841,918
Int. Cl. B31d
U.S. Cl. 93—1 C **9 Claims**



Apparatus and process for treating paper strip material to render it particularly adapted to be gathered and enclosed in a wrapper to make a filter cord subdividable into efficient cigarette filters. The paper is first moistened to prevent undue tearing in a longitudinal grooving and lateral stretching treatment which loosens and exposes fibers by passage through the nip between heated meshing rollers of rigid material having alternating circumferential grooves and ridges. After being grooved and stretched the paper is dried to set the grooves, and optionally flattened somewhat by a knurling operation. The grooving and stretching may be carried out by successive sets of rollers wherein the following sets may be operated at a higher peripheral speed to stretch the paper longitudinally.

3,646,856
METHOD OF MAKING A VALVE BAG

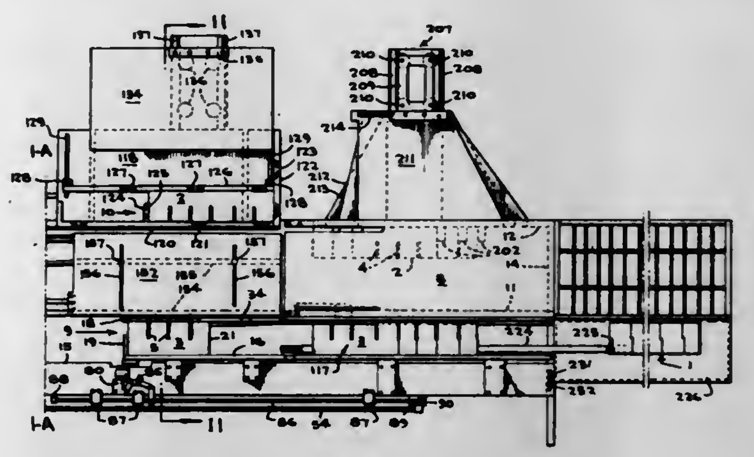
John Worndl, Brampton, Ontario, Canada, assignor to Canadian Industries Limited, Montreal, Quebec, Canada
Filed Jan. 26, 1970, Ser. No. 5,567
Claims priority, application Great Britain, Feb. 17, 1969, 8,507/69
Int. Cl. B31b *49/04*
U.S. Cl. 93—35 R **6 Claims**



A side weld bag having a patch valve located at one end of the bag. Preferably the bag ends are gusseted. The bag is manufactured by attaching a valve patch so as to cover an opening in the free border of a folded length of film. The edges of the folded length are then sealed together to form a bag having a valve in one end. The bag can be manufactured using a modification of a known bagmaking machine.

3,646,857
INNER PACK ASSEMBLY MACHINE

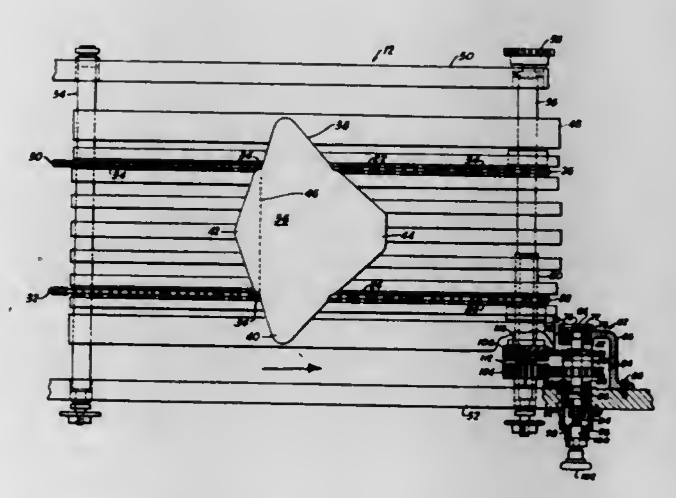
Thomas Larry McDougal, Route #5, Fairmont, W. Va.
Filed Oct. 24, 1969, Ser. No. 869,287
Int. Cl. B31b *1/00*
U.S. Cl. 93—37 R **40 Claims**



A method for assembling partition strips slit inwardly from one edge into inner pack assemblies, wherein a group of partition strips adapted to lie parallel and extend in one direction in the pack assembly are gathered in parallel, vertically spaced, longitudinally staggered relation and at an incline to the horizontal with their edges at the slits spread vertically, and another group of partition strips adapted to lie parallel and extend at an angle to the direction of the first group in the pack assembly are gathered in parallel, vertically spaced, longitudinally staggered relation and horizontal at a position confronting the first group, and the two groups are brought together in interlocking relation. Machines for carrying out the method are disclosed with magazines for holding supplies of the partition strips of the two groups, and having means to eject strips from the magazines, transport them to the opposed, confronting position, and leave them in the arrangements set out in the method. Additional means moves one group toward the other to assemble the inner pack. Several embodiments of the invention are disclosed, illustrating various arrangements of magazines and various means for operating the gathering mechanisms.

3,646,858
APPARATUS FOR ALIGNING THE PINS ON ALIGNER CHAINS OF AN ENVELOPE MACHINE

Herbert W. Helm, Hollidaysburg, Pa., assignor to F. L. Smithe Machine Company, Inc., Duncanville, Pa.
Filed Aug. 17, 1970, Ser. No. 64,181
Int. Cl. B31b *21/00*
U.S. Cl. 93—62 **10 Claims**



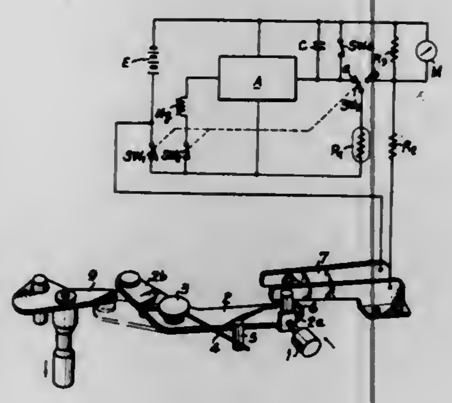
Envelope blank timing and aligning apparatus includes a support table for the envelope blanks with a pair of spaced parallel endless chains. The chains are positioned slightly below the upper surface of the table with pin members extending upwardly therefrom. The pin members engage edge portions of the envelope blank and convey the envelope blank along the table in timed and aligned relation for feeding into the other envelope-forming elements of the machine. A drive for the chains includes a drive shaft connected to a drive gear. A drive sprocket for one of the chains is secured to the drive shaft for rotation therewith. A tubular drive shaft is coaxially positioned on the drive shaft and has a drive sprocket for the other chain secured thereto for rotation therewith. A transmission drive is provided to connect the tubular shaft to the drive shaft and to adjust the phase angle of the tubular shaft relative to the drive shaft and thereby adjust or change the position of the pins on the respective chains relative to each other. The transmission drive includes an idler shaft and meshing spur gears connecting the drive shaft and the idler shaft. Also included in the transmission is a pair of meshing helical gears connecting the idler shaft and the tubular shaft. Axial movement of the idler shaft relative to the drive shaft and tubular shaft moves the gears on the idler shaft relative to the gears on the drive and tubular shaft to rotate one shaft relative to the other and change the phase angle between the drive shaft and the tubular shaft. The adjustment of the phase angle between the respective shafts may be accomplished while the shafts are rotating to thereby adjust the relative position of the aligner pins while the envelope machine is running.

3,646,859

CAMERA PROVIDED WITH AUTOMATIC EXPOSURE AND BATTERY-CHECKING CIRCUITS

Yukio Umemura, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Jan. 20, 1971, Ser. No. 107,884
Claims priority, application Japan, Jan. 27, 1970, 45/7842
Int. Cl. G03b *17/18, 7/08*
U.S. Cl. 95—10 CT **6 Claims**



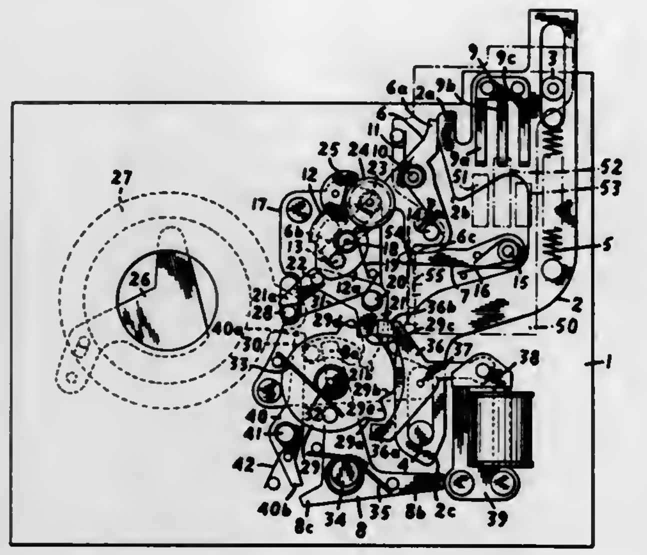
A camera which has an electrical circuit for automatically determining exposure as well as an electrical circuit for checking the condition of a battery. A battery is common on both of these circuits, and a meter is also common to both of these circuits. The checking circuit has a normally open switch, and this switch is manually closed in order to check the battery through an indication on the meter. The exposure circuit is rendered operative by actuation of the camera shutter. A blocking mechanism is automatically operated when the normally open switch of the checking circuit is closed for blocking operation of the camera shutter so that in this way operation of the meter in connection with battery-checking operations cannot interfere with the operation thereof in connection with exposure operations.

3,646,860

CAMERA WITH AUTOMATICALLY CHARGED SHUTTER

Kiyoshi Kitai, Tokyo, Japan, assignor to Kabushiki Kaisha Hattori Tokeiten, Tokyo, Japan

Filed June 18, 1969, Ser. No. 834,457
Claims priority, application Japan, June 19, 1968, 43/42168
Int. Cl. G03b *7/08, 9/08*
U.S. Cl. 95—10 CT **3 Claims**



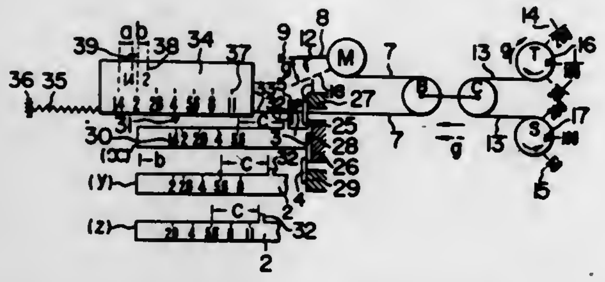
A camera with an electronic shutter of simplified construction without a cocking or charging member. The shutter initiates an exposure approximately at the end of the depression stroke of a release member and has means including a delay circuit having a photoelectric element sensing the brightness and an electromagnet for automatically controlling exposure aperture opening and exposure time in accordance with the brightness of a subject or field being photographed. The shutter has mechanism for charging it automatically when the release member is restored to a rest position by a resilient member.

3,646,861

EXPOSURE PHOTOMETRY SYSTEM FOR PHOTOGRAPHIC CAMERA

Tatsuo Fujii, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 23, 1969, Ser. No. 887,559
Claims priority, application Japan, Dec. 27, 1968, 43/95777
Int. Cl. G03b *7/04*
U.S. Cl. 95—10 C **4 Claims**



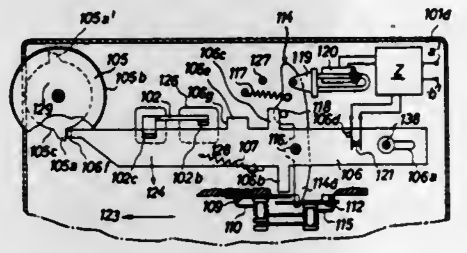
Exposure photometry system of photographic equipment provided with a light-receiving portion of exposure meter passing through at least a part of the photographic optical system. When obtaining an exposure for an aperture smaller than a specified aperture of the photographic optical system, the light is measured in like manner to full-open photometry by letting the light passing through said specified aperture be accepted by the light-receiving portion. On the other hand, when obtaining an exposure for an aperture larger than said specified aperture, the light passing through said larger aperture is accepted by the light-receiving portion of the exposure meter.

3,646,862

PHOTOGRAPHIC APPARATUS WITH DOUBLE EXPOSURE PREVENTING MEANS

Reinhard Von Sybel, Krailling; Dieter Engelsmann, and Gunter Fauth, both of Unterhaching, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 4, 1970, Ser. No. 16,307
Claims priority, application Germany, Mar. 7, 1969, P 19 11 774.9
Int. Cl. G03b *9/68, 9/62, 17/42*
U.S. Cl. 95—31 AC **24 Claims**



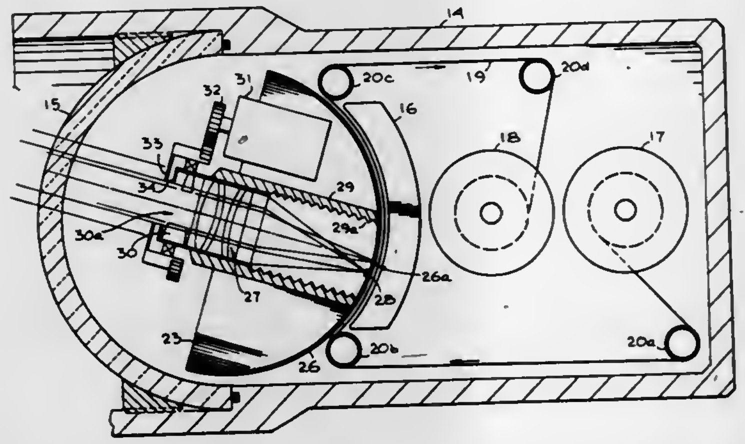
A still camera wherein a spring-biased bolt is free to move in response to actuation of the camera release to assume a position in which it prevents renewed actuation of the release. The bolt is moved from such position in response to transport of the film by the length of a frame to thereby stress a spring which propels it in response to renewed actuation of the release whereby an impeller of the bolt opens the leading blade of the shutter which thereupon remains in open position at least until the release reassumes its idle position. The trailing shutter blade is permitted to close and to thus complete the exposure with a delay which is determined by a retard mechanism or by an electrical circuit as a function of scene brightness.

3,646,863

ADAPTIVE UNDERWATER CAMERA

John S. Winslow, Altadena, Calif., assignor to Tetra Tech Inc., Pasadena, Calif.

Filed June 25, 1969, Ser. No. 836,329
Int. Cl. G03b *17/08*
U.S. Cl. 95—11 **6 Claims**



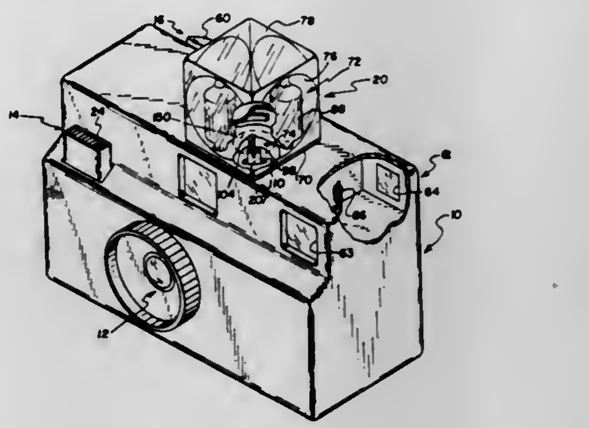
The present invention is an underwater camera which, because of its narrow field of view, looks only at the illuminated portion of an object. The camera includes a servosystem by means of which the camera is continuously positioned to follow the illuminated portion of the object.

3,646,864

FLASHLAMP-SENSING AND PERCUSSIVE-FIRING MECHANISM FOR PHOTOGRAPHIC APPARATUS

William T. Hochreiter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 14, 1969, Ser. No. 850,007
Int. Cl. G03b *9/70, 13/02, 17/20*
U.S. Cl. 95—11.5 R **7 Claims**



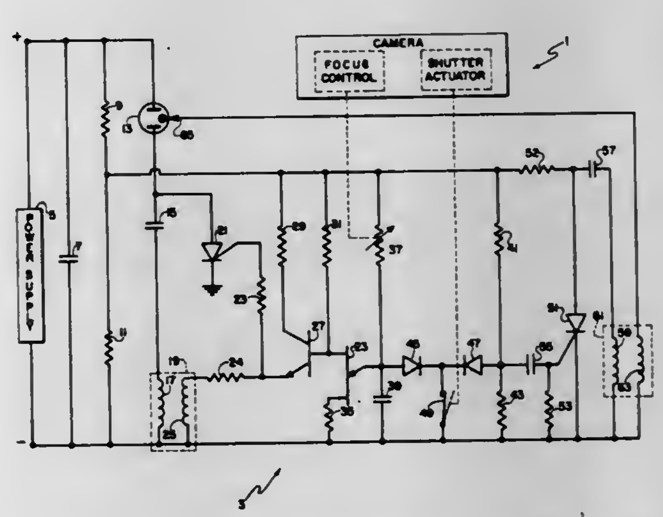
An improved photographic mechanism for mechanically sensing and firing a percussive flashlamp device is actuatable and resetable by the camera body release or shutter actuator and without requiring additional setting force upon film winding. The flashlamp device includes a preenergized striker, and the mechanism includes a sensing and actuating member movable into a first distinct position in engagement with the striker to sense the condition of the flashlamp. To fire the lamp, the sensing and actuating member is rapidly moved to a second and striker-dislodging position by a hammer or driver. Movement of the sensing and actuating member to such first and second positions is effected by depression of the camera body release or shutter actuator, and return movement thereof effects both retraction of the member and resetting or positioning of the hammer or driver. The mechanism also may be provided with one or more lamps or other indicating means for presenting an output or signal indicative of the sensed condition of the flashlamp or position of the preenergized striker.

3,646,865

ELECTRONIC FLASHLAMP CONTROL NETWORK

Conrad H. Biber, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 7, 1969, Ser. No. 874,826
Int. Cl. G03b *9/70*
U.S. Cl. 95—11.5 R **13 Claims**



A circuit is provided for automatically inducing an actinic discharge in a gas discharge photoflashlamp in response to the actuation of a camera shutter. Means are provided for electronically controlling the duration of the actinic discharge as a function of camera focus setting.

Basically, the duration control means comprises a capacitor in the discharge path of a photoflashlamp and shunted by an electronic switch. The switch is normally closed so as to short circuit the capacitor. A timing circuit opens the switch after a time interval determined by the camera focus setting and causes the lamp to quickly charge the capacitor in its discharge path so as to terminate the actinic discharge emanating from the lamp.

3,646,866

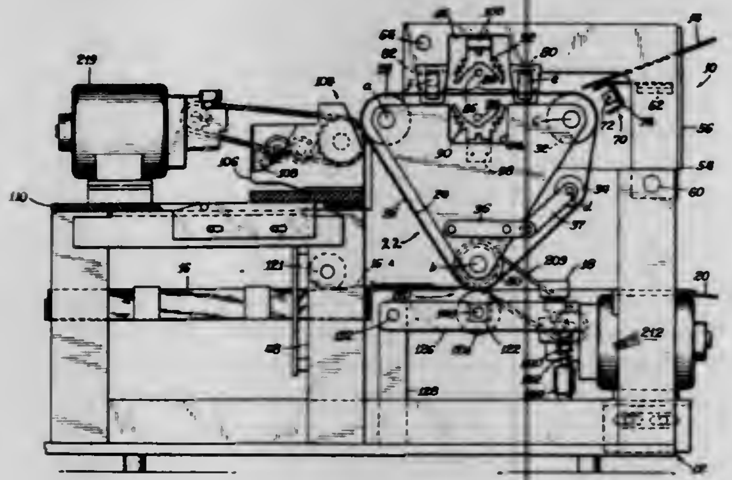
PHOTOELECTROSTATIC COPIER HAVING A SINGLE STATION FOR SIMULTANEOUSLY APPLYING TONER PARTICLES AND CLEANING THE PHOTOCONDUCTIVE MEDIUM

Evan S. Baltazzi, Brookfield; Loren E. Sheiffo, Palatine, and Michael Moduthagam, Chicago, all of Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Original application Oct. 16, 1967, Ser. No. 675,463. Divided and this application July 18, 1970, Ser. No. 61,005

Int. Cl. G03b *15/00*

U.S. Cl. 355—15 **19 Claims**



A photoelectrostatic copying apparatus equipped with a reusable continuous belt coated with an organic photoconductive medium adapted to move in an orbital path. A series of processing stations are located adjacent the path of movement of the belt so that, in sequence, it moves past charging, exposing, developing and transfer stations producing a copy or multiple copies on plain paper. The organic photoconductive medium is reusable. It is ready immediately after a developed image is transferred to the copy sheet to receive a new image without preliminary mechanical or electrical cleaning of the photoconductive medium.

3,646,867

FILM WINDUP DEVICE FOR CAMERAS PROVIDED WITH A FOCAL PLANE SHUTTER

Shigeo Ono, Yokohama-shi, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

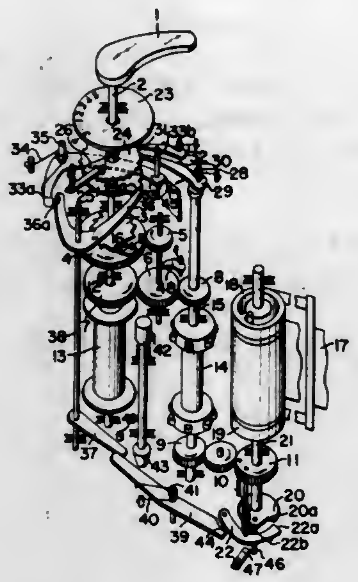
Filed Oct. 14, 1969, Ser. No. 866,280

Claims priority, application Japan, Oct. 18, 1968, 43/75625

Int. Cl. G03b *17/36, 19/04*

U.S. Cl. 95—31 AC **7 Claims**

A windup device for cameras having film-advancing means, a shutter, a clutch for normally connecting the film-advancing means to the shutter in operative engagement, a film counter and a back cover, the device being characterized by a mechanism for returning the film counter to its initial position while simultaneously disengaging the clutch upon opening the back cover and a mechanism for retaining the clutch in its disengaged position for a predetermined film advance subsequent to closure of the back cover.



3,646,868

MECHANISM FOR OPERATING THE REFLECTING MIRROR IN A SINGLE-LENS REFLEX CAMERA

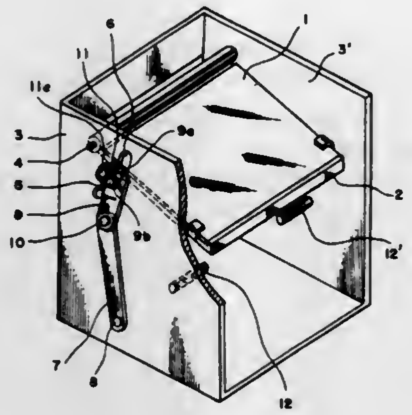
Minoru Sekida, Sakai-shi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed July 25, 1969, Ser. No. 844,749

Claims priority, application Japan, Aug. 1, 1968, 43/65993

Int. Cl. G03b *19/12*

U.S. Cl. 95—42 **2 Claims**



A mechanism for operating the reflecting mirror in a single-lens reflex camera wherein a pair of interconnected levers are so articulated as to be angularly related during other than an uppermost position of the pivotally mounted mirror, and be coaxial during an uppermost position of the mirror. One of the levers has a slot therein opening toward its free end for the reception of a pin member secured to the mirror, and a spring is provided on this one lever for urging the pin toward the bottom of the slot. The levers are so arranged that the pin is slightly spaced from the bottom of the slot to thereby increase the spring tension in the lowermost position of the mirror resting against a stop means, whereby the frame is moved upwardly as the residual tension of said spring is lessened and permits the pin to be moved closer toward the slot bottom until it makes contact therewith in the uppermost position.

3,646,869

ELECTRONIC SHUTTER FOR PHOTOGRAPHIC CAMERAS

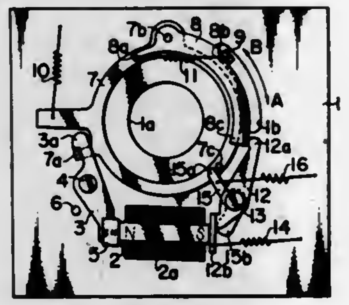
Kiyoyuki Arai, Gyoda, Japan, assignor to Kabushiki Kaisha Koparu

Filed Feb. 3, 1970, Ser. No. 8,248

Claims priority, application Japan, Feb. 10, 1969, 44/9922; Apr. 30, 1969, 44/40262

Int. Cl. G03b *9/58*

U.S. Cl. 95—53 EB **8 Claims**



A shuttering opening control lever has a permanent magnet which is attracted to an electromagnet when the electromagnet is deenergized. A shutter closing control member is attracted to the electromagnet when the electromagnet is energized, and the repelling force between the electromagnet and the permanent magnet actuates the shutter opening control lever to effect opening of the shutter. Upon deenergization of the electromagnet the shutter closing control lever, which has until then been attracted to the electromagnet, moves away from the latter and effects closing of the shutter.

3,646,870

DEVICE FOR BRAKING OF SHUTTER BLADES OR THE LIKE

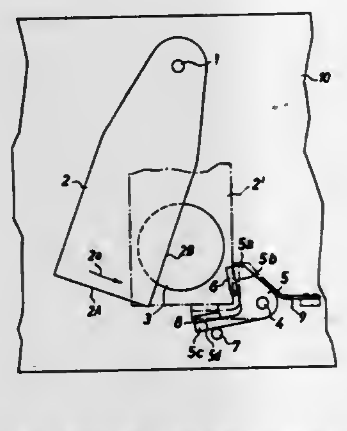
Boris Koleff, Munich, and Erich Nagel, Anzing, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 13, 9170, Ser. No. 36,884

Claims priority, application Germany, May 17, 1969, P 19 25 312.4

Int. Cl. G03 *9/10*

U.S. Cl. 95—59 **14 Claims**



A braking device for shutter blades or the like which comprises a pivotable actuating member normally extending into the path of movement of the blade and serving to displace a braking member which is thereby urged against the blade, preferably in a direction at right angles to the direction of movement of the blade, to produce a controlled braking action. The braking member is integral with or is coupled to the actuating member by a torsion spring or the like. Elastic cushions are provided on the actuating and braking members in such positions that the cushion of the actuating member is struck by the moving blade and the cushion of the braking member strikes against the blade in response to resulting displacement of the actuating member.

3,646,871

DIAPHRAGM ADJUSTMENT DEVICE FOR A MOTION PICTURE CAMERA

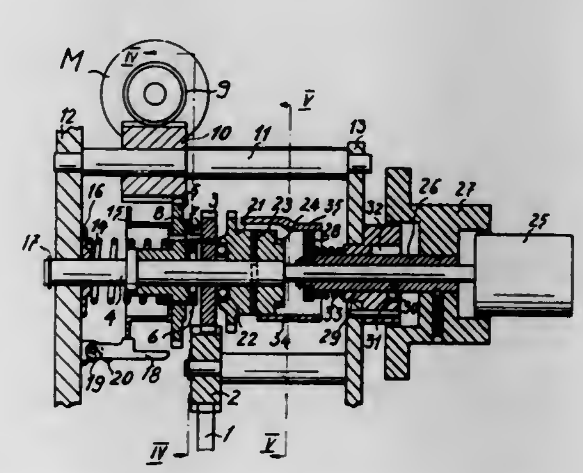
Gilbert Ramet, Cuarny, Switzerland, assignor to Paillard S.A., Sainte-Croix, Vaud, Switzerland

Filed Mar. 2, 1970, Ser. No. 15,621

Claims priority, application Switzerland, Mar. 13, 1969, 3794/69

Int. Cl. G03b *9/07*

U.S. Cl. 95—64 B **5 Claims**



An automatic control and a manual regulator for the diaphragm are combined with preselection apparatus so that after manual focusing adjustment at maximum aperture, the latter is restored to automatic control on actuating the filming trigger. The automatic control comprises an electric motor actuating the diaphragm through a coupling and a friction clutch with a locking member. The coupling has two parts held in a certain position by a spring and two stops, and is rotatably mounted on a spring-urged sliding shaft fixed to a control button and bearing a cogwheel which meshes with a pinion for automatic control and disengages for manual control. Under or over exposure is indicated by lamps controlled by a contactor responsive to the direction of rotation of the motor.

3,646,872

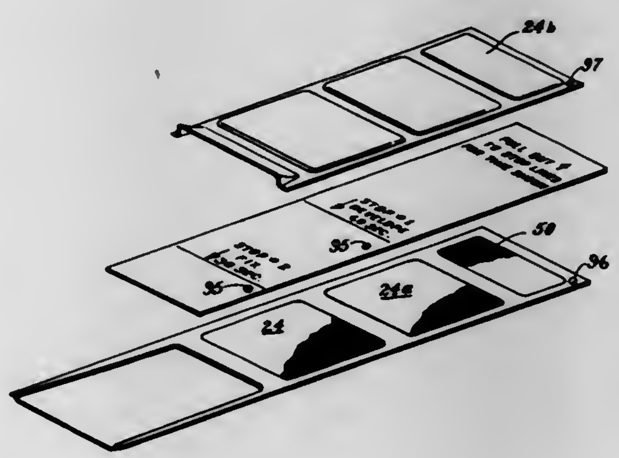
PHOTOGRAPHIC FILM-DEVELOPING APPARATUS

James F. Bowlby, 124 Demarest Road, Bloomingdale, N.J.

Filed Sept. 17, 1968, Ser. No. 760,231

Int. Cl. G03d *5/00*

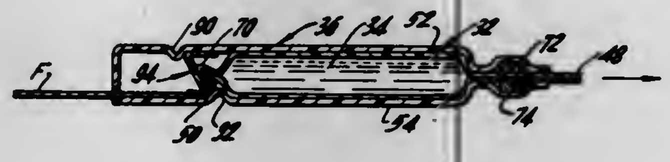
U.S. Cl. 95—89 **8 Claims**



A disposable photographic processor having a pair of elongated plates which are sealed to each other along their longitudinal edges to thereby form the inlet and outlet for the processor. A cup for containing a processing solution is formed in one of the plates. A pull strip is positioned between the plates and has an attaching device thereon for drawing an exposed film through the processor.

3,646,873
SINGLE USE FILM DEVELOPER

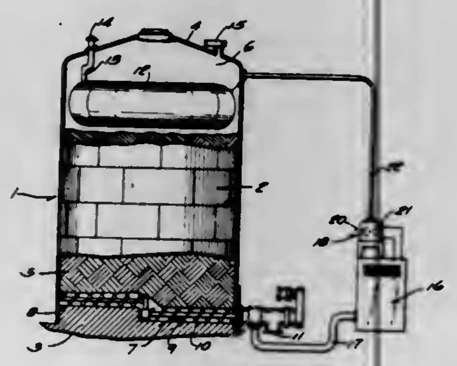
James F. G. Bowlby, 124 Demarest Road, Bloomingdale, N.J.
Filed Apr. 8, 1969, Ser. No. 814,243
Int. Cl. G03d *5/02*
U.S. Cl. 95—89 R **3 Claims**



A length of exposed, photographic film is coupled to a pliable package containing a developer. The pliable package and the film are drawn through a rigid container that discharges the developer from the pliable package into the rigid container and onto the film.

3,646,874
METHOD AND APPARATUS FOR STORAGE ATMOSPHERE CONTROL

Frank D. Hamerski, Milwaukee, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.
Filed Nov. 3, 1969, Ser. No. 873,375
Int. Cl. E04h *7/22*
U.S. Cl. 98—1.5 **8 Claims**

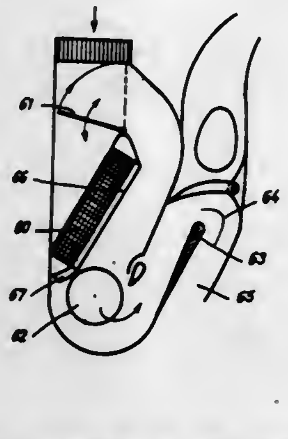


A storage unit having a gas generator connected to a generally sealed storage structure for supplying a controlled atmosphere gas to the structure. The generator is controlled by initiating generator operation when the storage structure pressure declines to a predetermined differential with the ambient, and by terminating generator operation when pressure in the storage structure builds to a second predetermined differential above the value of the first. A set of pressure switches in communication with storage pressure detect the predetermined differentials and start and stop the generator through an interlocking switching circuit connecting the switches to a generator control. The interlocking switching circuit includes a timer which precludes the pressure switches from frequent starting and stopping of the generator.

3,646,875
DEVICE FOR ADJUSTING THE TEMPERATURE

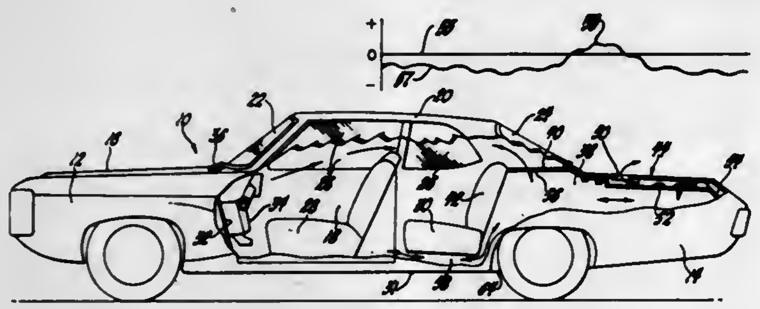
Kurt Zenkner, Hertzstrasse 12, Ettlingen, Germany
Filed Jan. 8, 1970, Ser. No. 1,454
Claims priority, application Germany, Aug. 14, 1969, P 19 41 356.0
Int. Cl. B60h *1/24*
U.S. Cl. 98—2.08 **36 Claims**

An arrangement for regulating the temperature inside a vehicle includes a casing containing a heat exchanger and a transverse-flow blower for moving air through the heat exchanger. The blower includes an impeller and the casing has a guide wall opposite the impeller which starts at a point close to the impeller and extends in a spiral of increasing radius through an angle of about 180° around the impeller axis and has a continuation tangent to its end remote from the impeller. A wedge-shaped vortex-forming tongue has a surface on its suction side which faces the impeller and forms therewith a passage diverging in the direction of impeller rotation. A guide plate opposite the surface of the tongue on the suction side forms with such surface a channel which converges from the discharge side towards the suction side and runs approximately tangential to the periphery of the impeller.



3,646,876
FLOW THRU BODY VENTILATION

Ward J. Atkinson, Northville, and Edward N. Cole, Bloomfield Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 15, 1970, Ser. No. 28,641
Int. Cl. B60h *1/24*
U.S. Cl. 98—2.11 **3 Claims**



A ventilation system for the passenger compartment of an automobile including an air admission means for introducing air under pressure into the forward portion of the passenger compartment and an air passage through the automobile's exterior surface effective to conduct an uninhibited flow of air in either direction between the atmosphere and the passenger compartment and wherein the passage opens to the atmosphere in a substantially horizontal rear deck lid between a substantially neutral pressure area on the automobile's exterior surface as produced by airflow over the exterior surface during automobile movement.

3,646,877
CLOSURE OPERATOR

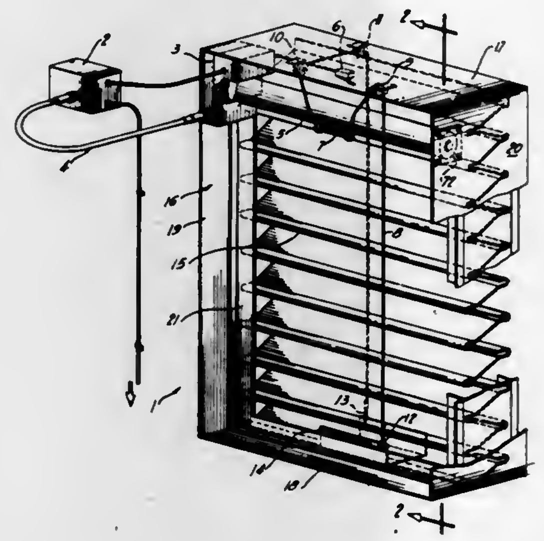
David H. Ellis, West Chicago, Ill., assignor to Rixson Inc., Franklin Park, Ill.
Filed Dec. 22, 1969, Ser. No. 886,916
Int. Cl. F24f *13/00*
U.S. Cl. 98—110 **9 Claims**

A closure operator to effect remote, fail-safe opening and closing of a closure, particularly a multifold or interlocking slat curtain damper.

A frame or shell envelopes the damper curtain which is capable of opening and closing an air passage defined by the frame or shell. A rotatable drum is positioned within the frame or shell adjacent the curtain when it is folded so that the drum will not obstruct airflow through the damper when the damper is opened. A cable couples the drum and the curtain; and the curtain is opened in response to the winding of the cable about the drum in response to drum rotation.

A drum drive mechanism is axially aligned relative the axis of the drum so that both components extend completely across the frame or shell immediately adjacent the folded curtain.

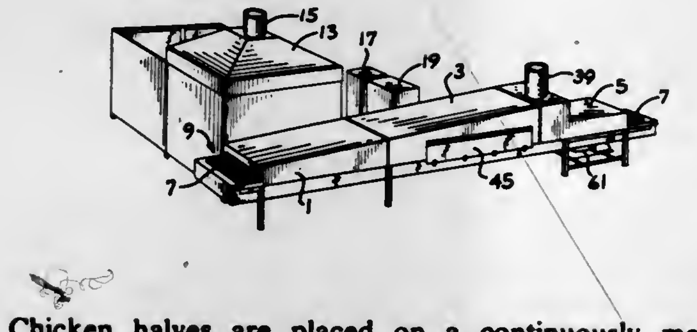
Upon occurrence of (1) a manual switch operation to effect damper closure, (2) a power failure, (3) circuit malfunctioning, or (4) the detection of an undesired condition such as smoke or fire, the drum drive clutch is disengaged. When the clutch is disengaged, the drum unwinds to lower the curtain and close the damper.



In an alternative drum embodiment, the drum includes a cable takeup spool and a drum body of relatively greater mass than the spool. A drawn cup roller clutch couples the spool to the drum body. This clutch is engaged when the curtain is folded to open the damper; and the clutch is disengaged when the curtain is released to close the damper. With this drum arrangement the forces of drum momentum acting upon the cable (and tending to rewind the cable in the opposite direction) are substantially minimized when the curtain is released for damper closure.

3,646,878
APPARATUS FOR BARBECUING FOOD

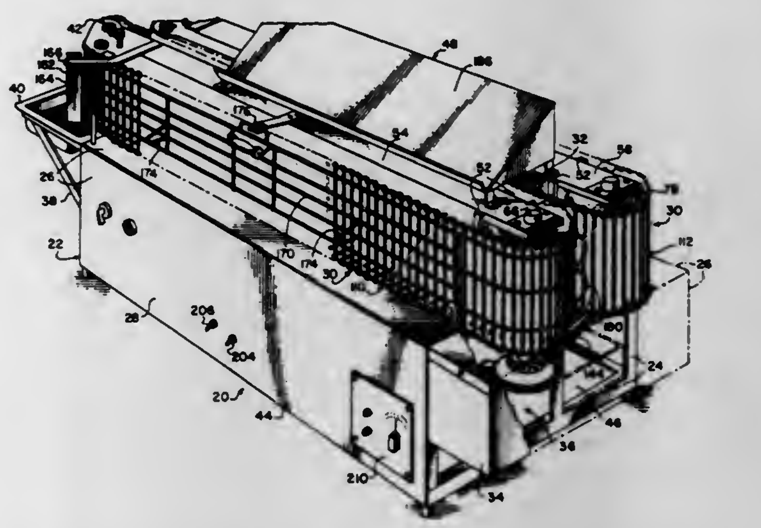
Ernest Keller, Chicago, Ill., assignor to Louis Jutzi, Palos Park, Ill.
Filed May 11, 1970, Ser. No. 36,137
Int. Cl. A47j *37/00*
U.S. Cl. 99—339 **4 Claims**



Chicken halves are placed on a continuously moving horizontal conveyor and conveyed first through a charcoal searing station that sears the bottom side of the product, then through a microwave section where the cooking takes place in an atmosphere of charcoal smoke from the charcoal fire, then through an infrared heating section for forming a crust and browning the top surface thereof.

3,646,879
AUTOMATIC BROILING APPARATUS

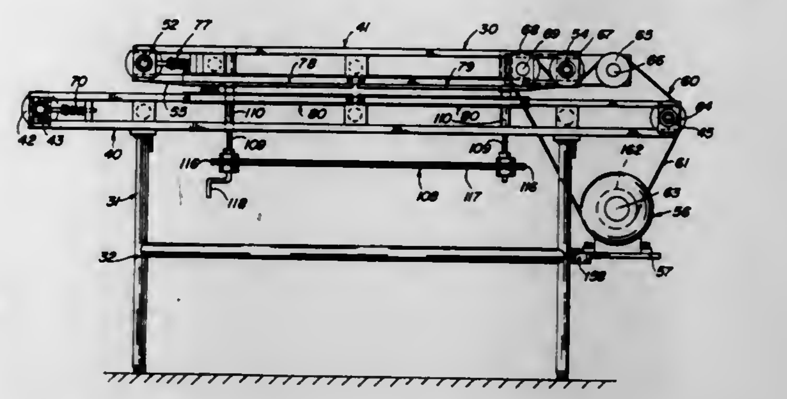
Einar H. Palmason, and Harry R. Stevens, both of Fort Lauderdale, Fla., assignors to Parkson Corporation, Fort Lauderdale, Fla.
Filed Mar. 21, 1969, Ser. No. 809,148
Int. Cl. A47j *37/00*
U.S. Cl. 99—339 **19 Claims**



An automatic apparatus for broiling comestibles having a guiding and conveying mechanism for transporting comestibles in a vertical position through spaced infrared broiling elements where the comestibles are continuously cooked from both sides simultaneously as they travel through the elements and after broiling are continuously removed from the guiding and conveying means.

3,646,880
COOKING GRILL

James D. Norris, Chicago, Ill., assignor to Thermal Process Engineering Company, Chicago, Ill.
Filed Aug. 21, 1970, Ser. No. 65,917
Int. Cl. A47j *37/00*
U.S. Cl. 99—349 **10 Claims**

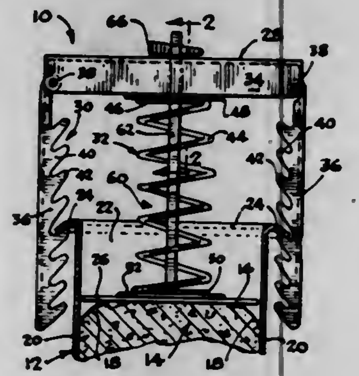


An electrically heated cooking grill for rapidly cooking cheese sandwiches, hamburgers, french toast, bacon, pancakes, crepe suzette (thin pancakes), pizza crust, scrambled eggs, and other food products. The food products are conveyed between a pair of endless heating belts which are heated by upper and lower heating units in the form of heating platens which have variable temperature heating zones so arranged that the cooking temperature is varied as the food product moves through the variable temperature heating zones. The upper heating unit includes front and rear upper heating platens which are vertically adjustable with the upper heating belt relative to the lower heating unit or platens and heating belt to provide for food products of varying sizes and thicknesses and the front and rear upper heating platens may be tilted relative to the horizontal so that as the food product moves progressively through the grill from front to rear and shrinks in size due to the cooking operation the front and rear upper heating platens and the upper heating belt will be disposed in the most advantageous heating position relative to the lower heating belt and heating unit or platens. The endless heating belts are designed to be nonsticky and to provide for rapid heat transfer from the heating units or platens to the food products being cooked and for long wear life.

3,646,881
MOLD COVER

Theodore Nicholas Rathjen, Oakland, and Harold Biddick Hanson, San Leandro, both of Calif., assignors to Chemetron Corporation, Chicago, Ill.

Filed Apr. 24, 1970, Ser. No. 31,668
Int. Cl. A47j *27/20*
U.S. Cl. 99—351 **2 Claims**

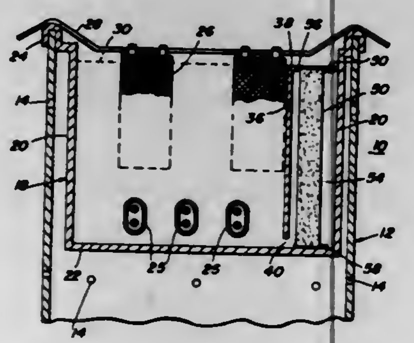


In a mold cover for use in combination with an elongated open-ended mold, such as may be used in molding meat loaves and other food products, means are provided for maintaining a movable pressure plate in predetermined transverse relation to the sides of the mold as the plate is biased for movement longitudinally into the mold.

3,646,882
FILTER FOR DEEP FRYER

Richard T. Keating, 4301 West Madison St., Chicago, Ill.

Filed May 28, 1969, Ser. No. 828,672
Int. Cl. A47j *37/12*
U.S. Cl. 99—408 **13 Claims**

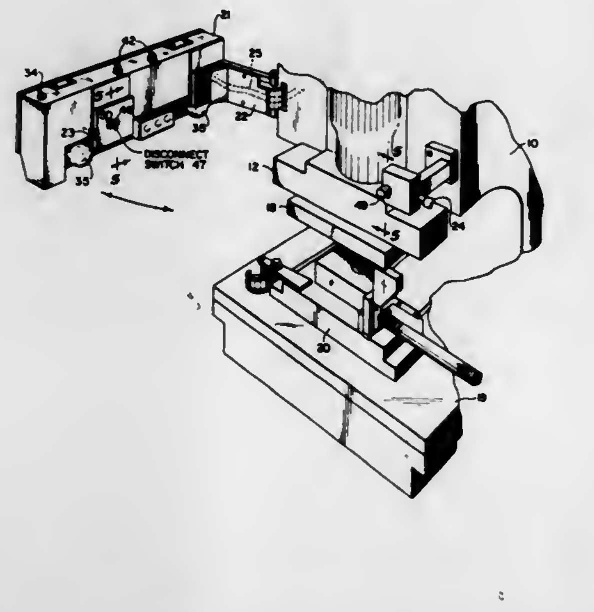


A multilayered filter element for deep fryers characterized by both the efficiency of filtering and sweetening action and ease of replacement. In one embodiment the filter element is formed as an elongated member having layers of filtering media of different particle size or porosity through which the liquid to be filtered is passed. In another embodiment the filter element has a combination of a fibrous filtering media and a finely divided absorbent material in alternate layers. A tubular filter element is disclosed having a wall composed of an inner layer of coarse filter paper, an intermediate layer of medium filter paper and an outer layer of fine filter paper, with diatomaceous earth or the equivalent interposed between the layers. The filter element is provided with a wall having engaging means whereby the filter can be readily removed from the fryer. In another embodiment a filter trough is provided into which the liquid fat overflows and passes through interposed layers of graded filter media. Other embodiments are disclosed.

3,646,883
PUNCH PRESS WITH SWING-OUT CONTROL PANEL

Mike A. Provi, Rockford, Ill., assignor to Rockford Iron Works Inc., Rockford, Ill.

Filed Oct. 19, 1970, Ser. No. 81,859
Int. Cl. B30b *15/14*
U.S. Cl. 100—53 **10 Claims**



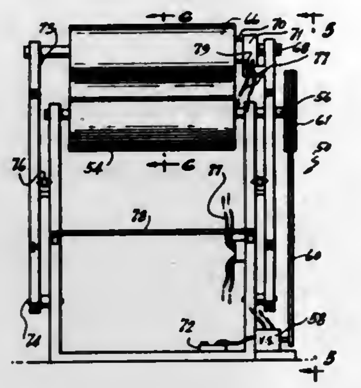
A control panel is hinged to swing like a door outwardly from the front of the frame away from the ram in order for the setup man or maintenance man to have clear access to all the press, ram, screw, and bed area for repairing or setting up the press, this control panel, for safety reasons, having a main disconnect switch incorporated therein with electric wires running inside the panel and thence through the frame at the hinged end of the panel to a main control box, the entire wired track being fully insulated. This main disconnect switch is opened automatically under spring pressure when the control panel is swung away from the frame when the control panel is swung back and locked in its normal position. In that way all electrical connections and all air connections are disconnected automatically when the panel is swung outwardly, completely eliminating any possible mechanical or electrical mishap befalling the setup man or operator, as the machine is completely immobilized under these conditions. The control panel carries die lights on the inner side thereof for good illumination of the entire bed area to facilitate repairing and setup jobs, the panel serving as a reflector for these lights. A hinged cover plate on the front of the panel facilitates all of the assembling and wiring operations at the outset, besides affording easy access to everything carried in the panel whenever that may become necessary.

3,646,884
METHOD AND MEANS FOR MAKING A CARBON PATTERN ON A FLEXIBLE PRINTING PLATE

Billie J. Johnson, 702 Fairhope Ave., Fairhope, Ala.

Filed July 7, 1969, Ser. No. 839,613
Int. Cl. B41d *7/00;* **B41c** *3/04*
U.S. Cl. 101—33 **5 Claims**

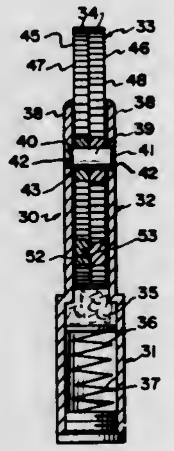
A pattern formed by heat transferable duplicating substances disposed in a predetermined array on a flexible sheet is transferred by application of heat to a flexible plate mounted on a cylindrical drum. The flexible plate is prestretched on the drum. The plate can then be removed from the drum and mounted on a cylinder of a rotary press for printing pattern carbon sheets. Apparatus including the cylindrical drum and means for applying heat thereto while the drum rotates to effect transfer of the pattern is described.



3,646,885
SCALE PATTERN AND ROUTE CONVERSION MARKER

Stanley J. Kolody, 1750 Burr Oak, Homewood, Ill.

Filed Feb. 4, 1969, Ser. No. 796,383
Int. Cl. B41f *5/10;* **B41g** *3/00*
U.S. Cl. 101—328 **1 Claim**



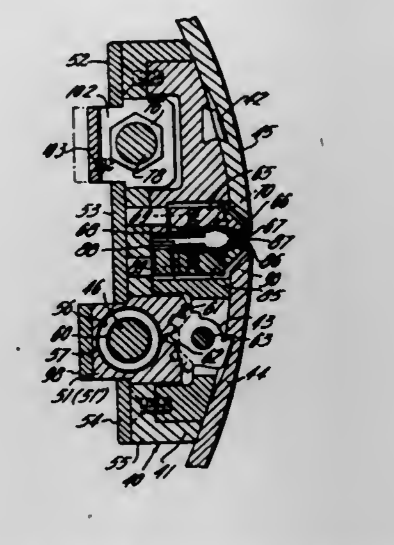
A marking apparatus is illustrated herein which discloses a body with a marking roller exposed at one end thereof. An applicator applies a marking substance such as ink to printing embossments on a circumferential surface of the roller when the roller is rotated or is rolled on a surface. The printing embossments are arranged in a pattern or patterns, and the pattern or patterns of the embossments are transferred or printed on the surface upon which the roller is rolled to mark a path or route on the surface as well as to transfer the pattern of embossments from the roller to the surface.

3,646,886
PLATE CYLINDER WITH INTERCHANGEABLE PLATE CLAMPING DEVICE

Richard Woessner, Fairlawn, N.J., and Alexander Z. Benda, Bronx, N.Y., assignors to Wood Industries, Inc., Plainfield, N.J.

Filed May 10, 1968, Ser. No. 728,185
Int. Cl. B41f *27/06;, 27/10, 27/12*
U.S. Cl. 101—378 **4 Claims**

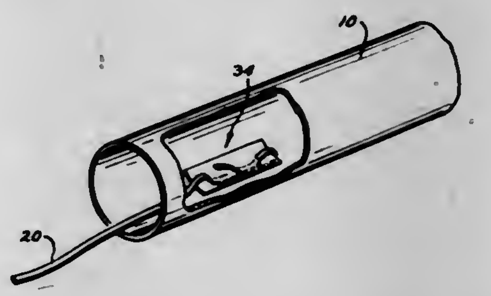
Interchangeable sets of printing plate clamping devices for the plate cylinder of letterpress printing machines are provided, one set for clamping lead-backed electrotype plates on the plate cylinder and another set, interchangeable with the first set, for independently clamping plate saddles on the cylinder and thin wraparound printing plates under spring pressure on the saddles. Provision is made for independently clamping two printing plates which are positioned side by side on the plate cylinder.



3,646,887
MODEL ROCKET AND SHOCK CORD RETAINER THEREFOR

George H. Stine, New Canaan, Conn., assignor to General Mills Fun Group, Inc., Minneapolis, Minn.

Filed July 30, 1970, Ser. No. 59,616
Int. Cl. F42b *15/00*
U.S. Cl. 102—34.5 **6 Claims**



A shock cord and retainer therefor. The shock cord retains in joined relation the nose cone and body tube of a model rocket during and after explosive separation of these parts, so that they will fall close together and be more easily recoverable. The retainer is a single piece of flexible material such as paper, to be attached inside the tube. Three holes which may be equidistant are cut into the piece of paper along its centerline. The cord is threaded through the holes with one end extending through the center hole to the top side of the paper. The cord extends along the bottom side of the paper then upward through a second hole, then around the side edge adjacent said hole, then again along the bottom surface, and finally upward through the third hole. The retainer is secured to the tube by an adhesive or bonding agent, such as glue or pressure-sensitive adhesive.

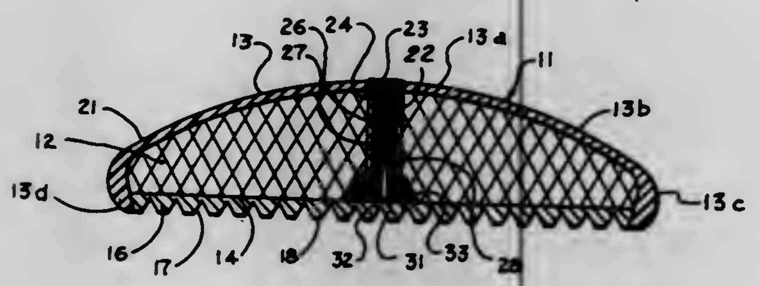
3,646,888
AERODYNAMIC DIRECTIONAL GRENADE, LAUNCHER THEREFOR AND WEAPONS SYSTEM UTILIZING THE SAME

Philip Lynn Posson, Suisun; Donald Baker Moore, San Lorenzo, and Dallas Earl Nicholson, Napa, all of Calif., assignors to Explosive Technology, Inc., Fairfield, Calif.

Filed Mar. 27, 1969, Ser. No. 811,702
Int. Cl. F42b *13/48*
U.S. Cl. 102—67 **11 Claims**

An aerodynamic directional grenade in the form of a body formed of a high-energy explosive material, said grenade having a generally saucerlike configuration with upper and lower surfaces that are adapted to sail through the air, the upper surface having a length in the direction of airflow which is greater than the length of the lower surface in the direction of airflow, whereby, when the body is propelled through the air an aerodynamic lift is imparted to the body. Fragment forming means is carried adjacent to one portion of the body, and means is carried by the body for detonating the body.

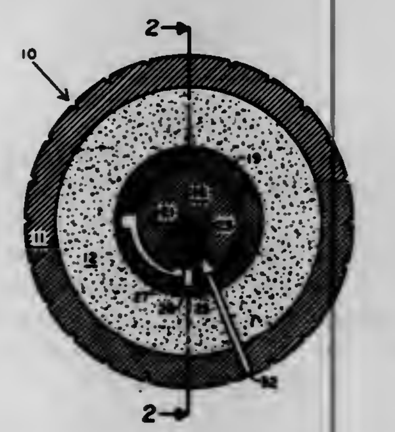
A launcher is provided for the aerodynamic directional grenade and has a launcher housing which carries a magazine that is adapted to receive a plurality of the grenades stacked one above the other, the housing having a discharge opening through which the grenades can be discharged. Means is mounted on the housing for receiving the grenades one by one from the magazine and discharging the same through the said opening at a speed so that the grenades are propelled aerodynamically through the air. Means is further included in said launcher to impart to the aerodynamic directional grenade a degree of rotation resulting in gyroscopic stability about an axis generally transverse to the direction of aerodynamic flight, requisite to maintaining a favorable aerodynamic flight orientation and desired orientation at detonation. Means is mounted on the housing for initiating operation, on or before the grenade leaves the housing, of the means carried by the body for detonating the body.



The weapons system may typically be used on a vehicle on which at least one launcher is carried by the vehicle and in which the launcher includes a means for launching the grenades sequentially from said magazine and to disperse the grenades automatically over a predetermined area within reasonably immediate range of the vehicle within a relatively short period of time. A plurality of the launchers can be provided to cover all the immediate area around the vehicle. The weapons system is capable of saturating the area immediately in the vicinity of the launcher with lethal fragments within a very short period of time.

3,646,889
BOMBLET FUZE SYSTEM

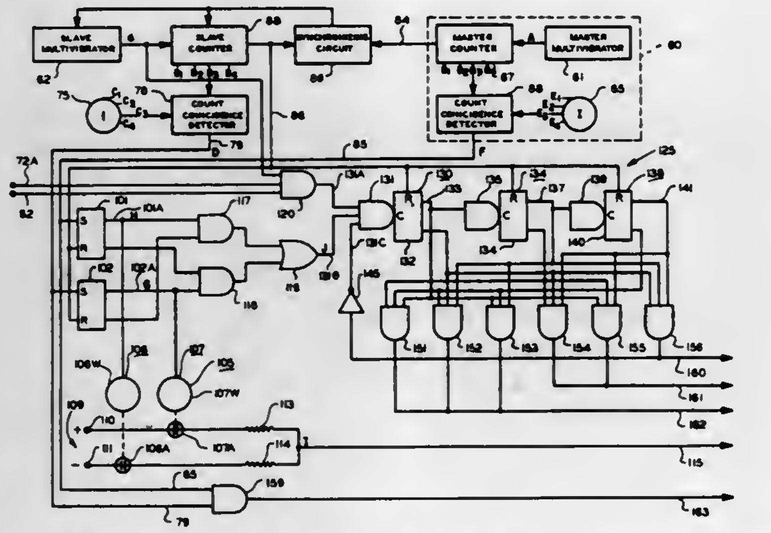
Edward J. Davis, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 9, 1970, Ser. No. 60,955
Int. Cl. F42c *5/02*
U.S. Cl. 102—70 B 5 Claims



A bomblet fuze arming device for use inside a bomblet which is dispensed from a container by a remote means; the device utilizes gas or air pressure to compress an enclosed cavity of air which in turn unlocks a stab-detonator holder and during release from the bomb dispenser performs the arming function by use of a reaction turbine, which locks at the end of the arming function.

3,646,890
MEANS FOR CONTROLLING AUTOMATICALLY MOVED VEHICLE

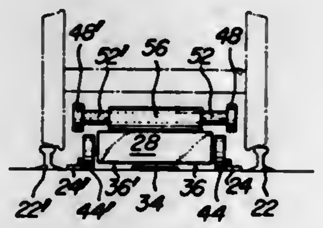
James H. Snyder, Battle Creek, Mich., assignor to Clark Equipment Company
Filed Nov. 28, 1969, Ser. No. 880,582
Int. Cl. G05b *19/00*
U.S. Cl. 104—1 31 Claims



A material unit handling and storage system has a stacking vehicle movable within an aisle between loading stations at each column of bins. The location of the vehicle within the aisle is sensed by a group of magnetically activated switches on the vehicle that respond to coded magnetic strips placed adjacent each station. A pulse clock and pulse counter system provide correlated pulses and information on the location of the vehicle and the selected destination for the vehicle is stored in count coincident detectors that produce an output upon the occurrence of the pulses corresponding to the location and destination. The difference in time of the occurrence of the pulses provides information to a driving control means that moves the vehicle in the desired direction at high, intermediate and low speeds as it nears its destination and at a fine positioning speed when it arrives at its destination.

3,646,891
CONTROLLING SYSTEM FOR MEANS FOR ADJUSTING SPEEDS OF FREIGHT CARS IN A YARD

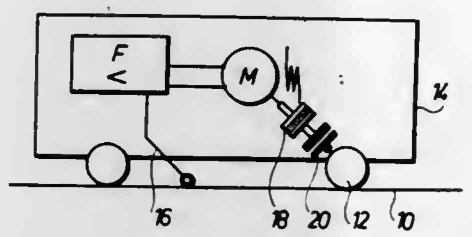
Kenichi Murato, Yokohama; Kenji Takei, and Masayuki Takayama, both of Katsuta, all of Japan, assignors to Japanese National Railways and Hitachi, Ltd., Tokyo, Japan
Filed Mar. 3, 1970, Ser. No. 16,181
Claims priority, application Japan, Mar. 10, 1969, 44/17540
Int. Cl. B61j *3/12*
U.S. Cl. 104—26 R 11 Claims



A controlling system for means for adjusting speeds of freight cars in a yard, which is designed such that self-powered freight car speed adjusting means having arms to catch a thrust freight car, in catching said freight car, detects the freight car at a point a predetermined distance ahead of said arms, whereby it is preliminarily accelerated to make the speed differential between it and the freight car small.

3,646,892
TRACTION UNIT FOR ELECTRIC MODEL RAILWAYS

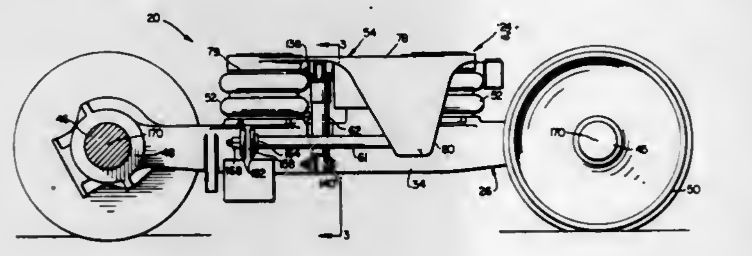
Attila Halmai, and Geza Halmai, both of Budapest, Hungary, assignors to Nikex Nehezipari Kulkereskedelmi Vallalat, Budapest, Hungary
Filed Dec. 16, 1969, Ser. No. 885,439
Claims priority, application Hungary, Dec. 28, 1968, HA-865
Int. Cl. B61b *11/00*
U.S. Cl. 104—148 3 Claims



In a traction unit for electric model railways consisting of a two-phase synchronous electric motor and an electronic unit for supplying the electric motor with two-phase pulse voltages from a feed voltage taken from the rails, an elastic clutch and, preferably, also a torque limiter is provided in the mechanical connection by means of which the electric motor drives the traction wheels, whereby the modeling range is extended to the use of quite low frequencies and, thus, to small revolution numbers of the traction wheels.

3,646,893
RESILIENT RAILWAY CAR TRUCK

Gustav B. Sundby, Atchison, Kans., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.
Filed Oct. 2, 1969, Ser. No. 863,039
Int. Cl. B61f *3/08*, *5/10*, *5/12*
U.S. Cl. 105—182 R 28 Claims

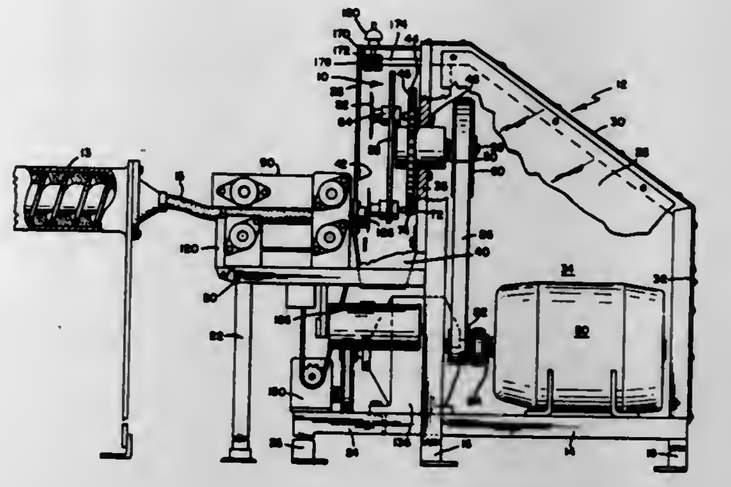


A railway car in which the car body is pivoted to a truck about a suspension adapter disposed in supporting relationship to its under side and in which the car body is in part supported directly from the truck frame and in part supported from the frame through the suspension adapter.

3,646,894
EXTRUDING AND CUTTING DOUGH

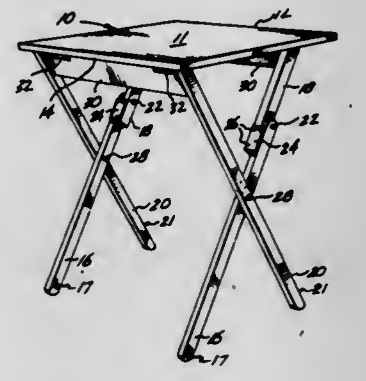
Mark Hasten; Lee S. Jones, and Denis L. Pommer, all of Minneapolis, Minn., assignors to General Mills, Inc.
Original application Dec. 23, 1966, Ser. No. 604,338, now Patent No. 3,491,637. Divided and this application Dec. 17, 1969, Ser. No. 888,104
Int. Cl. A21d *8/02*
U.S. Cl. 99—86 2 Claims

An apparatus for cutting or slicing a rope of material into slices of predetermined thickness without deforming the rope or the slice during the cutting operation. A circular cutting blade, mounted for rotation about two different axes, slices the rope as it is advanced toward the blade at a predetermined feed rate.



3,646,895
TABLE WITH FOLDING LEGS

Richard B. Campbell, 5808 Princeton Ave. N.E., Seattle, Wash.
Filed Sept. 2, 1970, Ser. No. 68,891
Int. Cl. A47b *3/02*
U.S. Cl. 108—118 3 Claims

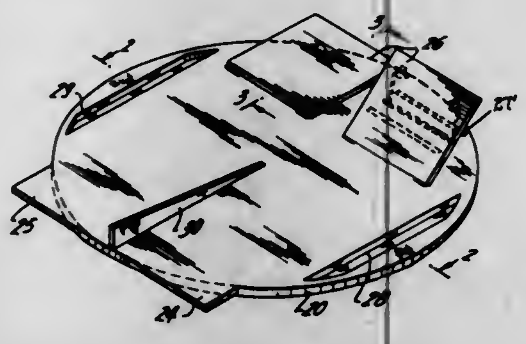


A table with folding legs is easily set up and folded away using one hand, while the other hand may be holding, for example, a tray with food. Four diagonal legs are used in an arrangement providing complete clearance for a person's legs beneath the table. Although the table in use is level, when folded, two legs on opposite sides of the table extend further downwardly than the other two legs and during the unfolding, the bottoms of these longer legs serve as fulcrums, as the tabletop is pivoted into a level position.

3,646,896
SUNBATHER'S ROTATABLE PLATFORM

Ruth Derujinsky, 165 West End Ave., New York, N.Y., and Patricia Field, 295 Third Ave., New York, N.Y.
Filed July 16, 1969, Ser. No. 842,164
Int. Cl. A47b *11/00;* A47g *9/00;* E04b *1/346*
U.S. Cl. 108—139 4 Claims

A sunbather's recreational device in which a platform is mounted for rotation on a base. The platform is provided with a gnomon or style, the position or length of its shadow upon the platform serving as an indicator or reference of the position of the sun with relation to the sunbather, so that

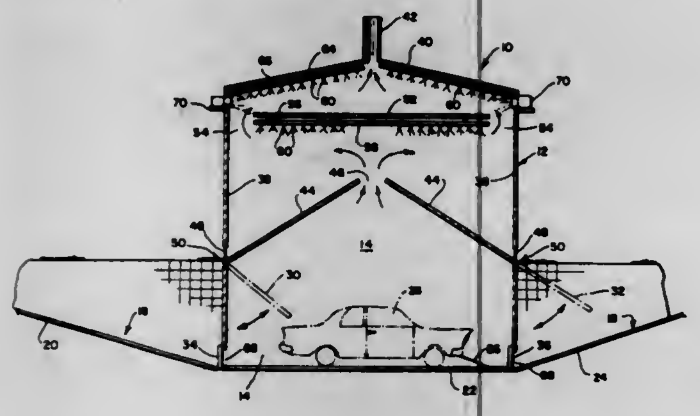


when required, the platform may be rotated to position the sunbather in the desired path of the sunrays.

3,646,897
METHOD AND APPARATUS FOR POLLUTION FREE BURNING OF AUTOMOBILE BODIES

James W. Snelling, Omaha, Nebr., assignor to Amex Corporation, Las Vegas, Nev.

Filed Apr. 23, 1970, Ser. No. 31,256
Int. Cl. F23g *7/00*
U.S. Cl. 110—8 A 18 Claims

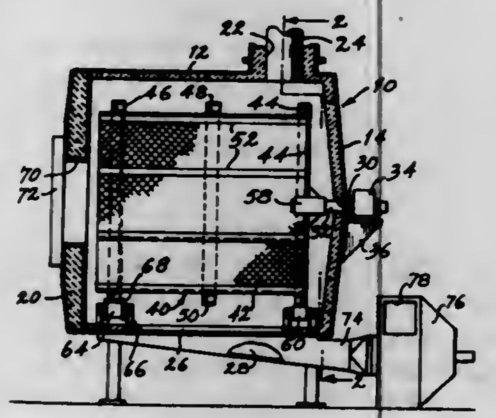


A method and apparatus for burning disposed automobile bodies by burning them in a modular-type device and successively contacting the gases with water to remove the contaminates.

3,646,898
REFUSE INCINERATING APPARATUS

Elliott Bavers, New York, N.Y., assignor to Rotodyne Manufacturing Corporation, Brooklyn, N.Y.

Filed May 28, 1970, Ser. No. 41,379
Int. Cl. F23g *5/06*
U.S. Cl. 110—14 16 Claims

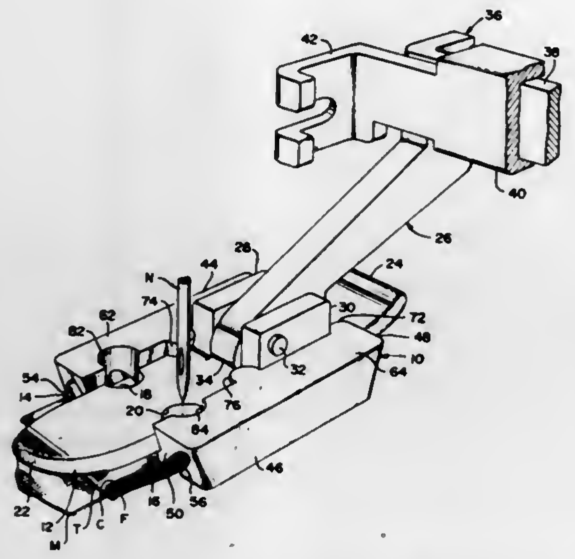


Incinerating apparatus for a mixture of combustible and noncombustible waste material consisting of a furnace and perforated cylindrical grating rotatably mounted within the furnace. The grating includes a closure at one end and a rigid frame surrounding its cylindrical and end walls. The frame includes circular ribs which are supported on rollers within the furnace and the grating is rotated by a shaft connected to the frame at the closed end thereof and projects through a furnace wall. An opening is formed in the bottom of the furnace leading into a hopper, for ash residue from which the ash may be removed by suction.

3,646,899
SLIDE FASTENER PRESSOR FOOT

Rolfe E. Reynolds, Meadville, and Louis L. Spencer, Conneaut Lake, both of Pa., assignors to Textron Inc.

Filed Sept. 23, 1969, Ser. No. 4,791
Int. Cl. D05b *29/00*
U.S. Cl. 112—235 12 Claims

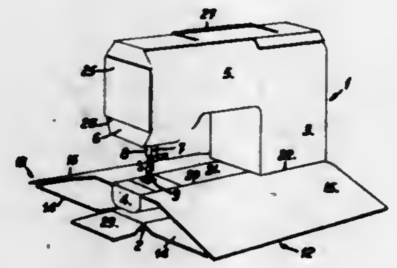


A slide fastener presser foot directly attached to a sewing machine pressor foot such that needle guiding apertures in the slide fastener presser foot are aligned with needle guiding recesses in the sewing machine presser foot whereby the slide fastener presser foot may stitch a hidden slide fastener to a garment to provide a seamlike appearance. Attachments for use with the slide fastener presser foot include an adapter to fit in the receiving channel and a mounting shank slidably cooperating with the adapter for attachment to a sewing machine.

3,646,900
FOLDABLE SUPPORT AND COVER FLAPS FOR A SEWING MACHINE

Marcel Fresard, Petit-Lancy, Geneva, Switzerland, assignor to Mefina S.A., Beaumont, Fribourg, Switzerland

Filed Jan. 13, 1970, Ser. No. 2,525
Claims priority, application Switzerland, Jan. 24, 1969, 1075/69
Int. Cl. D05b *73/10*
U.S. Cl. 112—258 10 Claims

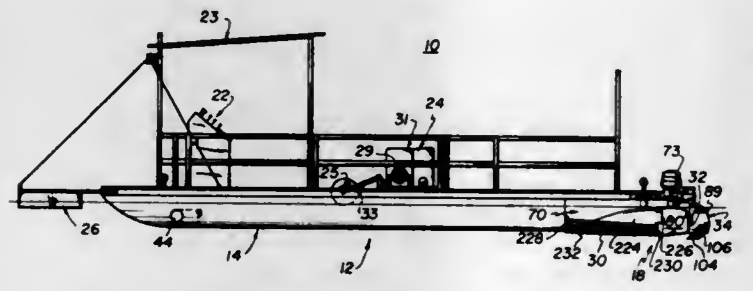


The sewing machine has flaps hinged to the frame forming a carrying case therewith and are foldable downwards to form a worktable. The flaps are hinged along the base of the machine and are in two portions with connecting hinges enabling the outer edges of the flaps to rest on the base clear of the free arm. The connecting hinges have two hinging axis positions laterally separated and parallelly separated by a slideway, enabling the flaps to form a worktable either flush with the top surface of the free arm or below and clear of the latter. A lug holds the two portions blocked for the packing position of the flaps. A front flap may be one piece or of two hinged portions and attached to the front edge of the base.

3,646,901
WATERCRAFT ESPECIALLY USEFUL FOR THE RECOVERY OF OIL

Allan R. Budris, Nutley; Frank J. McGowan, Murray Hill; Lewis M. Evans, Upper Montclair; Theodore J. Wayne, Linden, all of N.J.; Eric E. Lithen, Garden City, Long Island, and Charles B. Darcy, Glen Head, Long Island, both of N.Y., assignors to Worthington Corporation, Harrison, N.J.

Filed Feb. 2, 1970, Ser. No. 7,650
Int. Cl. B63b *35/00*; B63h *11/00*
U.S. Cl. 114—0.5 64 Claims

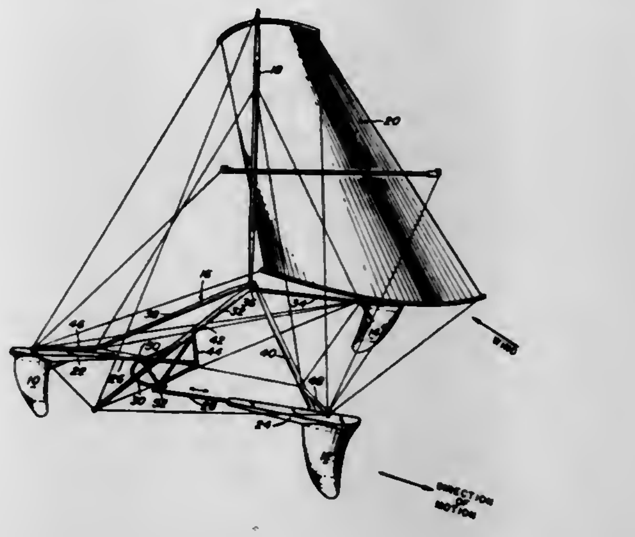


A watercraft is disclosed which comprises a body member of the catamaran-type having spaced-apart twin hulls between which is disposed an oil recovery system which can recover oil (for instance in the form of an oil slick) which has been properly directed by the hulls of the craft. The watercraft has a generally centrally located turning axis; first and second propulsor means secured to the body member for accepting water at an inlet opening thereof and discharging water at a higher velocity at discharge openings thereof; first thrust generating means in fluid communication with the discharge opening of the second propulsor means for generating thrust in a first direction about the turning axis; second thrust generating means in fluid communication with the discharge opening of the first propulsor means for generating thrust in the first direction about the turning axis; third thrust generating means in fluid communication with the discharge opening of the first propulsor means for generating thrust in a second direction about the turning axis; fourth thrust generating means in fluid communication with the discharge opening of the second propulsor means for generating thrust in the said second direction about the turning axis; and maneuverability control means on the body member for selectively establishing an nonestablishing the fluid communication between the first and second propulsor means and the first, second, third, and fourth thrust generating means respectively. Additionally each of the propulsor means may be removably secured to the rear of the body member and includes a particularly advantageous construction comprising a multifunction one-piece casting; a propulsor housing secured to the undersurface of a rearwardly extending portion of the one-piece casting; a prime mover secured to the upper surface of the said rearwardly extending portion of the one-piece casting; and a water gathering collection chamber secured to the propulsor housing for helping to establish the necessary pressure head used in the maneuverability system of the craft.

3,646,902
AEROHYDROFOIL STEERING CONTROL

Bernard Smith, 503 Sampson, Dahlgren, Va.

Filed Jan. 19, 1970, Ser. No. 3,738
Int. Cl. B63b *1/18, 35/00*
U.S. Cl. 114—66.5 H 3 Claims

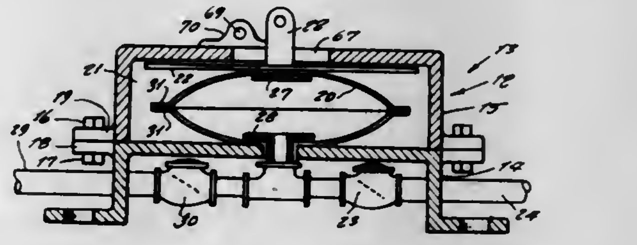


A hydrofoil sailboat having a rotatable bellcrank member to provide a single control for maneuvering and steering the boat on all points of sailing. The bellcrank member has its ends pivotally connected to two push rods which slide in hydrofoil extensions and rotate the hydrofoils to control the direction of travel of the hydrofoil craft. By rotation of the single bellcrank member, simultaneous control of the two windward hydrofoils is achieved.

3,646,903
PROPULSION AND STEERING DEVICE FOR SMALL BOATS

Malte Hansson, Route #3, Box #317, Cottonwood, Calif.

Filed Apr. 15, 1970, Ser. No. 28,852
Int. Cl. B63h *11/00*
U.S. Cl. 115—12 R 5 Claims



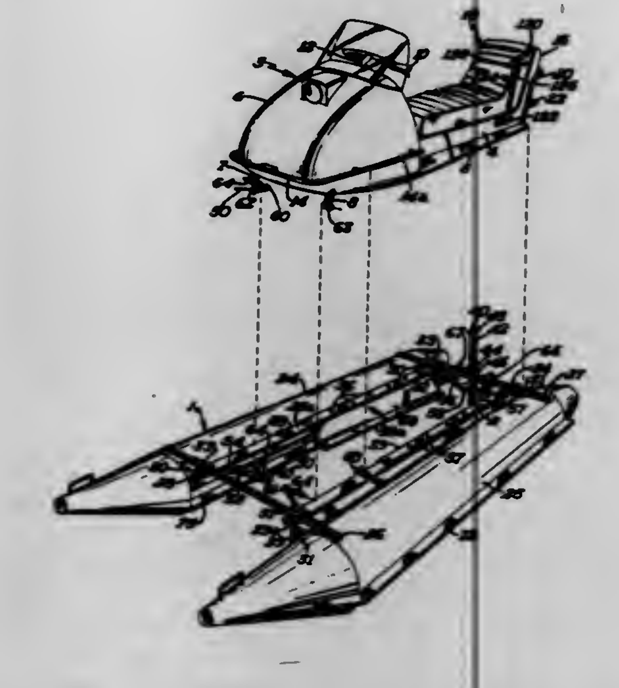
A kit that can be installed in a small boat for providing a novel means for propelling and steering the boat, the device incorporating a hydraulic propulsion assembly, a jet assembly and a steering cable assembly controlled by a steering wheel, and wherein the steering and the power is in one element.

3,646,904
REMOVABLE FLOTATION MEANS AND WATER DRIVE ASSEMBLY FOR SNOWMOBILES

Charles T. Lanning, 7305 Clinton Ave., Richfield, Minn., and James T. Cook, 5 North Broadway, Watertown, S. Dak.

Filed Oct. 31, 1969, Ser. No. 873,778
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 6 Claims

A conversion kit including a pontoon assembly, steering rudder and propeller with interconnected drive shaft and power transmission is utilized to adapt a snowmobile for use as a water vehicle by being removably mounted thereon. Turning linkage attached to the rudder is connected to the ski spindle steering mechanism of the snowmobile for operation thereby. The transmission of the propeller drive assembly includes a power input shaft sized to be rotatably supported transversely of the snowmobile frame in the bearings where the front drive axle for the snowmobile track is normally mounted, the power input shaft being driven by the same sprocket and chain arrangement from the snowmobile engine ordinarily employed to drive the front drive axle.



3,646,905

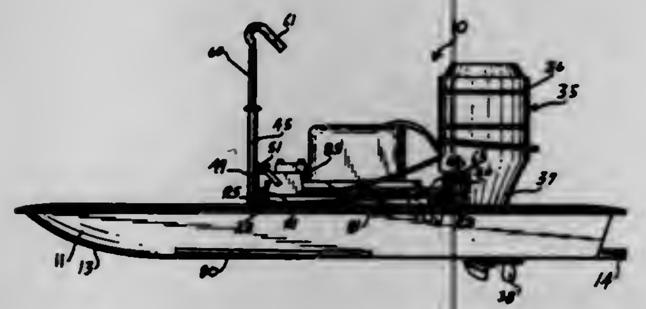
SELF-PROPELLED VEHICLE

Werner W. Martinmaas, 835 10th Ave. N.W., Watertown, S. Dak.

Filed Mar. 18, 1970, Ser. No. 20,495

Int. Cl. B63b *35/00*

U.S. Cl. 115—70 **12 Claims**



A pair of skis adapted to support an operator for operation in a manner simulating conventional skiing are mounted on a frame in a laterally spaced generally parallel relationship for pivotal movements relative to the frame on axes extending longitudinally of the skis. An outboard motor is mounted on the frame for steering movements on a vertical axis so as to depend between the skis forwardly of the rear end thereof. A lever, pivotally mounted on the frame for movements transversely of the skis, is connected to impart simultaneous pivotal movements to the skis on their pivotal axes in a common direction for high-speed turning maneuvers and a shaft rotatably carried by the lever is operatively connected to impart steering movements to the outboard motor in unison with or independently of pivotal movement of the skis on their pivotal axes.

3,646,906

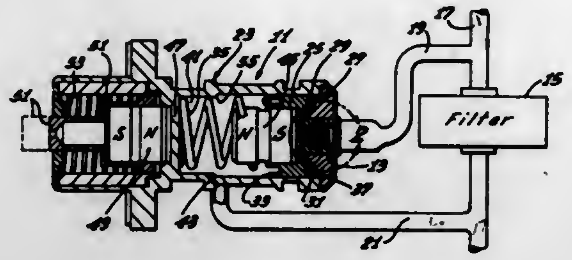
PRESSURE INDICATOR AND SURGE CONTROL DEVICE

Kurt F. Hammer, Camarillo, Calif., assignor to Purolator Products, Inc., Rahway, N.J.

Filed Feb. 1, 1968, Ser. No. 702,442

Int. Cl. G01l *19/12*

U.S. Cl. 116—70 **9 Claims**



This disclosure describes a pressure indicator of the type having a pressure-responsive member which is exposed to relatively high-pressure and relatively low-pressure fluid. A surge control device is interposed in the high-pressure line upstream of the fluid-responsive member to interpose a time delay for actuation of the indicator which is sufficient to cancel out the effect of pressure surges. The surge control device includes means for restricting the flow of fluid to the pressure responsive member to thereby achieve the necessary time delay.

3,646,907

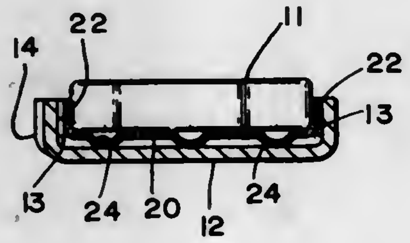
INKING PAD ASSEMBLY

John S. Dudley, Douglas, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation-in-part of application Ser. No. 839,925, July 8, 1969, now abandoned. This application Jan. 28, 1970, Ser. No. 6,340

Int. Cl. B05c *11/10*

U.S. Cl. 118—264 **6 Claims**



An inking pad assembly suitable for use with a marking machine, the inking pad assembly having an ink pad partially positioned in a box or holder, the pad being located by a plurality of raised portions above the inside bottom of the box or holder, at least one of said portions dividing the box bottom into a plurality of ink reservoirs.

3,646,908

APPARATUS FOR COATING FIBERS

Dennis Herbert Bowen, North Stoke; Neville John Mattingley, Abingdon, and Ronald Alfred James Sambell, Reading, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

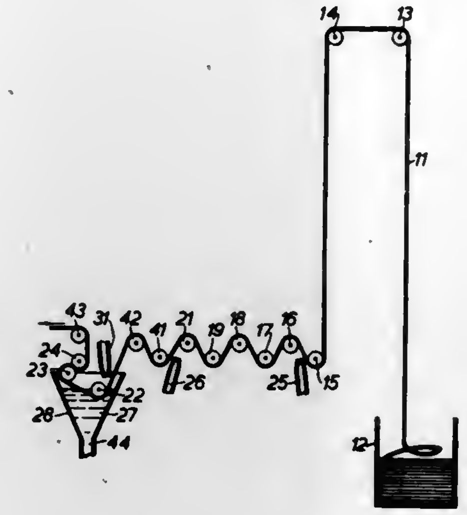
Filed Oct. 30, 1969, Ser. No. 872,593

Claims priority, application Great Britain, Nov. 1, 1968, 52,023/68

Int. Cl. D01d *11/06*

U.S. Cl. 118—304 **5 Claims**

Apparatus for coating carbon, glass and like fibers to make a composite using resin, glass, metal etc., matrix comprises a plurality of rollers passing the fibers through a container of a slurry or solution of the matrix material. At least one fluid jet is provided urging the fibers away from contact with a roller. The fluid jet may be gas or the matrix material or both.



3,646,909

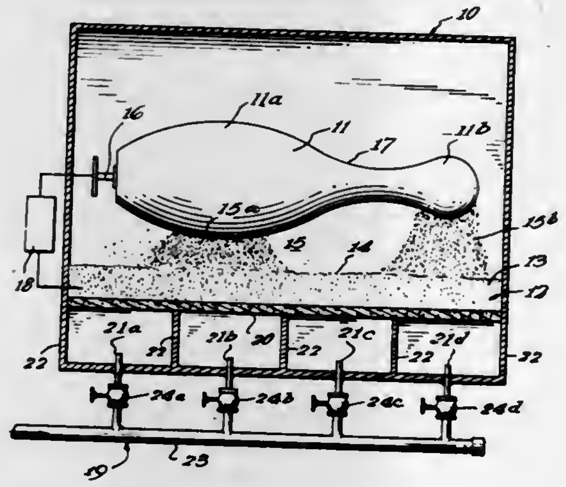
VARIABLE DEPTH COATING APPARATUS

William J. Cole, Muskegon, and Anton W. Rytina, Grand Haven, both of Mich., assignors to Brunswick Corporation

Filed Jan. 23, 1970, Ser. No. 5,317

Int. Cl. B05c *5/02*

U.S. Cl. 118—629 **2 Claims**



Apparatus for coating a body with a variable depth coating by means disposed externally of the body. In one form, the means comprises means for delivering a nonuniform cloud of coating particles to the body for deposit thereon to define a preselected nonuniform coating. In another form, the means comprises means for providing a uniform cloud of coating particles to the body and means for removing at least a portion of the deposited particles. The removing means comprises in one form means for blowing off deposited particles and in another form means for brushing off deposited particles. Electrostatic means may be employed for releasably retaining the deposited particles.

3,646,910

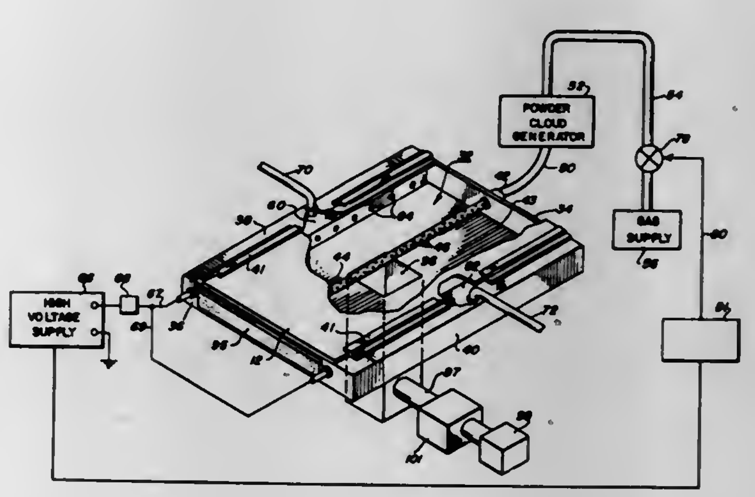
DEVELOPMENT APPARATUS FOR LATENT ELECTROSTATIC IMAGES

Ronald L. Cade, Fairport, and Michael A. Vince, Penfield, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Continuation-in-part of application Ser. No. 832,697, June 12, 1969, now abandoned. This application Nov. 10, 1969, Ser. No. 875,015

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **4 Claims**



Powder cloud development apparatus for developing latent electrostatic images comprising ion emitters adjacent a chamber area into which developer particles are introduced. The ion emitters are enclosed and have a plurality of apertures formed on an enclosing wall facing towards the chamber. When the ion emitters are energized, gas introduced therein is ionized and the ions are forced out through the apertures into the chamber area, thereby charging the developer particles. The developer particles are prevented from entering the ion emitters through the apertures by maintaining a pressure differential between the ion emitters and the camber.

3,646,911

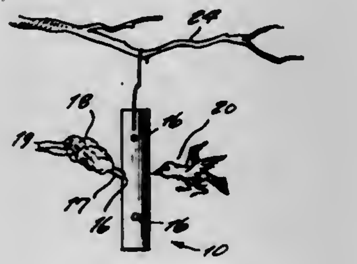
SORGHUM SEEDHOLDER BIRD FEEDER

Charles L. Parson, 76 N. Ogden Ave., Columbus, Ohio

Filed May 11, 1970, Ser. No. 36,264

Int. Cl. A01k *5/00*

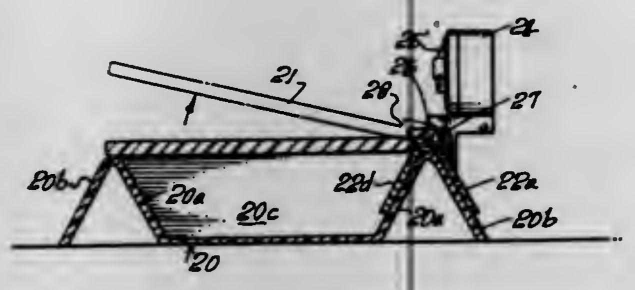
U.S. Cl. 119—51 **1 Claim**



A bird feeder composing an elongated body with diagonal openings on the vertical side thereof for receiving and supporting the stalks of heads of sorghum grains, the body having a hook hanger at the upper end for suspension from a tree branch, and the lower end of the body having a removable plug with a downward nail for pounding into a supporting fence, rail or fencepost.

3,646,912
TIME-CONTROLLED ANIMAL ACCESS PERMITTING DEVICE

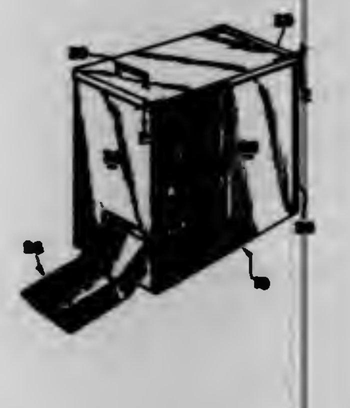
Joan E. Gardner, 11642 Kiowa St., Los Angeles, Calif.
Filed Feb. 20, 1970, Ser. No. 13,099
Int. Cl. A01k *5/02*
U.S. Cl. 119—51.12 **2 Claims**



A time-controlled animal-feeding receptacle mounted device for disbursing food to animals at predetermined times. A feeding receptacle for holding animal food or liquid supports a covering member which is adapted to be opened at predetermined intervals thereby permitting access to the food or liquid without the manual intervention of a human being.

3,646,913
TIME-OPERATED SEQUENTIAL DUMPING ANIMAL FEEDER

Chester W. Jenkins, 1184 North Waukegan Road, Lake Forest, Ill.
Filed Sept. 11, 1969, Ser. No. 856,972
Int. Cl. A01k *5/02*
U.S. Cl. 119—51.13 **8 Claims**

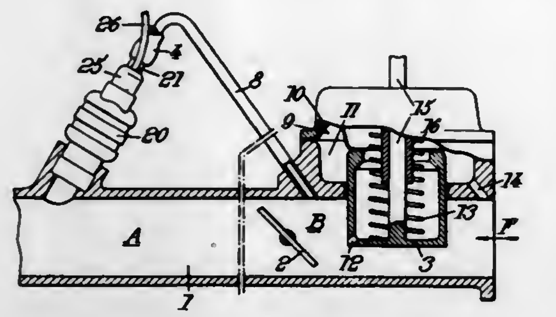


An apparatus for automatically feeding animals at a predetermined time is provided and includes at least one container for holding animal food and means for dumping the container at a predetermined time to cause the contents thereof to be discharged by gravity at a location accessible to the animal.

3,646,914
FUEL FEED DEVICES FOR INTERNAL COMBUSTION ENGINES

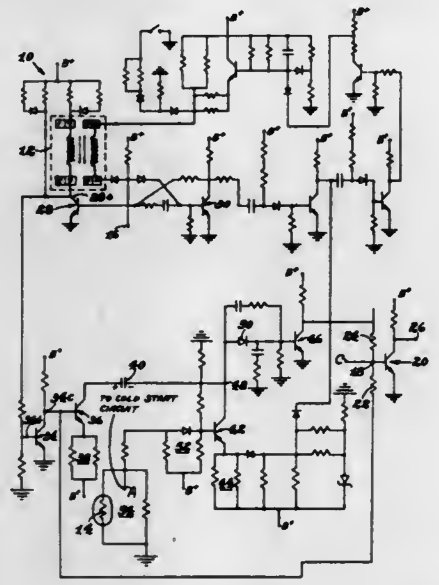
Andre Louis Mennesson, Neuilly-sur-Seine, France, assignor to Societe Industrielle de Brevets et d'Etudes S.I.B.E., Neuilly-sur-Seine, France
Filed Feb. 19, 1970, Ser. No. 12,581
Claims priority, application France, Feb. 25, 1969, 6904749
Int. Cl. F02d *5/00*
U.S. Cl. 123—32 EA **6 Claims**

Liquid fuel is injected under pressure into the induction pipe downstream of the main throttle valve. The fuel flow is metered to the injection orifice by a valve actuated by an electromagnet according to the airflow in the induction pipe. The injection orifice is aligned with an auxiliary orifice in an air chamber at constant pressure. The airflow to the chamber is carried close to the electromagnet so as to cool it.



3,646,915
COLD START AUXILIARY CIRCUIT FOR ELECTRONIC FUEL CONTROL SYSTEM

Todd L. Rachel, Elmira, N.Y., assignor to The Bendix Corporation
Filed June 16, 1970, Ser. No. 46,706
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA **9 Claims**

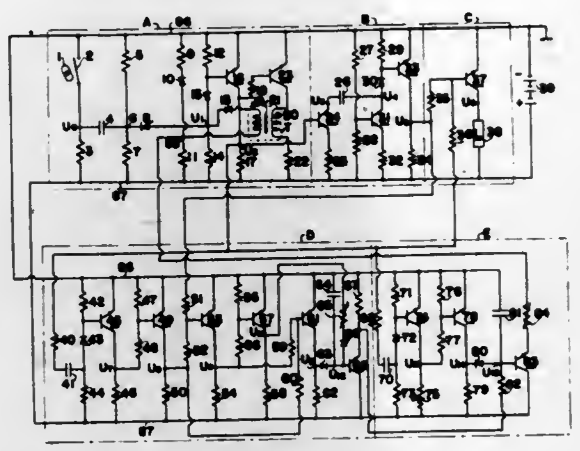


An auxiliary circuit means is disclosed herein for controlling actuation of an injector valve means to provide for cold starting of an engine. The circuit and injector means are energized when a vehicle ignition system is energized and the fuel for cold starting is provided during the period of time required for a selected voltage value to raise to a threshold value. The threshold value is determined by a voltage divider including a temperature-responsive element sensing engine temperature. Means are provided to render the auxiliary circuit insensitive to supply voltage variations.

3,646,916
ELECTROMAGNETIC FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

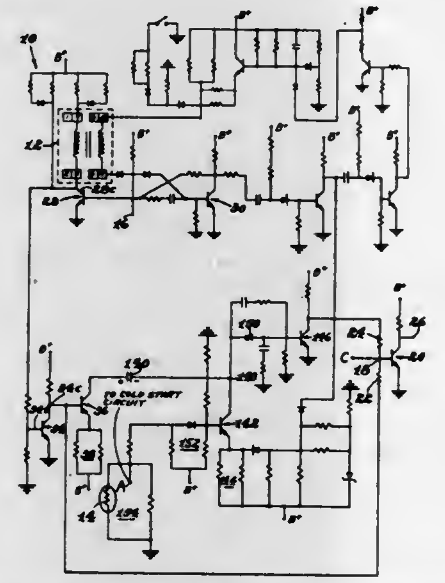
Takashi Inoue, and Yoshiaki Abe, both of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 24, 1970, Ser. No. 22,154
Claims priority, application Japan, Mar. 24, 1969, 44/31255
Int. Cl. F02d *5/00*
U.S. Cl. 123—32 E **1 Claim**

An electromagnetic fuel injection control system for an internal combustion engine, including a first monostable circuit having timing elements for receiving pulses relating to the speed of rotation of the engine, a second monostable circuit whose output is used to energize an electromagnetic fuel injection valve, and a charging-discharging circuit providing an output for use in varying the width of pulses in the first monostable circuit. The output of the first monostable circuit is applied as an input the second monostable circuit and is diverted for application as an input to the charging-discharging circuit.



3,646,917
AUXILIARY CIRCUIT FOR ELECTRONIC FUEL CONTROL SYSTEMS TO FACILITATE COLD STARTING

John R. Nagy, Detroit, Mich., assignor to The Bendix Corporation
Filed June 16, 1970, Ser. No. 46,705
Int. Cl. F02m *51/02*
U.S. Cl. 123—32 EA **14 Claims**

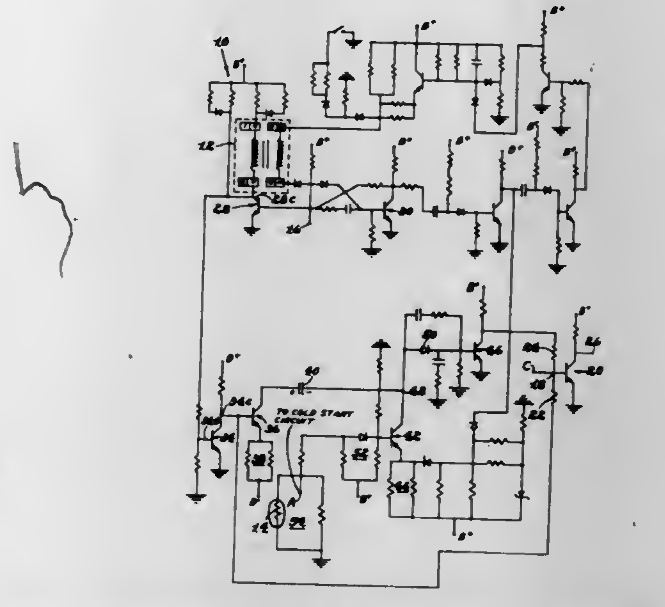


An auxiliary circuit is disclosed herein for controlling actuation of injector valve means to provide fuel for cold starting of an engine. The circuit is comprised of an interconnected pair of multivibrators and is adapted to produce an injector means control signal for a period of time representative of the fuel requirement for cold starting of the associated internal combustion engine. In order to permit the fuel to be pressurized, a time delay period is provided.

3,646,918
COLD START AUXILIARY CIRCUIT FOR ELECTRONIC FUEL CONTROL SYSTEM

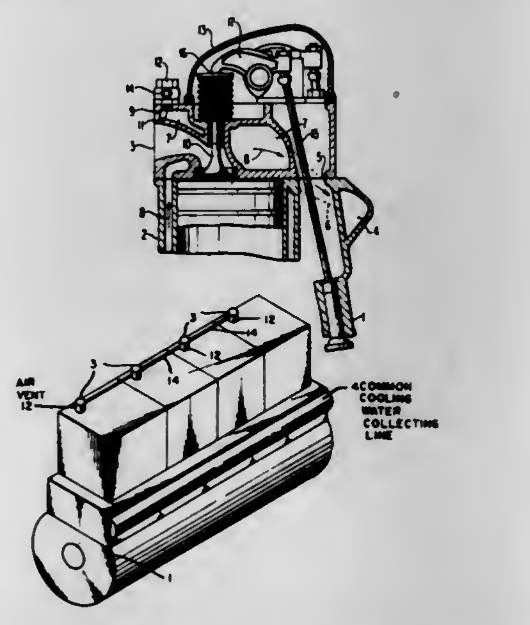
John R. Nagy, Detroit, Mich., and Todd L. Rachel, Elmira, N.Y., assignors to The Bendix Corporation
Filed June 16, 1970, Ser. No. 46,681
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA **12 Claims**

An auxiliary circuit means is disclosed herein for controlling actuation of an injector valve means to provide for cold starting of an engine. The circuit and injector means are energized when a vehicle ignition system is energized and the fuel for cold starting is provided during the period of time required for a selected voltage value to raise to a threshold value. The threshold value is determined by a voltage divider including a temperature responsive element sensing engine temperature. Means are provided to prevent noise and supply voltage variations from affecting the capability of the circuit to compute a cold start injection pulse of requisite duration.



3,646,919
COOLING WATER CONDUCTOR SYSTEM IN RECIPROCATING PISTON INTERNAL COMBUSTION ENGINES

Josef Reisacher, Wendlingen (Neckar), Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed July 21, 1970, Ser. No. 56,806
Claims priority, application Germany, July 22, 1969, P 19 37 146.1
Int. Cl. F02f *4/38;* **F02b** *75/20;* **F01p** *3/02*
U.S. Cl. 123—41.82 **11 Claims**



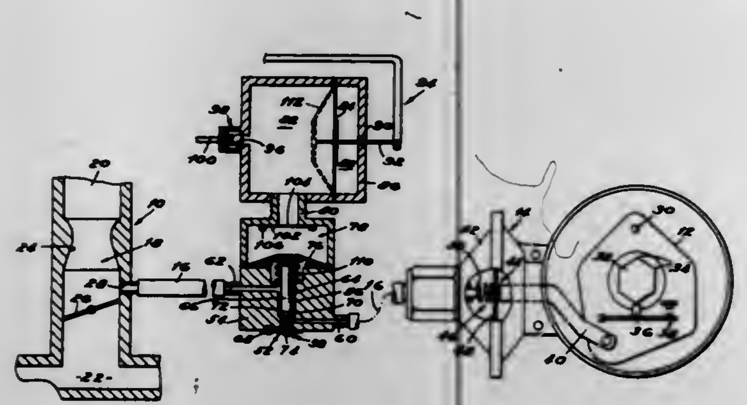
A cooling water duct system for reciprocating piston internal combustion engines, particularly for those engines with several cylinder heads, whose discharge apertures for the cooling water are connected to a common collecting line arranged outside of the cylinder heads whereby the collecting line is secured at the cylinder block below the cylinder head seal and the cylinder heads are provided with a vent bore at the highest place of their cooling water spaces.

3,646,920

CARBURETOR FUEL PUMP PRESSURE-ACTUATED SPARK TIMING CONTROL

Richard D. Vartanian, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 2, 1970, Ser. No. 94,363
Int. Cl. F02p *5/10*
U.S. Cl. 123—117 A **13 Claims**



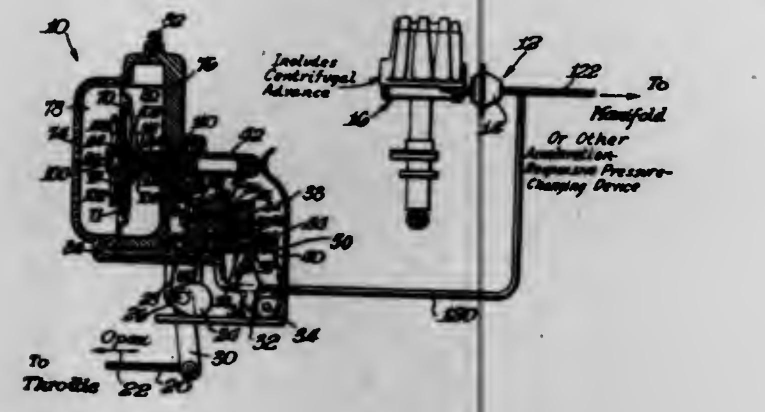
The vacuum line between the carburetor spark port and the engine distributor breaker plate servo actuator includes an air bleed valve that is normally closed to permit normal advance of the engine timing as a function of spark port vacuum changes, but opens during vehicle accelerations to bleed air to the distributor servo to condition the timing for retarded operation; the bleed valve being opened in response to fuel pressure in the carburetor accelerating pump fuel well acting on a diaphragm attached to the valve during operation of the pump, and, of which the following is a specification.

3,646,921

REDUCING ENGINE EMISSIONS

Frederick J. Marsee, Clawson, Mich., assignor to Ethyl Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 611,346, Jan. 24, 1967, now abandoned. This application July 17, 1969, Ser. No. 857,255
Int. Cl. F02p *5/04*
U.S. Cl. 123—117 A **11 Claims**


Includes Centrifugal Advance
To Manifold
Or Other Acceleration-Responsive Pressure-Changing Device
To Throttle

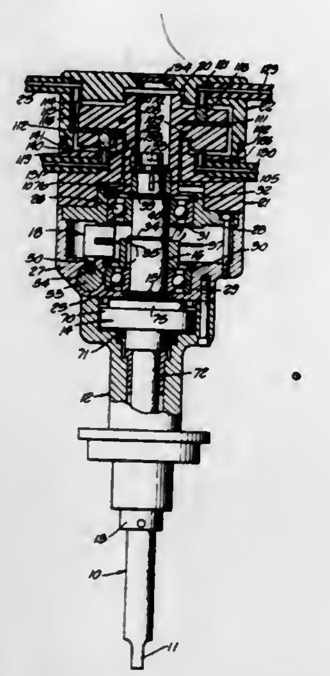
At part-throttle accelerations, ignition timing of spark-ignition engine is sharply retarded for at least a few seconds to reduce hydrocarbon and nitrogen oxide emissions from exhaust. Retarding can be made responsive to throttle-opening movement or acceleration inertia of rotating part of engine. Fluid-flow and electric-heating arrangements are shown for determining the length of the retard period.

3,646,922

IGNITION SYSTEM

Thomas P. Spalding, 245 Grand Ave., Monrovia, Calif.

Filed Nov. 13, 1969, Ser. No. 876,540
Int. Cl. F02p *5/06*
U.S. Cl. 123—117 A **15 Claims**



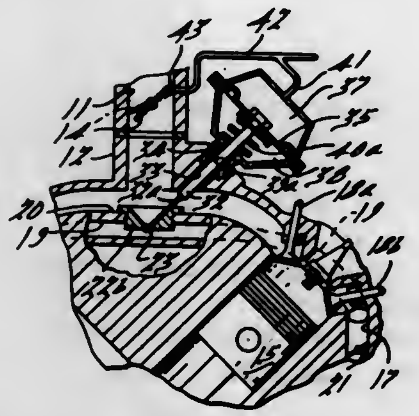
There is disclosed herein an ignition system of the capacitor discharge-type. The ignition system includes a source and cell, and a shutter therebetween driven from a suitable member of an internal combustion engine. The source and cell are included in a circuit arrangement for properly triggering an ignition coil. A new cap and rotor structure is disclosed for distributing voltage from the secondary of the ignition coil to the plugs of the engine. Additionally, a new centrifugal advance and a vacuum advance mechanism are disclosed.

3,646,923

CONTROLLED FLOOR JET ENGINE EXHAUST RECIRCULATION

Jorma O. Sarto, Orchard Lake, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Continuation-in-part of application Ser. No. 807,705, Mar. 17, 1969, now Patent No. 3,542,003. This application Apr. 22, 1970, Ser. No. 30,723
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **13 Claims**



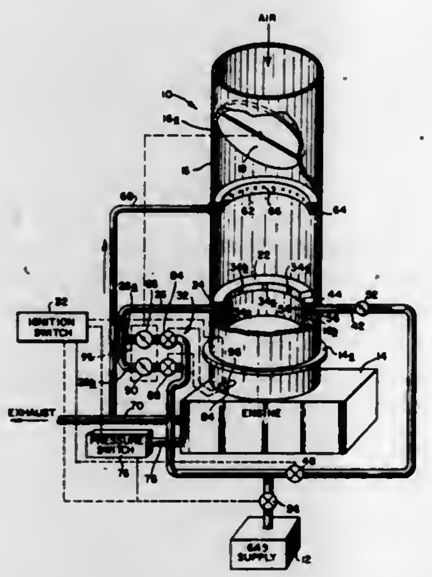
Automobile exhaust gases are recycled by means of a bypass duct which receives these gases at a restricted upstream end located within the environment of the hot gases of the exhaust system, passes in heat exchange relationship through the conventional intake manifold hotspot to facilitate heating of the latter, and discharges the hot exhaust gases in an upstream direction with respect to the inlet flow of the fuel-air mixture at a location directly below the throttle valve. The restriction of the upstream end is spaced from the hotspot to minimize heat loss to the latter, such that lead contaminants for example flow in a gaseous phase through the restriction without fouling the same. A bypass control plunger movable in response to the position of the throttle valve is insertable into the restriction to close and simultaneously clean the latter when the throttle valve moves either to its idle or wide open position.

3,646,924

FUEL SYSTEM FOR GASEOUS FUELED ENGINES

Marc S. Newkirk, Lynnfield, and W. Peter Zulkowski, Salem, both of Mass., assignors to International Materials, Lynnfield, Mass.

Filed Mar. 23, 1971, Ser. No. 127,146
Int. Cl. F02n *21/02*
U.S. Cl. 123—120 **7 Claims**



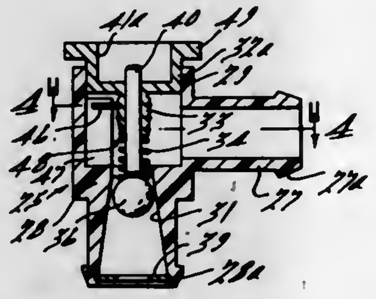
A gaseous fueled engine has a dual fuel feed system which provides a lean fuel-air mixture for starting the engine when it is cold and a richer mixture for starting or operating the engine after it is already warmed up.

3,646,925

CRANKCASE VENTILATION

Robert W. Eshelman, Ann Arbor, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed June 24, 1970, Ser. No. 49,474
Int. Cl. F02m *25/06;* **F02f** *9/00*
U.S. Cl. 123—119 B **9 Claims**



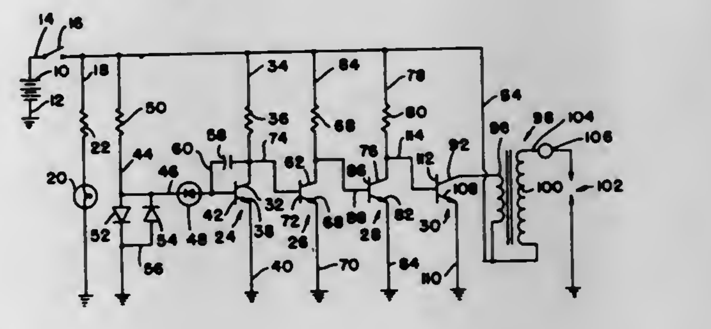
The crankcase for an internal combustion engine is vented to the fuel-air inlet induction passage via a ventilation valve comprising a tubular L-shaped valve housing having a comparatively small metering orifice which cooperates with a movable valve element responsive to decreasing pressure in the induction conduit for restricting the orifice. A coil spring yieldingly opposes closing movement of the valve element and is seated on a spring retainer adjustably mounted in an opening through the sidewall of the housing at the exterior angle of its elbow to effect a predetermined rate of gas flow through the orifice when a predetermined low-pressure differential corresponding to part load operation of the engine is applied across the orifice. A movement limiting plunger extends adjustably through the retainer to engage and limit closing movement of the valve element to effect a predetermined low rate of gas flow through the orifice when a predetermined highepressure differential is applied across the orifice corresponding to engine idling.

3,646,926

BREAKERLESS IGNITION SYSTEM

Alfred Plume, Jr., Carson City, Nev., assignor to Mallory Electric Corporation, Detroit, Mich.

Filed Nov. 6, 1969, Ser. No. 874,509
Int. Cl. F02p *3/02*
U.S. Cl. 123—148 E **4 Claims**



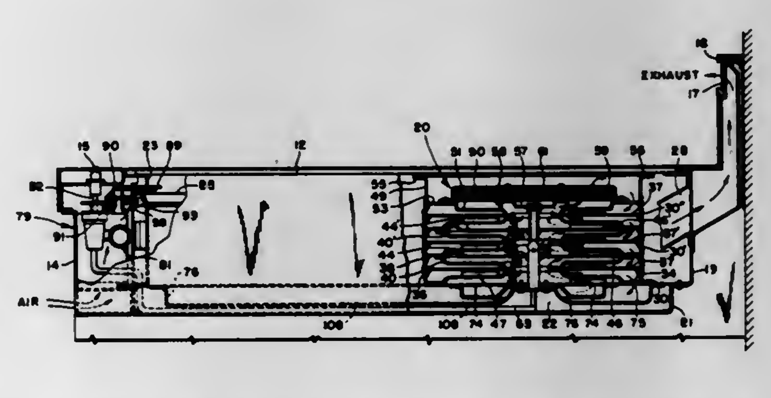
The breakerless ignition system is designed for use in connection with an internal combustion engine. A multistage transistor amplifier circuit is provided. The first stage of the amplifier includes a transistor which is biased to conduct when a photocell is energized. The photocell is energized by means of a light source in timed relation to engine operation. A capacitor is provided across the base collector of the first stage transistor to prevent inadvertent biasing thereof to conduct. The final stage of amplification includes a transistor which is normally biased to conduct. The primary winding of a step-up transformer is placed in the collector-emitter circuit of the final stage of amplification. When the transistor of the first stage of amplification is biased to conduct, the transistor of the final stage of amplification is placed in a nonconducting state to thereby cause collapse of the field in the primary winding with a resultant induced voltage in the secondary winding sufficient to fire the spark plugs of an internal combustion engine.

3,646,927

GAS SMOOTH TOP RANGE

Richard L. Perl, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Filed June 15, 1970, Ser. No. 45,991
Int. Cl. F24c *3/04*
U.S. Cl. 126—39 J **13 Claims**

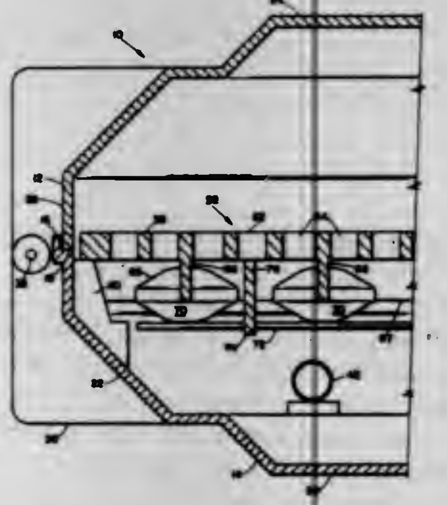


The range has plural radiant burners with individually associated heat exchangers and a common pressurized exhaust system. Each burner has a supply air tube the inlet end of which is obstructed by a coil spring which is variably expanded to act as an adjustable shutter regulating the amount of air that enters through its turns in response to actuation of the gas control valve for the burner. The burners have center simmer sections for low heat and single gas lines with port controlled terminals which variably direct the gas to the center simmer sections or to the main burner sections depending upon the rate of delivery of the same. A safety circuit prevents flow of gas to the range except when exhaust fans are properly operating, and a taut wire exposed to heating by all burners expands when any is above a selected temperature to signal such condition.

3,646,928
PORTABLE GAS-FIRED COOKING GRILL

Jim R. Grafton, Moline, Ill.; Glenn E. Wilkins, Davenport, Iowa, and Joseph F. Murphy, Moline, Ill., assignors to Blackhawk Metal Products, Inc., Davenport, Iowa

Filed Sept. 23, 1970, Ser. No. 74,747
Int. Cl. A47j *37/00*; F24b *3/00*; F24c *3/14*
U.S. Cl. 126—41 R **17 Claims**

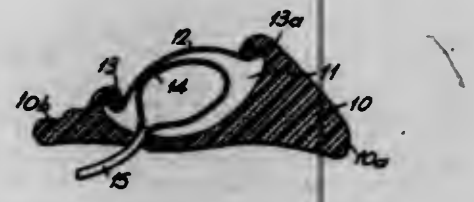


A portable gas-fired cooking grill includes a portable, closable case formed by similar, opposite, top and bottom members hinged together along one edge, with a handle opposite the hinged edge. A gas burner is mounted in the bottom of the bottom member and removably connectable to a propane fuel supply. A grill spans the open top of the bottom member, and a plurality of ceramic briquettes are attached to the underside of the grill in a regular pattern above the gas burner.

3,646,929
FEMALE INCONTINENCE DEVICE

John Bonnar, Glasgow, Scotland, assignor to National Research Development Corporation, London, England

Filed Dec. 9, 1969, Ser. No. 883,450
Claims priority, application Great Britain, Dec. 10, 1968, 58,688/68
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R **5 Claims**

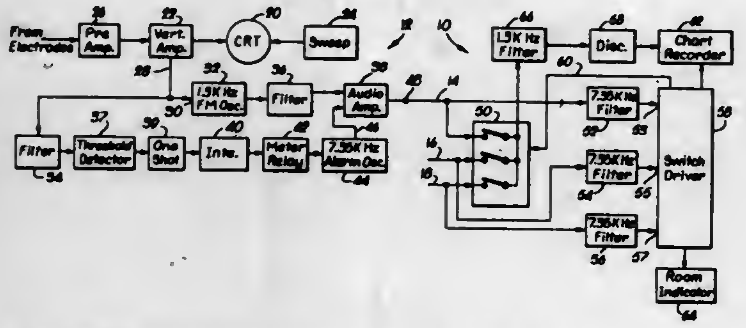


A female incontinence device comprising a support adapted for insertion into and stable retention in the vagina, a flexible diaphragm engaged at its periphery with the support, and remotely operable means carried by the support to elevate the diaphragm relative to the support and thereby upwardly displace both the urethra and bladder neck, while slightly elongating the urethra.

3,646,930
AUTOMATIC PHYSIOLOGICAL RECORDING AND ALARM SYSTEM FOR HOSPITALS

Robert E. Patterson, Raytown, and John L. Walker, Sr., Lake Lotawana, both of Mo., assignors to Johnnie Walker Medical Electronics Inc., Kansas City, Mo.

Filed Nov. 3, 1969, Ser. No. 873,564
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 F **10 Claims**

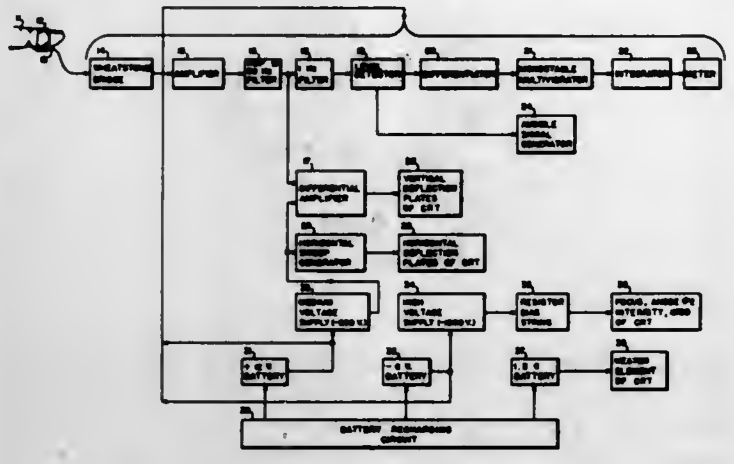


An EKG monitoring system for hospitals employing bedside units each connected by a simple two-wire cable to a remote central monitor having a chart recorder. A monitor signal, frequency modulated by an EKG signal, is produced by each unit and is carried over the cable to the central monitor. When the repetition rate of the R wave of a patient's EKG signal rises above or falls below a predetermined safe range of repetition rates, or the R wave amplitude decreases to less than a predetermined minimum amplitude, an alarm oscillator in the unit is triggered and its output is multiplexed with the monitor signal, the alarm and monitor signals being different in frequency. The central monitor is frequency discriminatory and responds to the alarm signal to activate the chart recorder and feed the monitor signal thereto from the unit at the bedside of the ailing patient.

3,646,931
PORTABLE BATTERY-POWERED INSTRUMENT FOR VISUALIZING THE PERIPHERAL PULSE WAVEFORM AND PULSE RATE

Jerry A. Phelps, 6013 Innes Trace Road, Louisville, Ky., and Donald J. Sass, 756 Forest Hills Drive S.W., Rochester, Minn.

Filed Feb. 25, 1970, Ser. No. 14,143
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 T **1 Claim**

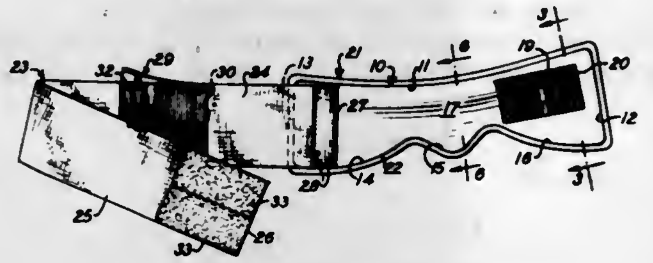


A compact transistorized pulse detector comprising a strain gauge attached to a finger. The output signal is amplified an filtered to trigger a monostable multivibrator, which signal is then integrated to give a readout of the pulse rate on a meter. The pulse waveform is also visually displayed on a small, battery-powered CRT.

3,646,932
GROIN SUPPORT

August L. Schultz, 214 North Harmon Drive, Mitchell, S. Dak.

Filed Jan. 6, 1970, Ser. No. 921
Int. Cl. A61f *5/24*
U.S. Cl. 128—95 **4 Claims**

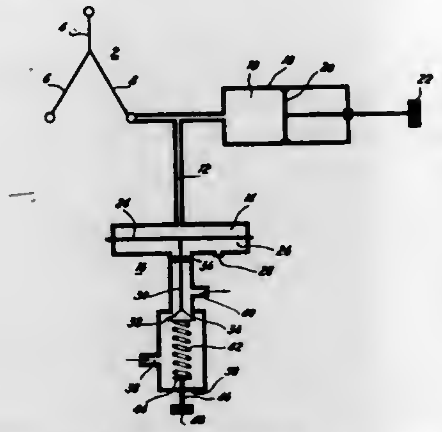


This specification discloses a support intended for application to a leg immediately at or below the groin area to provide support for strained or pulled groin muscles. The support comprises a length of hard plastic covered on its inner face with a foam material and of a length to substantially encircle that portion of the leg to which it is applied. The inner face of this component is concave in a transverse direction and its edges are contoured to provide support for injured muscles when tightly applied. A piece of Velcro fastening material is provided on the outer face of the hard plastic adjacent to its free end and a band of elastic material has one end secured to the outer face of the hard plastic at its other end. Spaced from the joinder of the elastic to the hard plastic and secured to the inner face of the elastic along one edge is a flap carrying another piece of Velcro fastening material which cooperates with the piece aforesaid in establishing a tightly wound inner ply of the hard plastic about the leg. Another Velcro piece is carried by the elastic on its outer face at approximately the location of the flap on the inner face and cooperating therewith in a final Velcro fastener on the inner face of the elastic at its free end. After the inner ply is achieved, the elastic is wound in a taut stretched condition about the inner ply, and the Velcro fasteners joined to establish an outer elastic ply which applies pressure to the inner ply.

3,646,933
PNEUMATIC RESPIRATOR COMPRISING A FLUID-OPERATED ALTERNATING CHANGEOVER SWITCH

Jean-Pierre Monnier, Clamart, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude

Filed Mar. 24, 1970, Ser. No. 22,157
Claims priority, application France, Mar. 25, 1969, 6908694
Int. Cl. A62b *7/02*; F15c *1/12*
U.S. Cl. 128—145.8 **7 Claims**

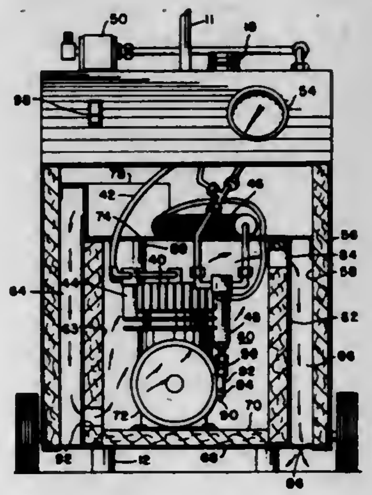


Pneumatic respirator comprising two stages in series. The first stage is a pneumatically operated changeover gas switch an exit of which is connected to a chamber the volume of which may be varied in order to vary the alternation frequency of the switch. The pressure inside the chamber actuates a valve which alternately opens and closes a passage between the respiratory passages of the patient and the source of gas to be insufflated.

3,646,934
AIR COMPRESSION EQUIPMENT FOR THERAPEUTIC USE

Daniel S. Foster, Grosse Pointe, Mich., assignor to W. D. Gale, Inc., Detroit, Mich.

Filed Nov. 20, 1969, Ser. No. 878,363
Int. Cl. A61m *16/02*
U.S. Cl. 128—212 **7 Claims**

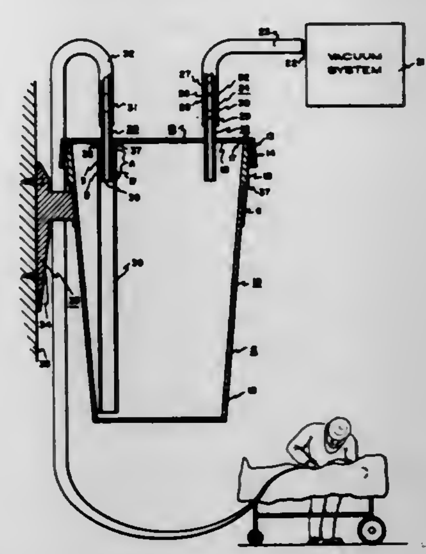


Self-contained apparatus for supplying cooled, dry, clean air under pressure for therapeutic use. A motor and compressor is contained in a sound-conditioned cabinet through which air is circulated to cool the motor and compressor. Condensate from the compressed cooled air is ejected into the cooling air through a pressure relief valve.

3,646,935
FLUID COLLECTION SYSTEMS

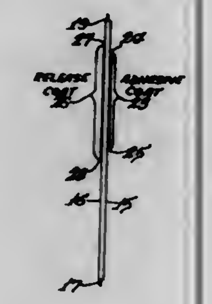
Le Grand K. Holbrook, and David S. Ostler, both of Salt Lake City, Utah, assignors to Medical Development Corporation, Salt Lake City, Utah

Filed Aug. 21, 1969, Ser. No. 851,955
Int. Cl. A61m *1/00*
U.S. Cl. 128—276 **12 Claims**



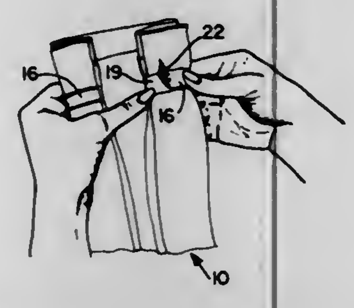
The present invention comprises a body fluid bottle preferably taking the form of a container and a cover interlocked therewith. Included are respective vacuum and body-fluid conduits or ports constructed for communication with interior of the container and for respective connection to a vacuum system and to appropriate means proximate the patient being supplied the same. Antisplash means may be provided. The body fluid conduit preferably extends into the container cavity and, in one form of the invention, includes means for preventing siphoning or back-flow of fluid stored in the container. Such means may comprise an apertured tube spaced from a body fluid conduit, for equalizing of gaseous pressure proximate the body fluid port with the remainder of the bottle interior, thereby avoiding dangers of back-flow or siphoning of contents of the bottle where gaseous pressure inside the container is raised above normal vacuum operating level. The container is constructed for insertion-stacking.

3,646,936
DRAINAGE POUCH AND METHOD OF MAKING
Arthur E. Marsan, 555 Cornelia Avenue, Chicago, Ill.
Filed Oct. 1, 1969, Ser. No. 862,665
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **10 Claims**



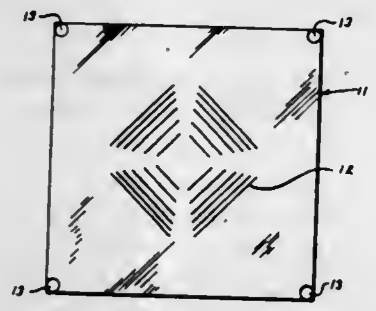
The invention is characterized by a drainage pouch having on one side an adhesive adapted to cover an area which surrounds the drainage opening in the patient's skin for sealing the pouch to the skin when applied for use, and a release material on the pouch in an area in coactive relation with the adhesive area, whereby in such coaction the adhesive area of one pouch will be covered by the release area. The invention is further characterized by the method of making the drainage pouch.

3,646,937
IMPROVED PRESSURE-SENSITIVE TAPE FASTENER FOR DISPOSABLE DIAPERS
Dale A. Gellert, Center Township, Dearborn County, Ind., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 19, 1970, Ser. No. 12,656
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **10 Claims**



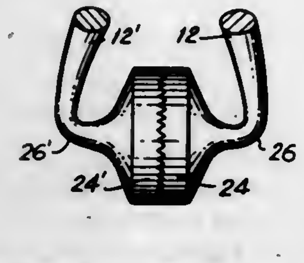
An improved fastening device for securing the corners of disposable diapers which includes a strip of pressure-sensitive tape held in superposed relationship with respect to a corner of the plastic backing sheet prior to use. One end of the tape is directly adhered to the plastic backing sheet. A treated release liner is interposed between the other end of the tape and the plastic backing sheet. The release liner is directly adhered to the backing sheet whereas the tape is releasably held in contact with the release liner. Securement means are provided for holding down the releasable end of the tape and maintaining it in contact with the release liner for the purpose of preventing inadvertent removal. The tape has a tab end between the securement means and the extremity of the releasable end of the tape to facilitate easy removal from the release liner when preparing the tape for fastening and holding the adjoining corners of a diaper.

3,646,938
POSTPARTUM BLOOD LOSS RECEPTACLE
John N. Haswell, 607 Dubois Street, Vincennes, Ind.
Continuation of application Ser. No. 652,132, July 10, 1967, now abandoned. This application July 27, 1970, Ser. No. 64,083
Int. Cl. A61f *5/44*
U.S. Cl. 128—292 **3 Claims**



A thin pliable sheet having concentric graduations for receiving and measuring postpartum blood loss.

3,646,939
TOWEL CLAMP
John Sklar, Long Island City, N.Y., assignor to J. Sklar Mfg. Co., Inc., Long Island City, N.Y.
Filed Feb. 12, 1970, Ser. No. 10,818
Int. Cl. A61b *17/28, 17/08*
U.S. Cl. 128—321 **1 Claim**

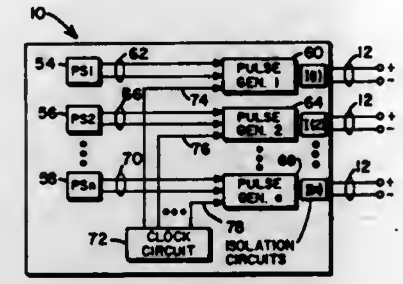


The method of manufacture for a surgical towel clamp or the like is described in terms of the steps of the method to produce such an article in stainless steel from its initial condition as steel splits. The product of the method provides enlarged, opposed jaw ends for a scissorlike instrument, the jaw ends being disposed out of the plane of the instrument.

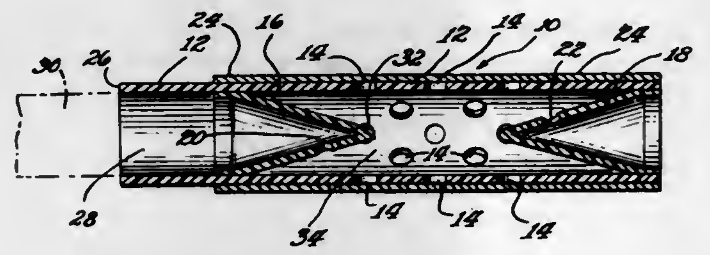
3,646,940
IMPLANTABLE ELECTRONIC STIMULATOR ELECTRODE AND METHOD
Gerald W. Timm, and William E. Bradley, both of Minneapolis, Minn., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.
Filed July 15, 1969, Ser. No. 841,756
Int. Cl. A61n *1/36*
U.S. Cl. 128—421 **9 Claims**

An apparatus for implantation in the body to locally stimulate a mass of electrically excitable tissue without stimulating nearby tissue structures, and the method of so stimulating the tissue is described. The apparatus includes a plurality of electrodes, each of the electrodes including a pair of conductors for carrying signals of positive and negative polarity, each of

said conductors having a plurality of electrically conductive coupling points for coupling to the mass of tissue. Apparatus is also described for providing timed sequenced electrical impulses to the plurality of electrodes so that only one of the electrodes has a voltage applied between its input terminals at any given time. An insulating backing placed between the electrodes and tissue structures surrounding the implanted stimulator for eliminating undesirable secondary tissue stimulation is also described. The method of applying controlled time-spaced electrical impulses to a mass of electrically excitable tissue structure for causing stimulation of that tissue structure is also described.



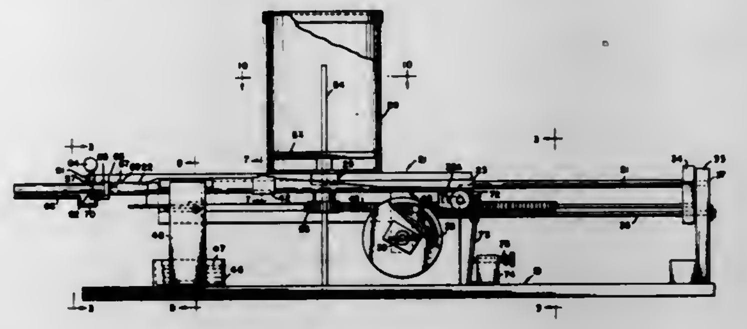
3,646,941
CIGARETTE AND/OR CIGARETTE HOLDER
Max J. Doppelt, deceased, late of Chicago, Ill. (by Jay A. Pritzker, administrator), assignor to E. A. Carey Pipe Company, Chicago, Ill.
Continuation-in-part of application Ser. No. 800,500, Feb. 19, 1969, now Patent No. 3,504,677, dated Apr. 7, 1970. This application Sept. 15, 1969, Ser. No. 857,740
Int. Cl. A24d *01/04*
U.S. Cl. 131—9 **3 Claims**



A cigarette or a cigarette holder for reducing the quantity of particulate, tar and nicotine, provide a cooler smoke, and considerably reduce toxic gases. It includes an apertured tubular member surrounded by a porous fibrous sleeve and a pair of generally cone-shaped members, one at the entrance end of the tubular member and the other at the exit or discharge end of the tubular member, with each cone-shaped member having a radial opening spaced from the inside of the tubular member and positioned approximately 180° from each other so that the smoke passing through the entrance cone is directed into the tubular member and mixed with air drawn thereinto and discharged through the radial opening in the exit cone-shaped member. The apices of the cone-shaped members may abut or may be mutually spaced along the longitudinal axis of the holder.

3,646,942
CIGARETTE MACHINE AND METHOD OF MANUFACTURING CIGARETTES
Clarence M. Asbill, Raleigh, and Frederic H. Heidelberg, Laurinburg, both of N.C., assignors to said Frederic H. Heidelberg by said Clarence M. Asbill
Filed Feb. 27, 1970, Ser. No. 15,037
Int. Cl. A24c *05/18, 05/24, 05/28*
U.S. Cl. 131—65 **21 Claims**

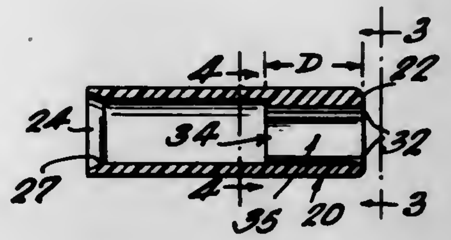
A cigarette machine and a method of manufacturing cigarettes suitable for home use, comprises the use of a pipe having an inlet for the passage of shredded tobacco from a bin to an outlet end of the pipe. A ram is disposed for reciprocation in the pipe to pump the tobacco from the inlet to the outlet end. A larger pipe surrounds the outlet end of the first pipe and overlaps it, forming with it an annular space for receiving an elongated strip of cigarette paper curled transversely in the shape of a tube. Means are provided for sealing the longitudinal ends of the paper tube in the space. The tube receives shredded tobacco as it is pumped through the outlet end of the first pipe and is moved forward by the deposit of successive amounts of tobacco in the tube. The resulting tobacco-filled tube emerges from the second pipe continuously and a portion of any length can be cut off, such as that corresponding to a regular, a king size, or a super king size cigarette.



3,646,943
RECONSTITUTED TOBACCO
Donald Joseph Blewitt, Richmond, Va., and Otto Karl Schmidt, Wapping, Conn., assignors to AMF Incorporated
Filed Sept. 23, 1968, Ser. No. 761,789
Int. Cl. A24b *03/14*
U.S. Cl. 131—140 C **18 Claims**

A method of making reconstituted tobacco material from stem material is disclosed which involves mechanically working by crushing or flattening stem particles, before it is subjected to any soaking or wetting operation, in such wise that the cellular structure of the stem material is disrupted without significant reduction in the size of the particles. The thus treated material is then refined, mixed with an aqueous carrier to form a slurry, shaped and then dried to a predetermined moisture level. Subsequent to the mechanical working operation, the stem material may be sweated to expand the cellular structure.

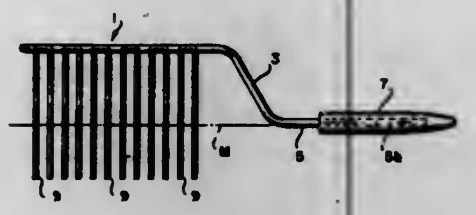
3,646,944
DISPOSABLE RECESSED CIGARETTE TIP
Joseph A. Banoczi, 82 West Avenue, Dorien, Conn.
Filed Feb. 12, 1970, Ser. No. 10,916
Int. Cl. A24f *13/02*
U.S. Cl. 131—187 **4 Claims**



The disclosure describes tubular nonfiltered, disposable mouthpieces for filter tip cigarettes. Each mouthpiece is cylindrical, tapered, or partially cylindrical and tapered in form, and molded of thin, plastic material. Inside each disposable mouthpiece is a plurality of projections against which the flat end of the filter of a cigarette will abut. Abutment ends of the projections are spaced from the rounded outlet end of the mouthpiece and the flat end of the cigarette so as to define a disposable recessed tip. This thin walled tip in an adapter which converts a regular cigarette, filtered or unfiltered into a recessed tip cigarette.

3,646,945
STYLING COMB AND METHOD OF MAKING

Anthony R. Romani, R.D. #2 A.C. #36, Hollidaysburg, Pa.
Filed Mar. 1, 1971, Ser. No. 119,562
Int. Cl. A45d *24/00*
U.S. Cl. 132—11 **6 Claims**



A styling comb for styling human hair is comprised of a U-shaped tooth carrier and U-shaped teeth formed of metal for strength, the teeth are inserted between the parallel legs of the U-shaped carrier and welded thereto, a handle is affixed to the free ends of the tooth carrier.

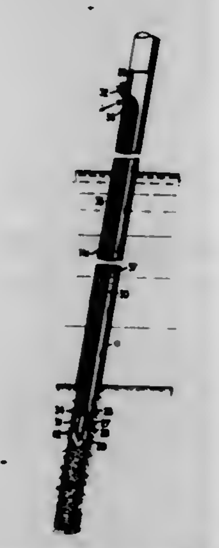
3,646,946
COPPER ALLOY CLEANING PROCESS

James A. Ford, North Haven; Stuart R. Saunders, Branford; Elmer J. Caule, New Haven, all of Conn., and Charles D. McLain, Alton, Ill., assignors to Olin Mathieson Chemical Corporation
Filed Jan. 6, 1969, Ser. No. 789,417
Int. Cl. C23g *1/04;* **C24g** *1/10;* **C23g** *1/20*
U.S. Cl. 134—3 **12 Claims**

A process for removing surface oxides from copper alloys. For example, these alloys which form, on annealing, Al_2O_3 and related oxides are uniquely cleaned by a process which consists of a duplex treatment requiring a first immersion in a hot alkaline solution followed by a second immersion in a hot mineral acid solution.

3,646,947
JACKET PILE CLEANOUT APPARATUS

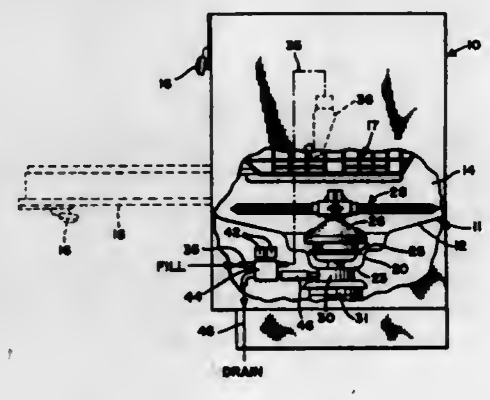
William R. Rochelle, Houston, Tex., and Ronald Lee Wycoff, Rolla, Mo., assignors to Brown & Root, Inc., Houston, Tex.
Original application Apr. 4, 1969, Ser. No. 813,479, now Patent No. 3,597,930, dated Aug. 10, 1971. Divided and this application June 12, 1970, Ser. No. 57,860
Int. Cl. B08b *3/02, 9/02*
U.S. Cl. 134—167 C **12 Claims**



A jacket pile cleanout device for cleaning in situ the interior of an offshore piling including a fluid accumulation jetting chamber for accumulating and jetting a fluid against debris within the interior of a pile casing and a pumping chamber connected with the accumulation chamber. The pumping chamber is fashioned with a fluid inlet and fluid exit with a means for introducing pressurized gas into the interior of the pumping chamber between the fluid inlet and the fluid exit. The pump serves to lift fluid and fragmented matter within the piling to the surface by a gas lift.

3,646,948
HYDRAULIC CONTROL SYSTEM FOR A WASHING MACHINE

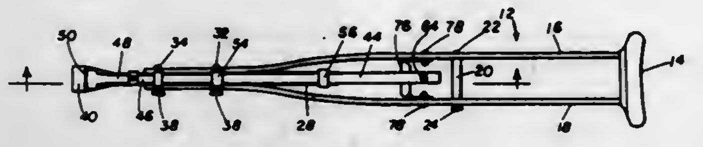
Stuart E. Athey, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio
Continuation-in-part of application Ser. No. 789,296, Jan. 6, 1969, now abandoned. This application Sept. 14, 1970, Ser. No. 72,039
Int. Cl. B08b *3/02*
U.S. Cl. 134—57 D **4 Claims**



A dishwashing machine has two solenoid actuated fill valves within a water supply line, and pressure tap between the solenoid valves is connected to a normally closed pressure actuated drain valve within a drain line to provide for controlling the drain valve in response to selective actuation of the fill valves. The fill valves are controlled by a timer according to a predetermined sequence, and the downstream fill valve is also actuated by a centrifugal switch responsive to operation of the motor for the recirculating means.

3,646,949
CRUTCH WITH RETRACTABLE ICE GRIPPER

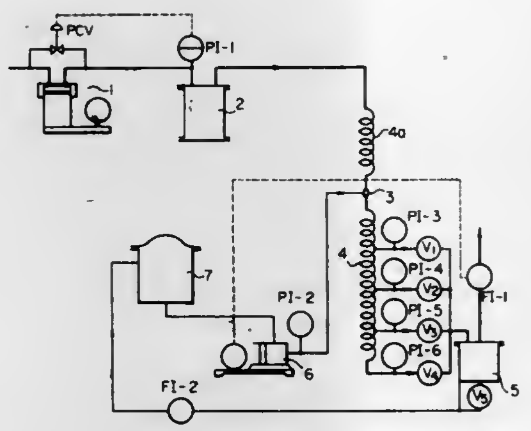
Maurice W. Streeter, 268 E. Muskegon Street, Cedar Springs, Mich.
Filed May 22, 1970, Ser. No. 39,718
Int. Cl. A61h *3/02*
U.S. Cl. 135—58 **12 Claims**



A crutch having a retractable ice gripper operable by the user as he normally uses the crutch while being supported by the crutch. The ice gripper is fixed on the end on an adjustable longitudinal support which is biased downwardly with respect to the crutch with an adjustable biasing means. A latch controls the disposition of the ice gripper with respect to the bottom of the crutch.

3,646,950
METHOD OF REDUCING PRESSURE AND CONTROLLING FLOW RATE OF A FLUID UNDER HIGH PRESSURE

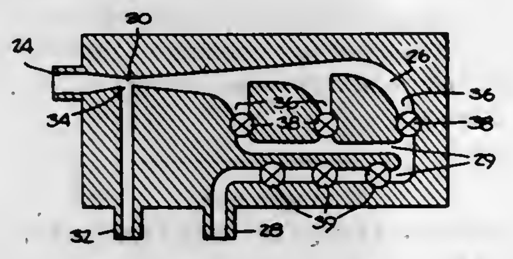
Masaaki Takehisa; Waichiro Kawakami; Hayato Nakajima, all of Takasaki-shi, and Yoshihiko Hosaki, Yokohama-shi, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan
Filed Apr. 1, 1969, Ser. No. 812,247
Claims priority, application Japan, Apr. 12, 1968, 43/24010
Int. Cl. F17d *1/16*
U.S. Cl. 137—13 **16 Claims**



The pressure of a fluid under high pressure can be reduced as the flow rate of said fluid is kept at an arbitrarily selected value by passing said fluid through a circuit comprising a long tubing or a reduction nozzle or series of nozzles and introducing a flow rate controlling medium into said circuit.

3,646,951
FLUIDIC DEVICES WITH A NEGATIVE PRESSURE GENERATING VENTURI

Albert A. Gagne, Huntington, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Apr. 24, 1970, Ser. No. 31,566
Int. Cl. F15c *3/00, 1/10*
U.S. Cl. 137—81.5 **6 Claims**

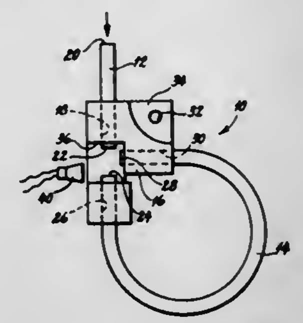


Fluidic devices having a fluid inlet, first and second fluid passages having outlets, means for generating a negative pressure in reference to atmospheric pressure at the second fluid passage as fluid passes through the first fluid passage outlet. The first fluid passage outlet is provided with valves to divert the flow of fluid from the first to the second fluid passage.

3,646,952
FLUID OSCILLATOR

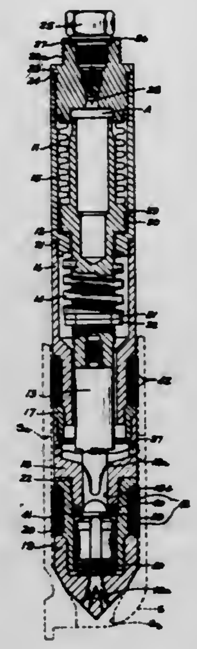
John M. Hunter, Granby, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.
Filed Dec. 29, 1969, Ser. No. 888,456
Int. Cl. F15c *1/04, 3/00*
U.S. Cl. 137—81.5 **8 Claims**

A fluid oscillator comprised of a first conduit which emits a power jet of fluid and a second conduit which both receives the emitted jet and intermittently deflects the emitted jet with fluid pulses to sustain continuous pressure fluctuations within the second conduit. The oscillator can be used as a temperature sensor since the pulse rate of the pressure fluctuations in the second conduit is a measure of the temperature of the fluid transmitted therethrough, other factors being held constant.



3,646,953
GAS LIFT APPARATUS

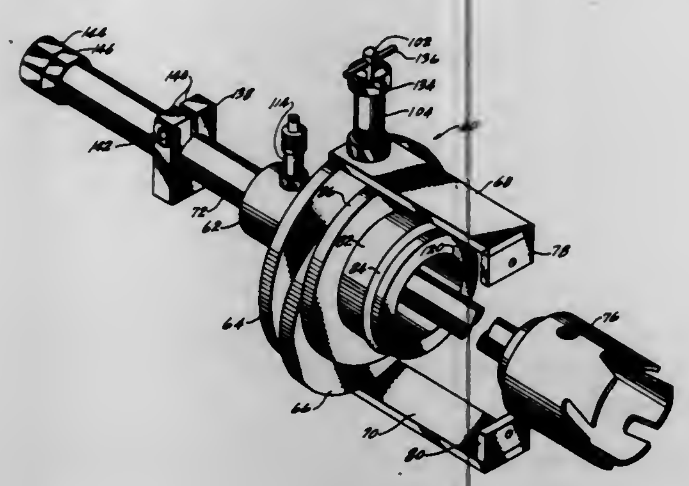
James Kelly Elliott, Baytown, and Douglas W. Crawford, Houston, both of Tex., assignors to Macco Oil Tool Co., Inc., Houston, Tex.
Filed Apr. 6, 1970, Ser. No. 25,985
Int. Cl. F04f *1/20*
U.S. Cl. 137—155 **9 Claims**



A casing pressured operated, variable orifice valve is employed as the operating valve in a single point injection well assembly with tubing pressure (fluid) operated unloading valves acting above the operating valve to provide a continuous flow system. The operating valve includes a throttling range which extends between optimum injection gas pressure levels based on the amount of injection gas pressure available at the well head to thereby increase the overall efficiency of the system. The variable orifice valve includes a pressure charged bellows and a coil spring in series to produce a linear resultant load rate which in turn cooperates with contoured closure surfaces in the valve to produce a linear relationship between orifice size and injection gas pressure. Gas is thus injected into the production column or tubing at a rate which is linearly related primarily to the casing pressure with the throttling range of the operating valve producing a broad response in the gas injection rate. The injection rate is surface regulated by controlling the injection gas pressure at the wellhead.

3,646,954
SERVICE TAP TOOL

Walter C. Hutton, 1567 Waldran Avenue, Los Angeles, Calif.
Filed Oct. 28, 1970, Ser. No. 84,784
Int. Cl. F16k *43/00*
U.S. Cl. 137—318 **16 Claims**

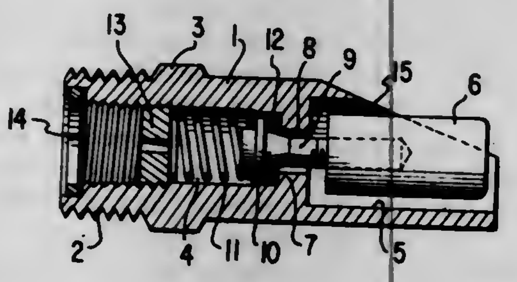


A plug section of a body is adapted to be received in the bore of a coupling of a branch connection from a plastic main containing gas under pressure. An O-ring on this plug section cooperates with the wall of the bore of the coupling to effect a seal. Rotation of a cam follower on a cam of the body brings a locking arm in behind a shoulder of the coupling. Air, admitted through a valve carried by the body, forces the arm into secure engagement with the shoulder of the coupling to secure the tool for making a tap. A boring bar, slidably received in a bore of the body, carries a shell cutter which is used to tap the main.

For heavy-duty service, two locking arms, each carried by a different cam follower on different cams of the body, are adapted to engage the shoulder of a coupling 180° apart from one another. The high points of the cams are 180° from each other and have a rise sufficient for the locking arms to clear the coupling when inserting the plug section into the bore of the coupling. The 180° rotation of the followers brings the locking arms radially inward behind the shoulder of the coupling. A detent lock secures the followers together in this closed position.

3,646,955
WATER-FEEDING DEVICE

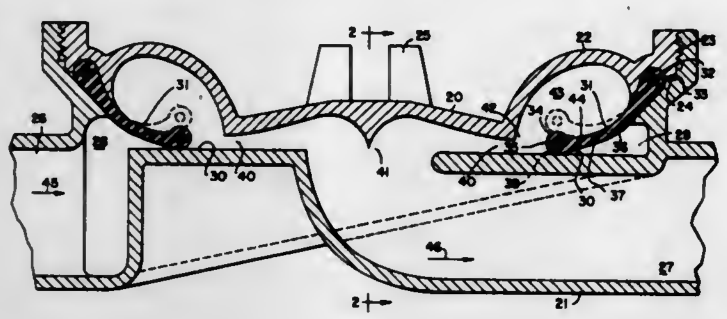
Jarl Rune Olde, Vardsatravagen 71,750, 10 Uppsala, Sweden
Filed May 6, 1970, Ser. No. 35,072
Claims priority, application Sweden, May 8, 1969, 6550/69
Int. Cl. A01k *07/00*
U.S. Cl. 137—382 **8 Claims**



A device for connection to a liquid supply system has a valve mechanism defining an open position for permitting liquid flow and a closed position shutting off liquid flow. An actuator member is operably connected to the valve mechanism for moving the valve mechanism from its closed position into its open position. A protecting lip is connected to the valve mechanism and arranged to at least partially surround the actuator member to prevent the valve mechanism from being inadvertently operated.

3,646,956
RADIAL FLOW CHECK VALVE

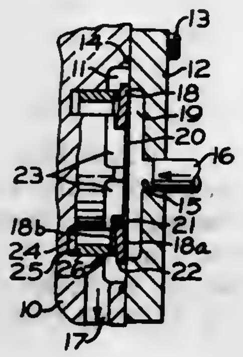
Adair Rogers, Harts Lane, Conshohocken, Pa.
Filed Mar. 18, 1970, Ser. No. 20,536
Int. Cl. F16k *15/14*
U.S. Cl. 137—525 **14 Claims**



A radial flow check valve having radially displaced annular inlet and discharge passages, an annular sealing wall between the inlet and discharge passages extending generally transverse to the axis, and an annular symmetrical elastomeric membrane secured at one edge to the body, when closed engaging the sealing wall at the other and movable edge of the membrane, and separating the inlet and discharge passages, having a web intermediate between its ends which in cross section is convex on the side toward the inlet passage, the movable edge of the membrane opening away from the sealing wall in a generally axial direction. In the preferred form the membrane has at the movable edge an annular lip extending toward the discharge passage and which may contain a metallic support ring. Also in the preferred form there is an annular vortex pocket located adjoining the side of the membrane which exerts closing force, the vortex pocket connecting at one side with the discharge passage by an annular opening, and the discharge passage extending directly from the space between the movable edge of the membrane and the sealing wall when the membrane is open. In the preferred form the membrane at rest conforms to the position which it assumes when the check valve is closed. The membrane may be clamped between separate parts of the body. In axial length the discharge passage is preferably between 0.5 and 1.5 times the distance of full opening of the check valve. In one form, the inlet and discharge passages are led from axial connecting passages.

3,646,957
HIGH-PRESSURE RELIEF BELLEVILLE VALVE

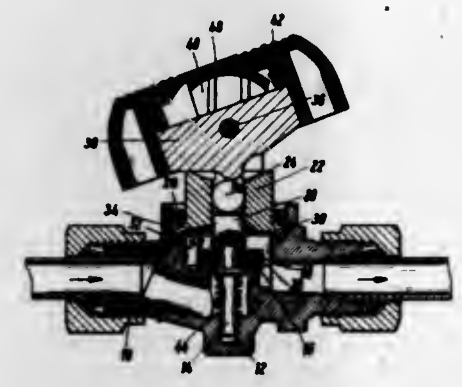
Thomas E. Allen, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 22, 1970, Ser. No. 30,679
Int. Cl. F16k *15/14*
U.S. Cl. 137—525 **7 Claims**



A high-pressure relief valve is constructed of a Belleville-type spring washer preloaded in a housing to serve as a resilient barrier to fluid flow between inlet and outlet openings in the housing. Means are provided for reducing the pressure effect of the fluid on the washer to thereby increase the pressure required to actuate the valve. This is accomplished by reducing the area of effective pressure on the face of the washer.

3,646,958
QUICK-ACTING VALVE WITH ROCKER-TYPE OPERATING BUTTON

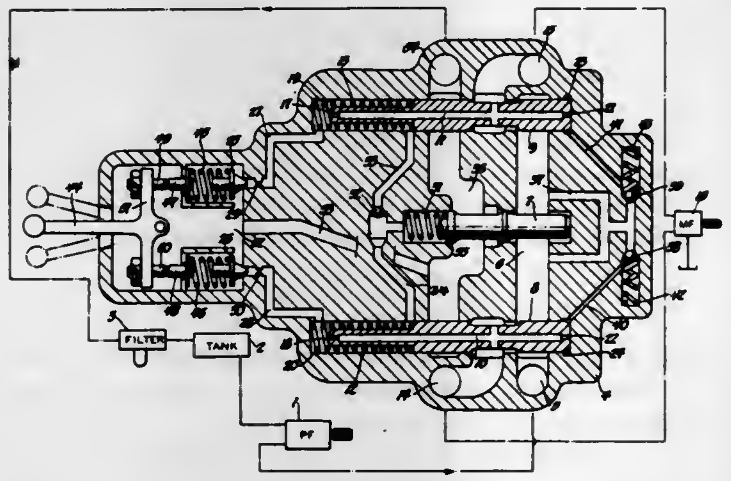
Alfred Braas, Dillenburg, Germany, assignor to Armaturenwerk Niederscheld GmbH, Dillenburg/Hessen, Germany
Filed Sept. 22, 1969, Ser. No. 859,647
Int. Cl. F16k *37/00, 31/44*
U.S. Cl. 137—553 **3 Claims**



A spring, preferably additionally connected to a ball, is interposed in the motion transfer mechanism from a rocker-type operating button to the valve element of a quick-acting valve, the spring compensating for overtravel during operation and for manufacturing tolerances, to effect tight seating of the valve element while permitting rapid operation of the valve element.

3,646,959
POWER TRANSMISSION

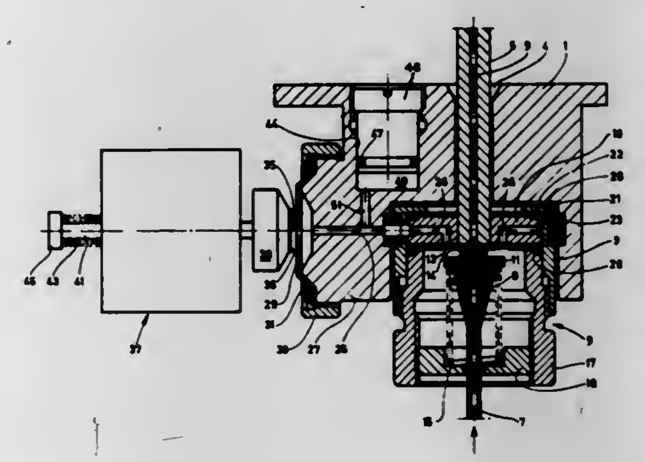
Donald C. Connett, Huntington; Gerald N. Olsen, Torrance, both of Calif., and Kurt R. Lonnemo, Troy, Mich., assignors to Sperry Rand Corporation, Troy, Mich.
Filed Oct. 12, 1970, Ser. No. 79,782
Int. Cl. F16k *11/10*
U.S. Cl. 137—596.12 **6 Claims**



A pressure-modulating directional control valve for high-inertia loads such as the swing drive of a crane uses two three-way spool valves biased to inlet-open position and a separate pressure-regulating valve with a minimum spring bias and a manually variable hydraulic bias. Each three-way valve has a variable pilot pressure relief valve and these are alternately operable by a manual lever to modulate pilot biasing pressure applied to the pressure-regulating valve and also to one or the other of the three-way valves whenever it is acting as a brake valve in the return side of the circuit during motor overrun.

3,646,960
INJECTION AND DOSING ARRANGEMENTS

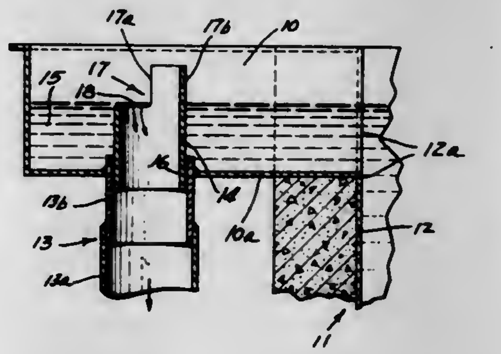
Kjell Esbjorn Jidling, Spanga, and Lars O. A. Soderkvist, Vallingby, both of Sweden, assignors to LKB-Produkter AB, Bromma, Sweden
Filed Mar. 30, 1970, Ser. No. 23,716
Claims priority, application Sweden, Apr. 25, 1969, 5949/69
Int. Cl. C02d *11/00*
U.S. Cl. 137—565 **6 Claims**



An arrangement for injecting a defined volume of a first fluid into a second streaming fluid is provided. The injection is carried out by separating two normally sealed tube sections through which the streaming fluid passes. The fluid to be injected is supplied to a chamber which surrounds the junction of the sections. An overpressure is obtained in the chamber, the overpressure generating an axial force which separates the sections and opens a passage through which the fluid is injected.

3,646,961
OVERFLOW STRUCTURE IN ELECTROLYTIC CELL OR THE LIKE

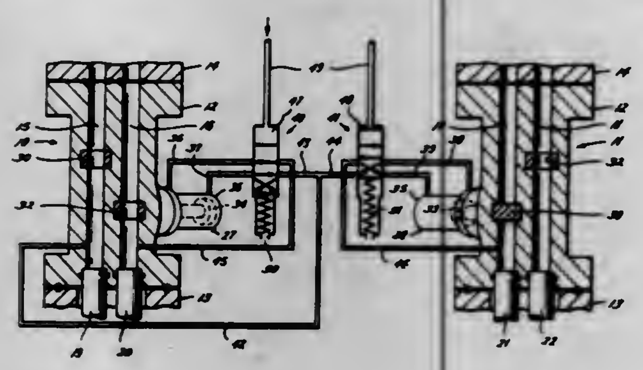
Kent F. Marquardson, 4627 Fortuna Way, Salt Lake County, Utah
Filed Mar. 25, 1970, Ser. No. 22,438
Int. Cl. F16t *1/00*
U.S. Cl. 137—577 **7 Claims**



An upstanding, tubular riser serves as a discharge pipe for electrolyte overflowing thereinto from a surrounding body of electrolyte. The top of the riser is indented around approximately a semicircle in the form of a notch having an elongate bottom that determines the overflow level of the body of electrolyte. The elongate bottom of the notch preferably extends horizontally around the entire width of the notch, with the sides of the notch extending vertically. The notched top portion of the riser is preferably a separate, relatively short nipple telescopically connected to the remainder of the riser.

3,646,962
REMOTELY LOCATED APPARATUS FOR PRODUCING WELL FLUIDS

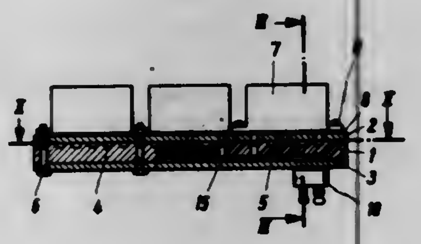
Marvin R. Jones, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed Oct. 16, 1970, Ser. No. 81,469
Int. Cl. F16k *31/42*
U.S. Cl. 137—594 **5 Claims**



There is disclosed wellhead apparatus having a plurality of bores and a valve for controlling flow through a bore. The valve is remotely controlled, and power for actuation is derived from fluids in two of the bores at relatively high and low pressures.

3,646,963
DUCT SYSTEM FOR FLUID PRESSURE MEDIUM OPERATED REGULATING, CONTROL AND MEASURING APPARATUS

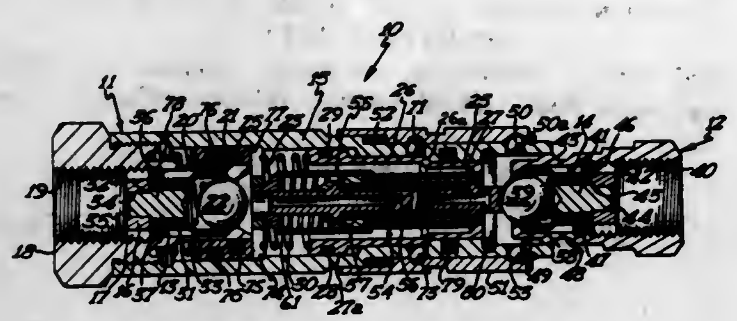
Gerhard Klee, Frankfurt/M.-Ginnheim, Germany, assignor to Samson-Apparatebau A.G., Frankfurt/Main, Germany
Filed Dec. 10, 1969, Ser. No. 883,743
Claims priority, application Germany, Apr. 5, 1969, P 19 17 727.6
Int. Cl. F17d *1/00*
U.S. Cl. 137—608 **5 Claims**



A duct system for fluid pressure medium operated apparatus comprises plural substantially flat superposable plates. At least one plate is formed with channel-type recesses separated from each other by separating walls. The recesses are arranged in regular groups, and all recesses in each group extend in the same direction. The recesses in adjacent groups extend in respective different directions, such as at right angles to each other. The separating walls are pierceable to interconnect channels at selected locations to form a fluid pressure medium flow circuit. In one embodiment of the invention, the plate has channel-type recesses on both surfaces, with the recesses on one surface extending substantially perpendicularly to the recesses on the other surface and with interconnection being effected by aperturing the portion of the plate separating the recesses on the opposite surfaces. In another embodiment of the invention, the recesses are formed on only one surface of the plate, and the separating walls comprise webs of the channel-type recesses.

3,646,964
COUPLING DEVICE FOR PERMITTING COUPLING UNDER TRAPPED PRESSURE

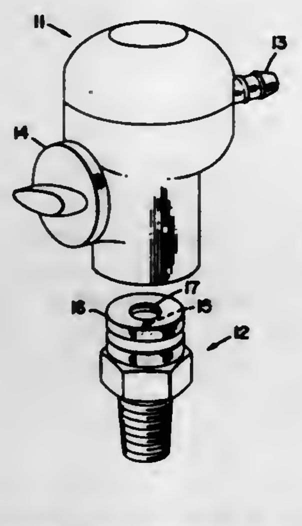
Paul E. Stratman, Minneapolis, Minn., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Feb. 28, 1967, Ser. No. 619,239
Int. Cl. F16l *37/28*
U.S. Cl. 137—614.03 **28 Claims**



This invention relates to a valved quick disconnect coupler in which two coupling halves, each connectable to a respective conduit for fluid, may be connected to each other while either or both conduits are under high-fluid pressure.

3,646,965
GAS SUPPLY CONNECTOR AND REGULATOR VALVE

Leonard B. Swartz, Los Altos Hills, Calif., assignor to Oxygen Valve Company of America, San Francisco, Calif.
Filed Jan. 23, 1968, Ser. No. 699,866
Int. Cl. F16k *29/00*
U.S. Cl. 137—614.06 **12 Claims**

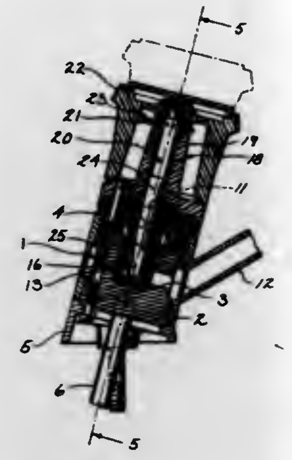


A gas supply connector and regulator is disclosed comprising an adjustable valve connectable to a gas supply source, a regulator for adjusting the valve and automatically maintaining a constant gas flow, and means formed on the respective valve and regulator for securely coupling the valve and regulator, and safety features to prevent the release of gas from the gas supply source during coupling and uncoupling.

3,646,966
CONTROL MEMBER FOR PROPORTIONING VALVES

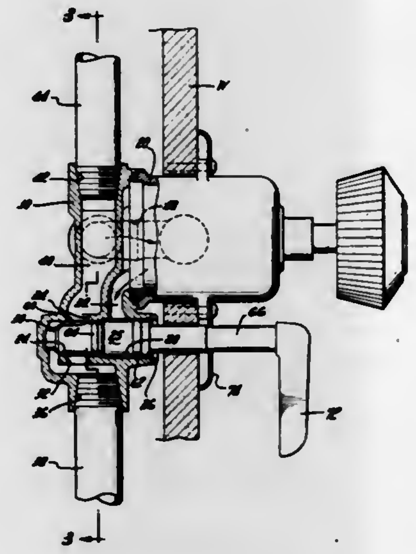
Edwin Allen Smart, Milwaukee, Wis., assignor to Bradley Washfountain Co., Menomonee Falls, Wis.
Filed Apr. 3, 1970, Ser. No. 25,515
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.4 **4 Claims**

There is shown a proportioning valve for controlling the mixing of two fluids. A valve body with an internal recess has a pair of diametrically opposed inlet ports and an outlet that connects with a discharge spout. A sleeve is inserted in the recess which has deflectable sealing cushions directly in front of the inlet ports, and an elongate control rod is inserted within the sleeve which is movable both in axially and circumferential directions. The control rod has a cylindrical portion which squeezes the sealing cushions of the sleeve into port closing positions, and a tapered portion canted at an angle which when moved into alignment with the inlet ports controls the relative amounts of flow from the two ports in response to rotation of the control rod. The tapered portion has a lobe extending along a substantial length of the rod to present a radial protrusion, such that when the control rod is adjusted to have flow from one inlet port and no flow from the other the closing pressure against the sealing cushion of the closed port is augmented.



3,646,967
DIVERTER VALVE STRUCTURE

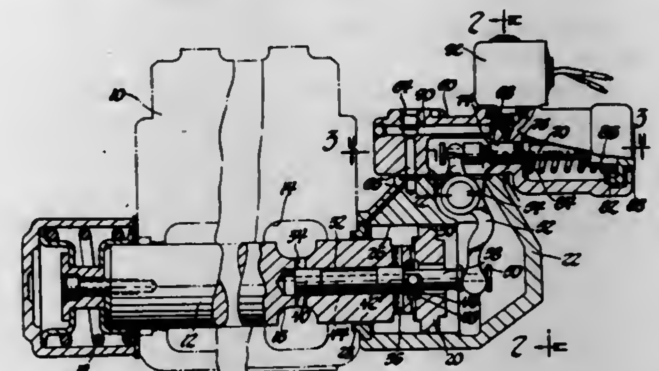
Louis E. Ross, Sunland; John K. Lyon, Pasadena, and Julius J. Paolucci, Canoga Park, all of Calif., assignors to Price-Pfister Brass Mfg. Co., Pacoima, Calif.
Filed Apr. 6, 1970, Ser. No. 25,632
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.47 **8 Claims**



A common casting provides hot and cold water inlets to a mixer valve and two outlet ports, one for the shower and the other for the tub. The casting provides a chamber for a hollow diverter valve member. The diverter valve member has a lateral outlet at one end registrable selectively with the tub and shower ports. An inlet to the interior of the hollow diverter valve member is formed at the other end. Peripheral O-rings on opposite sides of the inlet provide a seal. These O-rings are located in eccentric grooves so that a lateral thrust is imposed on the diverter valve member. The thrust seals the lateral outlet and prevents undesired flow to the opposite outlet port.

3,646,968
POWER TRANSMISSION VALVE WITH DETENT

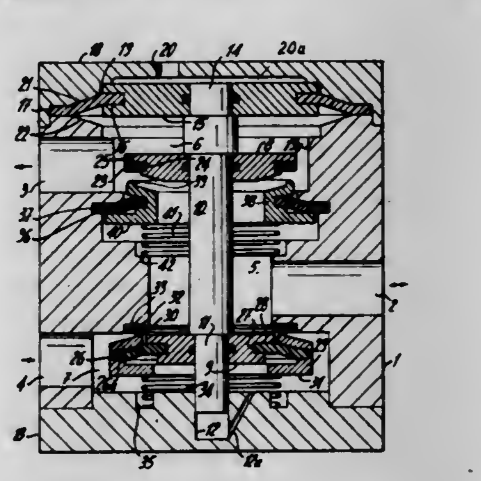
Carl R. Binkley, Warren, and Robert G. Farrell, Royal Oak, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.
Filed Sept. 30, 1970, Ser. No. 76,890
Int. Cl. F16k *11/07, 31/44*
U.S. Cl. 137—625.64 **7 Claims**



A remotely controlled directional valve of the sliding spool type for hydraulic power systems has a differential area actuating piston and a three-way followup pilot valve concentric with the spool. The pilot valve is actuated by a lever and a rotary shaft extending through the wall of the chamber enclosing the large side of the differential piston. A cap member provides detent means for the pilot valve together with interchangeable two-way valves actuated electrically or pneumatically for admitting pilot pressure to release the detents.

3,646,969
VALVE MECHANISM

Harald Stampfli, Petit-Saconnex, Switzerland, assignor to Lucifer S.A., Carouge-Geneva, Switzerland
Filed Mar. 23, 1970, Ser. No. 21,723
Claims priority, application Switzerland, Apr. 22, 1969, 6037/69
Int. Cl. F16k *11/04*
U.S. Cl. 137—627.5 **4 Claims**



A valve mechanism including a movable system carrying two valve members closing selectively two channels through engagement with their seats, at least one valve member being carried floatingly by a spring with the interposition of a rigid member fitted over the outer peripheral deformable edge of an intermediate yielding washer or the like member engaging through its inner peripheral edge the valve member considered. Similarly the seat of another valve member may be carried floatingly by a spring and form a rigid annular member fitted over the inner deformable edge of an intermediate yielding washer or the like member engaging through its outer peripheral edge the inner surface of the body of the valve mechanism. In all cases, the two valve members are held both in their closed condition for an intermediate position between the open positions of either valve member. Thus, an annular yielding member fitted coaxially in a rigid member subjected to the action of a spring engages fluidtightly through said yielding member a valve member or a seat for the latter according to the case, whereby said spring urges the rigid member into engagement with the cooperating seat or cooperating valve member respectively.

3,646,970

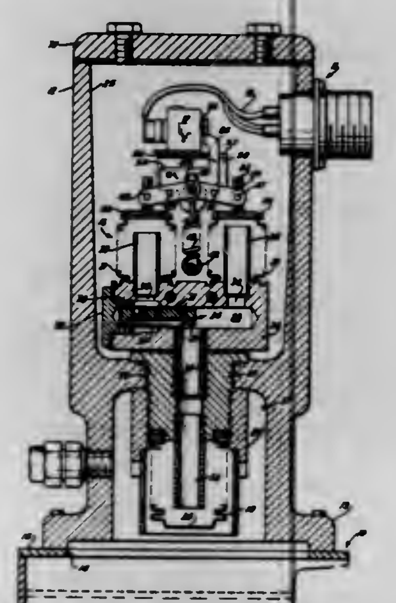
FLOW CONTROL UNIT FOR BELLOWS CONTROLLED SUDDEN PRESSURE RISE RELAY

Robert F. Romanowski, Rochester, N.Y., assignor to Qualitrol Corporation, Fairport, N.Y.

Continuation-in-part of application Ser. No. 829,464, June 2, 1969, now Patent No. 3,535,878, dated Oct. 27, 1970. This application June 1, 1970, Ser. No. 42,280

Int. Cl. F15d *1/02, 1/14*

U.S. Cl. 138—46 **3 Claims**



A relay unit designed for association with a fluid cooled transformer apparatus. The relay acts by means of a hydraulic bellows system to sense internal pressure variations in a tank member of the transformer apparatus; and it responds to a sudden rise in the pressure to actuate an alarm switch. The system includes a bellows which senses the pressure variation, and responds by forcing liquid in the system through a common chamber and connecting passages to each to a pair of pressure responsive bellows. The passage to one of the pair of bellows is relatively restricted as compared to that to the other, so that when a sudden pressure rise develops the system liquid flows in greater volume to one of the bellows than to the other. This causes differential expansion of the pair of bellows and consequent upsetting of linkage controlling operation of the switch. An orifice flow control unit removably inserted in the common chamber includes a thermostatic blade overlying the restricted passage. The blade responds to temperature changes in the bellows system liquid so as to move closer to or further clear of the restricted passage. In this manner, it serves to regulate and to maintain a constant rate of flow of the system liquid through the restricted passage over an operating range of -40° to 100° C.

3,646,971

DUCT FOR THE TRANSFER OF MATERIALS AT A VARIABLE FLOW RATE

Jean Godet, Le Mans, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

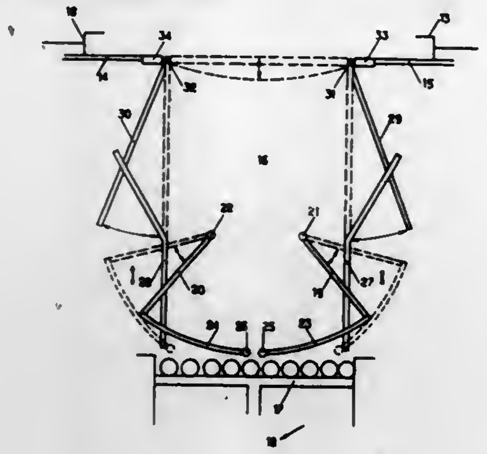
Filed June 30, 1969, Ser. No. 837,566

Claims priority, application France, July 2, 1969, 157474

Int. Cl. B65d *83/02*

U.S. Cl. 138—46 **9 Claims**

Duct for transferring a stream of material from a feed unit to a receiving unit, comprising means for adapting at least a part of the cross section of the said duct to the flow of the material streaming through said duct, the said means consisting of at least two wall elements which are mounted on the opposite sides of a lateral opening in one wall of the said duct, at least one of the said wall elements being movable, said wall elements being so designed that the distance, over which said movable wall element is in contact with the material, varies according to the position of the said element during the displacements thereof.



3,646,972

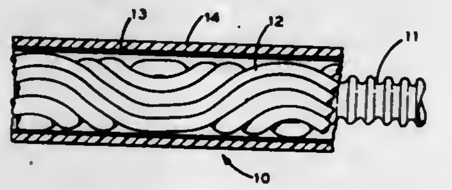
MULTITUBING SYSTEM

Hubert Kuypers, Bad Nenndorf, Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Feb. 27, 1970, Ser. No. 15,008

Int. Cl. F16l *9/18, 11/12*

U.S. Cl. 138—111 **8 Claims**



Information transmitting systems including a plurality of tubular members for pneumatically or hydraulically passing data in pulse form; the tubular members being stranded about a core member which may be tubular or in electric cable form, the tubular members being stranded with a reverse lay to allow such members to be displaced to allow convenient tapping of the tubular members or the core member.

3,646,973

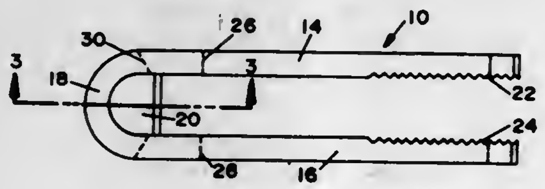
LUG STRAP ASSEMBLY AND METHOD OF FORMING SAME

Coyt E. Murray, Gastonia, N.C., assignor to Impact Plastics, Inc., Gastonia, N.C.

Filed Mar. 12, 1970, Ser. No. 18,951

Int. Cl. D03d *49/40*

U.S. Cl. 139—153 **4 Claims**



Slots provided along substantially the entire lengths of the leg and web portions of the strap component increase its flexibility, facilitate the heat dissipation and/or provide a seat for a removable plug component. Bending of the strap into its U-shaped configuration, formation of the web slot and seating of the plug may be achieved in one operation.

3,646,974

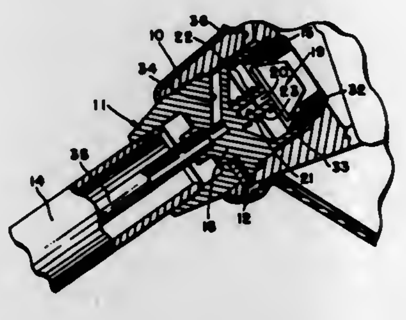
AUTOMATIC SHUTOFF DISPENSING NOZZLE VENTURI

Glenn E. Moore, Cincinnati, Ohio; Fred A. Wilson, Florence, Ky., and Chester W. Wood, Cincinnati, Ohio, assignors to Dover Corporation, Cincinnati, Ohio

Filed Mar. 23, 1970, Ser. No. 21,618

Int. Cl. B67d *5/373*

U.S. Cl. 141—392 **10 Claims**



A continuous groove is formed in the conical bore of a variable venturi body to increase the area in which the liquid flowing therethrough can expand to produce an enlarged low-pressure area. This enlarged low-pressure area enables a diaphragm to be moved to close a main valve even when the flow rate through the venturi is as low as one gallon per minute.

3,646,975

TREE SHEARING APPARATUS

Donald J. McNeil, Sr., Portland, and Richard R. Deline, West Linn, both of Oreg., assignors to Esco Corporation, Portland, Oreg.

Filed Aug. 22, 1969, Ser. No. 852,423

Int. Cl. A01g *23/02*

U.S. Cl. 144—34 E **16 Claims**

An apparatus for shearing trees which is relatively compact and lightweight and which may be easily attached to a blade of a tractor, a log skidder, a boom, or other device. The apparatus includes a generally L-shaped body with a relatively thin, platelike blade slidably mounted thereon. Hydraulic pistons are mounted within the body for pushing the cutting edge of the blade toward the base of the L-shaped body, and a stationary anvil knife is attached to the base. The blade is shaped to cut the tree fibers closest to the operator first to assist in directional fall, and the upper surface of the blade may carry wedges for further assisting directional felling. The outer periphery the blade theblade is provided with an upstanding rim for pulling hung-up trees after they are severed. The apparatus may be pivotally secured to a vehicle, and the rear side of the body is provided with an arcuate blade member for log-decking or blading operations when the apparatus is pivoted into a raised position.

3,646,976

TREE GRASPING DEVICE

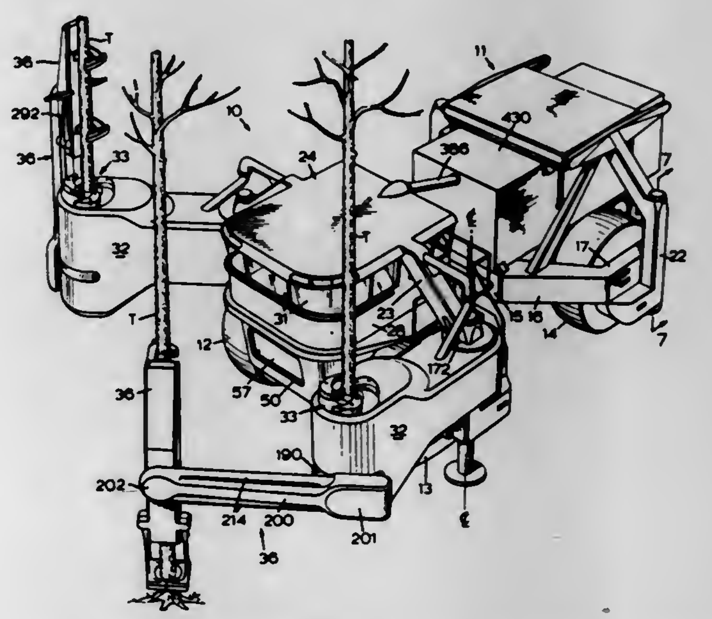
Bruce John McColl, Whitby, Ontario, Canada, assignor to Owens-Illinois, Inc.

Division of Ser. No. 572,530, Aug. 15, 1966, Pat. No. 3,533,458

Filed July 30, 1970, Ser. No. 59,388

Int. Cl. A01g *23/02*

U.S. Cl. 144—242 R **2 Claims**



A tree grasping mechanism for a tree harvester in which two grasping arms are mounted for pivotal movement on a slide that is mounted for reciprocable movement on a support structure of the tree harvester.

3,646,977

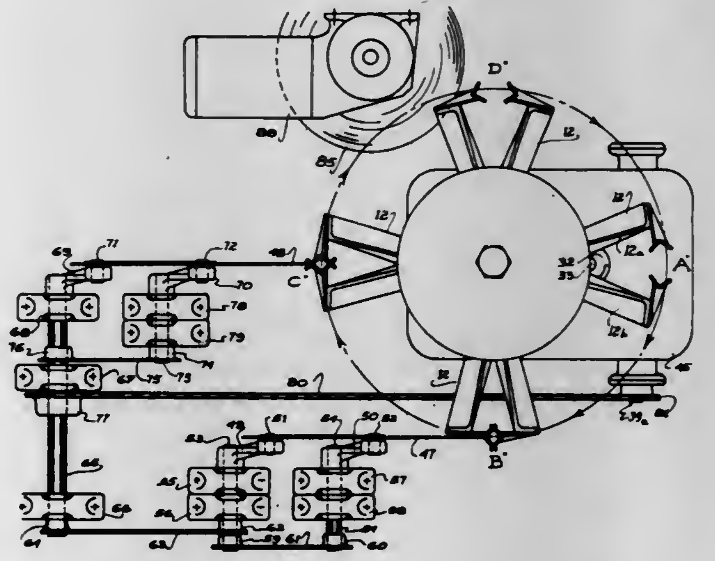
BROCCOLI TRIMMING MACHINE

Richard J. Goodale, Watsonville, Calif., assignor to Goodale Manufacturing Company, Inc., Watsonville, Calif.

Filed Apr. 27, 1970, Ser. No. 32,088

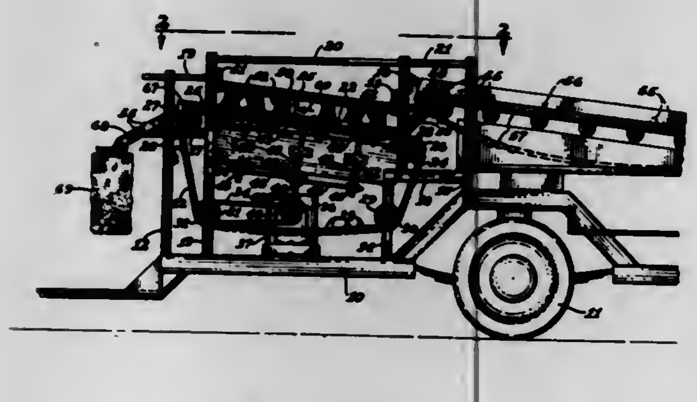
Int. Cl. A23n *15/04;* **B26d** *3/26*

U.S. Cl. 146—78 R **10 Claims**



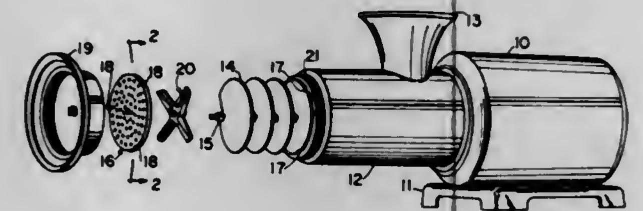
A broccoli trimming machine that is provided with a rotatable mechanism having a plurality of broccoli gripping means adapted to be rotated past a plurality of stations including a loading station A, a first slitting station B, a second slitting station C and a discharge station D. The broccoli gripping means are rotated past these stations in step-by-step motion by a Geneva-type drive. The slitting knives are attached to an endless chain which moves the knives in predetermined orbits. The broccoli gripping devices are closed by a system of cams while each broccoli gripping device is at the loading station. Rotating the broccoli gripping devices past the stations as well as opening and closing the gripping devices and moving the knives through their orbits is accomplished by a suitable drive mechanism in timed relation.

3,646,978
VEGETABLE PROCESSING MACHINE
Thomas Tait, 3920 West Rancho Drive, Phoenix, Ariz.
Filed Sept. 2, 1969, Ser. No. 854,533
Int. Cl. A23n
U.S. Cl. 146—83 **3 Claims**



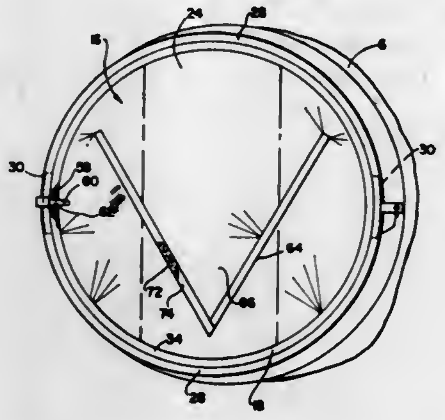
A vegetable processing machine for cleaning, trimming off the tops and roots, and bagging of vegetables such as onions and the like.

3,646,979
ROTARY BLADE FOR MEAT GRINDER
Eugene A. Anderson, Lewis Place, Box 895, Douglasville, Ga.
Continuation-in-part of application Ser. No. 764,407, Oct. 2, 1968, now Patent No. 3,563,291. This application July 1, 1970, Ser. No. 51,645
Int. Cl. B02c *18/36*
U.S. Cl. 146—189 A **11 Claims**



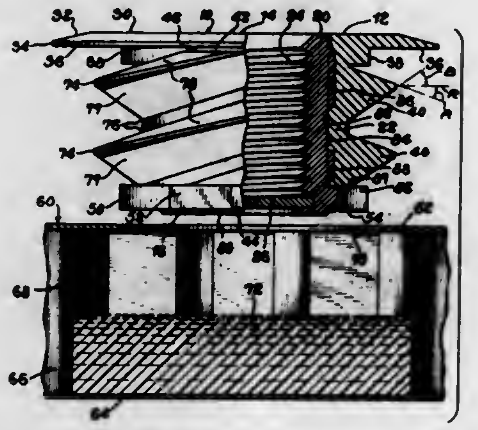
A meat grinder in which a worm conveyor on a horizontal shaft feeds the meat to be ground toward a rotary blade or chopper provided with radially extending blade arms. The blade arms move in a rotary path and cooperate with the surface of the perforated plate for cutting or chopping action. Each blade arm has a wedge-shaped blade block provided with outwardly converging surface portions with one surface portion having a straight leading cutting edge for riding on the surface of the plate. This cutting edge is disposed forwardly of and substantially parallel to the radial axis of the blade arm. The wedge-shaped blade blocks assure even wearing of the blade blocks against the plate.

3,646,980
JET ENGINE COWL COVER
Fred D. Peterson, Belmont, Calif., assignor to Peterson Products of San Mateo, Inc., Belmont, Calif.
Filed June 15, 1970, Ser. No. 46,071
Int. Cl. B65d *65/02*
U.S. Cl. 150—52 R **14 Claims**



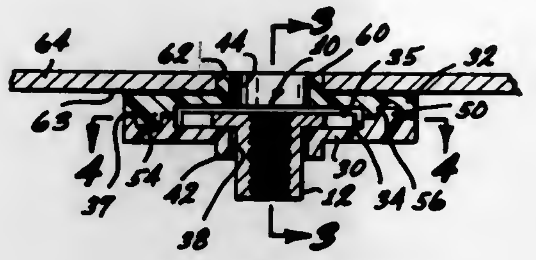
A cowl cover for placement over the intake opening of jet engine nacelles and the like which has a substantially rigid, lightweight outer ring constructed to fit into the opening and which includes stop means limiting the inward movement of the ring into the nacelle. The periphery of a translucent plastic sheet is tautly secured to the ring to close the nacelle opening when the ring is in place. The exterior surface of the ring includes a gasket that seals the ring to the nacelle and which applies a releasable force biasing the cowl cover against the nacelle. The plastic sheet includes a V-shaped slit so that a center portion of the sheet can be opened to provide access into the nacelle interior through the sheet and which can, thereafter, be closed to protect the nacelle interior from the atmosphere and atmospheric contaminants.

3,646,981
INSERT FOR SANDWICH PANELS
Gerald Barnes, Brooklyn, N.Y., assignor to Amerace Esna Corporation, New York, N.Y.
Filed June 2, 1970, Ser. No. 42,824
Int. Cl. F16b *35/00, 41/00*
U.S. Cl. 151—41.7 **5 Claims**



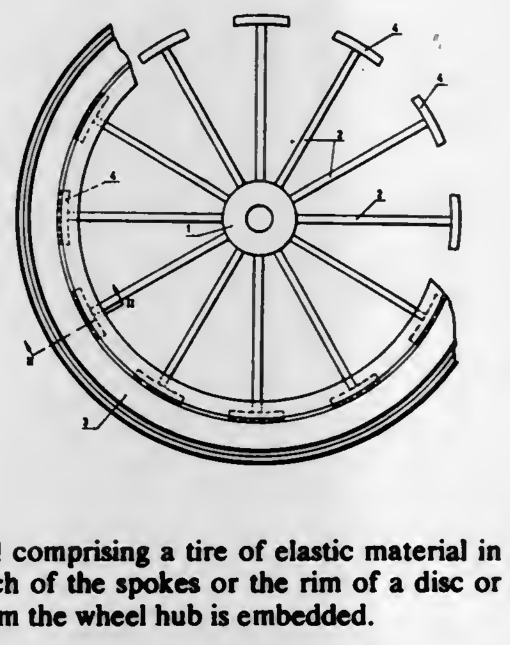
A threaded insert is affixed within a sandwich panel with a hardenable liquid adhesive which is forced into intimate contact with the body of the insert by helical ribs on the body which move the liquid adhesive during insertion of the insert into the panel and are engaged by the adhesive to anchor the insert upon hardening of the adhesive. The body is a composite construction including a metallic threaded member surrounded by a sleeve of molded plastic which carries the helical ribs.

3,646,982
ENCAPSULATED FLOATING AND NONFLOATING FASTENERS
Kenneth V. Cushman, Santa Ana, Calif., assignor to Delron Fastener Division of Rex Chainbelt, Inc., Milwaukee, Wis.
Filed Sept. 12, 1969, Ser. No. 857,418
Int. Cl. F16b *41/00*
U.S. Cl. 151—41.7 **7 Claims**



The invention is a fastener having an encapsulating base section providing a relatively large surface area which is attached to a surface by adhesive bonding. In one form the fastener is of the floating type. The fastener has a base section which is caged to allow the fastener to float laterally. The fastener is encapsulated with a portion extending through an aperture in the cage, the encapsulation having a circular rib to register with an opening in a surface to which the cage is secured by adhesive bonding, or sonic vibration.

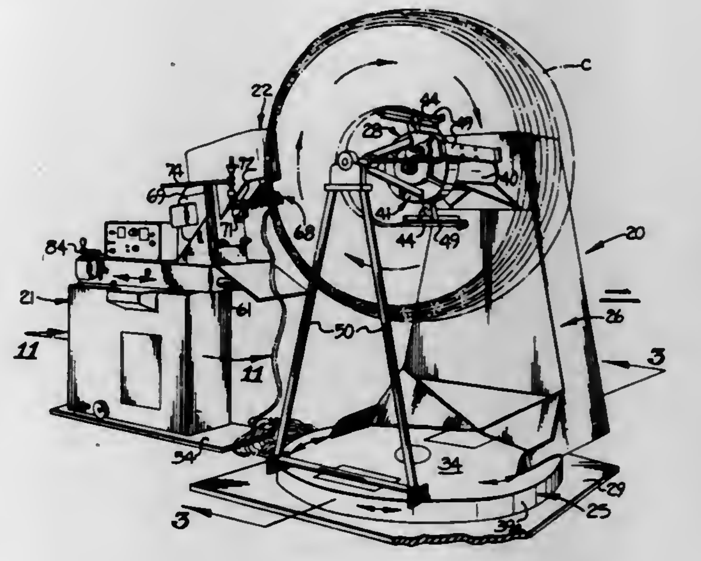
3,646,983
WHEEL COMPRISING A TIRE OF RUBBER OR SYNTHETIC MATERIAL AND A METHOD FOR MANUFACTURING SAID WHEEL
Leonardus J. M. Van Lieshoud, Maastricht, Netherlands, assignor to N. V. Bataafsche Rubber Industrie "Radium", Maastricht, Netherlands
Filed Dec. 5, 1969, Ser. No. 882,426
Claims priority, application Netherlands, Dec. 12, 1968, 68/17831
Int. Cl. B60c *7/28*
U.S. Cl. 152—323 **2 Claims**



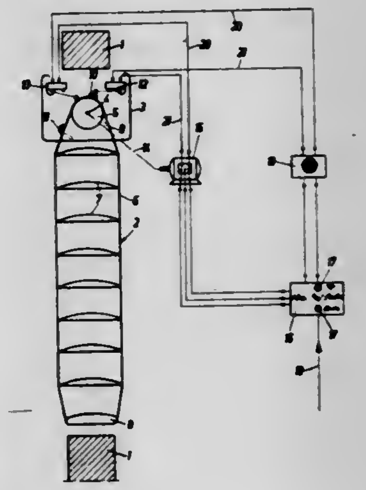
A wheel comprising a tire of elastic material in which the end of each of the spokes or the rim of a disc or plate projecting from the wheel hub is embedded.

3,646,984
APPARATUS FOR REMOVING A TIRE TREAD
Harvey E. Morgan; Theodore Suttle, both of Salisbury, and Jackson C. Schenck, Rockwell, all of N.C., assignors to Brad Ragan, Inc., Spruce Pine, N.C.
Filed Feb. 4, 1970, Ser. No. 8,514
Int. Cl. B29h *21/08*
U.S. Cl. 157—13 **7 Claims**

Apparatus for preparing a previously used tire carcass for retreading, such as by removal of tread from the circumferential face thereof, wherein a tire carcass is mounted on a tire stand for rotation about horizontal and vertical axes while a tool head support mounts a tool for movement adjacent the tire stand means and for engagement of the tool with a circumferential face of a tire carcass rotating about the horizontal and vertical axes. Movement of the tool is restrained to translation along a line extending in predetermined relation to the axes of tire carcass rotation, with the compound rotation of the tire carcass cooperating with translational movement of the tool to result in a particularly compact apparatus being provided.



3,646,985
VENETIAN BLIND WITH AUTOMATIC CONTROL OF ROOM BRIGHTNESS
Horst Klann, Bremen, Germany, assignor to Justin Huppe, Kommanditgesellschaft, Oldenburg, Germany
Continuation-in-part of application Ser. No. 792,629, Jan. 21, 1969, now abandoned. This application Apr. 13, 1970, Ser. No. 27,664
Int. Cl. E06b *9/26, 9/30*
U.S. Cl. 160—168 **2 Claims**



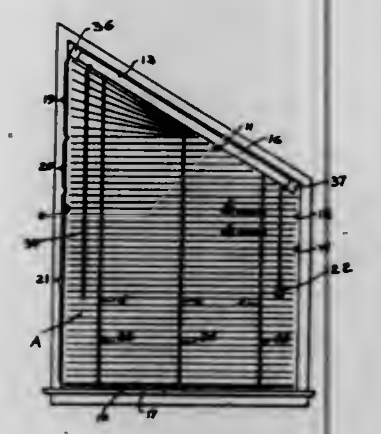
A venetian blind is provided with an electric motor to run the blind up and down. The motor also tips the slats one way or the other automatically to control the amount of light admitted to a room as detected by a control circuit having a photosensitive device in the room.

3,646,986
INCLINED-SOFFIT VENETIAN BLIND AND INSTALLATION

Joseph A. Anderle, Clifton, N.J., assignor to Levolor Lorentzen, Inc., Hoboken, N.J.

Filed May 15, 1970, Ser. No. 37,589
Int. Cl. E06b *9/30*

U.S. Cl. 160—168 **16 Claims**



A window which is either triangular or trapezoidal by reason of an inclined soffit is provided with a venetian blind which controls the passage of light through all portions of the window.

3,646,987
METHOD FOR REDUCING POLLUTION IN FOUNDRIES

Joseph S. Schumacher, Cincinnati, Ohio, assignor to International Minerals and Chemical Corporation, Skokie, Ill.

Continuation-in-part of application Ser. No. 839,339, Apr. 7, 1969, which is a continuation-in-part of application Ser. No. 714,339, Mar. 19, 1968, now Patent No. 3,461,941. This application Oct. 15, 1969, Ser. No. 866,716. The portion of the term of this patent subsequent to Aug. 19, 1986, has been disclaimed.
Int. Cl. B22d *29/00*

U.S. Cl. 164—5 **9 Claims**

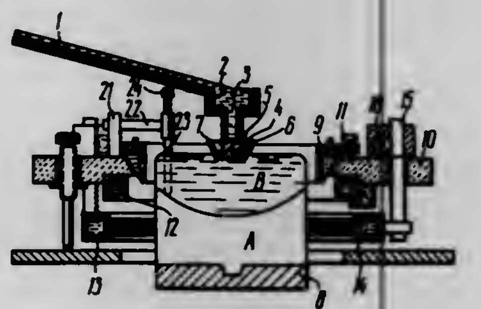
This invention relates to a method for reducing dust pollution in foundries that use sand molds for casting and recycle the used sand for subsequent molding operations. A quantity of sand is added to the used sand, preferably at the shakeout, so that the total amount of said weighs at least 12 times the weight of the metal previously cast.

3,646,988
INDUCTION APPARATUS FOR CONTINUOUS AND SEMICONTINUOUS CASTING

Zinovy Naumovich Getselev, Prospekt Metallurgov, 73, kv. 29, Kuibyshev, U.S.S.R.

Filed May 20, 1970, Ser. No. 39,131
Int. Cl. B22d *11/12, 27/02*

U.S. Cl. 164—251 **2 Claims**



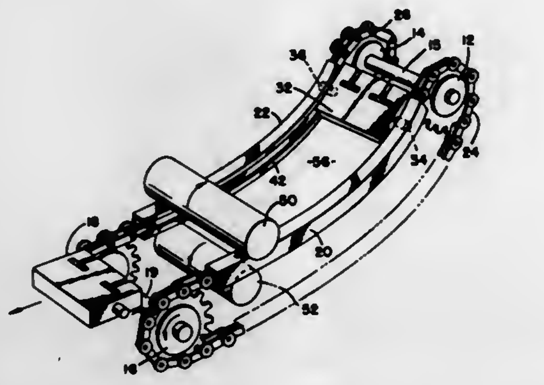
Apparatus for continuous and semicontinuous casting of metals by feeding molten metal into an annular electromagnetic inductor creating a field for forming an ingot cooled by a liquid supplied by a ring device made in the form of a perforated tube and mounted under the inductor so as to be capable of movement in a vertical direction.

3,646,989
CONTINUOUS CASTING DUMMY BAR HEAD CASTING CONVEYOR

Donald L. Lomax, Glen Mills, Pa., assignor to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed June 1, 1970, Ser. No. 41,926
Int. Cl. B22d *11/08*

U.S. Cl. 164—274 **11 Claims**



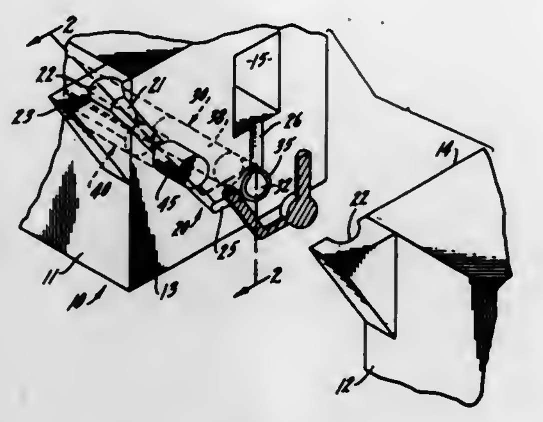
An apparatus for driving and guiding a continuous cast strand from an initial position at an open-ended mold to a second position within a withdrawal roll unit. The apparatus comprises external conveyor means which extend from the mold into the withdrawal unit to drive a dummy bar head from the mold through a predetermined path into the withdrawal unit. The dummy bar head acts as the bottom of the mold at cast startup and becomes integral with the cast strand at pouring. The head is driven by pivot pins extending from the head into coupling engagement with the conveyor means and is automatically released from the conveyor when driving of the cast strand is assumed by the withdrawal unit pinch rolls.

3,646,990
DIE CASTING MACHINE

Raymond E. Cross, 910 N. Green Bay Road, Lake Forest, Ill.

Continuation-in-part of application Ser. No. 769,598, Oct. 22, 1968, now abandoned. This application Oct. 10, 1969, Ser. No. 865,397
Int. Cl. B22d *17/00*

U.S. Cl. 164—304 **17 Claims**



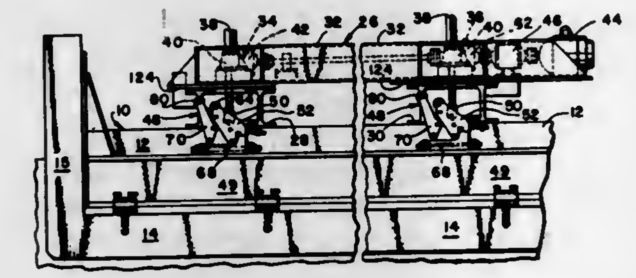
A method of casting high-temperature melting point metals and a die arrangement and molten metal feed mechanism for a die casting machine. The method includes gravity filling a shot cylinder with molten metal, cutting off the inlet to the shot cylinder when it is full and then forcing the molten metal in the air-free cylinder into the mold cavity. The machine includes die elements adapted to mate and define a mold cavity at a parting line defined by parting surfaces between the opposed faces of the elements. The die arrangement and molten metal feed mechanism includes a sprue and runner complex also disposed at a parting line, and a molten metal injection or shot cylinder which extends into the parting plane or lines. The metal shot cylinder is filled through the sprue with the dies closed. In one aspect of the invention, a molten metal injection plunger acts to seal off the sprue from the shot cylinder during a casting operation, while in another aspect of the invention a separate sprue plunger is utilized to perform this function.

3,646,991
TOP BLOCK SHIFT

Lyman W. Jeffreys, Mount Prospect, Ill., assignor to Armsted Industries Incorporated, Chicago, Ill.

Continuation-in-part of application Ser. No. 731,015, May 22, 1968, now abandoned. This application June 22, 1970, Ser. No. 47,963
Int. Cl. B22d *17/26*

U.S. Cl. 164—342 **10 Claims**



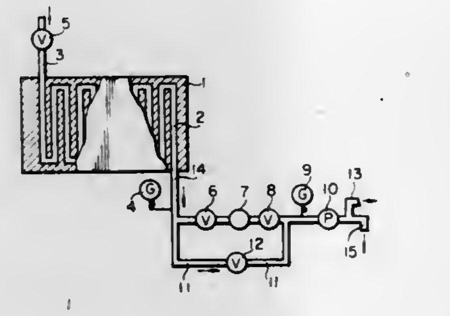
In an adjustable slab mold having side, end, top and bottom blocks, a top block shift is connected to a side block and has means to vertically raise and lower the top block and longitudinally move the top block relative to the mold. The top block may be further laterally moved relative to the side blocks.

3,646,992
METHOD FOR HEATING PRESSING PLATES OF CONTINUOUS FLAT PRESS

Kazutomo Ishizawa; Yasunori Nagata; Junnosuke Abe, all of Osaka, and Akira Fukuoka, Tokyo, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1969, Ser. No. 886,525
Claims priority, application Japan, Dec. 29, 1968, 43/96481
Int. Cl. F28d *7/10*

U.S. Cl. 165—1 **2 Claims**



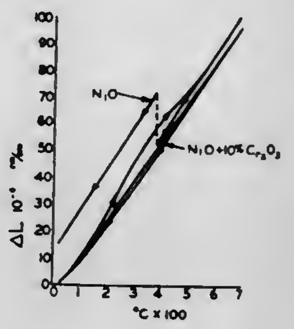
Method for heating pressing plates of a continuous flat press for maintaining surface temperature thereof below 100° C. by utilizing steam. The inside pressure of a conduit disposed in said pressing plate is maintained at a predetermined pressure below an atmospheric pressure while supplying steam into said conduit. And it is preferably applied for carrying out the present method that the partial pressure of air in said conduit is discharged before supplying said steam into said conduit.

3,646,993
STABILIZED NICKEL OXIDE SEAL

Hal H. Rice, Birmingham, and James J. Dudash, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 18, 1970, Ser. No. 38,390
Int. Cl. B05b *7/22*

U.S. Cl. 165—9 **5 Claims**



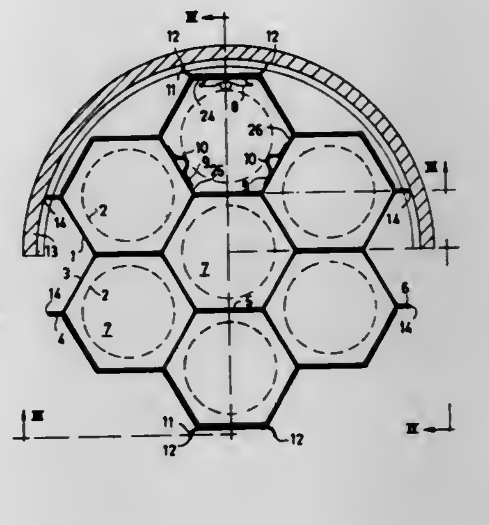
A fluid seal for use in the rotary regenerator portion of a gas turbine engine formed by heating a mixture of NiO and 2½ to 10 percent, by weight, Cr_2O_3 or Fe_3O_4 stabilizing additive to an elevated temperature to cause a reaction therebetween and thereafter plasma spraying the heated mixture on a base member to form a NiO base seal adapted for rubbing contact with the regenerator.

3,646,994
SPACER GRID RESPECTIVELY PLATE SPRING FOR A BUNCH OF CYLINDRICAL ELEMENTS TAKING PART IN A HEAT-EXCHANGING PROCESS

Gijsbrect G. Piepers, Heiloo; Leonard H. Vons; Aart Van Der Linde, both of, Alkmaar, and Edvard Lijbrink, Bergen N. H., all of Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands

Filed Dec. 23, 1969, Ser. No. 887,801
Int. Cl. F28f *7/00*

U.S. Cl. 165—69 **10 Claims**

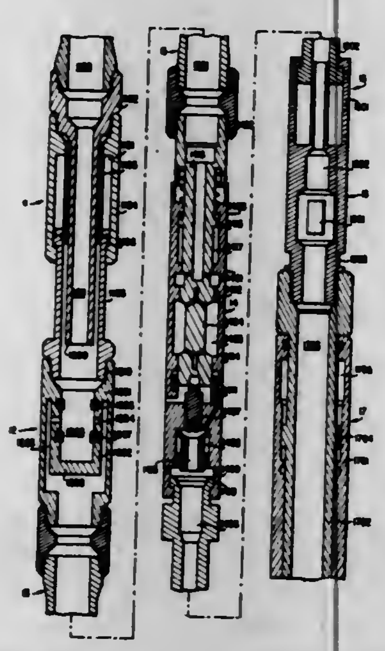


A spacer grid for holding against lateral displacement a plurality of nuclear reactor fuel rods of heat exchange tubes includes means defining a plurality of side-by-side parallel compartments, each compartment being provided with a specially shaped arched spring plate which engages the fuel element or heat exchanger tube. The spring plates are so contoured and apertured as to provide passages for the flow of heat exchange fluid to thereby avoid stagnation of the fluid.

3,646,995
METHOD AND APPARATUS FOR TESTING OFFSHORE WELLS

Dewey K. Manes, Agoura, Calif.; David L. Farley, and Gary Q. Wray, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 8, 1969, Ser. No. 882,856
Int. Cl. E21b *47/06*
U.S. Cl. 166—.5 **12 Claims**



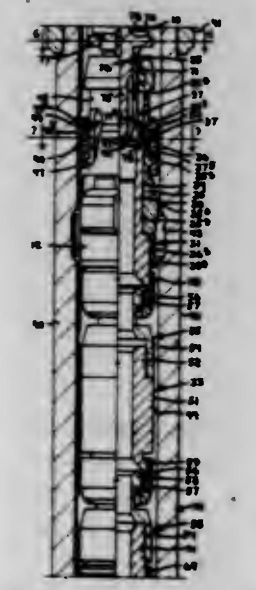
Method and apparatus for testing offshore wells where a conduit string connected with a testing string is supported in a wellhead during testing operations and where a combination of gravity responsive means and extensible means effect operation of a testing valve.

The apparatus includes a testing string containing a series of abutments for supporting an upper portion of the string in the wellhead, slip joint, a safety valve operable in response to the slip joint, drill collars which function as gravity responsive valve actuating means, a testing valve including an hydraulic impedance mechanism, a sample chamber and pressure recorder, a jar tool, a safety joint, and a packer mechanism which serves to anchor the lower portion of the string in a submerged well.

3,646,996
WELL TOOLS

Joseph L. Pearce, Jr., Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

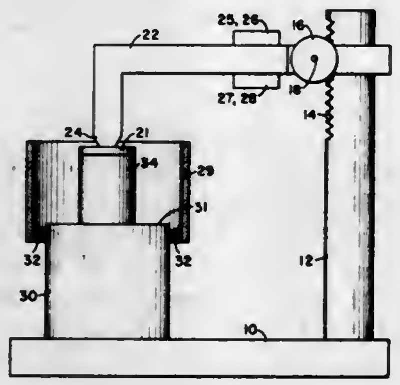
Filed Apr. 24, 1970, Ser. No. 31,533
Int. Cl. E21b *23/00*
U.S. Cl. 166—212 **16 Claims**



A locking device and a setting tool for setting said locking device in any selected one of a plurality of identical landing nipples having a locking recess and sealing surface therein installed at spaced intervals in a well tubing string to form a part thereof. The setting tool and locking device are attached to a string of operating tools and moved through the well tubing by fluid pressure or by conventional wire line. Locating means on the setting tool is initially held by retaining means in retracted position but is released for movement to expanded position enabling the setting tool to be stopped at an upwardly facing shoulder spaced in said tubing from the lock recess in the selected landing nipple. Longitudinal movement of the operating tools then expands the locking dogs of the locking device into locking engagement with said lock recess of said nipple, and reverse movement of said operating tool string releases said setting tool from said locking device for removal of the setting tool from the tubing string leaving the locking device locked in said landing nipple. Means for releasing the retaining means which is mechanically operated and means which is responsive to hydrostatic pressure are disclosed.

3,646,997
TREATING SUBSURFACE WATER-SENSITIVE SHALE FORMATIONS

Martin E. Chenevert, 5603 Willer's Way, Houston, Tex. Continuation-in-part of application Ser. No. 675,490, Oct. 16, 1967, now abandoned , Continuation-in-part of application Ser. No. 699,255, Jan. 19, 1968, now abandoned. This application May 14, 1970, Ser. No. 37,432
Int. Cl. E21b *21/04, 47/00*
U.S. Cl. 166—250 **39 Claims**



Shaley earth formations are drilled or otherwise treated with reduced difficulty through the use of water-in-oil invert emulsion fluids wherein the aqueous phases of the emulsions possess particular water vapor pressures relative to the formations which they contact. The aqueous vapor pressure of an oil-base fluid containing dispersed water is controlled to prevent damage to water-sensitive shale formations by monitoring the vapor pressure of the aqueous phase of the fluid and maintaining a vapor pressure depressant in the aqueous phase in a concentration sufficient to substantially prevent the migration of water from the fluid to the formations. The aqueous vapor pressure of an earth formation is determined. A method and apparatus are disclosed for determining the compatibility of a well fluid with a water-sensitive subsurface formation wherein a substantially unaltered sample of the formation is immersed in the fluid and the direction and extent of water migration between the well fluid and the sample are logged. Improved water-in-oil invert emulsion fluid compositions for drilling and other oil fields uses are obtained wherein the aqueous phases of the emulsions possess particular water vapor pressures relative to the formations which they contact.

3,646,998
METHOD AND COMPOSITIONS FOR STABILIZING INCOMPETENT OIL-CONTAINING FORMATIONS

Beverly A. Curtice, and Bobby G. Harnsberger, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed June 8, 1970, Ser. No. 44,550
Int. Cl. C04b *7/02;* **E21b** *43/02*
U.S. Cl. 166—276 **12 Claims**

Improved method of and compositions for the treatment of an oil-containing incompetent formation to prevent the movement of unconsolidated sand particles in an underground formation by forming a treating composition of sand, cement, silica flour, and a sufficient amount of petroleum oil fraction containing an oil-wetting agent therein to oil-wet the sand, cement, and silica flour particles, suspending the resulting treating composition in an aqueous carrier medium, injecting the aqueous suspension against the unconsolidated formation at a pressure effective to force the treating composition into contact with the unconsolidated formation, contacting the placed treating composition with an aqueous surface active agent solution to water wet the cement particles, permitting the cement to set and form a permeable cement and recovering oil through the cement.

3,646,999
EPOXY RESIN SAND CONSOLIDATION REJUVENATION

Tyler W. Hamby, Jr., Metairie, and William T. Strickland, Jr., New Orleans, both of La., assignors to Shell Oil Company, New York, N.Y.

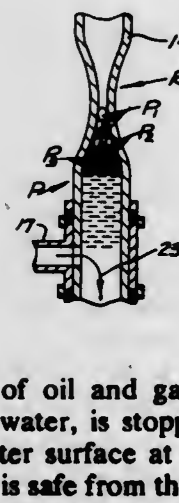
Filed May 20, 1970, Ser. No. 39,872
Int. Cl. E21b *33/138;* **E02d** *3/14*
U.S. Cl. 166—281 **10 Claims**

A consolidated permeable mass of grains that contains an epoxy resin grain-bonding material that has been weakened by exposure to a resin-degradative aqueous liquid is strengthened and stabilized by contacting the permeable mass with a polyfunctional organic silane capable of functioning as a resin-to-grain bonding agent.

3,647,000
METHOD FOR CONTROLLING WELL BLOWOUTS

Kermit G. Rowley, Houston, Tex., and Richard H. Barron, Lafayette, La., assignors to Tenneco Oil Company, Houston, Tex.

Filed Apr. 16, 1970, Ser. No. 29,091
Int. Cl. E21b *33/035, 35/00*
U.S. Cl. 166—285 **14 Claims**



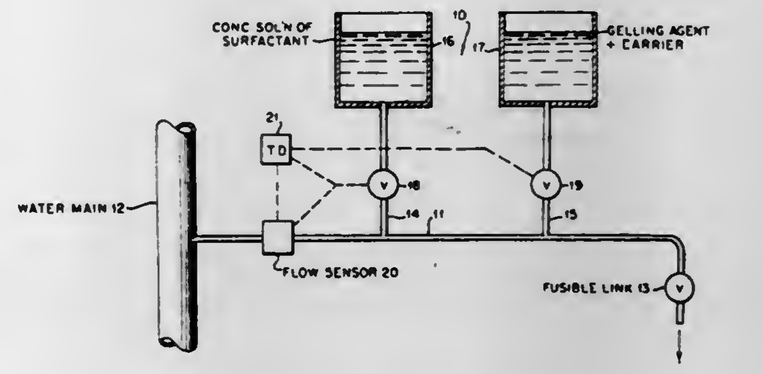
Uncontrolled flow of oil and gas from petroleum wells located in a body of water, is stopped by a procedure performed below the water surface at a location which is free from wave action and is safe from the danger of fire or explosion. An access conduit line is hot-tapped into the production tubing through access windows formed in the well casing. The production tubing is then crimped above the hot tap and solid particles are then introduced into the production tubing through the access line where they are carried upwardly by the flowing well fluids to lodge within the restriction and form a plug. Heavy, noncombustible "mud" is then pumped into the tubing through the access line until the weight of the injected mud overcomes the formation pressure, thus terminating well flow.

Where the well is located on land, the method of the present invention may be practiced by obtaining access t the well structure at the point below the land surface for formation of the hot tap and crimp.

3,647,001
COMBATING FIRE WITH ABLATIVE WATER

William L. Livingston, Norwood, Mass., assignor to Factory Mutual Research Corporation, Boston-Providence Turnpike, Mass.

Filed Apr. 22, 1970, Ser. No. 30,835
Int. Cl. A62c *1/06;* **A62d** *1/00*
U.S. Cl. 169—1 A **2 Claims**

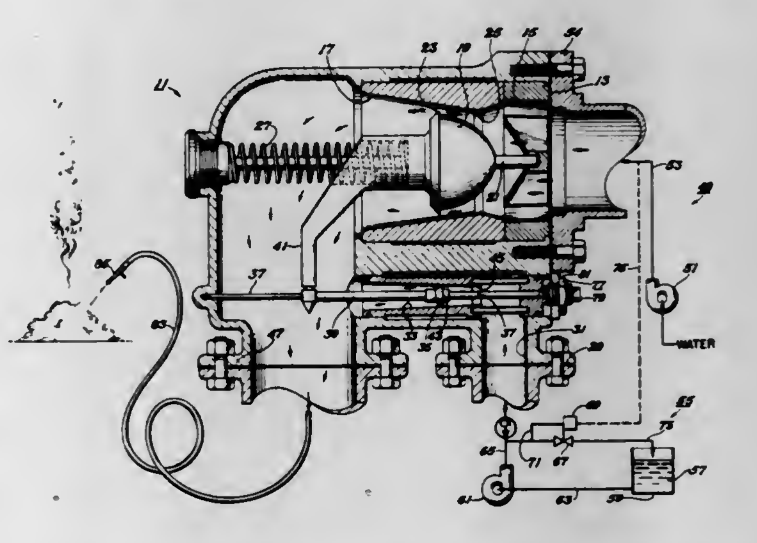


The application of ablative water in combating fire is improved by wetting the surfaces of the combustible materials to be protected with water containing a surfactant prior to the application of ablative water to such surfaces in order that the subsequently applied ablative water readily penetrates the combustible material down to where the fire is in order that the ablative water be available where it is required.

3,647,002
APPARATUS FOR ADMIXING FLUIDS IN PREDETERMINED PROPORTIONS

Charles H. Lindsay, Elmira, N.Y., assignor to Fire Control Engineering Company, Fort Worth, Tex.

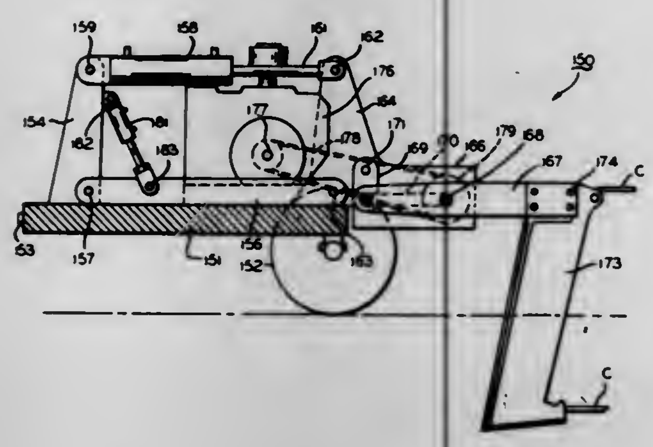
Filed May 11, 1970, Ser. No. 36,343
Int. Cl. A62c *35/00*
U.S. Cl. 169—16 **16 Claims**



Apparatus for admixing fluids in a predetermined proportion characterized by, inter alia, first and second valves, connected together and disposed in their respective tapered throats and sized to effect the correct proportion of fluid flow therepast; the first valve being biased towards its no flow position by suitable force sufficient to require at least 2.5, and preferably about 5 pounds per square inch (p.s.i.) pressure differential across the valve to open it for flow therepast.

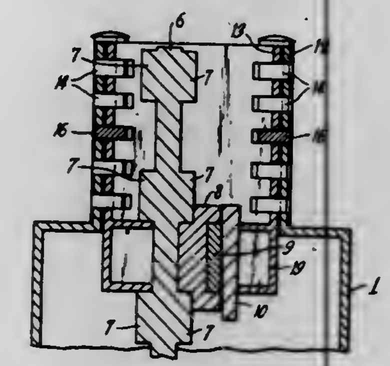
Delivery systems are provided for delivering the two fluids to be admixed at about the same inlet pressure. The second throat is movable with respect to the second valve to allow some flexibility in adjusting the proportion of the fluids, although for large variations in proportion, or concentration, of the second fluid, the second throat may be changed out entirely to give a larger or smaller range of areas of flow past the second valve.

3,647,003
SLIT TRENCHING MACHINE AND CABLE LAYER
Archie R. Gagne, R.R. #1, Box 146A, St. Charles, Ill.
Filed Mar. 6, 1970, Ser. No. 17,261
Int. Cl. A01b *63/32;* **E02f** *5/02*
U.S. Cl. 172—40 **3 Claims**



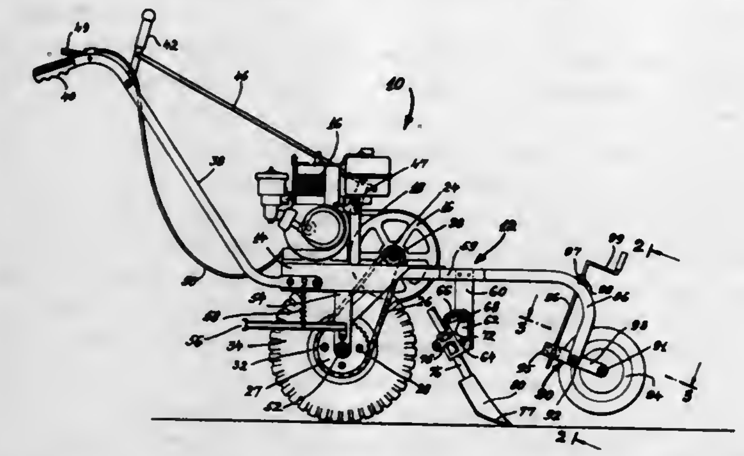
A cable plow including a ground-engaging vehicle having a plow member extending into the ground where it is driven orbitally to form a slit trench. Cable-laying means feed a flexible cable or the like into the slit trench as it is formed by movement of the vehicle over the ground surface.

3,647,004
VERTICALLY AND LATERALLY ADJUSTABLE PLOW STANDARD
Robert Leslie Edward Farmer, Yorkshire, England, assignor to R. L. Farmer Limited, Yorkshire, England
Filed June 12, 1969, Ser. No. 832,594
Claims priority, application Great Britain, June 18, 1968, 28,849/68
Int. Cl. A01b *49/02, 15/12, 65/02, 65/06*
U.S. Cl. 172—152 **8 Claims**



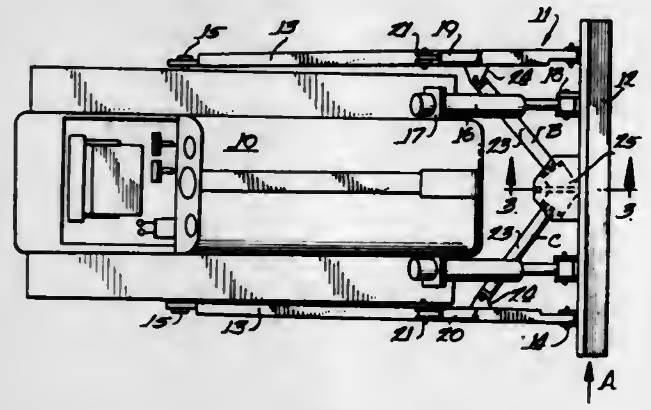
A plough for use on weed-infested land comprising a semimounted frame, at least one "full-digger" share and at least one "semidigger" share located at different vertical levels in positions that are spaced apart lengthwise of the frame. Means are provided for both coarse and fine vertical adjustments of the shares.

3,647,005
MOTOR POWERED PLOW
Woodrow Boyd, Route One, Lapine, Ala.
Filed Jan. 26, 1970, Ser. No. 5,633
Int. Cl. A01b *69/00, 3/02*
U.S. Cl. 172—259 **3 Claims**



A hand guided, motor driven plow has a main driving wheel located under a platform directly beneath a massive driving engine which drives the wheel. Frame members extending forwardly of the platform carry an adjustable mounting for a plow blade which is disposed immediately forward of the main wheel. The cutting angle and elevation of the plow blade can be adjusted. Another adjustable mounting forward of the plow blade carries an auxiliary wheel which is adjustable in elevation. The main wheel, auxiliary wheel and plow blade are all vertically aligned in the central vertical plane of the plow.

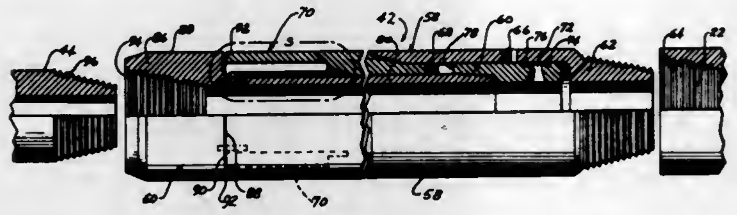
3,647,006
BULLDOZER BLADE LOAD EQUALIZER
Ralph M. Kallenbach, 915 Carol, Elgin, Ill.
Filed May 15, 1969, Ser. No. 824,829
Int. Cl. E02f *3/76*
U.S. Cl. 172—803 **1 Claim**



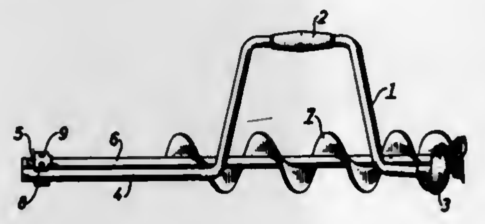
An apparatus for relieving and equalizing the stresses generated in the bracing and push arms of a bulldozer when the blade is adjusted to its tilt position and subjected to side load forces during operation, the described embodiment including diagonal braces mounted in a unitary fixture which is slidably associated with a fixed housing on said blade and limited to movement in directions normal to said blade.

3,647,007
STEERING SUB FOR UNDERWATER DRILLING APPARATUS
Thomas R. Norton, Placentia, Calif., assignor to Global Marine Inc., Los Angeles, Calif.
Filed Jan. 9, 1970, Ser. No. 1,736
Int. Cl. E21b *7/12;* **E21c** *19/00*
U.S. Cl. 175—5 **16 Claims**

A tubular steering sub, connected adjacent a drill bit at the bottom of a drill string, steers the bit into alignment with an underwater well. The steering sub comprises an inner barrel splined to an outer barrel to permit axial relative movement between the barrels so that laterally disposed jet ports of the inner barrel and the outer barrel move in and out of alignment. When the jet ports are aligned, a lateral steering force on the bottom of the drill string is generated by pumping fluid down the drill string and out the jet ports. A releasable spring latch closes the steering sub by securing the barrels in fixed relation with their jet ports out of alignment.

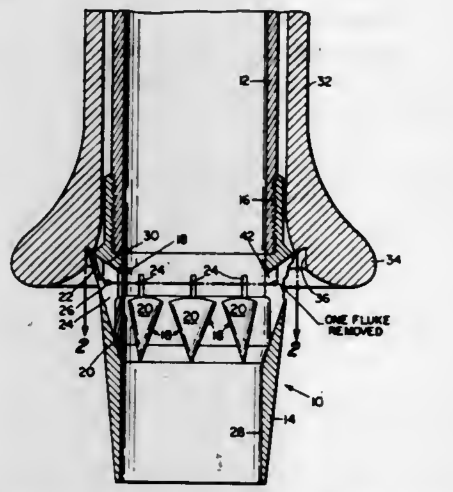


3,647,008
COLLAPSIBLE DRILLING TOOLS AND THE LIKE
Karl G. Isaksson, Blyberg 2638, Alvdalen, Sweden
Filed July 31, 1970, Ser. No. 59,952
Claims priority, application Sweden, Aug. 26, 1969, 11810/69
Int. Cl. F25c *5/04*
U.S. Cl. 175—18 **4 Claims**



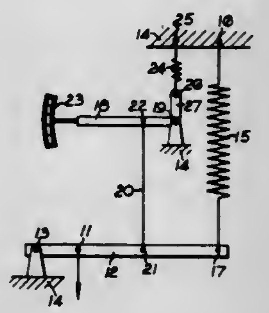
An arrangement for a collapsible drilling tool or the like, comprising a brace portion having a handle portion and a drill shaft which, through a link or the like, is connected with a drill holder shaft carrying a drill means or tool. When the arrangement is collapsed, distribution of the weight thereof is such that, when suspending the arrangement by the handle portion, the drill holder shaft lies to one side of a vertical line extending through the handle portion, and the angle between the pivoting plane of the drill holder shaft through the link in relation to the drill shaft and the vertical line is less than 90°.

3,647,009
FLUKED CORE RETAINER
Joseph A. Drelicharz, 2317 Chico Court, Oxnard, Calif.
Filed Sept. 17, 1970, Ser. No. 72,907
Int. Cl. E21b *25/00*
U.S. Cl. 175—242 **5 Claims**



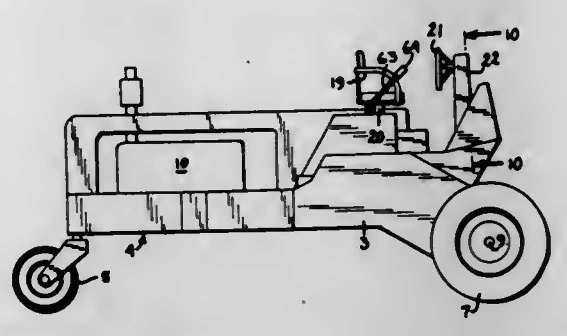
An arrangement for retaining a soil sample in a sampling tube, especially but not exclusively from remote locations such as the floor of the ocean or other body of water. A series of pivoted fingers are circumferentially spaced about the end of the tube, each finger having a sharp leading edge and a fluked rear edge which catches in the soil surrounding the tube when the latter is withdrawn. This pivots the leading edge inwardly to close the lower end of the tube and supports the enclosed soil sample during tube withdrawal.

3,647,010
MECHANICAL LOAD MEASURING SYSTEMS
Alfred Cyril Beardmore, Wednesbury; Geoffrey Cyril Cooke, Pedmore, and Donald Charles Stringer, Walsall, all of England, assignors to W. & T. Avery Limited, Birmingham, England
Filed June 30, 1969, Ser. No. 837,644
Int. Cl. G01g *23/26*
U.S. Cl. 177—230 **15 Claims**



In a load measuring system such as self-indicating weighing machine a compensating spring is applied between a fixed point and a part of a lever of the system which is deflected when a load to be measured is applied thereto. The magnitude of the deflection provides the measure of the load and the spring serves to apply a compensating moment to the lever which varies with the amount of angular displacement thereof to oppose a nonlinear error otherwise inherent in the system as between the load actually applied and the quantity indicated by the magnitude of the deflection.

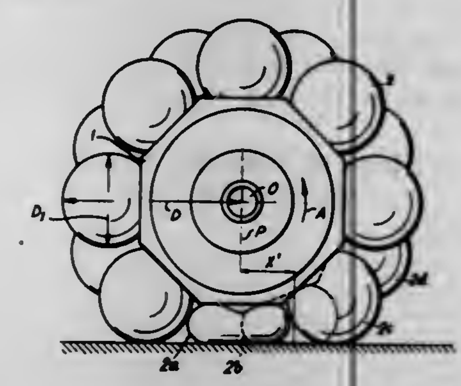
3,647,011
SPEED AND STEERING CONTROL FOR VEHICLES
Darrell E. Baumgartner, Owatonna, Minn., assignor to Owatonna Manufacturing Company, Inc., Owatonna, Minn.
Filed Apr. 13, 1970, Ser. No. 27,848
Int. Cl. B62d *11/04*
U.S. Cl. 180—6.48 **7 Claims**



Apparatus for controlling the speed and direction of movement of a vehicle using a pair of hydraulic drive units, each unit including an engine driven fluid pump and a cooperating fluid operated motor. Each motor is drivingly connected to one of a pair of laterally spaced drive wheels, steering of the vehicle being effected by a differential in speed between the drive wheels. A pivotal control lever is connected by linkage to speed and direction control arms on the drive units and pivotal and bodily movements are imparted to the lever, to control speed and direction of vehicle movement, by a speed control element and a steering wheel.

3,647,012
SELF-PROPELLED DRIVE WHEELS

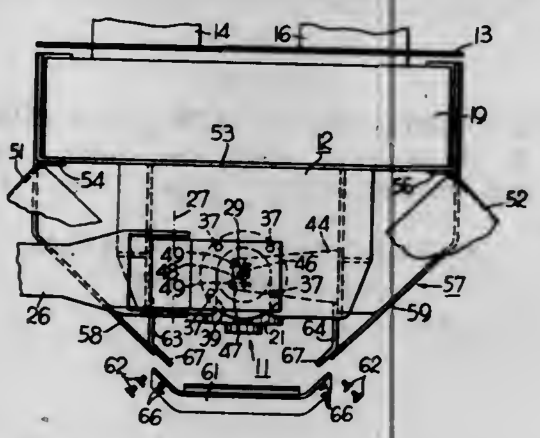
Julius Mackerle, Praque, Czechoslovakia, assignor to Ustav pro vyzkum motorovych vozidel, Praque, Czechoslovakia
Filed Feb. 18, 1970, Ser. No. 12,247
Claims priority, application Czechoslovakia, Feb. 21, 1969, 1251-69
Int. Cl. B62d *57/02*
U.S. Cl. 180—8 F **7 Claims**



A self-propelled driver wheel having two series of circumferentially arranged gas chamber globes adapted to be successively inflated. The globes of each series having a diameter at right angles to the diameter of the wheel of between 25–35 percent of the maximum external noncompressed diameter of the driver.

3,647,013
REMOVABLE DRIVE UNIT FOR LIFT TRUCK

William J. Harrison, Guelph, Ontario, Canada, assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed June 10, 1970, Ser. No. 44,945
Int. Cl. B62d *51/04*
U.S. Cl. 180—13 **13 Claims**

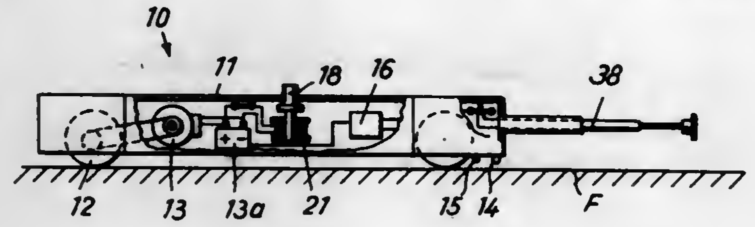


The drive unit of a material-handling truck is removable from the frame of the truck upon removal of a bumper and release of upper and lower bearing securing means.

3,647,014
TRANSPORTATION SYSTEM

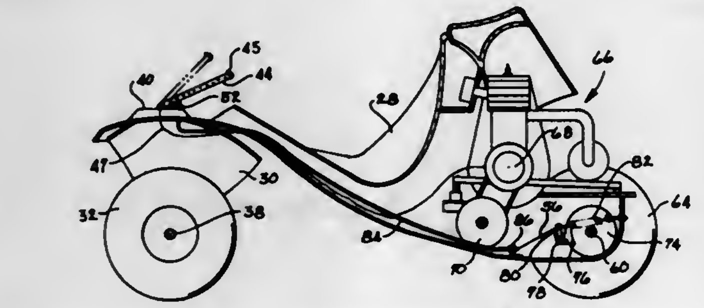
Gerhard Wilke, Korntal; Gerhard Schnell, Stuttgart N., and Karl Hoyer, Leinfelden, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Oct. 22, 1969, Ser. No. 868,295
Claims priority, application Germany, Oct. 24, 1968, P 18 04 791.1
Int. Cl. B60d *1/04*
U.S. Cl. 180—14 **11 Claims**

A transportation system includes at least one transportable element, such as a pallet, platform or the like, on which loads may be supported and which has a lower face directed towards but upwardly spaced from any floor surface on which the transportable element rests. At least one self-propelled transporter element is provided and is so configurated as to be accommodatable beneath the lower face of the transportable element intermediate the lower face of the latter and a floor surface on which the transportable element rests. Releasable coupling means are provided for releasably coupling the elements to one another when the transporter element is accommodated beneath the lower face of the transportable element so that the the latter may be transported by the transporter element while being connected thereto.



3,647,015
STEERING BAR BRAKE-ACTUATING DEVICE

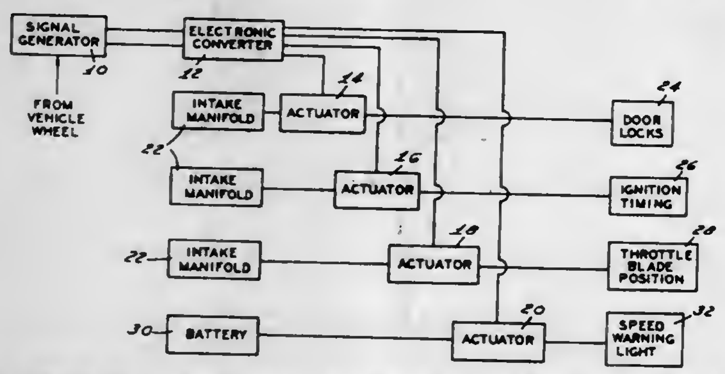
John A. Plessinger, 1725 Wesleyan Road, Dayton, Ohio
Filed Apr. 6, 1970, Ser. No. 25,711
Int. Cl. B60t *7/08*
U.S. Cl. 180—27 **3 Claims**



A brake for a vehicle having a steerable single front wheel rotatively disposed beneath the front portions and a live axle transversely disposed about the rear portions with wheels mounted thereon. A disc brake is attached about the rear axle for braking the rotation thereof and is linked by a brake cable to a steering bar that is rotatively disposed about the front portions of the vehicle for steering the single front wheel. Furthermore the steering bar is pivotable about a horizontal axis such that the upward forward movement of the steering bar about the horizontal axis p. , the brake cable forward, thereby actuating the disc brake and braking the rotation of the live axle.

3,647,016
VEHICLE SPEED RESPONSIVE SYSTEM

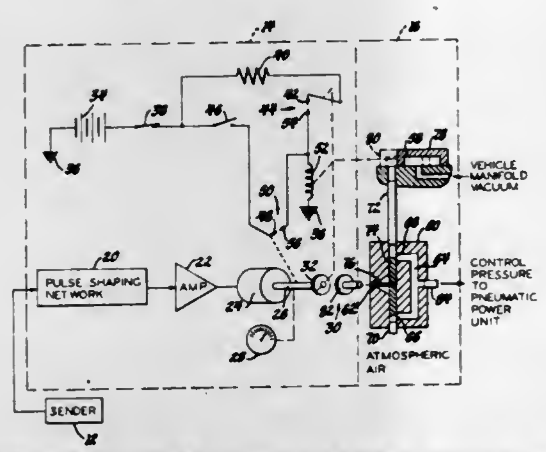
William D. Fitzsimons, Garden City, and Bernard G. Radin, Oak Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Aug. 28, 1969, Ser. No. 853,904
Int. Cl. B60k *13/00*
U.S. Cl. 180—105 R **4 Claims**



A signal generator connected mechanically to a vehicle wheel is coupled to electronic circuitry that actuates an item of vehicle equipment when a predetermined vehicle speed is attained. The system can be used to control ignition-timing, throttle-blade-positioning, exhaust-gas-recirculating, door-locking, speed-warning or speed-limiting equipment. The electronic circuitry is coupled to individual actuators that connect or disconnect power sources to the vehicle equipment when vehicle speed has attained predetermined values.

3,647,017
ELECTRONIC CRUISE CONTROL SYSTEM

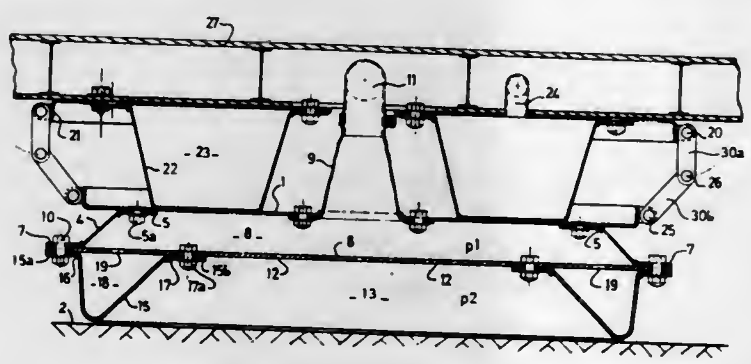
Norman R. Brainard, and William H. Holl, both of Flint, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 11, 1969, Ser. No. 857,133
Int. Cl. B60k *31/00*
U.S. Cl. 180—105 **5 Claims**



An electronic cruise control system having an electric torque motor whose output shaft tracks vehicle speed. A pneumatic pressure controller supplies a controlled pressure to a pneumatic power unit which in turn controls the position of a vehicle throttle. A clutch has one member attached for rotation with the torque motor output shaft and another member attached to a pneumatic valve. The clutch members are coupled together by a solenoid energized through a momentary switch such that any deviations of the torque motor output shaft position will control the pneumatic valve which in turn controls the pressure input to the power unit so as to position the vehicle throttle to provide for vehicle cruise control.

3,647,018
CONFINING SYSTEM FOR GROUND-EFFECT MACHINE

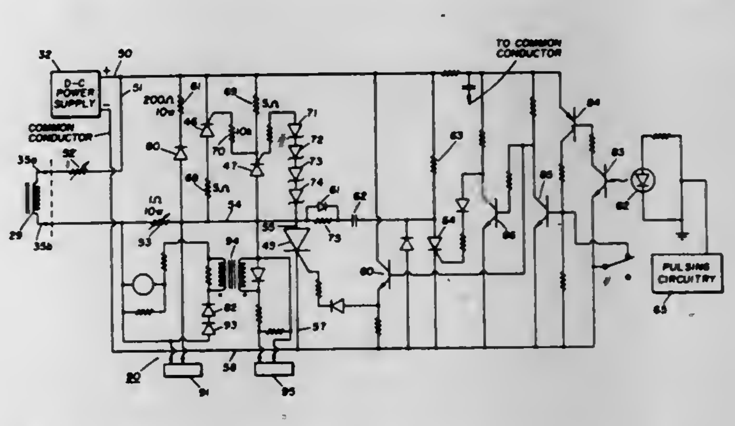
Francis Marie Jean Croix-Marie, Viry-Chatillon, and Robert Georges Grignon, Verriere le Buisson, both of France, assignors to Bertin & Cie, Plaisir, France
Filed Dec. 29, 1969, Ser. No. 888,516
Claims priority, application France, Dec. 26, 1968, 180809
Int. Cl. B60v *1/06, 1/16*
U.S. Cl. 180—124 **4 Claims**



An arrangement for sustaining and/or guiding a load such as a machine or vehicle over a bearing surface by means of air cushions confined in a chamber formed inside an annular trough-shaped inflatable wall between said bearing surface and a movable partition forming with the load and an annular deformable wall a chamber of a variable volume. The input of a compressed fluid into the latter feeds through ports in the partition the cushion-confining chamber so that the latter is sustained at a small self-adjusting distance over the bearing surface.

3,647,019
TRANSIENT DAMPER FOR PNEUMATIC SOUND SOURCE EMPLOYING AN ELECTROMAGNET FOR CONTROLLING ITS RELEASE VALVE

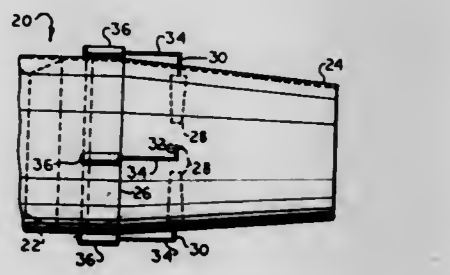
Silvan E. McAlpin, Dallas, Tex., assignor to Mobil Oil Corporation
Filed Feb. 27, 1970, Ser. No. 15,110
Int. Cl. G01v *1/02*
U.S. Cl. 181—.5 **5 Claims**



The specification discloses a pneumatic sound source comprising a pressure chamber for receiving gas and having a controllable valve for opening and closing an outlet port. An electromagnet including an electrical coil is energized to hold the valve in its closed position and is deenergized for releasing the valve for the generation of an acoustic pulse. Current is applied to the coil by way of a normally closed switch which is opened to deenergize the coil. Circuitry is coupled across the coil and is actuated, when the valve begins to move following deenergization of the coil, to allow current to flow through the circuitry to shunt the coil, thereby dampening the magnitude of a transient voltage generated by movement of the valve through the path of the decaying magnetic flux.

3,647,020
JET PROPULSION APPARATUS AND OPERATING METHOD

Howard R. MacDonald, San Diego, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
Filed Feb. 2, 1970, Ser. No. 7,520
Int. Cl. F01n *1/14, 1/18;* **B64d** *33/06*
U.S. Cl. 181—33 HC **3 Claims**

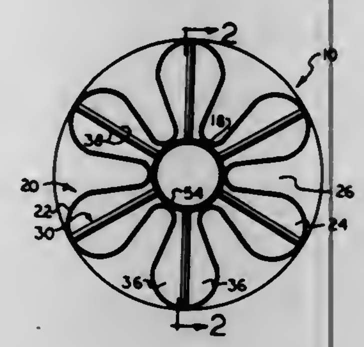


Vanes are mounted on jet engine nozzle or a plug associated therewith for movement between a position wherein they permit normal flow of the exhaust gas of the engine in a direction parallel with the longitudinal axis of the nozzle, and a position wherein they cause the exhaust gas to whirl about said nozzle axis as it travels longitudinally thereof. When the vanes whirl the exhaust gas its rate of mixing with atmospheric air is increased, thus suppressing jet noise.

3,647,021
SOUND SUPPRESSION SYSTEM

Victor Millman, San Diego, and Wallie P. Gray, Chula Vista, both of Calif., assignors to Rohr Corporation, Chula Vista, Calif.

Filed June 22, 1970, Ser. No. 47,955
Int. Cl. B64d *33/06*; **F02k** *1/26*
U.S. Cl. 181—33 HC **11 Claims**

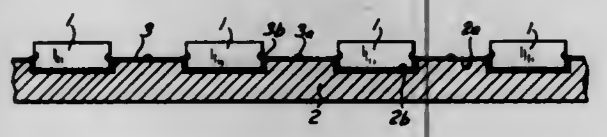


System includes a shroud immediately downstream of jet engine discharge and connected to nozzle to form continuation thereof and confine and direct the flow of the gaseous stream. Shroud is corrugated in axial direction to form peripherally spaced, radially extending lobes to serve as discrete discharge passages for gaseous stream. Valleys between lobes define flow paths for free stream air to flow between lobes and mix with gaseous stream at fluted margin to attenuate noise. Sound absorbing panels are inserted in some or all of the lobes to further attenuate noise. The panels are preferably planar and extend radially and axially in the lobes to divide them into additional discharge passages. Each panel comprises planar solid septum, honeycomb core in each face, and a face sheet on each honeycomb core, all secured together to form rigid panel, preferably of metal to further serve as reinforcement for lobe. Multiplicity of apertures in face sheets communicate with core cavities to form multiplicity of sound traps so that each face has sound absorbing characteristics. System may be used with fan jet engine if fan air exhausts into same discharge zone with turbine gas.

3,647,022
SOUND ABSORBER CONSTRUCTION

Erwin Meyer; Klaus-Dieter Brendel, both of, Goettingen; Hans Blau, Baden-Baden, and Gerhard Stoof, Hilden, all of Germany, assignors to Grunzweig & Hartmann AG, Ludwigshafen am Rhine, Germany

Filed Nov. 28, 1969, Ser. No. 880,550
Claims priority, application Germany, Nov. 30, 1968, P 18 11 998.7
Int. Cl. E04b *1/86*
U.S. Cl. 181—33 G **16 Claims**

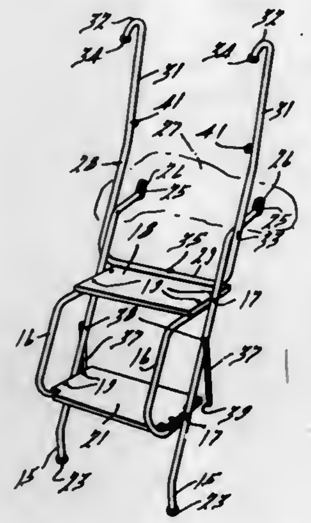


A sound absorber construction for absorbing sound waves transmitted through a liquid medium. A support having an exposed surface area is provided with a plurality of discrete sound absorbing units distributed over the surface area with spacing from one another. Mounting means connects the sound-absorbing units to one another and also mounts them on the exposed surface area of the support.

3,647,023
BOAT BOARDING STEP AND SEAT

William A. Bedford, Jr., 633 South Palm Avenue, Sarasota, Fla.

Filed Aug. 3, 1970, Ser. No. 60,661
Int. Cl. E06c *5/24*
U.S. Cl. 182—23 **11 Claims**

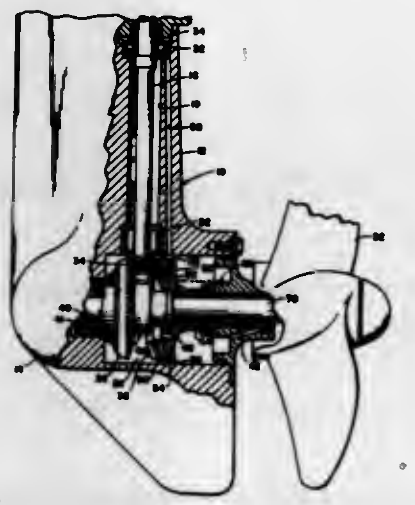


The boarding step is so constructed that it can be secured to the gunwale at the side of a boat cockpit to permit one to enter the cockpit from the dock when facing inwardly. The treads are wider than normal so as to function in the same manner as a plurality of steps. A pivoted U-shape frame on the step may be swung rearwardly to form the rear legs and back of a chair or which can be swung upwardly to a substantially vertical position to form handholds on both sides of the step to provide stability for one entering the cockpit. When the legs are moved to a position in alignment with the center of the treads, the boarding step forms a compact unit for storage. The hangers to which the spaced heads on the end of the boarding step are secured are unique in being of the locking-type to prevent the accidental separation after installation.

3,647,024
UPPER DRIVESHAFT BEARING LUBRICATION FOR MARINE PROPULSION UNIT

Gerald H. Wick, Menomonee Falls, and Theodore J. Holtermann, Milwaukee, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 30, 1970, Ser. No. 33,832
Int. Cl. F16n *7/16*
U.S. Cl. 184—6.18 **6 Claims**

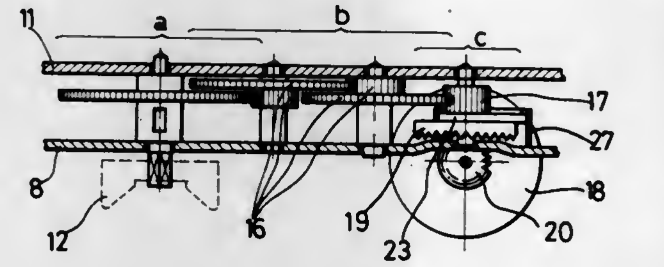


An arrangement for lubricating the upper bearing for a drive shaft in a marine propulsion unit. A disc-shaped member, which may be a gear used to drive a propeller, is situated below the upper bearing in the bore of a gearcase. Lubrication oil is supplied to the gearcase. There is a small clearance between the bore of the gearcase and the outside diameter of the disc-shaped member to prevent rapid leakage of oil from around the periphery of the disc-shaped member. The disc-shaped member when rotating acts as a centrifugal impeller throwing oil out from its center and up a passageway to the upper bearing. The lubricating oil spills over the upper bearing and returns to the gearcase by way of a drive shaft passage to provide a continuous lubricating means.

3,647,025
SPRING-OPERATED DRIVING MECHANISM FOR TOY MICROVEHICLES

Raimundo Paya Rico, Santa Rita 33, Ibi, Spain

Filed May 14, 1970, Ser. No. 37,166
Claims priority, application Spain, July 7, 1969, 150,140; Mar. 5, 1970, 156,537
Int. Cl. F03g *1/00*
U.S. Cl. 185—39 **7 Claims**

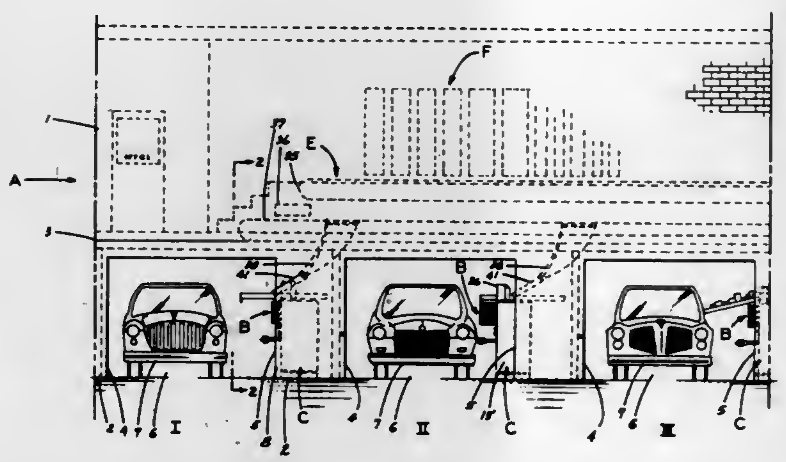


A spring-driven mechanism for toy microvehicles has a braking device for obtaining a slow unwinding of the spring. This has a rotary wheel where a movable mass is radially guided, and the mass under the effect of centrifugal force has a tendency to enter into contact with a fixed surrounding cover according to a pressure depending on the force. A faceted shaft is provided for winding up the spring and is operated by means of a specially designed wrench which on account of a large flat base rests during operation on the external face of the toy, thus avoiding a pendular movement taking place and causing the uncoupling of the wrench during winding.

3,647,026
AUTOMATIC DRIVE-IN STORE

Gilbert L. Alexander, Bloomington, Ill.; Arthur W. Neaville; William A. Mayfield, both of Webster Groves, Mo.; Gilbert L. Alexander, 1114 E. Taylor Street, Bloomington, Ill.; Arthur W. Neaville, 912 S. Rock Hill Road, and William A. Mayfield, 813 N. Forest, both of Webster Groves, Mo.

Filed Dec. 31, 1969, Ser. No. 889,502
Int. Cl. E04h *3/04*
U.S. Cl. 186—1 C **16 Claims**

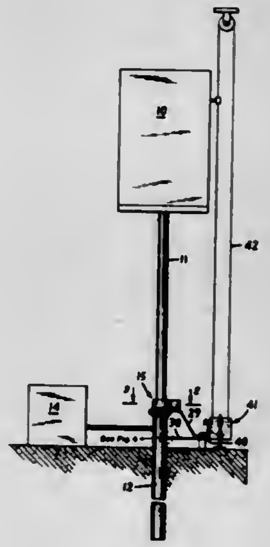


An automatic drive-in store structure having in its upper portion a warehouse for storing a multiplicity of diverse retail items within individual dispenser units, and in its lower portion a plurality of parking stalls for vehicles, each stall being provided with a console control apparatus which is equipped with a plurality of item selector panels for use by a motorist whereby a selective list of retail items may be ordered and thence dispensed from the respective dispenser unit responsive to electronic control means and delivered through a system of conveyors to the automobile; said console control apparatus also being supplied with a closed circuit television which is in circuit with a video camera for transmitting a picture of a selected item onto a television screen, and a moneychanger unit which returns the correct change after registering the amount submitted and subtracting the total price of the items selected.

3,647,027
SAFETY SYSTEM FOR HYDRAULIC ELEVATORS

Lawrence Flower Jaseph, Memphis, Tenn., assignor to Dover Corporation, Memphis, Tenn.

Filed Mar. 23, 1970, Ser. No. 21,779
Int. Cl. B66b *5/16*
U.S. Cl. 187—73 **6 Claims**

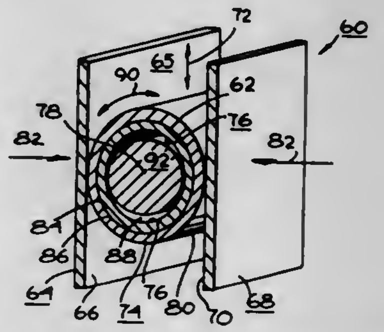


Emergency braking system for hydraulic elevators responsive to abnormal operating conditions including loss of pressure in the jack cylinder through rupture of the cylinder or of fluid conduit means and overspeed of the elevator cab in the downward direction. The system includes selectively operable braking means controlled by a pressure responsive actuating means, normally exposed to the fluid pressure in the cylinder with a pilot valve operated by speed responsive means when downward movement exceeds a predetermined value.

3,647,028
ENERGY ABSORBING ARRANGEMENT

David L. Platus, 2001 Holmby Avenue, Los Angeles, Calif.

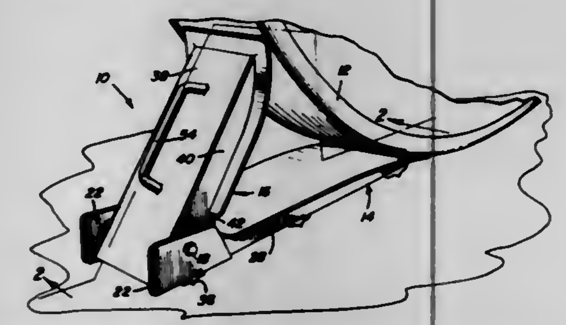
Filed Aug. 9, 1968, Ser. No. 751,606
Int. Cl. F16d *63/00*; **B62d** *1/16*
U.S. Cl. 188—1 **23 Claims**



There is disclosed herein an energy-absorbing arrangement in which a plurality of outer thin-walled, cylindrical, tubelike, annular, ductile metal members are confined in a space between two body members. Each of the plurality of outer thin-walled energy-absorbing members has at least one additional, similar, inner thin-walled energy-absorbing member concentrically mounted within it in a nested relationship. The body members are adapted to have relative motion therebetween in a preselected direction. The spacing between the two body members is less than the unstressed diametral dimension of the outermost of the energy absorbing members, and therefore all of the energy-absorbing members are diametrally deformed under force by the two body members and relative motion of one body member with respect to the other in a preselected direction rolls the energy-absorbing members and thereby absorbs energy due to the cyclical plastic deformation or hysteretic deformation thereof. A nondeformable rigid retainer means may be positioned within the innermost of the energy-absorbing members to limit the diametral deformation thereof to prevent stress relieving plastic flow or creep of the energy-absorbing members.

3,647,029
WHEEL CHOCK

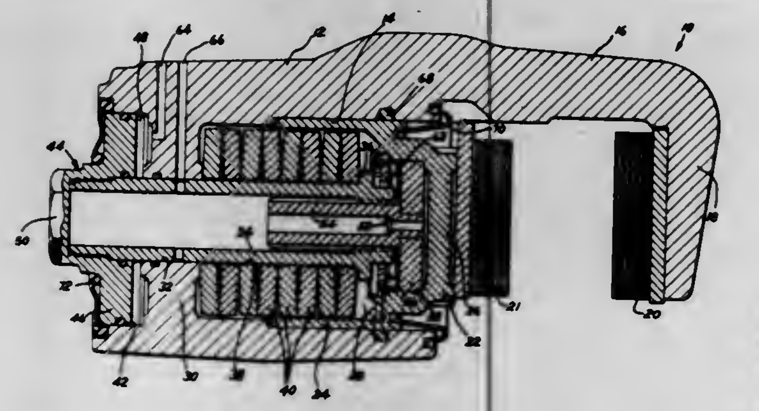
John J. Hanley, 605-1650 Road, Delta, Colo.
Filed May 1, 1970, Ser. No. 33,587
Int. Cl. B60t *3/00*
U.S. Cl. 188—32 **6 Claims**



A base member has a downwardly curved forward end portion which clamps the chock to a ground surface as soon as contact is made with a vehicle tire. The rear end of the base member pivotally mounts a movable member that has an outwardly and upwardly curved bottom edge for engaging the periphery of the tire as it moves into engagement with the chock. The curved nature of the movable member ensures continued intimate engagement with the tire. Abutments are attached to the base and movable members to function as mechanical stops after the tire has moved sufficiently onto the base.

3,647,030
SPRING-APPLIED DISC BRAKE

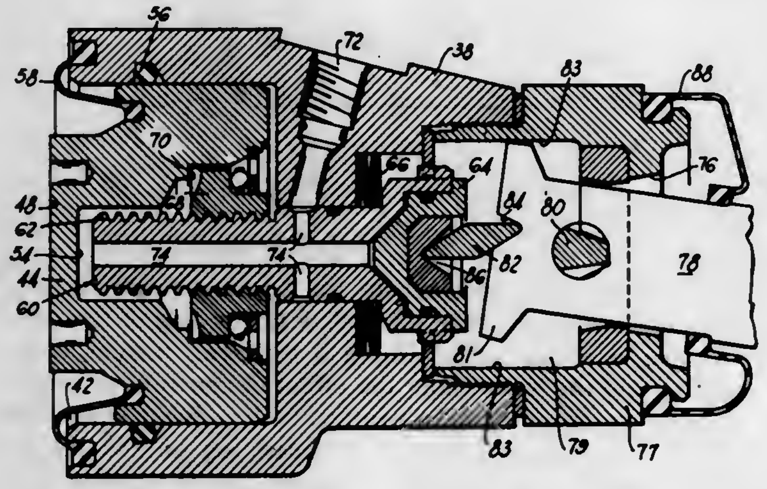
Richard T. Burnett, South Bend, Ind., assignor to The Bendix Corporation
Filed May 18, 1970, Ser. No. 38,088
Int. Cl. F16d *55/14, 65/24*
U.S. Cl. 188—72.3 **7 Claims**



A disc brake is disclosed which has a spring actuator in addition to the usual hydraulic actuation. When the brake is functioning normally, fluid pressure opposes the spring actuator to permit normal hydraulic operation of the brake. However, when fluid pressure is not available to the brake, because of a malfunction or because the vehicle operator has closed a valve to isolate the brakes from the vehicle's hydraulic system, the spring actuator maintains the frictional elements engaged with the rotor. The spring actuator, therefore, functions as both a parking brake and a fail-safe brake that immobilizes the vehicle when a malfunction in the vehicle's hydraulic system occurs. Mechanical release means are provided to release the spring actuator to permit the vehicle to be moved if the spring actuator has applied the brake while the vehicle is standing in an inconvenient location.

3,647,031
PARKING BRAKE ACTUATOR FOR DISC BRAKES

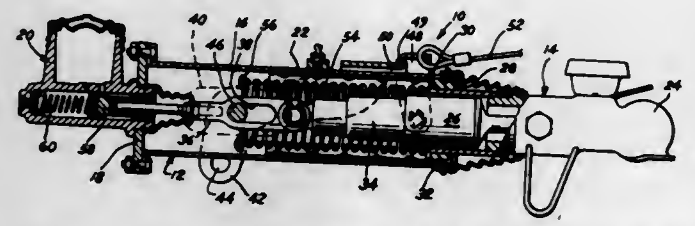
Richard T. Burnett, South Bend, Ind., assignor to The Bendix Corporation
Filed Oct. 3, 1969, Ser. No. 863,482
Int. Cl. F16d *55/26*
U.S. Cl. 188—72.6 **4 Claims**



A parking brake actuator for a caliper disc brake includes an elongated member shiftable in the caliper housing for actuating the brake shoes. The member is shifted by a lever mounted on the housing that is swingable about a point substantially coaxial with the member. A toggle link interconnects the lever and the member for shifting the latter in response to movement of the lever.

3,647,032
SURGE BRAKE CONTROL

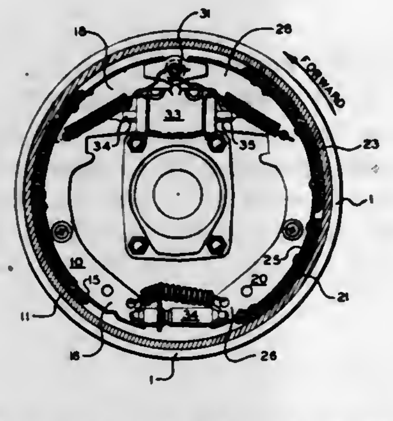
Edward K. Dombeck, South Bend, Ind., assignor to The Bendix Corporation
Filed June 17, 1970, Ser. No. 47,069
Int. Cl. B60t *7/20*
U.S. Cl. 188—112 **6 Claims**



A surge brake control unit is disclosed for attachment between a towed vehicle having brake means and a towing unit. The brake control includes a pair of elongated, coaxial, relatively movable, telescoping members. One of the members is secured to the towed vehicle, and the other member is adapted to be secured to the towing unit. Cooperative abutment means are provided on each of the members, and a spring yieldably urges the abutment means on the one member into engagement with the abutment means on the other member. A brake-applying device is carried at one end of the one member, and is engaged with the end of the other member. Upon relative movement between the members, the brake applying device applies the towed vehicle's brakes.

3,647,033
SECONDARY SHOE BRAKE LINING

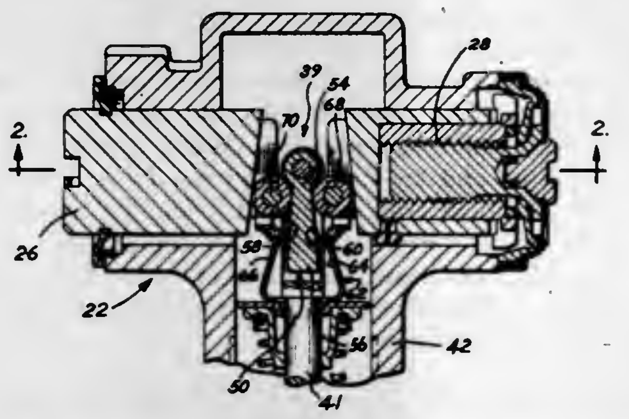
Bruce W. Klein, South Bend, Ind., assignor to The Bendix Corporation
Filed May 21, 1970, Ser. No. 39,411
Int. Cl. F16d *51/24*
U.S. Cl. 188—251 R **3 Claims**



In a vehicle servo brake of the type having a rotatable brake drum and a primary and a secondary shoe operable to stop rotation of the drum the improvement wherein the secondary shoe has a lining wherein at least 50 percent of the total surface area of the lining is a semimetallic material and at least 15 percent is organic material.

3,647,034
FLOATING OUTPUT WEDGE WITH ARTICULATED PULL ROD

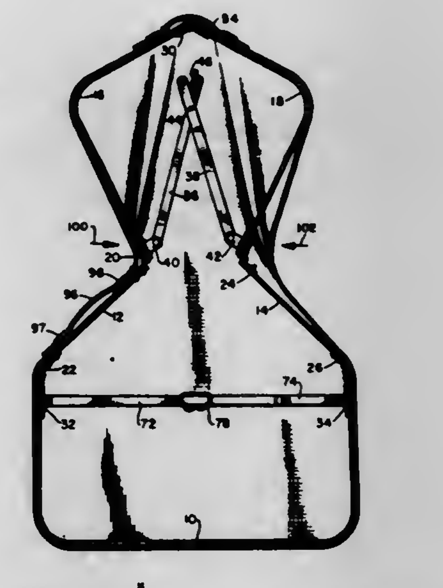
George F. Wieger, South Bend, Ind., assignor to The Bendix Corporation
Filed Aug. 20, 1970, Ser. No. 65,553
Int. Cl. F16d *51/22*
U.S. Cl. 188—343 **7 Claims**



A wedge-actuated drum brake is disclosed which includes the usual pair of brake shoes which are slidably mounted on a fixed support. The customary pair of actuator housings are disposed between adjacent ends of the two shoes. A pair of oppositely acting pistons are slidably disposed in each of the housings. One end of each of the pistons is operably connected to the corresponding ends of the brake shoes. The opposite adjacent ends of the pistons are spread apart by a wedge actuator when the brake is applied. The wedge actuator includes a pair of rollers which are mounted on a guide member for engaging the ends of the piston. The guide member is forced between the pistons by an actuating rod which also carries a wedge-shaped member that is adapted to force the rollers apart. The wedge is pivotally mounted on the actuating rod to permit the wedge to articulate as it is forced between the rollers, thus preventing damage to the wedge, the actuating rod, the rollers, or the guide member.

3,647,035
COLLAPSIBLE LUGGAGE BAG

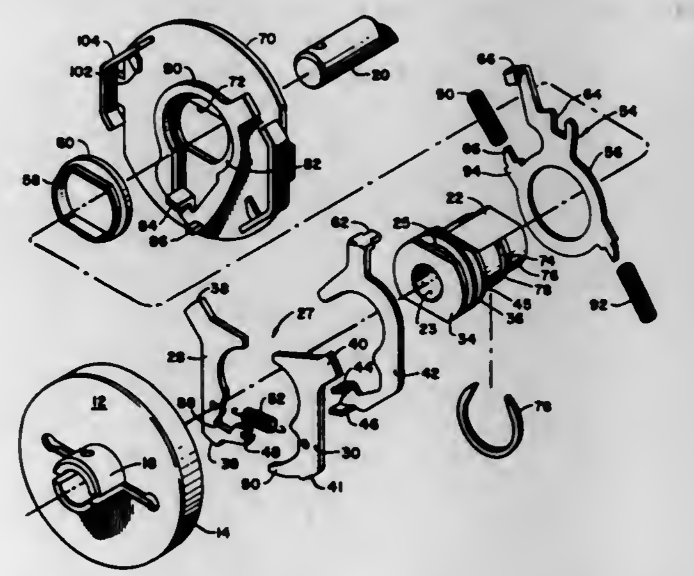
William Honig, 520 East 77th Street, New York, N.Y.
Filed Feb. 2, 1970, Ser. No. 7,743
Int. Cl. A45c *7/00*
U.S. Cl. 190—45 **7 Claims**



A collapsible luggage bag which can be reduced in size to approximately one-third its original volume comprises a plurality of hinged panels covered by a soft foldable outer cover. An adjustable bracing means retains the panels in a fully open position but, when released, permits the panels to collapse by means of their hinged connections to a bag approximately one-third its original size. The outer material includes a slide fastener and two pulls adapted to confront each other at a point along the slide fastener. When the bag is collapsed, the two pulls may be moved to a position at which they are adjacent each other to effectively close the collapsed bag without requiring closure of the entire slide fastener.

3,647,036
FRICTION CLUTCH

Gerhard Cless, Skokie, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed July 6, 1970, Ser. No. 52,315
Int. Cl. F16d *11/06*
U.S. Cl. 192—26 **4 Claims**



A pair of coiled compression springs expand to urge a clutch actuator from an uncoupled to a coupled position in which shoes carried from a driven member couple it to a driving member. In the uncoupled position, the shoes are released from the driving member and the springs are compressed with their axes parallel.

The springs engage the actuator tangentially from opposite sides for urging it angularly and are proportioned such that as the springs expand the distance through which they work increases, and the torque applied to the actuator increases because the increase of torque due to the increase in distance is greater than the loss of torque due to spring relaxation. Accordingly, as the clutch wears torque applied to couple the driving and driven members increases.

3,647,037

CLUTCH WITH CENTRIFUGAL DUMP VALVE

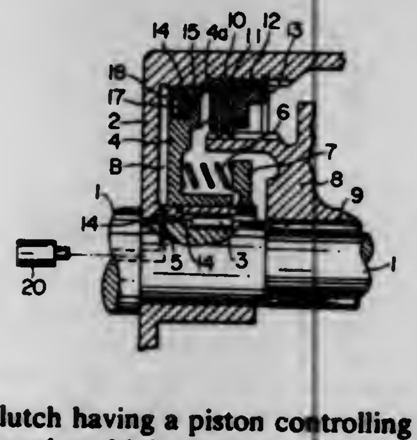
Setsuo Toma, Tokyo, Japan, assignor to Nissan Jidosha Kabushiki Kaisha, Yokohama City, Japan

Filed May 19, 1970, Ser. No. 38,824

Claims priority, application Japan, May 28, 1969, 44/40884

Int. Cl. F16d *23/10*

U.S. Cl. 192—106 F **5 Claims**



A hydraulic clutch having a piston controlling the engagement of a frictional multiple disk clutch and a drift-check valve for selectively exhausting the liquid under pressure from an operating chamber behind the piston. The drift-check valve comprises a relief passage and a truncated-conical valve element, which valve element blocks the relief passage with the flat base or end surface thereof upon an increase in the fluid apply pressure, and opens the relief passage by tumbling of the valve element upon a decrease in the fluid pressure.

3,647,038

POWER DRIVEN POSITIONING SYSTEM WITH INTERRUPT MEANS UPON APPLICATION OF A POSITIONING FORCE AT END POINTS OF TRAVEL

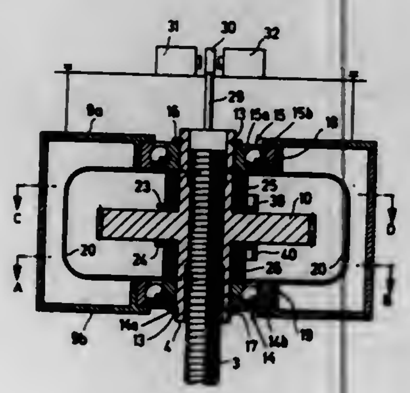
Jurgen Balz, Heilbronn/Neckar, Germany, assignor to Firma Helmut Balz GmbH, Heilbronn/Neckar, Germany

Filed July 20, 1970, Ser. No. 56,608

Claims priority, application Germany, Mar. 5, 1970, P 20 10 431.8

Int. Cl. F16d *71/00*

U.S. Cl. 192—141 **7 Claims**



A rotatable positioning member driven, for example by a gear over a motor moves a threaded spindle in an axial direction to position the spindle, for example for placement of a valve. When the threaded spindle, for example with a valve element at the end, reaches a terminal position, the positioning member will travel axially on the threaded spindle. The positioning member is located in a housing and is held in rotatable position by the inner races of an axially movable ball bearing, the outer races of which are held separated and apart by a pair of U-shaped leaf springs. Upon axial excursion of the positioning member, the bearings will be moved axially against the force of the spring, and axial movement transmitted to frictionally engage a camming disk with the rotatable positioning member which, upon rotation, operates an electrical switch to interrupt the power when the force of application of the spindle to the terminal position is matched to the compression force of the U-shaped spring.

3,647,039

APPARATUS FOR STOPPING A ROTATABLY DRIVEN MACHINE AT A PREDETERMINED POSITION

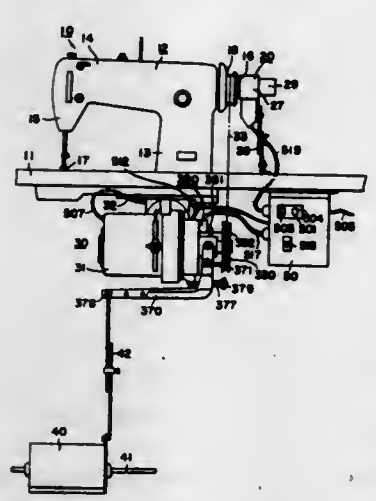
Syoichi Oke, and Takanori Kobayashi, both of Nagoya, Japan, assignors to Mitsubishi Electric Corporation, Tokyo, Japan

Filed June 29, 1970, Ser. No. 50,820

Claims priority, application Japan, July 10, 1969, 44/54758

Int. Cl. F16d *71/02;* D05b *69/26*

U.S. Cl. 192—146 **5 Claims**



A rotatably driven sewing machine is enabled to be stopped at a predetermined position through the use of a pilot generator which detects the speed of rotation of the machine and a position detecting device. The pilot generator includes a rotor and stator each of which have a plurality of magnetic poles. The position detecting device includes an auxiliary shaft which is connected directly to the main shaft of the machine and an annular segment thereon which includes an electrical conductor and insulating members. A plurality of brushes make contact with the annular segment and will contact the insulating members when the center of the magnetic poles of the rotor of the pilot generator are aligned with that of the stator.

3,647,040

SINGLE PRINTING ELEMENT POSITIONING MECHANISM

Hermann Waldenburger, Wolkersdorf, and Herbert Decker, Lauf, both of Germany, assignors to Triumph Werke Nurnberg A.G., Nuernberg, Germany

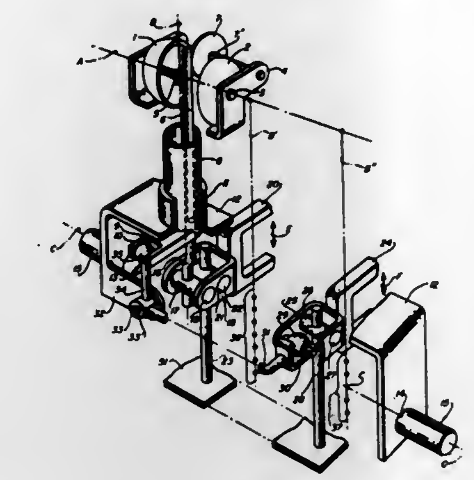
Filed Sept. 17, 1969, Ser. No. 858,696

Claims priority, application Germany, Sept. 28, 1968, P 17 86 405.0

Int. Cl. B41j *23/00*

U.S. Cl. 197—16 **5 Claims**

A mechanism for high-speed printing characterized by a low mass type body positionable about first and second intersecting axes for type selection, and mounted on support structure swingable about a third axis parallel to the first to effect printing of a selected type character. The mechanism is constructed so that the second axis intersects the first and third axes and so that points of connection with operating members to rotatably position said body variably about said first and second axes are coincident or closely adjacent the third axis and are substantially aligned with said second axis when the type body is brought to printing position; the construction being such as to minimize to a negligible degree any deviation of the positioned type relative to a print point.



3,647,041

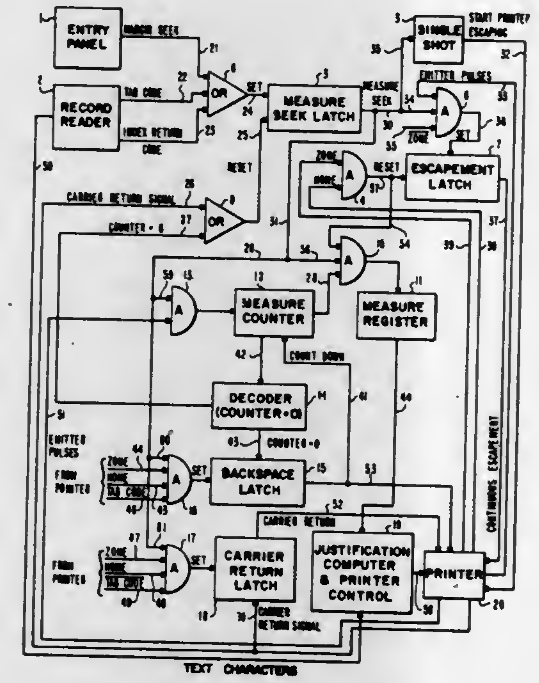
SYSTEM FOR DETERMINING LINE MEASURE

William H. Davis; Louis M. Hornung; Royce D. Lindsey, and Howard C. Tanner, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,087

Int. Cl. B41j *5/30*

U.S. Cl. 197—19 **7 Claims**



A system for determining and entering line measure into a justification computer for controlling the format of output copy. During an output operation when there is a necessity for determining line measure, a measure seek code is detected, escapement of the carrier initiated, the escapement of the carrier sensed, and the units of escapement counted. Upon sensing the location of the right margin stop, escapement is terminated. Thereafter the carrier is returned to the position occupied prior to the measure seek code being read. The number of units counted is the line measure which is then used for control of output.

3,647,042

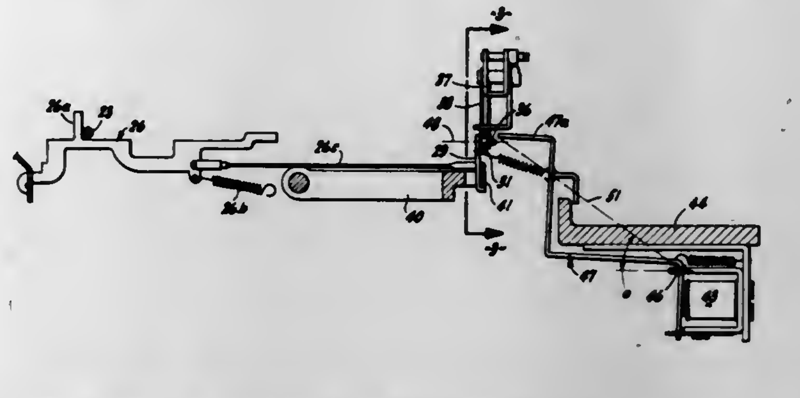
ELECTRICAL CHARACTER SELECT MECHANISM FOR TYPEWRITER

Roland T. Smith, San Francisco, Calif., assignor to Novar Corporation

Filed July 20, 1970, Ser. No. 56,541

Int. Cl. B41j *5/30*

U.S. Cl. 197—19 **3 Claims**



An electrical character select mechanism for a typewriter of the single printing head type, for example the IBM Selectric, where the selector latches which control tilt and rotation of the printing head are actuated by a number of relays specially located and shaped.

3,647,043

DEVICE FOR LOADING OBJECTS AND CONVEYING THEM FROM A LOADING STATION TO AT LEAST ONE WORKING STATION

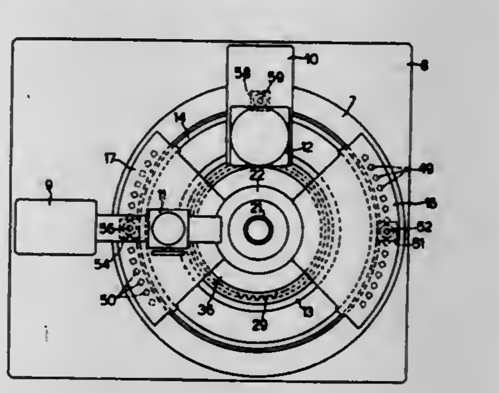
Bruno Garetto, Ivrea, Italy, assignor to Ing. C. Olivetti & C. S.p.A., Ivrea, Italy

Filed Apr. 23, 1970, Ser. No. 31,222

Claims priority, application Italy, Apr. 28, 1969, 51605 A/69

Int. Cl. B23q *1/04, 5/22*

U.S. Cl. 198—19 **5 Claims**



A device for loading objects and conveying them from a loading station to a working station of a machine tool comprises two plates formed of circular sectors rotatable about a fixed shaft. The two sectors are rotated independently of one another so as to bring them alternately to said loading station and said working station through a pair of friction rings. Each plate is retained at the different stations by stop plungers controlled by electromagnets for times which are determinable independently for the different stations.

3,647,044

BYPASS FOR PRODUCTION LINES

Preben Einer Roar Orstam, Copenhagen, Denmark, assignor to Skandinavisk Emballage Aktieselskab, Lyngby, Denmark

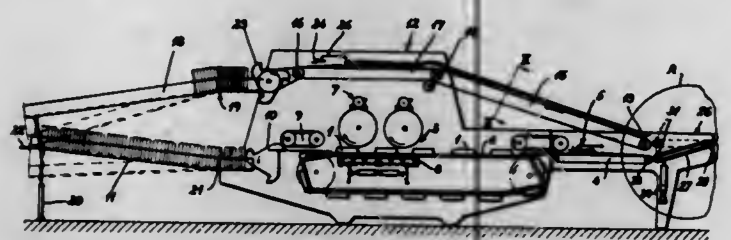
Filed Oct. 8, 1969, Ser. No. 864,736

Claims priority, application Denmark, Oct. 15, 1968, 4959/68

Int. Cl. B65g *47/26*

U.S. Cl. 198—31 AC **3 Claims**

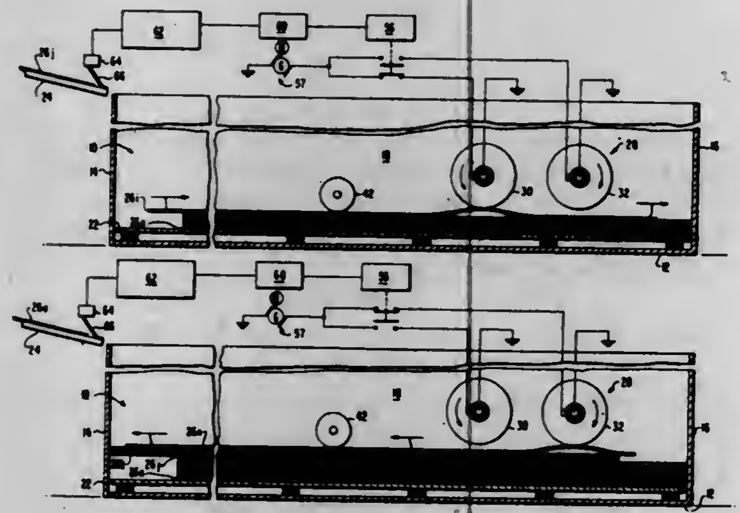
A bypass for production lines for diverting blanks advanced on the line, particularly polygonal blanks of fiber material or a similar light material, past a working unit incorporated in the line. The bypass comprises a diversion path extending in a vertical plane, and at least at the beginning of



the diversion path a switch unit is provided for connecting the path with the production line, the switch unit being displaceable in a vertical plane.

3,647,045
APPARATUS FOR STACKING UNITS OF SHEET MATERIAL

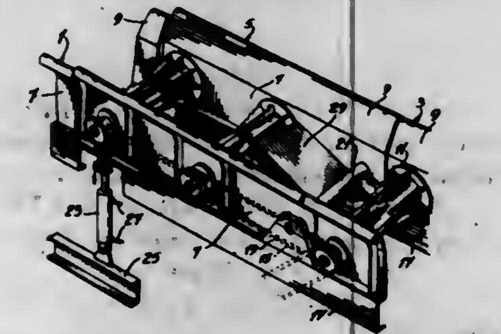
Hans F. Wegener, Michigan City, Ind., assignor to National Steel Corporation
Filed Feb. 6, 1970, Ser. No. 9,184
Int. Cl. B31b *1/96*, *1/98*; **B65b** *57/20*
U.S. Cl. 198—41 **13 Claims**



An apparatus for stacking units of sheet material in staggered relationship including a receiver with end plates spaced apart a distance greater than the length of the sheet material to be stacked, a feed device for feeding individual sheets into the receiver, a positioning device in the receiver for directing individual sheets against one or the other of the end plates and a control selectively directing the positioning device to achieve staggered stacking of units of sheet material.

3,647,046
CONVEYOR

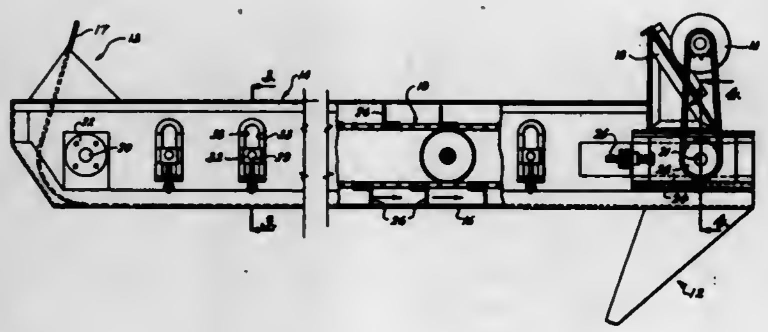
Jean-Paul Tanguay, and Elie Dallaire, both of De Roberval, Quebec, Canada, assignors to Placements Jean Paul Tanguay Limitee, St. Prime, Quebec, Canada
Filed June 10, 1970, Ser. No. 44,995
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 **5 Claims**



A conveyor, for tree stems, formed of a fixed section and of a section capable of pivoting upwardly about an axis transverse to the direction of travel of the tree stems. The fixed as well as the pivotable sections are provided with gripper rollers adapted to drive the tree stems in the conveyor.

3,647,047
INCLINED DRAG CONVEYOR FOR HOT ASPHALT MIX AND THE LIKE

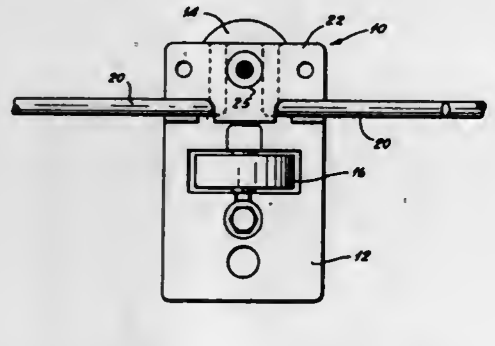
Lamson Rheinfrank, Jr., Kansas City, Mo., assignor to Standard-Havens, Inc., Glasgow, Mo.
Filed July 31, 1969, Ser. No. 846,344
Int. Cl. B65g *19/06*
U.S. Cl. 198—174 **2 Claims**



The lower flight of the slatted drag chain of the conveyor is yieldably biased toward the floor plate. The biasing force is obtained through the medium of idler wheels interposed between the flights and supported for floating movement between adjustable limit stops away from and back toward the floor plate.

3,647,048
OVERHEAD CONVEYOR TROLLEY PLATES

Robert Krammer, Farmington, Mich., assignor to John M. Leach, Port Jefferson, N.Y.
Filed Apr. 30, 1970, Ser. No. 33,300
Int. Cl. B65g *17/20*
U.S. Cl. 198—177 **2 Claims**

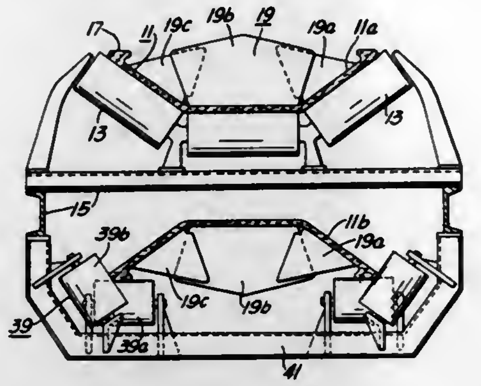


The present invention relates to an improved quick disconnect arrangement for attaching linkages to the baseplate of a trolley of an overhead conveyor.

3,647,049
STEEP SLOPE BELT CONVEYOR

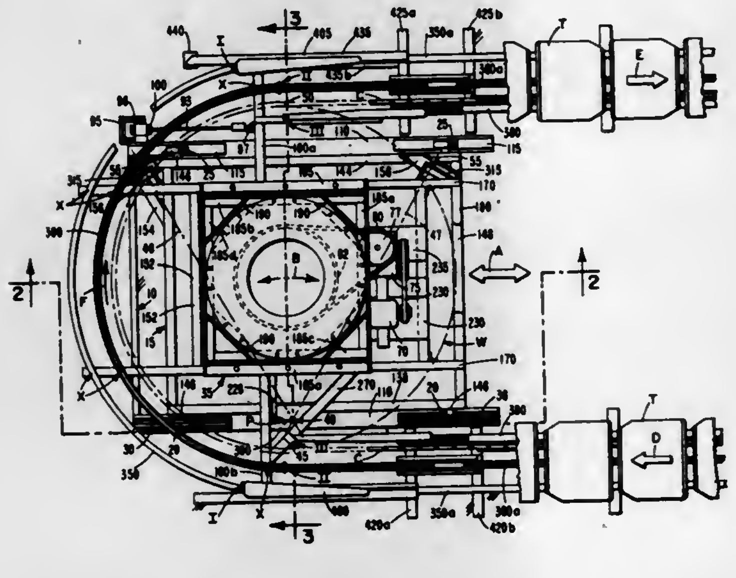
Harry F. Hartzell, Jr., Allison Park, Pa., assignor to Koppers Company, Inc.
Filed May 22, 1970, Ser. No. 39,640
Int. Cl. B65g *15/08*, *15/42*
U.S. Cl. 198—192 **1 Claim**

A steep slope belt conveyor for moving and elevating bulk material comprises a flexible belt supported by trough-shaped carrying idler rollers. Overlapping baffles mounted transversely at spaced intervals along the length of the load-carrying belt surface holds the bulk material on the belt surface and prevents such material from gravitating down the belt. The longitudinal edges of the belt are specially shaped to engage return idler rollers so that the belt maintains its troughlike contour during the return run.



3,647,050
SPROCKET DRIVE TENSIONING MOUNT FOR CONVEYORS

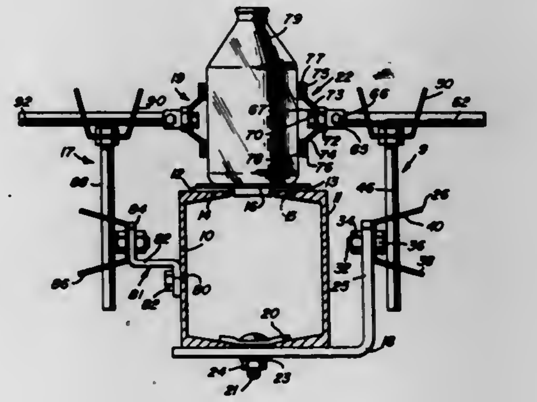
Warren D. Neal, Walkersville, Md., assignor to Aerojet-General Corporation, El Monte, Calif.
Filed June 11, 1970, Ser. No. 45,403
Int. Cl. B65g *15/30*; **B65b** *23/02*
U.S. Cl. 198—203 **20 Claims**



A chain-type conveyor forming a continuous loop of chain is driven by a large sprocket wheel which may be several feet in diameter. Tension is applied to the chain at one side of the wheel and accordingly a slack condition may occur at the other side of the wheel. The wheel is mounted along with its power drive, such as an electric motor, in a framework having a pivot point on the tension side of the wheel so that as the wheel revolves the tension side of the wheel will tend to be swung in a direction opposite to that in which tension is furnished to the chain, as a matter of reaction. This causes the opposite side of the wheel to swing in the opposite direction thereby taking up slack in the chain leaving the wheel at that side. The distance from the pivot point about which the mounting frame of the wheel can swing to the adjacent periphery is considerably shorter than the distance from the pivot point to the opposite side of the wheel so that only such torque as is necessary for taking up slack will be provided. Means are provided for telescopic movement of the conveyor guide and chain tracks to compensate for tensioning movement of the sprocket wheel mount. On carousel tray sorters where large sprockets are required to provide tray clearance, considerable space is saved and sorter length reduced by eliminating the need for a separate takeup loop. Additionally, the construction permits convenient initial tensioning of the chain by means of a weight bias acting on the mount.

3,647,051
FAST ADJUSTMENT DEVICE FOR CONVEYOR GUIDE RAILS

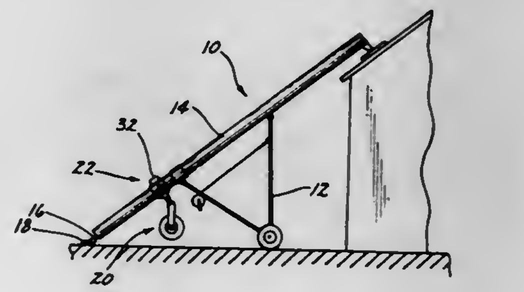
Ronald E. Didas, Dansville, N.Y., assignor to Stone Conveyor Co., Inc.
Filed May 26, 1970, Ser. No. 40,560
Int. Cl. B65g *15/60*
U.S. Cl. 198—204 **7 Claims**



Side rails are mounted over a conveyor. Each rail is connected to perpendicularly oriented rods that are slidably disposed in spring-retainer clamps. By selectively releasing the clamps, the rods may be longitudinally adjusted to position an associated side rail into close proximity with the outward contour of a conveyed article.

3,647,052
TRANSPORT ATTACHMENT FOR GRAIN AUGERS

Calvin R. Edinger, Cathay, N. Dak.
Filed Nov. 6, 1969, Ser. No. 874,634
Int. Cl. B65g *41/00*, *33/14*
U.S. Cl. 198—233 **1 Claim**

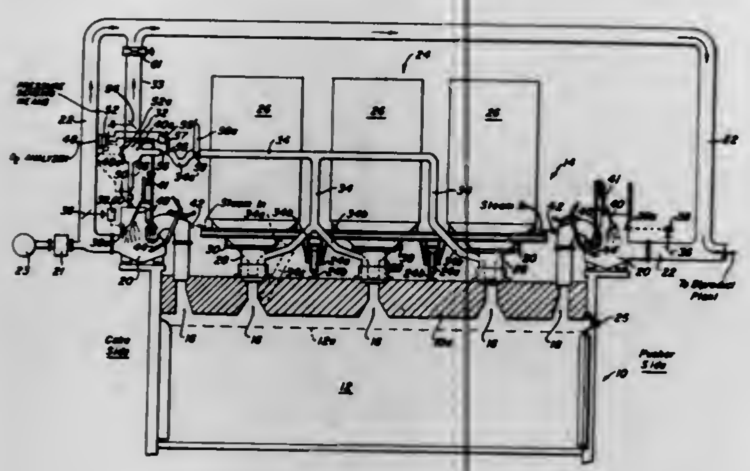


A transport attachment for grain augers to permit the auger to be manually moved, comprising a support means movably mounted on the grain auger and having a wheel means extending downwardly therefrom. The support means comprises a split tubular member which is selectively slidably mounted on the grain auger above the lower thereof which is selectively locked in first and second positions thereon. The wheel means engages the ground to support the lower end of the grain auger thereabove when the support means is in its first or transport position. The support means and wheel means are moved upwardly on the grain auger to the said second position to move the wheel means out of ground engagement thereby permitting the grain auger to be conventionally operated.

3,647,053
APPARATUS FOR AND METHOD OF COLLECTING SMOKE FROM COKE OVENS DURING CHARGING

Pete Palumbo, Bethel Park, Pa., assignor to United States Steel Corporation

Filed Nov. 20, 1969, Ser. No. 878,302
Int. Cl. C10b *31/04*
U.S. Cl. 202—263 **34 Claims**



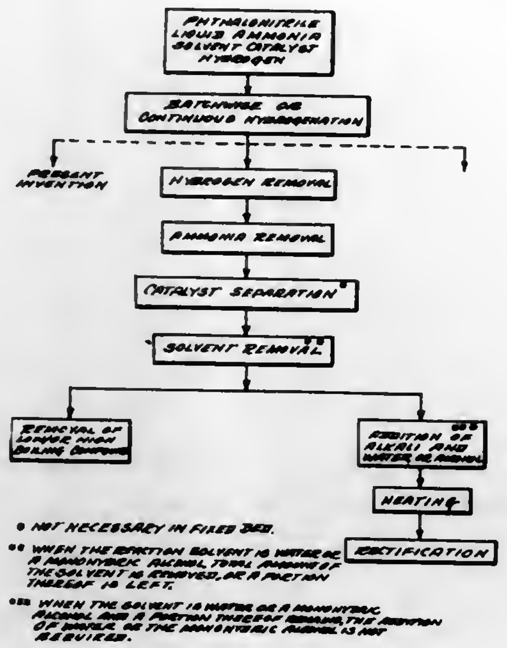
An apparatus for and method of smokeless charging of a heated coke oven with coal at a lower temperature than the temperature of the oven is disclosed. The oven of the apparatus is provided with a charging aperture for receiving the coal and with an exhaust aperture for any gases evolved in the oven. The oven has a collector main connected to the exhaust aperture and an exhaust means connected to the collector main for removing gases from the oven. A Larry car is movable on the oven and has hopper means adapted to contain the coal. The hopper means has discharge means movable into registry with and into sealing engagement with the charging aperture. Gate means are on the hopper means for controlling the flow of the coal through the discharge means and through the charging aperture into the oven. A charging gas collecting main is on the oven in communication with the exhaust means. A conduit means on the Larry car communicates with one of the discharge means, the hopper means, and the charging aperture and is connectable to the charging gas collector main. The exhaust means is operable (when the coal engages the oven and substantial quantities of charging gas and displaced oven gas are evolved) to simultaneously exhaust the charging gas and the oven gas through the exhaust aperture and the charging aperture. The conduit means is operable when connected to the one and to the charging gas collector main to prevent the escape of the charging gas and the oven gas through the hopper means and the discharge means to the atmosphere.

3,647,054
PROCESS FOR PURIFYING XYLYLENEDIAMINE BY ALKALINE AGENT ADDITION AND DISTILLATION

Yukio Tsuboi; Yoshio Ueda; Tazuo Ota, and Mikio Yoneoka, all of Niigata, Japan, assignors to Japan Gas-Chemical Company, Inc., Tokyo, Japan

Filed Apr. 2, 1970, Ser. No. 25,264
Int. Cl. B01d *3/34;* **C07c** *87/28*
U.S. Cl. 203—29 **9 Claims**

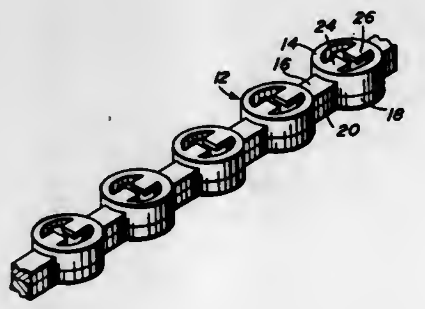
A high-purity xylylenediamine containing particularly neither phthalonitrile nor cyanobenzylamine is produced from the raw xylylenediamine obtained by the hydrogenation of a phthalonitrile, by heating said raw xylylenediamine in the presence of water or an alcohol after the addition of an alkaline agent such as alkali metals, alkaline earth metals, or alkaline compounds thereof, and then distilling the mixture to recover said high-purity xylylenediamine. The high-purity xylylenediamine obtained is particularly suitable for the production of polyamide fibers.


PHTHALONITRILE LIQUID AMMONIA SOLVENT CATALYST HYDROGEN
BATCHWISE OR CONTINUOUS HYDROGENATION
PRESENT INVENTION
HYDROGEN REMOVAL
AMMONIA REMOVAL
CATALYST SEPARATION*
SOLVENT REMOVAL**
REMOVAL OF LOWER HIGH BOILING COMPOUND
ADDITION OF ALKALI AND WATER OR ALCOHOL***
HEATING
RECTIFICATION
* NOT NECESSARY IN FIXED BED.
** WHEN THE REACTION SOLVENT IS WATER OR A MONOHYDRIC ALCOHOL, TOTAL AMOUNT OF THE SOLVENT IS REMOVED, OR A PORTION THEREOF IS LEFT.
*** WHEN THE SOLVENT IS WATER OR A MONOHYDRIC ALCOHOL AND A PORTION THEREOF REMAINS, THE ADDITION OF WATER OR THE MONOHYDRIC ALCOHOL IS NOT REQUIRED.

3,647,055
ARTICLE PACKAGING AND HANDLING CHAIN

Wayne K. Pfaff, P. O. Box 5026, Irving, Tex.

Filed Mar. 4, 1970, Ser. No. 16,344
Int. Cl. A45c *11/00*
U.S. Cl. 206—1 R **1 Claim**



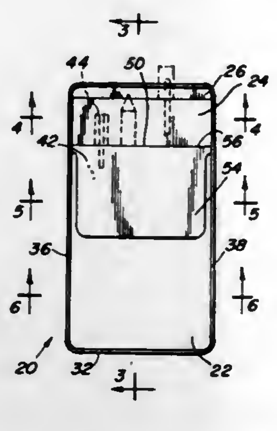
A series of resilient receptacles are interconnected by connective strips forming a chainlike structure. Each receptacle includes an opened end having diametrically confronting spaced tab elements which normally occlude the opened end. Upon application of distorting forces to a receptacle, the tabs are spread apart to allow insertion of an article. Upon removal of the forces, the tabular elements spring back into their occluding position thereby preventing the article from inadvertent removal.

3,647,056
SAFETY GLASSES CASE WITH ID CARD HOLDER AND PENCIL-CARRYING POCKET PROTECTOR

Arthur F. Jacobson, 1281 Lynn Terrace, Highland Park, Ill., and Harold D. Jacobson, 720 Gordon Terrace, Chicago, Ill.

Filed Sept. 25, 1970, Ser. No. 75,409
Int. Cl. A45c *11/04*
U.S. Cl. 206—5 **3 Claims**

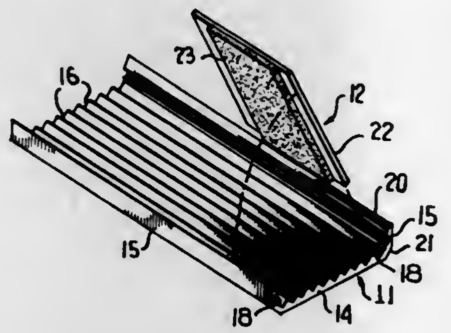
A multicompartment envelope of plastic sheet material and defining a glass case holder in conjunction with a pen and pencil-carrying pocket protector and an identification card holding receptacle, the latter having a transparent face and top closure means.



3,647,057
PACKAGE FOR ELONGAT ELEMENTS

Albert S. Ashmead, and Richard W. Shepard, both of Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Aug. 13, 1969, Ser. No. 849,641
Int. Cl. B65d *85/24, 43/12, 21/02*
U.S. Cl. 206—17 **1 Claim**



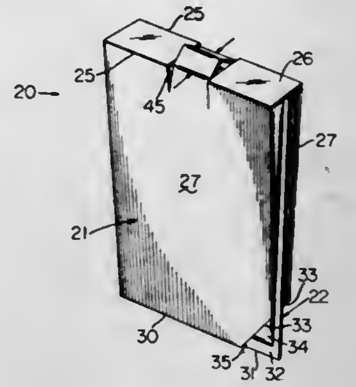
This disclosure relates to a package for sewing machine needles and similar elongated elements or parts wherein the package includes a generally channel-shaped cross-sectional container which may be readily extruded in continuous lengths and chopped to size, and a cooperating cover. The container includes a face having a plurality of longitudinally extending grooves formed therein for receiving elongated elements and the cover is slidably positioned in opposed grooves formed in sidewalls of the container with the underside of the cover being provided with a resilient material for compressively engaging elongated elements seated in the grooves.

3,647,058
CARTON AND BLANK FOR MAKING SAME

Melville T. Farguhar, Bon Air, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Nov. 10, 1969, Ser. No. 875,087
Int. Cl. B65d *79/00, 83/06*
U.S. Cl. 206—56 AC **10 Claims**

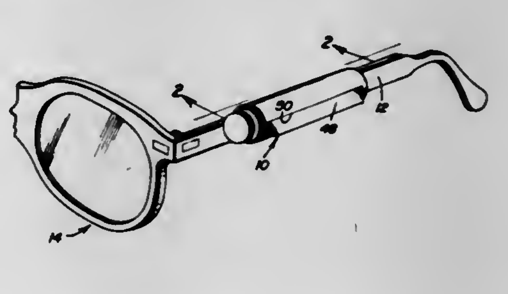
A protective carton having a wall interconnecting a pair of sidewalls and having open ends wherein the interconnecting wall is provided with a pair of parallel cuts extending completely across the central portion thereof with the sidewalls each having a pair of slits and with the slits of each pair each adjoining an end of an associated cut. The interconnecting wall also has weakening means therein extending between and roughly perpendicular to the cuts. The cuts and slits define a U-shaped construction which because of the presence of the weakening means is easily compressed in the form of a V-shaped construction to define an integral handle for the carton. A plurality of cartons identical to the above-described carton and each having a pouch supported therein so as to define an associated package may be tightly packed in an associated traylike container with the interconnecting walls of the cartons arranged immediately adjacent each other in a common plane and each package may be easily removed from the container by compressing the U-shaped construction of its associated carton to thereby define a V-shaped construction which serves as an easily grasped handle for lifting the package from within the container.



3,647,059
ACCESSORY RECEPTACLE

Thomas F. Humphreys, P. O. Box 886, Joliet, Ill.

Filed Oct. 2, 1969, Ser. No. 863,293
Int. Cl. B65h *55/00*
U.S. Cl. 206—58 **3 Claims**

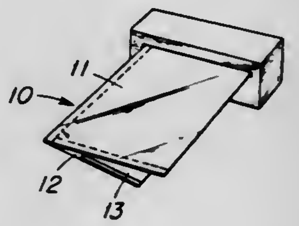


A hollow cylindrical accessory receptacle is mounted on a temple of a pair of eyeglasses. A core is axially formed in the housing and mounts a roll of lens-cleaning material. A slit is also formed in the housing which permits withdrawal and dispensing of a desired quantity of the rolled material.

3,647,060
ROLL OF DOUBLE-POCKETED BAG STRUCTURES

Robert R. Kiely, Pittsford, N.Y., assignor to Mobil Oil Corporation

Filed Mar. 25, 1969, Ser. No. 810,280
Int. Cl. B65d *83/00*
U.S. Cl. 206—58 **2 Claims**



A double-pocketed bag structure comprising a carrying pocket, a retaining pocket, and a web of material interconnecting the pockets and being unitary with the backwalls thereof. The total height of the web and the retaining pocket being less than the total height of the carrying pocket. The bag structure being further characterized by being joined together with identical bags into a continuous roll; the structures being defined by heat seals along their height dimensions, and a tear line being located between adjacent structures. The continuous roll of bag structures, for ease of dispensing and detachment of individual bags, being folded in the web area so that the carrying pocket overlies and extends beyond the retaining pocket.

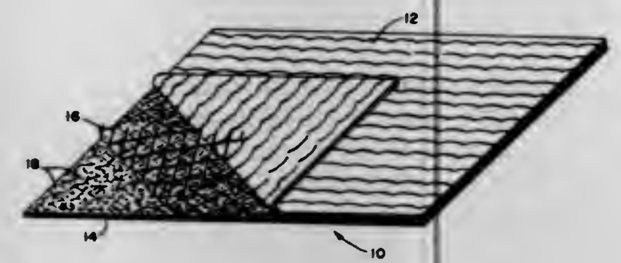
3,647,061
NONWOVEN COTTON BALE COVER

William B. Kaupin, Westwood, Mass., assignor to Ludlow Corporation, Needham Heights, Mass.

Filed Mar. 25, 1969, Ser. No. 810,307

Int. Cl. B65d *71/00*

U.S. Cl. 206—83.5 **6 Claims**



A nonwoven cotton bale cover is a bonded laminate of three layers of material. A layer of net is sandwiched between an outer layer of paper towelling and an inner layer of nonwoven cotton. The layers are bonded by means of a thermoplastic material applied to the outer or inner layer before they are joined.

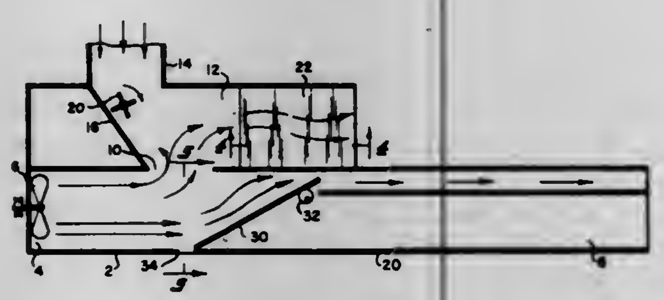
3,647,062
MACHINE FOR SEPARATING COFFEE BEANS AND BERRIES FROM TRASH MATERIAL

Luis E. Cancel, Alamo-Guaynabo; Jose Manuel Rivera-Ortiz, Bayamon, and Francisco Garcia-Rivera, Bayroa-Caguas, all of P.R., assignors to Commonwealth of Puerto Rico

Filed Nov. 2, 1970, Ser. No. 85,975

Int. Cl. B07b *3/00*

U.S. Cl. 209—3 **5 Claims**



A mixture of coffee beans and berries with twigs, leaves, snails and other trash material is obtained when coffee is harvested by spreading nets beneath the bushes. The trash in this mixture is separated from the coffee beans and berries by pouring the entire mixture vertically downwardly into the machine provided by the invention. The mixture falls into a forced updraft of air which is sufficiently strong that the coffee beans and berries and the heavier components of the mixture fall through it by gravity but leaves and other lighter components will not fall through it and are removed by the updraft. The components that fall through the updraft impinge on the inclined vibrating surface which is located in a stream of air, and the coffee beans and berries are separated from the high-density components of the mixture at this point.

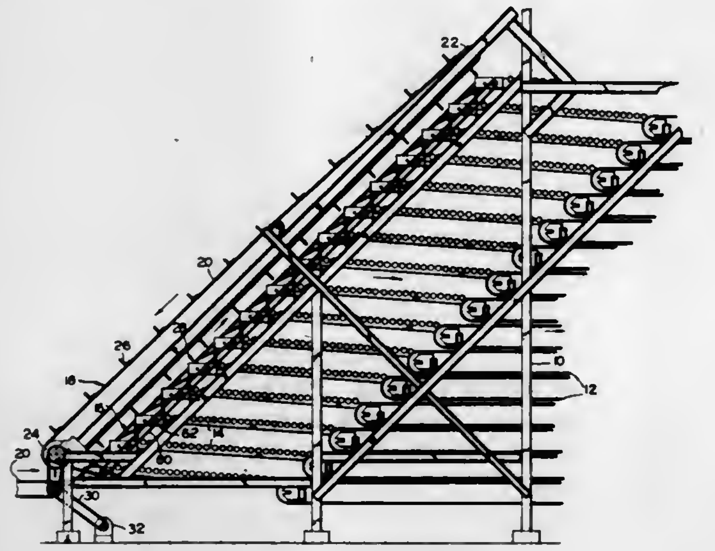
3,647,063
CLUTCH-OPERATED DIVERTER FOR SORTING SYSTEM

Daniel S. Rowley, Beaverton, Oreg., assignor to Irvington Forest Industries, Inc.

Filed Dec. 30, 1969, Ser. No. 889,220

Int. Cl. B07c *5/38*

U.S. Cl. 209—74 **28 Claims**



Diverter gates for diverting lumber, logs or similar products from an infeed conveyor to preselected sorting stations are operated through one-revolution or partial-revolution clutches. Clutch engagement and disengagement is synchronized to the movement of the infeed conveyor in a manner so that a diverter gate opens and closes when a piece to be diverted is in predetermined positions relative to such gate. The drives for the gates and infeed conveyor are interconnected in a manner so that variations in infeed speeds result in corresponding variations in the speed at which the gates are opened and closed, thereby enabling high-speed sorting.

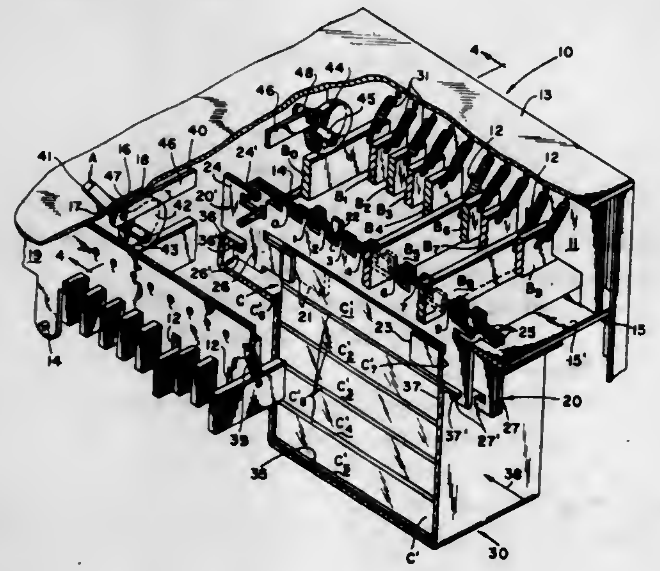
3,647,064
INFORMATION CARRIER SELECTION SYSTEM

Norman J. Rosenburgh, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 13, 1970, Ser. No. 36,821

Int. Cl. B07c *5/00*

U.S. Cl. 209—80.5 **10 Claims**



An apparatus for positively separating preselected information carriers from an arrangement of similar carriers, includes a frame and a container, and is adapted to be used

with a plurality of selector tabs releasably suspended from the frame and releasably suspending the container. A plurality of information carriers are symmetrically supported within the container and are respectively connected in sliding frictional relation to the selector tabs. Each selector tab has an edge configuration of alternative lands and notches that is coded to identify a respectively connected carrier by removing preselected of such lands. To make a selection, appropriate selector bars on the frame are actuated to a blocking position within corresponding notches of the coded selector tabs, and the container is shifted one notch pitch. The selected carrier selector tabs, i.e., those which have lands removed adjacent the actuated selector bars, will move with the shifted container and will remain fixed thereto while releasing from the frame. However, the selector tabs of the nonselected carriers will each have at least one of their lands blocked by an actuated selector bar. The blocked selector tabs will be prevented from moving with the shifted container and will release therefrom while remaining suspended from the frame. The selected carriers whose selector tabs have been released from the frame are then positively separated from the suspended arrangement of nonselected carriers in response to movement of the container away from such arrangement.

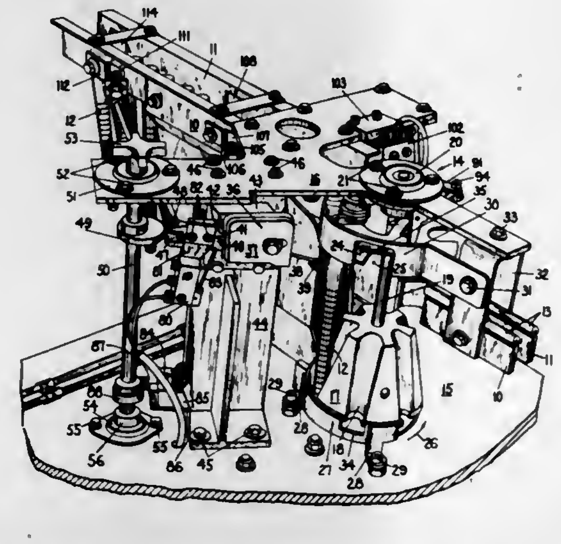
3,647,065
BOBBIN SELECTOR DEVICE

Charles Perry Powell, Westboro, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed May 4, 1970, Ser. No. 34,014

Int. Cl. B07c *1/10*

U.S. Cl. 209—88 **3 Claims**



A bobbin selector device having a mechanism for detecting a bobbin not fully stripped of its yarn and for automatically removing an incompletely stripped bobbin.

3,647,066
FLOTATION MACHINE AND SYSTEM UTILIZING IMPELLER-TYPE AERATION UNITS

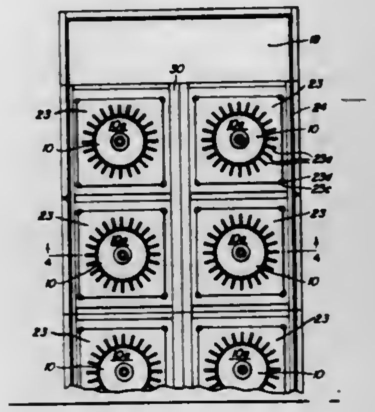
John T. Potts; Lawrence H. Lange, and Thomas P. Liss, all of Salt Lake City, Utah, assignors to The Galigher Company, Salt Lake City, Utah

Continuation of application Ser. No. 608,339, Jan. 10, 1967, now abandoned. This application June 13, 1969, Ser. No. 835,296

Int. Cl. B03d *1/16*

U.S. Cl. 209—169 **7 Claims**

A flotation machine comprising multiple rows of aligned but mutually independent aeration impeller units and respective stators arranged in spaced side-by-side relationship in a straight line substantially normal to the longitudinal across the width of a flotation tank, as well as along the length thereof, for complete independent local pulp circulation, respectively, so there is mutual impingement of the impeller discharges of aerated flotation pulp across the width of the tank, with recirculation of the resulting pulp and consequent unusually effective pulp aeration that might be appropriately termed "superaeration."



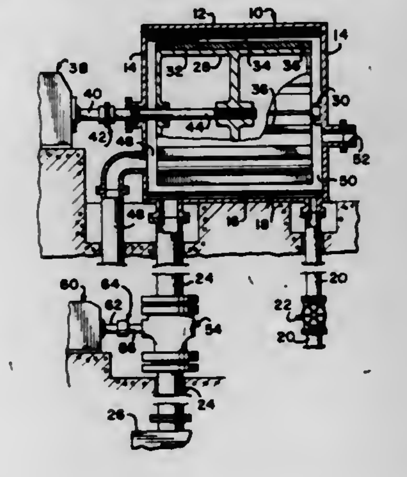
3,647,067
SCREENING APPARATUS HAVING REJECTS CONTROLLING MEANS

Karl E. Vogel, Hollis, N.H., assignor to Improved Machinery Inc., Nashua, N.H.

Filed Feb. 24, 1970, Ser. No. 13,558

Int. Cl. B02b *1/24*

U.S. Cl. 209—242 **10 Claims**



Screening apparatus having a valve in the rejects conduit controlling the discharge of material therethrough. The valve includes a plurality of chambers separated by a wall containing one or more openings of smaller cross section than the chambers and is rotatably driven at a predetermined speed by a drive motor to alternately connect each chamber to the upstream portion of the rejects conduit while the other chamber is connected to the downstream portion of such conduit. The drive motor is reversible to automatically reverse the direction of rotation of the valve in the event that the latter, during rotation in either rotary direction, becomes jammed by rejected material; and a valve in the inlet conduit of the screening apparatus is automatically closed when the first-mentioned valve is not in operation.

3,647,068
CARRYING MEMBERS FOR DEFORMING WEB SCREENS

Albert Wehner, Weberstrasse 31, Monheim (Rhine), Germany

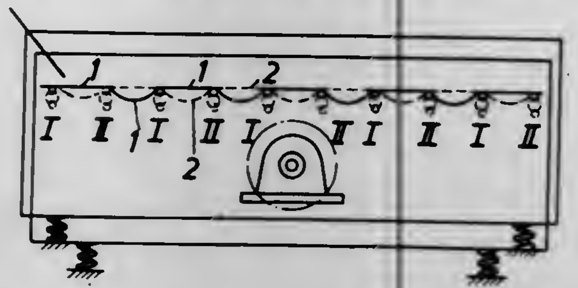
Continuation of application Ser. No. 488,964, Sept. 21, 1965, now abandoned. This application Nov. 25, 1968, Ser. No. 778,857

Claims priority, application Germany, Sept. 26, 1964, W 37612

Int. Cl. B07b *1/42, 1/54*

U.S. Cl. 209—310 **14 Claims**

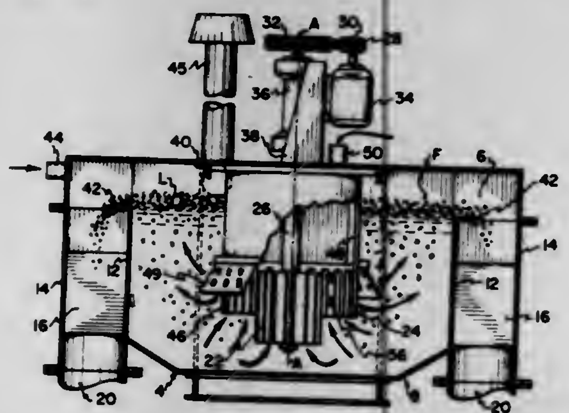
Screening mechanism includes two systems of screen-carrying members, the two systems, in static condition thereof, extending in substantially the same horizontal plane, the carrying members being disposed spaced from one another in a given direction and substantially in transverse alignment with one another in the given direction, the carrying members of one system being in respective alternate arrangement with the carrying members of the other system, a screening member comprising a web, at least partly deformable by gravity, carried by the carrying members, each of the carrying members of one of the systems being connected by the screening member to the carrying members of the other system adjacent thereto, and means for relatively moving the two systems in the given direction whereby the spacing between the adjacent carrying members is continually varied in the dynamic condition of the systems, and the screening member is deformed in accordance with the varied spacing between the carrying members.



3,647,069

ENCLOSED FLOTATION APPARATUS AND PROCESS

Robert S. Bailey, 3712 Kingridge Drive, San Mateo, Calif.
Filed May 11, 1970, Ser. No. 36,025
Int. Cl. B03d *1/00*
U.S. Cl. 210—44 **8 Claims**



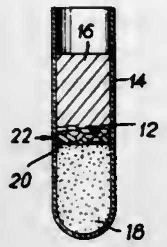
Combined deaeration and flotation apparatus which includes an enclosed tank adapted to contain a body of liquid with an overlying freeboard space. Means for introducing oxygen-free gas into the freeboard space and means for inducting and dispersing the gas into the liquid are also provided. By means of the above apparatus, oxygen is displaced from the liquid and solids are assisted to the liquid's surface for floating whereby both solids and oxygen are separated to produce a clarified liquid of reduced oxygen content Efficiency of operation can be improved by maintaining the gas in the freeboard spaced at a pressure slightly above atmospheric.

3,647,070

METHOD AND APPARATUS FOR THE PROVISION OF FLUID INTERFACE BARRIERS

Stanford L. Adler, Monsey, N.Y., assignor to Technicon Corporation, Tarrytown, N.Y.
Filed June 11, 1970, Ser. No. 47,495
Int. Cl. B01d *21/26*
U.S. Cl. 210—83 **7 Claims**

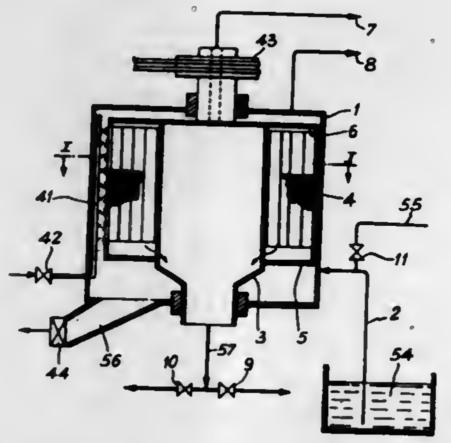
New and improved method and apparatus for the provision of a satisfactory physical and chemical barrier at a fluid interface in the nature of that which occurs at the interface of the separated plasma and packed cells layers in centrifuged blood samples are provided, and are embodied by barrier means which are of greater specific gravity than said blood plasma layer but lesser specific gravity than said blood cells layer and are operable, upon insertion into a centrifuged blood sample container, to sink through said blood plasma layer substantially to said interface and to be wetted and expanded by said blood plasma to expand into firm contact with each other and with the walls of said container to automatically form said barrier at said interface.



3,647,071

APPARATUS FOR CLARIFYING LIQUIDS CONTAMINATED BY MATERIALS IN SUSPENSION, MORE PARTICULARLY WASTE WATER FROM PAPER MACHINES

Pierre Lamort, 47 rue du Bac 51, Vitry-le-Francois, France
Filed Aug. 6, 1969, Ser. No. 847,882
Claims priority, application France, Aug. 7, 1968, 162168
Int. Cl. B01d *33/02*
U.S. Cl. 210—107 **9 Claims**



A filtering apparatus for batchwise operation in which a tank contains filter means in the path of liquid to be filtered the downstream side of the filter means communicating with a filtrate collector and jets for directing a liquid on to the filter means after a batch has been processed, to dislodge the extract from the filter means.

ERRATA

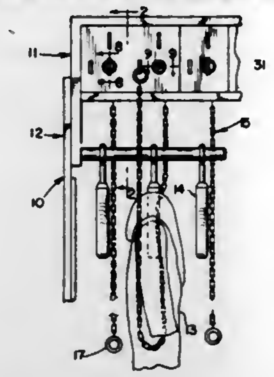
For Classes 210—150 and 210—500 see:
Patent Nos. 3,647,081 thru 3,647,086

3,647,072

GARMENT HANGER LOCK MECHANISM

Herman D. Strang, 308 Ridge, Algonquin, Ill.
Filed May 7, 1970, Ser. No. 35,397
Int. Cl. E05b *73/00*
U.S. Cl. 211—4 **3 Claims**

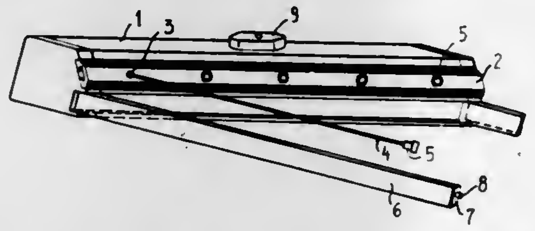
A locking device capable of being readily converted from a coin controlled to noncoin controlled condition. The extension and retraction of a locking hook or bolt is controlled by a key-operated drum cam which has means for receiving and positioning a coin thereon. A preferred embodiment includes a manually releasable drum-lock which can also be cammed by a coin in operating position on the drum out of drum-locking position when a key is turned.



3,647,073

EXTENSIBLE CLOTHES HANGING DEVICE

Walter Steiner, Oberseenerstrasse 14, Winterthur, Switzerland
Filed Sept. 2, 1969, Ser. No. 854,689
Claims priority, application Switzerland, Sept. 5, 1968, 13,394/68
Int. Cl. B65h *75/48;* **D06f** *53/00*
U.S. Cl. 211—1.3 **8 Claims**

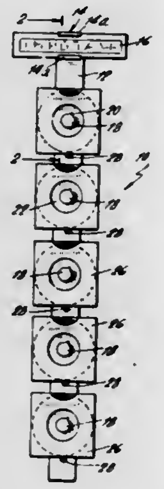


There is disclosed an extensible clothes-hanging device which comprises a housing containing therein a number of wound-up clothes lines, spring action being used for winding-up such clothes lines. The respective outer free ends of the clothes lines are retained in a ledge or bracket member, and with the aid of such, all of the clothes lines can be conjointly or simultaneously drawn out or extended from the housing. At least one of the clothes lines can be withdrawn without using the ledge or bracket member, and such last-mentioned clothes line is subjected to the action of an independent return spring.

3,647,074

RECORD RACK

Arthur Talmadge, 15 Richbell Road, Scarodale, N.Y.
Filed Mar. 3, 1971, Ser. No. 120,445
Int. Cl. A47b *81/06*
U.S. Cl. 211—40 **3 Claims**



A record rack display assembly for displaying 45 r.p.m. records within their individual paper protective jackets. A backing member is provided with a plurality of projecting spindles for mounting 45 r.p.m. records in a vertical plane. Each spindle has an associated pin member disposed below said spindle a distance equal to slightly more than the radial length of said records so that the paper protective jackets which are slightly larger than the diameter of the records rest on said associated pin member.

3,647,075

SHELF CONSTRUCTION FOR A REFRIGERATOR DOOR

John R. Aue, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 30, 1970, Ser. No. 33,433
Int. Cl. A47f *5/00*
U.S. Cl. 211—153 **7 Claims**

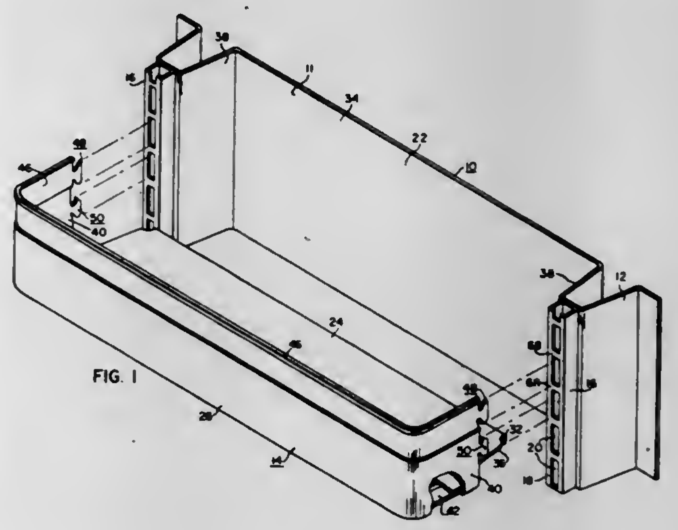


FIG. I

A refrigerator door shelf is formed from a single piece of metallic sheet metal bent into an L-shape along its width to form the front wall and bottom of the shelf and bent into a general U-shape along the front wall to form the end walls of the shelf. A bent over tab is provided at the bottom termination of each of the end walls or legs forming the U-shape so that the bottom and end walls of the shelf may be riveted together to form a substantially rigid structure. The shelf is secured to a pair of stringer members extending in a vertical direction on and attached to the refrigerator door. The stringers include a series of vertically aligned rectangular apertures so that the shelf may be placed at varying heights on the refrigerator door. The shelf includes a pair of hooked portions at the inward termination of each of the end walls, with each of these hooked portions including upper and lower projections so that the shelf may be engaged in pairs of the vertical aligned apertures so as to not be easily accidentally knocked from its connection with the stringer members.

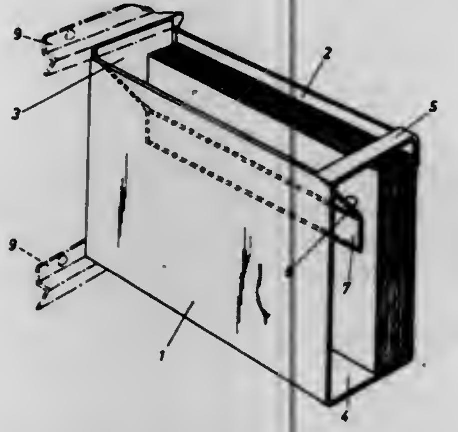
3,647,076

LATERAL FILE

Egon Heimann, Walkenberg 61, 5600 Wuppertal-Elberfeld, Germany
Filed Nov. 12, 1969, Ser. No. 870,533
Claims priority, application Germany, Feb. 12, 1969, P 19 06 854.3
Int. Cl. A47f *5/08*
U.S. Cl. 211—88 **6 Claims**

A lateral filing system comprising a file box fashioned from a folding blank with holding means projecting beyond the back part of said box and fixed rails to hold the file boxes. The holding means are formed by a tongue cut free from said blank that is folded in a double-layer manner. Said tongue fits behind an upper web of a Z-shaped rail while the lower part of the box rests on a lower web of a parallelly arranged similar rail.

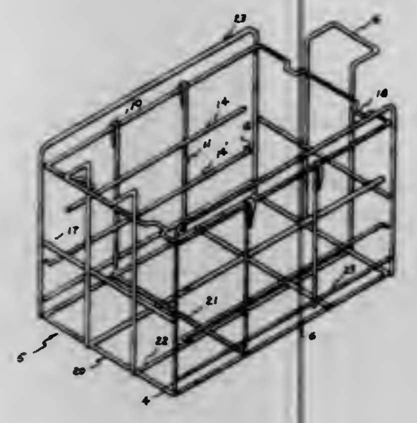
A supporting flap extending from a sidewall of the filing box is designed to press the inserted documents against one sidewall. The invention assures simple fabrication from a single material blank without any additional parts and provides for high stability and an easy box assembly shortly before use.



3,647,077
BASKET AND TRAY

Helen A. Gillespie, P.O. Box 59, Earl Grey, Saskatchewan, Canada

Filed June 2, 1969, Ser. No. 829,429
Claims priority, application Canada, Sept. 26, 1969, 063,183
Int. Cl. A47f *3/14*; A47j *47/00*; A47f *5/13*
U.S. Cl. 211—126 **10 Claims**



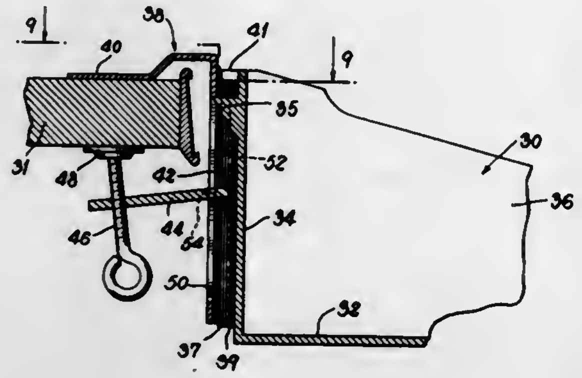
This invention is directed to an openwork basket or container most commonly made of wire and which has pivotable portions that enable one to make from a basket, a basket and tray, or a unit of trays. The pivotable portions are generally the sidewalls or sidewall portions as the case may be and are pivoted inwardly to a substantially horizontal position and retained in the normal confines of the basket, functioning in this position as the bottom of a newly formed tray or smaller basket for supporting articles. A removable-type sidewall portion may be added by placing it in a vertical position covering the opening created by the pivoted sidewall portion and thereby forming an enclosed compartment for retention of articles during rough handling.

3,647,078
SHELF EXTENDER

Vincent Fortunato, Valley Stream, N.Y., assignor to Henschel-Steinau Co., Palisades Park, N.J.

Filed July 27, 1970, Ser. No. 58,469
Int. Cl. A47f *3/14, 5/08*; E06b *7/28*
U.S. Cl. 211—134 **15 Claims**

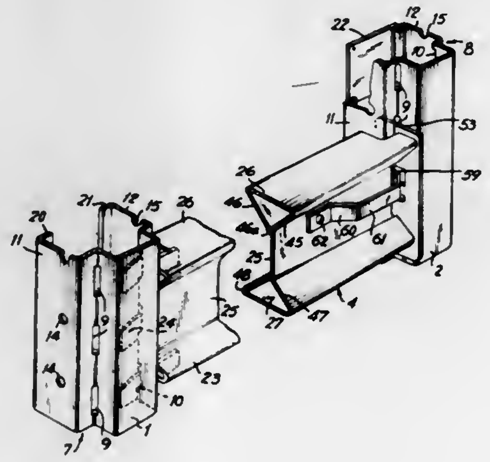
A shelf extender for presenting product to the purchaser forward of a shelf having a container for holding and displaying the product, the container having a rear wall with at least one lip projecting from its rear surface shaped to form a groove between the rear surface and the lip, a clamp having a rear plate having an ear to engage the groove, means to hold the rear plate in fixed relation to the container, the clamp having a rearwardly depending flange to engage the top surface of the shelf, a clamping pad, threaded adjusting means affixed to the clamping pad, a vertical slot in the rear plate, a slotted, movable plate shaped to move in the vertical slot and having a threaded opening therein to receive the adjusting means, the clamping pad engaging the lower surface of the shelf, the slotted movable plate serving to make the gross adjustment and the threaded member serving to make the fine adjustment to permit the clamp to rigidly engage the shelf and thereby hold the shelf extender firmly in place.



3,647,079
STORAGE RACK

Bror Eric Gustav Ohlin, Saffle, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed May 7, 1970, Ser. No. 35,313
Claims priority, application Sweden, May 9, 1969, 6594/69
Int. Cl. A47f *5/10*
U.S. Cl. 211—176 **1 Claim**

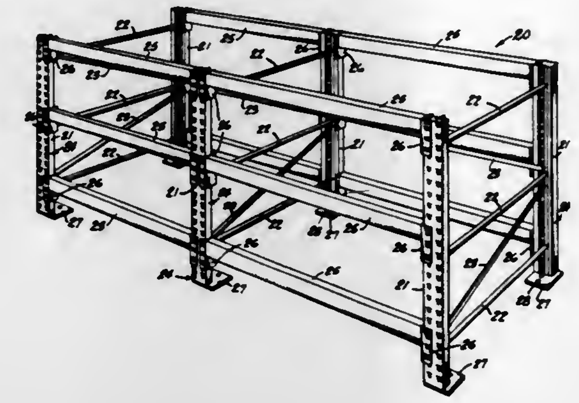


A storage rack having hollow uprights and goods supporting beams therebetween detachably connected to the uprights in a variety of different positions. The beams have mounting hooks at their opposite ends which are constructed differently from one another. The uprights have bent-in wall sections defining opposing recessed corners in each of which a vertical row of spaced openings is provided. The two sets of vertical rows of openings in the uprights are different from one another, one set of openings only being able to receive hooks of one kind at one end of the beams and the other set of openings only being able to receive hooks of another kind at the opposite end of the beams.

3,647,080
STRUCTURAL ELEMENT AND STRUCTURE

Denny A. Denny, Dallas, Tex., assignor to Inca Metal Products Corporation, Carrollton, Tex.

Filed June 12, 1970, Ser. No. 45,631
Int. Cl. A47f *5/10*
U.S. Cl. 211—176 **27 Claims**

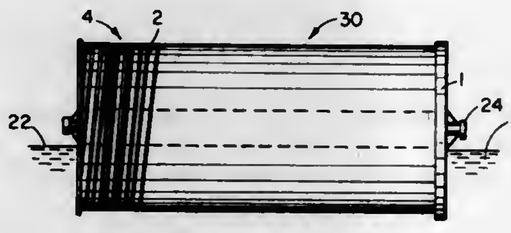


A supporting column member for use in sectional shelving, racks, scaffolding and the like, of the knockdown or point of use type. A truss supporting assembly constructed by use of such columnar elements, and a rack or shelving structure formed by means of the elements and the truss assemblies and having adjustable horizontal supporting beams for supporting shelving, walkways or the like.

3,647,081
DEVICE FOR PURIFYING POLLUTED WATER

Fritz Engelbart, Anderten, Germany, assignor to Orenstein-Koppel and Lubecker Maschinenbau A.G., Lubeck, Germany

Filed Aug. 19, 1969, Ser. No. 851,376
Int. Cl. B01d *21/00*
U.S. Cl. 210—150 **9 Claims**



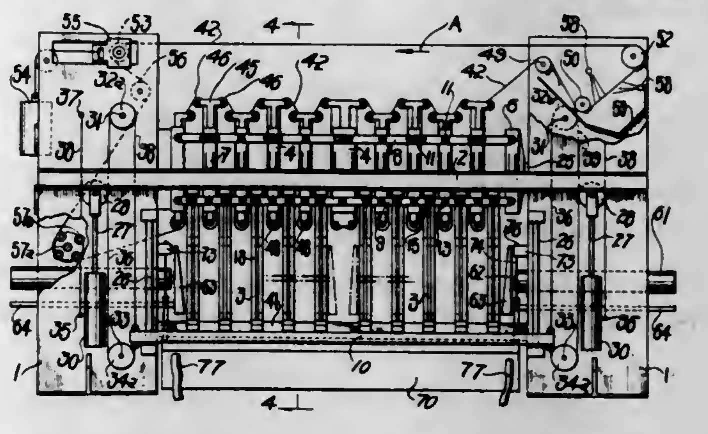
A device for purifying polluted water comprises an immersion body having a surface which provides a receiver of biological turf and which is continuously alternately immersed in the water to be purified and brought in contact with air. The body comprises a reel or drum on the surface of which is wound a hose of a stable cross section and preferably extending in helical multiple superposed layers. The drum is advantageously arranged horizontally within the water to be treated and is rotated about its horizontal axis to cause the layers of hose thereon to periodically dip into and out of the water to be treated.

3,647,082
FILTER PRESS

Eiichi Ishigaki, Sakaide, Japan, assignor to Ishigaki Kiko Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1969, Ser. No. 868,362
Claims priority, application Japan, Nov. 2, 1968, 43/80143
Int. Cl. B01d *25/32*
U.S. Cl. 210—225 **9 Claims**

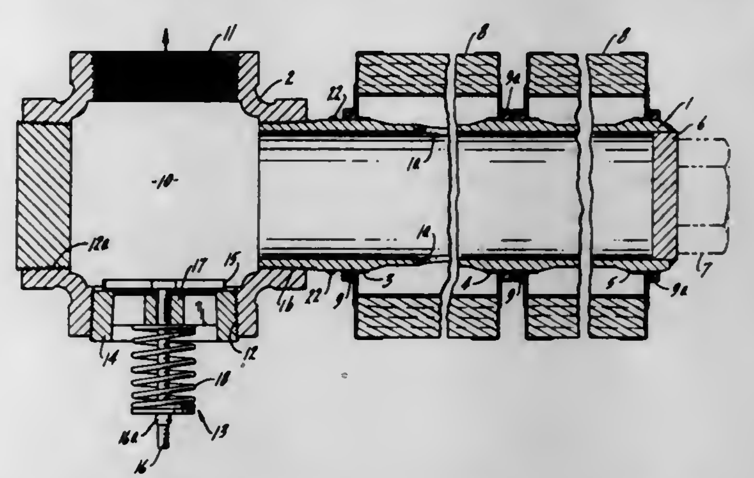
A filter press which includes a plurality of separated filter frames and filter plates maintained in juxtaposed assembly. Means are provided which permit the withdrawal of said filter frames out of the clearances space between the filter plates in such a manner that the filter frames are maintained in parallel arrangement. Removal of the cakes formed during filtration from the filter frames is effected by discharging means which are advanced and retreated through the openings of the frames. A filter medium is employed in the form of an endless belt entrained over said plates, said medium being run and washed continuously when cakes in the filter frames are removed.



3,647,083
SLIP-ON FILTER STRUCTURE

Forest G. Niccum, Skokie; Walter J. Kudlaty, Elmhurst; Charles W. Dauer, Arlington Heights, and Peter Heinrich, Jr., Chicago, all of Ill., assignors to Marvel Engineering Company, Chicago, Ill.

Filed Apr. 16, 1970, Ser. No. 29,104
Int. Cl. B01d *27/06*
U.S. Cl. 210—236 **2 Claims**

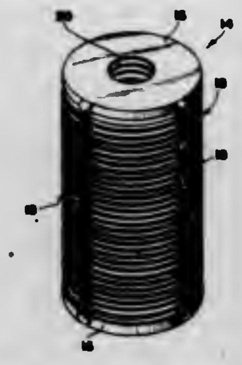


A filter assembly having a normally fixed core and manually replaceable filter elements.

3,647,084
FILTER

Henry Woods Martin, Houston, Tex., assignor to William W. Nugent & Co., Inc., Skokie, Ill.

Filed Oct. 17, 1969, Ser. No. 867,242
Int. Cl. B01d *25/18*
U.S. Cl. 210—492 **5 Claims**



A filter having a plurality of axially aligned and axially spaced flat annular discs of filtering material separated by inner and outer support members alternating axially with the respective discs and providing axial support for the discs while defining radial inlet and outlet openings communicating with the spaces between the discs for the flow of fluid axially through the discs.

3,647,085
PROCESS FOR PRODUCING ARTICLES WITH APERTURES OR RECESSES OF SMALL CROSS SECTION AND PRODUCT PRODUCED THEREBY

Daeyong Lee, Scotia, N.Y., assignor to General Electric Company

Original application Dec. 30, 1968, Ser. No. 787,838, now Patent No. 3,615,900. Divided and this application May 11, 1971, Ser. No. 142,262

Int. Cl. B01d *39/00*

U.S. Cl. 210—500 **5 Claims**

A process for preparing a body with apertures of small cross section useful as a filter. An alloy comprised of at least two phases in the solid state is treated to produce at least one phase in a fine form distributed in a matrix comprised of the second or other phases. The resulting treated structure is etched to remove the finely distributed phase to produce apertures or, if desired, recesses.

3,647,086
CATION EXCHANGE MEMBRANE AND METHOD OF MAKING SAME

Yukio Mizutani; Reiichi Yamane; Toshikatsu Sata, all of Tokuyama-shi, and Ryuji Izuo, Kudamatsu-shi, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Tokuyama-shi, Japan

Filed July 9, 1969, Ser. No. 840,513

Int. Cl. B01d *39/16*

U.S. Cl. 210—500 **11 Claims**

A cation exchange membrane comprising a membranous insoluble, infusible organic high-molecular-weight polymer having cation exchange groups chemically bonded thereto and having the dimension of at least 1 centimeter in two directions, the substantial surface of said membrane being chemically bonded with acid amide bonds in a proportion such that the percentage indicated by the following equation is satisfied:

$$A/(A+B)\times 100=15-10^{-5}\%$$

wherein A is the number of acid amide bonds per gram of dry membrane and B is the number of cation exchange groups per gram of dry membrane, said acid amide bonds being composed of a cation exchange group and an amine having one amino group containing at least one hydrogen atom bonded to a nitrogen atom and a method of making the same.

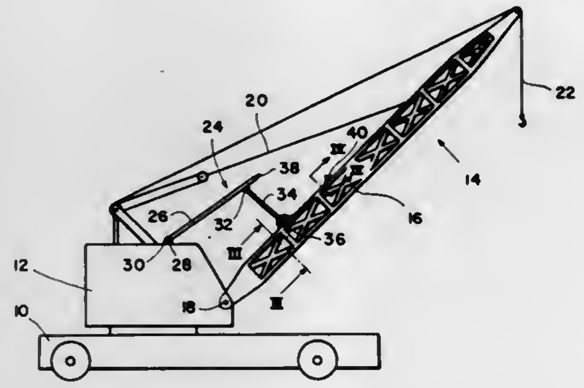
3,647,087
HINGED CRANE BOOM STOPS HAVING CONTROLLED BRAKING MEANS

Ralph Mooney, Mooney Bros. Supply Co., 133 Mahoning Avenue, New Castle, Pa.

Filed Sept. 14, 1970, Ser. No. 71,874

Int. Cl. B66c *23/06*

U.S. Cl. 212—59 **8 Claims**



Disclosed is a boom stop arrangement for a crane having a superstructure and a boom pivotally connected thereto for movement in a vertical plane. The boom stop consists of a first strut pivotally connected to the crane superstructure, a second strut pivotally connected to the boom, with the ends of the first and second struts pivotally interconnected, and braking means to control the rotation of one of the struts about its pivotal point. The second strut may include a spring section to provide resiliency and to absorb shock forces. Preferably, the control of the braking means is automatic and operates simultaneously with the boom elevating controls so that the brakes are applied at all times except when the boom is being raised or lowered under operator control.

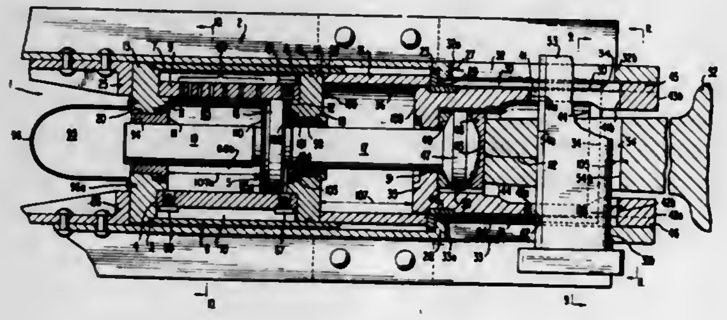
3,647,088
HYDRAULIC CUSHIONING APPARATUS FOR RAILWAY CARS

Orum E. Seay, and Robert Q. Shelton, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Original application May 27, 1968, Ser. No. 732,236, now Patent No. 3,568,855. Divided and this application Nov. 16, 1970, Ser. No. 89,544

Int. Cl. B61g *9/08, 9/16*

U.S. Cl. 213—8 **2 Claims**



A cushioning apparatus for railway cars, which apparatus includes an hydraulic cylinder fixedly positioned in a sill, a double rod piston mounted in the cylinder and connected by socketed coupling with a drawbar, and a relief valve and return flow check valve arrangement located at least at one cylinder end. A scavenging means is operably disposed adjacent the piston rod and includes an annular fitment means.

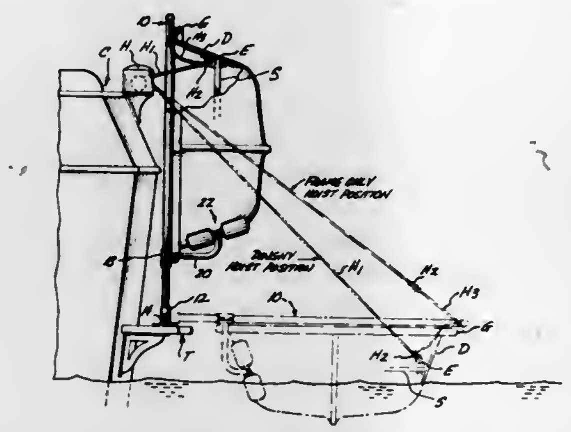
3,647,089
DOCKING AND HOISTING DEVICE FOR CRUISER DINGHIES

Orland M. Christensen, Edmonds, Wash., assignor to Christensen, Sanborn & Matthews, Seattle, Wash.

Filed Mar. 30, 1970, Ser. No. 26,181

Int. Cl. B63b *23/06*

U.S. Cl. 214—1 A **9 Claims**



A device for docking and hoisting a cruiser dinghy featuring a pivoted hoistable support frame adapted to rest upon the dinghy afloat, which frame carries depending fender elements which stand the dinghy off transom step or other frame support structure on the cruiser and serve also as arms to support the dinghy on its side in the upraised position of the frame carrying the dinghy. Tension in a hoist line exerted laterally and upwardly at a relatively outboard location on the dinghy from a point on the cruiser snugs the inboard side of the dinghy against the fenders as a first reaction to exerting tension in the hoist line, which condition may be maintained to hold the dingy securely docked and afloat but unhoisted, whereas further drawing in of the hoisting line thereupon raises the dinghy on the support frame in stowed position on the cruiser.

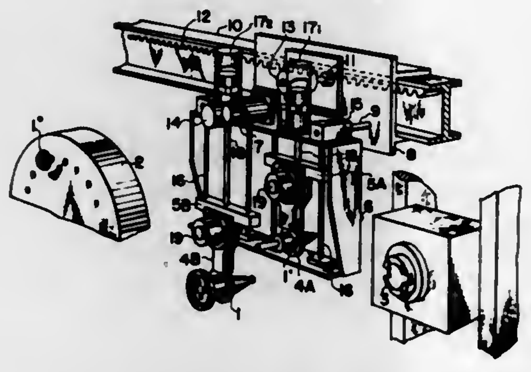
3,647,090
AUTOMATIC TOOL EXCHANGER

Yasuhiro Suzuki, Asa-gun, Hiroshima-ken; Renpei Ikegami, Hiroshima-shi, and Takuo Kishimoto, Asa-gun, Hiroshima-ken, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1969, Ser. No. 809,656

Int. Cl. B23q *3/157*

U.S. Cl. 214—1 BB **3 Claims**



An apparatus for automatically transferring tools between a magazine and a machine tool is arranged to afford movement of a transfer member in three different directions. The tool transfer member is secured to a support frame and is movable in an upward and downward direction. The support frame is movably attached to a carriage which, in turn, is movable along a beam extending between the magazine and the machine tool. The support frame is movable perpendicularly to the vertical plane through which the carriage travels along the beam.

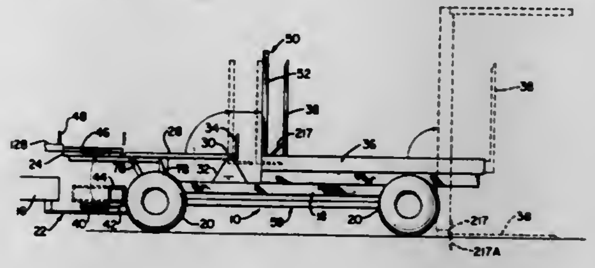
3,647,091
BALE-STACKING APPARATUS

James C. Walters, 2326 Lowell Blvd., Denver, Colo.

Original application Mar. 13, 1968, Ser. No. 712,664, now Patent No. 3,521,762. Divided and this application Jan. 29, 1970, Ser. No. 12,527

Int. Cl. B65g *57/32, 57/28*

U.S. Cl. 214—6 B **8 Claims**



Apparatus to produce butt or stack of bales with bale axes in each layer oriented to achieve best total inertia. Table on trailer receives successive bales from baler, raises each bale to level of positioning bed, and is rotatable about vertical axes to align each bale fore and aft or laterally as desired. First fences moves bale laterally to desired position. Second fence moves rearwardly to push bale onto transfer bed. Loaded transfer bed swings up to deposit the layer on the load bed. Clamp bars are used to compact the bales within each layer. When full stack is completed, load bed tilts to deposit stack upright on ground.

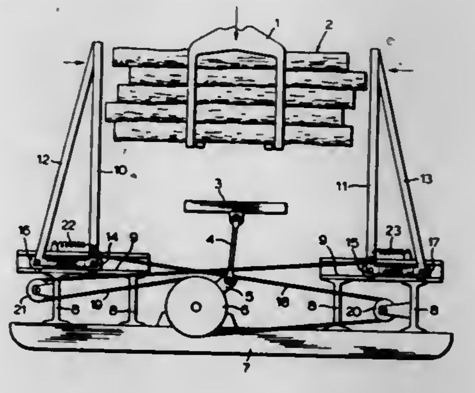
3,647,092
LOG BUNDLE ALIGNER

John Ivan Bulat, and Rudolph Juan, both of Manitouwadge, Ontario, Canada, assignors to The Ontario Paper Company Limited

Filed Mar. 27, 1970, Ser. No. 23,381

Int. Cl. B65g *1/14*

U.S. Cl. 214—6 S **1 Claim**



Apparatus for aligning a bundle of logs having two vertical butting plates adapted to be moved toward each other when a bundle of logs held in the customary grappling means is placed upon a pusher plate between the butting plates, the pusher plate being actuated by the downward thrust of the bundle of logs and the grappling means, and by suitable connecting means to cause the butting plates to move toward each other, thus aligning the ends of the logs in substantially the same plane.

3,647,093
APPARATUS FOR HANDLING ALIGNED ROWS OF OBJECTS

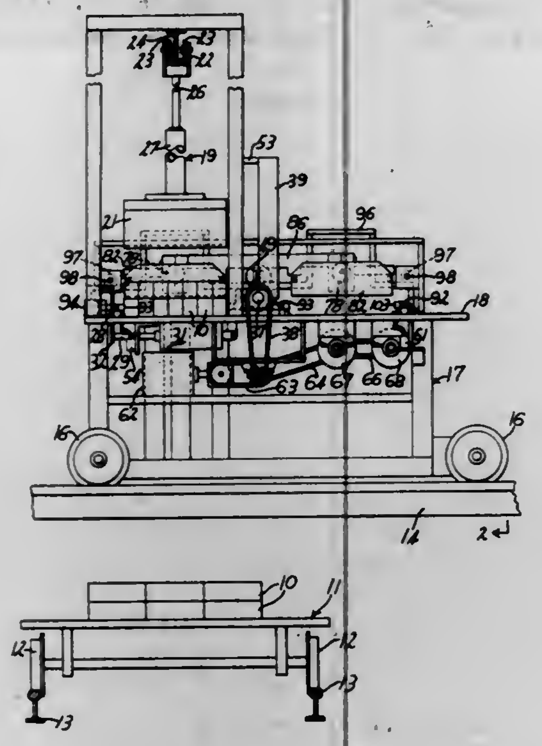
Marion E. Brooks, Columbus, Ga., assignor to Bickerstaff Clay Products Company, Inc.

Filed June 22, 1970, Ser. No. 47,991

Int. Cl. B65g *59/02*

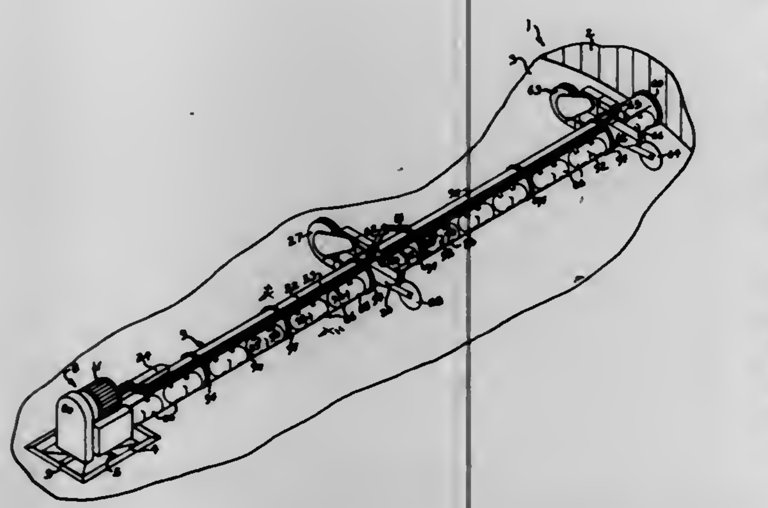
U.S. Cl. 214—8.5 C **7 Claims**

Apparatus positioning aligned rows of objects in horizontal tier with adjacent surfaces in contact and parallel with each other. Movable conveyor receives tier and moves in increments equal dimension of objects taken in direction of movement. Forwardmost row clamped and moved forward sequentially prior to forward movement of next row.



3,647,094
UNLOADER FOR STORAGE BINS

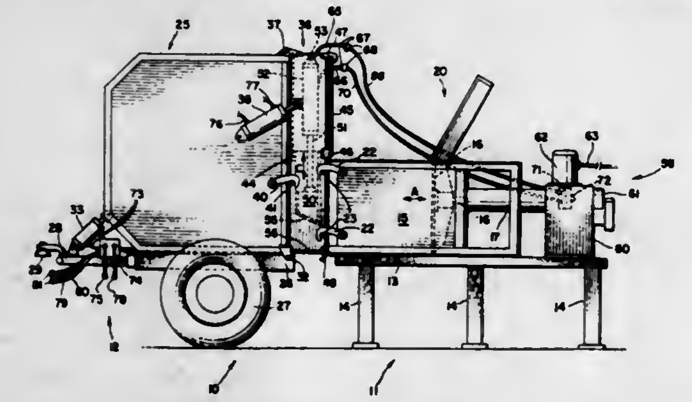
William J. Jackson, P.O. Box 266, Mendota, Ill.
Filed Oct. 1, 1970, Ser. No. 77,263
Int. Cl. B65g *65/46*
U.S. Cl. 214—17 DA **7 Claims**



The unloader uses a combination of a plurality of auger and casing units arranged end-to-end and seperably coupled together in a circular bin which has a floor provided with a center outlet sump leading to any means to carry loose granular material from the sump. A power unit connected to the first auger, is mounted in the sump so that it can be rotated on a vertical axis that is on the central axis of the bin. The power unit also includes a hydraulic pump. The casings have openings in one side with manually removable doors for them so that grain may be received by or blocked out of the augers. The first casing carries a tank for hydraulic fluid near the pump. Near the end of the casing remote from the sump, a drive and support unit carries the casing and is hydraulically driven. The second auger and casing unit is seperably coupled to the first auger and casing unit and extends axially beyond it. It also has near its outer end a drive support unit essentially like the one on the first auger. The hydraulic drive coupling to the pump is such that when the first auger and casing unit is separated from the second auger and casing unit, this will limit the supply of fluid to the hydraulic motor of the first drive and support unit so it can be used to cause the first casing unit to travel around the sump and remove the material from the center of the bin while the second unit remains buried in the pile of material in the outer portion of the bin. Unloading a bin by this method keeps the outward pressure on the entire circumference of the bin wall until center annular areas of the bin floor have been cleared and the outward pressure is lowered to a safe level.

3,647,095
REFUSE-COLLECTING APPARATUS AND SYSTEM

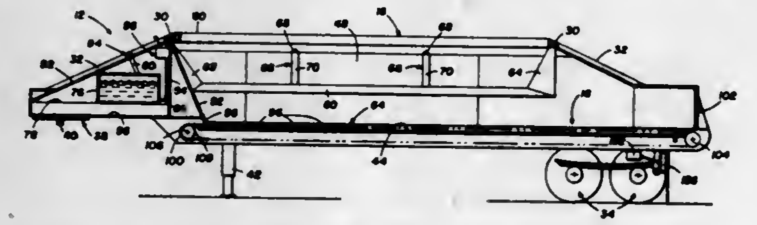
Harold Eugene Smith, Defiance, Ohio, assignor to Smithpac Canada Ltd., Toronto, Ontario, Canada
Continuation-in-part of application Ser. No. 703,214, Jan. 18, 1968. This application Jan. 19, 1970, Ser. No. 4,011
Int. Cl. B65g *67/20*
U.S. Cl. 214—41 **10 Claims**



A refuse-collecting apparatus includes a movable unit comprising a wheeled trailer chassis with a refuse-receiving receptacle pivotally mounted thereon for movement between a generally horizontal position and a tilted dumping position. A loading aperture extends through a pivotally mounted tailgate assembly for alignment with a loading chamber of a stationary unit to which the movable unit can be detachably coupled and which is provided at a permanent location such as an apartment building. A loading plunger pushes refuse from within the loading chamber through the loading aperture for compaction by a vertically reciprocable compacting plunger provided in the refuse-receiving receptacle. Flexible hydraulic hoses with quick-disconnect couplings permit operation of the compacting plunger from a hydraulic system provided on the stationary unit for operating the loading plunger as well as permitting operation of a hydraulic-dumping cylinder for moving the refuse-receiving receptacle from a hydraulic system provided on a towing vehicle used for moving the movable unit from its loading location to a refuse dump.

3,647,096
MATERIAL DELIVERY SYSTEM

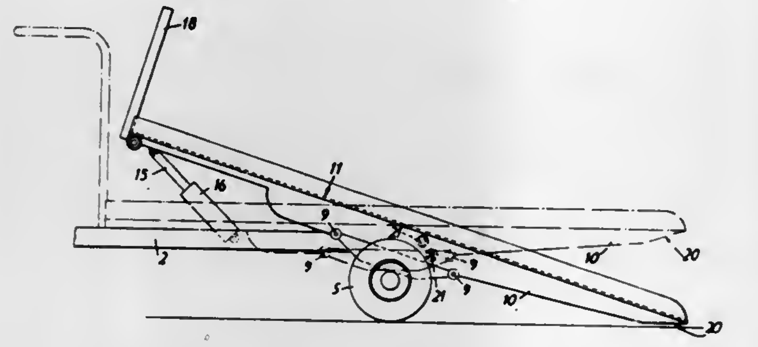
John H. Holland, Norman, Okla., assignor to Arkansas Rock and Gravel Co., Murfreesboro, Ark.
Filed Aug. 22, 1969, Ser. No. 852,345
Int. Cl. B60p *1/38*
U.S. Cl. 214—83.36 **7 Claims**



A delivery system for hot asphalt includes a plurality of semitrailers. Each trailer includes a V-shaped hopper having an asphalt supporting beam extending longitudinally through it. A tube extends around the hopper for use in spraying lubricating oil into the hopper prior to the loading of asphalt. Each trailer further includes a conveyor for unloading asphalt from the hopper into a paving machine. The conveyor is driven by a hydraulic motor that is controlled by a valve. The valve is mounted in the trailer for activation by a prod mounted on the paving machine so that the operation of the conveyor is controlled from the paving machine.

3,647,097
TRUCK BED

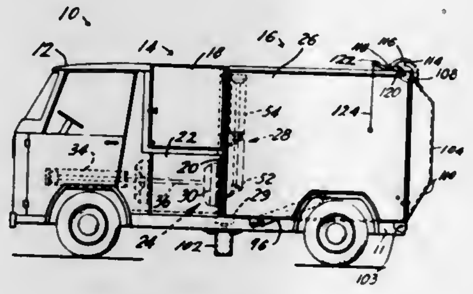
Preston H. Skaggs, P. O. Box 491, Riverton, Wyo.
Filed Aug. 21, 1969, Ser. No. 851,841
Int. Cl. B60p *1/28*
U.S. Cl. 214—506 **2 Claims**



A truck has a load-carrying bed which is mounted on the chassis by a transverse pivot, the load-bearing bed being supported by a road wheel assembly secured to it.

3,647,098
DUMP BODY PIVOT SYSTEM AND LOCK

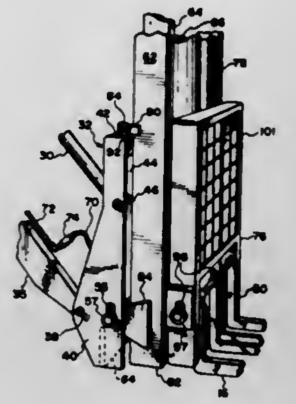
Harold Eugene Smith, Defiance, Ohio, assignor to Smithpac Canada Ltd., Toronto, Ontario, Canada
Continuation-in-part of application Ser. No. 703,214, June 18, 1968. This application Jan. 19, 1970, Ser. No. 3,788
Int. Cl. B60p *1/04*
U.S. Cl. 214—508 **6 Claims**



A refuse-collecting apparatus or vehicle includes a refuse-receiving receptacle pivotally mounted on a supporting frame or chassis for tilting movement between a generally horizontal loading position and a tilted dumping position. A loading chamber is provided on the chassis for alignment with a loading aperture in the refuse-receiving receptacle when the latter is disposed in its generally horizontal position. A longitudinally reciprocable loading plunger serves to transfer refuse from the loading chamber into the refuse-receiving receptacle which is pivotally mounted on the chassis by means of pivot pins disposed in elongated slots so that the refuse-receiving receptacle moves a short distance rearwardly out of its loading position to release its sealing engagement with the loading chamber prior to pivotal elevation of the refuse-receiving receptacle into its dumping position.

3,647,099
INTERPOSABLE MAST

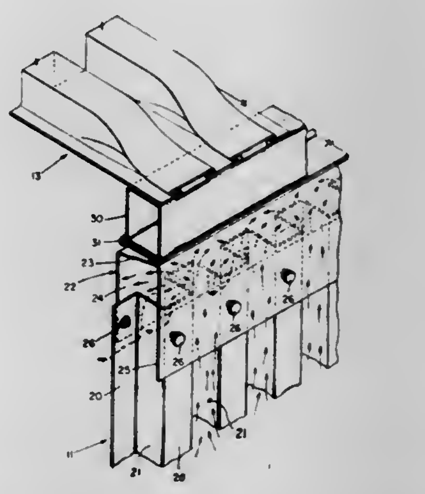
Russell F. Carriere, Baraga, Mich., assignor to Pettibone Corporation, Chicago, Ill.
Filed Dec. 11, 1969, Ser. No. 884,255
Int. Cl. B65g *47/00*
U.S. Cl. 214—674 **7 Claims**



Boom-type lift vehicles, including such vehicles already existing, are convertible to boom-mast-type vehicles, by means of a mast having a simple connector system which enables it to replace removable forks leaving pivotal linkages at boom's-end undisturbed. The mast has nonpivoting attachment to a frame which remains pivotally mounted at boom's-end. The replaced forks can be used on the elevator carriage of the mast.

3,647,100
CARGO CONTAINER CONSTRUCTION

Harry M. Russell-French, Philadelphia, Pa., assignor to Boothe Airside Services, Inc.
Filed Dec. 30, 1969, Ser. No. 889,056
Int. Cl. B65d *87/00*
U.S. Cl. 220—1.5 **2 Claims**

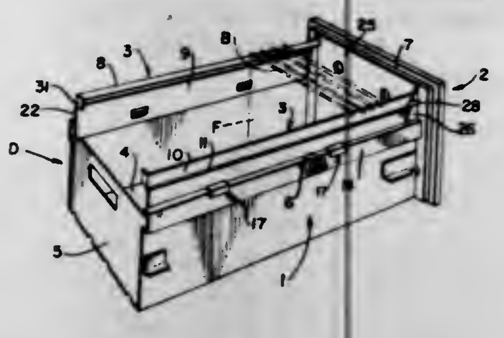


This application discloses a cargo container, especially suited for use in aircraft, which has means providing for ventilation through the walls by the basic structure of the container, specifically by a combination of corrugated wall panels and end rails therefor.

3,647,101
FILING DEVICE

Earl John Hensch, and Leroy Francis Ogilvie, both of Youngstown, Ohio, assignors to The General Fireproofing Company, Youngstown, Ohio
Filed July 29, 1970, Ser. No. 59,078
Int. Cl. B42f *15/00, 17/08*
U.S. Cl. 220—4 R **10 Claims**

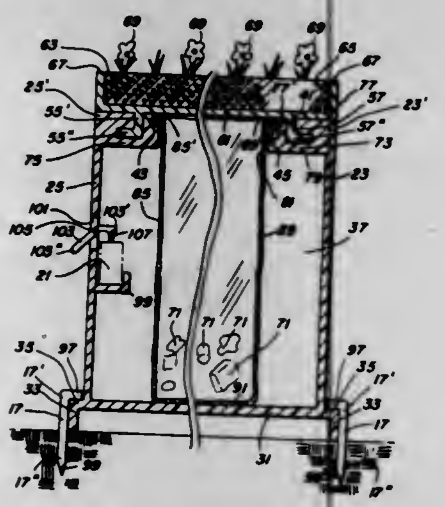
A support member for hanging files is removably attached to the top portion of a drawer and includes a unitary device provided with transverse elements insertable within a channel at the top of the drawer sidewalls and one or more saddles adapted to rest upon the top of the sidewall channel. Means



are provided at the forward end of the member engageable with the rear of the drawer head to insure lateral stability while snap fitting means are included adjacent the rear of the member to preclude accidental vertical displacement thereof.

3,647,102
DECORATOR GARBAGE AND TRASH CONTAINER

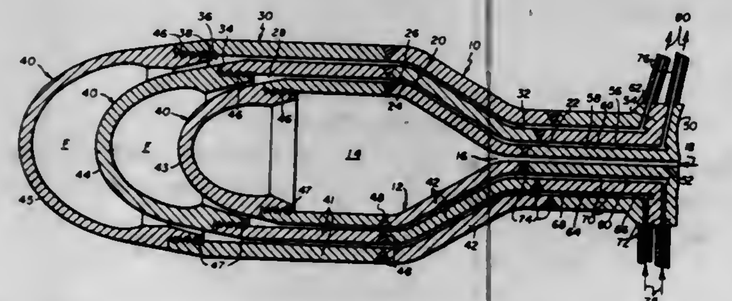
Michael P. Cooley, Memphis, Tenn.
Filed Jan. 13, 1970, Ser. No. 2,490
Int. Cl. B65d *25/14, 25/38*
U.S. Cl. 220—17 **5 Claims**



A decorative receptacle for containing refuse and the like having a boxlike structure, a disposable plastic insert, an ornamental cover and a self-contained bugspray bomb. The receptacle includes an imitation brick exterior surface and a cover having a decorative grouping of artificial plants. The container resembles an attractive brick structure serving the purpose of a planter rather than its intended use.

3,647,103
MULTILAYER PRESSURE VESSEL

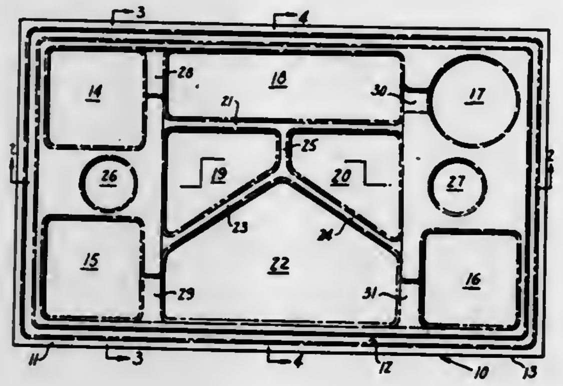
Irwin Berman, Bronx, N.Y., assignor to Foster Wheeler Corporation, Livingston, N.J.
Filed Dec. 19, 1969, Ser. No. 886,503
Int. Cl. B65d *7/22, 7/40*
U.S. Cl. 220—3 **4 Claims**



A vessel is provided with a plurality of spaced-apart layers which contain fluid fill and closure means comprising a plurality of layers which are integrally formed with the layers of the pressure vessel. The fluid fill between the layers of the pressure vessel extends into and between closure layers, such that the fluid fill can be maintained under uniform pressure in each layer.

3,647,104
DISPOSABLE TRAY

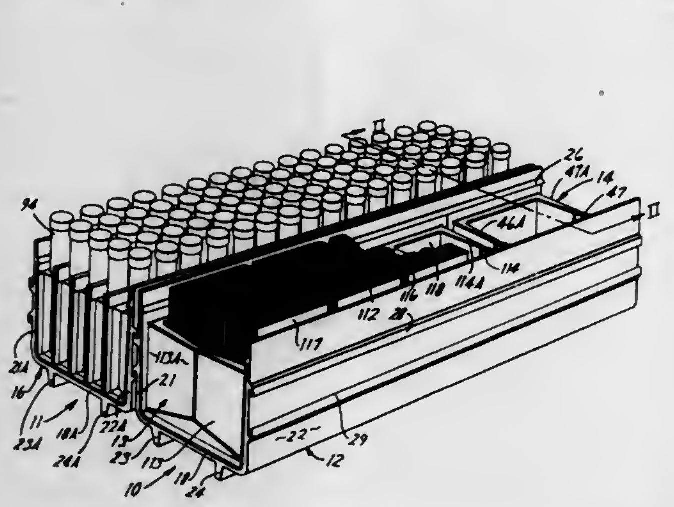
Harford E. Goings, 5428 Center Drive, Camp Springs, Md.
Filed Feb. 24, 1970, Ser. No. 13,611
Int. Cl. B65d *1/36*
U.S. Cl. 220—20 **2 Claims**



A food tray, pressed or stamped from thin plastic material, provided with dividing partitions for separating the various foods and accessories and provided with a depressed strengthening rib completely encircling the tray.

3,647,105
SET-UP TRAY

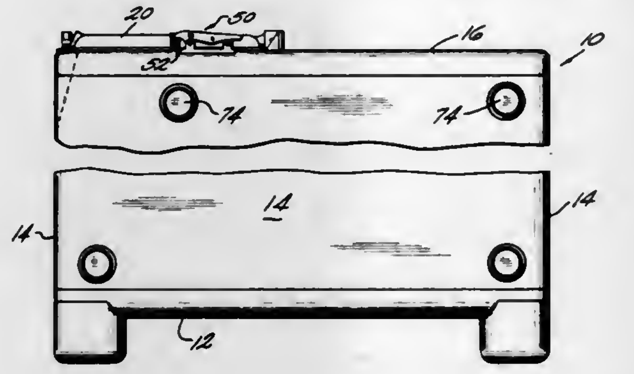
Clifford R. Keesiar, Oshtemo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Filed May 18, 1970, Ser. No. 38,065
Int. Cl. B65d *21/02, 25/04*
U.S. Cl. 220—23.4 **7 Claims**



A tray assembly having a channel-shaped base into which plural disposable trays are slidably receivable for holding a variety of articles. Each tray has a bottom wall connected to one or more pairs of cooperating, channel-shaped sidewalls with integral releasable gripping means for releasably holding said sidewalls together to form a recess or compartment which normally opens upwardly. The entire tray can be fabricated by a vacuum molding process from a single sheet of plastic material. Plural trays and plural bases can be interconnected in side-by-side relationship.

3,647,106
BIN WITH IMPROVED DOOR SEAL AND CONTENT RELEASE CHARACTERISTICS

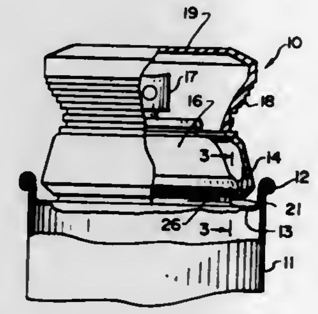
Delmar R. Wiese, Blue Springs, Nebr., assignor to Hoover Ball and Bearing Company, Saline, Mich.
Filed Jan. 13, 1970, Ser. No. 2,468
Int. Cl. B65d *53/00, 43/16*
U.S. Cl. 220—31 R **6 Claims**



A bin for storing and transporting bulk material having a door seal and latch assembly which prevents accidental escape of material in the bin around the door. Pressure and heat relief safety discs are mounted in a number of openings formed in the bin walls to allow for escape of the bin contents under unusual circumstances which would create dangerous pressure or heat conditions within the bin.

3,647,107
CAP FOR AEROSOL CANS OR THE LIKE

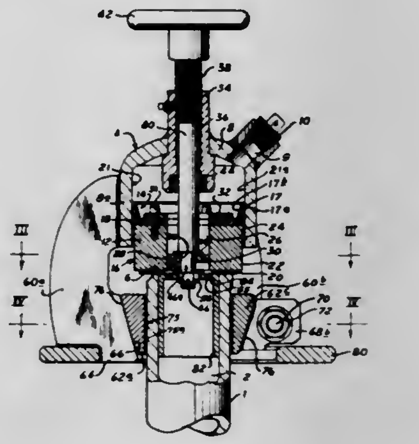
Pascal A. La Grutta, West Caldwell, N.J., assignor to Container Corporation of America, Chicago, Ill.
Filed Dec. 17, 1969, Ser. No. 885,950
Int. Cl. B65d *43/10*
U.S. Cl. 220—60 R **1 Claim**



A moulded cap for an aerosol can or the like. The cap is especially adapted for cans of the type having a chimed end closure forming part of the valving assembly and located inboard of the conventional chimed end of the container. The moulded cap has a chime engaging flange characterized by a multiplicity of inward extending projections therefrom each spaced from the next by a thin web of the cap material. The configuration of each projection is such that the cap can be snapped over the chimed end irrespective of distortions in the cap incident to the moulding thereof, and held to the chime periphery at a corresponding multiplicity of contact points, the rather minimal thickness of the wall material between the projections enabling any cap distortions readily to be accommodated.

3,647,108
CLOSURE FOR PRESSURE VESSELS

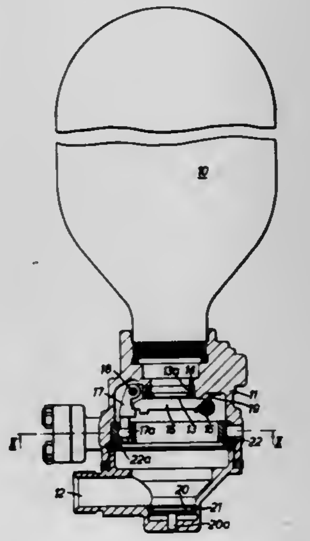
Norman H. Kemp, 726 Regal Row, Dallas, Tex.
Continuation-in-part of application Ser. No. 729,966, May 17, 1968, now Patent No. 3,498,493, which is a continuation-in-part of application Ser. No. 494,061, Oct. 8, 1965, now Patent No. 3,387,738. This application Jan. 2, 1970, Ser. No. 22
Int. Cl. B65d *53/00*
U.S. Cl. 220—46 **23 Claims**



A closure for pressure vessels including a resilient seal ring having an outer lip and an inwardly turned flange angularly disposed to the outer lip whereby pressure within the vessel is exerted through an opening in the seal ring to urge the seal ring into positive sealing relation with the vessel around an opening in the vessel. The closure member has a seal ring receptacle having a plurality of anchor members secured thereto, said anchor members having surfaces engageable with slip rings to urge the slip rings into gripping engagement with a portion of the vessel.

3,647,109
CONTAINERS FOR FLUID UNDER PRESSURE, SUCH AS FIRE EXTINGUISHERS

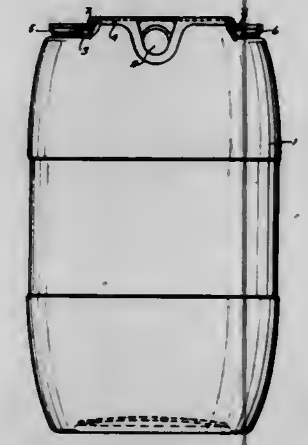
Peter B. Hebblethwaite, Ashford, Middlesex, England, assignor to Graviner (Colnbrook) Limited, London, England
Filed Feb. 5, 1970, Ser. No. 8,984
Claims priority, application Great Britain, Feb. 5, 1969, 6,112/69
Int. Cl. B65d *43/02*
U.S. Cl. 220—47 **2 Claims**



A fluid container adapted to contain fluid under pressure, has a discharge outlet normally closed by a frangible diaphragm which is supported by a member held in a position at which it prevents bursting of the diaphragm by pressure within the container. A rotary member is coupled to the diaphragm-supporting member, and means are provided for effecting selective rotation of the rotary member, to free the diaphragm supporting member to move away from the supporting position whereby the diaphragm is no longer supported against bursting.

3,647,110
MOLDED BARREL

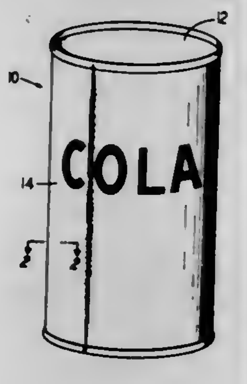
Wilhelm Hammes, Much, Germany, assignor to Mauser Kommanditgesellschaft, Colgne-Bayenthal, Germany
Filed Apr. 6, 1970, Ser. No. 27,629
Claims priority, application Germany, Apr. 23, 1969, P 19 20 515.3
Int. Cl. B65d *7/42*
U.S. Cl. 220—72 **10 Claims**



One end wall of a molded barrel of thermoplastic material has a general plane and is provided with at least two depressions at opposite diametric sides. A tubular portion is located in each depression and of one piece with the end wall, each of the tubular portions communicating with the interior of the barrel and terminating in the general plane. Reinforcing webs are provided in the respective depressions at that side of the associated projection which faces at the middle of the one end wall and these reinforcing webs are each of one piece with the one end wall and the respective projection, bridging the respective depression.

3,647,111
BIODEGRADABLE CONTAINER

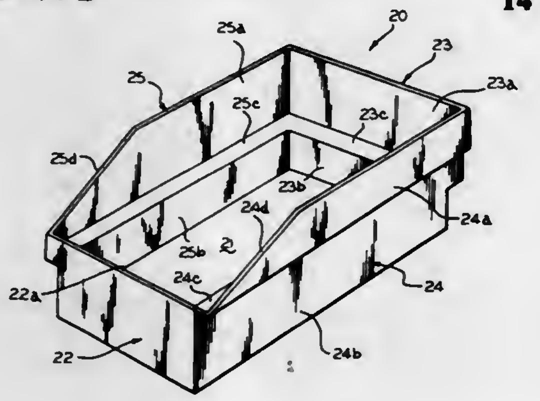
Francis W. Stager, and Robert N. Minor, both of Stafford Springs, Conn., assignors to Biocor Corporation, Stafford Springs, Conn.
Filed June 1, 1970, Ser. No. 42,010
Int. Cl. B65d *25/34, 25/14*
U.S. Cl. 220—83 **20 Claims**



A container which deteriorates after a prolonged exposure to moisture and oxygen in an atmospheric environment with the aid of biological agents. The container material has organic components that are nutrients to fungi and various bacteria which bring about the decomposition. The material is composed of an organic filler material, such as peat, and a phenolic resin impregnated with a metallic salt of a fatty acid. The decomposition process transforms the container material into a rich organic substance which enhances soil characteristics.

3,647,112
NESTABLE CONTAINER

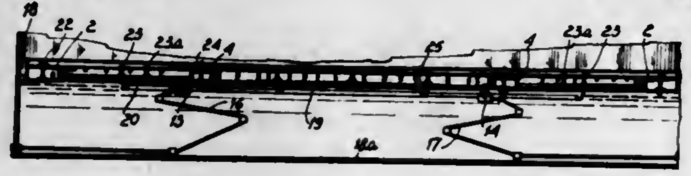
William F. Limbert, Jr., 750 Polk Street, Oconomowoc, Wis.
Filed Feb. 26, 1970, Ser. No. 14,348
Int. Cl. B65j *21/04*
U.S. Cl. 220—97 D **14 Claims**



A nestable container including a bottom wall and upstanding sidewalls wherein at least two of the upstanding sidewalls have a cross section such as to include a lower section, an upper section and an interconnecting web section between the upper edge of the lower section and the lower edge of the upper section serving as a nest stop and a wall reenforcement. The upper section of one sidewall is twice the height of the lower section thereof, while the lower section of the other sidewall is twice the height of the upper section thereof. Containers are nested two-thirds their height with each other by having them arranged oppositely end for end.

3,647,113
FLOATING ROOF FOR LIQUID STORAGE TANKS, PARTICULARLY FOR THE STORAGE OF LIQUID PETROLEUM PRODUCTS

Rodolfo Belleli, c/o Rodolfo Belleli and C. S.a.s., Strada Cipata, Zona Industriale, Mantova, Italy
Filed Sept. 2, 1969, Ser. No. 854,540
Claims priority, application Italy, Sept. 4, 1968, 20841 A/68
Int. Cl. B65d *87/18*
U.S. Cl. 220—26 D **1 Claim**

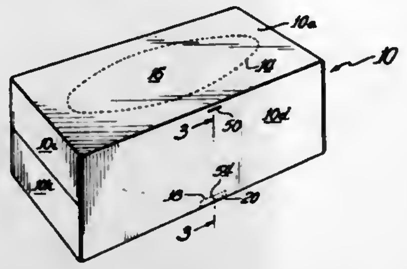


This disclosure relates to a large diameter floating roof for liquid storage tanks which comprises a covering sheetlike member and a peripheral hollow annular pontoon member fixed on the periphery of said sheetlike member and at least one intermediate annular concentric load member arranged to separate a central zone from a peripheral zone of said sheetlike member between said peripheral pontoon member and said intermediate load member.

3,647,114
TISSUE DISPENSER HAVING RESILIENTLY BIASED FOLLOWER

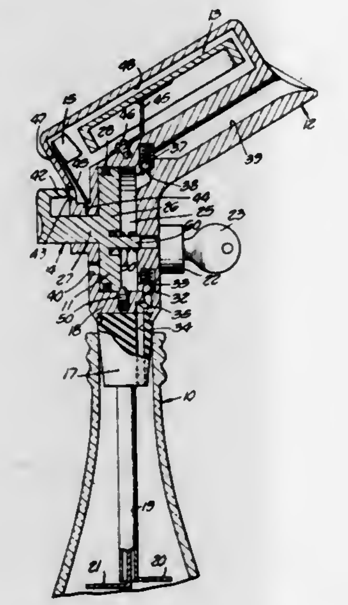
Keith T. Bleuer, 1663 Wilshire Drive N.E., Rochester, Minn.
Filed Dec. 1, 1969, Ser. No. 881,181
Int. Cl. A47k *10/44*
U.S. Cl. 221—59 **5 Claims**

A carton of cardboard or the like for a stack of tissues having a tissue-dispensing opening in its top panel and having a central portion of its bottom panel detachable from the rest of the bottom panel due to a perforation line ringing the bottom panel portion, with a rubber band attached on its ends adjacent the upper edges of the side panels of the carton and connected to the bottom panel portion at its edges by staples so that the rubber band pulls the bottom panel portion upwardly and thereby pulls the tissues upwardly in the carton when the perforation line is broken.



3,647,115
LIQUID-DISPENSING DEVICE WITH AUDIBLE ALARM

Gerald P. McCann, Glendale, and Frank F. Chase, Glendora, both of Calif., assignors to McCanns Engineering & Mfg. Co., Glendale, Calif.
Filed Mar. 12, 1970, Ser. No. 18,955
Int. Cl. B67d *5/32*
U.S. Cl. 222—39 **14 Claims**

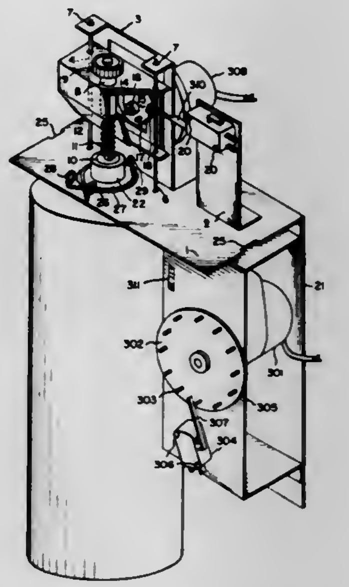


There is disclosed herein a liquid-dispensing device for use with bottles and the like for dispensing measured amounts of liquid and providing a detectable signal indicating that such dispensing has taken place. The device is insertable into and lockable in a bottle. The device includes a positive displacement pump for dispensing a predetermined amount of liquid. A vibrator arrangement is provided for providing signals, the vibrator being actuated each time liquid is dispensed. Vibrations from the vibrator may be sensed in any suitable manner to provide a record of the number of times liquid is dispensed.

3,647,116
MOUNTING BRACKET FOR PERIODICALLY DISPENSING AEROSOL BOMBS

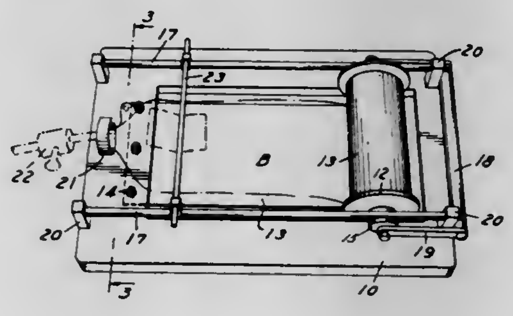
Dalbro R. Nixon, Jr., Chesapeake; David J. McIlhenny, Suffolk, and Marvin L. Harrell, Portsmouth, all of Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.
Filed Sept. 10, 1970, Ser. No. 71,055
Int. Cl. G04c *23/04*
U.S. Cl. 222—70 **4 Claims**

A mounting bracket for periodically dispensing aerosol bombs of the type having a cylindrical body portion and a neck dispensing portion with a collar and dispensing valve. The mounting bracket includes a feature for support of a clock timing mechanism and an operating slide vertically reciprocated upon two rods and including a spring tension plunger. The operating slide contacts the aerosol-dispensing valve and is activated by a cam rotated by the clock timing mechanism. The vertical reciprocation of the slide upon two rods enables a more accurate, more easily adjustable and more reliable discharge of the aerosol bomb at preselected time intervals.



3,647,117
APPARATUS FOR INTRAVENOUS FEEDING AND THE LIKE

Thomas S. Hargest, 1078 Winslow Drive, Charleston, S.C.
Filed Aug. 22, 1969, Ser. No. 852,347
Int. Cl. B65d *35/34*
U.S. Cl. 222—100 **11 Claims**

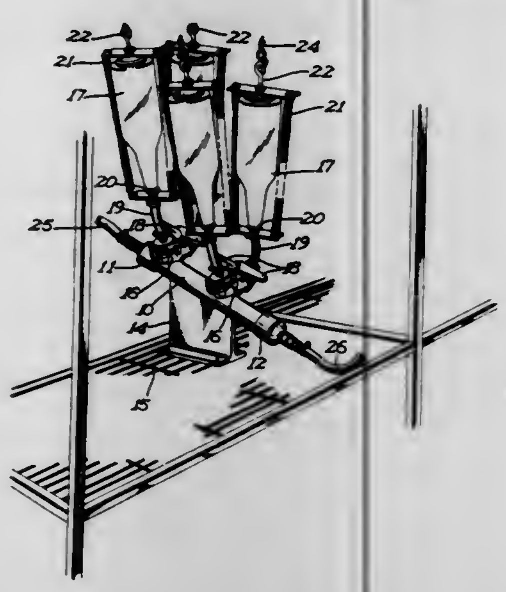


An apparatus for intravenous feeding comprising a drum that is mounted for rolling movement along a base. A constant tension spring has one end thereof fixed to the drum and one end thereof fixed to the base. A collapsible container is positioned such that the drum under the action of the spring tends to collapse the container uniformly and thereby dispense of the contents of the container out of the container.

3,647,118
LIQUOR-DISPENSING SYSTEM

James H. Johnson, Minneapolis, and William C. McGuire, St. Paul, both of Minn., assignors to Select Systems, Inc., Minneapolis, Minn.
Filed Aug. 4, 1969, Ser. No. 847,135
Int. Cl. B67d *5/60*
U.S. Cl. 222—145 **4 Claims**

A manifold having one end elevated with respect to the other, liquor bottle connections along its length, an air inlet at the elevated end of the manifold and a liquor outlet at the lower end of the manifold, is connected to a liquor-metering means. The bottles are connected to the manifold by valves to permit removing a single bottle while the others are being emptied. The bottles empty sequentially but independently.



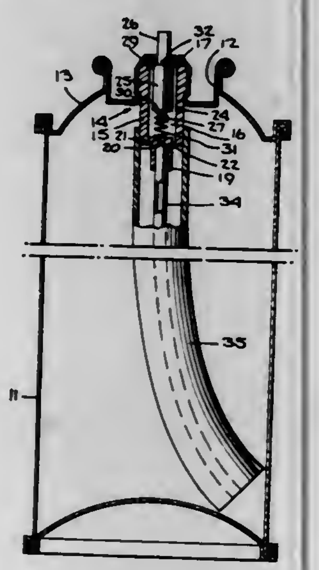
3,647,119
PRESSURIZED PACKAGE

Leon C. Samuelson, Racine, Wis., assignor to S. C. John & Son, Inc., Racine, Wis.

Filed May 26, 1970, Ser. No. 40,636

Int. Cl. B65d *83/14*

U.S. Cl. 222—402.18 **4 Claims**



Pressurized package for dispensing product from upright or inverted position and having means providing vapor tap effect in either position while preventing premature propellant exhaustion, and valve assembly therefor.

3,647,120
MIXING VALVE FOR DISPENSERS

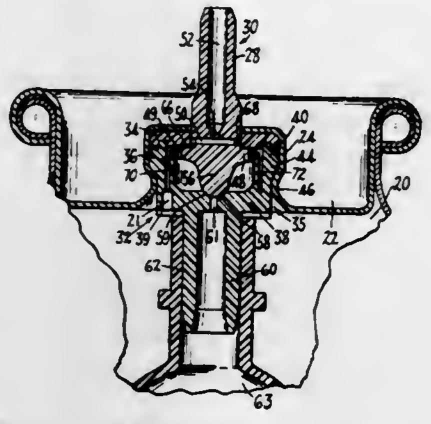
Wolf Steiman, Fairfield, Conn., assignor to VCA Corporation, Greenwich, Conn.

Filed Oct. 28, 1970, Ser. No. 84,840

Int. Cl. B65d *83/14*

U.S. Cl. 222—402.22 **7 Claims**

A tilt action mixing valve having a tiltable valve stem with an upper hollow portion and a side opening at a midway point, constituting a discharge passage. Below the side opening is a valve shoulder, engageable with an annular valve seat through which the hollow stem portion extends, for the purpose of shutting off the flow from within a tubular valve housing to the top of which the annular seat is sealed. The valve housing has two inlet openings, and is mounted at the top of a rigid outer container whose interior communicates with one of said openings. At its bottom the valve housing has the other opening, which communicates with a flexible, collapsible inner container having a different liquid from the outer container. At its inner end the said other opening has a valve seat, in the bottom housing wall, which is engaged by the bottom, solid end of the valve stem to control flow from the inner container into the housing. Tilting of the valve stem permits such flow. Surrounding the valve shoulder of the stem is a flexible seal skirt or cylinder constituting part of the housing. With the stem not tilted, this skirt seals to the shoulder and isolates the two inlet openings from each other. Tilting of the stem unseats both the stem shoulder and the stem bottom, and unseals the skirt from the shoulder. Pressurized liquid then flows from the two containers into the valve housing and out through the upper hollow portion of the stem, with mixing occurring only within the stem hollow portion. There is no mixing chamber as such, within the valve housing, and therefore no mixed residue remains, after a discharge, within the valve housing.



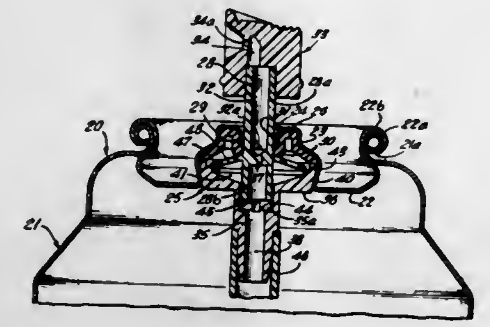
3,647,121
SNAP ACTION VALVE FOR PRESSURIZED PACKAGE

John E. Ayres, Mountainside, N.J., assignor to Acu-Tech Corporation, Union, N.J.

Continuation-in-part of application Ser. No. 805,973, Feb. 24, 1969, now abandoned. This application July 18, 1969, Ser. No. 842,934

Int. Cl. B65d *83/00*

U.S. Cl. 222—402.24 **24 Claims**



A manually operable valve which operates with a snap action is provided for a pressurized package. The valve operates with a snap action in movement of a valve-actuating member between an open position and a closed position with operation of the valve being positive and with an audible indication of such operation being provided.

The valve mechanism includes a seal which is fitted within a dome-shaped recess in a closure cap having an opening therein which is aligned with an opening in the seal. A tubular portion at the upper end of a valve-actuating member extends through the aligned openings and forms a discharge passageway. The tubular portion is engaged by the seal and contains a discharge port which communicates with the passageway and is closed by the seal in the closed position of the valve-actuating member.

The valve-actuating member carries a downwardly extending, skirtlike flange of a flexible material having a free lower end which rests on and engages with a fixed member and the skirtlike flange flexes with a snap action in operation of the valve. A tubular extension carried by a retainer or adapter cup provides communication with the interior of a container.

The valve-actuating member and the skirtlike flange are formed of a rigid plastic material such as an acetal resin which permits repeated flexing of the skirtlike flange in movement of the valve-actuating member between the open position and the closed position.

The valve mechanism may also be employed to simultaneously control the discharge from a separate vessel or container within the package and the combining of material from such a vessel with material from the main container at the time discharge from the package takes place.

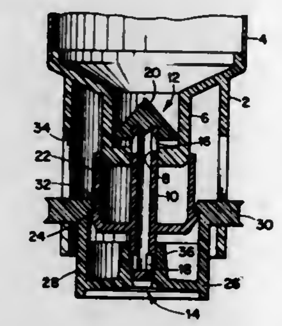
3,647,122
METERING DISPENSING VALVE

Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Oct. 20, 1969, Ser. No. 867,585

Int. Cl. B65d *47/26*

U.S. Cl. 222—501 **5 Claims**



Valve for dispensing a preselected amount of viscuous material from a container. The valve includes a reciprocable tubular portion which delivers a preselected amount of the material from the container upon each stroke.

3,647,123
EDGE-SENSING MECHANISMS

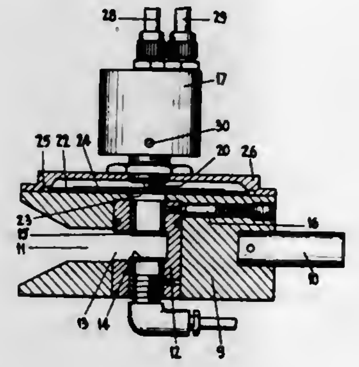
Reuben Medding, North Caulfield, Victoria, and Graham Roland Tyson, Nunawading, Victoria, both of Australia, assignors to Consolidated Electronics (Sales) Proprietary Limited, Brunswick East, Victoria, Australia

Filed Nov. 24, 1969, Ser. No. 879,085

Claims priority, application Australia, Nov. 29, 1968, 47045/68

Int. Cl. B65h *25/08*

U.S. Cl. 226—22 **5 Claims**



The invention provides a sensitive sensor and system with low response inertia for maintaining the accuracy of the path of a moving web of material and includes in its construction means to facilitate maintenance without the need for subsequent adjustment.

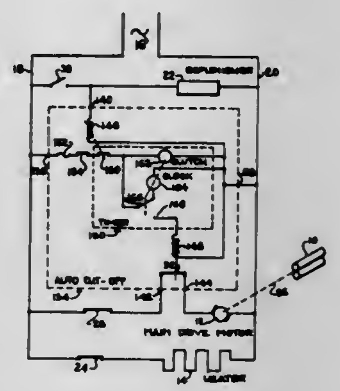
3,647,124
PHOTOGRAPHIC DEVELOPING MACHINE AUTOMATIC CUTOFF

Oliver V. Spicer, Lubbock, Tex., assignor to Swain Rodgers, a part interest

Filed Dec. 29, 1969, Ser. No. 888,716

Int. Cl. B65h *25/32*

U.S. Cl. 226—46 **2 Claims**



In a machine for processing photographic film, a main switch in the main power supply to the machine is normally held in the closed position so that the machine runs. A timing circuit is reset each time film is fed into the machine. At a set time after the last film is fed into the machine, an electromagnetic solenoid opens the main switch to automatically cut off the machine.

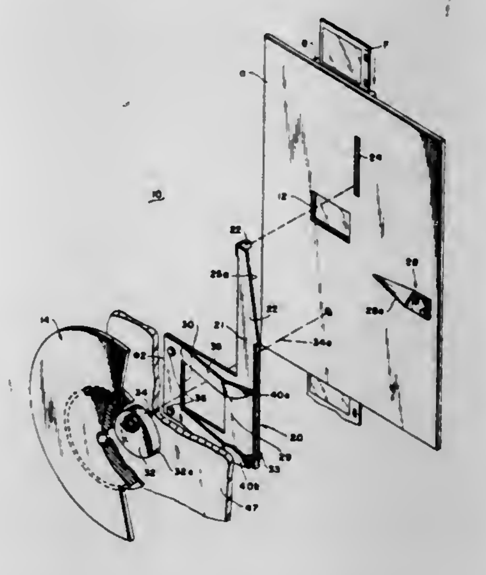
3,647,125
INTERMITTENT FILM-FEEDING MECHANISM

Edward J. Cator, Naples, and William A. Martin, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 17, 1970, Ser. No. 72,957

Int. Cl. G03b *1/22*

U.S. Cl. 226—62 **3 Claims**

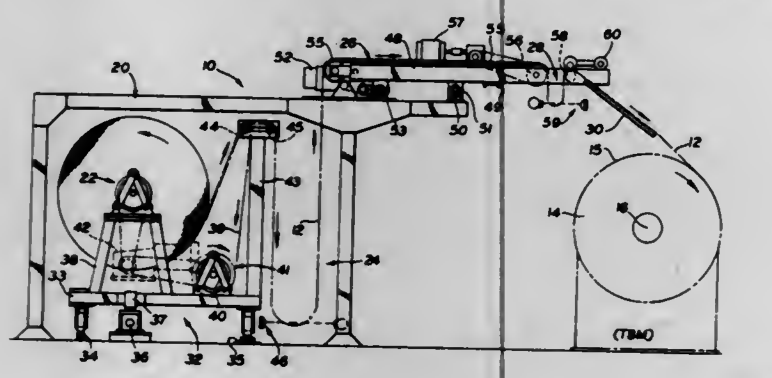


An intermittent film-advancing mechanism is disclosed which comprises a claw member extending along the direction of film movement and having at one end a projection for engaging and disengaging film perforations and at the opposite end a cam follower portion adapted to be engaged by a "Lumiere-type" cam which drives the follower to provide the requisite up-down projection movement. A ramp-type cam slidably engages the claw intermediate its ends and is adapted to reciprocate (in-out) the projection in appropriate portions of an operating cycle in response to up-down movement of the claw. Resilient means coupled to the claw member are provided to constantly urge protrusions formed on the claw member into slidable engagement with a support wall whereby the claw member will pivot about the protrusions when the ramp causes in-out projection movement. Advantageously, this arrangement prevents the claw member from executing arcuate movement.

3,647,126

TIRE-FABRIC-HANDLING APPARATUS

Donald B. Dieterich, Cuyahoga Falls, and George L. Schrum, Tallmadge, both of Ohio, assignors to Akron Standard, a division of Eagle Picher Industries, Inc., Cincinnati, Ohio
Filed Mar. 30, 1970, Ser. No. 23,748
Int. Cl. B65h *17/18*
U.S. Cl. 226—105 **2 Claims**

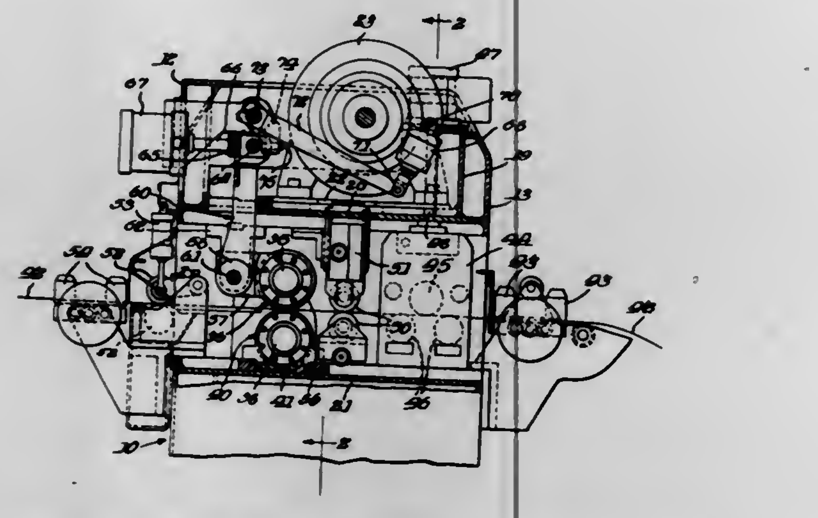


Apparatus for handling large diameter rolls of tire fabric for placement on a tire building drum. Apparatus is floor mounted and fabric is let off at controlled rate and registered laterally for selective delivery to the building drum.

3,647,127

FEEDING APPARATUS FOR STRIP MATERIAL

Chester M. Wiig, Lincolnwood, Ill., assignor to F. J. Littell Machine Company, Chicago, Ill.
Filed Apr. 30, 1970, Ser. No. 33,193
Int. Cl. B65h *17/22*
U.S. Cl. 226—155 **3 Claims**

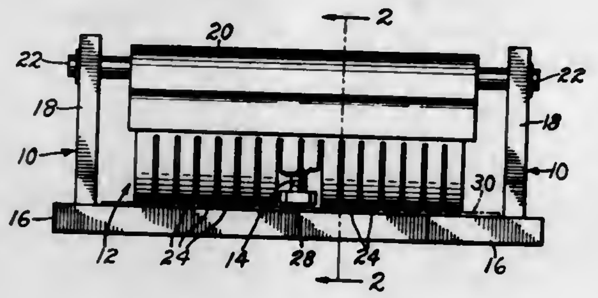


The intermittent feeding apparatus for strip material as herein disclosed is characterized by feed roll-lifting means which are power operated in an automatic manner to momentarily lift one of the feeding rolls so as to release and free the strip material and which takes place periodically and immediately in advance of a stamping or blanking operation on the material. More particularly the feed rolls are caused to resiliently contact and grip the strip material for a feeding operation by means of a main power cylinder and wherein an auxiliary power cylinder is provided for periodic operation against the main cylinder whereby to separate the feed rolls and release the strip material. During release of the strip material and the same is held against rearward movement by antibackup rolls.

3,647,128

WEB-TENSIONING DEVICE

Gautam C. Shah, Bombay, India, assignor to Burroughs Corporation, Detroit, Mich.
Filed Sept. 17, 1969, Ser. No. 858,716
Int. Cl. B65h *23/10*
U.S. Cl. 226—195 **2 Claims**

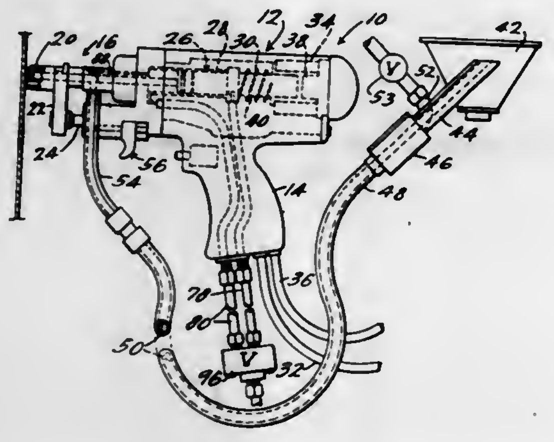


The disclosure embodies an elongated shoe for uniformly tensioning a web and includes mechanism for maintaining a preset shoe pressure over a range of web thicknesses. The shoe is pivotally mounted to press transversely downward under the influence of gravity upon a web to an extent permitted by an adjustable screw riding on the web and partially supporting the shoe.

3,647,129

STUD FEEDING SYSTEM FOR WELDING TOOLS

Don. E. Ehrlich, Avon, Ohio, assignor to TRW Inc., Cleveland, Ohio
Original application Oct. 21, 1968, Ser. No. 769,020, now Patent No. 3,526,744. Divided and this application Mar. 13, 1970, Ser. No. 24,474
Int. Cl. B23k *9/00;* **B25c** *1/04*
U.S. Cl. 227—112 **4 Claims**

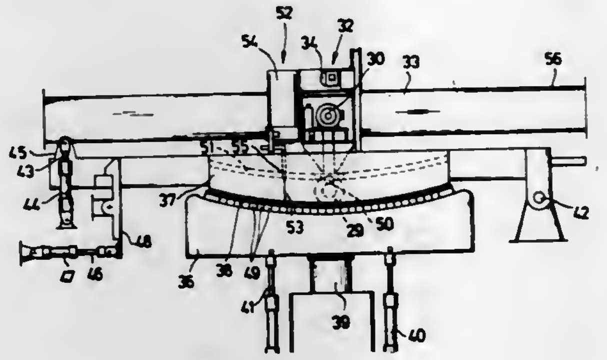


Studs to be welded are blown into a loading chamber behind a chuck of a stud-welding tool and then move into the front of the chuck where they are backed up by a plunger. An air nozzle communicates with the chamber and directs air rearwardly toward a stud fed into the chamber to urge the stud away from the chamber inlet in a manner to substantially eliminate stud jamming. The air preferably is supplied from an air cylinder which drives the plunger.

3,647,130

APPARATUS FOR WELDING SHEET METAL

Siegfried Hahne, Hoesel, Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Germany
Filed Feb. 26, 1970, Ser. No. 14,401
Claims priority, application Germany, Mar. 6, 1969, P 19 11 381.6
Int. Cl. B23k *1/20*
U.S. Cl. 228—5 **10 Claims**

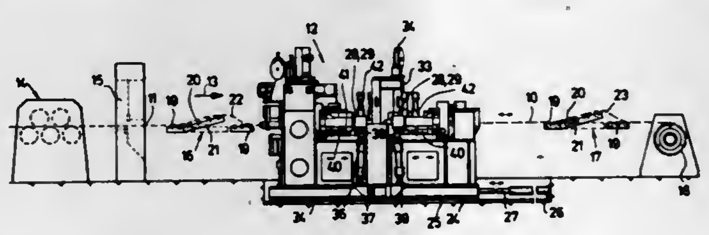


The apparatus comprises a clamping device for gripping the sheets to be welded, and a proper welding device that is combined with the sheet-clamping device to form a first operative unit. This first clamping and welding unit is arranged for displacement in the direction of the feed of the sheets. A heating device adapted for thermal pretreatment and aftertreatment of sheet edges, is combined with a grinding device for leveling the welding joints, to form a second operative unit. This second operative unit is carried by the first operative unit, and further supported for horizontal movement in the direction of the welding joints. The burner of the heating device, and the grinding disc of the grinding device, are vertically adjustable. A sheet gripping device with jaws having arcuate clamping surfaces, is operatively associated with the heating and grinding operative unit.

3,647,131

APPARATUS FOR ARRANGING PARALLEL THE EDGES OF STEEL SHEETS TO BE WELDED

Siegfried Hahne, Hosel, Germany, assignor to Messer Griesheim GmbH, Frankfurt/Main, Germany
Filed Feb. 26, 1970, Ser. No. 14,400
Claims priority, application Germany, Mar. 6, 1969, P 19 11 324.7
Int. Cl. B23k *1/20*
U.S. Cl. 228—5 **5 Claims**

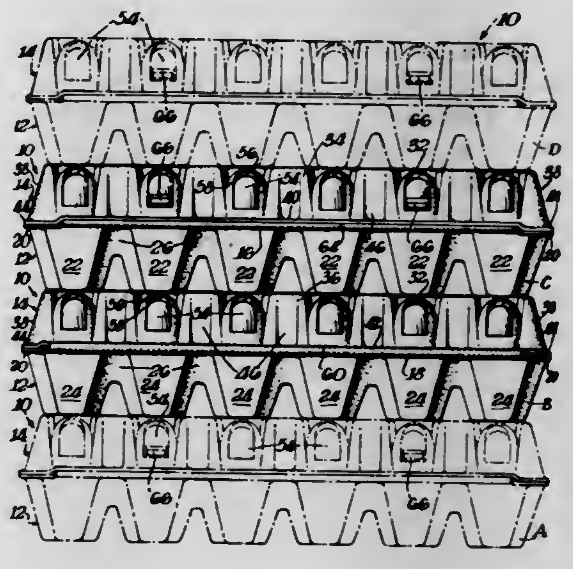


The apparatus comprises a sheet-feeding path extending in front of and behind the area of welding in a welding machine. A shearing device for trimming the end edges of the sheets to be welded is located at the input of the feeding path. The welding machine is supported for movement in the direction of the sheet feeding. A vertically adjustable stop beam is arranged in the area of welding, and the movement thereof is synchronized with that of clamping jaws. The clamping jaws clamp each of the two aligned sheets and feed them to the area of welding. A buckle table is provided for each sheet to produce a band thereon. These bands enable a substantially accurately parallel abutment of the sheet edges against the raised stop beam.

3,647,132

EGG CARTON WITH EXTERIOR WINDOWS

Kenneth L. Crabtree, Fairfield, Maine, assignor to Keyes Fibre Company, Waterville, Maine
Filed Apr. 17, 1970, Ser. No. 29,404
Int. Cl. B65d *1/36*
U.S. Cl. 229—2.5 **1 Claim**

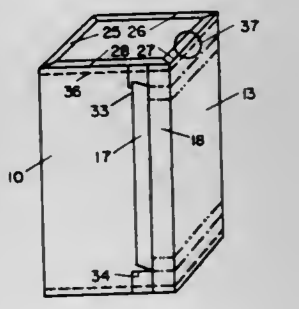


A molded egg carton of the type having a cover which has depending sidewalls with egg viewing windows in the exterior facets to provide a view into all the egg pockets when the carton is viewed from above, as when the carton is the top one in a stack or is held in the hand, and in addition to provide a view into each egg pocket in the row of pockets along one side of the carton when the carton is viewed from that side, as when a number of cartons are stacked one on top of another for display purposes in retail stores and it is thus impossible to view any but the top carton from above. At least the upper part of each window is framed by a portion of the carton cover which is recessed with respect to both the top portion and the sidewalls of the cover, and the carton cover has inwardly recessed buttress structure in the sidewalls and additional support structure extending downwardly from the flat top portion to increase the strength of the carton despite the provision of viewing windows for every egg pocket in the carton.

3,647,133

PACKAGE, PREFERABLY FOR DRY AND FROZEN MATERIAL, AND AN ARRANGEMENT FOR THE PRODUCTION OF SUCH A PACKAGE

Od Wikar Christensson, Bromma, near Stockholm, Sweden, assignor to Christenssons Maskiner & Patenter Aktiebolag, Bromma, near Stockholm, Sweden
Filed Aug. 20, 1970, Ser. No. 65,491
Int. Cl. B65d *5/00, 5/54*
U.S. Cl. 229—37 **5 Claims**



A package of polygonal cross section having a thin end closure closing at least one end. The closure extends over onto and is attached to the sides of the package. Airtightness is improved by attaching the closure such that the end of the package is bent inwardly at least at the corner, in somewhat the form of a frustrum pyramid. An apparatus for closing such a package comprises a heatable tool having inwardly sloping sides to press the end closure onto the edge of the package end and concurrently force the end into the frustrum pyramid shape.

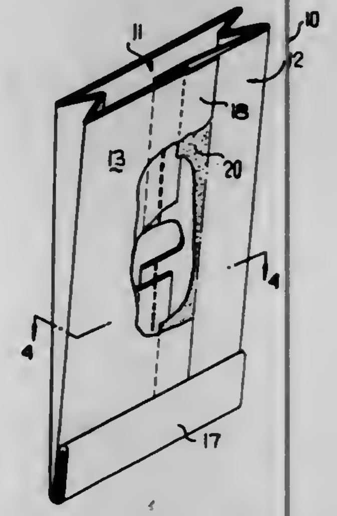
3,647,134
PHOTOGRAPHIC BAG

Ernest Carnevalino, King of Prussia, Pa., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Aug. 4, 1970, Ser. No. 60,808

Int. Cl. B65d *31/02, 31/10, 33/02*

U.S. Cl. 229—55 **10 Claims**



This disclosure relates to a bag constructed particularly for the packaging of products which are subject to further chemical reaction, i.e., chemical changes produced in substances by light being absorbed directly, by reflection, or by transmission, whether infrared or ultraviolet, as well as from the visible rays of the spectrum, the bag being formed as a seamless homogeneous one-piece tube flattened upon itself to define a pair of oppositely disposed flattened edge portions, the tubing constructed from synthetic generally opaque plastic material, the flattened material being folded upon itself at least once to bring the flattened edge portions into contiguous relationship and form at least a two-ply tubular member, means securing the edge portions to each other to define a tubular member having axially opposite end portions, and means closing at least one of said end portions.

3,647,135
CONTINUOUSLY OPERATING CENTRIFUGAL SEPARATOR

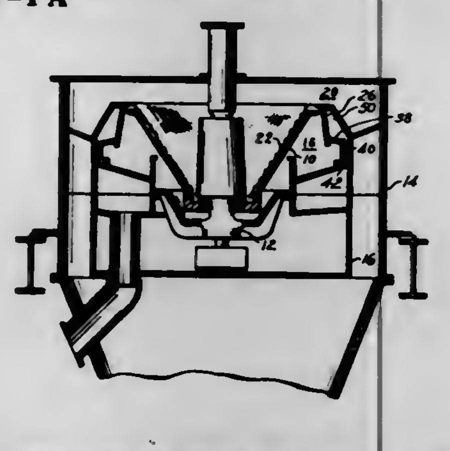
Andre Mercier, La Madelaine, France, assignor to Fives Lille-Cail, Paris, France

Filed Dec. 8, 1969, Ser. No. 883,281

Claims priority, application France, Dec. 9, 1968, 177147

Int. Cl. B01d *21/26;* **B04b** *3/00, 11/00*

U.S. Cl. 233—1 A **10 Claims**



The imperforate conical basket of a centrifugal separator carries a conical, mainly imperforate skirt which depends from the upper basket rim into the liquid receptacle bounded by the basket and by a stationary partition in the separator casing. The liquid flowing upwardly between the inner basket wall and a screen enters recesses at the top of the basket at least partly bounded by the skirt and is led to the inner skirt face. It is discharged centrifugally from the free lower edge of the skirt against a conical baffle attached to the partition and downwardly bounding an isolating chamber radially confined between the outer skirt face and the partition. Contamination of the discharged liquid with simultaneously discharged solids is prevented, air cannot carry the discharged liquid into the separated solids nor vice versa.

3,647,136
FORCED-CIRCULATION HOT WATER HEATING SYSTEM

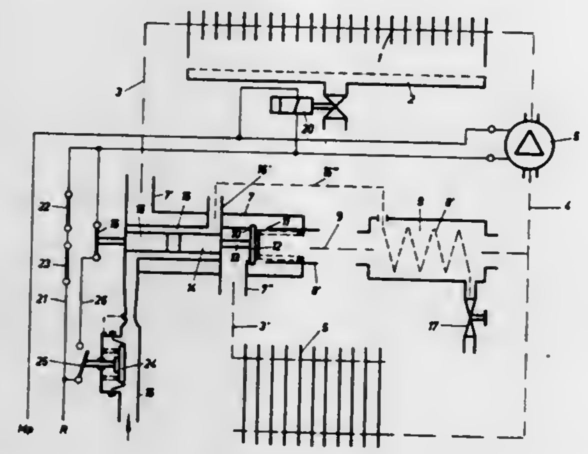
Hans Meier, Remscheid, Germany, assignor to Joh. Vaillant KG, Remscheid, Germany

Filed Aug. 7, 1970, Ser. No. 62,053

Claims priority, application Germany, Sept. 12, 1969, P 19 46 242.1

Int. Cl. F24d *3/08*

U.S. Cl. 237—8 **4 Claims**



A hot water feed trunk runs from a gas fired water heater to a priority valve with branches from the priority valve to a radiator and to a heat exchanger respectively. Return branches from the heat exchanger and from the radiator join a return water trunk leading to the water heater and having a circulating pump therein. The priority valve includes a valve closure and a temperature responsive element positioned to be primarily responsive to cold service water (proceeding to the heat exchanger) and secondarily responsive to the temperature of the water from the feed trunk. When the element is comparatively cool, the feed water is sent to the heat exchanger. When the element is relatively hot, the feed water is sent to the radiator. A first switch closed by the flowing of service water is connected in series with a second switch so that when the two are closed the circulating pump will be energized and the valve controlling the gas flow to the burner will be opened. In one embodiment the second switch is controlled by the same element as actuates the valve closure. In another embodiment a second heat responsive element subjected to the same temperature conditions as the first controls the second switch.

3,647,137
HYDRAULIC CHAMBER INCORPORATING A JET NOZZLE

Theodore T. Naydan, Schenectady, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.

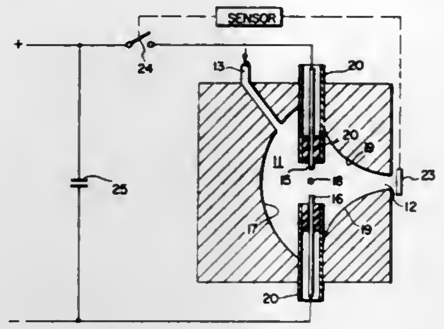
Filed Oct. 20, 1970, Ser. No. 82,320

Int. Cl. B05b *7/30*

U.S. Cl. 239—102 **5 Claims**

A hydraulic chamber incorporating a nozzle capable of delivering a very high instantaneous pulsed dynamic jet in apparatus producing a shock wave in a relatively incompressible liquid is obtained when the effective locus of the shock

wave is such that the pressure wave generated thereby is transmitted to build up rapidly and uniformly in a direction along the centerline of the nozzle. A suitable configuration for such chamber is a parabolic cissoid in which the locus of the shock wave is effectively at the focal point of the parabolic portion of such chamber thereby converting the resultant spherical waves into additive plane waves in the direction of the centerline of the nozzle opening. The shock wave employed in the apparatus can be produced by mechanical or electrical energy, or a combination thereof.



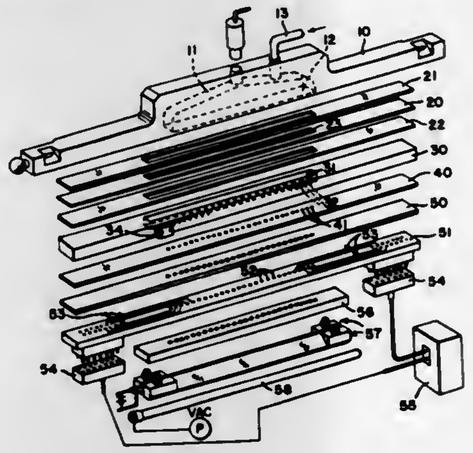
3,647,138
COATING HEAD SUBASSEMBLY WITH CLEANOUT PORT

Philip H. Houser, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 17, 1969, Ser. No. 877,255

Int. Cl. B05b *5/08*

U.S. Cl. 239—104 **1 Claim**



In the construction of a laminated coating head in which drops of coating material are ejected from very small orifices in an orifice plate toward a web or other article to be coated, the orifice plate, the filter plate, and an inlet plate are first assembled in what is termed a "clean package" and flushed through a port in the inlet plate with a cleaning fluid to insure that no particles large enough to clog the orifices have been trapped in the coating head during construction thereof. Compressed air may also be blown into the assembly during flushing and following flushing, the port on the inlet plate is sealed and the remaining components attached to the "clean package."

3,647,139
TOWER IRRIGATOR

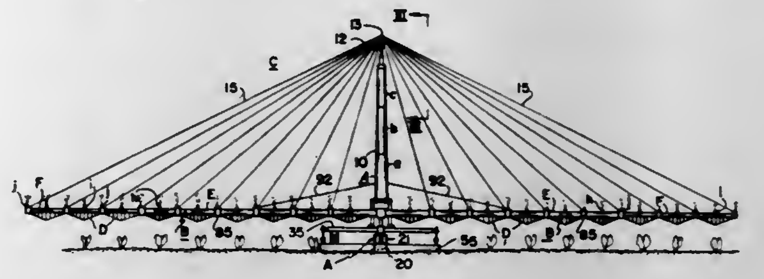
Charles De Long, Jr., and Stephen D. Newell, both of Du Bois, Pa., assignors to Alco Standard Corporation, Valley Forge, Pa.

Filed May 18, 1970, Ser. No. 38,456

Int. Cl. B05b *3/00*

U.S. Cl. 239—177 **12 Claims**

A rotating tower or turret irrigating or liquid dispensing apparatus has opposed, horizontally extending, side arm assemblies made up of a plurality of coupled-together liquid-carrying pipe or conduit members that are carried on a central column or mast and provided with sprinkling means or spray heads for rotatably covering a large ground area from a fixed central axis. Each conduit or pipe member is suspended adjacent its opposite ends by cord members that are connected to a column-mounted spread bracket, and is tension-stressed in its positioning along its length between the suspending cord members.



3,647,140
SPRINKLER CONSTRUCTION

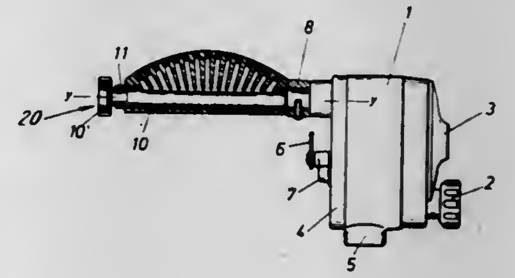
Alexander Perrot, and Emil Schucker, both of Calw, Germany, assignors to Perrot-Regnerbau GmbH & Co., Calw am Wurtt, Germany

Filed May 19, 1970, Ser. No. 38,743

Claims priority, application Germany, May 24, 1969, P 19 26 735.7

Int. Cl. B05b *3/16*

U.S. Cl. 239—242 **10 Claims**



A lawn sprinkler includes a housing having a turbine which, for example, may be driven by the water supplied thereto for rotating a crank eccentric for the purpose of oscillating a tubular nozzle assembly about its own longitudinal axis. The nozzle assembly includes a guide sleeve or tube having a slot on its periphery which extends longitudinally and which is covered on its exterior by a nozzle body defining a plurality of nozzle passages oriented at divergent angles on each side of a central vertical nozzle passage. A regulating sleeve is positioned inside the guide sleeve and has a threaded connection with the guide sleeve at one end. It includes a plurality of nozzle pattern selection axes or generatrices which include one or more slots arranged in longitudinal patterns at spaced locations around the periphery. The regulating sleeve includes a knob portion extending outwardly to one side of the sprinkler which may be engaged by an operator to selectively position one of the generatrices in alignment with the longitudinal slot of the outer guide sleeve. The guide sleeve slot in turn communicates with the passages of the nozzle body. The longitudinal slot patterns which are defined along the generatrices of the regulating sleeve are advantageously spaced such that the sprinkle pattern of operation of the device may be controlled for example to provide for a full sprinkling pattern or a reduced pattern, as well as a pattern on each side or on only one side, or to provide for sprinkling only on the sides and not in a central area.

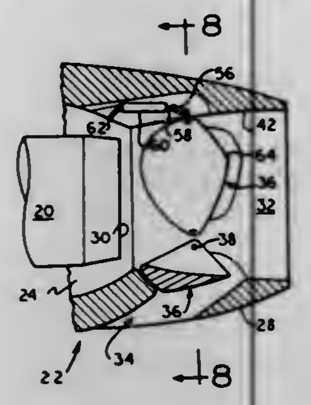
3,647,141
THRUST CONTROLLING APPARATUS

David A. Murday, Imperial Beach, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed June 1, 1970, Ser. No. 41,831

Int. Cl. B64c *15/06*

U.S. Cl. 239—265.29 **12 Claims**



Apparatus comprises elongate shroud surrounding jet engine. Aft portion of shroud extends rearwardly beyond stream. Passages through shroud wall aft of nozzle exit admit ambient air to define shroud aft portion as an ejector ring. A blocker door is provided for each passage and swings on lateral pivot from first forward position blocking forward portion of its passage, through intermediate positions partially blocking rearward flow of exhaust stream and redirecting portion of stream out through passages, to second full aft position where doors meet to block all rearward flow and redirect it out through passages. For supersonic flight afterburner operation, doors are bodily moved to fully block passages. Apparatus may be used with conventional jet or fan jet engines. Doors may be operated independently to modify the direction of the thrust vector.

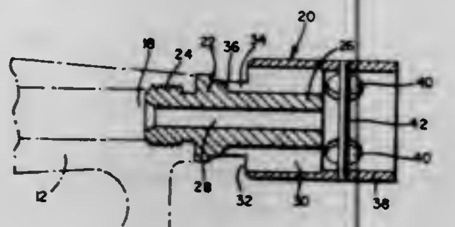
3,647,142
AIR GUN HAVING A SAFETY NOZZLE

Edward H. Drude, Raleigh, and Bennie Franklin Mangum, Garner, both of N.C., assignors to Scovill Manufacturing Company, Waterbury, Conn.

Filed Oct. 22, 1970, Ser. No. 83,025

Int. Cl. B05b *1/28*

U.S. Cl. 239—288.3 **4 Claims**



The safety nozzle on this air gun has rearwardly directed bores having oddly-shaped rearward openings to make plugging difficult. Radial holes in a forward sleeve and a diametrically disposed pin reduce dynamic pressures and noise levels.

3,647,143
ATOMIZER

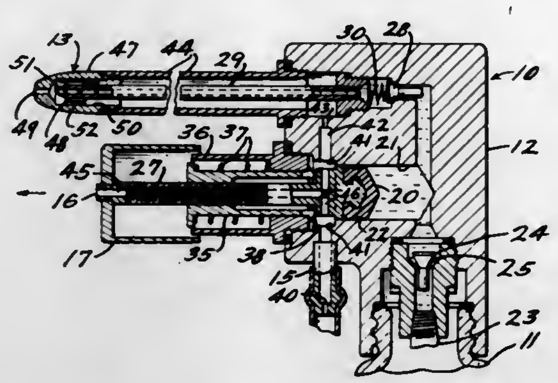
William D. Gauthier, Sylvania Township, and Ernest G. Lierke, Toledo, both of Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio

Filed Apr. 6, 1970, Ser. No. 25,754

Int. Cl. B05b *7/30*

U.S. Cl. 239—342 **6 Claims**

Apparatus for measuring and atomizing a predetermined quantity of liquid. Compressed atomizing gas is supplied through a passage to an atomizing nozzle. A finger actuated plunger moves a piston pump for measuring and delivering the predetermined quantity of liquid from a reservoir to the nozzle. The displacement of the piston is varied to change the predetermined quantity of liquid delivered to the nozzle.



An optional gas pressure relief passage may extend from the gas passage through the plunger for reducing gas flow to the nozzle when the apparatus is not in use. When a finger is placed on the plunger to operate the pump, gas flow to the nozzle is reestablished.

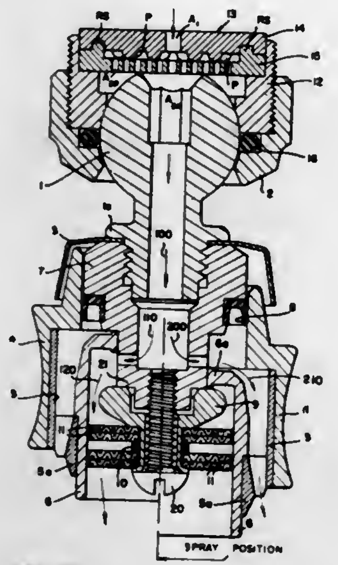
3,647,144
SWIVEL SPRAY APPARATUS

Richard Grant Parkison, and James Richard Griffin, both of Louisville, Ky., assignors to American Standard Inc., New York, N.Y.

Filed Mar. 31, 1970, Ser. No. 24,260

Int. Cl. B05b *1/32*

U.S. Cl. 239—456 **13 Claims**



A swivel type of apparatus, suitable as a plumbing fitting, for providing a single stream or a spray stream. The apparatus includes a ball type of swivel employing an O-ring positioned along the axis of the ball structure so as to seal the swivel arrangement against leakage. The apparatus also includes a hand-controlled slider component which may be moved either to a position so as to render the apparatus capable of supplying the single stream, or to another position so as to provide the spray stream.

The apparatus also includes a flow controller in the form of a pair of disks for rendering the two types of streams developed by the apparatus substantially free of the effect of varying pressures of the liquid supplied to the apparatus. The disks include (1) a rigid disk having a plurality of small apertures which are parallel to each other and (2) a flexible disk mounted closely adjacent to the rigid disk, the flexible disk having a smaller number of apertures of larger diameter. The flexible disk also includes a plurality of flexible projections which normally are barely in contact with the rigid disk and which become compressed to reduce the "open" area of fluid transmission as the pressure of the fluid rises above a predetermined value so as to render the exit stream substantially independent of the pressure variations.

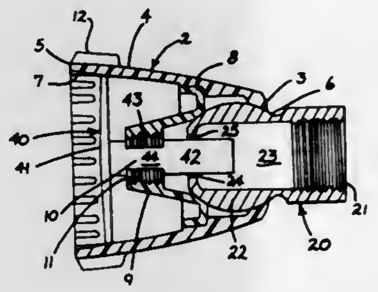
3,647,145
SHOWER HEAD

Merritt J. Nelson, 13121 Paine, Sparta, Mich.

Filed June 17, 1970, Ser. No. 46,960

Int. Cl. B05b *1/32*

U.S. Cl. 239—460 **5 Claims**



An adjustable shower head assembly including a generally cup-shaped hollow shower head having an opening in its bottom for passing liquid therethrough, a ball joint communicating with a liquid source and communicating with the opening in the head, a valve element movably associated with the head, the valve element including a seat and a stem with a liquid passageway therethrough, the valve element operably associated with the opening in the head whereby rotation of the head moves the valve element from a position restricting liquid from passing through the head to a position allowing liquid to pass therefrom, the liquid passing through the ball joint, through the opening into the head, through the passageway in the stem and thence from the head.

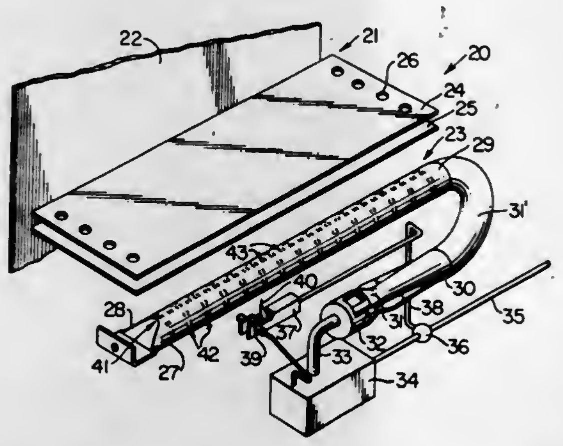
3,647,146
BURNER CONSTRUCTION AND METHOD OF MAKING THE SAME OR THE LIKE

Francis Simon Genbauffe, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed May 15, 1970, Ser. No. 37,654

Int. Cl. B05b *1/14*

U.S. Cl. 239—559 **5 Claims**



A burner construction having wall means defining a chamber for receiving fuel from a source thereof, the wall means having a plurality of port means passing therethrough and interconnecting the exterior of the wall means with the chamber whereby fuel will issue from the chamber out through the port means. The port means are arranged in a pattern through the wall means to define a first row of aligned spaced port means and a plurality of second rows of aligned spaced port means transverse and adjacent to the first row in spaced parallel relation to each other with the spacing between adjacent second rows being greater than the spacing between adjacent port means in the first row so that secondary air will be provided in a sufficient amount for all of the port means of the burner construction for proper fuel combustion.

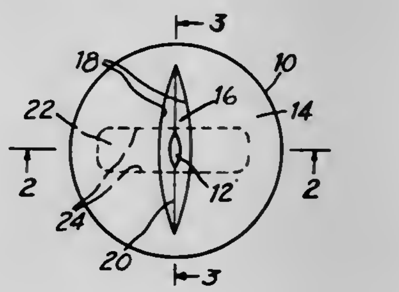
3,647,147
SPRAY NOZZLE ORIFICE MEMBER

Arnold M. Cook, Holden, Mass., assignor to Norton Company, Worcester, Mass.

Filed Dec. 23, 1970, Ser. No. 100,886

Int. Cl. B05b *1/00*

U.S. Cl. 239—599 **4 Claims**



A spray nozzle orifice member which produces a flat fan-shaped spray making it ideally suited for the application of coatings. The orifice is formed by the intersection of a straight bottomed slot on one side and a curved bottom V-shaped groove on the opposite side of said member. The improvement resides in the ease and economy of fabrication of such a spray nozzle member as a function of the groove-slot combination concept.

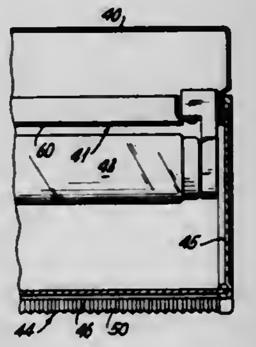
3,647,148
VEILING GLARE CONTROL WITH LUMINAIRES

Vearl S. Wince, Newark, Ohio, assignor to Holophane Company, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 788,669, Oct. 22, 1968, which is a continuation of application Ser. No. 664,890, Aug. 31, 1967, now abandoned, which is a continuation of application Ser. No. 453,709, May 6, 1965, now abandoned, which is a continuation-in-part of application Ser. No. 249,747, Jan. 7, 1963, now abandoned. This application Dec. 11, 1969, Ser. No. 884,280

Int. Cl. F21v *13/04*

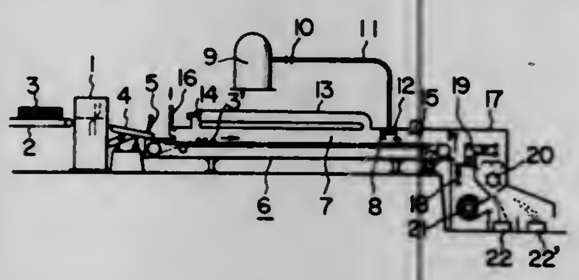
U.S. Cl. 240—93 **16 Claims**



A lighting system for eliminating specular reflection from work areas from impinging upon the eyes of persons in a workroom, such as a classroom and including a luminaire having a light source and a reflector having prisms which act to redirect longitudinal and transverse direct light from the source into lateral angles eliminating both longitudinal and transverse components of downlight on either side of a longitudinal plane through the light source. A work area receiving beams of longitudinal and transverse light at only lateral angles will not reflect light in the longitudinal directions at angles of "veiling glare." The refractor also provides sides having prisms redirecting light in the beam direction and upwardly to illuminate portions of the ceiling. Finally, a reflector is included which includes portions facing away from a light source so as to reflect as little light as possible upon the refractor.

3,647,149
APPARATUS FOR THE SEPARATION OF WIRE AND ITS INSULATING MATERIAL AND RECOVERING THESE AS RAW MATERIALS

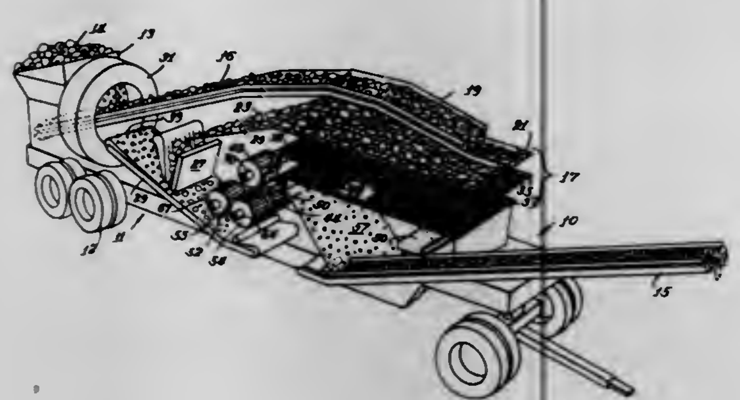
Shichiro Morita; Hiroshi Shimazu; Tsutomu Saito; Hiroshi Nakamura, and Torata Maeda, all of Sasebo, Japan, assignors to Sasebo Heavy Industries Co., Ltd., Tokyo, Japan
Filed Apr. 20, 1970, Ser. No. 29,868
Claims priority, application Japan, May 12, 1969, 44/35791;
Mar. 3, 1970, 45/20256; 45/17651
Int. Cl. B02c *19/12*
U.S. Cl. 241—65 **4 Claims**



Wire bundles are cut and fed along an elongated rapid cooling unit while being sprayed with a low-temperature gas. From the cooling unit, the wire passes to a separating device having a levelling unit, a feeder and hammering arrangement striking the now brittle wire. The material is then fed to an impeller, moves across slanting plates to effect gravity separation of the insulation material from the wire. Conveyor means on the impeller output side collect and carry away the separated wire and insulating material.

3,647,150
CRUSHER

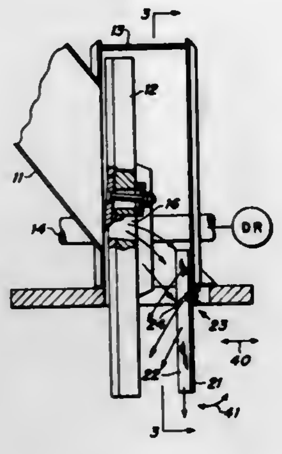
Roy W. Stephanek, Cedar Rapids, Iowa, assignor to Pettibone Corporation, Chicago, Ill.
Filed Aug. 27, 1969, Ser. No. 853,401
Int. Cl. B02c *4/32;* **B07b** *1/28*
U.S. Cl. 241—75 **7 Claims**



Portable crusher system achieving high crushing efficiency with structural simplicity. In a preferred embodiment two side-by-side crushing bites or passes are operated using two adjacent rollers on a first shaft and two separate opposing rollers on their respective second and third shafts, all supported by the same frame. The bite spacings are individually adjustable. The entire crushed stream leaving each bite is screened, and material which is product-sized and smaller is removed therefrom before any of the crushed material is fed into another crushing cycle. Each bite receives only the sizes appropriate for its bite spacing.

3,647,151
ANGLE FEED CHIPPER WITH CARD BREAKER

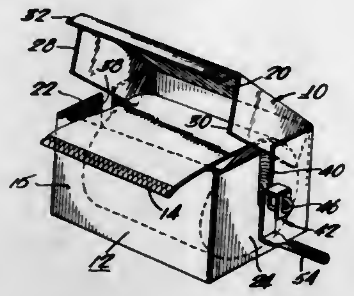
Adrian Artiano, and Robert M. Brown, both of Everett, Wash., assignors to The Black Clawson Company, Hamilton, Ohio
Filed Sept. 29, 1969, Ser. No. 861,786
Int. Cl. B27l *11/02*
U.S. Cl. 241—92 **10 Claims**



A disk chipper in which a log or other large piece of wood is fed to a rotating disk having a series of radially oriented slots extending through it and a chipper blade positioned adjacent each of the slots. In order to break up cards which pass through the slots into chips without unduly breaking up chips which are already of an acceptable size, and thereby produce fines, a series of flat bars are mounted behind the working face of the disk spaced apart a distance equal to three to six times the width of an acceptable chip, so that as the cards pass through the slots in the disk, they strike the bars and are broken up into chips of an acceptable size. The base member to which the bars are attached may be adjustably mounted on the chipper so that the position of the bars can be adjusted for optimum performance.

3,647,152
COMBINED PACKAGE AND WINDER FOR ROLL-TYPE BANDAGES

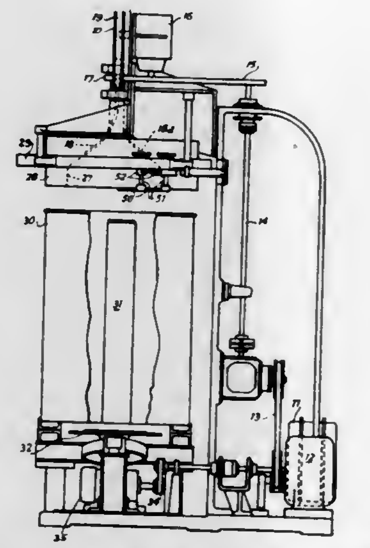
Robert J. Trewella, Reading, Pa., assignor to Wyomissing Corporation, Reading, Pa.
Filed May 7, 1970, Ser. No. 35,337
Int. Cl. B65h *75/02*
U.S. Cl. 242—60 **8 Claims**



A combination package and winder for roll-type bandages including a box adapted to hold the rolled bandage and winder. Opposed slots in the end panels of the box are adapted to support a demountable bandage winding crank assembly which is retained in the slots when the box is closed by end flaps downwardly extending from the top panel. The package is utilized as a winder by attaching an end of an unrolled bandage to the crank spindle, inserting the spindle in the end panel slots, closing the top to retain the spindle in position by means of the top panel end flaps, and turning the crank to reel in the bandage while applying light pressure to the box top to smooth out and establish a light tensioning of the bandage as it is wound. The crank assembly in a preferred embodiment may be disassembled to fit within the box for storage.

3,647,153
WINDING OF CONTINUOUS STRANDS

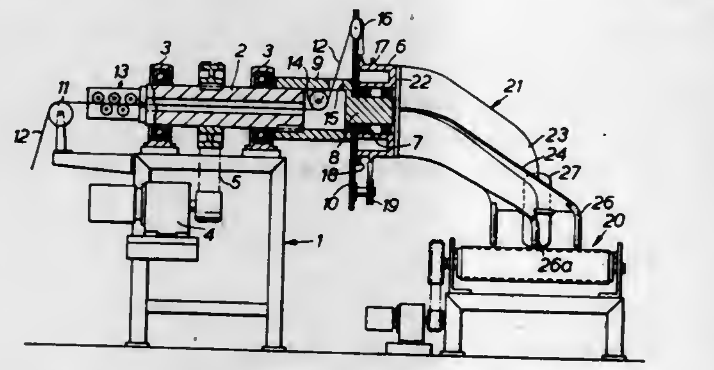
Richard Westwell Schofield, Prestwich, England, assignor to General Engineering Company (Radcliffe) Limited
Continuation-in-part of application Ser. No. 748,347, July 29, 1968, now abandoned. This application Oct. 21, 1969, Ser. No. 871,996
Int. Cl. B21c *47/14*
U.S. Cl. 242—82 **15 Claims**



An apparatus for producing, by a continuous winding process, a rosette coil within a container, including a capstan device for drawing the wire continuously from a supply and feeding it to a rotary tubular flyer which depends from a position below the capstan and is downwardly, outwardly and rearwardly formed in its end region so as to eject wire to be coiled from its end in such a manner that it has a component of movement rearwardly relative to the direction of rotation of the flyer and downwardly to form convolutions arranged to fall into a container; the flyer terminating at a radial distance from the axis of rotation of the flyer smaller than the mean radius of the coil to be formed. In order to assist feeding of the wire through the flyer fluid flow means may be employed.

3,647,154
WIRE-HANDLING APPARATUS

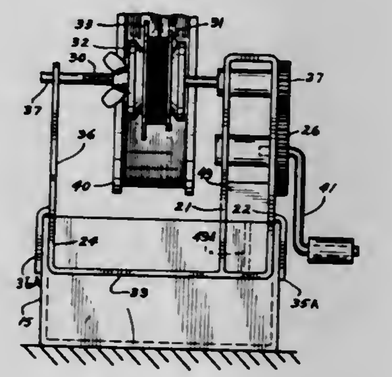
John W. Pamplin, Eastleigh, England, assignor to Marshall Richards Barcro Limited, Woodside Rd., Eastleigh, England
Filed Feb. 17, 1970, Ser. No. 12,118
Claims priority, application Great Britain, Feb. 17, 1969, 8,530/69
Int. Cl. B21c *47/02, 47/14*
U.S. Cl. 242—83 **16 Claims**



Dead block wire-coiling apparatus in which the rotor device for coiling the wire about the block is mounted at the upstream side of the block and an elongate carrier for the coiled wire is secured to the downstream side of the block to lead the coiled wire away, and including means for preventing rotation of the block from rotating in the form of interengaging holding means, e.g., a pair of rollers, one mounted on the carrier and the other mounted from a fixed structure and so arranged that the coiled wire passes between the holding means during operation, the latter being driven at a speed similar to the speed of the wire so as not to obstruct its movement.

3,647,155
WINDING DEVICE FOR FISHLINE

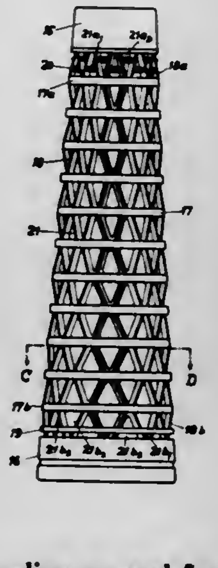
Julian B. Jorgenson, 3538 Rainbow Drive, Minnetonka, Minn.
Filed July 22, 1969, Ser. No. 843,715
Int. Cl. B65h *75/00, 75/38*
U.S. Cl. 242—106 **8 Claims**



A winding device for transferring fishing line from storage spools to a spool for a fishing reel which may use a storage case for the line and winder as a base member for mounting the line spool and the reel spool in proper position so that as winding takes place the line will not twist.

3,647,156
SLEEVE FOR REELING UP AND/OR WET-TREATING YARN OR THREAD

Walter Henning, Hoengen near Aachen, Germany, assignor to Messrs. Jos. Zimmermann, Aachen, Germany
Filed Nov. 20, 1969, Ser. No. 878,416
Claims priority, application Germany, Nov. 25, 1968, P 18 10 774.9
Int. Cl. B65h *75/20, 75/10*
U.S. Cl. 242—118.1 **8 Claims**



A textile sleeve for reeling up and for wet-treating thread or yarn, the sleeve being cylindrical or conical and having end rings and spaced intermediate rings, with a row of connecting webs between the rings of each pair of adjacent rings. The webs of each row are inclined to the axial direction of the sleeve and always at least two webs of each row are inclined in regular sequence in opposite sense.

3,647,157

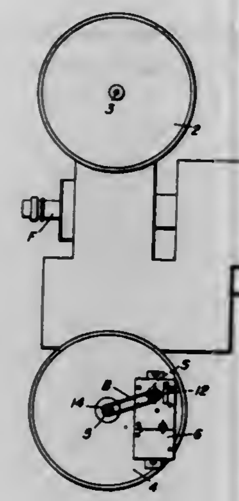
MOTION PICTURE PROJECTOR EXCESS ROTATIONAL SPEED DETECTOR

Michael W. Chitty, New York, N.Y., assignor to Century Projector Corporation, New York, N.Y.

Filed May 13, 1970, Ser. No. 36,868

Int. Cl. B65h *59/38;* **G03b** *1/02;* **G11b** *15/13*

U.S. Cl. 242—191 **9 Claims**



The invention is an electronic system which senses the rotational speed of the takeup reel of a motion picture projector during operation. If the speed is higher than normal due to breakage, absence of or end of film, the device operates to shut down the projector and/or provide an audible or visible warning.

3,647,158

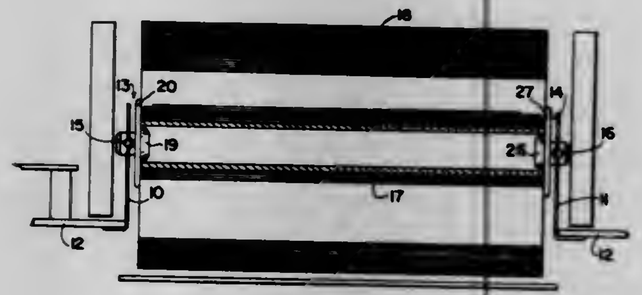
PAPER ROLL SUPPORT AND TENSION DEVICE

Alvin Feder, Skokie, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 22, 1970, Ser. No. 5,048

Int. Cl. B65h *19/00*

U.S. Cl. 242—55.2 **6 Claims**



A paper roll support and tension device for a printer having resilient support brackets mounted to the printer frame or chassis. Trunnions pivotally attached to the support brackets allowing easy insertion and removal of the paper roll. Discs formed on the pivotally attached trunnions provide uniform tension on the sides of the paper roll, retarding rotation of the paper roll and causing the paper to be uniformly fed to the printing mechanism.

3,647,159

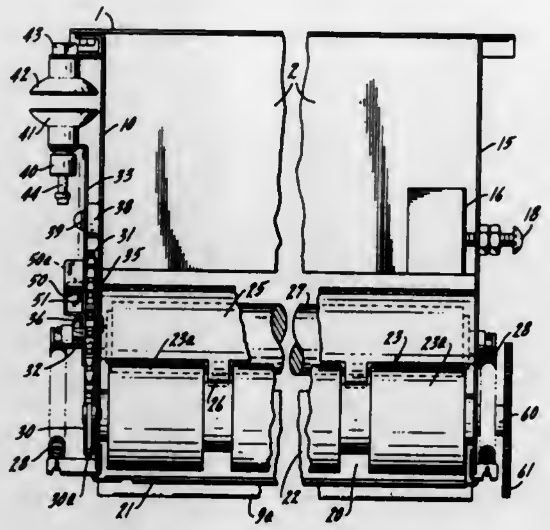
TOWEL DISPENSER

Edward L. Bump, Oak Park, Ill., assignor to Vaughan Mfg. Co., Chicago, Ill.

Filed June 18, 1970, Ser. No. 47,233

Int. Cl. B65h *19/00*

U.S. Cl. 242—55.53 **7 Claims**



A towel dispenser having automatic towel length controlling means and roll support tensioning means.

3,647,160

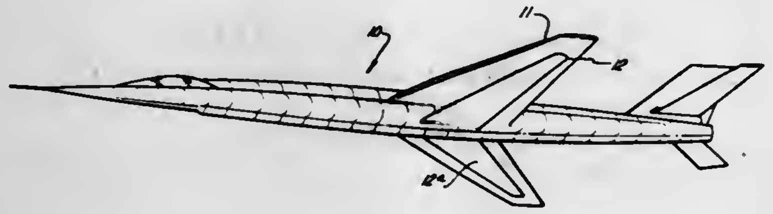
METHOD AND APPARATUS FOR REDUCING SONIC BOOMS

Morton Alperin, 6000 Lockhurst Drive, Woodland Hills, Calif.

Continuation-in-part of application Ser. No. 741,162, June 28, 1968, now abandoned. This application Sept. 23, 1968, Ser. No. 761,592

Int. Cl. B64c *23/04*

U.S. Cl. 244—1 N **8 Claims**



The sonic boom produced by a supersonic aircraft is attenuated by producing an expansion wave which interacts with the boom-producing shock wave as it travels toward the ground.

3,647,161

PLUG NOZZLE ATTITUDE CONTROL DEVICE

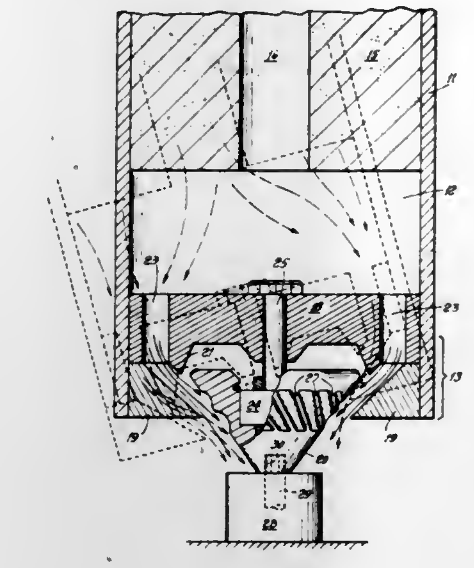
John E. Draim, 9310 Telfer Ct., Vienna, Va.

Filed July 18, 1969, Ser. No. 842,940

Int. Cl. F41g *7/12;* **F42b** *19/08;* **F02k** *1/08*

U.S. Cl. 244—3.2 **8 Claims**

The disclosure relates to the use of a spinning plug nozzle to provide an attitude reference means of which flow of fluid may be controlled to provide a righting moment in rockets and marine vehicles.



3,647,162

FLIGHT CONTROL CIRCUIT FOR MISSILE SPINNING ABOUT ITS LONGITUDINAL AXIS

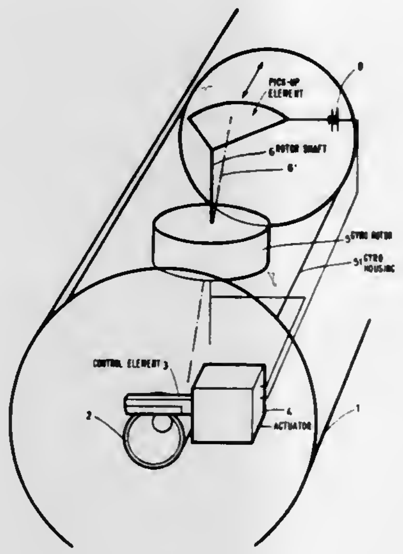
Heinz-Dieter Muller, Munich, Germany, assignor to **Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter** Haftung, Munich, Germany

Filed Aug. 19, 1969, Ser. No. 851,401

Claims priority, application Germany, Aug. 23, 1968, P 17 81 098.9

Int. Cl. F41g *7/00;* **F42b** *15/02;* **G06f** *15/50*

U.S. Cl. 244—3.2 **8 Claims**



A flight control circuit is provided for a missile spinning about its longitudinal axis and provided with at least one control member influencing its trajectory. The missile is stabilized about at least one of its pitch and yaw axes by at least one gyroscope having a gyro rotor shaft operatively associated with at least one position pickup indicating the position of the rotor shaft. Each position pickup is mounted rigidly on the missile frame in a plane containing the longitudinal axis of the missile and which plane also included the line of action of the control member. Each position pickup is connected directly to actuating means for the control member.

3,647,163

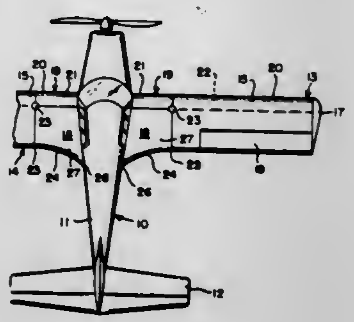
FOLDABLE SEMIRIGID AIRFOIL FOR AIRBORNE VEHICLES

Thomas E. Sweeney, 61 Overbrook Drive, Princeton, N.J.

Filed Nov. 19, 1969, Ser. No. 877,945

Int. Cl. B64c *3/56*

U.S. Cl. 244—49 **10 Claims**



The present invention relates to a foldable, composite rigid and semirigid airfoil for use with airborne vehicles. The airfoil includes a rigid portion. A hinged rigid spar defines a leading edge of the airfoil. The trailing edge of the airfoil is defined by both a rigid aileron structure forming part of the rigid wing portion, and a cable which interconnects the rigid portion of the airfoil with a root point of attachment on the fuselage of the vehicle. Flexible material forms top and bottom airfoil surfaces of the collapsible wing portion when the airfoil is deployed, said airfoil surfaces being continuous with the aerodynamic form of the rigid wing portion.

3,647,164

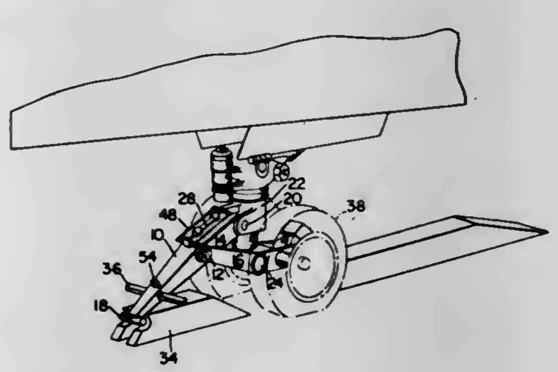
LAUNCH BAR INSTALLATION

Harold R. Smith, Encino, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 19, 1970, Ser. No. 65,162

Int. Cl. B64f *1/04*

U.S. Cl. 244—63 **5 Claims**



An aircraft nosewheel landing gear structure incorporating an oleo strut supported launch bar mechanism capable of movement when airborne to a wheel-contacting (braking) position prior to retraction of the nosewheel into the aircraft wheel well.

3,647,165

AIRCRAFT COMPARTMENT AND MAGNETIC CONNECTING ASSEMBLY

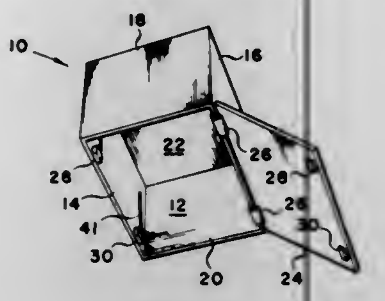
James Whitla, Tujunga, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Apr. 27, 1970, Ser. No. 32,042

Int. Cl. B64d *13/00*

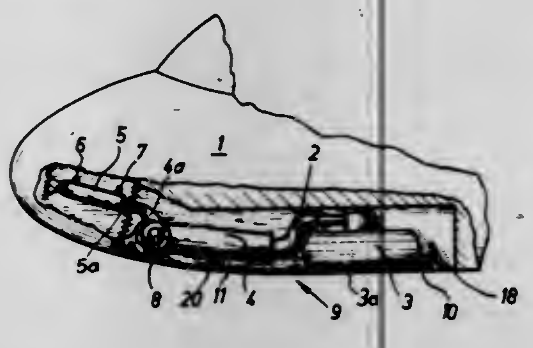
U.S. Cl. 244—118 P **1 Claim**

A magnetic connector assembly combined with an oxygen-mask carrying compartment mounted overhead of an aircraft cabin passenger's seat for automatic release of oxygen-mask equipment from the compartment to a passenger upon emergency or depressurization of the cabin. An electromagnet carrying spaced poles is securely mounted interiorly of the compartment by means of an adjustable bracket abutting a first wall's edge associated with and opposing the closing edge of the compartment's door. A permanent magnet is securely mounted on the inner side of the door adjacent its closing edge and is cooperatively disposed in relation to said poles. Energization of the core of the electromagnet repels the magnet from the cooperating spaced poles, thereby swinging open in a downward fashion the door upon hinging supports for dropping of the oxygen-mask into the lap of a passenger. The particular arrangement and orientation of the magnetic connector assembly in the aircraft concentrates and restricts its magnetic flux to at least one vertical plane normal to a horizontal plane in which the aircraft is travelling, thus eliminating interference with normal horizontal deviations of the aircraft's navigational compass.



3,647,166
COVER ARRANGEMENT

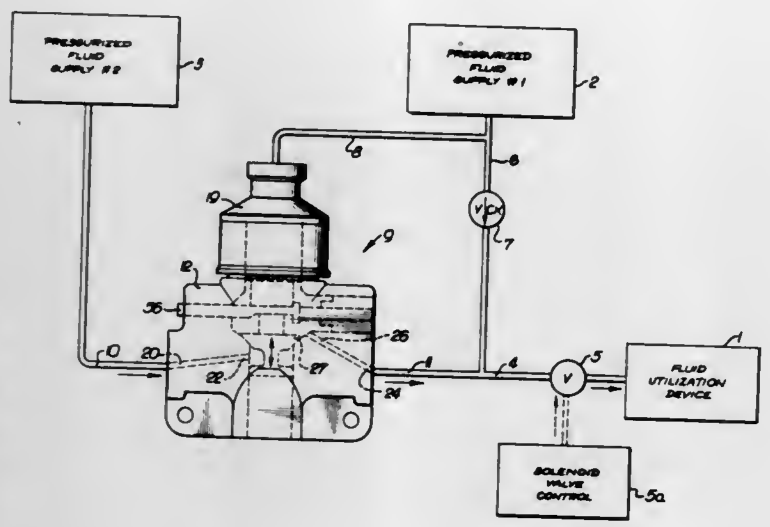
Franz Riedl, Munich, Germany, assignor to Vereinigte Flugtechnische Werke GmbH fruher "Weser" Flugzeugbau am Focke-Wulf am Heinkel-Flugzeugbau, Bremen, Germany
Filed Jan. 19, 1970, Ser. No. 3,898
Claims priority, application Germany, Jan. 24, 1969, P 19 03 575.7
Int. Cl. B64c *25/16*
U.S. Cl. 244—102 A **8 Claims**



A cover arrangement for closing at least part of the opening of a wheel well for a retractible landing gear of an aircraft. The cover arrangement has one or more units, each incorporating a cover plate and an engaging arm which extends generally at right angles to the plane of the cover plate. The unit is pivotably mounted at the edge of the opening for movement between open and closed positions. In the closed position, the arm extends into the wheel well and the cover plate closes at least part of the opening of the wheel well and is in the path of travel of the landing gear when the latter is lowered, and in the open position the cover plate is outside of the opening and the arm is in the path of travel of the landing gear when the latter is retracted. Consequently, the unit is pivoted into its open position by the landing gear when the same is lowered, and is pivoted into its closed position by the landing gear when the same is retracted. Spring means are provided which hold the unit in open position when the landing gear is in its lowered position and in closed position when the landing gear is in its retracted position.

3,647,167
FLUID DELIVERY SYSTEM FOR AIRCRAFT WINDSHIELDS

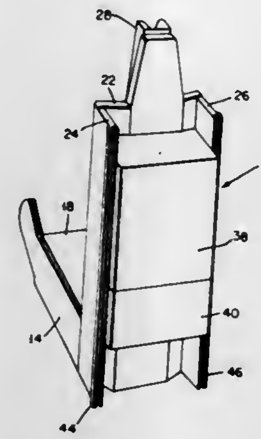
Teddy M. Schiller, Huntington Beach, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
Filed June 5, 1970, Ser. No. 43,859
Int. Cl. B64c *1/14*
U.S. Cl. 244—121 **8 Claims**



A fluid delivery system useful for delivery of rain repellent fluid to aircraft windshields including first and second tanks of fluid under pressure, a valve to control first tank delivery to a discharge line and adapted to close when discharge line pressure is greater than the first tank pressure and means responsive to first and second tank pressure, e.g., to a predetermined ratio of such tank pressures to control second tank discharge to the line.

3,647,168
EJECTION SEAT ARRANGEMENT

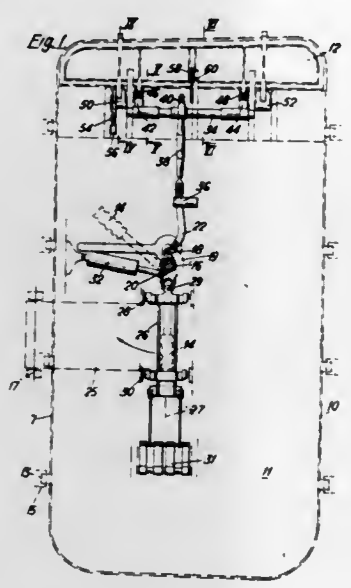
Walter S. Eggert, Jr., Huntingdon Valley, and Michael S. Frankel, Cheltenham, both of Pa., assignors to The Budd Company, Philadelphia, Pa.
Filed Apr. 27, 1970, Ser. No. 31,898
Int. Cl. B64d *25/10*
U.S. Cl. 244—122 A **6 Claims**



A lightweight ejection seat includes a main body having a honeycomb core sandwiched between two formed sheets of metal. A track and rail arrangement is used to control the direction of seat ejection. Means are provided to permit the seat to tilt prior to the separation of the seat from the vehicle.

3,647,169
AIRCRAFT DOORS

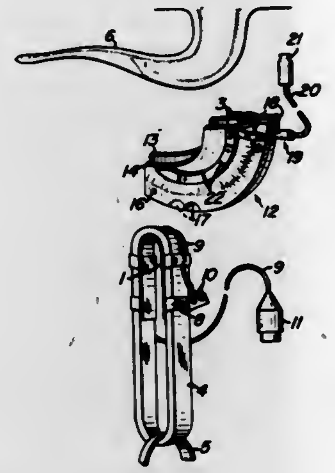
Eric Sydney Allwright, Leatherhead, and Roy Charles Godwin, Ringwood, both of England, assignors to British Aircraft Corporation Limited
Filed Jan. 27, 1970, Ser. No. 6,091
Claims priority, application Great Britain, Feb. 7, 1969, 6,830/69
Int. Cl. B64c *1/14*
U.S. Cl. 244—129 **10 Claims**



An aircraft door having a main part which is outwardly hinged from the fuselage and which vertically lowers into a closed position in secure engagement therewith. A locking panel lies above the upper horizontal edge of the main door and is connected therewith by operating linkage. When the main door is being lowered into a closed position the panel is carried upwardly and outwardly to fill the space between the upper edge of the main door and the fuselage opening, thereby positively locking the door in a closed position.

3,647,170
HELICOPTER SLING LOAD ELECTRICAL CONNECTOR

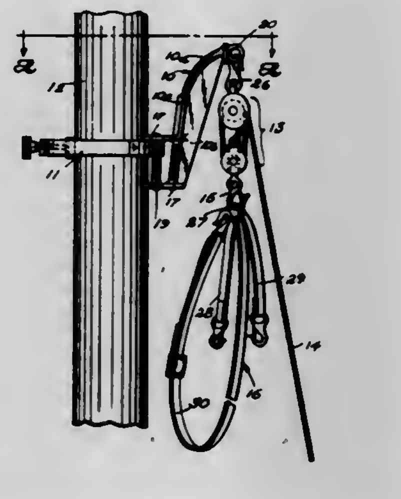
Charles W. Beeker, Baltimore, and Royale R. Crabtree, Towson, both of Md., assignors to The United States of America as represented by the Secretary of the Army
Filed May 4, 1970, Ser. No. 34,291
Int. Cl. B64d *1/00, 9/00*
U.S. Cl. 244—136 **8 Claims**



A means and method for electrically connecting the electrical system of a load means to the electrical power supply of a lifting means. The disclosed embodiment uses a removable pair of insulating members having contacts which, when affixed to the cargo hook of a helicopter, form bus bar means along the sides of said hook. A sling body member comprising nylon straps has contact means fastened at spaced points so as to contact the bus bars when a load is suspended from the hook by the sling, thus providing electrical continuity between circuitry in the helicopter and the load.

3,647,171
RESCUE DEVICE FOR LINEMEN

John E. Rafferty, 100 Holman St., Lunenburg, Mass.
Continuation-in-part of application Ser. No. 735,014, June 6, 1968, now abandoned. This application Dec. 1, 1969, Ser. No. 881,166
Int. Cl. F16m *13/00*
U.S. Cl. 248—221 **5 Claims**

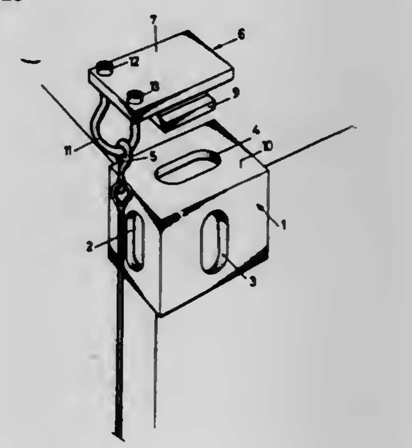


A device for lowering a disabled lineman from an electric pole. A portable hoist has a saddle with upper and lower flanges curved to engage the pole. A pair of spaced bars and a post portion rigidly interconnect the flanges. Adjustable strap means connected to the spaced bars secure the hoist to the pole. The post portion is adapted to carry a block and tackle with a rope leading to the ground. The hoist can be carried up by a lineman and attached to the pole at any desired height.

A rescue harness is attached to the block and tackle, and has three straps attached to a ring. Two of the straps can be hooked to the rings on a lineman's belt, and the third step passed between his legs and over one shoulder and hooked to the ring in front.

3,647,172
CONTAINER LASHING

Leonard Hendrik Van Der Molen, Rotterdam, Netherlands, assignor to P. J. Enderburg's Zeilmakerij en Scheepstuigerij N.V., Veerstal, Gouda, Netherlands
Filed May 6, 1970, Ser. No. 35,128
Claims priority, application Netherlands, May 7, 1969, 6906974
Int. Cl. B65d *1/22*
U.S. Cl. 248—361 R **1 Claim**

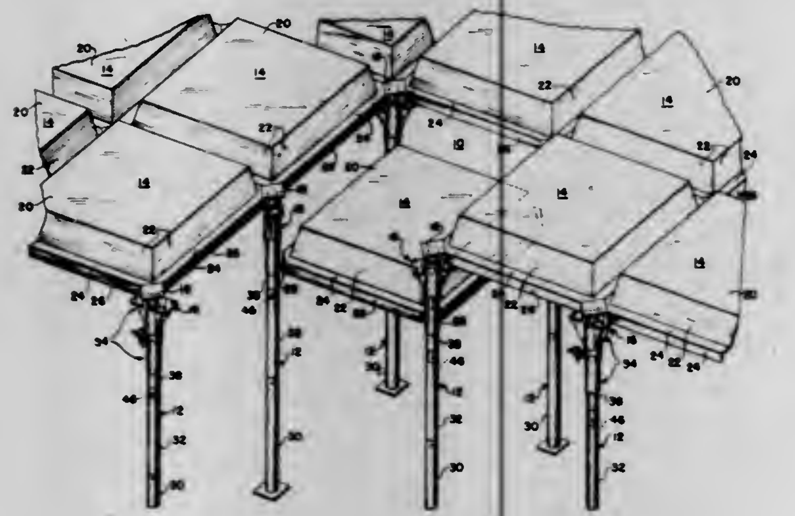


A fitting for lashing containers, which comprises: a top plate, a centering portion and a locking part fixedly secured to each other, which fitting will be prevented from tilting in the event of a lashing force directed via the top plate substantially to the outer surface of the corner-fitting of a container, even if this force deviates considerably from the vertical.

3,647,173
CONCRETE CEILING SLAB FORM INSTALLATION AND DOME-SUPPORTING SHORE ASSEMBLY THEREFOR

Dennis R. Pipala, Park Ridge, Ill., assignor to Symons Corporation, Des Plaines, Ill.

Filed Jan. 15, 1970, Ser. No. 3,061
Int. Cl. E04g *11/40*
U.S. Cl. 249—31 **5 Claims**

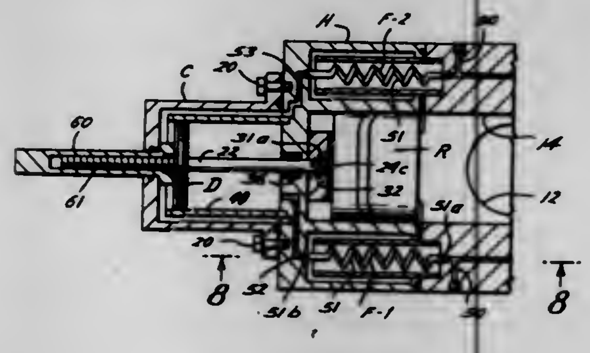


A supporting shore for a concrete ceiling slab, having a vertically and downwardly shiftable rotatable member which normally supports the adjacent truncated four corners of a quadrilaterally arranged group of four inverted generally rectangular pan-shaped slab-supporting domes and which, in the lowered and rotated position of the member, moves out of operative register with two of the four corners so as to release the other two corners for dome-removal purposes, while at the same time the shore continues to support the concrete ceiling slab until the latter has become fully hardened.

3,647,174
BLOWOUT PREVENTER

Robert K. LeRouax, Harris County, Tex., assignor to Hydril Company

Filed Sept. 25, 1970, Ser. No. 75,360
Int. Cl. E21b *29/00;* **F16k** *3/02*
U.S. Cl. 251—1 **20 Claims**

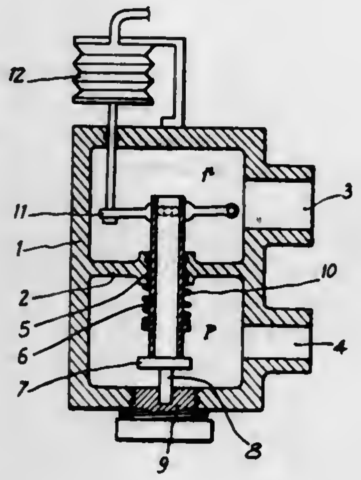


Blowout preventers of the ram-type, each having a bonnet which is detachably connected to the preventer body, and which bonnet is movable away from the preventer body to expose the ram therewith for permitting removal of the ram from the preventer for replacement or repair, wherein the ram piston and cylinder which are operable for moving the ram to and from its open and closed positions when the bonnet is secured to the preventer body are also operable for moving the bonnet away from and towards the preventer body when the bonnet is disconnected from the body. Detent means are provided for resisting relative movement between the ram and the body when the ram is in the open position and the bonnet is disconnected from the body, whereby the bonnet can be moved away from the body to the exposed ram position and then returned to reengage the bonnet with the body. Flexible hydraulic fluid conductor means is provided for operating the piston and for moving the cylinder relative to the piston.

3,647,175
FLUID FLOW CONTROL VALVE

Andre Bonneau, 26, rue de l'Avenir, Perpignan, and Henri Bontems, rue des Trilles, Elne (Pyrenees Orientales), both of France

Filed Mar. 4, 1970, Ser. No. 16,322
Claims priority, application France, Mar. 18, 1969, 6907717
Int. Cl. F16k *31/12*
U.S. Cl. 251—61 **3 Claims**



A fluid flow control valve comprises a cylindrical tube slidably mounted in a wall between the inlet and outlet valve chambers. One end of the tube is spring urged against the valve seat, so that the spring action plus the pressure against the other end of the tube holds the valve closed. In the open valve position, what acts on the tube is the spring and the difference of the pressures in the two chambers that bear against the tube ends.

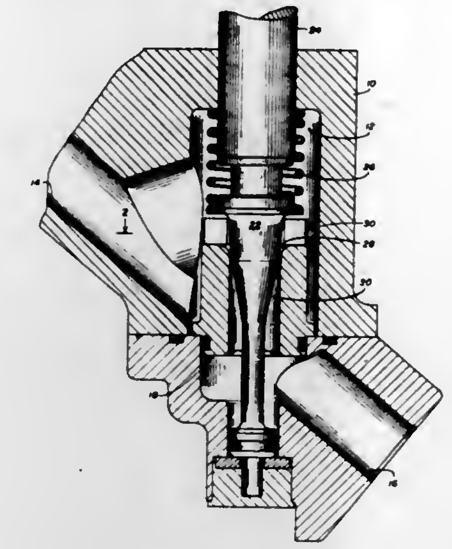
3,647,176
CAVITATING THROTTLING VALVE

Joe D. Usry, Arlington, Tex., assignor to LTV Electrosystems, Inc., Greenville, Tex.

Filed June 23, 1970, Ser. No. 49,048
Int. Cl. F16k *47/00*
U.S. Cl. 251—122 **6 Claims**

To provide a definable and repeatable transition between noncavitating and cavitating flow in a variable area venturi valve, a flow straightener is included upstream of a valve seat and metering plug assembly. Cavitating venturi valves meter the flow of fluid therethrough between the metering plug and

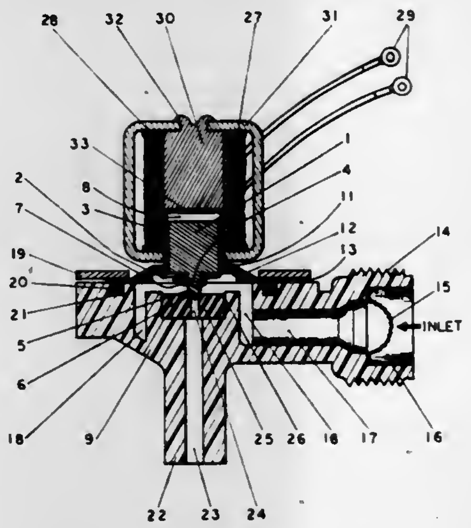
the valve seat. The metering plug and the valve seat have a geometry that in cross section resembles a venturi. The valve straightener resembles a plurality of parallel passageways having a length to width ratio to collimate a flow of fluid passing therethrough.



3,647,177
ALTERNATING CURRENT SOLENOIDS

Gregor L. Lang, 295 East St., Suffield, Conn.

Filed June 4, 1969, Ser. No. 830,342
Int. Cl. F16k *31/06;* **H01f** *7/13*
U.S. Cl. 251—129 **9 Claims**



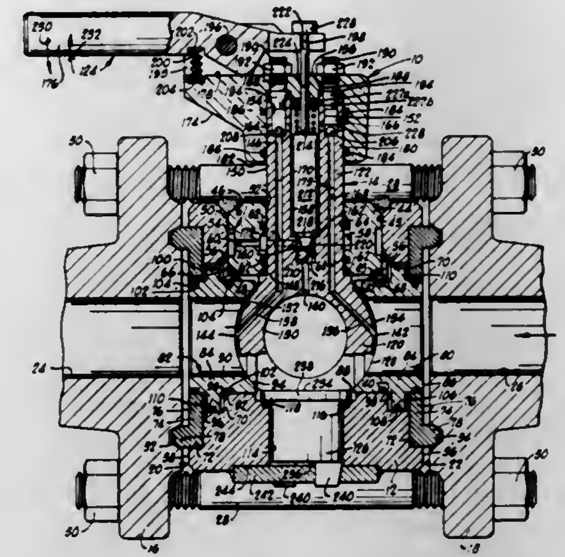
A solenoid construction for use as a flow control valve having a coil, and an armature in the form of a valve plunger which is disposed in a housing which forms a fluid barrier between the coil and plunger, and is formed of magnetic material to provide a flux path of low reluctance linking the coil with the immersed valve plunger.

3,647,178
HIGH-PRESSURE LOW-TORQUE VALVE ASSEMBLY

Ladd M. Adams, Norman, Okla., assignor to Balon Corporation, Oklahoma City, Okla.

Filed Sept. 24, 1970, Ser. No. 74,956
Int. Cl. F16k *1/16*
U.S. Cl. 251—148 **31 Claims**

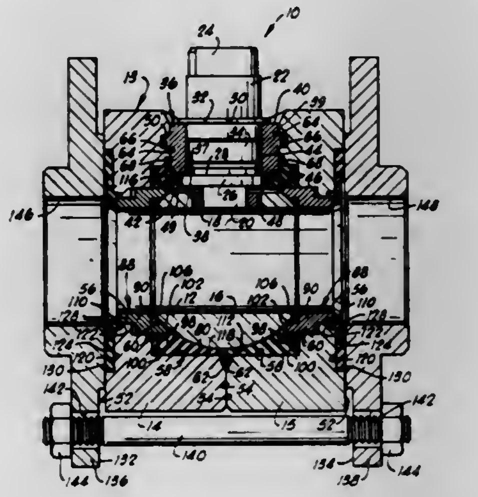
A valve assembly of the type wherein the valve seats are moved away from the valve member by fluid pressure, particularly when the valve is being opened, wherein the fluid pressure so employed is controlled by the handle of the valve operating a control valve.



3,647,179
SPLIT BODY VALVE ASSEMBLY

Domer Scaramucci, Oklahoma City, and Ladd M. Adams, Norman, both of Okla., assignors to Balon Corporation, Oklahoma City, Okla.

Filed Oct. 6, 1969, Ser. No. 863,863
Int. Cl. F16k *3/02*
U.S. Cl. 251—172 **26 Claims**



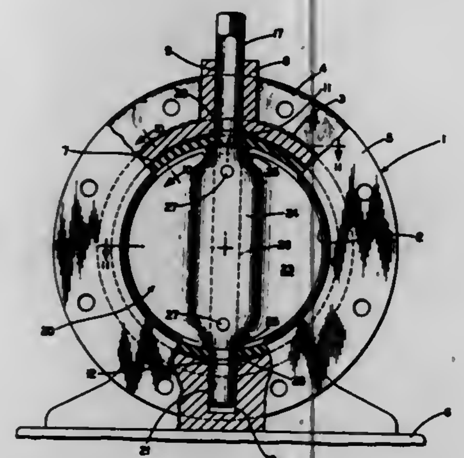
A valve assembly, having two separate body components which are sized and adapted to form the valve body in such a manner that the vertical and horizontal orientation of the two body components with respect to each other and with respect to the valve member and valve stem is assured. The valve assembly also includes axially insertable seats and/or a composite seat, each being sized and adapted to assure the sealing integrity of the valve assembly when the valve member is in the open or the closed position.

3,647,180
BUTTERFLY VALVE CONSTRUCTION

Herman S. Church, Cuyahoga Falls, Ohio, assignor to Teledyne-Mid America Corporation, Hartville, Ohio

Filed Apr. 6, 1970, Ser. No. 25,959
Int. Cl. F16k *1/226*
U.S. Cl. 251—306 **3 Claims**

A rubber gasket construction for butterfly valves which control the flow of fluids in pipelines and the like. The gasket is a precision-molded rubber component bonded in a complementary or shouldered cavity formed in a valve body. The gasket has shoulders on an external annular rib seated in shoulders or a complementary groove in the valve body, and may have diametrically opposed collars forming stem openings for the valve stem. A flat area is formed on the inside gasket surface surrounding each stem opening. The inside diameter of the gasket is smaller than the outer diameter of the valve disc which rotates within the valve body and gasket, and the valve may be a typical flanged-end valve.



The precision-molded gasket is molded and vulcanized separately. Then it is bonded, with a bonding adhesive under pressure and at elevated temperature, in a generally complementary cavity formed in the valve body.

3,647,181

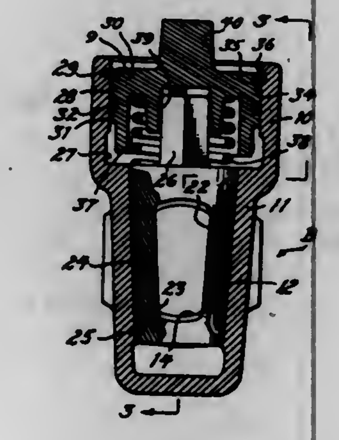
VALVE WITH CONTROLLED SEAL DEFLECTION

William L. Hulslander, Bradford, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of application Ser. No. 682,255, Nov. 13, 1967, now abandoned, Continuation-in-part of application Ser. No. 650,953, July 3, 1967, now Patent No. 3,504,886, dated Apr. 7, 1970, Continuation-in-part of application Ser. No. 440,101, Mar. 16, 1965, now Patent No. 3,360,231, dated Dec. 26, 1967. This application Mar. 25, 1970, Ser. No. 20,471

Int. Cl. F16k *5/00*

U.S. Cl. 251—317 **14 Claims**



An elastomeric seal for a closure element in a fluid shutoff valve to seal the valve against leakage when in shutoff position. The seal is situated front and rear on the closure element and is constructed to have greater rear deflection then front to minimize shearing or scarifying thereof when encroached by the surface edge at which it is to be compressed into sealing relation.

3,647,182

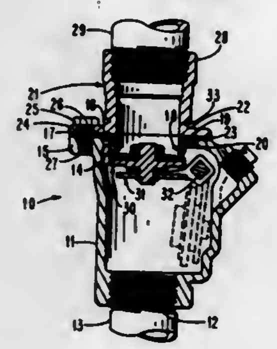
SHUTOFF VALVE ASSEMBLY

W. Donald Boudot, and Robert C. Carl, both of Cincinnati, Ohio, assignors to Dover Corporation, Cincinnati, Ohio

Filed Mar. 16, 1970, Ser. No. 19,936

Int. Cl. F16k *27/00*

U.S. Cl. 251—361 **6 Claims**



An emergency shutoff valve assembly has its valve seat supported by its casing so as to be easily replaceable in the field.

3,647,183

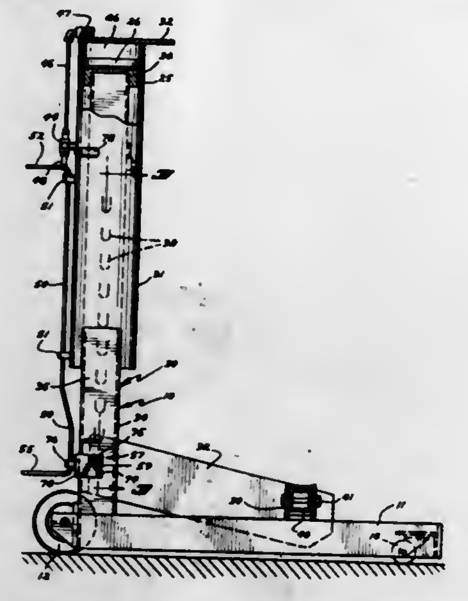
VEHICLE JACK

Sigurd A. Rishovd, Minneapolis, Minn., assignor to Royal Industries, Inc., Osseo, Minn.

Filed Sept. 2, 1970, Ser. No. 68,809

Int. Cl. B60p *1/00*

U.S. Cl. 254—2 B **5 Claims**



A fluid operated lift jack for vehicles or the like having a first stop means for limiting downward movement of the jack cylinder and a second stop means for limiting upward movement of the cylinder, said stop means yieldably retained in operative position, a single control for selectively admitting or withdrawing fluid from the jack to raise or lower the cylinder, and said control having connection with said stop means to make the second stop means inoperative during raising and the first stop means inoperative during lowering of the cylinder.

3,647,184

APPARATUS FOR TENSIONING TENDONS

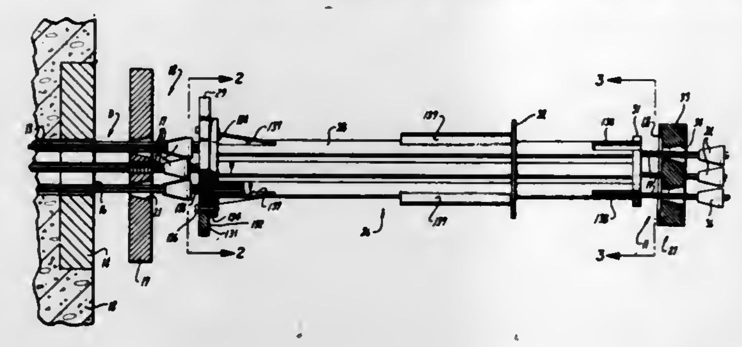
William L. Vanderhurst, 20630 Carmel Road, Saratoga, Calif., and Sidney D. Kemp, 339 Vassar Ave., Berkeley, Calif.

Filed Nov. 25, 1969, Ser. No. 879,780

Int. Cl. E21b *19/00;* **B21d** *39/00;* **E04c** *3/20*

U.S. Cl. 254—29 A **8 Claims**

Apparatus including a jacking device and a tendon aligning cartridge for use therewith, and a method of tensioning a plurality of side-by-side tendons is disclosed. The jacking device is preferably formed as a ring-type or center hole ram having a central passageway formed of sufficient dimension to accept and receive a tendon gripping pulling head, as mounted on the ends of the tendons to be tensioned, and formed with pulling head engaging gates which allow the pulling head to be engaged by the ram for tensioning of the tendons upon axial advancement of the ram. The jacking device is preferably additionally provided with a second ring-type ram which is used to insure uniform actuation of an anchorage having tendon gripping wedges therein after advancement of the tensioning ram to the desired position. A cartridgelike apparatus is also preferably used with the ram in order to align and separate the tendons between the tendon anchorage and the pulling head. The cartridge may also function to assist in properly actuating the tendon anchorage into gripping engagement of the tendons. The method includes the mounting of a pulling head onto the plurality of tendons, and preferably a tendon aligning cartridge, prior to bringing the ram into position for engagement of the pulling head and tensioning of the tendons.



3,647,185

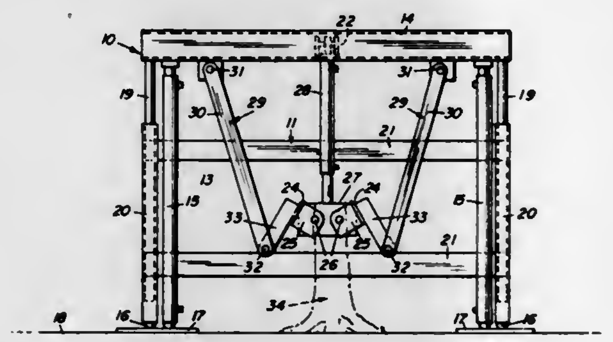
POWER-OPERATED PULLING IMPLEMENT

William Wayne Phibbs, Route 4, Lenoir City, Tenn.

Filed Oct. 24, 1969, Ser. No. 869,207

Int. Cl. E21b *19/00*

U.S. Cl. 254—30 **12 Claims**



A pulling implement includes a pair of opposed pivotally connected gripping jaws with toggle linkages arranged to exert force to close the jaws on an object to be pulled when the supporting framework is raised and thus pull the object thus gripped.

3,647,186

TOOL FOR TENSIONING AND HOLDING ROLLER CHAINS

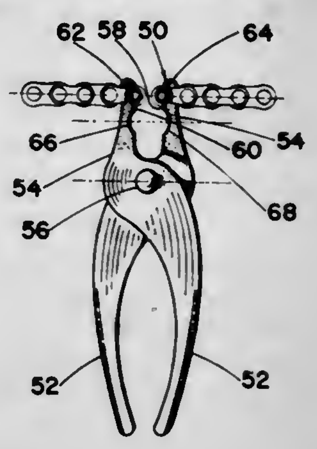
Wallace H. Hartman, 1444 South End Parkway, Plainfield, N.J.

Filed Mar. 9, 1970, Ser. No. 17,678

Int. Cl. B25b *7/02*

U.S. Cl. 254—78 **4 Claims**

A tool for tensioning and holding roller links of a roller chain in properly spaced relationship to provide for easy engagement or disengagement of a connecting link.



3,647,187

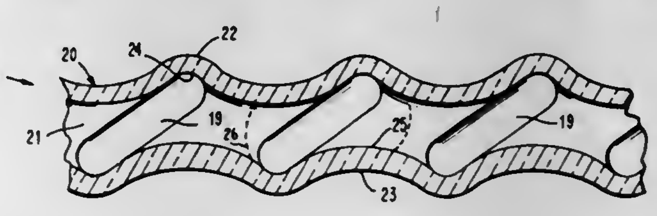
STATIC MIXER AND METHOD OF MAKING SAME

Robert E. Dannewitz, Yonkers, N.Y., and Albert M. Luongo, Emerson, N.J., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,474

Int. Cl. B01f *15/02*

U.S. Cl. 259—4 **7 Claims**



A static mixer and method of making the same which mixer is capable of simultaneously mixing together a plurality of fluids, usually at least two liquids, in a stream which may be segmented by a fluid which may be a gas, comprising one or more elements forming an elongated fluid passageway for conveying the fluids while at least two liquids are intermixed. A helix is formed within the passageway to impart a rotational movement to the stream so that the rotational velocity at the liquid-wall interface is greater than that at the center of the stream, providing an efficient mixing action, without breaking up the gas segments.

3,647,188

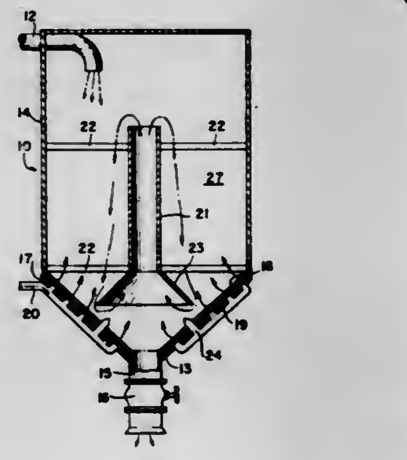
AIRLIFT BLENDING APPARATUS

Paul E. Solt, Allentown, Pa., assignor to Fuller Company

Filed Mar. 25, 1970, Ser. No. 22,640

Int. Cl. B01f *13/02*

U.S. Cl. 259—4 **6 Claims**



A blending apparatus for mixing dry powdered materials consisting of an upright silo with a gas-permeable divider and a gas supply providing fluidizing gas up through the divider.

A hollow blending column, open at its top and bottom, is vertically mounted in the silo with its bottom end spaced from the gas-permeable divider and gas is directed upwardly through the blending column at a velocity higher than the fluidizing gas velocity in the silo to circulate material from the silo upwardly through the blending column.

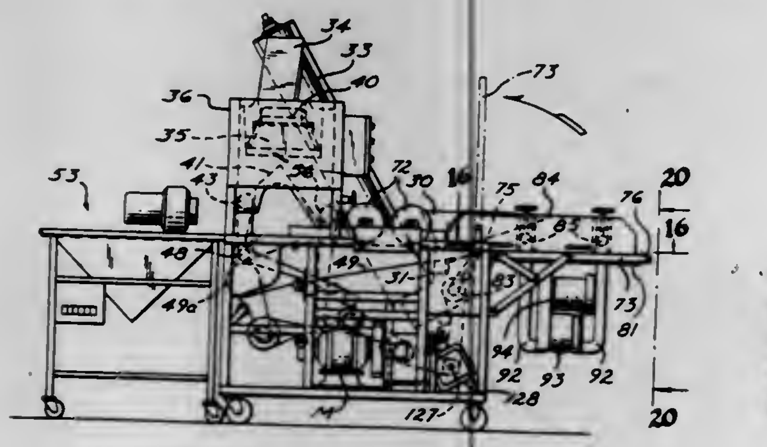
3,647,189
BREADING MACHINE

Richard T. Johnson, Sandusky, Ohio, assignor to Sam Stein Associates, Inc., Sandusky, Ohio

Original application June 27, 1968, Ser. No. 740,701, now Pat. No. 3,357,045. Divided and this application Jan. 12, 1970, Ser. No. 2,239

Int. Cl. B01f *7/02*

U.S. Cl. 259—45 **1 Claim**



A machine for coating a food product with breading material has an elevated hopper for storing the breading material and means for feeding the same in a smooth and controlled manner from the hopper, through a free-flowing downspout to be deposited on a belt beneath the food product, together with means for feeding the breading material in a smooth and controlled manner from the hopper to be deposited on top of the food product with a control valve at such outlet to control the rate of feed. A breading level plate is provided to maintain an even layer of breading material beneath the food product on the conveyor belt and this plate is resiliently mounted to relieve pressure of breading material building up behind the plate; and edge control plates are provided for preventing spillage of breading material at the sides of the conveyor belt. A hooded portion of open mesh belt conveyor is provided near the discharge end of the machine with air spray pipes above the belt to remove excess material, and the hood is adapted to be raised without interrupting the operation of the machine. In a modification, a flip bar is provided across the conveyor belt toward the discharge end of the machine to flip over the product so as to shake out breading material lodging in cavities of the food product, together with a novel arrangement for taking up excess length of the belt after it passes over the raised flip bar.

3,647,190
MIXING MACHINE FOR MEATS AND SAUSAGES

Adriano Iozzelli, Macalle 32, Pistoia, Italy

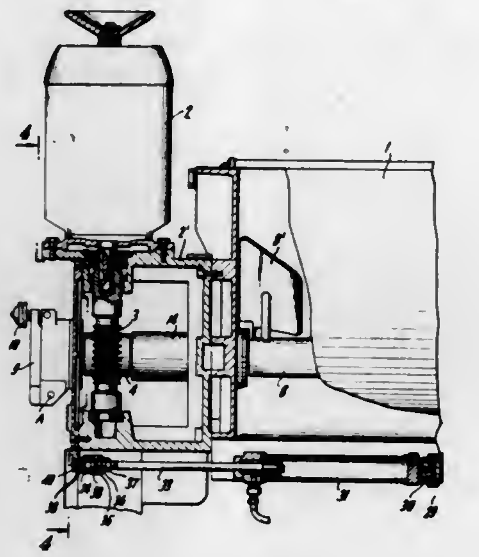
Filed Jan. 12, 1970, Ser. No. 2,326

Claims priority, application Italy, June 16, 1969, 4637 A/69

Int. Cl. B01f *7/00;* **B29b** *1/10*

U.S. Cl. 259—104 **9 Claims**

A mixing machine includes a pair of spaced counterrotating mixing shafts, mounting mixing paddles, disposed in parallel relationship within a vessel with a separate motor and transmission assembly located at each end of the shafts for rotating them. Each transmission assembly is located within a closed housing and a lubricant is contained in the housing for effecting continuous lubrication of the transmission assembly. A removable cover on the housing supports a part of the transmission assembly and provides means for compensating for axial thrusts on the mixing shafts. When the cover is opened it is possible to remove a portion of the transmission assembly so that the mixing shafts are released for removal from the vessel. Displaceable closures are provided for openings in the lower part of the vessel for unloading and cleaning the vessel. The closures can be disassembled for complete cleaning of the vessel.



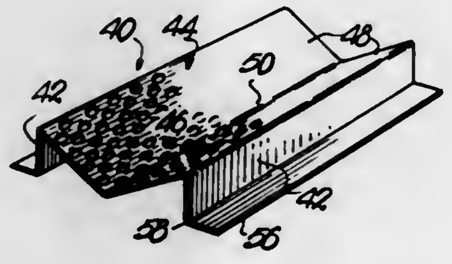
3,647,191
SPLASH BAR FOR COOLING TOWER FILL ASSEMBLY

Homer E. Fordyce, Kansas City, Mo., assignor to The Marley Company, Kansas City, Mo.

Filed July 27, 1970, Ser. No. 58,391

Int. Cl. B01f *3/04*

U.S. Cl. 261—111 **5 Claims**



A splash bar for a cooling tower fill assembly is formed from a synthetic resin sheet material and is of transversely M-shaped open base configuration. The sides of the bar are solid and vertically short relative to the horizontal distance between the sides spanned by the top, which is perforated and has a shallow, V-shaped, transverse configuration. Accordingly, the top presents a pair of inwardly sloping splash surfaces merging intermediate the sides to define a longitudinal channel along the top, three drip lines thus being provided at the channel and the two sides.

3,647,192
GAS-LIQUID CONTACTING TRAY

Johannes H. DeGroot; Hendrik J. Scheffer, and Willem H. Smit, all of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

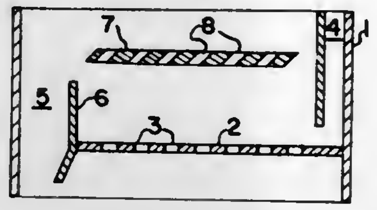
Filed Mar. 5, 1970, Ser. No. 16,798

Claims priority, application Netherlands, Mar. 31, 1969, 16620

Int. Cl. B01d *3/16*

U.S. Cl. 261—114 R **6 Claims**

A tray for contacting liquids and gases comprising a gas-liquid contacting section having a plurality of apertures for the passage of gas therethrough. At least one liquid supply inlet and at least one liquid discharge outlet is provided, the outlets being separated from the contacting section by a baffle plate disposed on the tray. A plate is disposed above the tray over the contacting sections thereof at a distance from the tray ranging between about one-half of the height of the baffle plate and twice that height, the plate being provided with passage means whose walls are positioned obliquely in such a way that, to the mixture of gas and liquid flowing through those passages in the upward direction, a deflection may be imparted in the direction of the nearest liquid supply outlet.



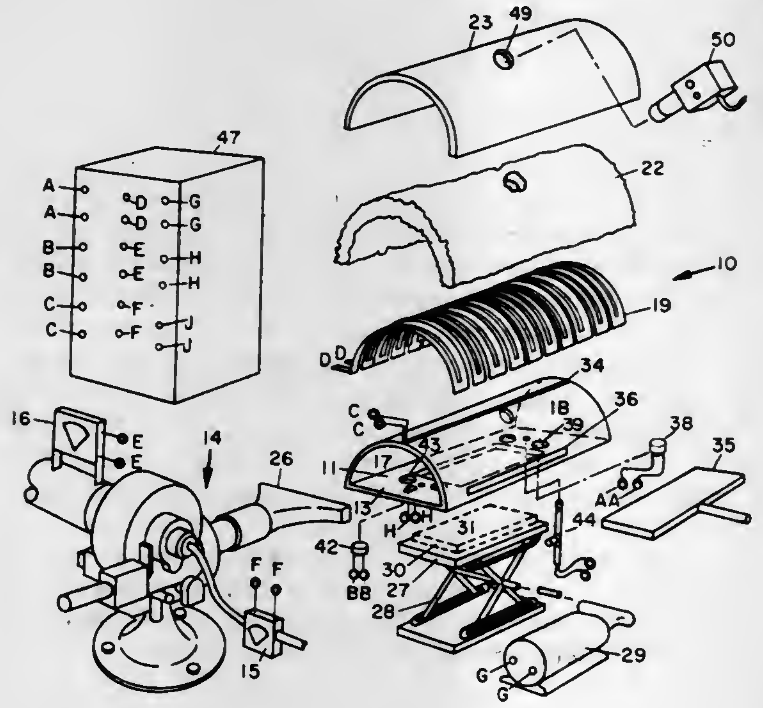
3,647,193
FIRE SIMULATION FACILITY

E. Bruce Belason, Wilmington; George K. Castle, Chelmsford; Donald P. Crowley, Lowell, and Joseph V. Morgida, Billerca, all of Mass., assignors to Avco Corporation, Cincinnati, Ohio

Filed Nov. 3, 1969, Ser. No. 873,281

Int. Cl. F27b *3/00*

U.S. Cl. 263—1 **17 Claims**



The invention relates to a fire simulation facility which accurately reproduces the thermodynamic and thermochemical parameters of a fire under controllable conditions. The facility utilizes a combination of a radiative and a convective heat source. The radiative source utilizes electrical resistance heater heating and a radiating surface having an emissivity of 0.8 to 0.9 or greater. The convective source generates hot gases in the form of chemical combustion products. The fire simulator also includes instrumentation for controlling the heat flux emanating from the heat sources.

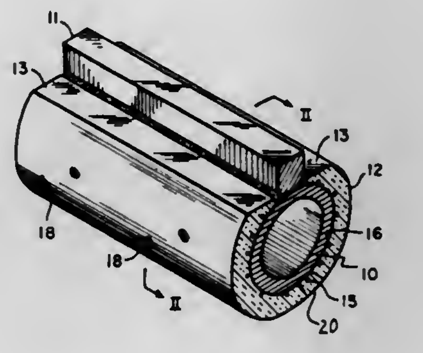
3,647,194
PROTECTIVE REFRACTORY MEMBER

Louis E. Brungraber, Mt. Lebanon, and Walter Rudin, Whitehall, both of Pa., assignors to Bloom Engineering Company, Inc., Pittsburgh, Pa.

Filed June 1, 1970, Ser. No. 41,791

Int. Cl. F27d *3/02*

U.S. Cl. 263—6 B **5 Claims**



A protective refractory member for protecting heat absorptive elongated elements comprising a hollow refractory element into which is solidly embedded a reticulated metal structure. A series of spaced pluglike openings extend through the refractory element so that the reticulated metal structure, which is substantially adjacent the heat absorptive elongated element can be welded thereto to serve as the sole means of support for the refractory member.

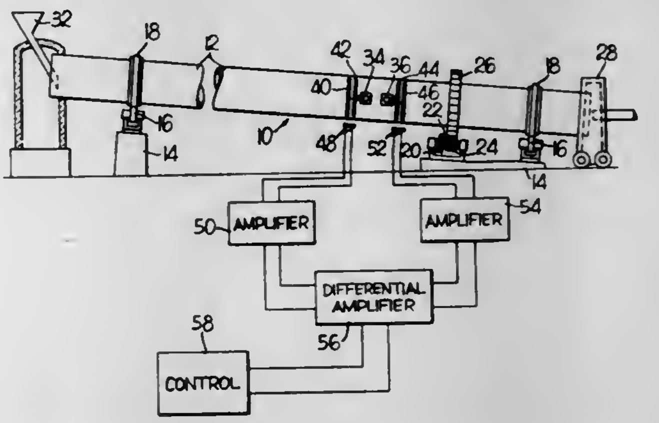
3,647,195
APPARATUS FOR AND METHOD OF CONTROLLING ROTARY KILN OPERATION

Hugh S. Drewry, Wauwatosa, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed May 1, 1970, Ser. No. 33,811

Int. Cl. F27b *7/20*

U.S. Cl. 263—33 **6 Claims**

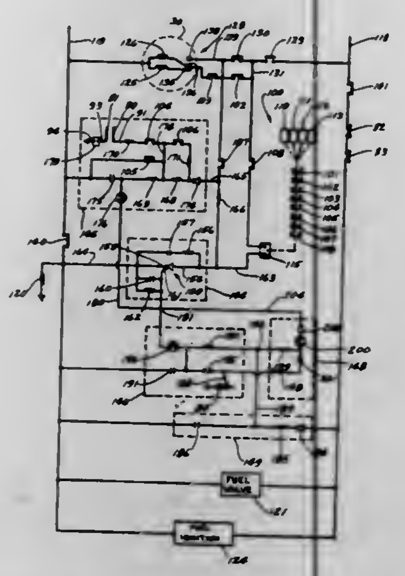


An apparatus for and method of controlling the operation of a cement kiln or the like in accordance with which means are provided for determining the temperature at two axially spaced locations within the calcining zone of the kiln, determining the differential between the temperatures measured at the two axially spaced locations as an indication of whether or not the burning zone of the kiln is located at a desired axial location within the kiln, and making proper control adjustment or adjustments to the kiln to maintain substantially constant the predetermined differential between the two measured temperatures, whereby to maintain the burning zone at the proper axial location within the kiln.

3,647,196

DRYER CONTROL SYSTEM

Curran D. Cotton, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa
Filed June 15, 1970, Ser. No. 46,332
Int. Cl. F27b *7/00*; **F26b** *19/00*
U.S. Cl. 263—33 B **15 Claims**

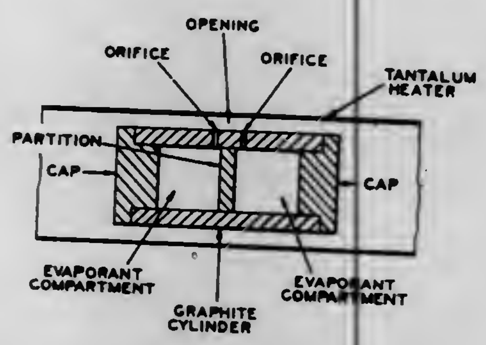


A control system for a fabric-drying apparatus comprising an actuation circuit including an SCR operable for initiating termination of operation of the apparatus responsive to one of a plurality of condition-responsive trigger circuits. The SCR is effectively responsive to a preselected dryness condition of the fabrics, to an absence of flame at the fuel burner, or to a malfunction of the apparatus, for example, to initiate a shutting down of the apparatus.

3,647,197

VACUUM DEPOSITION

Henry Holloway, West Bloomfield Township, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Apr. 27, 1970, Ser. No. 31,984
Int. Cl. F27b *14/04*
U.S. Cl. 263—47 R **1 Claim**



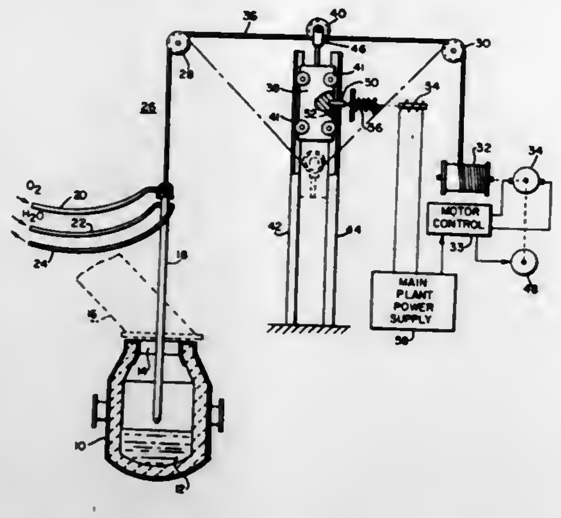
This invention is concerned with an apparatus for depositing in vacuum an epitaxial layer of lead tin tellurides. This invention achieves a constant chemistry of the deposited film by evaporating the constituents of the film from an essentially integral and isothermal source.

3,647,198

PROTECTIVE SYSTEM FOR BASIC OXYGEN FURNACE LANCE

William A. Munson, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 17, 1970, Ser. No. 64,445
Int. Cl. C21c *7/00*
U.S. Cl. 266—34 LM **9 Claims**

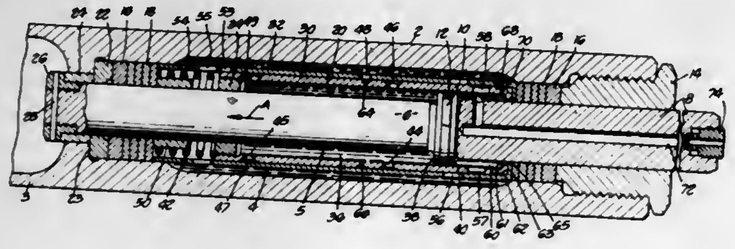
A system for automatically and positively retracting a basic oxygen furnace lance upon the occurrence of a power failure. The system is mechanical, relying only on gravity to withdraw the lance, and eliminates the necessity for auxiliary standby electrical and/or pneumatic equipment normally used to withdraw the lance when a power failure occurs.



3,647,199

VARIABLE-DAMPING LIQUID SPRING

Harish K. Bhutani, Downey, and Giles A. Kendall, Tarzana, both of Calif., assignors to Menasco Manufacturing Company, Los Angeles, Calif.
Filed May 7, 1970, Ser. No. 35,335
Int. Cl. F16f *5/00*
U.S. Cl. 267—124 **14 Claims**



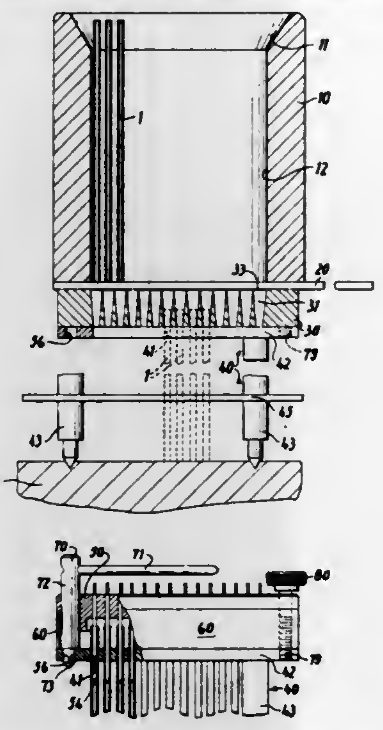
A variable-damping liquid spring having a housing adapted to contain a compressible fluid under pressure, a piston means extending into the said housing in slidable sealing engagement therewith, and damping means positioned within said housing which provide a variable fluid flow pattern to permit changes in the rate or direction of fluid flow within the housing during relative movement between the piston means and housing. A plurality of sleeves may be mounted within the housing with each of the sleeves having apertures therein. One fluid flow pattern during relative movement between the piston means and housing is established by the flow alignment of one set of apertures in the sleeves and another flow pattern during relative movement between the piston means and housing is established by the flow alignment of a different set of apertures in the sleeves.

3,647,200

APPARATUS FOR MAKING PROPELLANTS OF POWDER STRANDS

Gabriel Gross, Vichy, France, assignor to Manufacture de Machines du Haut-Rhin, Mulhouse-Bourtzwiller, France
Filed Aug. 3, 1970, Ser. No. 60,600
Claims priority, application France, Aug. 5, 1969, 69 26 815
Int. Cl. B23q *1/10*, *7/04*; **B65b** *35/34*
U.S. Cl. 269—51 **11 Claims**

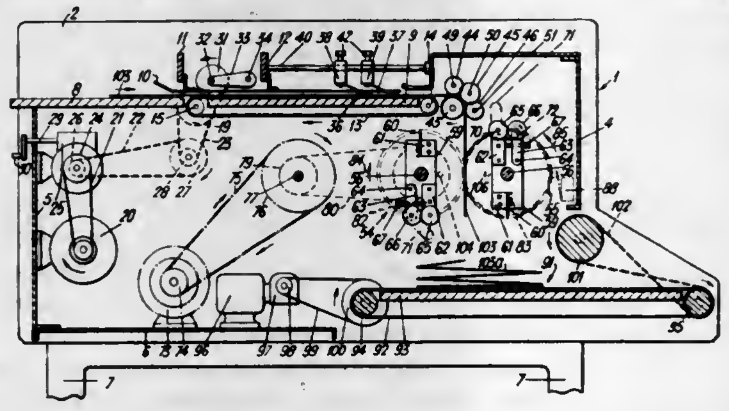
Apparatus for making propellants of powder strands. A plurality of outer strands of the same length are first placed generally in the form of a bundle in an open-topped vertical receptacle. The bottom end of the receptacle is closed by a plate which may be withdrawn when the strands are to be allowed to fall into a strand-orienting fixture. The fixture is placed beneath the receptacle in alignment therewith, the fixture having a multiperforated upper plate with vertical, funnel-shaped openings therethrough which receive the lower ends of the strands therein when the combination of receptacle and fixture are vibrated, whereby to guide strands through such openings and downwardly into contact with a supporting plate. The powder strands in the embodiment shown are hollow. After all of such openings are closed by the upper ends of the forwarded strands, the receptacle is removed from the fixture, and there is applied to the upper end of the fixture a jig or second fixture carrying a plurality of spaced mandrels, when the strands are hollow, which are introduced into the upper ends of the hollow strands now positioned in the first fixture. The jig is provided with means whereby the mandrels grip the upper ends of the hollow strands sufficiently to support the strands. The second fixture is then removed from the first fixture, and the thus-oriented and supported strands are transported, in very accurately spaced position, for further treatment, such as drying, and ultimately to be introduced into the chamber of an explosive device. When the strands are not hollow, rings or sleeves may be substituted for the mandrels.



3,647,201

MACHINES FOR FOLDING PAPER AND OTHER SHEETS

Jack Voyna Leslie Kemp, Toddington, Dunstable, England, assignor to Kemp Applications Limited, Dunstable, England
Filed Jan. 15, 1970, Ser. No. 3,022
Claims priority, application Great Britain, Feb. 21, 1969, 9,566/69
Int. Cl. B65h *45/16*, *45/20*
U.S. Cl. 270—73 **9 Claims**

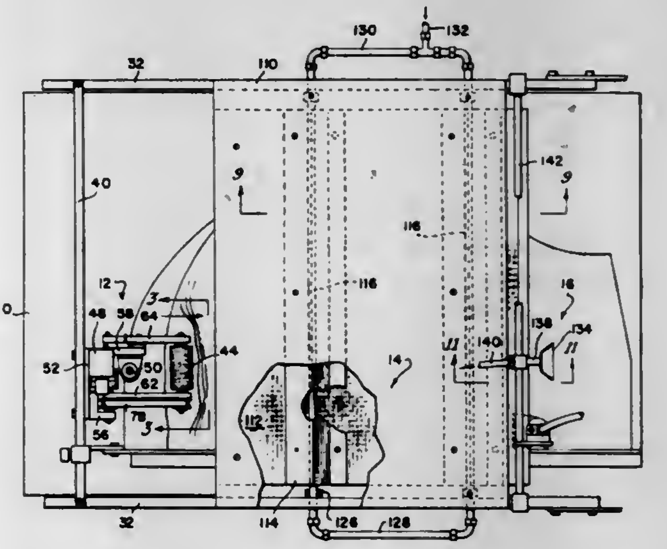


A machine for folding a sheet with a concertina fold comprises a pair of rotary creasing devices each of which includes an axially extending male creasing member and an axially extending female creasing member arranged so that on rotation of the devices the male and female members of the two devices mate with each other alternately and produce creases alternately in opposite directions in a sheet which is fed freely between the creasing devices by a feeding mechanism. The speed by which the sheet is fed by the feeding mechanism is adjustable and the speed of rotation of the creasing devices is constant so that the space between adjacent creases can be adjusted by adjusting the speed of the feed mechanism. Each of the male creasing members consists of an axially extending blade and each of the female members comprises a pair of rollers forming a nip between them into which the sheet is pushed by the blade of the other device as the devices rotate. The rollers are rotated contra to each other to draw the sheet into the nip between them to form the crease and subsequently the direction of rotation of the rollers is reversed so that the part of the sheet held between the rollers is discharged again after the crease has been formed.

3,647,202

PLY SHIFTER ASSEMBLY

Herbert V. Jacobs, Greenhill Apts., Apt. WA602, 1001 City Ave., Lower Merion, Pa., and Eric Winston, Melrose Park, Pa., assignors to Herbert V. Jacobs
Filed Feb. 11, 1970, Ser. No. 10,535
Int. Cl. B65h *3/52*
U.S. Cl. 271—19 **5 Claims**

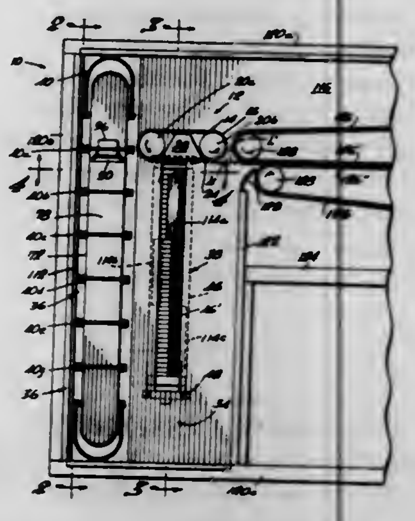


A ply shifter assembly comprising a rearwardly located ply shifter station, a centrally located air separation station and a forwardly located flutter tube station, all for the purpose of facilitating the separation of a topmost or otherwise exposed ply of goods from the remaining workpieces that have been assembled into a stack so that forward delivery of the workpiece is not impeded by the normal adherence inherent in many materials that are superimposed into a stack. The ply shifter station includes an actuator to drive a workpiece-contacting roller, as well as a clamp to hold down the remaining plies in the stack during the delivery of a workpiece. The air separation station involves means to discharge jets of air that will create currents to attract the topmost or exposed workpiece and cause it to become separated from the next workpiece in the stack. The flutter tube station is comprised of a fan-shaped discharge port that directs a stream of air forwardly and downwardly to loosen the leading edge of the workpiece.

3,647,203

APPARATUS FOR FEEDING LETTER ENVELOPES OR THE LIKE

John Randle De Hart, 4125 Pinta Ct., Coral Gables, Fla.
Filed Jan. 8, 1970, Ser. No. 1,347
Int. Cl. B65h *1/14, 3/12*
U.S. Cl. 271—30 A **12 Claims**

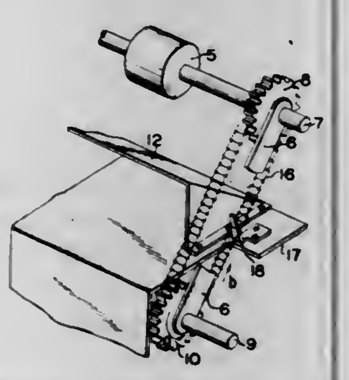


Work station apparatus for individually successively feeding elongate planar work items such as letter envelopes including main feed means including ported vacuum belt means for rapidly successively endwise edgewise shifting a continuous supply of work items and including supply feed means for progressively broadwise advancing a juxtapositioned supply of envelopes or the like to the main feed means and with the supply feed means including automatically operative means for regulating the feed rate of the supply feed means in response to the feed rate of the main feed means.

3,647,204

PAPER SHEET FEED DEVICE

Jiro Sato, Kawasaki-shi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 20, 1970, Ser. No. 4,227
Claims priority, application Japan, Jan. 28, 1969, 44/7826; Feb. 19, 1969, 44/15144
Int. Cl. B65h *3/06*
U.S. Cl. 271—36 **5 Claims**

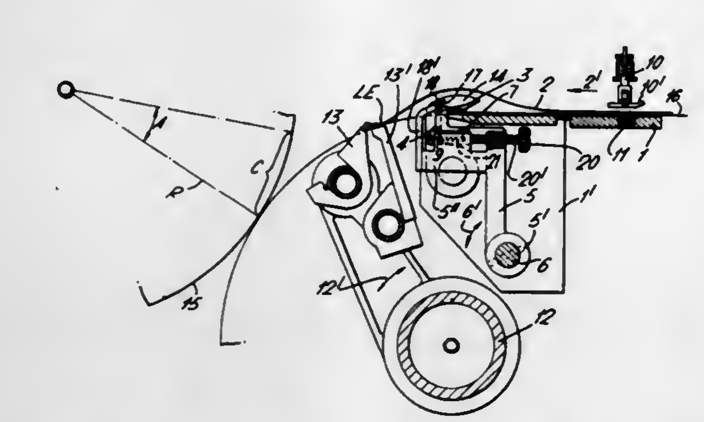


Paper sheet feed device includes a plurality of paper sheet feed means disposed such that each means can feed paper sheets having a predetermined size. When paper sheets are supplemented or replaced by the sheets of other size, the paper feed means is moved from its operative position to nonoperative position, but the paper sheets have been supplemented or replaced, the paper sheet feed means is automatically returned to its operative position with the aid of pawl members and ladder chain cooperating with feed means.

3,647,205

METHOD AND APPARATUS FOR FEEDING OF SHEETS FITTINGLY ALIGNED TO A MACHINE

Helmut Schone; Gunter Weisbach; Hans Johne; Fritz Kuhn, and Werner Lein, all of Radebeul, Germany, assignors to Veb Polygraph Leipzig, Kombinat fuer Polygraphiche Maschinen und Ausrustugen, Leipzig, Germany
Continuation-in-part of application Ser. No. 731,805, May 24, 1968, now abandoned. This application May 15, 1970, Ser. No. 37,602
Int. Cl. B65h *43/08*
U.S. Cl. 271—57 **3 Claims**

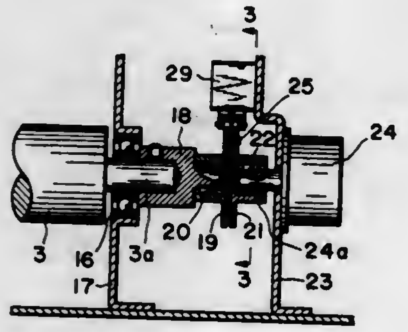


According to the method for feeding sheets fittingly aligned to a machine as taught by the invention, the sheet advancing, aligning, and controlling, as well as the moving of a control member is performed for a following sheet while the preceding sheet is still with its trailing edge upstream of a reference or control line thus overlapping the following sheet whereby the control member prevents erroneous indications for a following sheet by the preceding sheet. The present apparatus comprises journaled lever means which move said control member into and out of the path of a light beam to prevent a light reflection by a preceding sheet when a following sheet is out of alignment or absent.

3,647,206

MEANS FOR DETECTING SLIPPAGE OR STOPPAGE OF ENDLESS BELT IN COPYING MACHINE

Hideo Hashimoto, Koshigaya, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Aug. 3, 1970, Ser. No. 60,567
Claims priority, application Japan, Aug. 14, 1969, 44/63865
Int. Cl. B65h *7/00*
U.S. Cl. 271—57 **10 Claims**

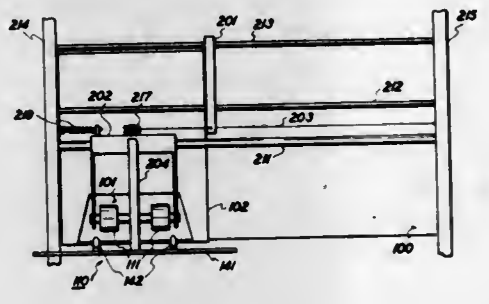


In a copying machine of the type having an endless belt on guide rollers for feeding copy sheets about a transparent printing cylinder, a system at one of the belt-driven guide rollers for detecting the slippage or stoppage of the endless belt, which system comprises a motor having an output shaft with a given rate of rotation which is lower than the rotation rate of the guide roller during normal operation, and two juxtaposed cam plates, one connected through a one-way clutch to the shaft of the guide roller and the other connected through a one-way clutch to the output shaft. The two plates are coupled for rotation together by a pin which projects from one into an arcuate slot in the other. When the roller is turning faster than the motor shaft, the roller clutch engages, causing the two cam plates to be driven in unison at the roller rotation rate by engagement of the pin with one end of the slot while the output shaft clutch is disengaged. If the rotation rate of the guide roller drops below that of the output shaft, relative rotation between the plates causes the pin to engage the opposite end of the slot, thereupon causing the output shaft clutch to engage to drive the plate system, while the roller clutch disengages. The periphery of each cam plate is provided with a recess, which recesses are out of register when the cam plate system is being driven through the guide roller clutch, but which are brought into register by the shifting of the pin in the slot when the output shaft clutch takes over the driving operation. A switch is provided having an actuator, riding on the outer periphery of the rotating cam plate, which drops into the recesses when indexed, giving a signal that indicates the slippage or stoppage of the belt on the roller and which can be used to operate associate components in the machine to deal with the condition.

3,647,207

SHEET-FEEDING MECHANISM CENTERING DEVICE

Donald F. McPherson, Hilton, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 18, 1970, Ser. No. 38,465
Int. Cl. B65h *1/04*
U.S. Cl. 271—61 **4 Claims**



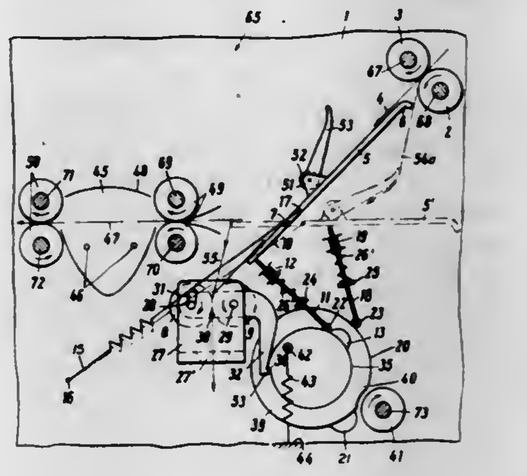
Apparatus for reliably locating the feed rollers and paper snubbers of a copier about the centerline of sheets contained in a cassette in response to the cassette being loaded into the copier regardless of the size of the cassette so that the feeding mechanism feeds sheets as needed from the cassette to the copier in correct alignment.

3,647,208

COMBINED SEPARATING AND DEFLECTING DEVICE FOR COPYING MATERIALS, MORE PARTICULARLY FOR COPYING MACHINES

Walter Limberger, Hamburg-Poppenbuttel, Germany, assignor to Lumoprint Zindler KG, Hamburg, Germany
Filed Mar. 17, 1970, Ser. No. 20,255
Claims priority, application Germany, Mar. 19, 1969, P 19 13 811.5
Int. Cl. B65h *29/64*
U.S. Cl. 271—64 **11 Claims**

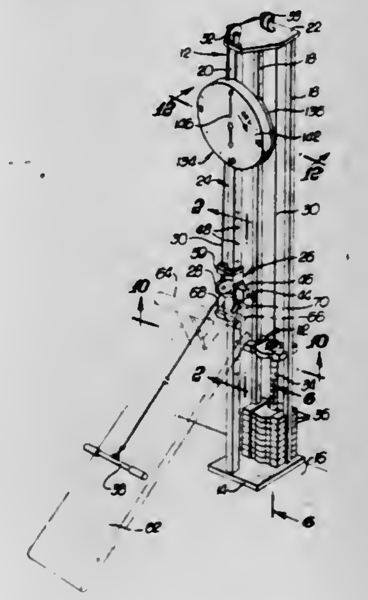
An improved combined separating and deflecting device for copying materials, more particularly for copying machines, wherein a combination of two superimposed sheets is applied at a certain velocity, the improvement comprises that the sheet to be deflected has a lead and is guided between two cooperating separating rollers of which at least one is mounted pivotably and is driven at a higher peripheral speed that the speed of the transport means for the copying materials, comprising a guide adapted to be pivoted towards the sheet to be deflected in accordance with the state of engagement of the separating rollers, the guide guiding the other sheet in its direction and being fixed resiliently in its end positions by an overcentering device.



3,647,209

WEIGHT LIFTING TYPE EXERCISING DEVICE

Jack La Lanne, 5224 Santa Monica Blvd., Hollywood, Calif.
Filed May 15, 1970, Ser. No. 37,553
Int. Cl. A63b *21/06, 21/00*
U.S. Cl. 272—58 **18 Claims**



An exercising device for lifting weights with a cable that is supported by and guided over an upright frame. A vertically movable carriage engages an upright post of the frame, means for guiding the cable to position its free end at different elevations above ground, and a locking pin mounted to the carriage for horizontal axial movement of the pin into engagement with any one of a plurality of vertically spaced apertures in the vertical post. Means are provided for biasing the pin into an aperture-engaging position, for withdrawing it therefrom, and for locking it in its aperture-engaging position. The carriage includes apertured ears for positioning an upwardly extending balanced bar resting on the ground. The end of the cable remote from the carriage has a weight-connecting member that extends through central apertures in a plurality of vertically spaced weight plates that include vertically arranged, radially outwardly extending cutouts and suitable undercuts so that an angular displacement of the member about its axis through 90° engages a protrusion projecting from the member with one of the weight plates for movement of the weight plate, together with the plates above it, with the cable. Means are provided for locking the weight connecting member in its weight plate engaging position. The member includes markings indicating the weight connected thereto. The cable is guided through and engaged by an indicating mechanism which signals the number of times the cable and the weights suspended therefrom have been lifted.

3,647,210
SIMULATED STEERING DEVICE HAVING A MANUALLY CONTROLLED FRICTION RESISTANCE TO STEERING MOVEMENTS

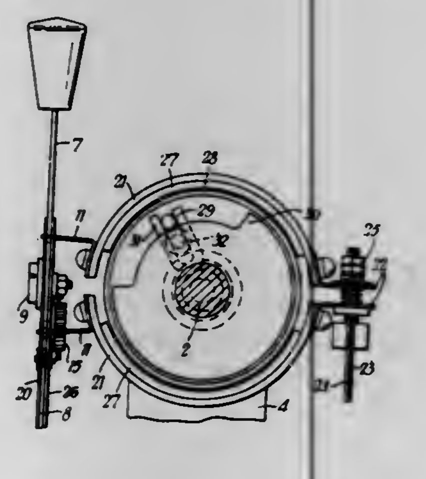
George Dennis Ratcliffe, 43, Northampton Road, Addiscombe, Croydon, Surrey CRO 7HD, England

Filed Dec. 24, 1969, Ser. No. 888,008

Claims priority, application Great Britain, Dec. 24, 1968, 61,467/68; Jan. 17, 1969, 3,000/69

Int. Cl. A63b *21/22, 21/00*

U.S. Cl. 272—83 A 7 Claims



A portable device for use in driver instruction or physiotherapy and having a steering wheel connected by a friction spindle to a brake which is manually adjustable to vary the friction resistance to rotation of the steering wheel encountered by a user of the device. The rotation of the spindle is transmitted to the brake through a torque transmission spring.

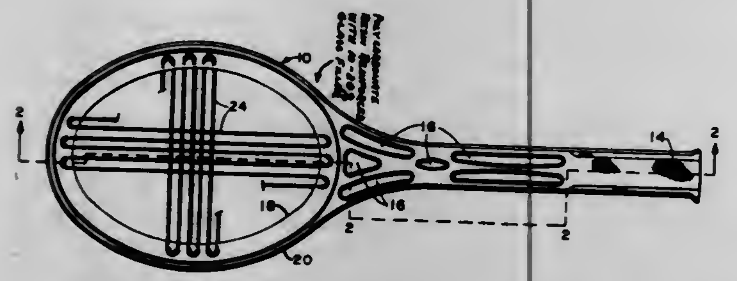
3,647,211
PLASTIC TENNIS RACKET HAVING PREDETERMINED CROSS SECTIONS EFFECTING FLEXIBILITY

James H. Doessel, 7429 N. Claremont Ave., Chicago, Ill., and Patrick A. McKenna, 708 Long Road, Glenview, Ill.

Filed June 8, 1970, Ser. No. 44,109

Int. Cl. A63b *49/10*

U.S. Cl. 273—73 C 5 Claims



A tennis racket frame of molded plastic includes head, shaft and handle portions with the cross sections thereof, together with the characteristics of the plastic material, providing maximum flex at the upper end of the head, secondary flexing at the throat area adjacent the head, lesser flexing at the base of the head, and the minimum of flexing at the shaft adjacent to handle. Shaft apertures and texturing of the handle can be molded in at the same time that the proper cross-sectional areas of these parts are formed. The cross-sectional area of the head is T-shaped and the string apertures are bridged by guides about which the strings extend in order to reduce wear thereof.

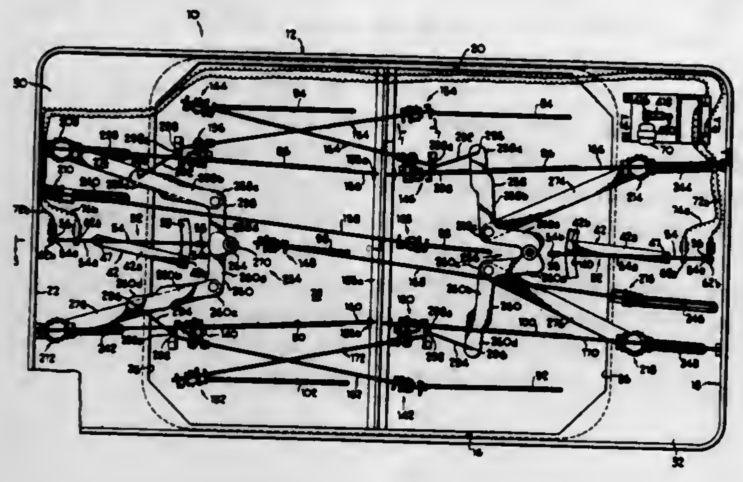
3,647,212
HOCKEY GAME

Gordon A. Barlow, Evanston, and Marvin I. Glass, Chicago, both of Ill., assignors to Marvin Glass & Associates

Filed June 1, 1970, Ser. No. 41,885

Int. Cl. A63f *7/06, 7/12*

U.S. Cl. 273—85 B 17 Claims



An improved game of the table hockey type characterized by the provision of linkage arrangements for operating simulated hockey players which require reduced to and fro movement to accomplish full to and fro movement of the players and wherein some controls operate more than one player. In addition, the hockey game is provided with a timekeeping device and associated audible signal means as well as audible signal means to indicate the score of a goal.

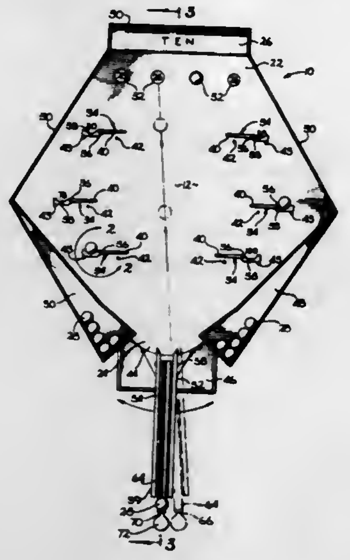
3,647,213
GAME APPARATUS INCLUDING SWIVELABLE PROJECTOR AND PIVOTABLE TARGETS

Donald L. Baker, 516 Mills Way, Goleta, Calif.

Filed Jan. 12, 1970, Ser. No. 2,257

Int. Cl. A63b *65/12*

U.S. Cl. 273—101 9 Claims



A game apparatus to be played with a spherical playing object having an inclined ramp playing surface, a plurality of playing object retaining devices upon the playing surface, a portion of the retaining devices including pivotal levers which upon contact on one end thereof is capable of effecting dislodgment of a resting playing object located at the other end of the lever, a playing object propelling device to move a playing object upon the inclined ramp playing surface against the pull of gravity, the propelling device being swivelable within an arc to be capable of catching a returning playing object and effect replay of the object.

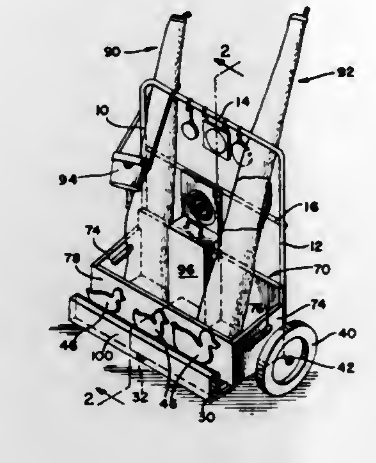
3,647,214
PORTABLE SHOOTING GALLERY AND GUN CART

John F. Hohmann, 403 Beech Ave., Takoma Park, Md.

Filed Apr. 21, 1970, Ser. No. 30,387

Int. Cl. F41j *7/00*

U.S. Cl. 273—105.6 5 Claims



An open framework includes spaced side portions, spaced bottom portions, and spaced horizontal portions, said horizontal portions having targets supported thereby. A front angle portion is connected to the forward ends of the bottom portions and pivotally supports targets thereon which are spring urged into operative position. A swingable support member is supported by the underside of said front angle portion. A pair of wheels are supported on axle means provided on the framework and are readily detachable therefrom. A removable support means in the form of an open top container is provided for supporting the lower ends of guns and for carrying ammunition or the like.

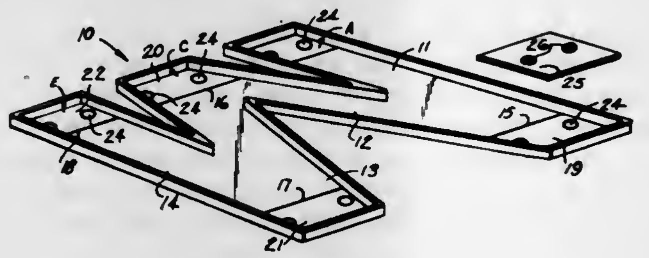
3,647,215
SURFACE PROJECTILE GAME BOARD HAVING INTERCHANGEABLE SCORING BOARD MEMBERS

Helen Sterlicchi, and Pasquale J. Sterlicchi, both of 11649 Downey Ave., Downey, Calif.

Filed Apr. 30, 1970, Ser. No. 33,328

Int. Cl. A63d *3/00;* A63f *7/14*

U.S. Cl. 273—123 R 2 Claims



A game device of a character having extended leg portions configuration with sidewalls on a similarly shaped structure to confine a ball or puck.

At the ends of the leg portions of the game structure are openings for interchangeable game-scoring members having either circles imprinted thereon or openings therein for the ball or puck to come to rest upon while within. The ball of the game and also puck, if used, are propelled by a suitable instrument which upon impact will propel the ball towards a circle or an opening whichever the case.

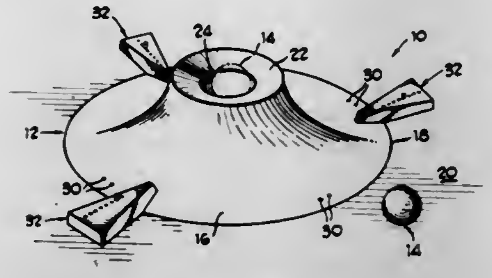
3,647,216
TARGET GAME FOR ROLLING MISSILE

Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates

Filed June 22, 1970, Ser. No. 48,078

Int. Cl. A63f *9/00*

U.S. Cl. 273—123 R 3 Claims



A target game characterized by the provision of a target member having a base for disposition on a horizontal surface and upwardly curved sides, terminating in a central opening. The game is further provided with divider elements for attachment to the periphery of the base for dividing the periphery into sectors corresponding to the number of participants in the game. The object of the game is for a participant to attempt to roll a ball up the sides of the base so that it will occupy the elevated central opening.

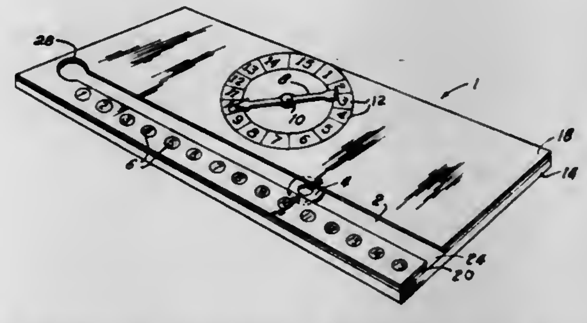
3,647,217
BOARD GAME APPARATUS

Leon Williams, Jr., and William Gerbetz, both of 3414 Tribune Drive, Apt. 134, Dallas, Tex.

Filed Feb. 4, 1970, Ser. No. 8,495

Int. Cl. A63f *3/02*

U.S. Cl. 273—134 G 7 Claims



A game apparatus comprising a game board having an elongated groove formed therein, a pointer pivotally mounted on the board, position indicators on the board adjacent the groove, and corresponding indicia positioned around the pointer. The groove has a bottom which is wider than the opening formed in the surface of the board allowing a game piece to be inserted only at an end of the groove and moved therealong for removal at the other end of the groove. The game piece is recessed in the groove such that a deliberate act is required to move the game piece through the groove.

3,647,218
PAN PUZZLES

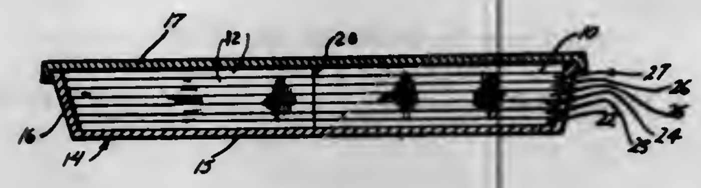
Charles F. Foley, 3908 Merriam Road, Minnetonka, Minn.; Charles D. McCarthy, Route #3 Box 217 8A, Wayzata, Minn., and Neil W. Rabens, 1106 Woodhill Road, Burnsville, Minn.

Filed Feb. 24, 1970, Ser. No. 14,265

Int. Cl. A63f *9/10*

U.S. Cl. 273—157 R 3 Claims

A small child's picture puzzle having a picture on a planar member which is made into pieces shaped in the form of a piece of pie, with straight edges, a center, and which do not interlock. The puzzle pieces fit together to form a substantially circular outer periphery and a plurality of puzzles nest



together in a container in the shape of a pie pan. Alternately the pieces may be stored in a pie piece shaped container.

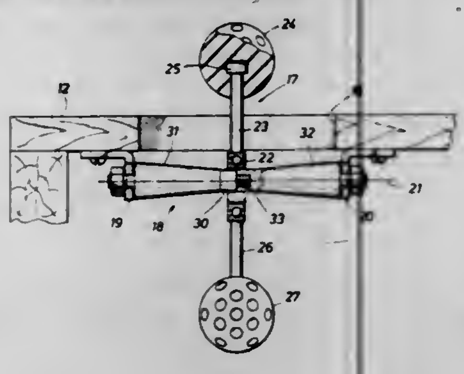
3,647,219
GOLF-PRACTICING APPARATUS

Hugh M. Ravatt, Aurora, Colo., assignor to John P. Kreisheimer, a part interest

Filed Dec. 31, 1970, Ser. No. 103,103

Int. Cl. A63b *69/36*

U.S. Cl. 275—185 D **10 Claims**



As a preferred embodiment of the invention disclosed herein, a circular bearing carrying at least one simulated golf ball and a dynamically associated counterbalance is loosely mounted on a tapered axle having axially spaced sections of different diameters which are each less than the internal diameter of the bearing. The axle includes a central cylindrical portion arranged between frustoconical end portions, which portions are coincidentally aligned along a common axis. The taper of the frustoconical sections is outward from the cylindrical section toward an outer end diameter that may be either smaller or larger than the diameter of the central cylindrical section. In this manner, only when the ball is struck squarely will the ball rotate about the axle without either wobbling or carrying the rotating assembly laterally along the axle to a different position. On the other hand, when the ball is struck offcenter, the rotating assembly will seek an axial position along the tapered axle which is representative of the misdirection of the golfer's swing.

3,647,220
GOLF PRACTICE SWING WEIGHT

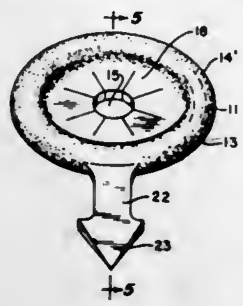
Joseph A. Burkart, 125 Turner Pl., and Gerald A. O'Connell, 118 Nichols Drive, both of Sycamore, Ill.

Filed Mar. 18, 1970, Ser. No. 20,722

Int. Cl. A63b *69/36*

U.S. Cl. 273—194 A **14 Claims**

This practice weight is basically a disk of molded rubber based plastic material having a circular rim in which a metal ring is encased concentrically with the disk, the disk having a center hole and radial slits extending therefrom to the rim portion to provide resilient friction tabs or fingers that are yieldable in both directions permitting slipping the practice weight on over the handle grip down to the head for practice swings and later removal of the practice weight in the reverse direction, the tabs or fingers engaging the hosel firmly enough to hold the practice weight in place properly during the practice swings. An elongated radially outwardly extending rubber based plastic tab can be molded in one piece with the disk ending in an outwardly tapered pointed wedge, this tab being long enough to permit bending it into a semicircle behind the head after the practice weight is in place at or adjacent the head on an iron, when the pointed end of the



wedge is forced through the center hole of the disk upwardly far enough to jam it on the hosel of the club and thereby fasten the practice weight securely against slipping down past the heel of the club head in practice swings and coming into contact with the ground.

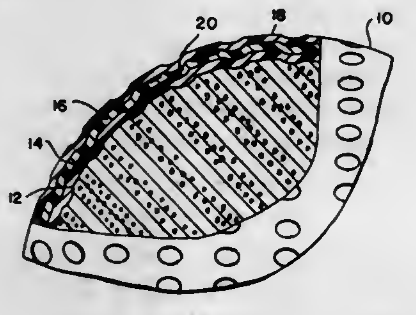
3,647,221
PAINTED GOLF BALL METHOD AND STRUCTURE

Danforth Holley, Grosse Pointe Shores, Mich., assignor to Holley Plastics Company, Warren, Mich.

Filed Sept. 15, 1969, Ser. No. 857,778

Int. Cl. A63b *37/00;* **B44d** *1/092*

U.S. Cl. 273—235 **12 Claims**



A method of producing a urethane painted solid polyurethane golf ball and the resulting structure. The steps in painting a solid polyurethane golf ball include soaking the golf ball in an acetone bath for approximately 20 minutes with intermittent agitation, applying a first coat of pigmented urethane paint to the golf ball approximately 5 hours after removing the golf ball from the acetone bath, applying a second coat of pigmented urethane paint to the golf ball approximately 10 hours after the first coat of paint has been applied thereto, stamping the golf ball 10 hours after the second coat of paint has been applied thereto, and clear coating the golf ball with a coat of clear urethane paint after it has been stamped. In the resulting painted golf ball structure, the paint adheres strongly to the golf ball due to the initial acetone treatment of the golf ball.

3,647,222
ORIENTATION INDEPENDENT PHONOGRAPH

Jack L. Kelly, Bethel Park, Pa., and Ronald K. Wiandt, Decatur, Ill., assignors to General Electric Company

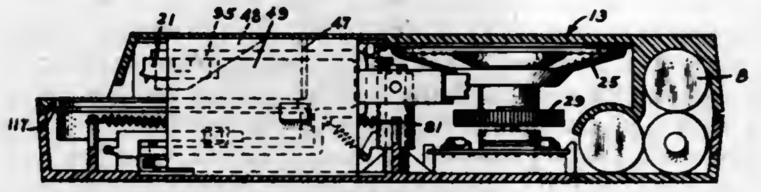
Filed Jan. 6, 1969, Ser. No. 789,247

Int. Cl. G11b

U.S. Cl. 274—1 R **3 Claims**

In a miniature record player for reproducing diminutive records, there is provided a rotatable turntable and a pivoted tone arm. A pickup cartridge is mounted on the tone arm for playing records positioned on the turntable. The tone arm is counterbalanced and spring biased so that the pickup cartridge is resiliently urged into playing engagement with a

record propelled by the turntable. A peripheral bearing surface is provided on the turntable to enable the turntable to maintain vertical stability when the player is inverted. One or more other bearing surfaces are also provided for maintaining vertical stability of a record placed on the turntable when the player is inverted. With this simplified arrangement, the miniature record player of the present invention may readily play records independently of its orientation.



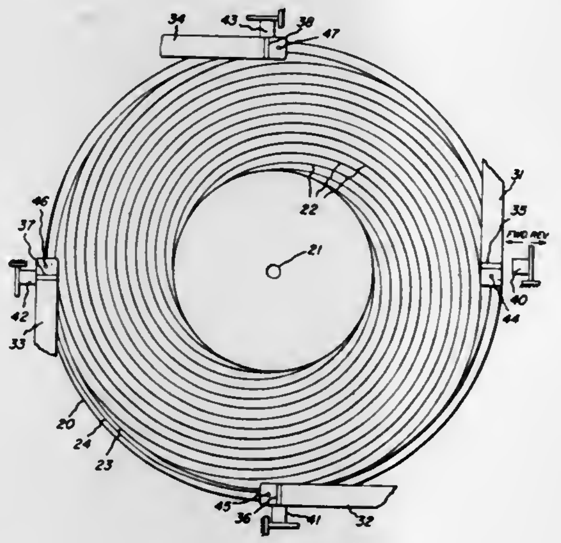
3,647,223
SELECTIVE AUDIO PLAYBACK APPARATUS

David J. Ben Daniel, Schenectady, N.Y.; John R. Morgan, Phoenix, Ariz., and John O. Fielding, Ballston Lake, N.Y., assignors to General Electric Company

Filed May 26, 1969, Ser. No. 827,794

Int. Cl. G11b *17/06*

U.S. Cl. 274—9 R **5 Claims**



Audio playback apparatus is described including phonograph means having a permanent magnet mounted in the pickup arm and a solenoid affixed at one side of the turntable for attracting or repelling the permanent magnet on the arm. The phonograph disk itself comprises information recorded in nested spiral-shaped grooves, each spiral-shaped groove intersecting an annular master groove containing spiral groove identification data. The stylus travels in the master groove to detect spiral groove identification data. When the recorded identification data matches the selected data, the solenoid repels the magnet, moving the pickup arm inward toward the center of the disk and into the selected spiral groove to reproduce the information recorded in the selected spiral groove.

3,647,224
VISCOUS DAMPED PIVOT SYSTEM FOR A PHONOGRAPH TONE ARM

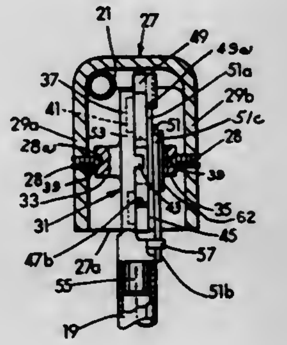
Keith W. Klein, Simsbury, Conn., assignor to General Electric Company

Filed Feb. 8, 1970, Ser. No. 1,403

Int. Cl. G11b *3/10*

U.S. Cl. 274—23 R **10 Claims**

A pivotal supporting arrangement for a phonograph tone arm is provided. This arrangement incorporates a stator having a channel therein for receiving a viscous damping fluid. The stator is structured to pivotally support a phonograph tone arm. A drag disc having a pickup tab formed on it is coaxially disposed relative to the stator and slidably engages the damping fluid in the stator channel. With this approach, an actuating portion of the tone arm housing acts upon the pickup tab of the drag disc during movement of the tone arm about its horizontal axis, with the disc sliding on the damping fluid to provide lost motion or time delay between the tone arm and the stator. The stator also pivotally supports the



tone arm for movement about a horizontal axis. A control spring is attached to the drag disc to enable the operator to select the desired amount of drag for exertion upon the tone arm. A stop tab on the stator is also provided for limiting movement of the drag disc with respect to the stator during vertical movement of the free end of the tone arm toward the turntable. The physical relationship of the actuating portion of the tone arm housing and the pickup tab of the drag disc is such that the viscous damping system is operationally disconnected from the tone arm when the stylus of the tone arm is in contact with a record surface.

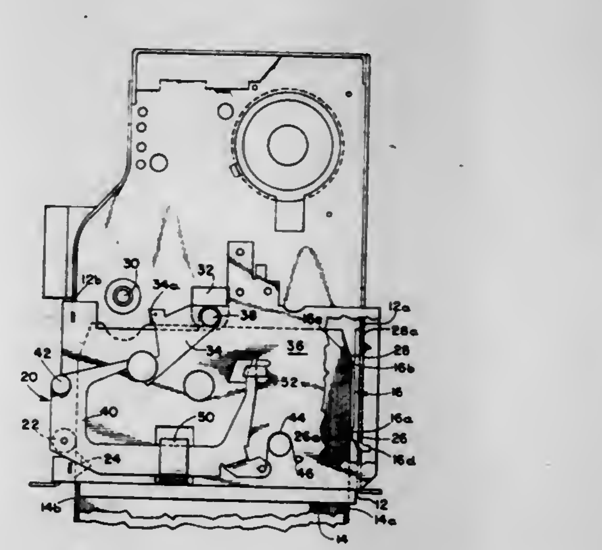
3,647,225
LOW-FRICTION GUIDE FOR CARTRIDGE TAPE PLAYER

Donald J. Dattilo, Mt. Prospect, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 2, 1970, Ser. No. 7,917

Int. Cl. G11b *5/00*

U.S. Cl. 274—4 R **7 Claims**



A cartridge-type magnetic tape player is provided with a snap-in guide member which is removably fastened to one of the sidewalls of the entryway of the tape player so that when a cartridge is inserted into the entryway and moved therealong the guide member will provide a low-friction guide surface for the cartridge.

3,647,226

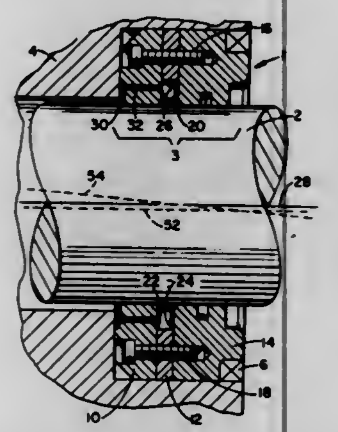
SEALING CARTRIDGE ASSEMBLY AND RING ELEMENT THEREFOR

James H. Middelkoop, Woodland Hills, and Edward J. Bigelow, Torrance, both of Calif., assignors to North American Rockwell Corporation

Continuation of application Ser. No. 583,879, Oct. 3, 1966, now abandoned. This application May 7, 1970, Ser. No. 37,380

Int. Cl. F16j *9/02, 9/20*

U.S. Cl. 277—35 **16 Claims**



A sealing cartridge assembly is disclosed for use between a cylinder housing and a piston shaft movable relative thereto. The assembly comprises a cartridge removably supported on the cylinder housing and having an annular cavity within which a sealing ring is contained. The stated ring is deformed by forcible contact with the cavity walls, causing the ring to bear against the piston shaft with a different contact area than when in the undeformed state. The ring is radially movable within the cavity to insure continuous sealing contact during conditions of misalignment, out-of-roundness, or bending of the piston shaft.

3,647,227

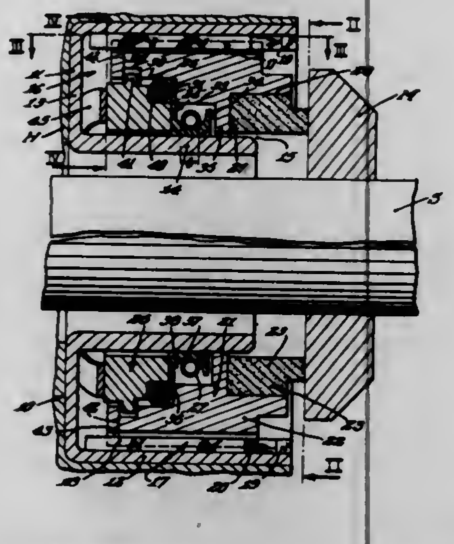
TWIN TAKE-APART HIGH-TEMPERATURE SHAFT SEAL

Bruno V. Lojkutz; Dale J. Warner, both of Chicago, and George H. Schulz, Naperville, all of Ill., assignors to Gits Bros. Mfg. Co., Chicago, Ill.

Filed May 15, 1970, Ser. No. 37,652

Int. Cl. F16j *15/02*

U.S. Cl. 277—40 **8 Claims**



A face-type high-temperature resisting shaft seal which can be disassembled without removal of its outer shell or casing from a housing, gearbox or the like in which it is pressed and having a unitary multiple-part inner seal assembly which is easily separated into its components after removal from the shell or casing. The casing is U-shaped, opening in an axial direction, and has one or more keys lugs extending longitudinally on the inner face of the outer wall, each with a crosshead at its outer end. The inner assembly includes an adapter ring with a slot or keyway for each lug wide enough to clear the crosshead. The adapter is retained in the casing by the crosshead when rotated to abut one side of the keyway with the lug. The adapter carrier a carbon seal nose projecting from the casing to ride on the face of an adjoining mating ring. A J-shaped temperature-resisting plastic packing ring has the leg portion thereof sealed against the adapter ring with an elastomeric O-ring and the hooked portion thereof loaded by a garter spring against the inner surface of the inner peripheral wall of the casing. A ferrule ring fits in the adapter and is pressed by a wave spring against the elastomer O-ring to seal the J-packing against the adapter ring. This ferrule has one or more radially projecting ears fitting in a groove at the back end of the adapter ring and this groove is slotted at intervals to permit assembly of the ferrule into the adapter. Thus each of the components of the inner assembly can be separated by rotating the ferrule to a align the ears thereof with the gaps in the adapter permitting the ferrule to drop out of the adapter.

3,647,228

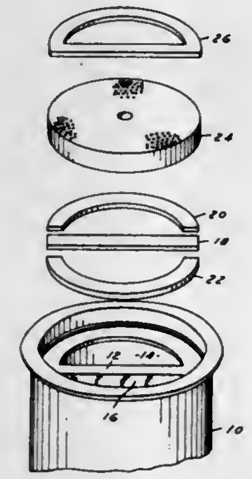
CERAMIC REGENERATOR SEALS

Donald J. Cassidy, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 9, 1970, Ser. No. 53,616

Int. Cl. F16j *15/54*

U.S. Cl. 277—96 **6 Claims**



A monolithic seal member made of zinc oxide is positioned in the housing of a gas turbine engine where the seal member rubs against a rotating ceramic regenerator. The seal member has excellent friction and thermal shock characteristics that make it uniquely suited for use in the gas turbine engine. Adding small amounts of calcium fluoride to the seal member reduces the coefficient of friction without changing significantly the thermal shock characteristics. The zinc oxide also can be applied as a coating to a ceramic substrate.

3,647,229

RESILIENT CONDUIT SEAL

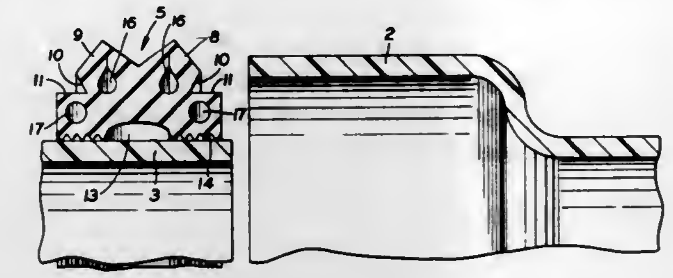
Kenneth Grimes, Streetsboro, Ohio, assignor to Hamilton Kent Manufacturing Co., Kent, Ohio

Filed Feb. 12, 1970, Ser. No. 10,952

Int. Cl. F16j *15/10*

U.S. Cl. 277—207 **11 Claims**

The seal is for use between the bell of one of two telescoped pipe ends and the spigot of the other pipe end. It is symmetrical and comprises a plurality of encircling perforate ears on its outer surface, with the tips of the ears in pressure contact with the inner surface of the bell. There is preferably a single tubular opening located radially inward from each tip and also a tubular opening near each edge of the seal below the above-mentioned openings. The inner surface of the conduit seal is preferably serrated and indented at the central portion.



3,647,230

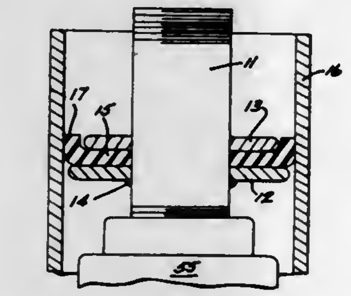
WELL PIPE SEAL

William L. Smedley, 245 Graham Road N.W., Grand Rapids, Mich.

Filed July 24, 1969, Ser. No. 844,333

Int. Cl. F16j *9/08, 15/32*

U.S. Cl. 277—212 **7 Claims**



The disclosure is of a seal to be used in a well immediately above a pump and at or below the normal level of the water in the well casing to prevent the movement of water and air downwardly past the seal into the area of the pump. The seal is designed to permit the necessary service connections to be passed through it and then adjusted to tightly seal about these connections before installation of the seal in the well.

3,647,231

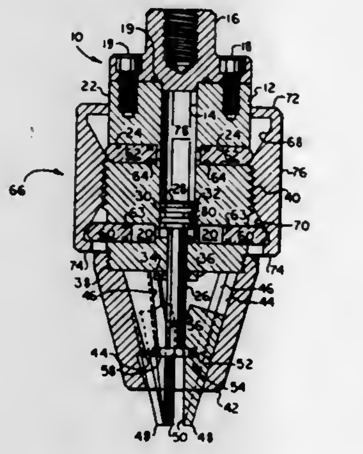
SELF-CONTAINED HYDRAULIC SYSTEM FOR FLUID-ACTUATED CHUCK

Thomas W. Schafer, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Feb. 13, 1970, Ser. No. 11,090

Int. Cl. B23b *31/30*

U.S. Cl. 279—4 **3 Claims**



Chuck includes cylindrical housing with central bore and two sets of holes extending from the bore to side surface of housing, said sets being spaced apart axially of the housing and the holes in each set being spaced apart circumferentially thereof. Actuating pistons are disposed in said holes and project from side surface of housing, and a drive piston is disposed in bore between two sets of holes. A collar is mounted on housing for movement axially thereof and has on its inner side cam surfaces which slope relative to side surface of housing and respectively engage projecting ends of actuating pistons in two sets of holes. Fluid disposed in bore between actuating pistons and drive piston cause latter to move axially of bore when collar moves axially of housing and thereby forces one set of actuating piston toward bore while permitting other set of actuating pistons to move away from bore. A collet having jaws therein is attached to housing, and shaft connected to drive piston varies spacing between jaws when drive piston moves in bore.

3,647,232

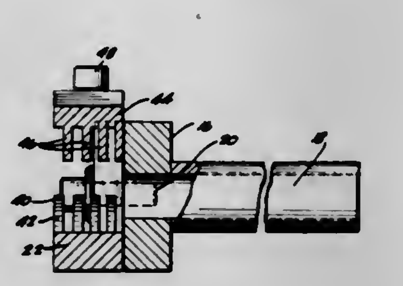
TOOLHOLDER

Dwayne Roy Anderson, Sylmar, Calif., assignor to George D. Hayes, Sun Valley, Calif., a part interest

Filed Jan. 8, 1970, Ser. No. 1,508

Int. Cl. B23b *29/08, 31/04*

U.S. Cl. 279—68 **2 Claims**



A toolholder for retaining a cutting tool is disclosed for use in automatic screw machines, turret lathes, or the like. The toolholder includes a hollow tubular member adapted to be inserted into the turret of the machine tool. A baseplate is mounted to the tubular member and has an opening therein which communicates with the hollow portion of the tubular member. A first set of jaws is fixedly mounted to the baseplate and a second set of jaws is adjustably mounted to engage the first set of jaws. Each set of jaws includes a plurality of teeth which are adapted to interleave with opposing teeth.

3,647,233

SAFETY SKI BINDING

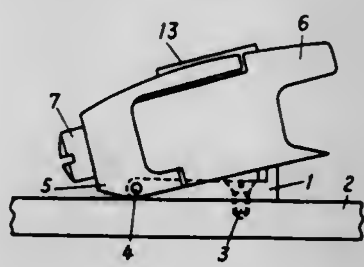
Hans Martin, Volkmarstrasse 6, Zurich, Switzerland

Filed Apr. 30, 1970, Ser. No. 33,264

Claims priority, application Switzerland, May 9, 1969, 7173/69

Int. Cl. A63c *9/00*

U.S. Cl. 280—11.35 T **9 Claims**



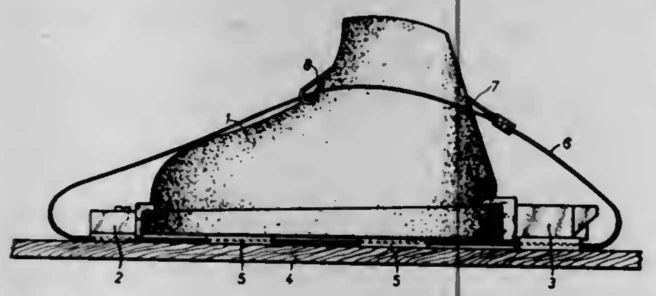
A safety ski binding of the type incorporating at least one securing head into which there can be inserted the ski boot, this securing head being raisable at the side of the ski boot and incorporating two retaining arms, the free ends of which hold or secure the ski boot, these retaining arms being laterally pivotable for the purpose of releasing the ski boot.

According to important aspects of the invention the securing head is equipped with a latching or locking mechanism which fixes the securing head in its lowered position, such latching mechanism engaging with predetermined locations of said retaining arms. The latching mechanism is subjected to the counter force of at least one spring member, so that upon exceeding the adjusted force this spring member releases the latching mechanism and therefore the securing head.

3,647,234
SKI BINDING WITH FRICTION-REDUCING MEANS BETWEEN SKI BOOT AND SKI

Ernst Gertsch, Sporthaus Central, Wengen, and Ulrich Gertsch, 461 G, Aenderbergstrasse, Matten, Interlaken, both of Switzerland

Filed Oct. 31, 1969, Ser. No. 872,904
Claims priority, application Switzerland, Nov. 5, 1968, 16485/68
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 C **11 Claims**

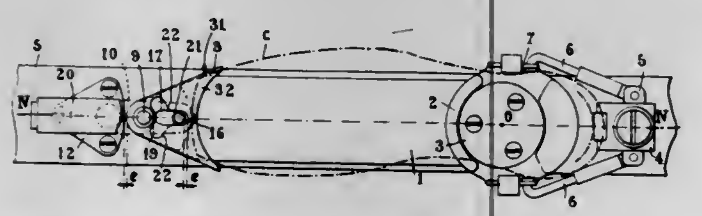


A ski binding is combined with one or several discs of plastic material inserted between the sole of the ski boot and the ski boot supporting surface of the ski. The discs are provided with diametrical bores through which a cable is passed which extends longitudinally of the ski between the boot and the ski surface. The cable passes through guides secured to the ski at both ends of the ski boot and is extended to form a loop about the upper of the boot. In a modification, one end of the cable is attached to the ski adjacent one end of the boot and the other end is attached to the ski boot.

3,647,235
SAFETY SKI BINDING

Jean Joseph Alfred Beyl, Boulevard Victor-Hugo, Nevers (Nievre), France

Filed Nov. 21, 1969, Ser. No. 878,864
Claims priority, application France, Dec. 4, 1968, 176496
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **14 Claims**

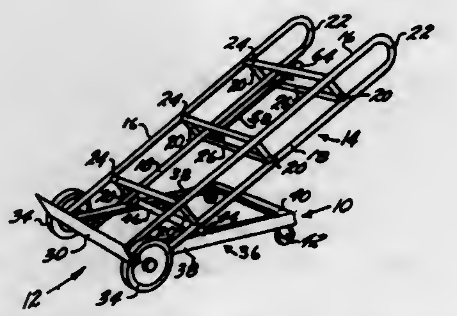


Safety ski binding comprising a movable plate adapted to pivot laterally on the ski and to receive the sole of a ski boot, a front jaw pivotally mounted on the front end of said movable plate about a pivot pin extending at right angles thereto, said jaw being adapted to be engaged by the toe end of the ski boot, and a resilient return device mounted on the ski ahead of said movable plate and adapted to urge said movable plate to its normal position when it is pivotally moved away therefrom. Said movable plate held against any longitudinal movement can only pivot about a fixed perpendicular axis and said return device acts upon the front jaw in such a manner that said front jaw is held in its normal position in relation to said movable plate when said movable plate is pivoted, but it is released therefrom only when the pivotal movement of said plate exceeds a predetermined angle.

3,647,236
HANDTRUCK ATTACHMENT

Leonard L. Hayes, 5060 Mitchell St., Riverside, Calif.

Filed Mar. 9, 1970, Ser. No. 18,405
Int. Cl. B62b *1/08*
U.S. Cl. 280—41 R **7 Claims**

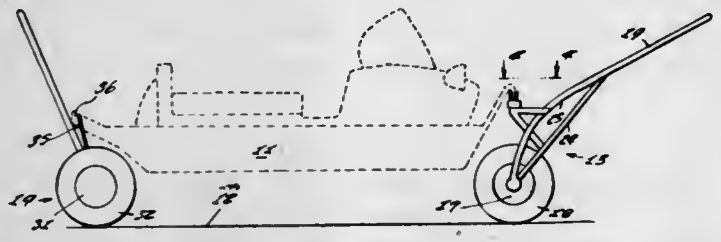


A handtruck body has a front end mounted on an axle and a pair of wheels about which the body is tilted for handling a load. An attachment has a front end pivotally connectable to the axle, a wheeled rear end and transversely slideable members having upstanding projections. The attachment is adapted to fit wholly within the body and be retained therein, yet can be released to swing downwardly and the projections can be foot manipulated for sliding the members laterally for engagement under the body to support it in tilted position.

3,647,237
SNOWMOBILE DOLLIES

Floyd W. Milton, Route 2, Box 197, Grand Rapids, Minn.

Filed Nov. 6, 1968, Ser. No. 773,777
Int. Cl. B62b *1/26*
U.S. Cl. 280—47.24 **1 Claim**



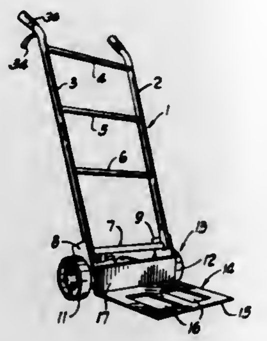
A front and rear dolly over which the front and rear end of a snowmobile can be placed so that the snowmobile may be transported conveniently to a place of use, each dolly including a frame supported upon a pair of wheels, each frame being adapted for receiving the snowmobile, and each dolly including a handle.

3,647,238
HANDTRUCK

Charles L. Mackey, Boynton Beach, Fla., assignor to Trio Machine and Manufacturing Company, Inc., Willoughby, Ohio

Filed Dec. 15, 1969, Ser. No. 884,964
Int. Cl. B62b *1/12*
U.S. Cl. 280—47.29 **1 Claim**

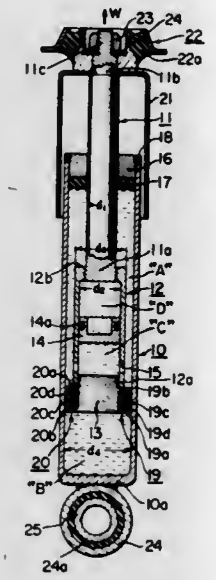
The disclosure hereof is of a handtruck which includes a load support mounted on a wheel and axle assembly, with a handle unit likewise connected to said wheel and axle assembly, both pivotally related, and means to interconnect the said support and handle unit for simultaneous movement, in various adjusted positions so that the handtruck and its load may be manipulated either to maintain the load support at a generally level attitude, or to change the same depending upon the type of load to be carried thereon, the adjustment being effected by simple means which are manipulatable from the handle unit as may be necessary or desirable.



3,647,239
VEHICLE SUSPENSION MECHANISM

Teiji Katsumori, Yokohama, Japan, assignor to Tokico Limited, Kanagawa-ken, Japan

Filed July 15, 1970, Ser. No. 54,947
Claims priority, application Japan, July 17, 1969, 44/56683; 44/56684; July 25, 1969, 44/59241; 44/59242
Int. Cl. B60g *11/26*
U.S. Cl. 280—124 F **4 Claims**

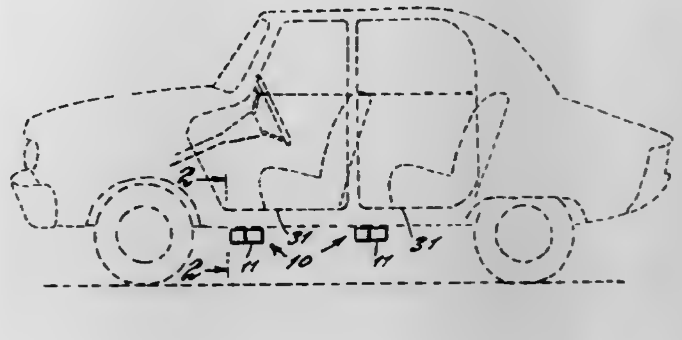


The suspension strut of the monotube-type for use with a powered and wheeled vehicle is of the combined hydraulic and pneumatic type having a cylinder and a piston slidable therein and the interior space of said cylinder is filled with a hydraulic liquid such as oil. The piston is fitted with flow-restricting valve means for generating damping forces during telescopic relative movement of said piston to said cylinder and said piston is mechanically connected with the chassis or running gear of said vehicle which said cylinder is fixed to the other portion of the vehicle. The improvement comprises a sleeve formed between said rod and said piston and a free piston is slidably mounted within the interior space of said sleeve for dividing said space into two variable volume chambers and a certain volume of a high-pressure inert gaseous medium is confined within one of said two chambers in a totally enclosed manner by rigid encircling walls for assuring the least possible leakage of the confined gaseous medium from said gas chamber.

3,647,240
KICK BLOCK

Joseph Rachic, P. O. Box 109, Bessemer, Pa.

Filed Apr. 2, 1970, Ser. No. 25,006
Int. Cl. B62d *23/00*
U.S. Cl. 280—150 **3 Claims**

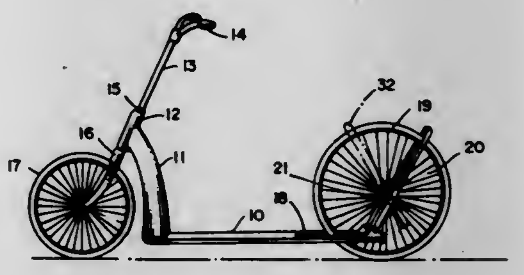


A shoe-kicking device for an automotive vehicle, the device comprising a wooden block mounted to a bracket, the bracket being mountable within a pair of clamps affixed to the chassis frame of an automotive vehicle so that the block in use, is in a position where a person may kick his feet upon entering the vehicle so to remove snow or slush from his shoes.

3,647,241
RIDER-PROPELLED VEHICLE

Phillip H. Huyssen, 116 Baber St., Hot Springs, Ark.

Filed Dec. 23, 1969, Ser. No. 887,595
Int. Cl. B62m *1/04*
U.S. Cl. 280—221 **3 Claims**



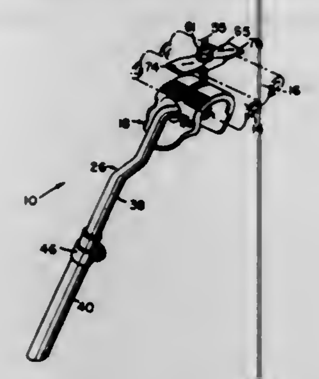
A rider-propelled vehicle has a footboard on which the rider may shift his weight in the propelling action and is provided at its front with a support and a handle-equipped steering shaft mounted in the support and with a fork receiving a front wheel. The rear portion of the board is slotted longitudinally to receive a rear wheel which is provided with an eccentric bearing. A shaft extending through the bearing is carried by support arms pivotally mounted upon the footboard, and a brace extends about the wheel and moves with the support arms.

3,647,242
ADJUSTABLE SUPPORT FOR KICKSTAND

Carlton P. Pawsat, and Robert F. Humlong, both of Maysville, Ky., assignors to Wald Manufacturing Company, Incorporated, Maysville, Ky.

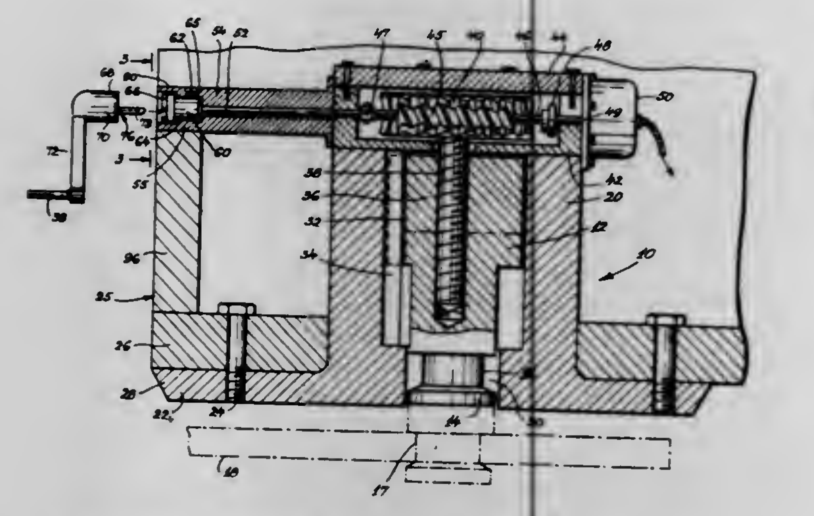
Continuation-in-part of application Ser. No. 853,786, Aug. 28, 1969, now abandoned. This application Jan. 9, 1970, Ser. No. 1,737
Int. Cl. B62h *1/02*
U.S. Cl. 280—298 **24 Claims**

A kickstand for a two-wheeled vehicle has its support adjustable in accordance with the size of the vehicle. The support comprises two telescoping members and a unique clamping arrangement holding the members in engagement with each other through the clamp engaging both members.



3,647,243
THEFTPROOF LOCKABLE COUPLING DEVICE

Charles E. Nagy, 3221 Benda Pl., Hollywood, Calif., and John F. Nagy, 785 West End Ave., New York, N.Y.
Filed Jan. 23, 1970, Ser. No. 5,268
Int. Cl. B62d *53/08*
U.S. Cl. 280—433 **10 Claims**

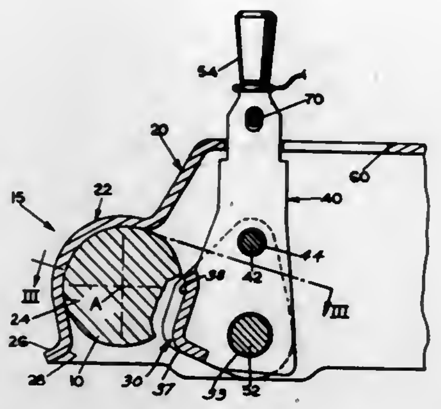


A lockable coupling device for a truck trailer has a pin which can be moved axially out of baseplate for engagement with a coupling plate of a tractor. A shaft is operatively arranged to advance and retract the pin. The shaft is joined to a barrel rotatable by a crank. The barrel can be locked against rotation by a lock in the barrel. The crank carries a key for locking and unlocking the barrel. A motor may be provided to drive the shaft for extending the pin. The pin may be arranged to obstruct a hole in a coupling plate attached to a truck trailer. The pin can be provided with a spring for automatic retraction when the shaft is retracted. The rotatable barrel may have switch contacts connected in circuit with the motor. The motor may be driven electrically or hydraulically.

3,647,244
COUPLER FOR TRAILERS AND THE LIKE

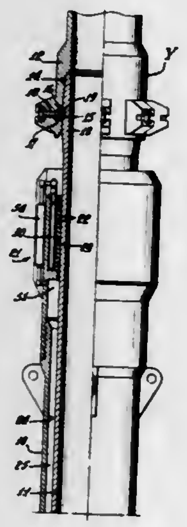
Russell E. Hollis, Jr., Xenia, Ohio, assignor to General Processing Corporation, Crossville, Tenn.
Filed Jan. 12, 1970, Ser. No. 2,299
Int. Cl. B60d *1/06*
U.S. Cl. 280—512 **9 Claims**

A coupler for engaging ball-type hitches, having a movable jaw or tumbler controlled by a handle secured thereto such that both rotate about a common axis which is positioned below the center of the engaged ball and such that the jaw is rotatable upwardly and away from the ball to disengage the coupler therefrom. The jaw is positioned generally opposite a socket portion of the coupler housing to entrap the ball therebetween, and the housing defines a recess which receives said handle to lock the coupler in a ball-engaging condition, there being a spring which biases the handle toward such recess.



3,647,245
TELESCOPIC JOINT EMBODYING A PRESSURE-ACTUATED PACKING DEVICE

James W. E. Hanes, Ventura, and Edward Larralde, Santa Barbara, both of Calif., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.
Filed Jan. 16, 1970, Ser. No. 3,400
Int. Cl. F16j *15/46;* **F16l** *17/00*
U.S. Cl. 285—106 **20 Claims**

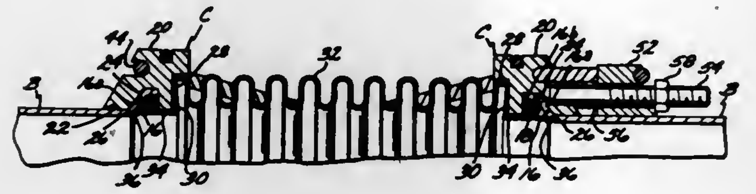


A telescopic joint embodying inner and outer telescopic members, a packing device effecting a slidable seal between the members and composed of pliable packing material carried by the outer member and forced against the inner member by fluid pressure acting upon an elastic diaphragm or bladder surrounding the packing material and forcing the latter inwardly over substantially its full length against the inner member, the origin of the fluid pressure force being the interior of the telescopic joint.

3,647,246
TUBING COUPLING

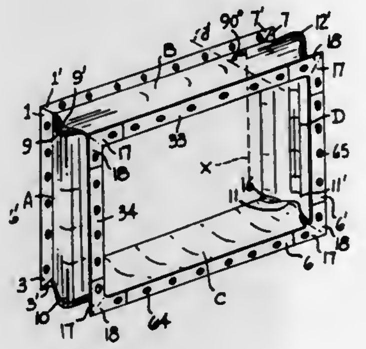
Wilson A. Burtis, Westminster, Calif., assignor to DeLaval Turbine California, Inc., Princeton, N.J.
Filed Jan. 13, 1970, Ser. No. 2,470
Int. Cl. F16l *13/04*
U.S. Cl. 285—114 **10 Claims**

A coupling of either fixed or flexible structure for removably connecting the adjacent generally axially aligned ends of two lengths of tubing. The coupling whether of fixed or flexible structure includes a resilient tubular connector that effects primary surface to surface seals with flared end portions of said tubing, and secondary seals by resilient rings that pressure contact said flared end portions, said connector, and ferrules that form a part of said coupling. Flexible cable or marcelled high-tensile strength wire removably engage slotted portions of the ferrules to prevent longitudinal separation thereof, and without axially loading the connector beyond that degree required to maintain said surface to surface seals.



3,647,247
TUBULAR CONNECTOR FOR EXPANSION JOINTS

Frederick Bruce Pintard, Somerville, and George Michael Mollick, Middlesex, both of N.J., assignors to Johns-Manville Corporation, New York, N.Y.
Filed July 24, 1969, Ser. No. 844,478
Int. Cl. F16l *51/02*
U.S. Cl. 285—229 **8 Claims**

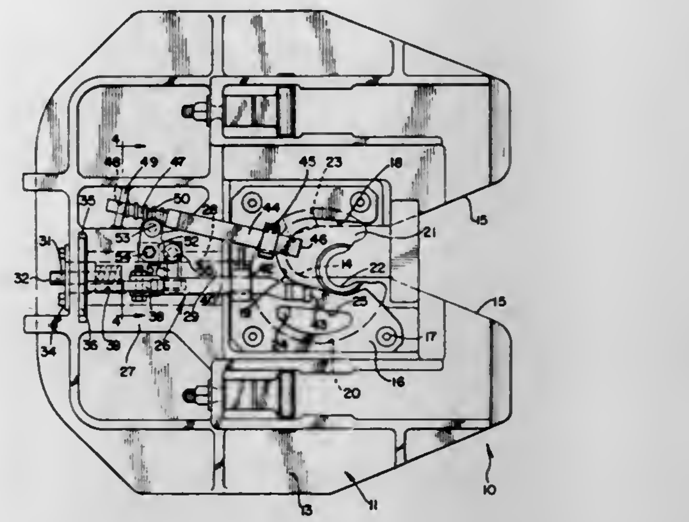


An expansion joint for joining adjacent ends of a pair of ducts wherein the expansion joint comprises a tubular connector having a turnable flange that is attached directly to the flange of each duct. Also, the tubular connector is made by a process which permits the folding thereof in sheetlike form.

3,647,248
KINGPIN LOCK AND INDICATOR FOR FIFTH WHEEL PLATE

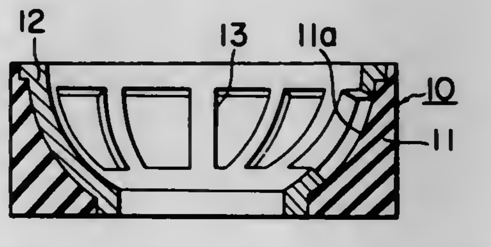
Ray L. Ferris, Thornton, and John H. Spence, Chicago Heights, **both of Ill., assignors to Pullman Incorporated, Chicago, Ill.**
Filed Sept. 24, 1970, Ser. No. 75,034
Int. Cl. F16d *9/00*
U.S. Cl. 287—20.5 R **5 Claims**

A fifth wheel plate for a trailer hitch includes a locking mechanism which is adapted to lock a kingpin receiving jaw in a closed position. The locking mechanism includes an indicating member which when the locking means is unlocked projects outwardly with respect to the fifth wheel plate so as to be readily visible. When the jaws are locked about a kingpin the indicator is recessed into the fifth wheel plate so that it is substantially removed from view. A rod is positioned in the path of the kingpin jaw during its movement to a closed position and engages the kingpin whereupon the actuating rod moves a latch mechanism out of the way of the locking mechanism so that it can move to its jaw locking position. If the kingpin is not within the jaw in proper position the latch mechanism prevents the locking mechanism from closing and thus remains in the position indicating that proper locking has not been accomplished.



3,647,249
BALL JOINT

Takashi Baba, and Chikara Matsuoka, both of Aichi-ken, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan
Continuation-in-part of application Ser. No. 760,849, Sept. 19, 1968, now abandoned. This application Sept. 14, 1970, Ser. No. 71,683
Int. Cl. F16c *11/06* Ser. No. 71,683
U.S. Cl. 287—90 R **3 Claims**

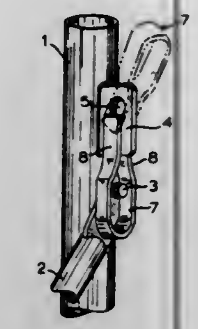


In a ball joint, the bearing for the ball or ball-like element comprises a support portion of a lubricant-resistant, elastically deformable rubberlike material having a surface layer formed to complement the ball-like member. The surface layer is of a wear- and lubricant-resistant synthetic resin having a low coefficient of friction, and is deformable in conformity with the underlying elastically deformable support portion. The surface layer has an opening or openings extending therethrough which serve as a reservoir for a lubricating oil and to moderate or impart flexibility to the surface layer.

3,647,250
PIVOTAL LOCKING CLASP

William M. Brown, 5175 North 105th St., Milwaukee, Wis.
Filed Apr. 30, 1970, Ser. No. 33,356
Int. Cl. E05c *19/08, 5/00*
U.S. Cl. 292—67 **3 Claims**

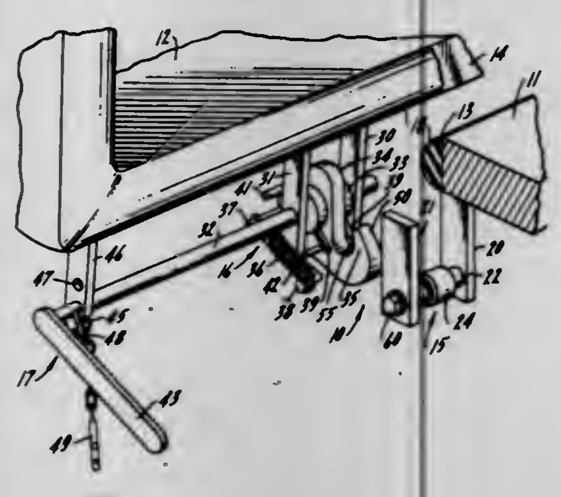
This invention is directed to pivotal locking clasps which may be employed to secure braces to posts as in scaffolds or to latch gates in closed position. The clasp consists of a baseplate having an aperture from which extends a slot. A hasp in the form of a loop is secured in a pivotal manner to the baseplate by a key located inside the aperture and secured internally to the legs of the hasp. When the hasp is pivoted to register the key with the slot and lodge it therein,



the clasp is in locking position and removal of the key from the slot permits the hasp to be pivoted to unlocked position.

3,647,251
LATCHING MECHANISM

Fred Brown, Chicago, Ill., and James Henry Obermeyer, Newtown, Ind., assignors to Union Tank Car Company
Filed July 13, 1970, Ser. No. 54,275
Int. Cl. E05c *5/00, 19/12*
U.S. Cl. 292—111 **5 Claims**

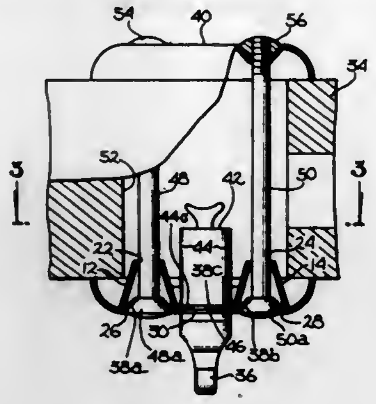


A latching mechanism which comprises a latch pin, an operating rod parallel to the latch pin, an eccentric sleeve secured about the operating rod, a hook-shaped catch means rotatably secured about the eccentric sleeve, and spring means biasing the catch means such that as the catch means is moved against the latch pin the catch means automatically engages the latch pin. The eccentric sleeve is positioned such that upon rotation of the operating rod the catch means exerts a closing force on the latch pin.

3,647,252
GUIDE FOR FASTENERS

Roger J. Nolin, Monterey Park, and Anthony F. Brizzi, Santa Ana, both of Calif., assignors to Tool Research & Engineering Corporation, Beverly Hills, Calif.
Filed Apr. 3, 1970, Ser. No. 25,412
Int. Cl. E05b *15/00*
U.S. Cl. 292—357 **15 Claims**

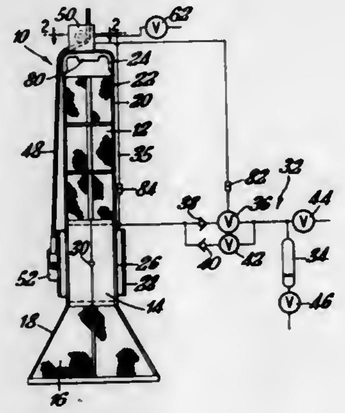
A guide for properly aligning elongated fastening means which are used to join opposed parts separated by a substantial distance in an opening. A typical application for the invented screw guide is in a lock or latch assembly where the



holding screws must generally pass through a substantial distance to join and engage opposed rosettes.

3,647,253
CAPTURE DEVICE

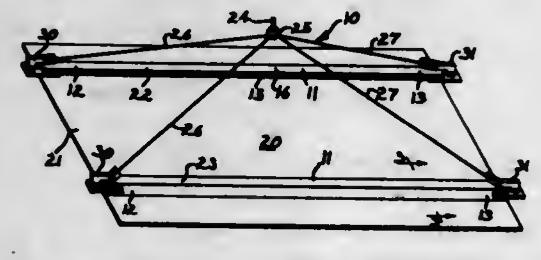
Frederic Lee Hettinger, Hollywood, Fla., and Bruce Calvin Gilman, Annandale, Va., assignors to Ocean Systems, Incorporated, New York, N.Y.
Filed Dec. 10, 1969, Ser. No. 883,921
Int. Cl. B66c *1/12*
U.S. Cl. 294—66 **7 Claims**



Apparatus for retrieving an experimental marine torpedo, or any other load, which is adapted to float on the surface of a body of water, comprising a main inflatable center section and a detachable nose and tail section. The nose section includes automatic signaling means responsive to the presence of the head of the torpedo for automatically inflating the center section. Additional means are incorporated to permit rotation of the apparatus from a vertical plane to a horizontal plane when retrieving the load.

3,647,254
BEAM-LIFTING APPARATUS

Chester R. Munson, 3129 E. 34th, Spokane, Wash.
Filed July 30, 1970, Ser. No. 59,431
Int. Cl. B66c *1/34*
U.S. Cl. 294—78 **6 Claims**

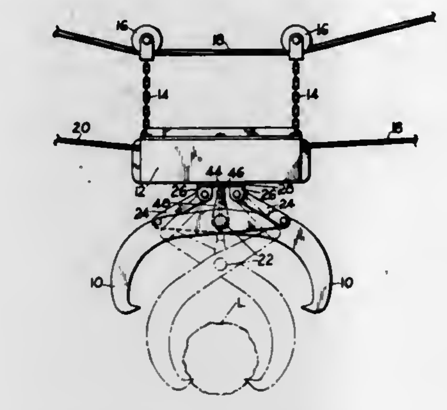


A beam-lifting apparatus is described for lifting structural channel beams such as U, T, I, H or L-shaped beams utilizing

hook means mounted to the ends of cables for inserting on the ends of the beams. The hook means includes two arm elements spaced by a web slot for receiving the web of the beam therein with the arms extending along the side of the web underneath the beam flange.

3,647,255
REMOTE-CONTROLLED GRAPPLE

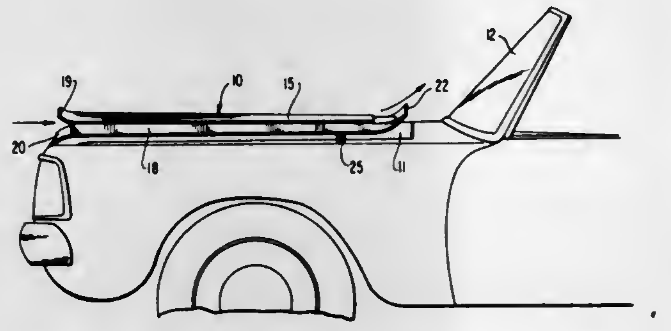
Gordon H. Hale, 13055 McKenzie Hwy., and James M. Fay, 890 Q St., both of Springfield, Oreg.
Filed Nov. 14, 1969, Ser. No. 876,740
Int. Cl. B66c *1/00*
U.S. Cl. 294—111 **6 Claims**



A pair of pivoted grapple hooks extend downward from a turntable mounted on a housing supported for movement between working sites. The turntable is driven by a hydraulic motor in the housing. One end of a cable is connected to the hooks and extends upward through a central opening in the turntable, thence over a pulley on the end of an extensible hydraulic piston-cylinder unit in the housing, and its opposite end is secured to the housing. Extension and retraction of the piston-cylinder unit effects opening and closing of the hooks. An electric motor in the housing receives power from a battery source in the housing to drive a hydraulic pump which supplies hydraulic pressure to the hydraulic motor and piston-cylinder unit through sequential operation of solenoid valves controlled by an electronic control circuit which, in turn, is activated by operation of a radio frequency receiver in the housing from a remotely transmitted radio frequency signal.

3,647,256
WINDSHIELD AIR DEFLECTOR

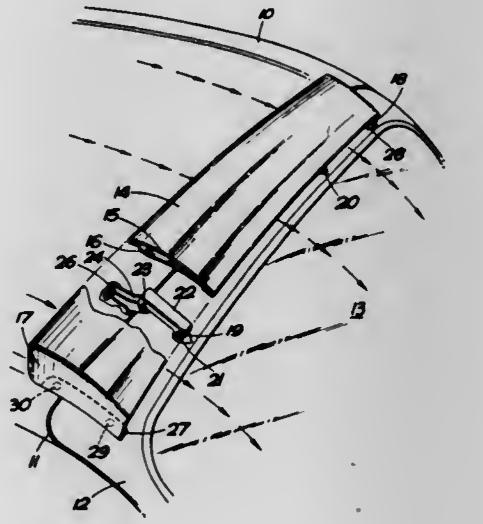
Ernest P. Cox, Seeley Lake, Mont.
Filed May 12, 1970, Ser. No. 36,590
Int. Cl. B60j *1/20*
U.S. Cl. 296—91 **3 Claims**



A unitary shallow airscoop attaches externally to the automobile hood and covers substantially the area of the hood and spans the width of the windshield. The airscoop is slightly tapered rearwardly to produce a nozzle effect and a deflector extension directs the airblast upwardly across the windshield to clear the same and tō carry debris, insects and the like over the roof of the car. The device is formed of tough heat-resistant plastic and attaches to the hood in a safe manner without marring the automobile in any way.

3,647,257
VEHICLE BODIES

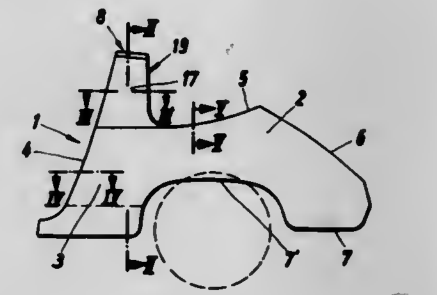
Edward Francis Litchfield, Coventry, England, assignor to Rootes Motors Limited, London, England
Filed May 25, 1970, Ser. No. 40,337
Claims priority, application Great Britain, June 3, 1970, 27,987/69
Int. Cl. B60j *1/20*
U.S. Cl. 296—91 **8 Claims**



A vehicle body has a rear access door in which a rear window is formed. An air vane is mounted on the body and door above the rear window to direct airflow over the window during forward movement of the vehicle.

3,647,258
PASSENGER CAR WITH A ROLL YOKE

Ferdinand Anton Ernst Porsche, Stuttgart-Nord, and Rainer Srock, Leinfelden, both of Germany, assignors to Firma Dr.-Ing. h.c.F. Porsche KG, Stuttgart-Zuffenhausen, Germany
Filed Oct. 24, 1969, Ser. No. 869,046
Claims priority, application Germany, Nov. 14, 1968, P 18 08 786.0
Int. Cl. B62d *25/06*
U.S. Cl. 296—102 **4 Claims**



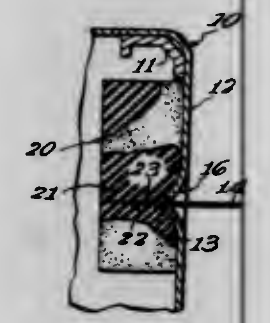
An automotive vehicle, especially a passenger car, with sidewalls which are disposed beneath the belt line and consist of inner and outer pressed-out parts. The sidewalls are provided with extensions above the belt line and are integral with the sidewalls. These extensions form the upright sections of the roll yoke. In particular, the outer pressed-out parts are equipped with extensions which form the outer wall of the roll yoke. The inner pressed-out parts are provided with extensions forming the inner wall of the roll yoke. The roll yoke is thus constructed as a box girder and has an additional pressed-out reinforcing member with pressed-out portions arranged within the box girder and extending over the entire height of the roll yoke.

3,647,259

TAMPER-PROOF TICKET HOLDER FOR COMMUTER SEAT

Gordon W. Hultquist, Chicago, Ill., assignor to Coach and Car Equipment Corporation, Elk Grove Village, Ill.

Filed Aug. 19, 1970, Ser. No. 64,941
Int. Cl. A47c *7/62*
U.S. Cl. 297—194 **9 Claims**



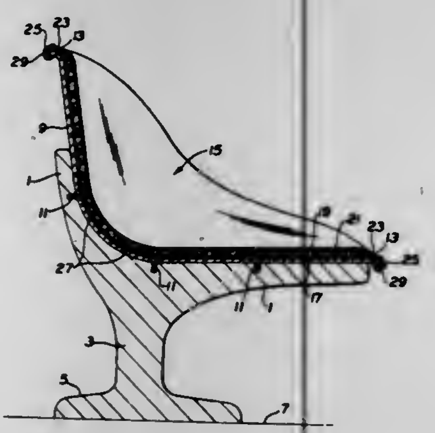
Tamper-proof ticket holder for commuter seat comprises a ticket-engaging element protectively enclosed within the backrest of the commuter seat, a slot in the rear wall of the commuter seat for receiving the ticket, and guide means for directing a ticket, inserted in the slot, toward the engaging element.

3,647,260

REPLACEABLE SEAT INSERT AND PROCESS OF MAKING

Bernard Carrington Grant, Sylvania, and John F. Reilly, Toledo, both of Ohio, assignors to The General Tire & Rubber Company

Filed Aug. 13, 1970, Ser. No. 63,371
Int. Cl. A47c *27/16, 3/00*
U.S. Cl. 297—219 **11 Claims**



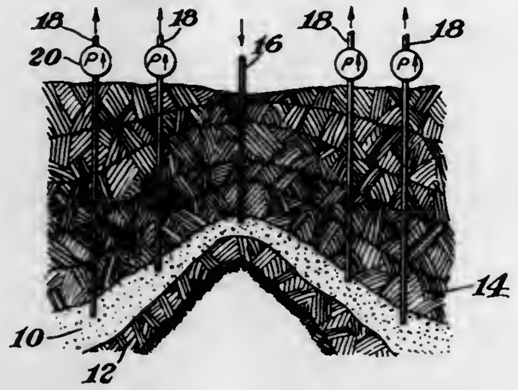
This invention concerns a replaceable insert for flare-edged, fully supported type chairs that combines the features of a rigid yet flexible base, a cushion, a nonwrinkling, nontearable cover, and resilient edge clamping means in one integral unit and to a novel method of making the insert. This seat insert is characterized by low manufacture and material costs as well as the absence of metal fasteners and other adjustable implements thus eliminating special installation skills and tools.

3,647,261

PROCESS FOR SOLUTION MINING OF SILVER

Vernon A. Stenger, and Walter R. Kramer, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 4, 1970, Ser. No. 34,419
Int. Cl. E21b *43/28*
U.S. Cl. 299—4 **8 Claims**



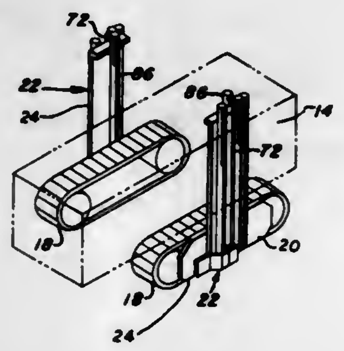
Disclosed herein is a process for the in situ leaching of noble metal values from ores. The process comprises feeding into a subterranean stratum chlorinated aqueous brine having an oxidation potential of at least about 500 millivolts. Noble metal values are solubilized into the brine which is then recovered from the stratum. The process is relatively efficient and economical and can be performed without complex, time-consuming excavations or the accumulation of processed tailings.

3,647,262

ROOF BOLTING METHOD AND ASSEMBLY

Charles W. Kacmarcy, P.O. Box 262, Franklin, Pa.

Continuation of application Ser. No. 777,313, Nov. 20, 1968, now abandoned. This application Jan. 7, 1970, Ser. No. 1,530
Int. Cl. E21c *11/02*
U.S. Cl. 299—11 **15 Claims**



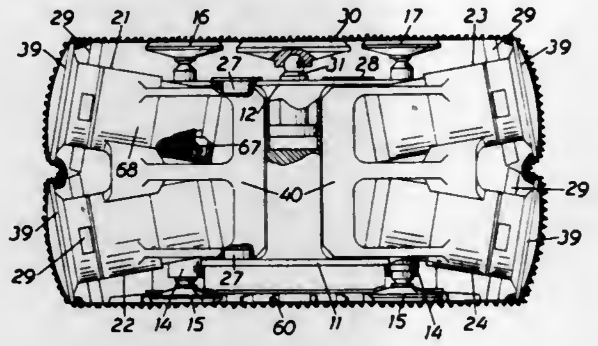
A roof bolting drill assembly for use with a mining machine which assembly is selectively mountable and demountably from the mining machine. Cooperable means are included on the mining machine and roof bolting assembly whereby the assembly is clamped to the mining machines for only linear motion for repositioning and unclamped from the mining machine during a bolting operation to permit limited relative traverse motion of the mining machine for simultaneous mining. A method of utilizing the above structure to carry out a simultaneous mining and roof bolting operation is also disclosed.

3,647,263

TUNNELLING MACHINES AND THE LIKE

Ernst Abraham Lauber, and Lorne Robert Herron, both of Thun, Switzerland, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Mar. 19, 1970, Ser. No. 21,167
Int. Cl. E21c *29/02;* E01g *3/04*
U.S. Cl. 299—31 **11 Claims**



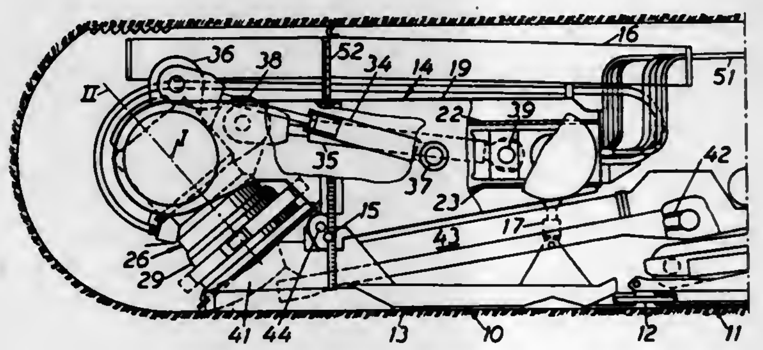
A tunneling machine is provided with one or more cutter heads with rotary cutters driven by a motor in each cutter head and swingably mounted in a front frame portion of the machine on an axis directed transversely to the longitudinal direction of the machine or tunnel. The front frame portion has supporting wall engaging shoes capable of being pressed against the tunnel walls for holding the front frame portion in fixed position and to loosen the grip in the walls when the front frame portion is fed forward or swung in any direction for steering purposes. The swinging axes of the cutter heads are offset from the axes along which the shoes press against the walls to facilitate service and supervision of the cutter heads.

3,647,264

MACHINE FOR DRIVING TUNNELS, DRIFTS, RAISES, AND THE LIKE

Ernst Abraham Lauber, Thun, Switzerland, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Apr. 14, 1970, Ser. No. 28,343
Int. Cl. E21c *29/02;* E01g *3/04*
U.S. Cl. 299—31 **21 Claims**



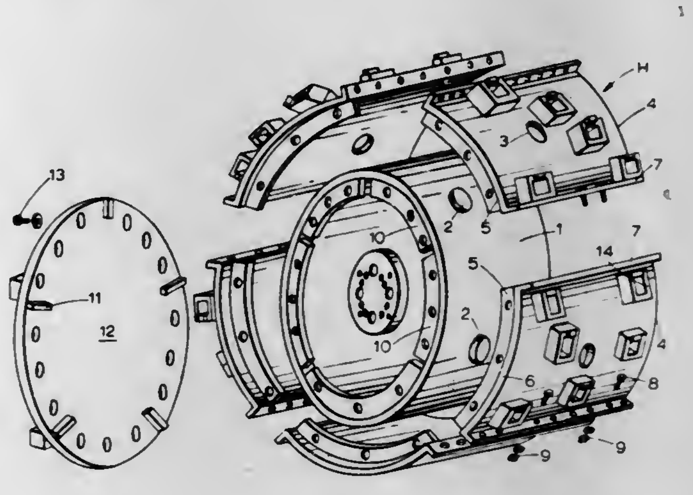
A tunnelling machine has a cutting unit which is mounted on a main frame to swing about a horizontal axis. The cutting unit has a rotating cutter head which cuts over the whole width of the tunnel upon the swinging of the cutting unit by means of two swing jacks. The cutting unit and the frame are braced between the sidewalls of the tunnel by means of two jacks which have their extension axes colinear with the horizontal axis of swinging. A transverse frame, slidable forwards and backwards in the main frame, can also be braced between the sidewalls by means of two colinear jacks. One of the swing jacks is mounted in the main frame and the other in the transverse frame, and the swing jacks are also used for advancing the machine in steps.

3,647,265

CUTTING HEADS

Gerald R. O. Pentith, Winston, Nr. Darlington, England, assignor to Greenside Machine Company, Limited, Durham, England

Filed July 31, 1970, Ser. No. 60,076
Int. Cl. E21c *25/10*
U.S. Cl. 299—90 **7 Claims**



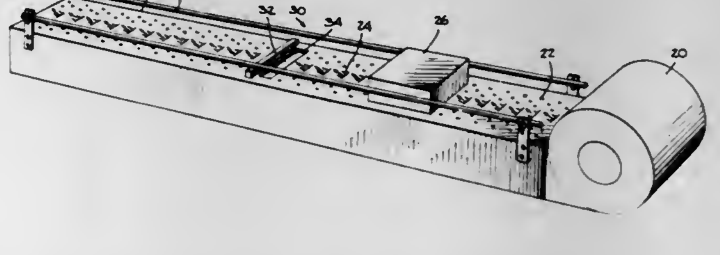
A rotary drum-type cutting head for use with, for example, mining and tunnelling machines, comprises a cylindrical drum to the periphery of which are secured a number of arcuate segments provided with pick boxes for the reception of picks.

3,647,266

VELOCITY CONTROL SYSTEM FOR AIR CONVEYORS

Stanley E. Hurd, Sunnyvale, and Leong Q. Fong, San Jose, both of Calif., assignors to Bangor Punta Operations, Inc., Greenwich, Conn.

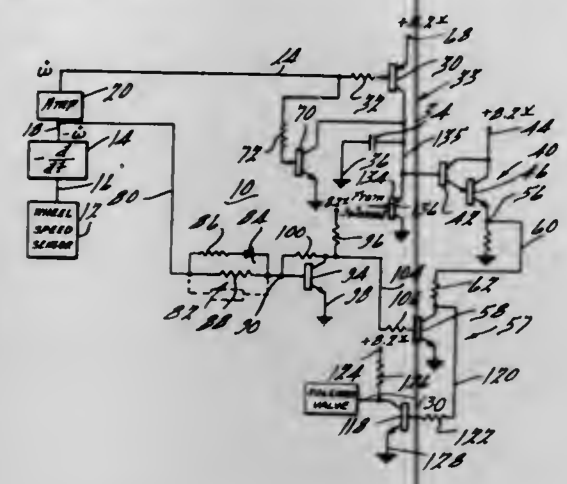
Filed Jan. 8, 1971, Ser. No. 104,869
Int. Cl. B65g *54/04*
U.S. Cl. 302—31 **14 Claims**



The system includes a deck having multiple openings for communicating air from an underlying plenum to lift and advance an object along a predetermined path spaced above and adjacent the deck. To retard fast moving objects without affecting slower moving objects, a barrier is disposed in the path of movement of the objects. Enlarged openings are provided through the deck directly upstream of the barrier to provide a lifting airjet of increased capacity. The fast moving objects have sufficient forward momentum to penetrate the larger capacity lifting airjet and strike the barrier. The larger capacity airjet lifts the stopped object over the barrier whereupon the object again starts moving downstream. The slower moving objects are lifted by the larger capacity airjet to an elevation above the barrier prior to hitting the barrier and are thus conveyed over the barrier without significant loss of velocity.

3,647,267
SKID CONTROL SYSTEM

Ronald S. Scharlack, San Antonio, Tex., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Nov. 12, 1969, Ser. No. 875,993
Int. Cl. B60t *8/08, 8/12*
U.S. Cl. 303—21 P **10 Claims**



A system for controlling the braking of a wheeled vehicle to prevent skidding, in which the braking effect applied to the wheel is effectively responsive to one or a combination of two conditions, either a large spin-up rate of the wheel, or a small wheel speed versus car speed deviation, in this latter case it being assumed that the car speed remains essentially constant. The system generates a signal which is an approximation of the function representative of the time remaining to effectively reapply the brakes in order to anticipate the hydraulic and mechanical inertia of the system in reapplying the brake pressure to the wheels. The system includes a apparatus for sensing the wheel angular velocity, a differentiater circuit for differentiating the wheel velocity to achieve an angular acceleration signal, this acceleration signal being stored in the system for use in generating a wheel speed deviation from vehicle speed signal, and a system for sensing the rate of change of the wheel speed velocity relative to the car velocity or wheel speed deviation from vehicle speed and a second circuit for sensing the rate of spin-up of the wheel, this latter circuit including a function generator system, in the form of a nonlinear device, to vary the effect of the wheel spin-up signal rate in accordance with its magnitude. The skid control solenoid is controlled in accordance with one of these signals.

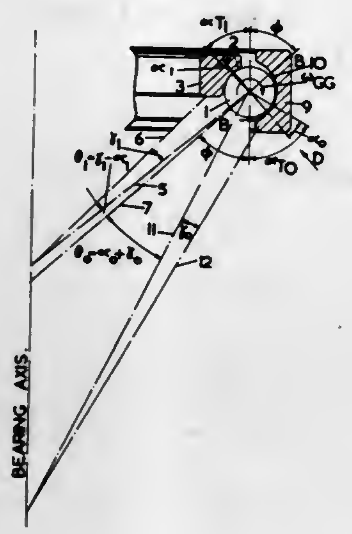
ERRATUM

For Class 305—10 see:
Patent No. 3,647,270

3,647,268
BALL BEARINGS

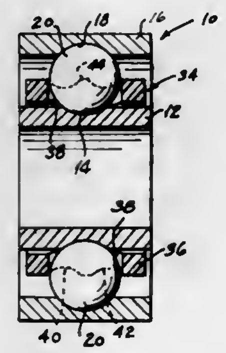
Derrick John Haines, Swansea, Wales, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom and Northern Ireland, London, England
Filed Apr. 22, 1970, Ser. No. 30,892
Claims priority, application Great Britain, Apr. 22, 1969, 20,397/69
Int. Cl. F16c *33/00*
U.S. Cl. 308—193 **7 Claims**

An angular contact ball thrust bearing has its outer race formed in two parts each of which has an arcuate track, the centers of the arcs comprised in the tracks being offset, the profile of the race with which the balls make contact thus not constituting a continuous circular arc. In a substantially unloaded condition each ball makes peripheral contact with the outer race at a point on one track substantially diametrically opposite to a contact point on the inner race. Under operational loading conditions, resultant forces on the balls urge them into peripheral contact with a second point on the outer race on the other track. The two arcs may be of differing radii while the outer race may be in either one or two parts and may include a substantially continuous elliptic arc in place of the two circular arcs.



3,647,269
STABLE BEARING CAGE

Lewis W. McKee, Brookfield, Conn., assignor to The Barden Corporation, Danbury, Conn.
Filed May 15, 1970, Ser. No. 37,767
Int. Cl. F16c *33/38*
U.S. Cl. 308—201 **12 Claims**

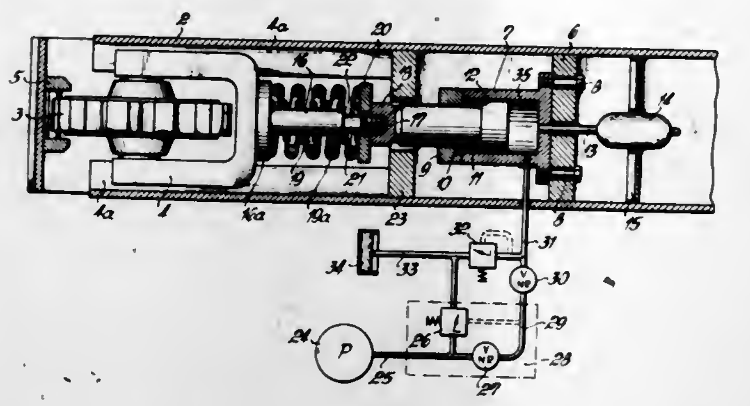


A stable cage for the balls of a ball bearing in which the annular body of the cage having radially extending cylindrical ball pockets therein is provided with spaced annular grooves in its inner or outer surface which grooves run through the pockets at locations along which the bearing balls normally would contact the edge of the pocket cage. The construction simulates square ball pockets thus to reduce the tendency of the cage to vibrate and to operate in an unstable mode.

3,647,270
HYDRAULIC CHAIN-TENSIONING DEVICE, ESPECIALLY FOR TRACKLAYING VEHICLES

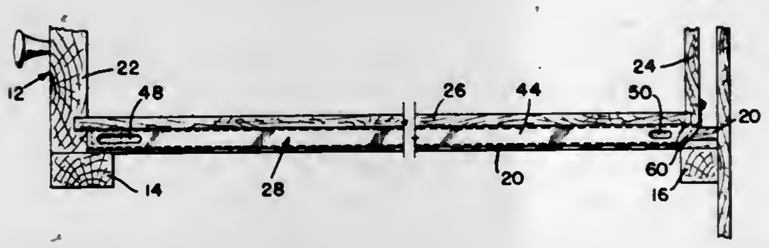
Ernst Althaus, Dortmund-Kirchhorde, Germany, assignor to Orenstein & Koppel Aktiengesellschaft, Berlin, Germany
Filed Nov. 12, 1969, Ser. No. 875,870
Claims priority, application Germany, Nov. 13, 1968, P 18 08 528.4
Int. Cl. B62d *55/30*
U.S. Cl. 305—10 **6 Claims**

A hydraulic chain-tensioning device for tracklaying vehicles, in which the chain tension controlling wheel is carried by a reciprocable slide operable by a hydraulically operable cylinder-piston system in association with a fluid accumulator through the intervention of a pushrod interposed between said cylinder piston system and said slide while yieldable spring means surrounding said pushrod are interposed between said cylinder-piston means and said slide.



3,647,271
DRAWER GUIDE CONSTRUCTION

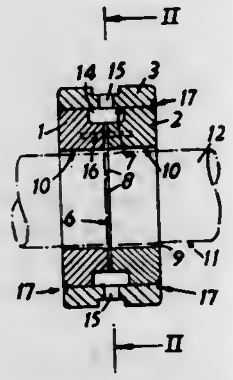
Bobby J. Allred, High Point, N.C., assignor to Allred Metal Stamping Works, Inc., High Point, N.C.
Filed Jan. 22, 1970, Ser. No. 4,910
Int. Cl. F16c *29/00*
U.S. Cl. 308—3.6 **7 Claims**



A channel member secured to the underside of a drawer cooperates with a T-shaped guide rail to prevent inadvertent removal of a drawer from a furniture frame. Protuberances on the laterally extending ears of the T-shaped rail cooperate with indentations on the opposed sidewalls of the channel member to limit displacement of the channel member relative to the rail.

3,647,272
FLUID BEARINGS

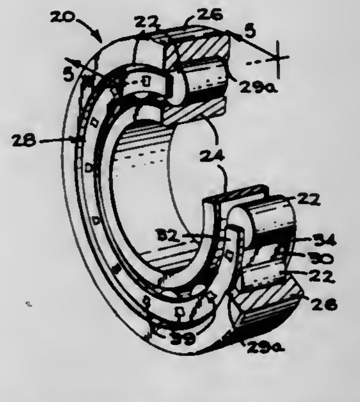
Colin W. Dee, Wimborne, England, assignor to Aerostatic Limited, Poole, Dorset, England
Continuation-in-part of application Ser. No. 792,220, Jan. 14, 1969. This application Nov. 7, 1969, Ser. No. 874,772
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **5 Claims**



In a fluid journal bearing an outer bearing member has a first annular element with a radial face and a second annular element with a radial face which is butted up against the radial face of the first element, one or both of the radial faces being recessed axially at angular intervals such that a plurality of radial slots is defined by the abutting faces, an annular wrapper encircling the first and second elements and retaining them in coaxial abutted condition.

3,647,273
CYLINDRICAL ROLLER BEARING CAGE

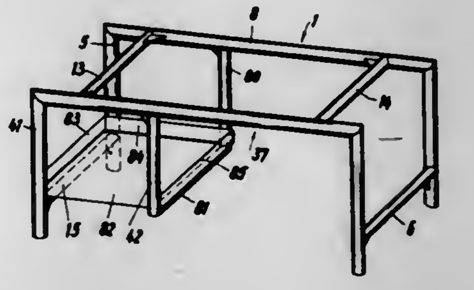
Eugene E. Pfaffenberger, Indianapolis, Ind., assignor to FMC Corporation, San Jose, Calif.
Filed Mar. 23, 1970, Ser. No. 21,903
Int. Cl. F16c *19/10*
U.S. Cl. 308—217 **6 Claims**



This invention relates to a cage for cylindrical roller bearings wherein each spacer between adjacent roller bearings have compound curved surfaces facing the cylinder surfaces of the roller.

3,647,274
TUBULAR FRAME FOR FURNITURE

Klaus Schnelle, Barmstedt/Holstein, Germany, assignor to VELOX-WERK Herbert Schnelle, Barmstedt/Holstein, Germany
Filed Oct. 15, 1969, Ser. No. 866,582
Claims priority, application Germany, May 31, 1969, P 19 27 580.0
Int. Cl. A47b *43/00, 47/00, 17/00*
U.S. Cl. 312—257 **2 Claims**

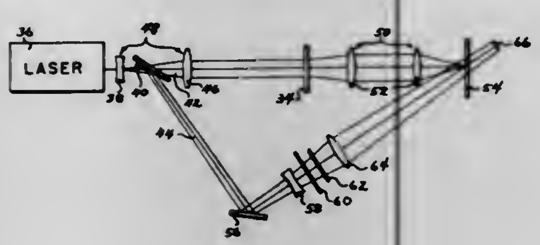


The invention relates to improvements in the construction of furniture with tubular frames of hollow profiles, and particularly hollow profiles with oblong, for example oval cross section, adapted to support planar elements, such as walls, plates and shelves. The invention has the object of facilitating the storage of the furniture in its dismantled state, its assembly by the user, and its stability. The furniture is assembled by means of plug-in connections without screws, by providing at least two subframes. The longer axis of the oblong profile is located in the plane of the subframe and retaining elements may be provided to increase the stability of the assembly. Provision is made for the arrangement of drawers, shelves and the like.

3,647,275
IDENTIFICATION SYSTEM USING REFERENCE BEAM CODED HOLOGRAMS

John H. Ward, Andover, Mass., assignor to Optronics International, Chelmsford, Mass.

Filed Sept. 9, 1970, Ser. No. 70,762
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **12 Claims**

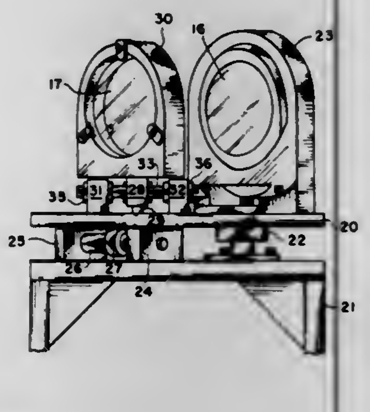


An identification system for identifying persons, articles, documents and the like using a coded hologram which contains the desired identifying indicia in coded holographic form. Encoding of the identifying indicia in the hologram is accomplished by means of a beam scrambler which introduces random path distances in either the reference or object beam during the formation of the hologram. The same or identical beam scrambler is used during reconstruction of the hologram to decode the identifying indicia. The identification system can be used for credit cards and personal access I.D. cards. Typical identifying indicia includes the user's name, signature, and photograph.

3,647,276
STAR IMAGE MOTION COMPENSATOR

William E. Howell, Yorktown, and Aaron J. Ostroff, Newport News, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Apr. 28, 1970, Ser. No. 32,665
Int. Cl. G02b *23/02*
U.S. Cl. 350—16 **3 Claims**

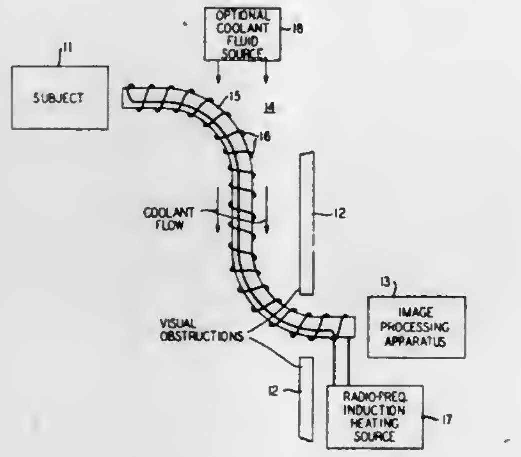


Technique and hardware internal to a telescope for maintaining one or more star images fixed on the focal plane of the telescope despite small motions between a guide star and the telescope. The hardware consists of first and second parallel mirrors that are maintained parallel to each other as they are rotated about an axis through the first mirror. Means are also provided that are responsive to the rotational movement for moving the second mirror relative to the first mirror to maintain the length of the light path from the first mirror to the focal plane constant.

3,647,277
INDUCTION HEATED OPTICAL GUIDE

Ivan P. Kaminow, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 30, 1969, Ser. No. 872,630
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 R **8 Claims**

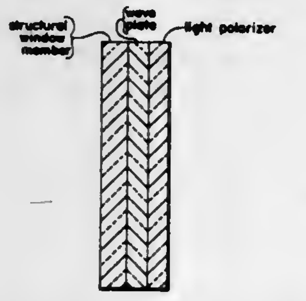

SUBJECT
11
OPTIONAL COOLANT FLUID SOURCE
18
15
14
16
COOLANT FLOW
12
13
IMAGE PROCESSING APPARATUS
VISUAL OBSTRUCTIONS
RADIO-FREQ. INDUCTION HEATING SOURCE
17

The disclosed optical guiding system employs radial thermal gradients in a propagation medium which is a bulk solid dielectric having a positive temperature coefficient of index of refraction and in which the radial thermal gradient is established by inductive heating of the rod, while inherent or forced cooling of the rod exterior establishes an approximately quadratic radial variation of index of refraction.

3,647,278
LIGHT-TRANSMITTING ELEMENTS

Albert S. Makas, Medford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 771,970, Oct. 30, 1968, now Patent No. 3,528,722, which is a continuation-in-part of application Ser. No. 697,113, Jan. 11, 1968, now abandoned. This application Mar. 26, 1970, Ser. No. 22,863
Int. Cl. G02b *5/30*
U.S. Cl. 350—157 **10 Claims**



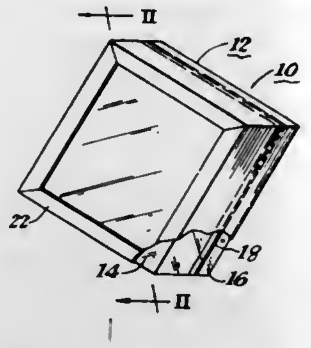
A composite structure comprising a high-order wave plate and a light-polarizing element utilized in a light-transmitting window apparatus comprising a stressed plastic material to eliminate polariscopy.

3,647,279
COLOR DISPLAY DEVICES

Edward N. Sharpless, Pitcairn, and Frederick Davis, Penn Hills, both of Pa., assignors to Liquid Crystal Industries, Inc., Turtle Creek, Pa.

Filed May 27, 1970, Ser. No. 40,925
Int. Cl. G02f *1/40*
U.S. Cl. 350—160 **20 Claims**

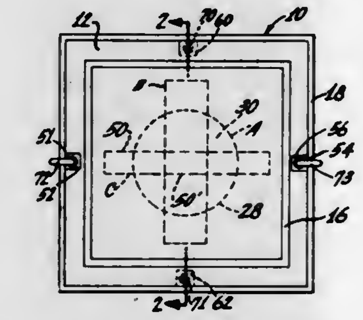
A display device for exhibiting a color pattern, said device comprising container means having a light-transmitting section and a juxtaposed darker hued or opaque section, a quantity of liquid crystalline material interposed between said container sections and encapsulated within said container means, said material having a characteristic of selective light scattering to exhibit color patterns within a range of temperatures at which said display device is normally utilized, and means for peripherally sealing one of said container sections to the other. Means can also be provided for applying deformational stress to the liquid crystal to vary its color pattern.



3,647,280
LIQUID CRYSTAL DISPLAY DEVICE

Richard Ira Klein, Edison, and Sandor Caplan, Trenton, both of N.J., assignors to RCA Corporation

Filed Nov. 6, 1969, Ser. No. 874,441
Int. Cl. G02f *1/28*
U.S. Cl. 350—160 R **7 Claims**



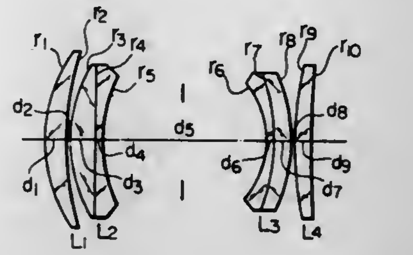
Front and rear substrates sandwich a liquid crystal material therebetween. The substrates are transparent, and each substrate has a layer of a conductive material on the inside surface thereof. A thin opening or line divides the conductive material layers into segments, at least one of the segments of each layer defining an image, the images of the two layers being different. A layer of dielectric material covers one of the conductive layers and has an opening therethrough defining a third image. Terminal means are provided for applying either fluctuating or DC voltages to various ones of the conductive layer segments.

3,647,281
TELEPHOTOGRAPHIC OBJECTIVE HAVING SIX LENSES FORMING FOUR LENS GROUPS

Yoshitsugi Ikeda, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Shibuya-ku, Japan

Filed Aug. 3, 1970, Ser. No. 60,670
Claims priority, application Japan, Aug. 27, 1969, 44/67825
Int. Cl. G02b *9/42*
U.S. Cl. 350—222 **4 Claims**

Telephotographic objective of a wide angle of field consisting of six lens elements forming four lens groups separated from each other by airgaps, respectively. The foremost first lens group at the object side is a positive meniscus lens element, each of the second and the third lens group consisting of a composite negative lens group having a positive and a negative lens element cemented to each other with the negative lens element in each group facing to each other, the fourth lens group being a positive meniscus lens element. The concave surfaces of the first to three lens groups are directed to a diaphragm located between the second and third lens groups while the convex surface of the fourth lens group is directed to the diaphragm.



The lens satisfies the following relationships:

(I) $0.7f_2 > f > -0.7f_3$

(II) $0.15f < d_5 < 0.35f$

(III) $(\nu_2 - \nu_3)/(\nu_4 - \nu_5) > 0.5$

$$\underline{\nu_4 - \nu_5 > 20}$$

(IV) (*a*) $(n_3 - n_2)f/\ r_4 < 0.05,\ n_3 > n_2$

(b) $0.15f < -r_7 < 0.5f$

(V) $r_{10} > 1.5r_9 > 0.5f$

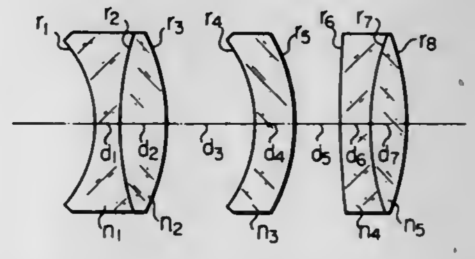
where:

f = focal length of the entire system
f_i (i=1, 2 —) = focal length of the respective lens group
d_i (i=1, 2 —) = thickness of each lens element or airgap
ν_i (i=1, 2 —) = Abbe's number of each lens element
n_i (i=1, 2 —) = refractive index of each lens element
r_i (i=1, 2 —) = radius of curvature of the respective surface of each lens element.

3,647,282
A WIDE ANGLE FLAT FIELD MICROSCOPIC OBJECTIVE OF LOW POWER

Akio Taira, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

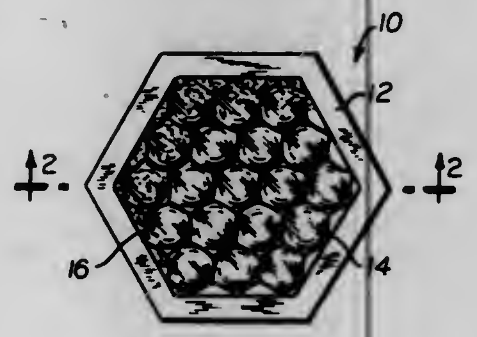
Filed July 23, 1970, Ser. No. 58,452
Claims priority, application Japan, Aug. 14, 1969, 44/64374
Int. Cl. G02b *9/12, 21/02*
U.S. Cl. 350—225 **1 Claim**



Microscopic objective lens consisting of a first, a second and a third lens group arranged in that order from the object side and separated respectively by airgaps from each other. The first lens group is constructed by a cemented meniscus lens component with the air contacting surfaces thereof concave toward the object side and the second lens group is constructed by a meniscus lens element with the surfaces thereof concave toward the object side while the third lens group is constructed by a cemented lens component consisting of a lens element of negative refractive power arranged at the object side and a lens element of positive refractive power arranged at the image side. The absolute value of the focal length of the second lens group is selected to be greater than the focal length of the entire system and the absolute value of the radius of curvature of the surface of the second lens group at the object side is selected to be smaller than half the focal length of the entire system while the absolute value of the radius of curvature of the air contacting surface of the first lens group at the object side is selected to be greater than 0.15 times the focal length of the entire system and the Abbe's number of the lens element of the third lens group at the image side thereof is selected to be greater than that of the lens element at the object side by at least 25.

3,647,283
MULTIIMAGE MIRROR

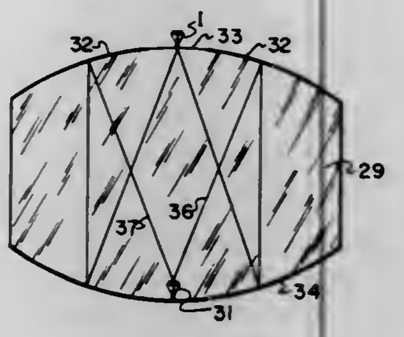
George Castanis, 444 Sixth Ave., New York, N.Y.
Continuation of application Ser. No. 758,736, Sept. 10, 1968, now abandoned. This application Nov. 16, 1970, Ser. No. 91,578
Int. Cl. G02b *5/10*
U.S. Cl. 350—293 **8 Claims**



A mirror for producing a multiplicity of similar images, has a multiplicity of convex reflective faces disposed in an overall concave or dish-shaped array. The convex faces and the overall dish shape are preferably portions of spheres, with the radius of curvature of the overall dish shape being desirably from about 12 to 1/8 times that of the faces. The faces may have outlines of various shapes, e.g., hexagonal, circular, etc. A planar or slightly concave surface may be disposed in the array, as in the center thereof, to provide a conventional vanity or shaving mirror portion.

3,647,284
OPTICAL DISPLAY DEVICE

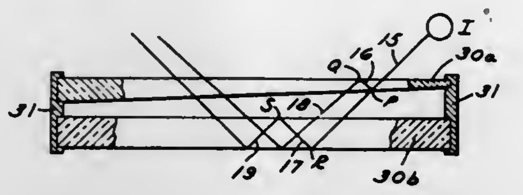
Virgil B. Elings, 958 Isleta, and Caliste J. Landry, Clingstone Painted Cave, Star Route, both of Santa Barbara, Calif.
Filed Nov. 30, 1970, Ser. No. 93,608
Int. Cl. G02b *17/06*
U.S. Cl. 350—294 **6 Claims**

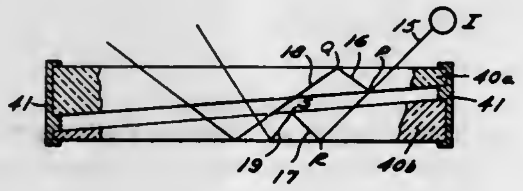


A pair of concave mirrors are placed with their concave sides toward each other and one is optically apertured, either with a hole in the mirror or by an unsilvered portion in a mirror of transparent material. An object placed at the mirror that is not apertured will project a real image at the region of the aperture if the curvature and spacings of the mirrors are correct. The image may be left-right reversed or may have the same orientation as the object depending upon the reflective paths of rays from the object. The image may be magnified or reduced in size depending upon curvatures and spacings of the mirrors.

3,647,285
GLASS WINDOW STRUCTURES ELIMINATING JAMIN INTERFERENCE FRINGES

James E. Harvey, Tucson, Ariz.; Max J. Irland, Dearborn, and Victor L. Lindberg, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Continuation of application Ser. No. 756,437, Aug. 30, 1968, now Patent No. 3,575,694. This application June 10, 1970, Ser. No. 44,964
Int. Cl. G02b *5/00, 7/00, 27/00*
U.S. Cl. 350—319 **6 Claims**

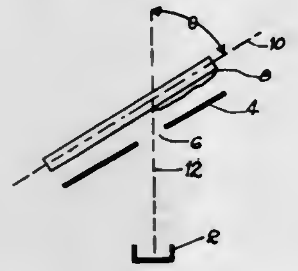




A glass window structure which eliminates Jamin interference fringes includes a frame for supporting a pair of glass brackets in spaced relationship. A first glass bracket is supported in the frame and this bracket is cut from a glass ribbon manufactured in a process wherein molten glass is flowed out upon a molten bath and processed thereon so that the glass ribbon has a slight taper therein. A second glass bracket is also supported in the frame and this second bracket is cut from the same glass ribbon as the first bracket. Other window structures which eliminate the Jamin fringes are structures in which (1) at least one of the glass brackets has a tapering thickness from one side to the other side, or (2) both brackets have different tapering thicknesses with the thicker edges being positioned in any manner.

3,647,286
REPRODUCTION APPARATUS USING PHOTOVOLTAIC MATERIAL

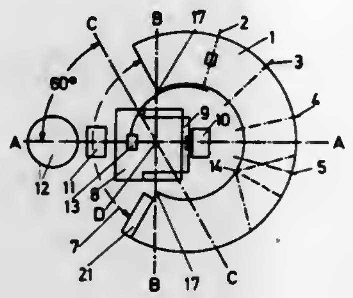
John H. Delorme, Jr., 6826 North Wayne, Chicago, Ill.
Filed Feb. 10, 1969, Ser. No. 797,729
Int. Cl. G03g *13/00*
U.S. Cl. 355—17 **2 Claims**



Apparatus for the reproduction of visual images which uses a layer of photovoltaic material deposited on a substrate in such a way as to substantially increase the voltage produced when exposed to light according the pattern of an image to be reproduced so that no external charging voltage is required. The application of a toner to the material develops the image which may then be transferred to a copy sheet to reproduce the image. After discharge, either naturally by the passage of time or intentionally, the material may be exposed once again to permit the reproduction of a new image.

3,647,287
APPLIANCE FOR DIAGNOSIS AND THERAPEUTIC EYE TREATMENT

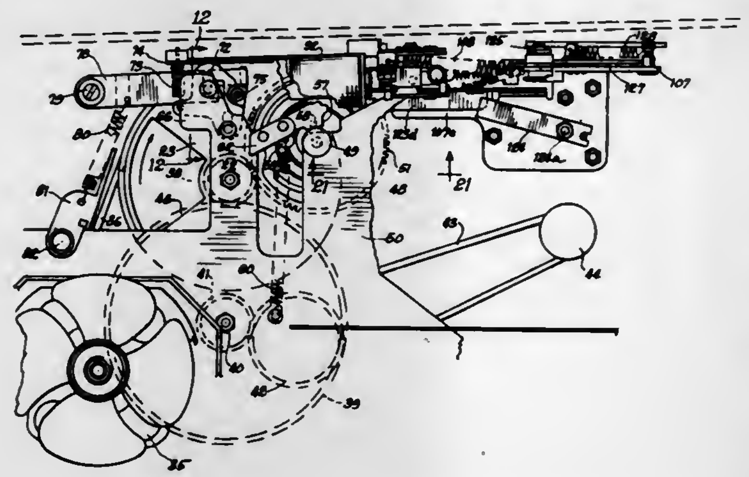
Herbert Schwind, Dammer Weg 37, 8752 Goldbach-Aschaffenburg, Germany
Filed Mar. 10, 1970, Ser. No. 18,161
Claims priority, application Germany, Sept. 20, 1969, P 19 47 803.6
Int. Cl. A61b *3/00;* **A47b** *11/00*
U.S. Cl. 351—38 **5 Claims**



An appliance for ophthalmologists, comprising a movable ring-sector shaped work surface for holding ophthalmic instruments, that subtends an angle of approximately 240° and closely surrounds the patient's chair.

3,647,288
AUTOMATIC STOPPING MECHANISM FOR A MOTION PICTURE PROJECTOR

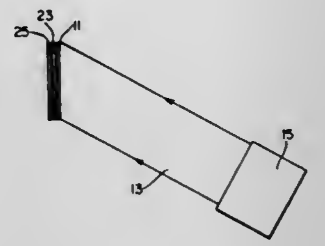
George J. Zahradnik, Wheaton, and Arthur A. Pudark, Evanston, both of Ill., assignors to A. B. Dick Company, Niles, Ill.
Filed July 31, 1970, Ser. No. 59,933
Int. Cl. G03b *1/00*
U.S. Cl. 352—174 **14 Claims**



A solenoid is energized either by an 80 Hz. signal on the film sound track or by operation of a button on the projector. The solenoid operates a lever which releases a crank arm and allows a cam follower on the latter to engage a spiral cam track on a timing wheel which is rotated by the shutter. Such movement on of the lever also operates switch contacts to deenergize the projector motor and to connect the projection lamp in a dimming circuit. The motor and the means driven thereby including the timing wheel coast as the latter moves the crank arm which in turn moves a stop block into the path of movement of a lug on the shutter thereby to stop the latter in an open position. A manually operated start mechanism simultaneously disengages the stop member from the shutter lug, energizes the projector motor and disconnects the projection lamp from the dimming circuit.

3,647,289
APPARATUS AND METHOD FOR HOLOGRAM COPYING WITH REFERENCE BEAM INTENSITY CONTROL

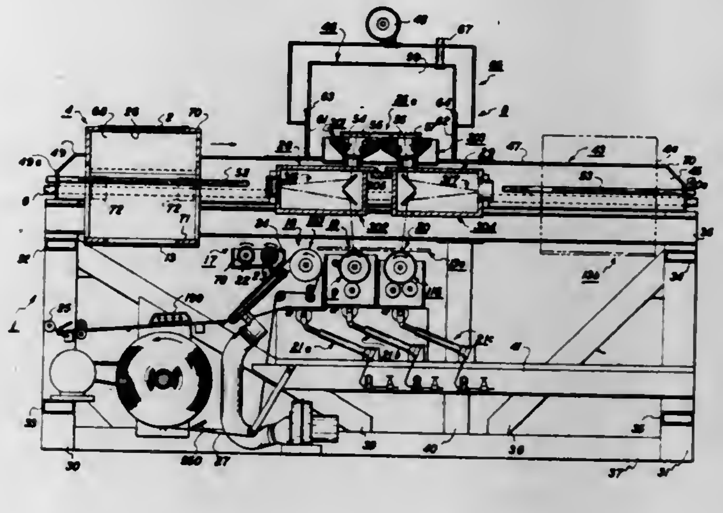
Bob L. Weber, Columbus, Ohio, assignor to Holotron Corporation, Wilmington, Del.
Filed Mar. 28, 1969, Ser. No. 811,384
Int. Cl. G03b *27/00*
U.S. Cl. 355—2 **18 Claims**



A technique for making a copy of an off-axis hologram wherein the hologram and a photosensitive copy detector are placed very close together with a means therebetween, for significantly attenuating that portion of a reconstructing light beam which is undiffracted by the hologram without significantly altering the intensity of an image carrying first order diffracted beam.

3,647,290
PHOTOELECTROPHORETIC IMAGING SYSTEM

Raymond K. Egnaczak, Williamson, and Gino F. Squassoni, Pittsford, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Nov. 14, 1969, Ser. No. 876,983
Int. Cl. G03g *15/04*
U.S. Cl. 355—3 **22 Claims**



An imaging machine having a generally flat plate electrode on which images of opaque or transparency originals are formed from a photoelectrophoretic ink. The flat plate electrode travels along a generally linear path past various roller electrodes. At one roller electrode the photoelectrophoretic ink is applied to the flat plate electrode. At another roller electrode the ink is exposed to light and electric field. At yet another roller electrode, ink in imagewise configuration is transferred to an appropriate substrate.

3,647,291

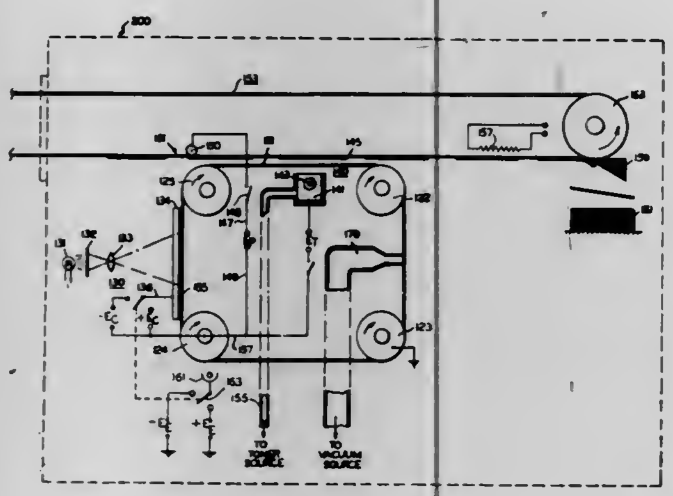
APPARATUS FOR APERTURE CONTROLLED ELECTROSTATIC IMAGE REPRODUCTION OR CONSTITUTION

Gerald L. Pressman, San Jose, and Thomas D. Kittredge, South San Francisco, both of Calif., assignors to Electroprint, Inc., Palo Alto, Calif.

Filed Nov. 15, 1968, Ser. No. 776,146

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 **38 Claims**



The invention basically comprises apparatus and methods relating to the field of electrostatics, and is concerned with electrostatic reproducing or constituting. Apertured screen means carry charge distributions in accordance with a pattern such that particles directed at the screen means pass therethrough under modulation control dictated by the pattern.

The invention further relates to apparatus and methods for constituting or reproducing images through the use of a multilayered screen consisting of an array of apertures. A propulsion field directs charged particles through the screen to a receiving medium preferably spaced at a distance from the screen. Charge distribution on the screen controls the flow of particles through the apertures, some of which are in effect blocked, partially blocked, unblocked, and enhanced, depending on the local charge level. Thus, it is possible to produce patterns of varying tone without contact with the printed or effected substrate.

The screen preferably consists of a conductive layer and an insulative layer for supporting opposite charges across the insulative layer. A uniform charge level or field may be established across the insulator layer and then modified in accordance with an image to be reproduced by selectively counteracting and reversing the field through the selective application of a second field of greater magnitude. Novel contact field charging may also be used to modify the first field or precharge. Imaging elements comprising a transparent support, transparent conductive layer, and transparent insulative layer secured together in that order are provided for contacting the screen to permit an applied voltage connected between the conductive layer of the imaging elements and the conductive layer of the screen to modify and even reverse the precharge level in accordance with image light shined through the image elements onto the screen. The screen insulator layer need not be photoconductive if the image elements include as the transparent insulative layer a photoconductive layer which need not be transparent. The imaging elements may be used with or without the enhancing field. Ions may comprise the particles to take advantage of the enhancing fields or used in conjunction with toner particles to cause printing on ordinary paper.

3,647,292

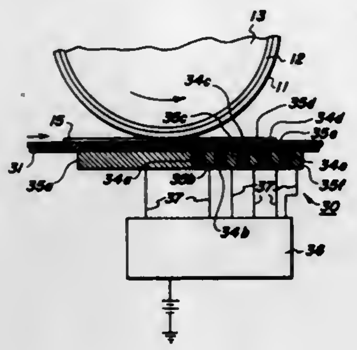
TRANSFER APPARATUS

Donald J. Weikel, Jr., Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 28, 1969, Ser. No. 880,576

Int. Cl. G03g *15/00, 15/08*

U.S. Cl. 355—3 **7 Claims**



An apparatus and method for efficiently transferring a toner image from a rotatable electrostatic drum to a copy sheet while the copy sheet remains in a substantially flat position without degrading the quality of the latent image on the drum by imposing an electrical field between the copy sheet and drum as the sheet moves away from the drum surface after the toner image has been transferred to the copy sheet. In one embodiment of the invention, a movable, endless, two-layer belt having an inner layer of conductive material and an outer layer of relatively nonconductive material carries the copy sheet through the transfer station in a plane substantially tangent to the surface of the drum. An electrical bias is applied to the inner layer of the belt which attracts toner from the electrostatic drum to the copy sheet, but charge is prevented from reaching the copy sheet and drum by the relatively nonconductive layer of the belt. Small holes can be made in the belt and a vacuum placed on the copy sheet through the holes to insure there is no relative motion between the copy sheet and belt during the transfer step.

In a second embodiment of the invention, a movable, endless, relatively nonconducting belt carries the copy sheet through the transfer station in a substantially flat position. Directly under the belt, adjacent the transfer area and that area through which the copy sheet travels as it leaves the drum surface after transfer has taken place, is a stationary conductive means having an electrical bias thereon. In a third embodiment, the stationary conductive means is constructed so that the electrical bias placed on it can be increased as a given portion of the copy sheet increases its distance from the surface of the drum.

ERRATUM

For Class 355—15 see:
Patent No. 3,646,866

3,647,293

COPYING SYSTEM FEATURING COMBINED DEVELOPING-CLEANING STATION ALTERNATELY ACTIVATED

Carl A. Queener, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

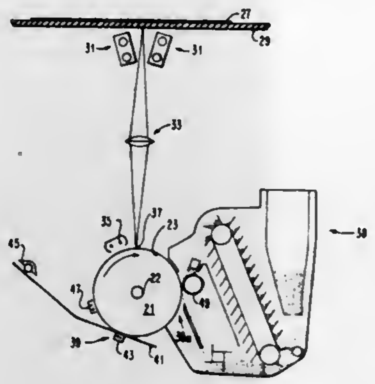
Filed Dec. 1, 1970, Ser. No. 94,037

Int. Cl. G03g *15/00*

U.S. Cl. 355—15 **8 Claims**

Electrophotographic copying apparatus has charging, imaging, transferring, precleaning, and erasing facilities in a conventional sense but incorporates a combined developing-cleaning unit that is operable to perform either function at the proper time during the copying sequence. A first version incorporates a photoconductor drum structure surrounded with the necessary electrophotographic elements including a

single developer-cleaner unit. Another version incorporates a photoconductor belt movable forwardly and reversely. In either version, cleaning cycles may alternate with developing cycles or be activated following the production of a high number of images on the photoconductor surface. Conveniently, a magnetic brush element forms a contacting surface for conveying toner onto the photoconductor surface during developing and for scavenging residual toner from the photoconductor surface by bringing developer mixture into contact with the photoconductor surface during cleaning. Appropriate changes in biasing of the brush are made during operation.



3,647,294

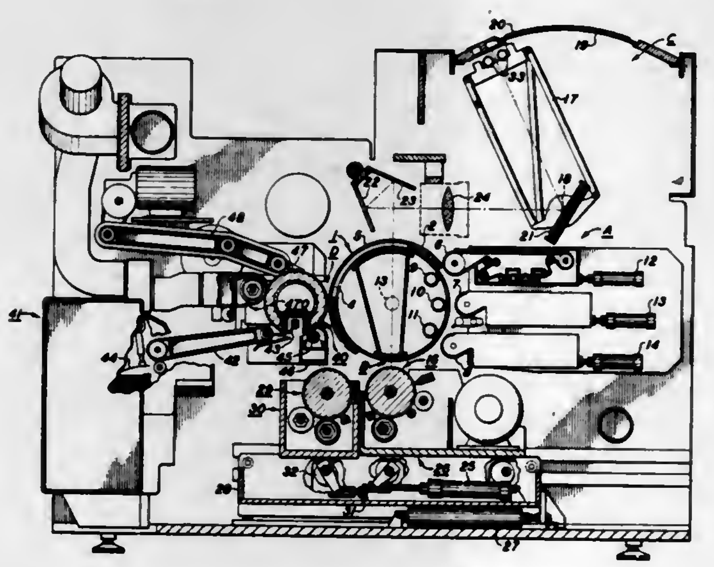
MATERIALS APPLICATION AND CLEANING APPARATUS FOR XEROGRAPHIC APPARATUS

Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,923

Int. Cl. G03g *15/22*

U.S. Cl. 355—15 **10 Claims**



A modular imaging electrode transport assembly for use in forming photoelectrophoretic images in automated imaging machines. The unit has one tank for each roller electrode and electrical coupling means at each roller. A carriage shuttles the tanks back and forth past a contact position and each tank raises and holds the roller in the contact position while it functions in the imaging process so that the roller contacts an imaging member of the machine in which it is located in order to form a suspension image.

3,647,295

COLOR PRINTING APPARATUS

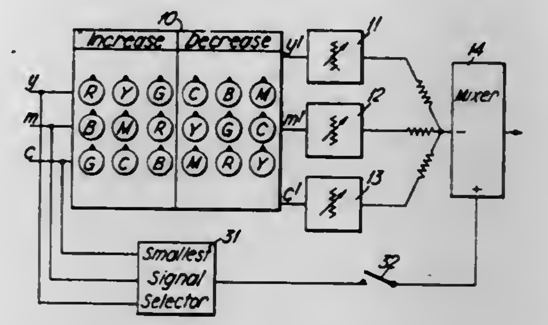
Mouayed Edouard Dobouney, Dartford, England, assignor to Crosfield Electronics Limited, London, England

Filed May 18, 1970, Ser. No. 38,328

Claims priority, application Great Britain, May 23, 1969, 26,508/69

Int. Cl. G03b *27/76*

U.S. Cl. 355—38 **6 Claims**



In the reproduction of a colored original red, green and blue filters are used in a photoelectric scanning operation to analyze the color components of the original and corresponding electric signals are generated. To prepare a color printer representing a color which is not complementary to any of the filter colors (for example brown) the primary signals derived by means of the filters are combined in a signal-processing circuit to form further electric signals representing more restricted color ranges. These further signals are used to modify the primary signals so that the modified primary signals are less responsive to those restricted color ranges which are not required for the special color printer. Some at least of the modified primary signals are then combined in a mixer circuit to give a resultant representing the required color printer.

3,647,296

LIGHT-MONITORING DEVICE FOR USE WITH COLOR PHOTOGRAPHIC APPARATUS

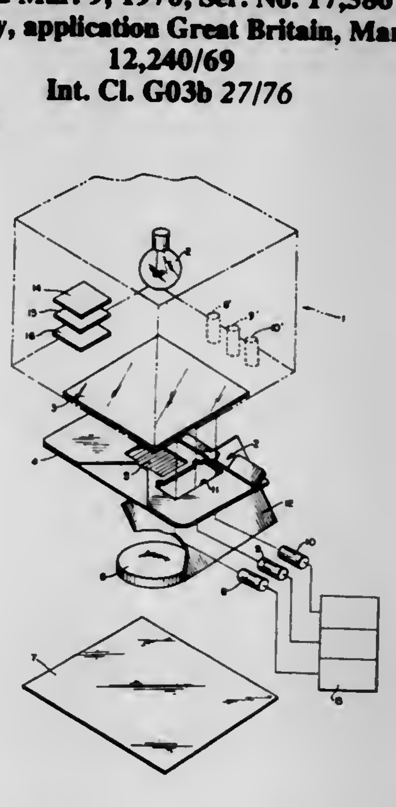
John Geoffrey Long, Surbiton, England, assignor to The Pavelle Corporation, New York, N.Y.

Filed Mar. 9, 1970, Ser. No. 17,586

Claims priority, application Great Britain, Mar. 7, 1969, 12,240/69

Int. Cl. G03b *27/76*

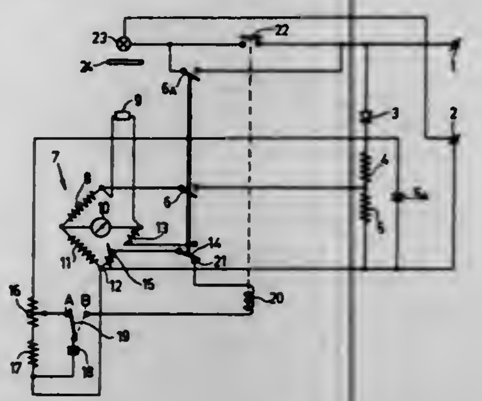
U.S. Cl. 355—38 **2 Claims**



Light-monitoring apparatus is disclosed for use with a color printing process in which the mean printing conditions are determined and applied to all prints. Three photoelectric transducers responsive to the primary colors are arranged to receive light from the source, after filtering, with such light being screened from the photosensitive material on which the prints are formed. The exposure times for the process are then determined by the average intensity of the light impinging upon the photocells. The photocells may also be partially responsive to light passing through the negative or transparency to correct partially for density and/or color changes from transparency to transparency.

3,647,297
SWITCHING DEVICE FOR FEEDING THE LIGHT SOURCE OF A PHOTOGRAPHIC ENLARGER

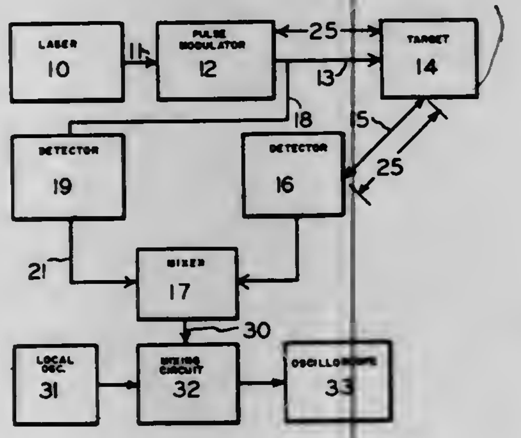
Peter Jan Van Westering, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 7, 1969, Ser. No. 848,176
Claims priority, application Netherlands, Aug. 14, 1968, 6811524
Int. Cl. G03b *27/78*
U.S. Cl. 355—68 **11 Claims**



An automatic exposure control system that includes a photosensitive element in one arm of a bridge circuit and a first potentiometer connected in a second bridge arm via a first switch. A capacitor is connected to the supply source via a second potentiometer and a second switch. In the second operating position of the two switches, the capacitor forms a closed circuit with the first potentiometer and a relay coil. A contact of the relay controls the supply of electric energy to a light source for a photographic enlarger. A third switch coupled to the first switch is connected in shunt with the relay contact.

3,647,298
PULSE CHIRP LASER RANGING DEVICE

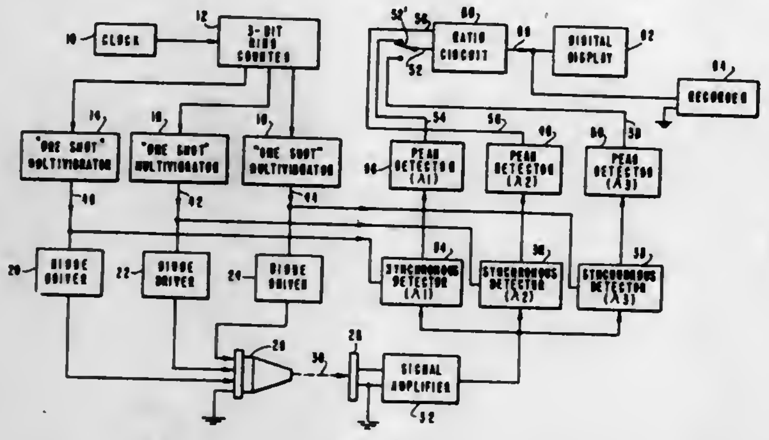
Jack A. Soules, Cleveland, Ohio, assignor to The United States of America as represented by the Secretary of the Navy
Filed Sept. 16, 1969, Ser. No. 858,477
Int. Cl. G01c *3/08*
U.S. Cl. 356—5 **5 Claims**



The invention disclosed in this application concerns itself with a laser echo ranging system utilizing a unique modulator for providing an audio signal corresponding to the distance to the target and a simplified inexpensive method of reading the distances.

3,647,299
OXIMETER

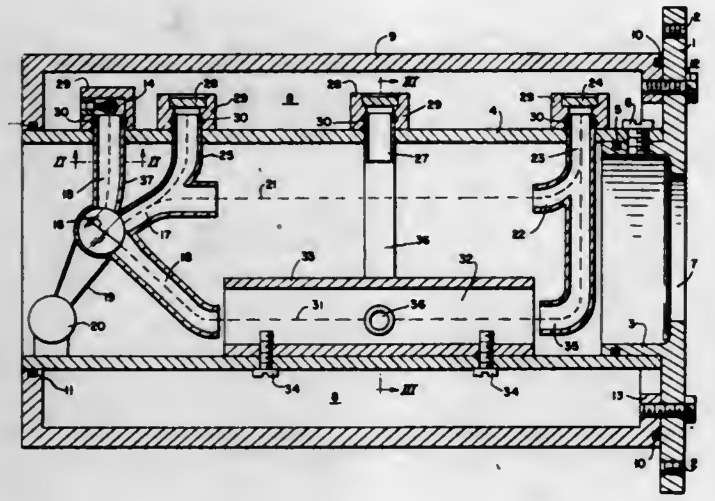
Robert G. Lavallee, Ashland, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Apr. 20, 1970, Ser. No. 29,851
Int. Cl. G01n *33/16*
U.S. Cl. 356—41 **12 Claims**



An oximeter having a single light-emitting diode structure capable of emitting the three wavelengths required for oximetry and dye dilution measurements. A ring counter causes three semiconductor chips in the device to be energized in sequence. Light is directed toward the blood sample and the reflected light is extended to three synchronous detectors. Each detector operates only when a corresponding semiconductor chip in the light-emitting diode is energized; each detector thus responds only to the intensity of light at a respective wavelength. The outputs of two of the detectors are extended to a ratio circuit for deriving a final measurement. The ratio circuit itself has a high accuracy over the relatively low dynamic range of the ratio values.

3,647,300
DUAL-BEAM FLUID MONITOR FOR MEASURING TRANSMITTED AND SCATTERED LIGHT

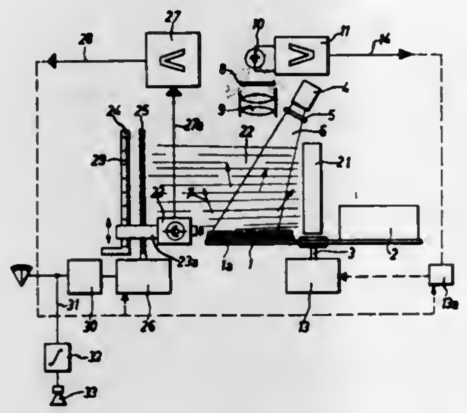
George Frank Skala, Scotia, N.Y., assignor to Environment/One Corporation, Latham, N.Y.
Filed Apr. 27, 1970, Ser. No. 31,995
Int. Cl. G01n *21/22*
U.S. Cl. 356—73 **5 Claims**



An optical system for determining the contamination, chemical breakdown, or other change in a fluid that manifests itself in a change in optical properties of the fluid with respect to attenuation or a scattering of a light beam, wherein the light from a single source is optically split to pass in parallel through a reference material and a sample material for recombining as an input to a transducer that produces a correlated electrical output signal. Switching means is provided in each of the parallel paths of the light to alternately feed a light pulse from the sample material and the light pulse from the reference material to the transducer. Additional electric switching means is provided to separate the correlated electrical signals produced by the transducer respectively for the sample and reference materials. The optical switching means may be a motor rotated or oscillated mirror, a vibrated mirror, a motor or fluid operated screen disc, or the like. A switching electrical signal is produced by magnetic coding or optically from movement of the mirror or a screen, which will actuate the electrical switching means.

3,647,301
SYSTEM FOR ASCERTAINING THE ACCUMULATION OF PULVERULENT, GRANULAR OR FLAKY BULK GOODS

Oskar Edwin Sturzinger, Kirchmattweg 6, Baar, Zug, Switzerland
Continuation-in-part of application Ser. No. 695,995, Jan. 5, 1968. This application Jan. 9, 1970, Ser. No. 1,636
Int. Cl. G01n *21/00, 21/48, 21/16*
U.S. Cl. 356—103 **10 Claims**

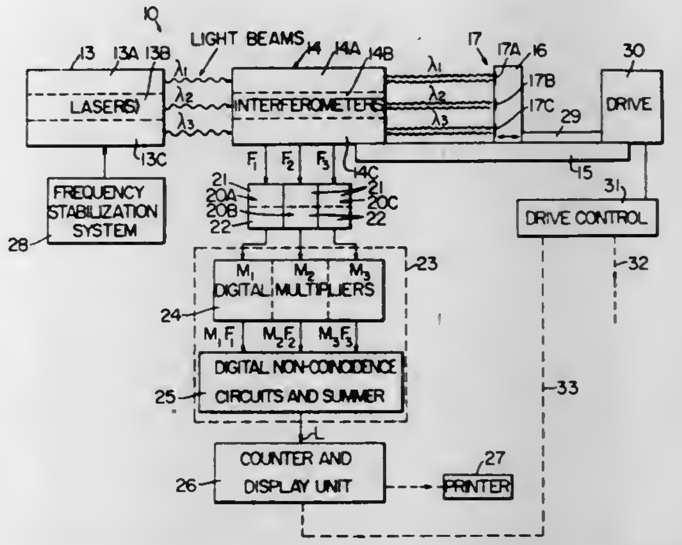


A system is provided for determining an accumulation per unit time and for determining a layer thickness of accumulation of bulk goods such as pulverulent, granular or flaky goods. Preferably, the system uses diffused reflected light from the bulk goods being deposited on a moving surface to determine the rate of accumulation and an optical system including a further light beam and photocell to measure the layer thickness of the accumulation. An integrating means may be provided for ascertaining a cumulative total accumulation within a predetermined period of time.

3,647,302
APPARATUS FOR AND METHOD OF OBTAINING PRECISION DIMENSIONAL MEASUREMENTS

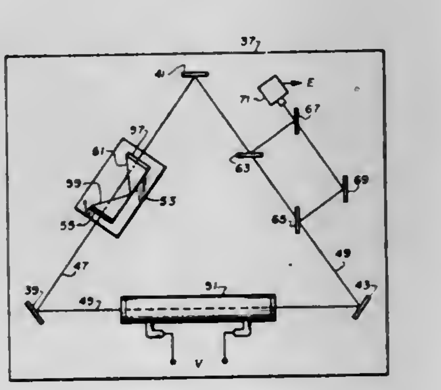
Richard B. Zipin, and James T. Zalusky, both of Dayton, Ohio, assignors to The Bendix Corporation
Filed May 18, 1970, Ser. No. 38,372
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 **20 Claims**

A plurality of beams of electromagnetic energy having different known wavelengths in a vacuum are each operatively associated with an interferometer having a movable reflector to provide an output fringe pattern for each beam characterized by alternating annulment and reenforcement fringes. The reflector is moved causing movement of the fringes of each beam past an associated detector which provides an electrical output signal in response to alternating ones of the fringes as they move therepast whereby the electrical output signals represent a count of alternate fringes of each beam. The electrical output signals from the detectors are scaled and summed to provide a combination signal which represents the actual distance moved by the reflector and such distance has been inherently corrected for variations in ambient conditions.



3,647,303
RING LASER HAVING MEANS FOR PREVENTING MODE LOCKING

Charles J. Kramer, Jr., Fort Lee, N.J., assignor to The Bendix Corporation
Filed Sept. 5, 1969, Ser. No. 855,677
Int. Cl. G01b *9/02;* **H01s** *3/00*
U.S. Cl. 356—106 LR **14 Claims**

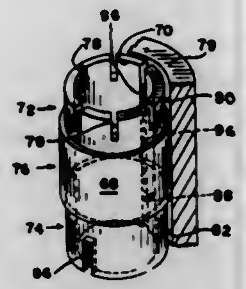


A ring laser having laser beams traveling in opposite directions and a polarizer for circularly polarizing the beams in the same sense to reduce beam coupling within the lasing medium and for rejecting back scattered light to prevent oscillation of the back scattered light and reduce beam interaction.

3,647,304
MICROVOLUME FLOW CELL

Henry J. Emmel, Irondequoit, and Thomas J. Morgan, Rochester, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,157
Int. Cl. G01n *1/10*
U.S. Cl. 356—246 **9 Claims**

A microvolume flow cell for providing laminar fluid flow comprises an insert having an inlet and an outlet and each defining a plurality of openings channeling to a generally cylindrical fluid chamber formed therein. The openings in the inlet end are elongated and equidistantly disposed about the periphery of the inlet for providing for a laminar fluid flow therethrough into the fluid chamber. The openings in the outlet end comprise two diametrically disposed exit ports of differing size for fluid communication with a waste system. The smaller exit port is disposed with a troughlike drainage slot extending the length of the fluid chamber.



3,647,305

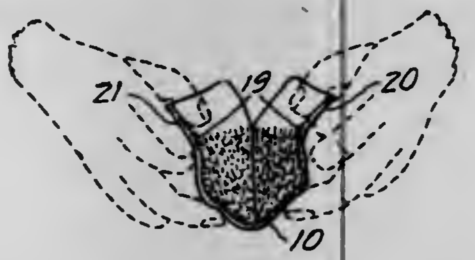
PACKET TECHNOLOGY

Mary Joan H. Baker, and Robert C. Baker, both of 1831 Summit Avenue, St. Paul, Minn.

Filed Mar. 13, 1969, Ser. No. 806,983

Int. Cl. A46b *5/04*

U.S. Cl. 401—7 **19 Claims**



A disposable flexible envelopelike container and a new sheet material are taught. The container is convertible to a pocket applicator for applying packaged messy spreadable compositions such as various polishes, cleaners, pastes, oils, paints, stains, waxes, and many other compositions.

The envelopelike container is easily manufactured by automated techniques. It has opposing walls formed of flexible sheet material. The sheet material preferably employed has a flexible self-supporting organic polymeric film and an exposed recess-containing layer over one surface of that polymeric film. Seals unite peripheral portions of the opposing walls of the envelope together. One edge is only temporarily sealed; and the others are permanently united. Earflaps extend beyond the temporary seal.

In use, a person grips the earflaps and pulls them apart to rupture the temporary seal and thereby convert the envelopelike container into a pocket. This pocket is then reversed or inverted to place the spreadable composition exterior to the inverted pocket. One then inserts one's fingers in the inverted pocket, which now becomes an applicator, and then applies the spreadable composition. The earflaps serve as a shield against unwanted contact with the spreadable composition during application of it to a surface. The length of the temporary seal and its relationship to the depth of the envelope cavity is critical to permit convenient reversal or inversion of the pocket during the step of converting the container into an applicator.

3,647,306

BINDING POST CONSTRUCTION

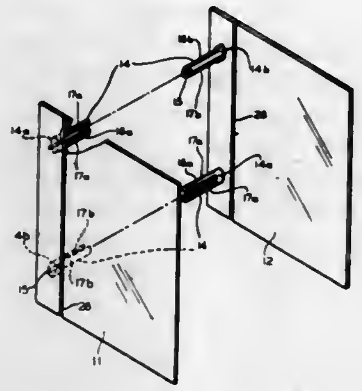
John H. Chamberlin, 5070 West Lake Road, Cazenovia, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,362

Int. Cl. B42f *3/04, 13/12*

U.S. Cl. 402—48 **6 Claims**

A post construction for looseleaf binders in which the post is comprised of two interengaging complementary parts, one for each cover. The two post parts are expanded by interior means to force them into tight engagement with the wall of a bore through the paper block and this operates to lock the binder. The post with its two parts assembled is generally tubular, and each part is made up of one or more sector shaped pieces of the tubular wall. The binding post parts can be formed integrally with their respective covers or they can be independent elements separate from the covers.



3,647,307

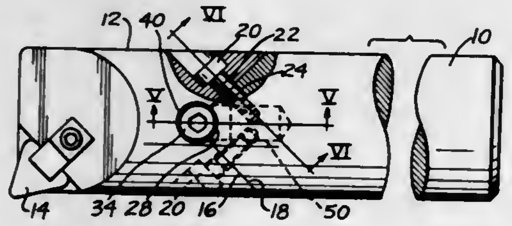
BORING BAR

Leon G. Kosker, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Dec. 2, 1969, Ser. No. 881,569

Int. Cl. B23b *29/034*

U.S. Cl. 408—181 **5 Claims**



The invention relates to a boring bar made up of a shank or bar member and a head member mounted on the outer end thereof and adapted for detachably supporting a cutting insert. The head member is adjustable on the bar member in a direction substantially perpendicular to the top surface of the cutting insert over which chips flow during a cutting operation.

3,647,308

APPARATUS FOR FORMING A CORED CONCRETE SLAB

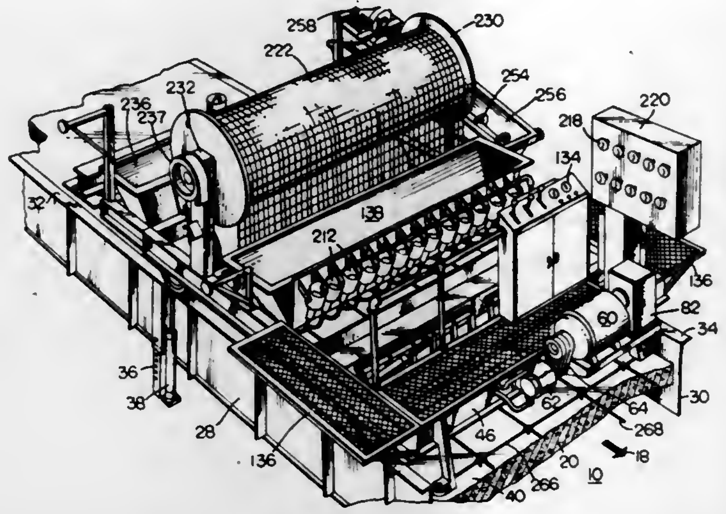
Robert L. Yost, Decatur, Ind., assignor to Joseph J. Dues, Dayton, Ohio

Filed Oct. 28, 1968, Ser. No. 771,152

Int. Cl. B28b *7/30*

U.S. Cl. 425—111 **15 Claims**

An apparatus and method for forming cored concrete slab utilizing an elongated fixed mold for forming the opposite sides and bottom surface of the slab. A concrete depositing and core forming assembly moves longitudinally over the mold, the assembly including a plurality of elongated core forming mandrels and a hopper which deposits a first layer of concrete in the mold generally to the top of the mandrels. A length of metal mesh is provided having its free end attached at one end of the mold, the mesh being coiled on a reel mounted on the assembly which lays the mesh over the mandrels and the first layer, applying tension thereto, as the assembly moves toward the other end of the mold. Another hopper is mounted on the assembly which deposits a second layer of concrete over the first layer and mesh.



3,647,309

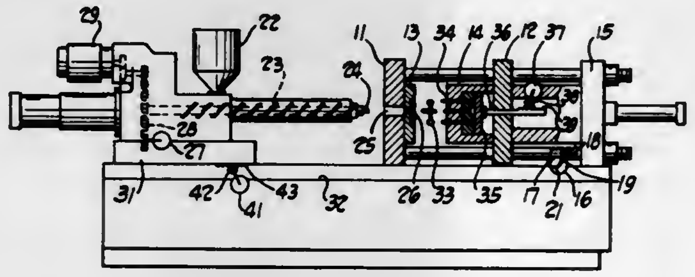
APPARATUS FOR CONTROLLING AN INJECTION MOLDING MACHINE

Robert H. Thompson, Brunswick, Ohio, assignor to Van Dorn Company, Cleveland, Ohio

Filed Sept. 19, 1969, Ser. No. 859,525

Int. Cl. B29f *1/00*

U.S. Cl. 425—139 **3 Claims**



Injection molding apparatus is provided with readily preset means for automatically or semiautomatically causing certain functions to be performed in relation to the movement of reciprocating members including a platen, injection screw and eject mechanism. To this end sensing potentiometers are provided which produce voltages representing positions of the moving members and reference potentiometers are provided which are set to provide voltages representing various positions of the various movable members at which desired functions are to be performed. Voltage comparator-bistable circuits are provided for each function to be performed. They are so connected that when the sensing voltage agrees with the reference voltage actuation of the member of the molding apparatus or a decision function takes place. A dial is provided for each of the reference potentiometers to enable the operation desired to be preset.

3,647,310

UNIVERSAL HOLE SAW ARBOR

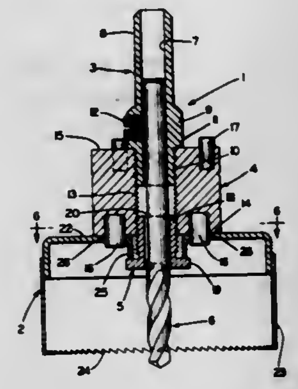
Mansfield K. Morse, 1916 Frazer Avenue, N.W., Canton, Ohio

Filed Apr. 3, 1970, Ser. No. 25,352

Int. Cl. B23b *51/00*

U.S. Cl. 408—239 **10 Claims**

A universal hole saw arbor construction for mounting all types and sizes of hole saws which also accommodates the pilot drill used with the hole saws. The arbor construction includes as components a stem, a body, and various clamping nuts. These components are used in various combinations to mount and drive several types each of direct-driven and pin-driven hole saw blades. The pilot drill is adjustable for predetermined settings of the drill with respect to the blade in accordance with the thickness of the workpiece being sawed.



3,647,311

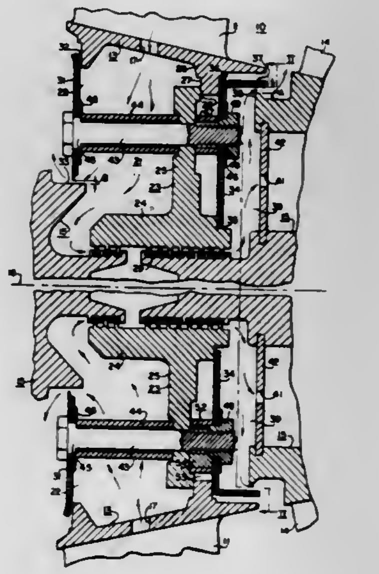
TURBINE INTERSTAGE SEAL ASSEMBLY

Horace Wootton, Surf City, N.J., and George M. Mierley, Sr., Wilmington, Del., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 23, 1970, Ser. No. 31,120

Int. Cl. F01d *11/00, 11/10*

U.S. Cl. 415—113 **5 Claims**

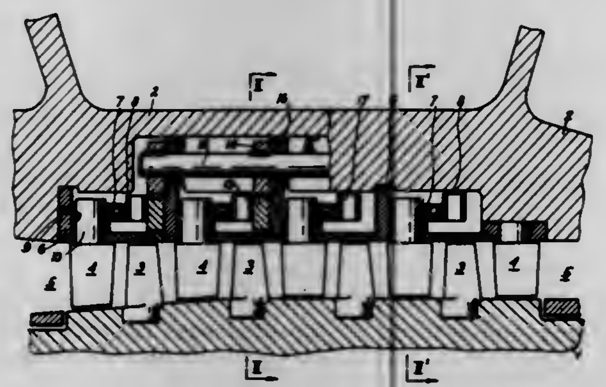


Interstage leakage around the inner shrouds of the stationary vanes of a turbine is reduced by a seal assembly disposed in a space between turbine rotor wheels or discs. The members of the seal assembly are separated from the hot stator vanes and are supported by a seal housing cooled by air supplied through the hollow stator vanes. Thus, clearance between stationary members of the seal assembly and the rotor can be made smaller than in prior structures which had to allow for expansion of the members.

3,647,312
MOUNTING OF STATOR BLADES IN AXIAL COMPRESSORS

Vaclav Kadera; Josef Novotny; Miloslav Vondruska; Jiri Feierfeil; Vlastimil Svoboda; Dusan Misarek; Miroslav Futera; Katerina Nacovska; Zbynek Jasc; Adolf Nemec; Jiri Penkava, and Zdenek Vitkovec, all of Prague, Czechoslovakia, assignors to CKD Praha, oborovy podnik, Prague, Czechoslovakia

Filed Feb. 17, 1970, Ser. No. 11,948
Claims priority, application Czechoslovakia, Feb. 20, 1969, 1206/69
Int. Cl. F04d *27/00*
U.S. Cl. 415—149 9 Claims

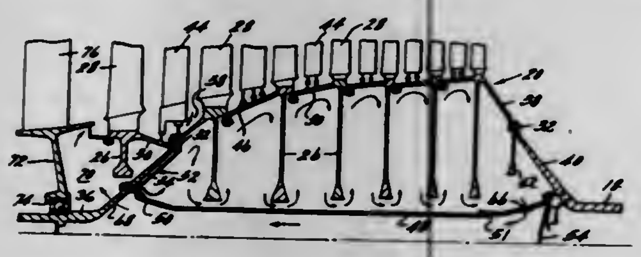


A compressor in which the blades of the stator are mounted in circular rows in a plurality of abutting axially aligned ring-shaped members secured in a recess in the inner wall of the stator, each ring is provided with an associated second annular ring in which is located link means extending into engagement with each of the blades mounted on the first ring. The link means are arranged to swivel the blades about their axes. Means are provided for oscillating the second ring member to actuate the link means.

3,647,313
GAS TURBINE ENGINES WITH COMPRESSOR ROTOR COOLING

Bernard L. Koff, Cincinnati, Ohio, assignor to General Electric Company

Filed June 1, 1970, Ser. No. 41,958
Int. Cl. F01d *5/14;* **F03b** *11/00;* **F04d** *29/38*
U.S. Cl. 415—115 9 Claims



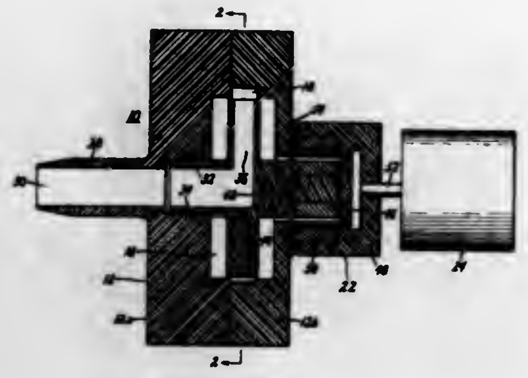
The disclosure shows a system for cooling the rotor of an axial flow compressor incorporated in a gas turbine engine. Air is ducted from the first compressor stage discharge into the interior of the rotor. This cooling air flows to the downstream end of the rotor and is then ducted back into the compressor inlet.

3,647,314
CENTRIFUGAL PUMP

Rudolf R. Laessig, Sumneytown, Pa., assignor to General Electric Company

Filed Apr. 8, 1970, Ser. No. 26,685
Int. Cl. F04d *1/00, 13/02*
U.S. Cl. 415—206 3 Claims

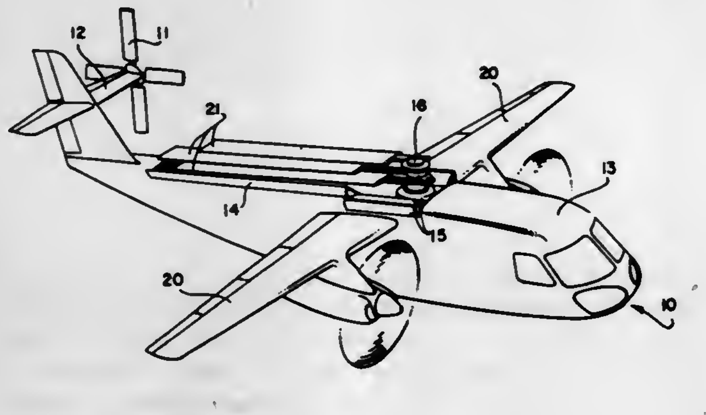
A high-efficiency, low-specific speed centrifugal pump comprised of a discontinuous discharge rotor with an axial inlet and radially extending discharge passageways, a spiral collector for directly receiving the flow of fluid from the discharge passageways and a diffusor aligned with and extending substantially fully across the discharge end of said collector.



3,647,315
ROTOR BLADE PITCH CONTROL BY MECHANICAL HYDRAULIC SYSTEM SENSING BLADE DEFLECTION

Nels C. Rostad, Glendale, and Walter J. Davis, Woodland Hills, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Nov. 28, 1969, Ser. No. 880,799
Int. Cl. B64c *27/22, 27/50*
U.S. Cl. 416—31 16 Claims



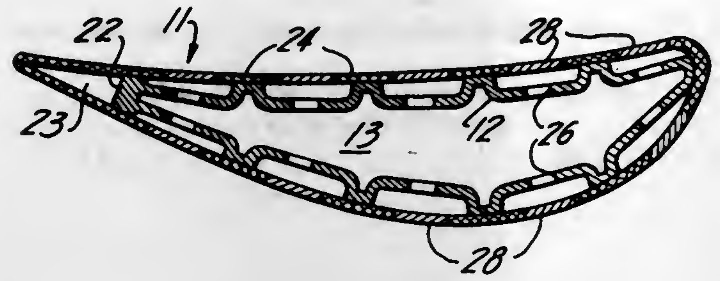
A system of mechanisms for automatically controlling, at relatively low speed, rotation of a helicopter rotor blade responsive to gust conditions or flapping loads or to reverse flow of air on the rear or trailing edge of a rotor blade. The system comprises novel blade sensor means, amplifying means coupled thereto, converting means, pitch azimuth sensing means, means for locking out gyroscopic control, and automatic low-speed pitch control means.

3,647,316
VARIABLE PERMEABILITY AND OXIDATION-RESISTANT AIRFOIL

Seymour Moskowitz, Fort Lee, N.J., assignor to Curtiss-Wright Corporation

Filed Apr. 28, 1970, Ser. No. 32,662
Int. Cl. F01d *5/18*
U.S. Cl. 416—97 1 Claim

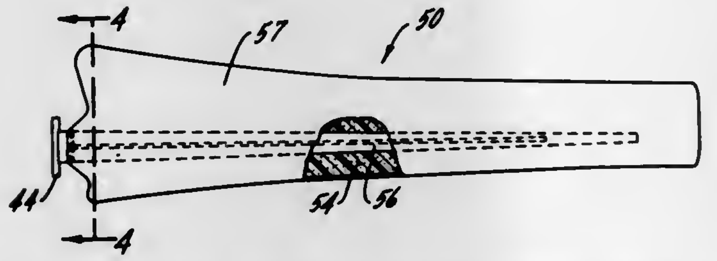
An air-cooled turbine blade for rotor or stator, having a strut member having airflow channels and covered with a sheath of porous mesh material, portions of which are impregnated with a slurry of finely divided metal in a liquid ceramic binder which is then cured in place, to provide a transpiration cooled blade having selected areas of variable resistance to airflow therethrough.



3,647,317
FIBERGLASS FAN ASSEMBLY

Donn B. Furlong; Samuel Luzaich, and James F. Forchini, all of Santa Rosa, Calif., assignors to Fluor Products Company, Inc.

Filed Mar. 19, 1970, Ser. No. 21,009
Int. Cl. F04d *19/00*
U.S. Cl. 416—226 8 Claims

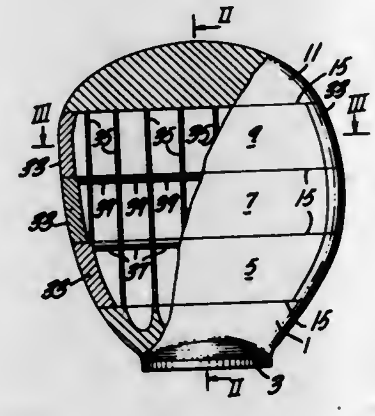


A fan assembly including a fan hub engaged with a driving means for rotation, a streamlined hub cover and a plurality of fan blades attached to the fan hub. The fan blades have an exterior fiberglass skin, filled with high-density polyurethane foam, and a reinforcing steel spar positioned within the exterior skin. The spar is fabricated in a tapered "H" cross section to provide maximum strength without impairing the efficiency of an optimum airfoil.

3,647,318
HOLLOW BLADE FOR PROPELLERS AND METHOD OF MAKING IT

Anders Lennart Pehrsson, and Sven-Ola Andersson, both of Kristinehman, Sweden, assignors to Aktiebolaget Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed July 9, 1969, Ser. No. 840,378
Claims priority, application Sweden, July 11, 1968, 9539/68
Int. Cl. B63h *1/26*
U.S. Cl. 416—233 2 Claims

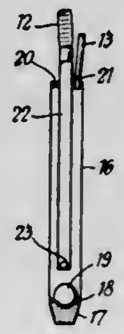


The body of a hollow propeller blade is fabricated in sections disposed generally transversely across the blade by progressively building up the body beginning from the root section and working toward the tip by welding a wall section on the pressure side of the blade to the preceding wall section and grinding both sides of such weldment to enable a very thorough inspection of the weld to be made before installing the corresponding wall on the suction side of the blade. Each succeeding section moving away from the root may be of progressively thinner plate material, and the wall plate of each section may be constituted by separate parts with the outer parts being of thinner plate material than the center part. Longitudinal stringers and transverse ribs extend across the body cavity in spaced-apart relation.

3,647,319
PUMPING EQUIPMENT

Peter McLean, and John William Wilkins, both of Middlesex, England, assignors to Terresearch Limited, Northolt, Middlesex, England

Filed Jan. 21, 1970, Ser. No. 4,539
Claims priority, application Great Britain, Feb. 6, 1969, 6,582/69
Int. Cl. F04f *3/00, 1/06*
U.S. Cl. 417—143 2 Claims



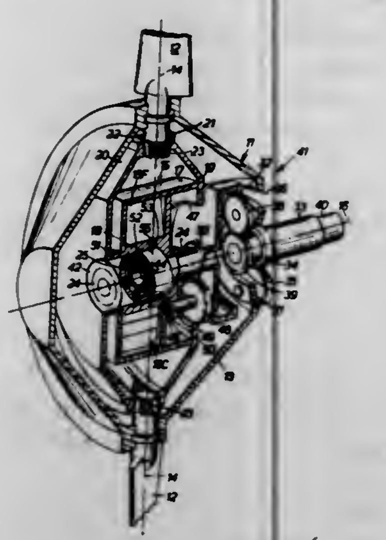
Pumping equipment for lowering the level of liquids in boreholes and the like and comprising a pump unit which is designed for location in such a borehole and for operation by an air pulse supply unit located externally of the borehole at ground or other convenient level. The pump unit comprises a tubular body which is sealed at one end and is provided at the other end with a liquid intake controlled by a one way valve, a discharge tube one end of which is disposed in the tubular body and is equipped with a one way valve while its other end is adapted to be connected to a discharge hose leading from the pump unit to a discharge point externally of the borehole and a connection on said tubular body to which an air supply line from the air pulse supply unit may be attached so that air may be supplied periodically to the interior of the tubular body.

3,647,320
BLADED ROTORS

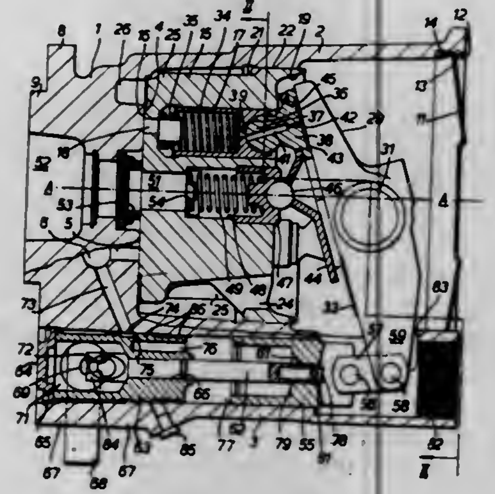
John Alfred Chilman, Painswick, and Ivor Harold Brooking, Wotton, both of England, assignors to Dowty Rotol Limited, Gloucester, England

Filed Apr. 7, 1970, Ser. No. 26,216
Claims priority, application Great Britain, Apr. 21, 1969, 20,135/69
Int. Cl. B63h *3/02, 3/08*
U.S. Cl. 416—157 10 Claims

A bladed rotor including blading adjustable by a valve-controlled fluid-operable actuator, the actuator and valve being rotatable with the rotor hub. The valve has one element adjustable with respect to the hub and a further element cooperable with the one element to control fluid supply to the actuator. Feedback means connected between the actuator and the further element produce relative movement of the actuator and further element, during which the latter follows up movement of said one element.

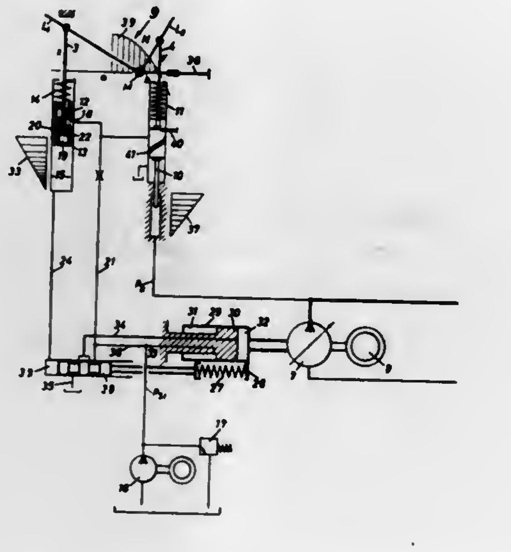


3,647,321
HYDRAULIC APPARATUS
Kenneth Raymond Boydell, Bredons Hardwicke, near Tewkesbury, England, assignor to Dowty Technical Developments Limited, Brockhampton, Cheltenham, England
Filed Sept. 19, 1969, Ser. No. 859,447
Claims priority, application Great Britain, Sept. 20, 1968, 44,774/68
Int. Cl. F04b *1/26*
U.S. Cl. 417—222 **2 Claims**



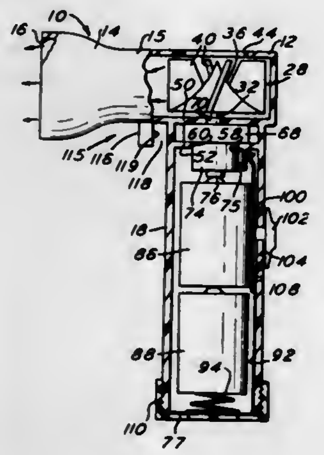
A swashplate pump or motor having a rotary cylinder block, cylinders in the block parallel to or inclined to the rotation axis, a valve on which the block is arranged to rotate and an inclinable swashplate located adjacent to one end of the cylinder block and engageable by pistons in the cylinders either directly or through the medium of slippers whereby the pistons are reciprocated when the block rotates. The pump or motor includes a structural member formed in one piece having. a. a flat valve surface against which the cylinder block rotates, b. a cylindrical bearing surface surrounding part of the cylinder block and in which the cylinder block rotates, c. apertures to support a transverse shaft carrying the swashplate for tilting movement, and d. a servomotor cylinder bore to house a servo piston arranged to adjust the inclination of the swashplate about the axis of the transverse shaft.

3,647,322
DEVICE FOR CONTROLLING QUANTITIES WHICH ARE DEFINED BY THE PRODUCT OF TWO MEASURED VARIABLES
Hans Molly, Dr.-Eugen-Essig-Strasse 48, 7502 Malsch, Germany
Filed Apr. 12, 1967, Ser. No. 630,388
Int. Cl. F04b *49/00*
U.S. Cl. 417—217 **29 Claims**



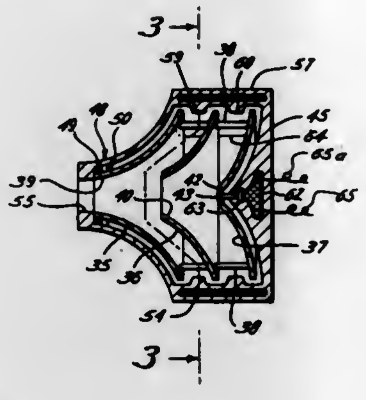
A calculating linkage is used to adjust a device such as a hydraulic motor or a hydraulic pump wherein there are two variables involved. The calculating linkage has a pivotable lever means to which is connected a slidingly guided input member and a slidingly guided output member. The input member is connected to be responsive to one of the variables and the output member is connected to the device to adjust the other variable as an inverse function of the variation in the first variable.

3,647,323
BATTERY OPERATED FANNING DEVICE
John C. Thomas, 451 Queensboro Lane, Haddonfield, N.J.
Filed Aug. 28, 1970, Ser. No. 67,716
Int. Cl. F04b *21/00, 17/00, 35/04;* **A47j** *37/00*
U.S. Cl. 417—234 **5 Claims**



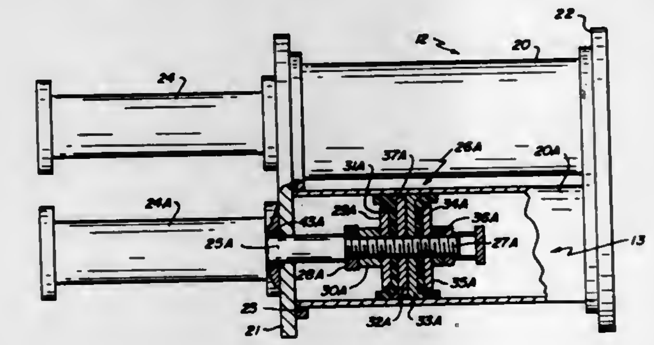
A battery-operated fanning device which can be used in cooperation with barbecues and the like in order to produce a rapid expansion of zone of ignited coals therein. The device includes dry cell batteries in a housing having a fan and exhaust nozzle fastened thereto. A retainer is provided for mounting the device on a barbecue pit.

3,647,324
ELECTRICALLY DRIVEN PUMPS CAPABLE OF USE AS HEART PUMPS
Edson Howard Rafferty, 151 2nd Avenue, Excelsior, Minn., and Harold D. Kletschka, 4321 Woodley Square 0140, Montgomery, Ala.
Continuation-in-part of application Ser. No. 678,265, Oct. 26, 1967, now Patent No. 3,487,784, dated Jan. 6, 1970. This application Dec. 18, 1969, Ser. No. 886,137
Int. Cl. F04b *17/00, 35/04;* **H02k** *21/12*
U.S. Cl. 417—420 **10 Claims**



Pumps capable of use as heart pumps; that is, for pumping blood in connection with the maintenance of the life function in a human or animal body to replace one or more pumping functions of the heart. The pumps are also useful for pumping kidney fluids. The pumps herein described are electrically driven, that is, they are driven by assemblies which function as electric motors.

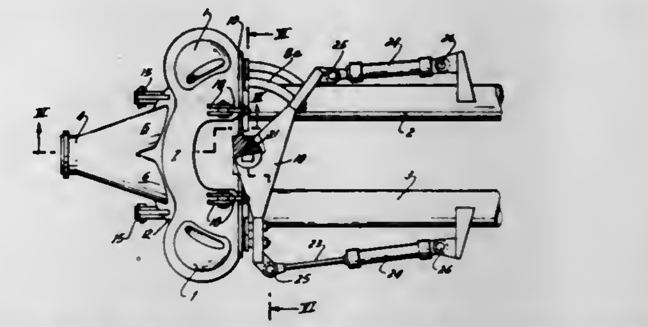
3,647,325
CONCRETE PUMP
Frederick S. Johnson, Calgary, Alberta, Canada, assignor to Consolidated Concrete Limited, Chinook Center, Calgary, Alberta, Canada, a part interest
Filed Apr. 15, 1968, Ser. No. 721,343
Int. Cl. F04b *39/68, 15/02, 23/04*
U.S. Cl. 417—508 **8 Claims**



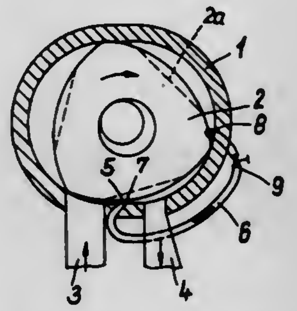
A concrete pump having a pair of cylinders fed from a common hopper and pumping into a common outlet. An inlet valve in the hopper and an outlet valve in the outlet are actuated by piston and cylinder assemblies which in turn control the movement of the concrete pumping pistons in the cylinders.

3,647,326
DISTRIBUTING VALVE ARRANGEMENT
Heinz Bille, Dortmund, Germany, assignor to Walter Scheele KG Maschinenfabrik, Massen/Unna, Germany
Filed Oct. 20, 1969, Ser. No. 867,564
Claims priority, application Germany, Oct. 18, 1968, P 18 03 819.2
Int. Cl. F04b *7/00, 15/02*
U.S. Cl. 417—517 **13 Claims**

A valve arrangement has first and second working cylinders for transporting a fluid mass, such as concrete. The working cylinders communicate with outlet conduits in a valve housing, and with inlet conduits in the same. A valve plate is movable between two positions, connecting alternately each working cylinder with an outlet conduit, while closing the respective inlet conduit.

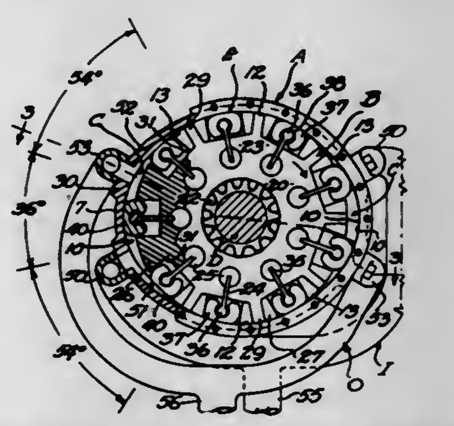


3,647,327
CIRCULAR PISTON INTERNAL COMBUSTION MACHINE WITH REDUCED SHORT CIRCUIT FLOW
Harald Manthey, Mulheim (Ruhr), Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Sept. 26, 1969, Ser. No. 861,405
Claims priority, application Germany, Oct. 5, 1968, P 18 01 423.3
Int. Cl. F01c *1/02;* **F04c** *17/02;* **F02b** *53/00*
U.S. Cl. 418—61 **6 Claims**



A circular piston internal combustion machine, in which conduit means lead into the interior of the machine between the inlet and outlet opening thereof and conveys gas pressure to the exhaust gas side into the gap between the piston and the adjacent mantle inner surface, said gas of higher pressure being withdrawn from a chamber section of the machine which has a higher pressure than prevails on the other side of said gap.

3,647,328
SLIPPER VANE AND VALVE COMBINATION FOR VANE-TYPE FLUID PUMP
Leonard N. Fox, Glendale, Calif., assignor to Crane Co., Burbank, Calif.
Filed May 25, 1970, Ser. No. 40,076
Int. Cl. F01c *19/00;* **F03c** *3/00;* **F04c** *27/00*
U.S. Cl. 418—136 **12 Claims**



A pump vane embodies a shoe of broad area and pivotally linked to its rotor to follow the internal cam surface of a pump cylinder with an effective sealing action and a balanced pumping action.

3,647,329
APPARATUS FOR THE EXTRUSION OF CELLULAR SYNTHETIC RESINS

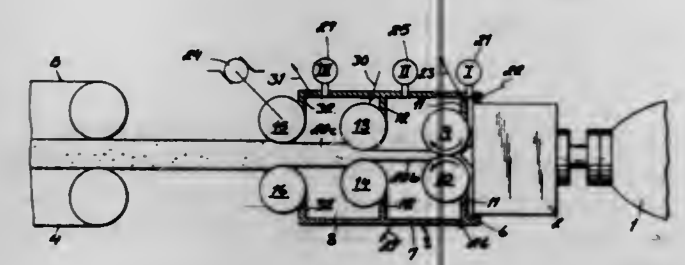
Fritz Reifenhauser; Hans Reifenhauser, both of Troisdorf, and Klaus Burggraf, Sieglar, all of Germany, assignors to Reifenhauser KG, Troisdorf, Germany

Filed Aug. 4, 1969, Ser. No. 847,085

Claims priority, application Germany, Aug. 3, 1968, P 17 79 374.7

Int. Cl. B29d *27/00*

U.S. Cl. 425—4 **3 Claims**



Apparatus for the extrusion of cellular (foamed) synthetic resins and elastomers in which a masticated and plastified synthetic resin or elastomer mixture, blended with a foaming agent, is extruded through a nozzle, e.g., in the form of slab. The extruded slab is permitted to expand against a superatmospheric counterpressure during cooling in one or more chambers provided immediately ahead of the extrusion nozzle, the chambers being separated from one another by pressure-retaining gates or locks. Between each chamber, a driven or autorotating pair of calibrating rolls may form part of the pressure-retaining gate.

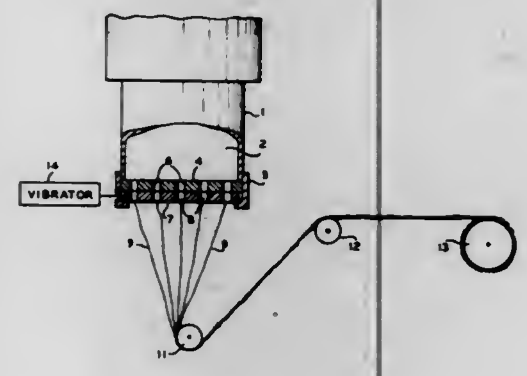
3,647,330
APPARATUS FOR FORMING FILAMENTS

Paul D. Hann, Bartlesville, Okla., assignor to Phillips Petroleum Company

Original application June 27, 1966, Ser. No. 560,714, now Patent No. 3,538,206. Divided and this application June 25, 1970, Ser. No. 49,739

Int. Cl. D01d *3/00, 5/22*

U.S. Cl. 425—76 **6 Claims**



The invention pertains to apparatus for producing filaments of varying cross-sectional area and the produced filaments. The apparatus comprises a spinneret having a plurality of plates, at least one of which is vibrated.

3,647,331
ULTRAHIGH PRESSURE-TEMPERATURE APPARATUS

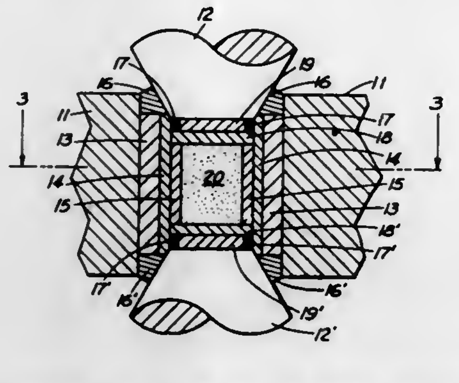
Tatsuo Kuratomi, 2-18, 4-chome, Hamatoke, Chigasaki, Japan

Filed Mar. 10, 1970, Ser. No. 18,143

Claims priority, application Japan, Mar. 10, 1969, 44/17548

Int. Cl. B30b *11/00, 11/32*

U.S. Cl. 425—77 **3 Claims**



An improvement in ultrahigh pressure-temperature apparatus in which adiabatic, electrically nonconductive, thermostable cylinders are utilized to protect the outer portions of the apparatus from the pressures and temperatures generated within the innermost parts of the apparatus.

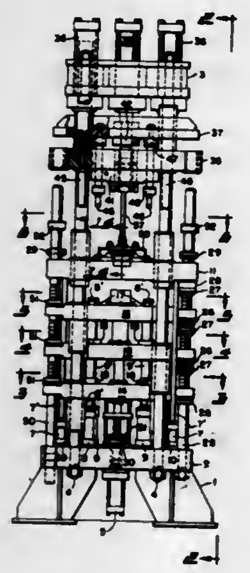
3,647,332
HYDRAULIC PRESS

Robert Leslie Schmaus, Mt. Prospect, Ill., assignor to Parker Hannifin Corporation, Cleveland, Ohio

Filed Aug. 29, 1969, Ser. No. 854,222

Int. Cl. B30b *11/00*

U.S. Cl. 425—78 **11 Claims**



A hydraulic press having upper and lower hydraulically actuated punches which are moved toward each other in a die containing powdered metal, the upper punch and die having interengageable positive stops and the upper and lower punches having interengageable positive stops so that the powdered metal is compressed by the punches to form an article of precise size. The downward force of the upper punch exceeds the upward force of the lower punch to assure engagement of the upper punch and die stops and to prevent premature upward movement of the upper punch out of the die. The press has control valves operative to cause upward movement of the punches in unison with respect to the die while the upper and lower punch stops are retained in engagement, thus to strip or eject the article from the die. In a press which has multiple lower punches pressure control valves set at selected pressures control the upward and downward sequence of operation of the lower punches respectively to produce an article of uniform density and to effect stripping or ejection of the article from the lower punches without chipping off corners of the article. Multiple fluid motors of different sizes may be selectively coupled to multiple lower punches according to the sizes of the punches.

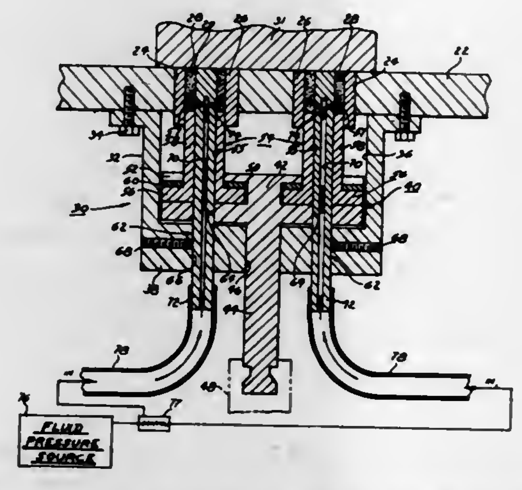
3,647,333
APPARATUS FOR INJECTING A FLUID INTO POWDERED MATERIALS BEING COMPACTED

Joseph E. Smith, Birmingham, Mich., assignor to Wolverine-Pentronix, Inc., Lincoln Park, Mich.

Continuation-in-part of application Ser. No. 850,204, Aug. 14, 1969. This application Nov. 10, 1969, Ser. No. 875,340

Int. Cl. B29f *1/03*

U.S. Cl. 425—78 **13 Claims**



A method and apparatus for adding an additive material, such as a fluid (gas or liquid) to a granular base material which is to be compacted, providing for maximum saturation of the granular base material with the fluid by injecting the fluid into the granular base material in metered proportions prior to or during the compacting operation. The method may be advantageously carried out in an apparatus such as a compacting press having a die provided with at least one die cavity into which a lower compacting member extends for movement upwardly through the die cavity. The die cavity is filled with a granular base material from a filling head positioned above the die cavity. The filling head is part of a positioner assembly pivotally supported over the die cavity and which comprises, in addition to the filling head, an anvil or upper compacting member adapted to be placed over the filled die cavity for compression of the granular material between the anvil or upper compacting member and the lower compacting member. The fluid, under controlled pressure and in a predetermined amount, is injected into the granular base material immediately prior to or during advancement of the lower compacting member within the die cavity for compression of the granular material into a fluid-saturated compacted article, and thereafter the fluid-saturated compacted article is ejected from the die cavity for disposal into a suitable receptacle.

3,647,334
CONSUMABLE FIXTURE FOR USE IN ASSEMBLING A MAGNETIC TAPE HEAD

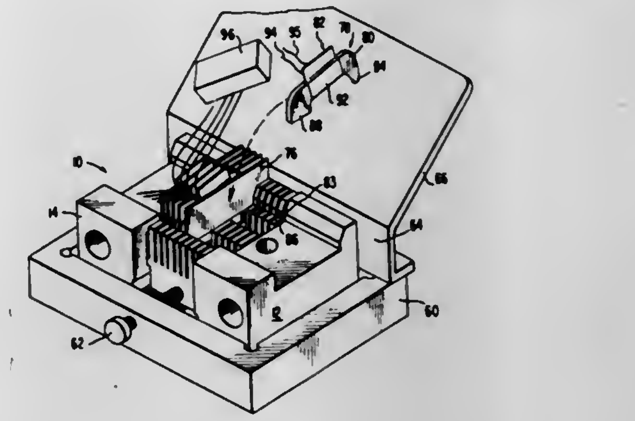
Louis H. Faure, Poughkeepsie, and Alfred T. Hardart, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Original application Jan. 4, 1968, Ser. No. 696,009, now Patent No. 3,534,470, dated Oct. 20, 1970. Divided and this application Aug. 26, 1970, Ser. No. 67,294

Int. Cl. B29f *1/022*

U.S. Cl. 425—110 **9 Claims**

A consumable fixture and a process for assembling a multiple track tape head. The fixture contains a plurality of slots and shoulders for receiving shields and magnetic core assemblies each of which has a wound coil thereon. The fixture includes channels that communicate with two potting holes extending to the surface of the fixture. The shields and core assemblies are assembled, a pin connector is installed in the fixture, and the ends of the coils are soldered to the pins of the connector. A housing is then inserted into the fixture and tests are performed for magnetic phasing, continuity and short circuits. The coil connecting wires and the gaps of the core assemblies are then encapsulated by injecting and pouring epoxy into the fixture. After the epoxy is cured, the outer portions of the fixture are broken off, and the remainder of the fixture and the excess portions of the shields are then cut off and the vertical gap portion of the assembly is ground.



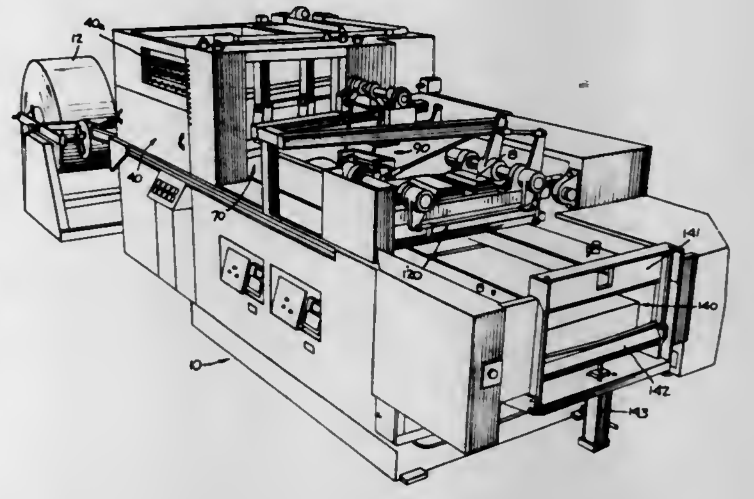
3,647,335
APPARATUS FOR FORMING CONTAINERS

Fred P. Brown, Jr., Centerville, Mass., assignor to Packaging Industries, Inc., Hyannis, Mass.

Filed Apr. 11, 1969, Ser. No. 815,292

Int. Cl. B29c *3/04, 3/06*

U.S. Cl. 425—143 **21 Claims**

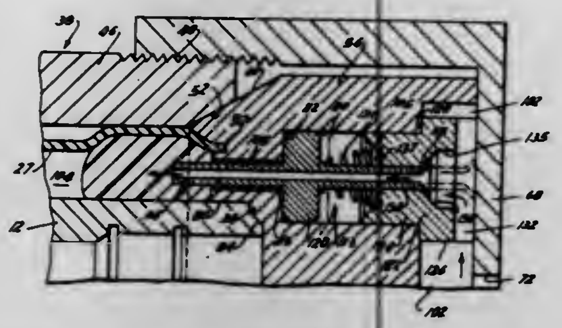


The disclosure relates to a method and apparatus for forming articles such as containers. In accordance with the disclosure, a web of thermoplastic material is held along the opposite edges extending along the length thereof while being passed through an article-forming station, a printing station, a trimming station, and if required, a heating station. The movement of the web of plastic material through the apparatus is intermittent in order to provide time sufficient to enable the necessary operations to be performed at each station. The formed article produced by the machine is ready for its ultimate use when discharged from the last station of the machine.

3,647,336
MOLD FOR MANUFACTURE OF CORED RUBBER ROLLS

Charles N. Pruitt; Douglas L. Segars, both of North Charleston, and Walter L. Miller, Goose Creek, all of S.C., assignors to Raybestos-Manhattan, Inc., Passaic, N.J.

Filed Aug. 26, 1970, Ser. No. 67,040
Int. Cl. B29f *1/00*
U.S. Cl. 425—146 **14 Claims**

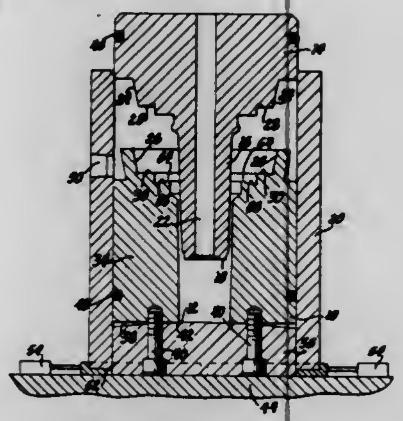


An apparatus for molding a metal-cored rubber roll in which the mold assembly is effectively sealed during cure and vulcanization. The mold assembly comprises a mold casing having a cavity. Rubber is extruded into the mold cavity through a valve mechanism mounted in an aperture communicating with the mold cavity. During cure the increased pressure of the rubber within the mold cavity resulting from the elevated temperature to which the mold is subjected is effective to move the valve mechanism to position effectively sealing the mold cavity whereby the rubber is cured under extremely high pressure. As a result shrinkage is reduced and the tolerances and concentricity of the roll are more uniform and precise.

3,647,337
PRECISION MOLDING APPARATUS

Robert L. Dega, Mount Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 17, 1969, Ser. No. 834,105
Int. Cl. B29f *1/00*
U.S. Cl. 425—242 **5 Claims**

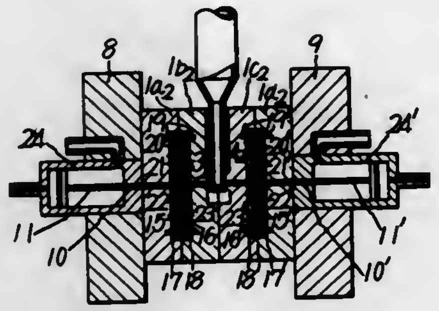


An apparatus for injection molding dimensionally precise tubular elastomeric articles. The apparatus includes male and female mold members longitudinally movable relative to each other and adapted to form a tubular cavity therebetween, longitudinally and transversely disposed precision alignment surfaces, and means whereby an annular injection orifice is provided at one end of the cavity while the other end is provided with an annular vent opening and evacuation means. In the molding process, elastomeric material is injected into the cavity through the orifice until the mold cavity is filled. Thereafter, pressure is applied to the mold whereby the orifice and the annular vent opening are restricted and the material is subjected to a uniform pressure at all points within the mold cavity to produce a dimensionally precise elastomeric product.

3,647,338
DISC RECORD INJECTION MOLDING MACHINE

Hideo Ise, Kawasaki-shi, Japan, assignor to Nippon Columbia Kabushikikaisha (Nippon Columbia Co., Ltd.), Tokyo, Japan

Filed Sept. 15, 1969, Ser. No. 857,948
Int. Cl. B29d *17/00*
U.S. Cl. 425—247 **1 Claim**

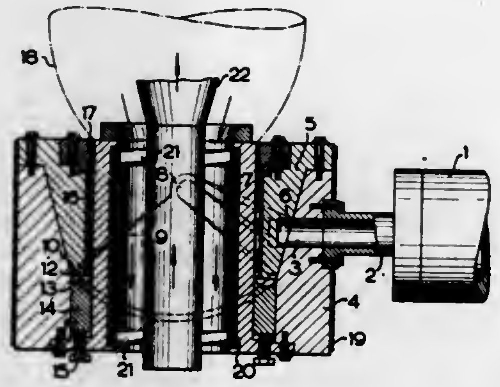


A disc record injection molding machine having a metal mold consisting of a plurality of templets, the metal mold having a plurality of record molding cavities and runners leading thereto, means for injecting record material into the cavities through the runners, means for assembling the templets to form the metal mold and disassembling them, and means for boring central openings through molded records and pushing out the material remaining in the runners.

3,647,339
BLOWHEAD FOR MAKING TUBULAR PLASTICS

Hartmut Upmeier, Tecklenburg, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed Jan. 13, 1970, Ser. No. 2,517
Claims priority, application Germany, Jan. 22, 1969, P 19 03 110.8
Int. Cl. B29d *23/04*
U.S. Cl. 425—326 **7 Claims**

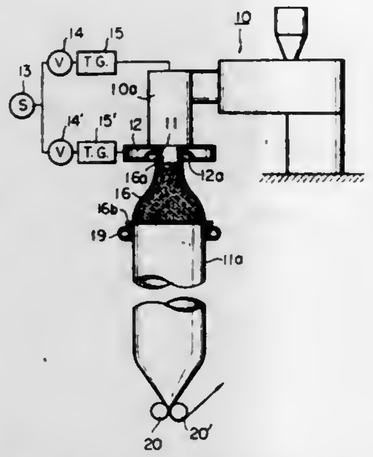


A blowhead for making tubular plastics film comprising a housing having a central aperture for installing special equipment, a lateral supply passage in the housing for the entry of molten plastics material, branch passages which branch from the supply passage and extend, each in its own direction, through 90° about an insert in the housing, are then shortly curved to divert the flow of plastics material axially of the blowhead against the direction in which film is blown, and then diverge constantly in the peripheral direction until they merge at positions at an end of the insert, recesses formed in the housing adjacent the end of the insert to direct the flow of plastics material over projecting surfaces provided on the end of the insert and into an annular passage leading to a nozzle orifice from which the plastics material is blown as a film, the projecting surfaces and recesses extending in the direction opposite to the film blowing direction such that, starting from the sharp curvatures, the flow path for the plastics material to the nozzle orifice has the same length in every angular direction of the diverging portions of the branch passages.

3,647,340
APPARATUS FOR MANUFACTURING BIAXIALLY ORIENTED FILM

Masao Sakurai, Yokohama, and Kikuo Muto, Kawasaki, both of Japan, assignors to Gunze Kobunshi Kogyo Kabushiki Kaisha, Naka-gun Kanagawa Prefecture, Japan

Filed July 28, 1970, Ser. No. 58,963
Claims priority, application Japan, Aug. 16, 1969, 44/64525; Aug. 30, 1969, 44/68346
Int. Cl. B29d *23/04*
U.S. Cl. 425—326 **12 Claims**

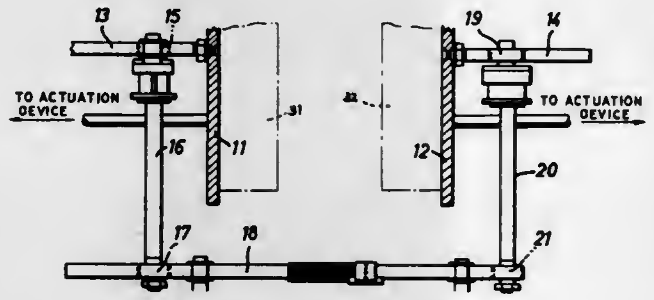


Apparatus for manufacturing a biaxially oriented film from a semifused thermoplastic material which is extruded in a continuous hollow tubular form from an annular discharge nozzle of an extruder machine of usual construction, wherein said thermoplastic material in a tubular form, or parison, is, after being preliminarily cooled, expanded in an air permeable heat-resistive enclosure which is generally shaped like an inverted funnel with its lower peripheral edge enlarged to an inside diameter corresponding to the outside diameter of the finally expanded tubular film. The tubular material is expanded with pressurized air or steam blown thereinto and, as the tubular material is expanded, it is cooled to a temperature ranging from the softening point to melting point of the thermoplastic material. The tubular film thus produced is then cooled and set as it is drawn and stretched in the longitudinal direction.

3,647,341
MOLD SYNCHRONIZING APPARATUS

Stefan Fischer, Im Korresgarten 21, and Rainer Fischer, Am Wildtor 2, both of Lohmar, Germany

Filed Mar. 5, 1969, Ser. No. 804,566
Claims priority, application Germany, Mar. 7, 1968, P 17 04 067.4
Int. Cl. B29c *1/16*
U.S. Cl. 425—326 **2 Claims**

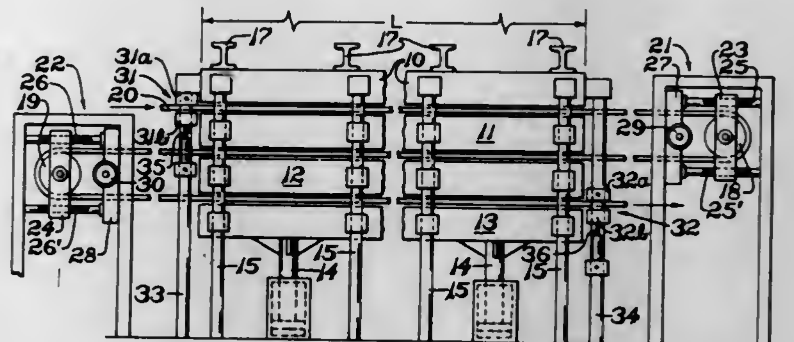


The present invention relates to an apparatus for the production of hollow articles from thermoplastic synthetic plastic materials by the blowing method employing a two part mold which is opened and closed in the cyclic operation of the apparatus and which in turn is blown up in the mold to form the finished hollow article, and wherein the mold halves are coupled for synchronous movement with respect to one another.

3,647,342
APPARATUS FOR VULCANIZING OPEN END BELTING

David G. Hunt, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Jan. 22, 1969, Ser. No. 793,033
Int. Cl. B29h *7/22*; **B29d** *29/00*
U.S. Cl. 425—330 **4 Claims**

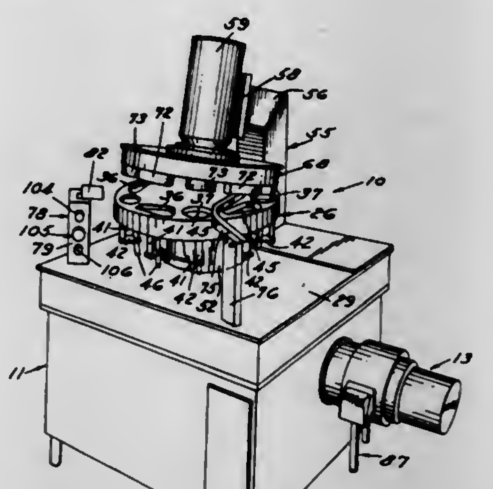


Apparatus for curing long lengths of reinforced elastomeric, open end, conveyor belting in a multiple-decked vulcanizing press. The portions of the belt being cured are subjected to substantially uniform stretch prior to closing the press by outrigger rollers over which the belt is trained as it passes continuously from one platen to another. When the portions between the press platens are cured, the belting is advanced longitudinally over the rollers to permit vulcanizing the portions previously extending over the rollers.

3,647,343
MATERIAL COMPACTING EQUIPMENT

Donald W. Garnett, Grand Ledge, Mich., assignor to The Olofsson Corporation, Lansing, Mich., and Mahogany Farms, Inc., Williamston, Mich.

Filed Nov. 10, 1969, Ser. No. 875,267
Int. Cl. B29c *3/04*
U.S. Cl. 425—350 **13 Claims**



A motor driven rotary compactor table carries a circumferential series of material-receiving pockets, each bottomed by an ejector cam-operated during the table rotation to eject a shaped and compacted product from its pocket. A compactor plate of the same diameter is journaled above the table on an axis at an acute angle to the table axis, and theoretically intersecting the latter at the table surface. The plate carries an annual series of compactor plungers equal in number and circumferential spacing to the table pockets; and the inclination and vertical relationship of table and plate to one another are such that the plungers enter into the respective table pockets at the apex of an acute angle theoretically defined by planes of the convergent, mutually facing plate and table surfaces. Thus, in compacting material in the pockets, the plungers also effect a cog and wheellike drive of the compactor plate.

3,647,344

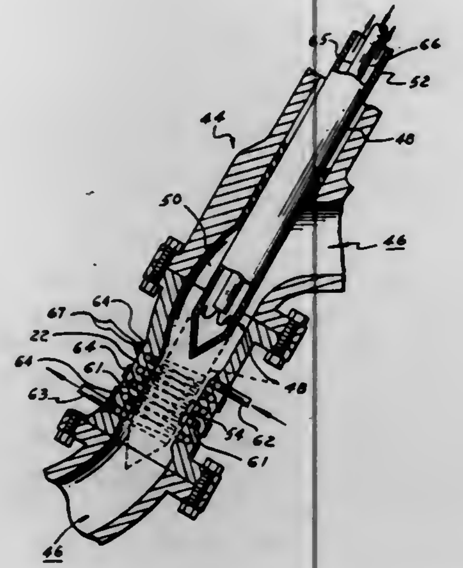
APPARATUS FOR CONTROLLING BACK PRESSURE IN AN EXTRUDER

Andrew D. Skibo, Monson, and Chester L. Woodworth, East Longmeadow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 16, 1970, Ser. No. 19,886

Int. Cl. F15d *1/12;* **F16k** *47/00;* **B29f** *3/08*

U.S. Cl. 425—379 **11 Claims**



A pressure control valve or apparatus adapted for controlling the pressure of a viscous fluid in a conduit by producing a pressure drop which is substantially directly proportional to the valve stem position. The valve or apparatus comprises in combination a valve body having a streamlined flow channel which has a narrow section of substantially uniform cross-sectional dimension opening into a wide section of substantially larger cross-sectional dimension and a plunger which is slidably mounted within the channel. The plunger is adapted for movement within the wide section and narrow section of the flow channel wherein the clearance distance between the sidewall of the narrow section and the plunger surface extending into the narrow section is substantially constant. When the plunger is moved reciprocally into the narrow section the changes in pressure drop across the valve or apparatus are substantially directly proportional to the axial extent to which the plunger lies within the narrow section.

3,647,345

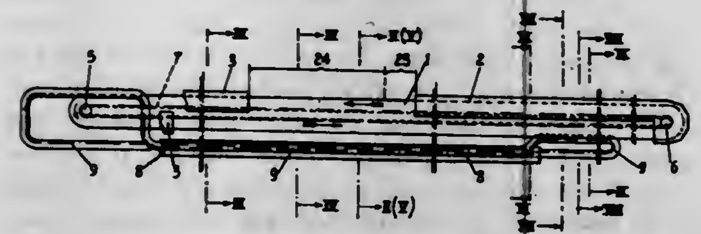
MOLDING TRANSFERRING SYSTEM FOR CERAMIC ARTICLES

Frans D. Claessens, and Theodore F. Hein, both of Maastricht, Netherlands, assignors to N. V. Koninklijke Sphinx-Ceramique v/h Petrus Regout, Boschstraat, Maastricht, Netherlands

Continuation-in-part of application Ser. No. 592,448, Nov. 7, 1966, now abandoned. This application May 18, 1970, Ser. No. 38,272

Int. Cl. B28b *15/00*

U.S. Cl. 425—439 **11 Claims**



Two trucks are caused to move in side-by-side relation on a pair of parallel tracks, one truck carrying top and bottom mould parts pivoted on opposite sides of the truck and having followers remote from the respective pivot axes. The other truck carries a horizontal support member pivoted on one side of this truck coaxial with the pivot axis of the bottom mould part on the first truck. The support member also has a follower remote from its pivot axis and which is spaced from it by the same amount as is the spacing between the follower of the bottom mould part and its pivot axis. As the truck moves along, the follower of the top mould part engages a carriage movable along an arcuate track having its center of curvature on the pivot axis of the top mould part and which carries the top mould part to an upright position. Thereafter the follower of the top mould part enters a fixed guide which holds it in the upright position. Beyond this is a second arcuate track stradding the paths of the trucks and having its center of curvature coincidental with the pivot axes of the bottom mould part and the support member. A carriage on this second track first engages the follower of the support member to swing it over onto the bottom mould part and then to pick up the follower of the bottom mould part as well and, during its return movement, to swing both the bottom mould part and the support member onto the other truck to transfer a moulded article onto the support member of such other truck. A further arcuate track and carriage then return the bottom mould part back onto the first truck, and a still further arcuate track and carriage then returns the top mould part onto the bottom mould part.

3,647,346

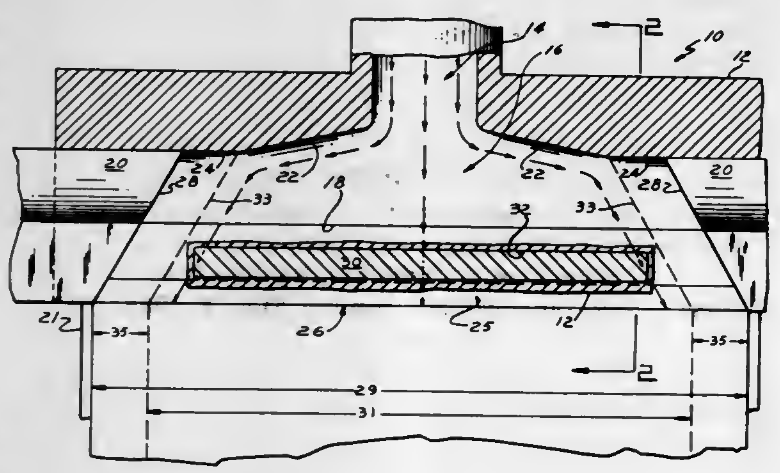
EXTRUSION DIE WITH ADJUSTABLE DAMS

Armand F. Minnie, Ludlow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 27, 1970, Ser. No. 32,199

Int. Cl. B29f *3/04*

U.S. Cl. 425—466 **10 Claims**



An extrusion die with an adjustable dam for continuously controlling the width of extruded sheet material while eliminating dead space areas in the die flow channel in which the extruded material may be held up and thermally degraded. The die body has a streamlined feed channel which opens into a horizontally oriented, elongated, distribution channel having (a) a gradually outwardly tapering transition section which opens into (b) a horizontal uniform section located adjacent to the lateral end of the transition section. The distribution channel, including the transition section and the uniform section, opens into a coextensive, narrow, horizontally oriented, outlet channel having an orifice. An adjustable dam is adapted to sealingly engage and move within the uniform section and the adjoining portion of the outlet channel to control the width of the extruded sheet material by controlling the width of the distribution channel, the outlet channel, and the orifice. Because of the streamlined configuration of the distribution channel, the outlet channel, and the cooperating dam, the extruded material flows freely through the die with no material dead spots regardless of the position of the dam within the uniform section. The die can operate effectively with one dam and one uniform section. However the use of two dams and two uniform sections located at the opposite lateral ends of the transition section provides greater flexibility in controlling the width of the extruded sheet.

3,647,347

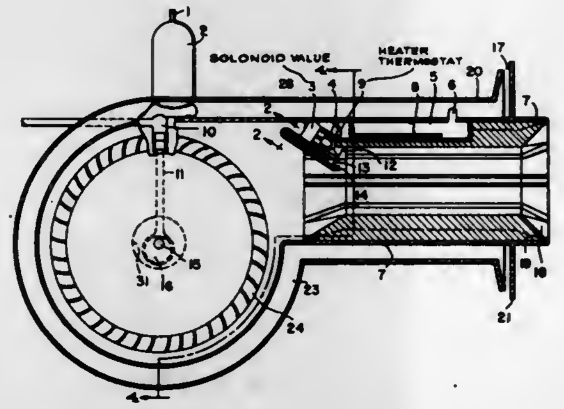
FLASH VAPOR BURNER

Hosein M. Shakiba, 4527 Walnut Street, Philadelphia, Pa.

Filed July 8, 1970, Ser. No. 53,059

Int. Cl. F23n *1/00*

U.S. Cl. 431—37 **15 Claims**



The flash burner utilizes the total thermal efficiency of the fuel to develop heat. The fuel is kept under high pressure and heated beyond the boiling point. This superheated liquid fuel which is under pressure, enters into the low-pressure area of the combustion channels, where it flashes into vapor and prompt mixing of this vapor with air causes complete burning and heat production. The device has the advantages of great fuel economy, no likelihood of causing air pollution, and low maintenance.

3,647,348

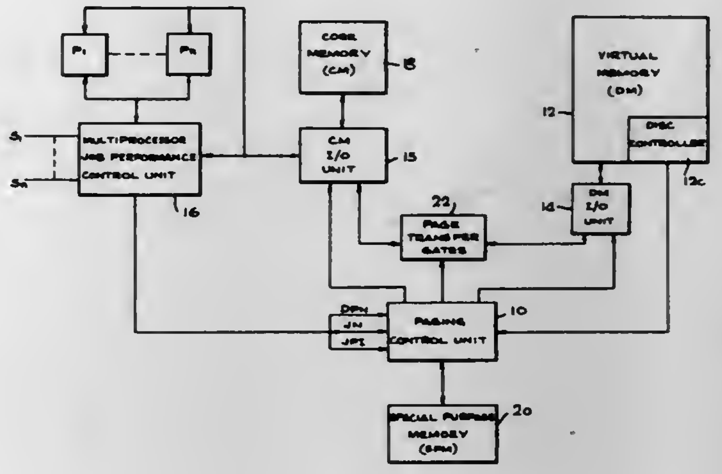
HARDWARE-ORIENTED PAGING CONTROL SYSTEM

William R. Smith, Mountain View; Rex Rice, Menlo Park, and Stanley Mazor, Sunnyvale, all of Calif., assignors to Fairchild Camera and Instrument Corporation, Syosset, Long Island, N.Y.

Filed Jan. 19, 1970, Ser. No. 3,626

Int. Cl. G06f *9/10, 13/00, 15/16*

U.S. Cl. 444—1 **2 Claims**



A system for controlling the transfer of pages between a large disc memory and a much smaller core memory in response to requests for the transfer of pages from the disc memory to the core memory, including a first plurality of control words, which define an In-Core List. Each of these control words is associated with a different core page. The word's fields are used to designate various information related to the disc page located in the core page associated with the word, as well as the availability of the core page to have a disc page transferred thereto. The system includes circuitry to form a Paging Queue comprising of other control words. Each word in the Paging Queue includes all the information necessary to define which core page should be emptied of which disc page located therein, to make room for a new disc page which is requested, and/or the number of a new disc page and the core page into which it is to be transferred. The transferring of pages between the memories is independent of the order in which page requests are received. The accessibility of the core memory is dynamically variable.

CHEMICAL

3,647,349

PROCESS FOR THE DYEING AND PRINTING OF SHAPED MATERIALS OF POLYMERS FROM ACRYLONITRILE, AS.-DICYANOETHYLENE OR ACID-MODIFIED AROMATIC ESTERS

Roderich Raue, Leverkusen; Willi Eifler, Cologne-Stammheim, and Hans-Peter Kuhlthau, Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

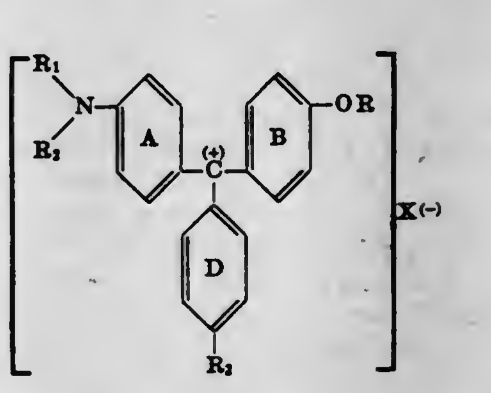
Filed Nov. 20, 1969, Ser. No. 878,549

Claims priority, application Germany, Nov. 29, 1968, P 18 11 652.4

Int. Cl. D06p *3/76*

U.S. Cl. 8—4 **8 Claims**

The dyeing or printing of polymers of acrylonitrile, polymers of as.-dicyanoethylene, or acid-modified aromatic polyesters, or acid-modified superpolyamides by using as a dyestuff a triaryl-methane compound which is free from sulphonic acid and carboxylic acid groups, and has the formula



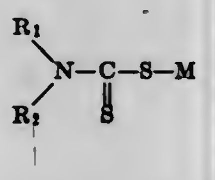
(I)

in which R is alkyl, aralkyl, cycloalkyl or aryl; R_1 is hydrogen, alkyl, aralkyl or cycloalkyl; R_2 is alkyl, aralkyl, cycloalkyl or aryl; R_1 and R_2 together with the nitrogen atom, or R_1 or R_2 with a carbon atom in the O-position in the ring A may form a heterocyclic ring; R_3 is hydrogen, alkyl, aralkyl, aryl, alkoxy, aralkoxy, aryloxy, alkylmercapto, arylmercapto, halogen, carboxylic acid ester radical, carbonamido, sulphonamido, cyano, nitro, alkylsulphonyl, aralkylsulphonyl, arylsulphonyl, or acyl; and X is the radical of an anion.

3,647,350
DITHIOCARBAZATES AND DITHIOCARBAMATES WITH ACID AND DIRECT DYES

Jean Galerne, Paris, France, assignor to Eugene-Gallia, Societe Anonyme, Paris, France
Filed Aug. 4, 1969, Ser. No. 847,436
Claims priority, application France, Aug. 28, 1968, 164389
Int. Cl. D06p *3/00*
U.S. Cl. 8—10 **2 Claims**

These dyes, notably for animal fibers, such as hair, wool, silk, and containing essentially acid or direct dyestuffs, comprise as adjuvants dithiocarbamic derivatives of formula:



wherein M is NH_4, K or Na, and R_1 and R_2 identical or different represent each a hydrogen atom, a possibly substituted alkyl or phenyl, a NR_3 (R_4) group or a N CR$_5$ (R_6) group, R_1 and R_2 being also able to form together and with the nitrogen atom to which they are linked a heterocycle. These adjuvants improve substantially the affinity of said dyestuffs for the fibers, consequently the intensity of the shade, as well as the uniformity of the dyeing.

3,647,351
PYRIDINE DYESTUFF INTERMEDIATES IN A HAIR DYEING COMPOSITION AND METHOD

Fritz-Walter Lange, Puccheim, Germany, assignor to Hans Schwarzkopf GmbH, Hamburg, Germany
Continuation-in-part of application Ser. No. 360,449, Apr. 16, 1964, now abandoned. This application Mar. 11, 1968,
Ser. No. 711,906. The portion of the term of this patent subsequent to Aug. 10, 1982, has been disclaimed. Claims priority, application Germany, Apr. 19, 1963, Sch #33135
Int. Cl. A61k *7/12*
U.S. Cl. 8—10.2 **21 Claims**

Hair is dyed in a natural-looking color with a composition comprising a carrier compatible with hair in which at least one of the following compounds is dispersed in an effective amount:

2,5′-diamino-bis-(3,2′-pyridyl)amine,
5-hydroxy-5′-amino-bis-(2,2′-pyridyl)amine,
6-amino-pyridylamino (2)-1,4-diaminobenzene, and acid salts, particularly hydrochloric acid salts, thereof.

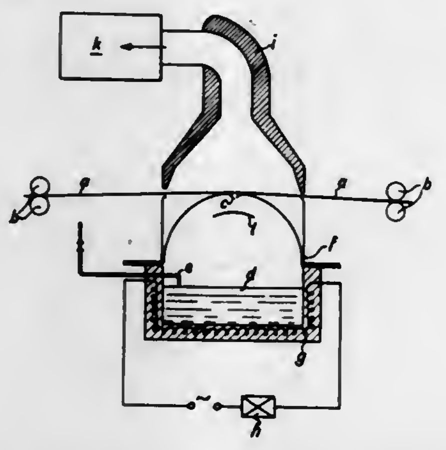
3,647,352
CHEMICAL MODIFICATION OF FIBROUS CELLULOSE WITH SODIUM N-METHYLBIS(2-SULFATOETHYL)AMINE AND WITH N-METHYLBIS(2-CHLOROETHYL)AMINE TO IMPART CREASE RESISTANCE IN FABRICS

Earl J. Roberts; Stanley P. Rowland, both of New Orleans, and Mary Ann F. Brannan, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture
Filed Feb. 17, 1971, Ser. No. 116,283
Int. Cl. D06m *13/36, 13/38*
U.S. Cl. 8—116.2 **6 Claims**

N-methylbis(2-sulfatoethyl)amine and the monosodium salt of this new compound have been prepared and applied to cotton to impart crease-resistant characteristics to the fabrics. N-methylbis(2-chloroethyl)amine, a related known compound, was also reacted with the fibrous cellulose. Respectively, a pad-cure process was employed on the one and a pad wet-cure process was employed on the other to produce cross-linked cellulosic derivatives.

3,647,353
METHOD AND APPARATUS FOR PROCESSING CELLULOSE-CONTAINING TEXTILES WITH THE VAPORS FROM AN AZEOTROPIC LIQUID COMPRISING AN ACIDIC CATALYST

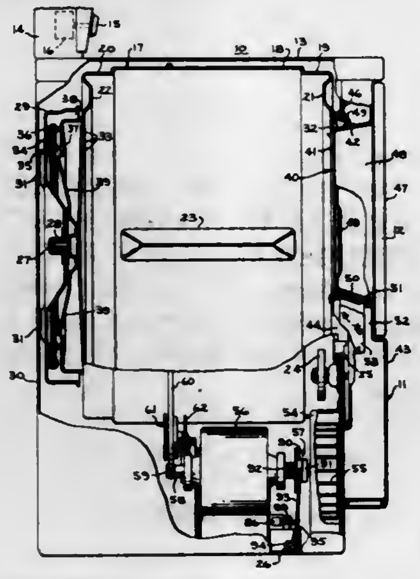
Hans Calzaferri, Ilanz; Werner Kunz, Uerikon; Martin W. Schwemmer, Urdorf, and Max Wyler, Winterthur, all of Switzerland, assignors to Triatex International AG fur Textile Forschung und Entwicklung, Zurich, Switzerland
Filed Aug. 9, 1967, Ser. No. 659,429
Claims priority, application Switzerland, Aug. 24, 1966, 12,222/66
Int. Cl. D06m *1/16, 13/38, 13/14*
U.S. Cl. 8—116.3 **6 Claims**



Method and apparatus for finishing cellulose-containing textile material wherein the material is treated with an acid catalyst by contacting the material with the vapor of a liquid azeotropic mixture containing the acid catalyst, and wherein the temperature of the liquid azeotropic mixture is controlled to regulate the amount of catalyst present in the vapor phase for contact with the textile material.

3,647,354
FABRIC-TREATING METHOD

Leopold Loeb, Louisville, Ky., assignor to General Electric Company
Filed Nov. 24, 1969, Ser. No. 879,031
Int. Cl. D06l *1/00*
U.S. Cl. 8—158 **4 Claims**



An improved fabric-treating method is provided which may be used to treat fabrics with postwash treating chemicals, or to clean previously laundered fabrics of soil and detergent left deposited thereon, to to perform a combination of these functions. When used solely to clean previously laundered fabrics of soil and detergent, the fabrics are tumbled together with a quantity of water and transfer agent. When the process is also used to treat fabrics with postwash treating chemicals, such treating chemicals are tumbled simultaneously with the fabrics, water and transfer agent. In each instance, the quantity of water is sufficient only to dampen the fabrics. The tumbling causes the water and the transfer agent to contact the fabrics and causes soil and detergent from the fabrics to be distributed over the combined surface areas of the fabrics and the transfer agent. When a treating chemical is also employed, the tumbling additionally causes the treating chemical to be distributed over the surfaces of the fabrics. Following such tumbling, the soiled transfer agent is separated from the fabrics, whereby the fabrics are cleaned of soil and detergent distributed onto the transfer agent.

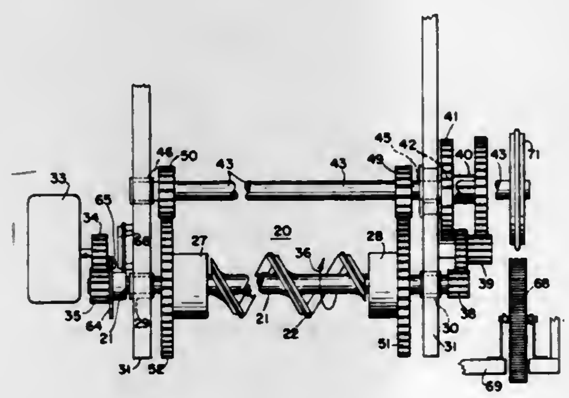
3,647,355
PROCESS

Meurig W. Williams, Rochester, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 7, 1970, Ser. No. 26,435
Int. Cl. D06m *3/30*
U.S. Cl. 8—130.1 **6 Claims**

Fabrics containing fibers of selected polymers prepared from bis(4-aminocyclohexyl)methane and linear aliphatic dicarboxylic acids, bis(4-isothiocyanatocyclohexyl)methane or bis(4-isocyanatocyclohexyl)methane develop improved liveliness upon treatment with chloroform.

3,647,356
PRINTER DRIVE WITH PAGE RECORD FEED

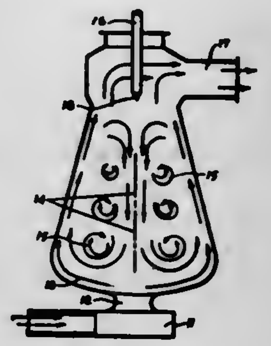
Alvin Feder, Skokie, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Feb. 13, 1970, Ser. No. 11,258
Int. Cl. B41j *11/24, 11/38*
U.S. Cl. 346—101 **9 Claims**



A printer drive mechanism for a printer including a cylindrical platen and page record mechanism coaxially mounted on the platen shaft. A gear train connects the platen to the page record feed mechanism allowing synchronous but independent rotation of the platen and the page record feed mechanism, with the page record feed mechanism rotating at a slower rate than the platen. A stepping motor is used to rotate the platen, and printing occurs after each step of the motor thereby preventing the printed dot from blurring due to platen rotation or page record advancement.

3,647,357
PROCESS FOR MIXING GASES, LIQUIDS OR FINELY GRAINED SOLIDS WITH A CARRIER GAS AND FOR THE MANUFACTURE OF REACTION PRODUCTS

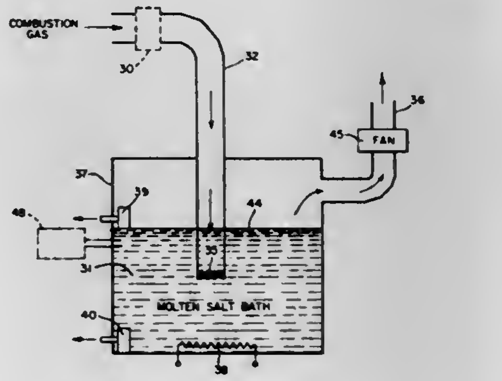
Peter Niedner, Muhlerstr. 104, Bendorf; Gerhard Diez, Koblenz-Olperstr. 21, Bendorf-Sayn, and Heinz Thubeauville, Roomarsheide 104, Bochum, all of Germany
Original application Aug. 29, 1966, Ser. No. 576,507, now Patent No. 3,459,949, dated Feb. 17, 1970. Divided and this application Jan. 5, 1970, Ser. No. 5,409
Claims priority, application Germany, Aug. 28, 1965, O 11 087
Int. Cl. C01q *1/00*
U.S. Cl. 23—1 R **6 Claims**



A process for the thermic treatment of a substance with a carrier gas comprising steps of: introducing the carrier gas from the bottom of a chamber while imparting a twist to the gas under high-kinetic energy; the chamber being axially symmetrical and having an upwardly tapering wall and a straight-walled portion at the top of the conical chamber; radially expanding the carrier gas to cause an upward flow thereof under the influence of centrifugal force, thereby creating an area of reduced pressure at the center of the chamber; diverting the upward flow to form a spiral; redirecting a portion of the gas to flow back through the area of reduced pressure and to mix with newly entered gas, thus creating an area of high turbulence; introducing the substance to be treated into the area of high turbulence and contacting it with the carrier gas; and removing the treated substance together with a portion of the carrier gas near the top of the chamber.

3,647,358
METHOD OF CATALYTICALLY INDUCING OXIDATION OF CARBONACEOUS MATERIALS BY THE USE OF MOLTEN SALTS

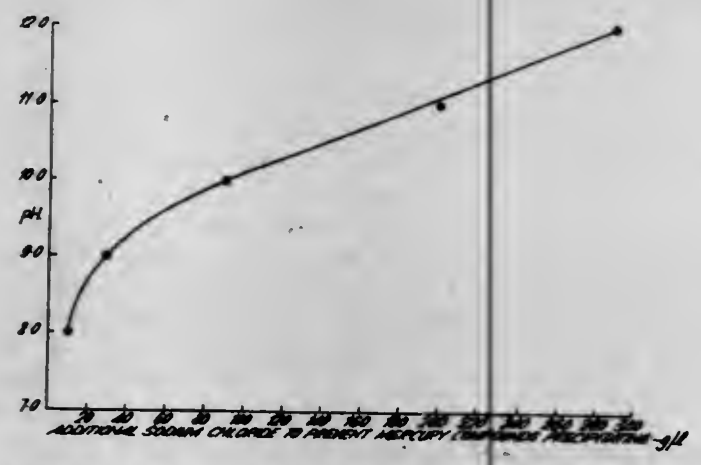
Jacob Greenberg, Ventnor City, N.J., assignor to Anti-Pollution Systems, Inc., Pleasantville, N.J.
Continuation-in-part of application Ser. No. 781,495, Dec. 5, 1968, now abandoned , and a continuation-in-part of 781,383, Dec. 5, 1968, now abandoned. This application July 23, 1970, Ser. No. 57,593
Int. Cl. B01d *53/34*
U.S. Cl. 23—2 R **47 Claims**



Oxidation of gaseous, liquid and solid carbonaceous materials, with removal of normally unburned pollutant products of combustion such as carbon, carbon monoxide and hydrocarbons, by contacting such materials with a molten salt. The molten salt acts as a catalyst in inducing relatively complete oxidation of the materials at temperatures below their normal combustion temperatures, and with substantial decrease in the unburned pollutant products. In one form, the salt may be a neutral salt with which the material, in the presence of oxygen, is contacted. In another form, the catalytic salt also contains a chemical oxidizer which continuously releases nascent oxygen and retakes ambient oxygen, thereby maintaining an equilibrium pressure of oxygen gas which aids the oxidation process.

3,647,359
RECOVERY OF MERCURY

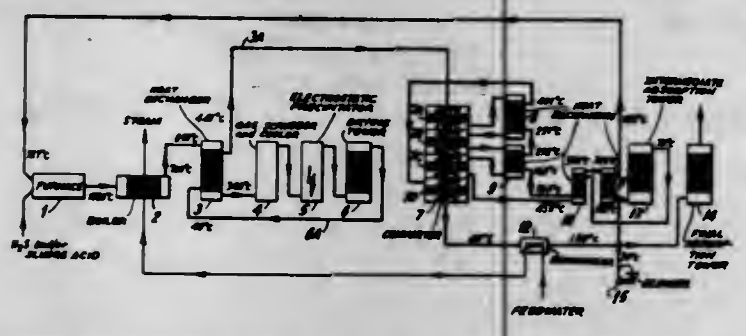
David Bell, Holmes Chapel, near Crewe, England, assignor to BP Chemicals (U.K.) Limited, London, England
Filed Aug. 29, 1969, Ser. No. 854,195
Claims priority, application Great Britain, Sept. 21, 1968, 44,984/68
Int. Cl. B01d *53/34*
U.S. Cl. 23—2 R **4 Claims**



Removal of mercury from a gas stream by washing the gas with alkaline hypochlorite containing added alkali metal or calcium chloride.

3,647,360
PROCESS FOR THE PRODUCTION OF SULFUR TRIOXIDE BY THE COLD GAS PROCESS

Walter Jaeger, Stroudsburg, Pa., assignor to Ovitron Corporation, Newburgh, N.Y.
Continuation-in-part of application Ser. No. 816,687, Apr. 16, 1969. This application Apr. 13, 1970, Ser. No. 27,541
Int. Cl. C01b *17/76, 17/80*
U.S. Cl. 23—168 **4 Claims**



Sulfur trioxide is produced by generating sulfur dioxide gas from raw material in a furnace which gas is cooled, cleaned and dried to form cold gas which is then reheated to its corresponding catalytic kindling temperature by passing it through a first heat exchanger, following which the heated cold gas is passed through a first group of catalytic converters. The sulfur trioxide formed is then cooled and removed from the gas stream in a first or intermediate absorber. The remaining tail gas from the first absorber is reheated by heat exchange with hot gas by means of heat exchangers serially connected to the first group of converters and the thus-heated tail gas then finally converted in a last stage catalytic converter to sulfur trioxide which is recovered in a second absorber, this process being known as the double absorption process.

3,647,361
TWO-STAGE COUNTERCURRENT LEACHING PROCESS FOR THE RECOVERY OF PHOSPHATES, YTTRIUM AND RARE EARTH VALUES

Enzo L. Coltrinari, and James K. Kindig, both of Arvada, Colo., assignors to Molybdenum Corporation of America, New York, N.Y.
Filed Dec. 3, 1969, Ser. No. 881,742
Int. Cl. C22b *59/00*
U.S. Cl. 23—18 **7 Claims**

Phosphates and yttrium and rare earth metal values are recovered from solid materials, particularly phosphate ores or commercial concentrates and especially apatites, in a two-stage leaching process comprising a first extraction with an aqueous acid solution to remove part of the phosphate and a substantial part of the yttrium and a second extraction with stronger acid to remove the residual phosphate, yttrium and rare earth values, then recovering the products from the first and second extracts. The process is carried out in a countercurrent manner by using the aqueous acid solution from the second extraction, after partial removal of yttrium and rare earth values, in the first extraction.

3,647,362
POLYESTER CATALYST RECOVERY

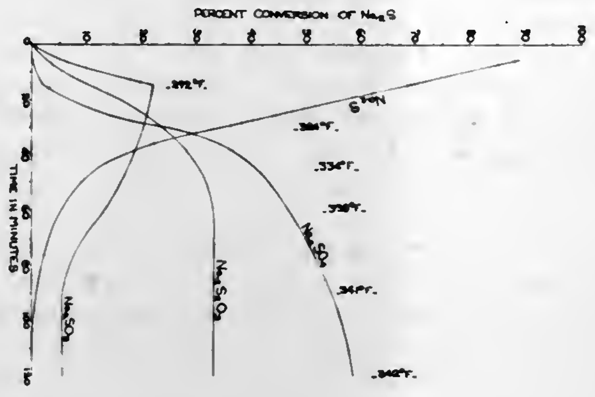
Gordon Edwin Head; Kenneth Morgan Jones, and Eric Gendle, all of Harrogate, England, assignors to Imperival Chemical Industries Limited, London, England
Filed Jan. 23, 1970, Ser. No. 5,372
Claims priority, application Great Britain, Jan. 27, 1969, 4,447/69
Int. Cl. C22b *59/00*
U.S. Cl. 23—22 **4 Claims**

A process for the recovery of germanium dioxide in a form and degree of purity suitable for catalyzing a polycondensation from an ethylene glycol solution of a reaction product of germanium dioxide and ethylene glycol, said ethylene glycol solution containing a proportion of germanium in amount less than that corresponding to a total concentration of 2 percent of germanium dioxide by weight based on the weight of solution, said process comprising the steps of removing ethylene glycol from the said solution by vaporization until the resultant concentrated solution contains a proportion of germanium corresponding to a total concentration of at least 2 percent by weight of germanium dioxide, adding to the resultant concentrated solution a quantity of water equal to at least 34 percent by weight of the germanium (expressed as dioxide) in the resultant concentrated solution, effecting hydrolysis of the compounds of germanium present in the resultant aqueous mixture to germanium dioxide by maintaining the said resultant aqueous mixture at elevated temperature for a time sufficient to effect said hydrolysis, cooling to ensure the separation in the solid state of the germanium dioxide so produced, and isolating the said germanium dioxide.

3,647,363
RECOVERY OF SULFUR VALUES FROM FLUE GASES WITH OXIDIZED NEUTRAL SULFITE GREEN LIQUOR

Nallan C. S. Chari, Valdosta, Ga.; Kermit E. Olson, Tomahawk, Wis., and Philip E. Shick, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed Aug. 6, 1969, Ser. No. 847,966
Int. Cl. D21c *11/06*
U.S. Cl. 23—25 Q **5 Claims**

A process for the utilization of sulfur compounds in spent pulping liquors and flue gases, said process including the oxidation of neutral sulfite green liquor with air or oxygen under heat and pressure to form an alkaline solution containing sodium sulfate, sodium thiosulfate, sodium sulfite, sodium hydroxide and sodium carbonate, suitable for recovery of sulfur dioxide from flue gases to obtain a product liquor suitable for use in a pulping process.



3,647,364
PROCESS FOR PRODUCING HIGH-PURITY SUBMICRON BARIUM AND STRONTIUM TITANATE POWDERS

Khodabakhsh S. Mazdiyasni, Xenia; Richard T. Dolloff, Dayton, both of Ohio, and Jonathan S. Smith, II, St. Louis, Mo., assignors to The United States of America as represented by the Secretary of the Air Force
Filed Jan. 6, 1970, Ser. No. 1,007
Int. Cl. C01g *23/00*
U.S. Cl. 23—51 R **5 Claims**

Barium titanate and strontium titanate powders having a particle size in the range of 50 to 150 angstroms and a purity of 99.75 percent or higher are prepared by the hydrolytic decomposition of a barium or strontium alcoholate and a titanium alcoholate. The barium and strontium titanate powders are useful in the preparation of dense ferroelectric bodies, thin film electronic components, and piezoelectric materials.

3,647,365
COARSE LIGHT SODIUM BICARBONATE

Walter C. Saeman, Hamden, Conn., assignor to Olin Corporation
Filed Jan. 6, 1970, Ser. No. 915
Int. Cl. C01d *7/10*
U.S. Cl. 23—64 **17 Claims**

Coarse, granular, free-flowing, dust-free, low-density sodium bicarbonate is prepared by hydrating light soda ash (sodium carbonate) to form particles of the desired final size, carbonating in the presence of free moisture to saturation, volatilizing the liberated moisture and recovering coarse, granular, free-flowing, dust-free, low-density sodium bicarbonate of the desired particle size. The sodium bicarbonate is produced in the novel form of hollow beads having apparent density as low as about 20 pounds per cubic foot.

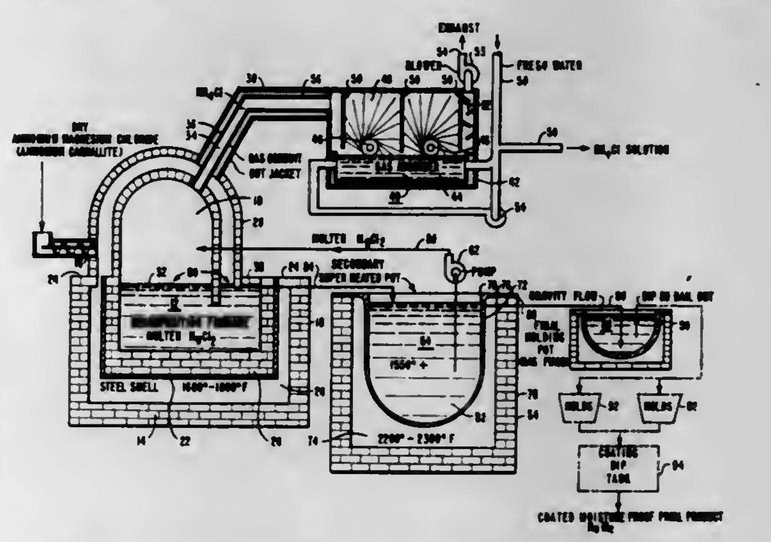
3,647,366
PROCESS FOR THE PREPARATION OF ANHYDROUS ALUMINUM FLUORIDE

Theodorus J. Thoonen, Rotterdam, Netherlands, assignor to Verenigde Kunstmestfabrieken Mekog-Albatras N.V., Maliebaan, Utrecht, Netherlands
Continuation-in-part of application Ser. No. 634,859, May 1, 1967, now abandoned. This application Apr. 23, 1969, Ser. No. 818,785. Claims priority, application Netherlands, May 20, 1968, 6807108
Int. Cl. C01f *7/50*
U.S. Cl. 23—88 **13 Claims**

This disclosure is concerned with a process for the preparation of anhydrous aluminum fluoride, whereby an aqueous solution of ammonium fluoride is treated with at least approximately twice the quantity of an aluminum oxide required to form triammonium hexafluoroaluminate. The resulting intimate mixture of triammonium hexafluoroaluminate and unconverted aluminum oxide is separated from the mother liquor. The separated mixture is heated to decompose the triammonium hexafluoroaluminate to form aluminum fluoride. The anhydrous aluminum fluoride may be used as an auxiliary material in reducing aluminum oxide or as a catalyst in several chemical reactions.

3,647,367
METHOD FOR MAKING ANHYDROUS MAGNESIUM CHLORIDE

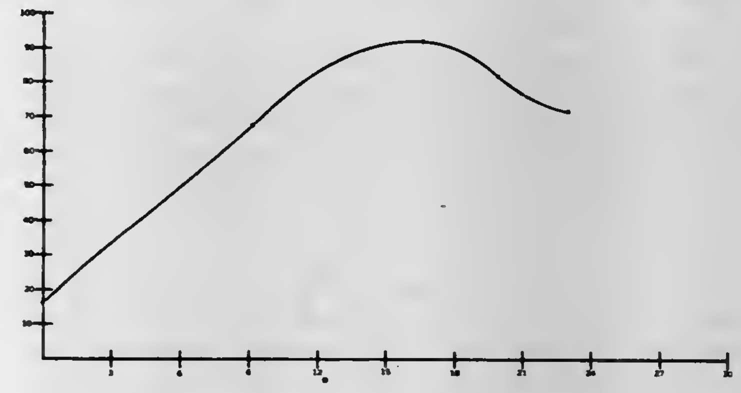
James G. Macey, Salt Lake City, Utah, assignor to Pete Prestininni, Long Beach, Calif.; Ruth G. Macey and Ann M. Macey, part interest to each
Filed Dec. 29, 1969, Ser. No. 888,774
Int. Cl. C01f *5/30;* **C01c** *1/16*
U.S. Cl. 23—91 **3 Claims**



Anhydrous purified magnesium chloride is made from anhydrous ammonium carnallite in a specially adapted apparatus by decomposing the anhydrous ammonium carnallite in the substantial absence of contaminants, employing superheated molten magnesium chloride as the heating source, ammonium chloride vapor and molten magnesium chloride being recovered separately, and any residual magnesium oxide being precipitated from the molten magnesium chloride.

3,647,368
USE OF SODIUM CHLORIDE IN PROVIDING AQUEOUS SOLUTIONS OF COPPER SALTS FROM COPPER ORE

Jay W. Palmer, Crystal Lake, Ill., assignor to Morton-Norwich Products, Inc., Chicago, Ill.
Filed Apr. 9, 1970, Ser. No. 27,060
Int. Cl. C01g *3/04*
U.S. Cl. 23—97 **8 Claims**



A process for preparing aqueous solutions of copper salts from low-grade copper ores by admixing the ore with sodium chloride, roasting the ore-sodium chloride admixture at an elevated temperature, extracting the roasted admixture with a leaching solution saturated with respect to sulfur dioxide and containing sodium chloride, and separating therefrom an aqueous solution containing a soluble copper salt. The solution of copper salt so prepared is suitable for further chemical processing to prepare a variety of copper salts or pure copper metal.

3,647,369
PROCESS FOR CONTINUOUSLY PRODUCING ALKALI METAL PHOSPHATES

Theodor Riehm, and Oskar Gehrig, both of Mannheim, Germany, assignors to Benckiser-Knapsack GmbH, Ludwigshafen am Rhine, Germany

Filed Aug. 6, 1968, Ser. No. 750,499
Claims priority, application Germany, Aug. 10, 1967, B 93910
Int. Cl. C01b *25/30*

U.S. Cl. 23—107 **5 Claims**

Alkali metal ortho-, di-, or triphosphates or mixtures thereof are produced by continuously mixing concentrated phosphoric acid and alkali metal hydroxide solutions in a closed system, atomizing the resulting hot reaction mixture into a drying chamber by means of nozzles or the like atomizing means which are adapted, for instance, by properly selecting the orifice diameter of the nozzles, to maintain a minimum pressure preventing evaporation of water in the closed system, and drying of calcining the atomized reaction mixture in said drying chamber. A suitable equipment for carrying out this process is described. The process is more economical than the heretofore used processes.

3,647,370
SEPARATION OF POTASSIUM PHOSPHATE AND ALUMINA

Robert A. Kearley, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 14, 1969, Ser. No. 807,438
Int. Cl. C01b *25/30;* **C01f** *7/34*

U.S. Cl. 23—107 **10 Claims**

Aqueous ammonia is employed to separate the phosphate content of a potassium aluminum phosphate as a solid phase. Typically, temperatures below 15° C. and ammonia concentration above 30 percent are relied upon.

3,647,371
METHOD FOR PREPARATION OF DICALCIUM PHOSPHATE

Keun Young Kim, and Kenneth J. Shaver, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 7, 1968, Ser. No. 751,012
Int. Cl. C01b *25/32;* **A61h** *7/16*

U.S. Cl. 23—108 **6 Claims**

Anhydrous dicalcium phosphate having an assay of at least 90 percent by weight and composed of particles, a major proportion of which have a particle size of from about 0.1 to 1.0 microns and a specific surface area of at least 10 square meters per gram is prepared by adding well dispersed, substantially dry calcium oxide or calcium hydroxide to phosphoric acid having a concentration of from about 40 to 80 percent H_3PO_4 by weight and maintaining the temperature of the reaction medium sufficiently high to provide dicalcium phosphate substantially free from water of crystallization. Dentifrice compositions containing this product provide effective polishing action without undue abrasion. Such compositions are prepared by direct blending of conventional dentifrice ingredients with an aqueous paste containing 45 to 65 percent by weight anhydrous dicalcium phosphate.

3,647,372
METHOD OF RECOVERING ALUMINA FROM ALUNITE AND ALUMINOSILICATE MATERIALS

Jason Svoronos, Athens, Greece, assignor to Eleusis Bauxite Mines Mining Industrial & Shipping Inc., Athens, Greece

Continuation of Ser. No. 823,499, May 9, 1969, which is a **Continuation-in-part of application Ser. No. 704,952, Feb. 12, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 242,061, Dec. 5, 1962, now abandoned. This application July 13, 1970, Ser. No. 56,200**
Int. Cl. C01f *7/02, 7/04;* **C01d** *5/00*

U.S. Cl. 23—142 **4 Claims**

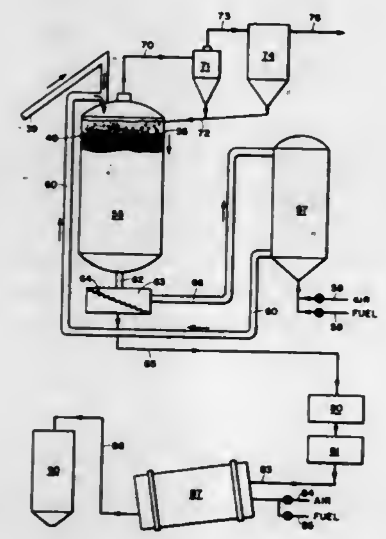
A method for extracting pure alumina from alunite and aluminosilicate ores having a high-SO_3 content wherein a mixture of at least two alkali chlorides is added to the ore and the combined ore and alkali chlorides is heated to a temperature between 500° and 590° C.

3,647,373
METHOD AND APPARATUS FOR CONVERTING ALUMINUM NITRATE SOLUTIONS TO ALPHA ALUMINA

Paul A. Huska, Carlisle; Herman P. Meissner, Winchester, and Thomas J. Lamb, Lexington, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Oct. 16, 1968, Ser. No. 768,111
Int. Cl. C01f *7/02, 7/08;* **C01b** *21/42*

U.S. Cl. 23—142 **11 Claims**



Method and apparatus for converting an aluminum nitrate solution to α-alumina for electrolytic reduction to aluminum. The solution is introduced into a fluidized bed under conditions which remove a substantial portion of the nitrate values as nitric acid vapor and form a solid product which is heated further to remove residual water and nitrate values and to convert the alumina to α-alumina.

3,647,374
METHOD FOR SEPARATING ALCOHOLS AND HYDRATED ALUMINA FROM HYDROLYSTS PRODUCTS OF ALUMINUM ALKOXIDES

Kazuhumi Nomura; Kunio Nakazato, and Hideki Matsui, all of Niihama-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Aug. 21, 1968, Ser. No. 754,486
Claims priority, application Japan, Aug. 29, 1967, 42/55686
Int. Cl. C01f *7/36;* **C07c** *29/12;* **B01d** *17/00*

U.S. Cl. 23—143 **8 Claims**

An improvement in a method for separating a hydrolysis product of an aluminum alkoxide into two layers of a higher alcohol layer and an aqueous layer containing readily precipitatable hydrated alumina in a suspended state. The hydrolysis reaction mixture is heated, either during or after the hydrolysis, at a temperature of 130°–250° C. in the presence of an ammonium, sodium or potassium salt of carbonic acid, hydrochloric acid, nitric acid, sulfuric acid, hydrobromic acid, phosphoric acid, formic acid, acetic acid or oxalic acid. The hydrated alumina is separated from the aqueous layer and the separated hydrated alumina is markedly low in content of impurities of organic matters.

3,647,375
METHOD OF PRODUCING MANGANESE DIOXIDE

Isao Tanabe, Tokyo, Japan, assignor to Japan Metals and Chemicals Company Limited, Tokyo, Japan

Filed Oct. 22, 1969, Ser. No. 868,644
Int. Cl. C01g *45/02*

U.S. Cl. 23—145 **3 Claims**

A method of producing manganese dioxide comprising the steps of pouring an aqueous solution of a soluble manganese salt and an aqueous solution of alkali carbonate into a reaction vessel and mixing the two solutions so that the two solutions may react with each other to produce manganese carbonate, heating the manganese carbonate produced in an atmosphere containing water vapor to produce crude manganese dioxide, and washing the crude manganese dioxide produced with dilute or concentrated nitric acid and then heating to produce manganese dioxide.

3,647,376
METHOD FOR PRODUCING CONCENTRATED NITRIC ACID

Tetsuya Ohrui, Niihama-shi, and Yasuhito Sakakibara, Saijo-shi, both of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed May 16, 1969, Ser. No. 825,319
Int. Cl. C01b *21/40*

U.S. Cl. 23—160 **4 Claims**

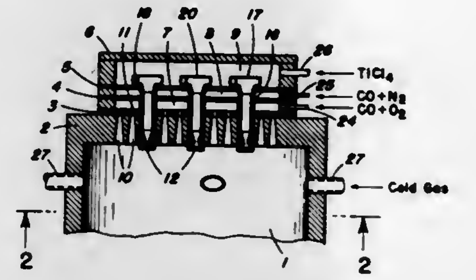
Subconcentrated nitric acid of 80–90 percent by weight is effectively concentrated to concentrated nitric acid of more than 97 percent by weight using an integrated tower where both stripping of nitrogen peroxide and distillation of subconcentrated nitric acid are carried out. Thus, concentrated nitric acid of more than 97 percent by weight which contains nitrogen peroxide is fed into the upper section of a tower and nitric acid of 80–90 percent by weight is fed into the lower section of the tower and distillation is effected, thereby obtaining concentrated nitric acid of more than 97 percent by weight from the middle stage of the tower.

3,647,377
PROCESS FOR THE MANUFACTURE OF FINE PARTICLE SIZE TITANIUM DIOXIDE BY REACTING TITANIUM TETRACHLORIDE WITH OXYGEN

Giovanni Hilgers, Post Bechen; Gerard Hitzemann, Post Durdorf, and Achim Kulling, Opladen, all of Germany, assignors to Titangesellschaft mbH, Leverkusen, Germany

Original application Aug. 29, 1968, Ser. No. 756,107, now Patent No. 3,586,489. Divided and this application May 27, 1970, Ser. No. 40,920
Int. Cl. C01g *23/04*

U.S. Cl. 23—202 V **5 Claims**



The disclosure is of an improved method for producing a pyrogenic TiO 2 material by the vapor phase reaction of gaseous titanium tetrachloride with oxygen in the presence of hot gases produced by combustion of carbon monoxide and oxygen wherein all the oxygen required for the reaction is introduced in admixture with carbon monoxide, the gaseous $TiCl_4$ being introduced into the reaction chamber as one or more rotating jetstreams each surrounded by a mantle of gaseous carbon monoxide which reacts with the surrounding hot combustion gases plus free oxygen to produce a spatially fixed circular flame at a predetermined distance below the point of introduction of each rotating stream of gaseous $TiCl_4$ as a consequence of which the reaction of the gaseous $TiCl_4$ and free oxygen always takes place at substantially the same location, i.e., reaction zone in the reaction chamber and owing to the rotary movement of each $TiCl_4$ jetstream the reaction zone is relatively short as a consequence of which the residence time of the TiO_2 particles formed therein is short and of substantially equal duration thereby producing a uniform fine-grained product. The disclosure also includes apparatus for reacting the gaseous components in the manner hereinabove described wherein the gaseous $TiCl_4$ is introduced into the upper end of a reaction chamber through one or more of concentric tube feedpipes mounted in a gas-permeable plate having a multiplicity of gas passages surrounding the $TiCl_4$ feedpipes through which passages mixtures of CO and oxygen at reacting temperature are introduced into the reaction chamber to provide hot combustion gases plus free oxygen for effecting the reaction of the gaseous $TiCl_4$ and oxygen. The upper end of the reaction chamber is also provided with inlet pipes for introducing a cold gas tangentially into the chamber for sweeping the walls free of TiO_2 deposits.

3,647,378
CARBURETOR ANTI-ICING COMPOSITION

Robert E. Malec, and Roy J. Betty, both of Chicago, Ill., assignors to Armour Industrial Chemical Company, Chicago, Ill.

Continuation of application Ser. No. 533,246, Mar. 10, 1966, now abandoned. This application July 9, 1969, Ser. No. 847,776
Int. Cl. C10l *1/18, 1/22*

U.S. Cl. 44—70 **2 Claims**

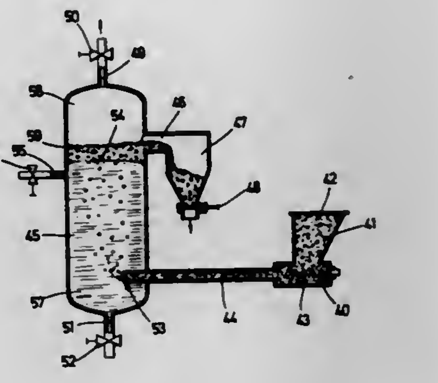
An enhanced carburetor deicer composition consisting of benzoic acid and a freeze-point depressant or a surfactant deicer.

3,647,379
METHOD OF GASIFYING WATER-CONTAINING COAL

Werner Wenzel, and Hermann Schenck, both of Aachen, Germany, assignors to Rheinische Braunkohlewerke A.G., Cologne, Germany

Filed Aug. 22, 1969, Ser. No. 852,430
Claims priority, application Germany, Aug. 22, 1968, P 17 96 050.8
Int. Cl. C10j *3/00, 3/46*

U.S. Cl. 48—202 **9 Claims**

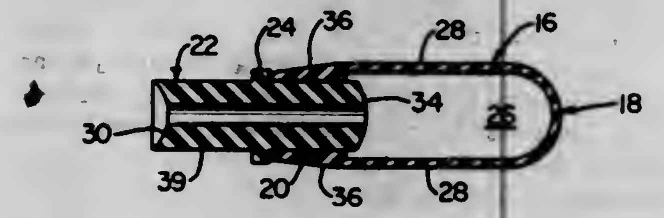


For gasifying coal, a coal-water mixture is pumped in the form of a viscous mass into a treating chamber where the mixture is heated, causing, in immediately successive steps and in said chamber, first, dehydration of the mixture by vaporizing its water content, second, gasification thereof and, third, endothermic reaction of the products precedingly obtained by the heat treatment.

3,647,380
CONTACT LENS HOLDER

Robert E. Middleton, 5865 East Powers Ave., Englewood, Colo.

Filed Nov. 1, 1966, Ser. No. 591,167
Int. Cl. B24b *47/00;* B25b *11/00;* B66c *1/02*
U.S. Cl. 51—235 **6 Claims**



A contact lens holder including a tubular portion constructed for reversably mounting within said holder and which has one end thereof formed for complemental mating with a convex surface of a contact lens and the other end thereof formed for complemental mating with a concave surface of a contact lens. The contact lens holder includes a member having a relatively rigid portion formed adjacent the end of the holder upon which is to be mounted a contact lens to facilitate manipulating and positioning of said end of said holder.

3,647,381
DENTAL-PROPHYLAXIS COMPOSITION

Gabriel Reiter, 8204 Ventnor Ave., Margate City, N.J.

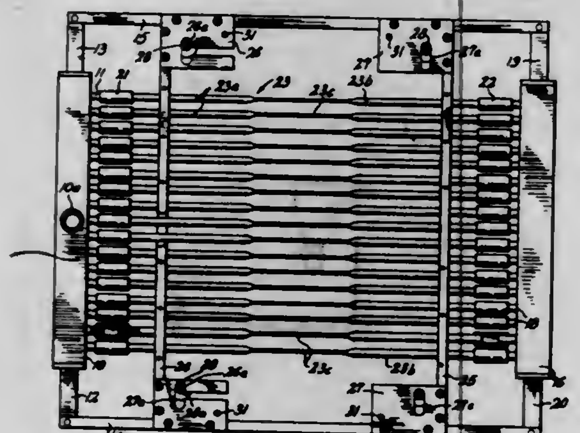
Filed Apr. 8, 1968, Ser. No. 719,732
Int. Cl. A61r *7/16;* B24d *3/02*
U.S. Cl. 51—308 **8 Claims**

This invention is concerned with a dental-prophylaxis composition including particulate zirconium silicate having unique distribution of particle sizes.

3,647,382
GLASS FIBER COOLING MEANS MADE OF PALLADIUM

Kenneth B. Tilbrook, Kansas City, Mo., assignor to Certain-Teed Products Corporation, Ardmore, Pa.

Continuation of application Ser. No. 726,799, May 6, 1968, now abandoned, which is a division of application Ser. No. 583,623, Oct. 3, 1966, now Patent No. 3,392,779. This application June 15, 1970, Ser. No. 48,883
Int. Cl. C03b *37/02*
U.S. Cl. 65—12 **1 Claim**

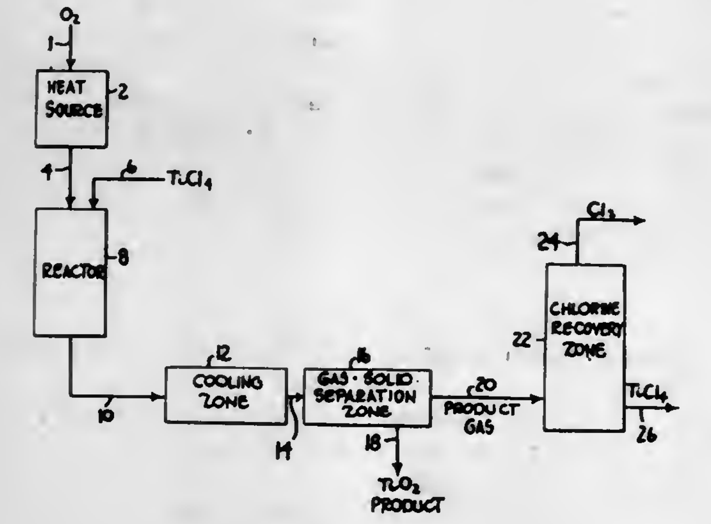


A cooling tube assembly for use with a molten glass bushing in the production of glass fibers wherein the cooling tubes of the assembly are fabricated from commercial grade palladium metal and are positioned in a highly corrosive, high-temperature environment.

3,647,383
METHOD FOR PRODUCING TITANIUM DIOXIDE

Alonzo Farmer, and John R. Bogdan, both of New Martinsville, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 28, 1969, Ser. No. 853,671
Int. Cl. C01g *23/04*
U.S. Cl. 23—202 **8 Claims**

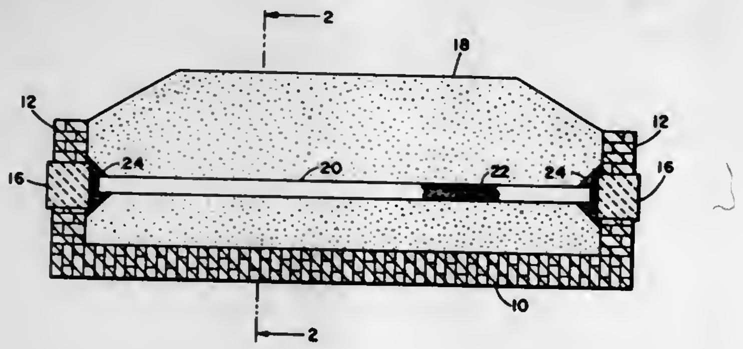


Pigmentary titanium dioxide is produced by vapor phase oxidation of titanium tetrachloride with oxygen at elevated temperatures in a reactor. Gaseous and solid products produced by the reaction are separated and chlorine recovered from the gaseous portion in a chlorine recovery zone. Operation of the chlorine recovery zone is improved by utilizing reactant oxygen having not more than about 100 parts per million nitrogen.

3,647,384
CORE FOR SILICON CARBIDE FURNACE

Jean-Marie Dessureault, Niagara Falls, Ontario, Canada, assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed July 1, 1968, Ser. No. 741,739
Int. Cl. C01b *31/36;* B01j *6/00;* F27b *14/06*
U.S. Cl. 23—208 **7 Claims**

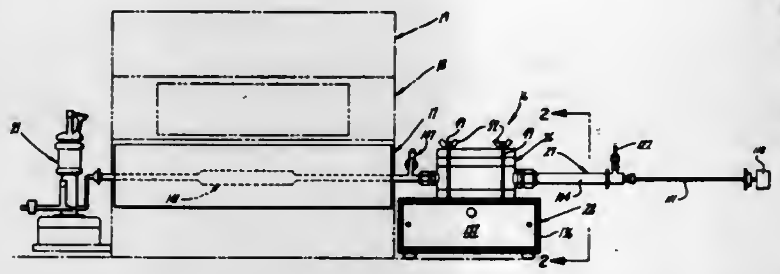


Silicon carbide is produced commercially by the reaction of carbon and silica in a carbon core electrical resistance furnace. According to the present invention, an improved core for such a furnace comprises a nonconductive combustible tube packed with carbon.

3,647,385
SOLID SAMPLER, APPARATUS AND METHOD

Thomas M. Stephens, Menlo Park, Calif., assignor to Dohrmann Instruments Company, Mountain View, Calif.

Filed Feb. 20, 1969, Ser. No. 800,946
Int. Cl. G01n *31/12, 31/16*
U.S. Cl. 23—230 PC **26 Claims**

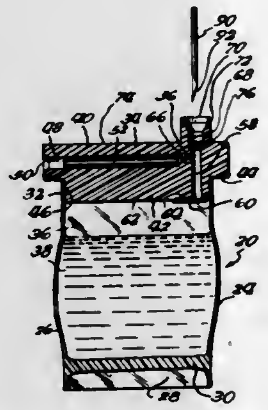


Solid sampler having a tray with a plurality of sample boats carried by the tray and containing samples to be analyzed with means for introducing the boats into a pyrolysis tube and removing the boats from the pyrolysis tube. The apparatus is a microcoulometric titrating system which includes the solid sampler combined with a pyrolysis furnace and a titration cell. The method involves the steps of utilizing the solid sampler in a microcoulometric titration system for reductive-type analyses and oxidative-type analyses.

3,647,386
SAMPLE PROCESSING CONTAINER

Saul R. Gilford, Oberlin, Ohio, assignor to Gilford Instrument Laboratories, Inc., Oberlin, Ohio

Continuation-in-part of application Ser. No. 793,504, Jan. 23, 1969, now abandoned. This application Sept. 26, 1969, Ser. No. 864,945
Int. Cl. G01n *1/10;* Goln *21/02;* B65d *32/00*
U.S. Cl. 23—230 R **29 Claims**



A sample processing container, especially for use with samples of some fluid such as blood or blood serum contained in a short length of capillary tubing. The container comprises a flexible plastic bag having its lower end closed and having its upper end sealed to a relatively rigid header. The length of capillary tubing is arranged to be inserted into an elongate cavity or chamber that is formed in the center of the header along its length by way of an entrance at one end of the header. The opposite end of the cavity or chamber communicates with the interior of the bag so that when the length of capillary tubing is disposed in the cavity or chamber, a nozzle may be inserted into the entrance and diluent of a given amount forced through the length of tubing into the bag. This washes the length of tubing clean and provides the proper dilution for a mixture that is to be sampled. The entrance is plugged or, in the alternative, there is a valve in the connection between the header cavity or chamber and the bag that prevents reverse flow out of the bag. The bag can be shaken or kneaded manually or mechanically to assure homogeneity of the sample.

A normally blocked entrance to the bag through the top of the header enables sample to be removed by a hollow needle or snorkle for testing as desired.

In the alternative, an independent lateral passageway is provided in the header for withdrawing a sample by a dip tube. A second valve is provided at the lower end of the independent passageway at the bottom of the header to prevent reverse flow out of the bag.

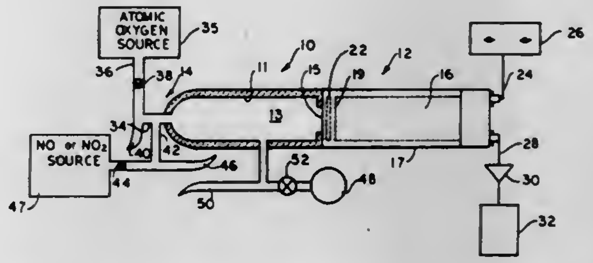
The header may have a slot, either open or closed for insertion of an identifying label that will be carried with the container.

The header may be constructed for mounting on a suitable carrier, so that a plurality may be handled, stored, and viewed together.

3,647,387
DETECTION DEVICE

Sidney W. Benson; Gilbert R. Haugen, both of Palo Alto, and Roland S. Jackson, San Jose, all of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Mar. 19, 1970, Ser. No. 20,919
Int. Cl. G01n *27/68*
U.S. Cl. 23—232 R **13 Claims**

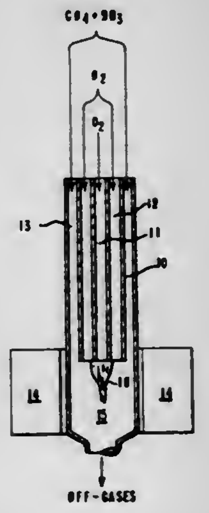


The presence of nitrogen containing compounds is detected by sampling vapor in the vicinity of the suspected compounds, reacting the vapor under conditions to convert the compound to nitric oxide. The nitric oxide is reacted with atomic oxygen with the chemiluminescent emission of light. This light is detected to determine the presence of the suspected compound.

3,647,388
PROCESS FOR THE MANUFACTURE OF HYDROGEN CYANIDE

John Derek Rushmere, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 4, 1970, Ser. No. 34,119
Int. Cl. C01c *3/02;* B01j *1/00*
U.S. Cl. 23—151 **13 Claims**



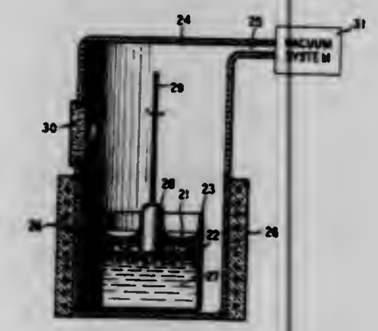
A process for the manufacture of hydrogen cyanide from a gaseous hydrocarbon of up to six carbon atoms such as methane and ammonia is provided in which the gaseous hydrocarbon and ammonia react in a reaction zone at the flame front of a flame formed by the combustion of hydrogen with oxygen. The preferred process is carried out in a burner having a center conduit for the flow of an oxygen-bearing stream and one or more annular conduits adjacent the center conduit for the cocurrent flow of hydrogen, ammonia and the gaseous hydrocarbon, the conduits ending in a reaction chamber where the gaseous hydrocarbon and ammonia react at the flame front of the hydrogen and oxygen combustion flame.

3,647,389

METHOD OF GROUP III-V SEMICONDUCTOR CRYSTAL GROWTH USING GETTER DRIED BORIC OXIDE ENCAPSULANT

Martin Eric Weiner, Bridgewater Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 11, 1970, Ser. No. 36,367
Int. Cl. C01b *27/00;* **B01d** *9/00*
U.S. Cl. 23—204 R **5 Claims**



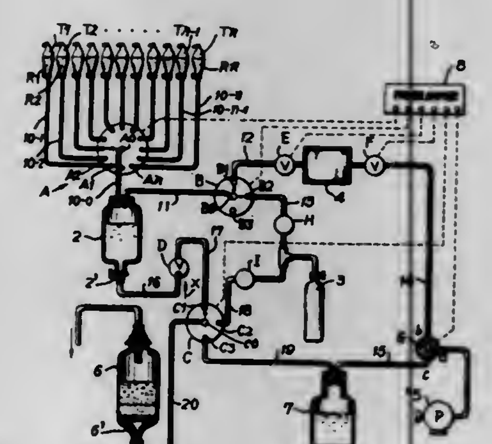
The impurity content of boric oxide for use as the encapsulant in the growth of crystals of Group III–V semiconductors by the liquid encapsulation technique is reduced by a high-temperature chemical treatment. The boric oxide is maintained for a time together with a getter substance under vacuum at a temperature at which both are molten. When the growth of crystals of GaAs and GaP is contemplated, some suitable getter substances are boron-palladium alloy, boron-platinum alloy and the pure metals or alloy combination of gallium, aluminum and silicon.

3,647,390

APPARATUS FOR SYNTHESIS OF PEPTIDES OR THE LIKE ORGANIC COMPOUNDS

Toshiya Kubodera; Tasuku Hara, and Hideki Makabe, all of Kyoto, Japan, assignors to Shimadzu Seisakusho Ltd., Kyoto, Japan

Filed July 3, 1969, Ser. No. 838,960
Claims priority, application Japan, July 8, 1968, 43/48048
Int. Cl. C07c *103/52*
U.S. Cl. 23—252 R **7 Claims**



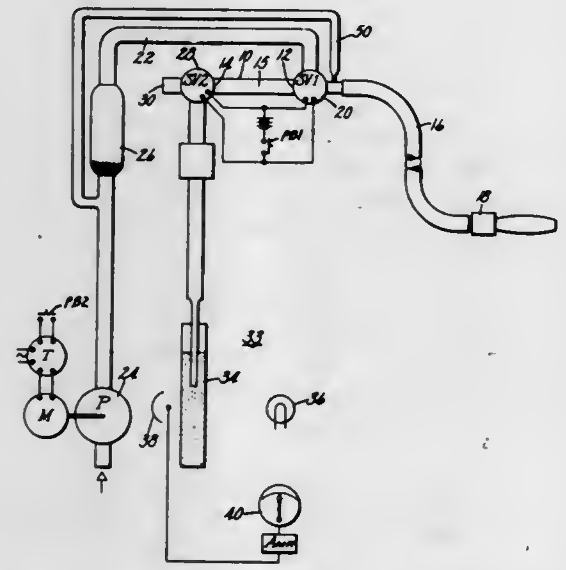
An apparatus for synthesis of peptides or the like organic compounds, in which transfer of the selected reagents into and out of a reaction vessel is conducted by utilizing vacuum and a pressurized inert gas under control of various valves. No liquid pumps are required. The sequential operation of the valves may be automatically controlled by a programmer.

3,647,391

BREATH ANALYZING APPARATUS HAVING MEANS FOR EVAPORATING MOISTURE FROM BREATH CONDUIT

Frederick G. Keyes, 15 Berkeley St., Cambridge, Mass.

Filed Jan. 27, 1970, Ser. No. 6,113
Int. Cl. G01n *1/22, 31/22, 33/16*
U.S. Cl. 23—254 R **5 Claims**



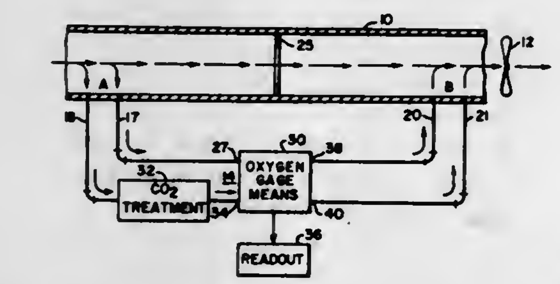
Apparatus for analyzing breath for ethyl alcohol having a breath conduit into which a subject expires in the collection of a sample of breath is provided with means for removing condensed moisture from the conduit. For this purpose, means is provided for supplying air to the conduit following the collection of a sample thereby effecting a flow of drying gas through the passage of the conduit. Advantageously, the air is supplied, after closure of a valve between the conduit and a sample chamber, by an air pump which also serves to expel the sample collected in the chamber to alcohol measuring means.

3,647,392

CARBON DIOXIDE SENSOR

Gerald E. McGinnis, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 27, 1967, Ser. No. 612,119
Int. Cl. G01n *27/50*
U.S. Cl. 23—254 E **7 Claims**



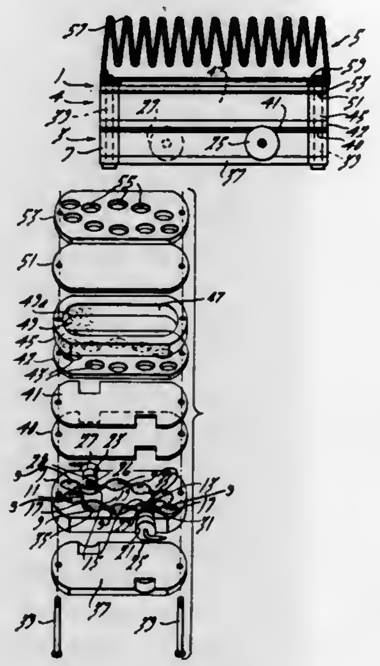
The carbon dioxide in a sample of gas to be tested is reacted with potassium superoxide resulting in a related increase of oxygen. The increase in oxygen over that of the original sample is determined in a differential oxygen gauge which compares the partial pressure of oxygen in the original sample with the partial pressure of oxygen in the modified sample including the increased amount of oxygen from the reaction.

3,647,393

GAS-GENERATING APPARATUS

Maurice B. Leising, Clawson; Herman J. Greif, Jr., Orchard Lake; James R. Kirberg, Walled Lake, and Philip J. Willson, Royal Oak, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 11, 1970, Ser. No. 36,020
Int. Cl. B01j *7/00*
U.S. Cl. 23—281 **3 Claims**



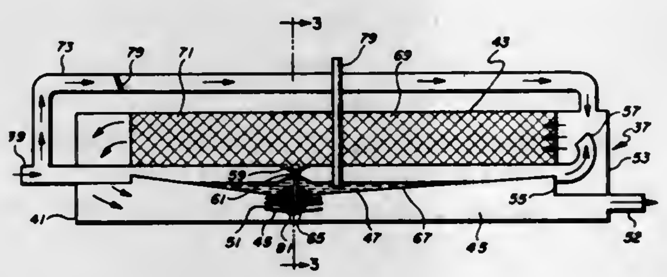
Gas generator having a folded inflatable bag connected thereto, the generator having a plurality of pockets confining propellant. Electrical ignition devices ignite the propellant in two pockets first to release gas for deploying or partially expanding the folded bag. Propellant filled channels connect the two initially ignited propellant pockets to the remaining pockets for igniting the latter to release gas for inflating the bag to a desired pressure. A sublimable, vaporizable or decomposable powdered material capable of absorbing heat is provided in the device to absorb the heat produced by the burning propellant.

3,647,394

MUFFLER DEVICE FOR REMOVING IMPURITIES

Joseph R. Wetch, Sherman Oaks; Seymour Sudar, Malibu, and Louis L. Bienvenue, Canoga Park, all of Calif., assignors to North American Rockwell Corporation

Filed Feb. 20, 1970, Ser. No. 13,247
Int. Cl. F01n *3/16*
U.S. Cl. 23—288 F **14 Claims**



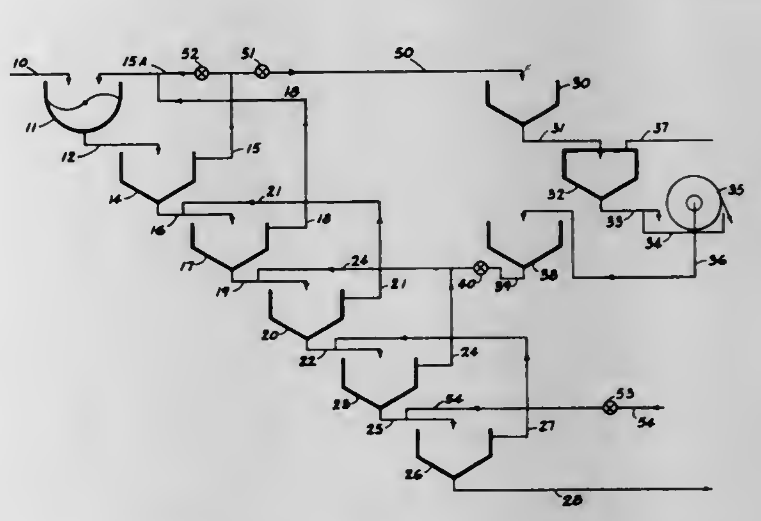
A muffler, scrubber or chemical reactor device for utilization with combustion engines to aid in the removal of impurities from exhaust gases, comprising a housing having a packing therein, an inlet line to said housing for conducting the exhaust gas from said engine thereto, a construction such as a venturi within the inlet line through which exhaust gas will pass, means for aspirating a reactant material into the exhaust gas near the venturi throat and for utilizing the thermal energy of the exhaust gas for liquefaction of materials where needed, an outlet from the housing, and a cooled bypass line ahead of and around the orifice or venturi to provide temperature and pressure control in and across the device.

3,647,395

RECOVERING ALKALI METAL SALTS FROM CEMENT KILN GASES BY THE STEPS OF CONDENSING LEACHING AND CRYSTALLIZING

Thomas Stanley Dean, Ragland, Ala.

Filed Oct. 21, 1968, Ser. No. 769,110
Int. Cl. B01d *9/02, 11/02*
U.S. Cl. 23—299 **4 Claims**



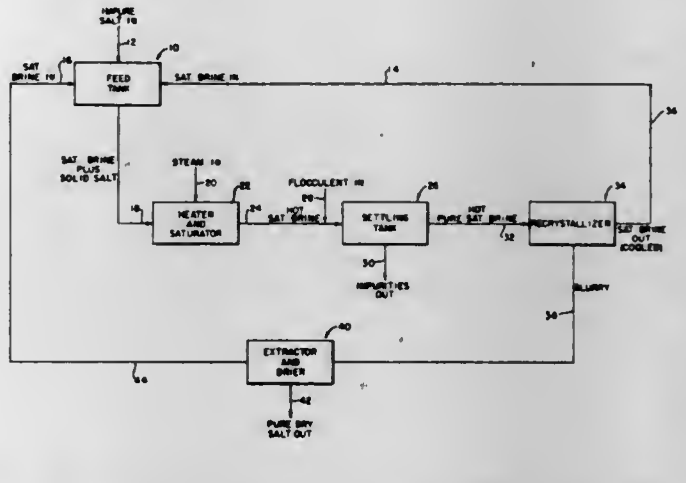
Method for recovering substantially pure alkali metal salts from the exhaust gases and dust of a kiln or blast furnace comprising leaching said alkali metal salts from the exhaust gases and dust, concentrating same and precipitating out substantially pure alkali metal salts.

3,647,396

PRODUCTION OF HIGH-PURITY SALT

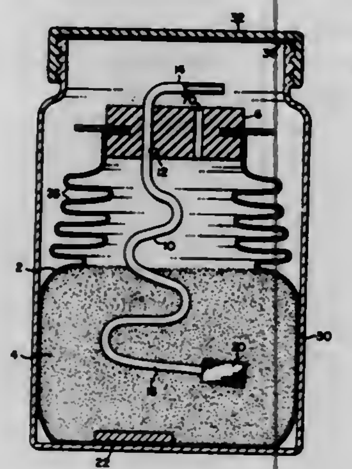
H. W. DeWittie, Waverly, Pa.; John A. Kirchstein, Cleveland, Ohio, and Kishore M. Atit, Dalton, Pa., assignors to International Salt Company, Clarks Summit, Pa.

Filed Feb. 25, 1969, Ser. No. 801,938
Int. Cl. C01d *3/14;* **C01f** *11/46*
U.S. Cl. 23—299 **6 Claims**



Recrystallization of sodium chloride in the form of high-purity cubic crystals from a sodium chloride source containing calcium sulphate impurity by multieffect evaporation preceded by treatment of the hot sodium chloride saturated brine by flocculents and settling, to cause the undissolved calcium sulphate particles and any other suspended solids to agglomerate and settle out of the brine prior to recrystallization of the sodium chloride. The conventional requirement for filtering the hot brine is completely eliminated.

3,647,397
REAGENT SOLUTION PREPARATION
Charles M. Coleman, 958 Washington Road, Pittsburgh, Pa.
Filed Nov. 19, 1969, Ser. No. 878,066
Int. Cl. B01f *1/00*; **B01d** *11/02*
U.S. Cl. 23—309 **7 Claims**

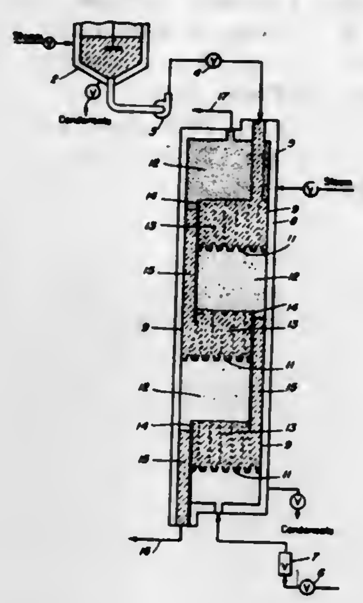


A method of preparing sterile chemical reagent solutions including providing a sterile expandable mixing container with a quantity of reagent concentrate material, positioning said mixing container on or within a support structure, introducing a predetermined quantity of mixing fluid into the mixing container, mixing the concentrate material and fluid to establish a uniform homogeneous reagent solution and subsequently filtering the solution to remove particulate material. Mixing may be effected by an inertly covered magnetic stirring element positioned within the container.

A sterile container assembly for chemical reagent concentrates including an expandable inner container having a chemical reagent concentrate therein, closure means having a passageway therethrough secured to the mouth of said inner container, a tubular reagent discharge conduit having one portion extending into the closure passageway and one end disposed within the container. Filter means secured to said conduit and an outer container protectively surrounding said inner container. Sterile sealing means on at least one of said inner and outer containers to prevent communication between the surrounding air and the interior of the inner container.

3,647,398
PROCESS FOR REMOVING GANGUE FROM SULFUR-BEARING MATERIALS
William M. Goldberger, Columbus, Ohio, assignor to Corporation de Fomento de la Production, Santiago, Chile
Filed Mar. 21, 1969, Ser. No. 809,194
Int. Cl. C01b *17/14*; **B01d** *12/00*
U.S. Cl. 23—312 S 14 Claims

A process for removing gangue from sulfur-bearing materials, such as silica from sulfur ores or concentrates, includes melting the sulfur-bearing material having the gangue in the molten sulfur consist essentially of minute solid particles. A stream of water is introduced flowing in droplet form through the molten sulfur as a matrix having the droplets coalesce in the effluent of the stream exteriorly of the molten sulfur. Quantities of the minute gangue particles are carried off from the molten sulfur by the action of the water droplets which wet the gangue and cause the gangue to be brought to the sulfur-water interface, and by maintaining the flow rate of the coalesced water exteriorly of the molten sulfur within a range of velocities sufficient to load the coalesced water with quantities of minute gangue particles and entrain these particles in the effluent water stream. In preferred embodiments the molten sulfur is caused to flow countercurrently to the droplets of water passing through the molten sulfur such as through having the sulfur follow a downward course while the water droplets are ascending in the sulfur. Also, in certain preferred embodiments the molten sulfur is subjected to flowing water droplets in counter flow as carriers for quantities of the minute gangue particles present in each of a series of regions along the flowing sulfur and the water stream.



3,647,399
DI (ALKALI METAL) BERYLLIUM TETRAHYDRIDES
Eugene C. Ashby, Atlanta, Ga., and Paul Kobetz, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.
Filed Sept. 10, 1964, Ser. No. 395,985
Int. Cl. C01b *6/24*
U.S. Cl. 23—360 **13 Claims**

Novel alkali metal beryllium hydrides of the formula M_2BeH_4, wherein M is alkali metal, are prepared by reaction of alkali metal aluminum alkyl hydrides with beryllium alkyls wherein the alkyl groups contain not more than about 10 carbon atoms. The new compounds are effective reducing components for high-energy fuels.

3,647,400
MAGNETIC ARTICLES
Joseph Louis Blanchard, Saint-Joseph, France, assignor to Compagnie Internationale Poure L'Informatique, Les Clayes-sous-Bois, France
Filed Mar. 10, 1969, Ser. No. 805,859
Claims priority, application France, Mar. 26, 1968, 145354
Int. Cl. B32b *15/00*
U.S. Cl. 29—191 **8 Claims**

A thin magnetic layer of substantially rectangular hysteretic cycle, specially for use in binary data information magnetic stores, comprised of a ternary alloy of cobalt, tungsten and phosphor. Such a layer is produced on a dielectric or metallic substrate from a chemical autocatalytic process.

3,647,401
ANISODIMENSIONAL TUNGSTEN CARBIDE PLATELETS BONDED WITH COBALT
Geoffrey W. Meadows, Kennett Square, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of application Ser. No. 660,986, Aug. 16, 1967, now Patent No. 3,451,791, which is a continuation-in-part of application Ser. No. 582,924, Sept. 29, 1966, now abandoned , and a continuation-in-part of 516,825, Nov. 24, 1965, now abandoned ; said 582,924, , Continuation-in-part of application Ser. No. 516,825, , which is a continuation-in-part of application Ser. No. 418,808, Dec. 16, 1964, now abandoned. This application June 4, 1969, Ser. No. 830,323
Int. Cl. C22c *29/00*
U.S. Cl. 29—182.8 **1 Claim**

Anisodimensional tungsten carbide platelets having a maximum dimension of from 0.1 to 50 microns and a minimum dimension of less than one-third the maximum dimension are prepared by heating an intimately mixed uniformly fine cobalt/tungsten carbide powder to a temperature above 1,300° C. and recrystallizing the tungsten carbide. The platelets are useful in preparing cobalt bonded tungsten carbide cutting tools.

3,647,402
GALVANICALLY METALLIZED OBJECTS HAVING A POST-CHLORINATED POLYETHYLENE SUBSTRATE AND PROCESS OF PRODUCING SAME
Robert Buning, Oberlar; Gunther Bernhardt, Hangelar, Vilicher; Egon Bierwirth, Oberlar, and Werner Trautvetter, Spich, all of Germany, assignors to Dynamit Nobel AG, Troisdorf, near Cologne, Germany
Continuation-in-part of application Ser. No. 752,738, Aug. 15, 1968, now abandoned. This application Oct. 8, 1968, Ser. No. 765,963
Claims priority, application Germany, Oct. 13, 1967, D 54342
Int. Cl. C23b *5/60*
U.S. Cl. 29—195 **8 Claims**

Galvanically metallized thermoplastic shaped articles comprising post-chlorinated polyethylene or mixtures thereof with polyvinyl chloride and/or post-chlorinated polyvinyl chloride.

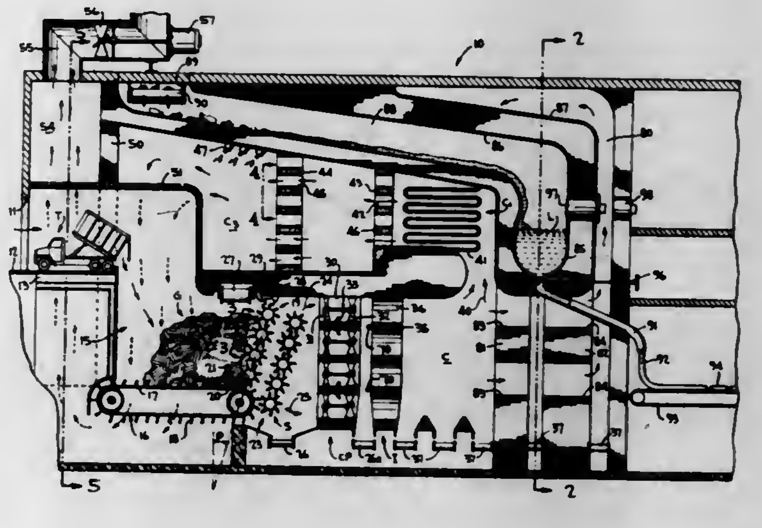
3,647,403
SOLID FUEL UNIT
George B. Davis, Jr., 7512 Marbury Road, Bethesda, Md.
Continuation-in-part of application Ser. No. 803,484, Feb. 28, 1969, now abandoned. This application Aug. 14, 1970, Ser. No. 63,899
Int. Cl. C10l *9/00, 11/00*
U.S. Cl. 44—6 **4 Claims**

A process for improving the initial igniting properties of a charcoal unit by first impregnating the unit with an inflammable liquid after the temperature of the liquid and charcoal has first been established at a predetermined value and thereafter sealing the liquid within the unit by dipping the latter within a molten solution of high-melting point paraffin wax, then cooling the paraffin coating in such a manner as not to detrimentally affect its appearance or vapor sealing characteristics.

3,647,404
THERMALLY STABLE JET FUEL COMPOSITION
William M. Sweeney, Wappingers Falls, and Jerzy J. Bialy, Lagrangeville, both of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed May 7, 1969, Ser. No. 822,734
Int. Cl. C10l *1/16, 1/22*
U.S. Cl. 44—62 **9 Claims**

Thermally stable turbine or jet fuel composition containing (1) a hydrocarbon polymer of ethylene and a C_3 to C_4 olefin and optionally a higher olefin and (2) an aldehyde-amine condensation product, and a method for operating a turbine engine.

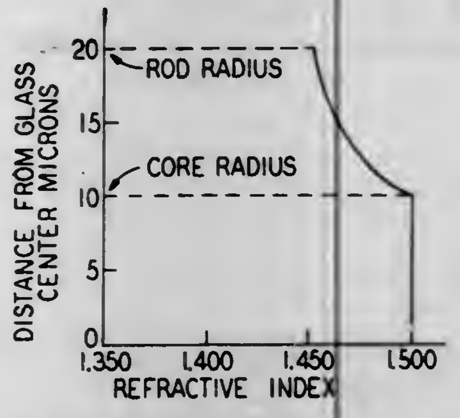
3,647,405
GARBAGE INCINERATOR AND METHOD OF OPERATION
Ray F. Smith, 25 South Ogontz, York, Pa.
Filed Dec. 12, 1969, Ser. No. 884,471
Int. Cl. C03b *19/02*
U.S. Cl. 65—19 **45 Claims**



A system for disposing of garbage and gaining useful heat output from controlled burning of the garbage is provided and is particularly adapted for decentralized locations in a community. The garbage is dumped into a feed hopper and piled to a substantial depth with the forward face of substantial cross-sectional area being acted upon by rotating shredders; the garbage being continuously fed forward by the endless belt support at the bottom of the hopper. A second series of shredders serves to completely shred and masticate the garbage into fine particles and project the same into a combined compressing and pulverizing station. Continuous ignition is provided by a heat-retaining wall immediately downstream. Solid particles, glass and metal are removed by transverse conveyors at critical locations along the system. Computer control of the operating components and auxiliary fuel injection maintains full efficiency in the incinerator chamber. Heat exchange means is provided for useful heat output with expansion and scrubber chambers immediately downstream thereof. Steam is injected to move the relaxed gaseous products and to precipitate out minute solid products; the gaseous products being forced to the bottom of the unit to assist the precipitation and to thus minimize air pollution. A melting cupola for glass or other thermoplastic material receives heat from the incinerator chamber with continuous casting of such byproducts and cutting into blocks.

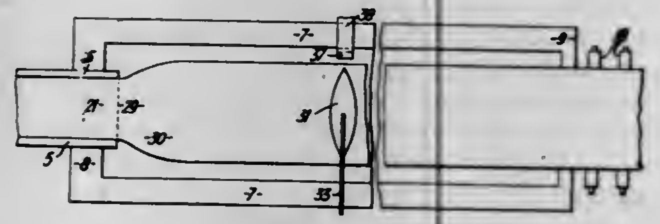
3,647,406
METHOD OF ACHIEVING SURFACE REFRACTIVE INDEX CHANGES IN A GLASS LIGHT GUIDE ELEMENT
George M. C. Fisher, Homdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Nov. 4, 1968, Ser. No. 772,970
Int. Cl. C03c *15/00*; **F16c** *1/06*; **G02b** *5/14*
U.S. Cl. 65—30 **3 Claims**

The surface index of refraction of a light-guiding glass is controllably increased or decreased by changing the alkali metal ion concentration at the surface. In one approach, these ions are replaced with similar ions of differing ionic radius. A gaseous source of replacement ions and capable of extracting the surface ions is passed over the glass surface at temperatures sufficient to permit an ion diffusion inward. Control of the process parameters permits regulating the exchanged ion layer depth and approximating a definite refractive index gradient, which is not possible with conventional cladding. Optical light guides achievable with the process are disclosed.



3,647,407
METHOD FOR THE MANUFACTURE OF FLOAT GLASS

Albert Sidney Robinson, Southport, England, assignor to Pilkington Brothers Limited, Liverpool, England
Filed Mar. 3, 1969, Ser. No. 803,565
Claims priority, application Great Britain, Mar. 6, 1968, 10,937/68
Int. Cl. C03b *18/00*
U.S. Cl. 65—30 **1 Claim**

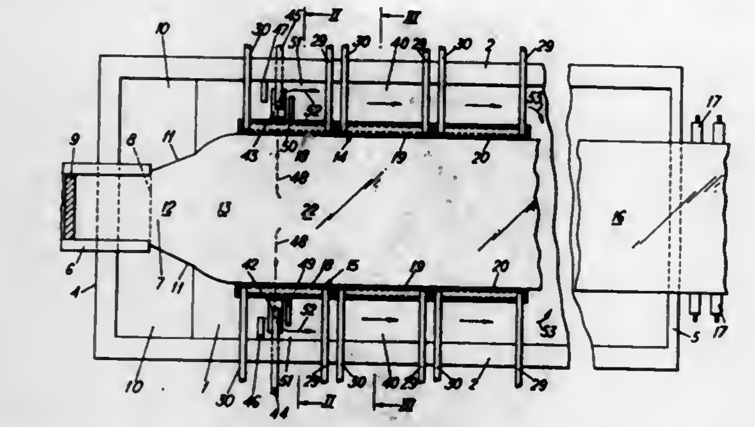


Glass having a shaded characteristic, for example a shaded windscreen, is manufactured by maintaining a body of molten material for modifying the glass against a surface of the moving glass and controlling variation in the treatment of the glass in a lateral direction with respect to the direction of movement. The method involves the provision of a locating member which is shaped to maintain the molten body with a configuration in which its dimension in the direction of glass advance is widest at its center and tapers toward both its ends. The glass is subsequently cut longitudinally through its center to produce a pair of shaded component glass ribbons.

3,647,408
METHOD AND APPARATUS FOR MANUFACTURE OF FLOAT GLASS

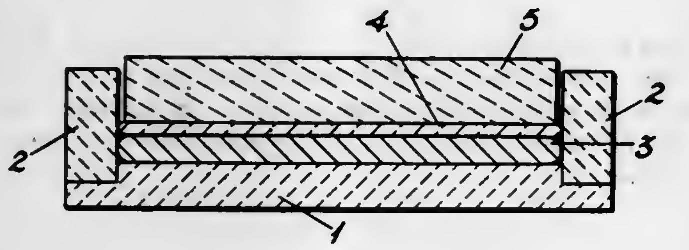
George A. Dickinson, St. Helens, England, assignor to Pilkington Brothers Limited, Liverpool, England
Filed July 29, 1969, Ser. No. 845,681
Claims priority, application Great Britain, Aug. 12, 1968, 38,561/68
Int. Cl. C03b *18/00*
U.S. Cl. 65—99 A **7 Claims**

Thick float glass, e.g., from 8 mm. to 30 mm. thick, is produced by physically halting the lateral flow of the glass when it achieves a predetermined thickness, the layer of molten glass being thermally controlled by causing transverse flow of molten metal beneath the glass and then confining to the sides of the bath downstream flow of that molten metal and permitting dispersal of the confined flows of molten metal into a downstream region of the bath. This method is accomplished by a float glass apparatus having longitudinally extending fenders, the section nearer the entrance being spaced from the floor so a pump may pump liquid in the bath transverse to the sheet of glass being formed.



3,647,409
METHOD AND APPARATUS FOR HEAT TREATING GLASS SHEETS ON MOLTEN METAL

Bernard Long, Paris, France, assignor to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Sept. 23, 1969, Ser. No. 860,201
Claims priority, application France, Sept. 24, 1968, 167,397
Int. Cl. C03b *25/02*
U.S. Cl. 65—117 **15 Claims**

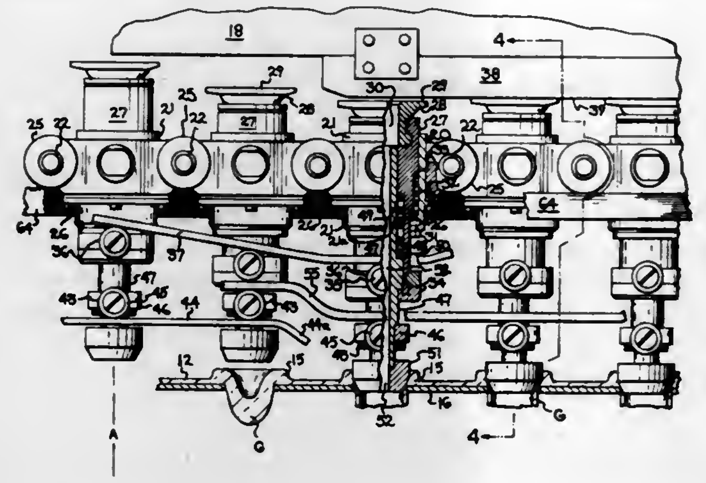


Removing defects in surface planimetry from a glass sheet by depositing the sheet on a layer of molten metal which it does not wet within a mold of corresponding interior configuration. A uniform pressure greater than that necessary to maintain in equilibrium a thickness of liquid glass equal to the thickness of the sheet is applied to its upper surface by a plate or second layer of molten metal not wetted by the glass, and the sheet is heated to give is a viscosity between 10^5 and 10^7 C.G.S. units. After the defects are eliminated by the action of surface tension, the confining layers are cooled so as to cool the sheet. By rapidly cooling the confining layers, the sheet can also be tampered.

3,647,410
GLASS RIBBON MACHINE BLOW HEAD MECHANISM

Richard A. Heaton, Toledo, and Maurice J. Sachs, Aurora, both of Ohio, assignors to Owens-Illinois, Inc.
Filed Sept. 9, 1969, Ser. No. 856,289
Int. Cl. C03b *5/32, 9/14*
U.S. Cl. 65—184 **4 Claims**

A blow head mechanism for a glass ribbon type forming machine in which the improved blow head structure and the method of operation thereof employs complete cammed movements for manipulation of the blow shoe and blowpipe, respectively, into and out of engagement with the overlying blowbox and the underlying glass ribbon, the latter moving horizontally with the series of chainlike orifice plates. The positive control of both axially movable members of the chainlike series of blow heads on the machine enables reliable repeatibility of the blowing cycle in making successive articles from the ribbon, and, thereby improves quality of the glassware produced.



3,647,411
PACKAGED COMPOSITION FOR ENHANCING THE GROWTH OF PLANTS

George D. Stevens, Marinette, Wis.
Continuation-in-part of application Ser. No. 856,230, Aug. 4, 1969, now Patent No. 3,532,485, which is a continuation-in-part of application Ser. No. 609,709, Dec. 27, 1969, now abandoned. This application Apr. 2, 1970, Ser. No. 25,281
Int. Cl. C05d *7/00;* **B65d** *83/00*
U.S. Cl. 71—1 **6 Claims**

A packaged composition for enhancing the growth of plants provides pressurized discharge of a plant nutrient solution for application to the foliage of plants. The solution contains a large quantity of dissolved CO_2 and is expelled from the container by CO_2 at above atmospheric pressure.

3,647,412
PROCESS FOR PRODUCING AMMONIUM NITRATE, CALCIUM CARBONATE MIXED FERTILIZER PRILLS AND RESULTING PRODUCT

Marion L. Brown, Jr.; Albert W. Green, and Elmer L. Blanton, all of Yazoo City, Miss., assignors to Mississippi Chemical Corporation, Yazoo City, Miss.
Filed June 20, 1969, Ser. No. 835,213
Int. Cl. C05c *1/02*
U.S. Cl. 71—59 **2 Claims**

Particulate ammonium nitrate, calcium carbonate mixed fertilizer compositions are rendered more resistant to caking, less hygroscopic and less sensitive to crystal-type transitions and less free ammonia is formed during their production by the addition of 0.1 to 0.2 percent by weight diammonium phosphate, 0.068 to 0.135 percent by weight boric acid or an ammonium or alkali metal salt thereof, and 0.005 to 0.01 percent ammonium sulfate to the molten or aqueous ammonium nitrate prior to the addition of finely divided calcium carbonate.

3,647,413
ALKYL-N-ALKYL-CHLOROPHENOXYTHIOACETIMIDATES AS SELECTIVE HERBICIDES

Edmund J. Rumanowski, Dover, N.J., assignor to Allied Chemical Corporation, New York, N.Y.
Filed July 3, 1969, Ser. No. 839,078
Int. Cl. A01n *9/12*
U.S. Cl. 71—98 **6 Claims**

Alkyl-N-alkyl-chlorophenoxythioacetimidates are prepared by reacting N-alkyl-di- or trichlorophenoxythioacetamide with alkyl iodide in the presence of sodium alcholate. The compounds are useful as herbicides.

3,647,414
EXTRACTION OF IRON FROM TITANIFEROUS ORES

Arnold E. Nilsen, Freehold, N.J., assignor to N L Industries, Inc., New York, N.Y.
Filed July 31, 1969, Ser. No. 846,343
Int. Cl. C22b *3/00, 53/00*
U.S. Cl. 75—1 **11 Claims**

The present invention relates to the removal of iron values from titaniferous ores so as to produce a titanium concentrate suitable for chlorination and is characterized by leaching the iron values from a metallized titaniferous ore in two stages using, in combination, a dilute solution of a mineral acid and preferably waste sulfuric acid in the first stage and an oxidizing leach solution in the second stage.

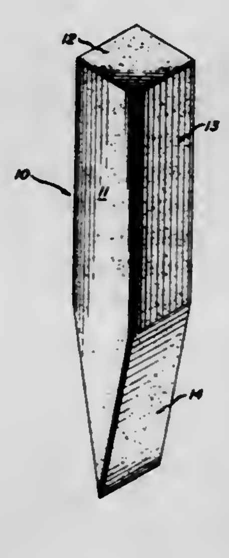
3,647,415
TANTALUM POWDER FOR SINTERED CAPACITORS

Tomosaburo Yano, Yokohama; Naoaki Oishi, Ichikawa-shi; Akitoshi Komatsu, Aizuwakamatsu-shi, and Keizi Koyama, Kawanuma-gun, all of Japan, assignors to Show Denko Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 21, 1968, Ser. No. 769,366
Claims priority, application Japan, Oct. 25, 1967, 42/68318
Int. Cl. B22f *9/00*
U.S. Cl. 75—0.5 BB **5 Claims**

Tantalum powder for electrolytic capacitors wherein tantalum particles in said powder have an average flakiness of 2 to 60, at least 80 percent by weight of said powder consisting of particles having a shorter breadth of 3 to 250μ and said powder being free from particles having a shorter breadth of above 500μ, and methods of preparing the same.

3,647,416
SLOW-RELEASE FERTILIZER SPIKE HAVING HIGH CRUSH-RESISTANCE

Henry C. Messman, Mamaroneck, N.Y., assignor to Edmond L. d'Ouville, Evergreen Park, Ill., a part interest
Filed July 18, 1969, Ser. No. 842,946
Int. Cl. C05c *9/02*
U.S. Cl. 71—29 **4 Claims**



A slow-release fertilizer composition, having a crushing strength in excess of 2,000 p.s.i., comprises a water-soluble urea-formaldehyde resin, a granular filler material and a binder derived from magnesia and phosphoric acid. The composition is prepared as a paste and extruded in the form of a beveled spike.

3,647,417
PROCESS FOR PRODUCING SPONGE IRON

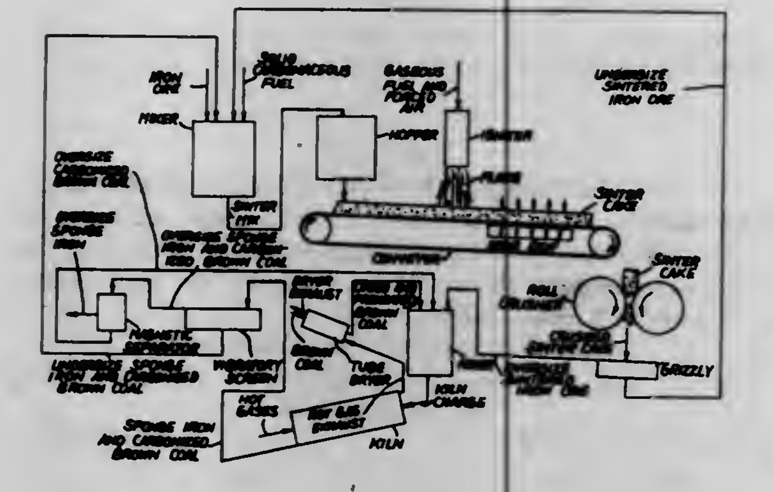
Rolf Emil Wetzel, Essen, and Willi Janssen, Mulheim (Ruhr), both of Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Sept. 4, 1969, Ser. No. 855,278

Claims priority, application Germany, Sept. 7, 1968, P 17 58 951.4

Int. Cl. C21b *13/14*

U.S. Cl. 75—35 **5 Claims**



Fine sponge iron particles are mixed with iron ore and the mixture is then sintered before being charged to a kiln for reduction into sponge iron.

3,647,418
HIGH RECOVERY PRODUCTION OF RICH FENI ALLOYS IN A CONVERTER

Lucas S. Moussoulos, 1, Tsacalof St., Athens (136), Greece

Filed Dec. 9, 1965, Ser. No. 512,806

Claims priority, application Greece, Dec. 11, 1964, 27418

Int. Cl. C22b *23/00;* **C22c** *3/00*

U.S. Cl. 75—82 **2 Claims**

A method of producing nickel rich iron alloy by increasing the nickel concentration of the alloy in a converter having molecular-oxygen containing gas blowing comprising adding nickel-bearing iron ore and molecular oxygen containing gas to the converter at a rate which maintains the temperature in the converter between 1,550° and 1,650° C., carrying out the blowing and addition of ore in a plurality of steps, and removing, after each step, the slag produced at each step of blowing with addition of ore so that the weight of the slag removed after each step is smaller than four times the weight of the alloy produced after the end of the corresponding step of blowing and addition of ore.

3,647,419
NICKEL RECOVERY

John K. Pargeter, Warwick, N.Y., and Loris M. Diran, Montclair, N.J., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,726

Int. Cl. C22b *23/00, 7/00, 5/04*

U.S. Cl. 75—82 **5 Claims**

The nickel content of nickel-magnesium alloy fines containing up to 50 percent silicon is recovered in usable metal form by reacting said fines exothermically with powdered iron oxide, an alkali metal nitrate and magnesia fluxing ingredients to provide a nickel-containing metal phase and a fluid magnesia-containing slag phase.

3,647,420
PROCESS FOR PRODUCING HIGH-PURITY NIOBIUM AND TANTALUM

Attilio Restelli, Binningen, Switzerland, assignor to Hermann C. Starck Berlin, Berlin, Germany

Filed June 4, 1969, Ser. No. 830,542

Claims priority, application Switzerland, June 6, 1968, 8380/68

Int. Cl. C22b *51/00*

U.S. Cl. 75—84 **8 Claims**

A process for producing high-purity niobium and tantalum wherein the oxide of the metal is intimately mixed with carbon, e.g., fine graphite, in an amount such that the oxygen is present in a slight excess beyond the quantity of carbon required to react stoichiometrically with the metal oxide. In the first stage, the mixture is subjected to a high vacuum at the order of 10^{-4} torr. at a temperature of about 1,800° C. to carry out an initial reduction, the reduced material containing about 500 to 10,000 parts per million (p.p.m.) of oxygen. In an intermediate stage, the partly reduced product is combined with finely divided carbon pyrolytically precipitated from a hydrocarbon in a retort permeable to hydrogen (at elevated temperature), so that the carbon is uniformly distributed over the surface of the partly reduced product. In the second state, the mixture of the partially reduced product and the finely divided pyrolytically precipitated carbon is subjected to a temperature below to 2,000° C. and nevertheless sufficient to effect a final reduction. Preferably the latter temperature is about 1,700° C. The resulting high-purity metal (i.e., tantalum or niobium), may be used in electrolytic capacitors.

3,647,421
REPROCESSING A PLUTONIUM DIOXIDE-MOLYBDENUM FUEL

Paul A. Nelson, Wheaton, Ill., and Donald A. Wenz, Livermore, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 4, 1969, Ser. No. 813,733

Int. Cl. C22b *61/04*

U.S. Cl. 75—84.1 A **7 Claims**

Plutonium is recovered from an oxidation-resistant plutonium dioxide-molybdenum fuel by reacting the fuel with molten cupric chloride contained in a molten salt to form a soluble plutonium species, an insoluble molybdenum species and a volatile molybdenum species. Plutonium is reduced and separated from the cupric chloride by mixing the salt with a zinc-magnesium or a cadmium-magnesium alloy which is thereafter retorted to leave essentially pure plutonium metal.

3,647,422
RECOVERY OF SILVER, POLYESTER AND AMINO ACIDS FROM PROCESSED FILM

Eugene Wainer, Shaker Heights, Ohio, assignor to Horizons Incorporated, a Division of Horizons Research Incorporated

Filed July 13, 1970, Ser. No. 54,092

Int. Cl. C22b *3/00, 11/00*

U.S. Cl. 75—101 **5 Claims**

Recovery of silver, polyester and amino acids from processed silver halide gelatin photographic film.

3,647,423
PRODUCTION OF COPPER, NICKEL OXIDE AND ZINC OXIDE

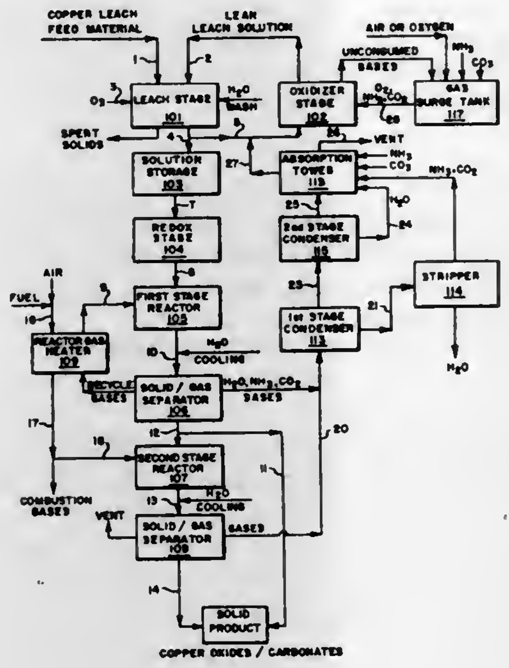
Floyd Acoveno, c/o Southern Lead Co., P. O. Box 6195, Dallas, Tex.

Filed Oct. 27, 1969, Ser. No. 869,782

Int. Cl. C22b *15/10, 19/24, 23/04*

U.S. Cl. 75—103 **16 Claims**

High-purity copper powder, nickel powder and zinc powder, high-purity oxides of these metals and high-purity carbonates of these metals are recovered from copper-, nickel- or zinc-bearing materials by leaching the material with an aqueous ammonia-ammonium carbonate solution at an elevated temperature and under a partial pressure of oxygen. The copper-, nickel- or zinc-containing leach liquor is then separated from the insoluble residue and contacted with hot gases to cause rapid decomposition of the corresponding metal ammonium carbonate solution into a gas/solids mixture. The resulting metal carbonate or metal oxide powder of high purity is then separated from the decomposition gas components and is recovered. These oxidic metal powders can be reduced with hydrogen to obtain high-purity metal powders.



3,647,424
MACHINABLE ALLOYS

George A. Majesko, Glen Ridge, N.J., assignor to Wilber B. Driver Company

Filed Nov. 3, 1969, Ser. No. 873,508

Int. Cl. C22c *39/10, 39/26, 39/54*

U.S. Cl. 75—123 AA **4 Claims**

A freely machinable alloy comprising, as expressed in percent by weight:

Nickel	25%–32%;
Cobalt	6.5%–27%;
Selenium	0.1%–0.4%;
Manganese	0.5%–1.5%;
Iron	Balance

3,647,425
FREE CUTTING STEEL CONTAINING SMALL AMOUNTS OF ALUMINUM AND CALCIUM

Yoshio Miyashita, Kawasaki; Katuhiko Nishikawa, Yokohama, and Toshio Sata, Hoya, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

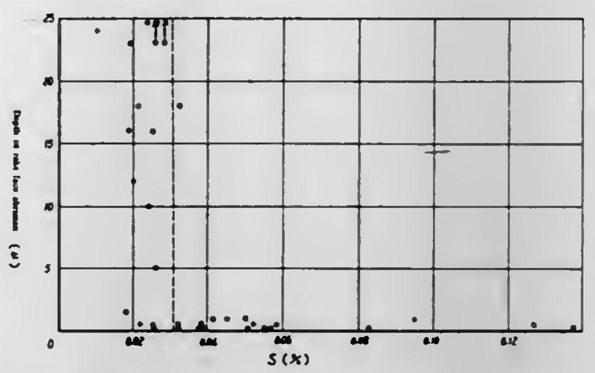
Filed Apr. 7, 1970, Ser. No. 26,341

Claims priority, application Japan, Apr. 7, 1969, 45/26129

Int. Cl. C22c *37/10, 39/02*

U.S. Cl. 75—124 **1 Claim**

A free cutting steel having excellent mechanical properties, e.g., impact value and good free cutting property and that abrasion amount of used tool is little, in comparison with common Ca free cutting steel, ordinary S free cutting steel and the like which is obtained by adjusting coexisting manner of Ca, S, and Sol·Al in steel.



3,647,426
PROCESSES FOR THE PRODUCTION OF IRON-NICKEL ALLOYS HAVING A HIGH-NICKEL CONTENT

Xavier Wache, La Turlurette, Sauvigny-les-Bois, (Nievre), France

Continuation-in-part of application Ser. No. 652,484, July 11, 1967, now abandoned. This application Jan. 27, 1970, Ser. No. 6,140

Claims priority, application France, July 12, 1966, 69164

Int. Cl. C22c *39/40, 39/50, 39/54*

U.S. Cl. 75—129 **1 Claim**

A process for improving the weldability of iron-nickel alloys with a nickel content higher than 30 percent in weight, which introduces into the alloy during its production an addition of at least one of the elements of the group vanadium, titanium, zirconium and niobium, said elements forming nitrides with the nitrogen present in the alloy.

3,647,427
GERMANIUM AND SILICON ADDITIVES TO DUAL-LAYER ELECTROPHOTOGRAPHIC PLATES

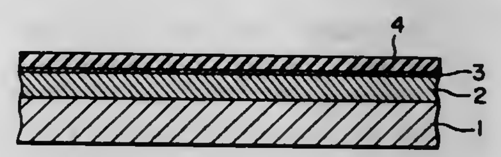
Hiroshi Hanada, Yokohama; Nobuo Kitajima, and Tatsuo Masaki, both of Tokyo, all of Japan, assignors to Cannon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1970, Ser. No. 65,955

Claims priority, application Japan, Aug. 27, 1969, 44/67165

Int. Cl. G03g *5/02*

U.S. Cl. 96—1.5 **10 Claims**



An electrophotographic photosensitive member comprises a layer containing selenium, tellurium and at least one of germanium and silicon as an additive and a layer containing selenium and at least one of germanium and silicon as an additive.

3,647,428
PHOTOCONDUCTIVE MATERIAL FOR ELECTROPHOTOGRAPHY

Hisatake Ono; Syu Watarai, and Harumi Katsuyama, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

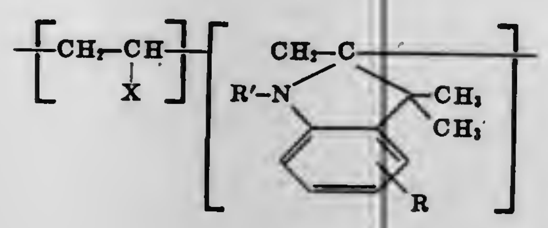
Filed Nov. 27, 1970, Ser. No. 93,387

Claims priority, application Japan, Nov. 28, 1969, 44/95990

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.5 **3 Claims**

A photoconductive material comprising an electroconductive support having coated thereon a layer containing a sensitizer, a plasticizer and a high-molecular compound having the following repeating unit:



wherein X is CN or COOR′, R is hydrogen atom, halogen atom, OR′ or COOR′, and R′ is alkyl group having one to four carbon atoms.

3,647,429

PHOTOCONDUCTIVE COMPOSITIONS AND ELECTROPHOTOGRAPHIC ELEMENTS CONTAINING GROUP IVA OR GROUP VA ORGANOMETALLIC PHOTOCONDUCTORS

Martin Goldman, and Arthur L. Johnson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 3, 1967, Ser. No. 650,664
Int. Cl. G03g *5/00, 7/00*

U.S. Cl. 96—1.5 **9 Claims**

Photoconductive compositions and electrophotographic elements containing as photoconductors organometallic compounds having at least one aminoaryl group attached to a Group IV*a* or Group V*a* metal atom through an aryl moiety.

3,647,430

METHOD OF THE PREPARATION OF CDS OR CDSE POWDER FOR ELECTROPHOTOGRAPHY AND METHOD OF MAKING AN ELECTROPHOTOGRAPHIC PHOTOSENSITIVE PLATE BY USING THE POWDER

Hiroshi Hanada, Yokohama-shi, and Nobuo Kitajima, Tokyo, both of Japan, assignors to Canon Camera Kabushiki Kaisha, Tokyo, Japan

Filed June 5, 1968, Ser. No. 734,637
Claims priority, application Japan, June 8, 1967, 42/36627
Int. Cl. G03g *5/00, 7/00*

U.S. Cl. 96—1.5 **4 Claims**

CdS or CdSe powders are treated by adding silver or copper as an activator, firing the mixture in the presence of $CdCl_2$ or ZnO together with HC1, and after washing and drying the resultant powder, firing the dried powder in an atmosphere of S vapor. The powder thus produced is mixing with a bonding resin to form a photosensitive layer and an electrophotographic photoconductive plate is made therefrom.

3,647,431

SUBSTITUTED BIS(P-DIAKYLAMINOPHENYL) METHANE PHOTOCONDUCTORS

Louis J. Rossi, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1969, Ser. No. 862,923
Int. Cl. G03g *5/06*

U.S. Cl. 96—1.5 **10 Claims**

Organic photoconductors for electrophotographic elements are described. These photoconductors are bis-(p-dialkylaminophenyl)methanes having a third substituent comprising an unsaturated group having two or four carbon atoms wherein an ω-carbon atom of the third substituent is fully substituted by aryl group(s), heterocyclic group(s) or combinations thereof.

3,647,432

CARBAZOLYLMETHANE DYE SALTS AS SENSITIZERS FOR PHOTOCONDUCTOR COMPOSITIONS

Colin Holstead, 37 Abbotts Road Abbotts Langley, Walford, England

Filed Oct. 22, 1969, Ser. No. 868,600
Int. Cl. G03g *5/06, 5/08*

U.S. Cl. 96—1.6 **15 Claims**

Tris(9-alkylcarbazol-3-yl)methane dyes and tris(9-arylcarbazol-3-yl)methane dyes enhance the sensitization of photoconductive layers containing various photoconductors. These materials are particularly useful in elements used in electrophotographic processes.

3,647,433

DINITROARYLMETHINE DYES AS SENSITIZERS IN ELECTROPHOTOGRAPHIC LAYERS

Lawrence Edward Contois, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 3, 1969, Ser. No. 863,691
Int. Cl. G03g *5/06, 5/08*

U.S. Cl. 96—1.6 **17 Claims**

Dinitroarylmethine dyes are useful for sensitizing photoconductive compositions used in electrophotographic layers. These dyes are light bleachable so that undesirable color imparted to background areas of the image-bearing element by the dyes is removable. Such bleaching increases the visual contrast of the reproduction.

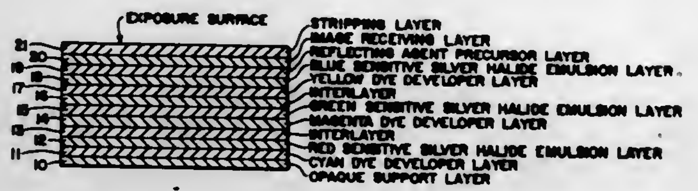
3,647,434

INTEGRAL NEGATIVE/POSITIVE COLOR DIFFUSION TRANSFER PROCESS FILM UNIT EMPLOYING IN SITU GENERATED VISIBLE LIGHT-REFLECTING AGENT

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 5, 1970, Ser. No. 43,741
Int. Cl. G03c *7/00, 5/54, 1/84*

U.S. Cl. 96—3 **43 Claims**


EXPOSURE SURFACE
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STRIPPING LAYER
IMAGE RECEIVING LAYER
REFLECTING AGENT PRECURSOR LAYER
BLUE SENSITIVE SILVER HALIDE EMULSION LAYER
YELLOW DYE DEVELOPER LAYER
INTERLAYER
GREEN SENSITIVE SILVER HALIDE EMULSION LAYER
MAGENTA DYE DEVELOPER LAYER
INTERLAYER
RED SENSITIVE SILVER HALIDE EMULSION LAYER
CYAN DYE DEVELOPER LAYER
OPAQUE SUPPORT LAYER

This application is directed, in general, to an integral negative/positive color diffusion transfer process film unit which comprises a dimensionally stable common support carrying on one surface a dyeable polymeric layer, a photosensitive silver halide emulsion layer having associated dye transfer image-forming material and a layer comprising a light-reflecting agent precursor which comprises, upon contact with a processing composition, first ionic species adapted to interact with second ionic species to provide a substantially white, inorganic visible light-reflecting agent intermediate the dyeable polymeric layer and the photosensitive silver halide emulsion layer, and to specified diffusion transfer color processes employing such a film unit.

3,647,435

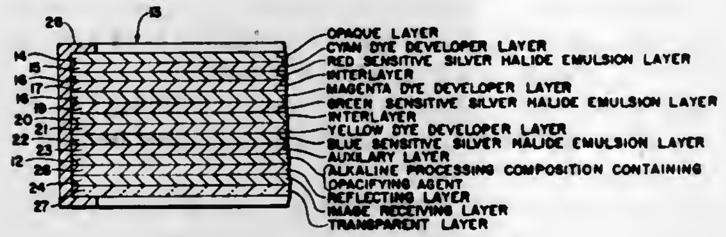
INTEGRAL NEGATIVE/POSITIVE COLOR DIFFUSION TRANSFER PROCESS FILM UNIT EMPLOYING IN-SITU GENERATED VISIBLE LIGHT-REFLECTING AGENT

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 5, 1970, Ser. No. 43,742
Int. Cl. G03c *7/00, 5/54, 1/84*

U.S. Cl. 96—3 **42 Claims**

This application is directed, in general, to an integral negative/positive color diffusion transfer process film unit which includes, in order, an opaque layer, a photosensitive silver halide layer having associated dye transfer image-forming material, a layer comprising a light-reflecting agent precursor which comprises, upon contact with a processing composition, first ionic species adapted to interact with second ionic species to provide a substantially white, inorganic visible light-reflecting agent, a polymeric layer adapted to be dyed by the dye transfer image-forming material, a transparent layer, and means for distributing a processing composition between the dyeable polymeric layer and the photosensitive silver halide layer, and to specified diffusible transfer color processes employing such a film unit.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OPAQUE LAYER
CYAN DYE DEVELOPER LAYER
RED SENSITIVE SILVER HALIDE EMULSION LAYER
INTERLAYER
MAGENTA DYE DEVELOPER LAYER
GREEN SENSITIVE SILVER HALIDE EMULSION LAYER
INTERLAYER
YELLOW DYE DEVELOPER LAYER
BLUE SENSITIVE SILVER HALIDE EMULSION LAYER
AUXILARY LAYER
ALKALINE PROCESSING COMPOSITION CONTAINING OPACIFYING AGENT
REFLECTING LAYER
IMAGE RECEIVING LAYER
TRANSPARENT LAYER

3,647,436

DEVELOPERS FOR DIFFUSION TRANSFER FILM UNITS

Walter M. Bush, Victor, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1970, Ser. No. 68,478
Int. Cl. G03c *7/00, 5/54, 1/48*

U.S. Cl. 96—3 **22 Claims**

The use of 4-amino-3-alkoxy-N-ethyl-N-β-hydroxyethylaniline developing agents in a diffusion transfer film unit employing at least one nondiffusible coupler capable of reacting with oxidized aromatic primary amino color developing agent to produce a diffusible dye is more effective than analogous paraphenylenediamine color developing agents.

3,647,437

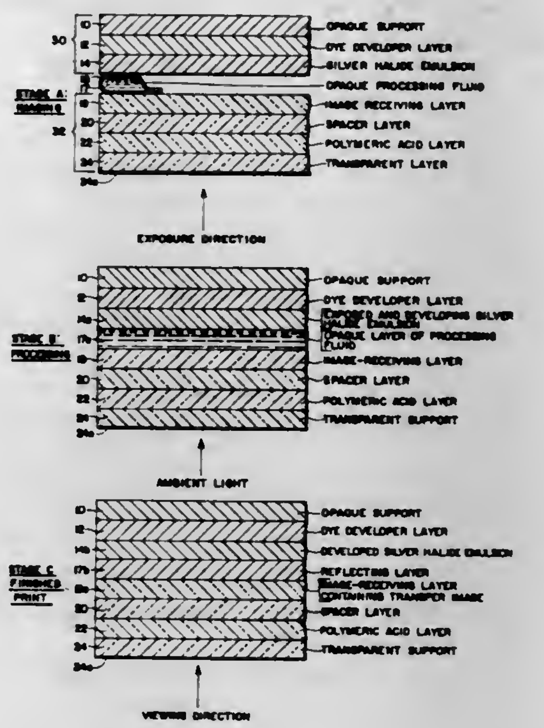
PHOTOGRAPHIC PRODUCTS, PROCESSES AND COMPOSITIONS

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 786,352, Dec. 23, 1968, Continuation-in-part of application Ser. No. 43,782, June 5, 1970, abandoned. This application Dec. 18, 1970, Ser. No. 101,968
Int. Cl. G03c *5/54, 7/00, 1/84*

U.S. Cl. 96—3 **134 Claims**

Photographic films and particularly film units for performing diffusion transfer processes, are disclosed which may be processed outside of a camera. A light-absorbing reagent is employed to prevent postexposure fogging by actinic light passing through a transparent face of the film unit. After a suitable period, the light-absorbing reagent is rendered ineffective to prevent viewing an image through said transparent face. In a preferred embodiment, the image is viewed against a light-reflecting material such as a white pigment, said light-reflecting material and said light-absorbing material being employed in combination to provide desired protection against said postexposure fogging. Particularly useful light-absorbing materials are dyes which are light absorbing at a pH at which image formation is effected and nonlight-absorbing at a subsequently attained pH. Other light-absorbing reagents including dyes which are selectively mordanted to render them ineffective to prevent viewing transfer images visible against a light-reflecting material. The final image may be dye or silver. Suitable image-forming reagents include dye developers, color couplers, coupling dyes, etc.



3,647,438

METHOD OF MAKING HIGH AREA DENSITY ARRAY PHOTOMASKS HAVING MATCHING REGISTRY

Frederic Paul Heiman, East Brunswick, N.J., assignor to RCA Corporation

Filed Dec. 29, 1969, Ser. No. 888,249
Int. Cl. G03c *5/04*

U.S. Cl. 96—27 **8 Claims**

The method comprises: printing a master photomask having an array of opaque elements on a photographic photosensitive layer with overexposure; developing the overexposed photosensitive layer to produce a submaster photomask. the submaster having an array of smaller. opaque elements and repeating the steps of printing by overexposing and developing a number of times. using the successive submasters in place of the master to produce a subsequent submaster photomask. the subsequent submaster having opaque elements substantially smaller than the elements of the master and having matching registry with the master.

3,647,439

PHOTOGRAPHIC ELEMENT, COMPOSITION AND PROCESS

Jon Dolf Bass, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1968, Ser. No. 764,330
Int. Cl. G03c *5/54, 5/24, 5/38*

U.S. Cl. 96—29 R **23 Claims**

Photographic elements, compositions and processes employing certain stable sources of metal for physical development, including certain metal-organic complexes, such as metal-thiazoline thione or metal-thiazolidine thione complexes or metal-alkyne complexes, provide good images. Silver-dye complexes are especially suitable as a photosensitive material for use with these metal-organic complexes, typically silver-organic complexes.

3,647,440

PHOTOGRAPHIC DIFFUSION TRANSFER PRODUCT AND PROCESS

Arthur A. Rasch, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 4, 1969, Ser. No. 796,552

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 **19 Claims**

A receiving layer for use in the photographic diffusion transfer process comprises finely divided nonsilver noble metal nuclei obtained by reducing a metal salt in the presence of a colloid with a reducing agent having a standard potential more negative than −0.30. The nuclei typically have an average particle size in the range of about 15 A. to about 65 A., at least 80 percent, by number, of the nuclei having a particle size in the range of about 20 A. to about 50 A. The receiving layers can be on a support such as paper or film base.

3,647,441

PHOTOGRAPHIC APPARATUS AND METHOD

Albert J. Bachelder, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 744,912, July 15, 1968. This application Mar. 6, 1969, Ser. No. 804,819

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 **13 Claims**

A self-developing camera for use with a photographic film unit including a photosensitive sheet and a second sheet secured in face-to-face relation by external binding strips secured to the lateral margins of the sheets and adapted to be processed to produce a visible image by a liquid processing agent distributed between the sheets in a uniform thin layer at least coextensive with the exposed area of the photosensitive sheet. The camera includes a pair of juxtaposed pressure-applying rolls for distributing the processing liquid between the sheets, and one of the rolls includes annular grooves near its ends for receiving lateral edge portions of the binding strips during movement of the film unit between the rolls to relieve the pressure on the edge portions of the binding strips while the medial sections of the rolls engage the sheets and are spaced apart by engagement of the end sections of the rolls with the binding strips at the lateral edges of the film unit.

3,647,442

LAMINATIONS

Robert L. Maister, Wellesley, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 451,705, Apr. 29, 1965, now abandoned. This application July 3, 1969, Ser. No. 843,907

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 **11 Claims**

A laminar structure comprising a diffusion transfer color photographic image on a stratum comprising a mixture of polyvinyl pyridine and polyvinyl alcohol, the surface of said stratum being bonded to the surface of a transparent layer or sheet material; and identification (ID) cards including the same.

3,647,443

LIGHT-SENSITIVE QUINONE DIAZIDE POLYMERS AND POLYMER COMPOSITIONS

Frederick J. Rauner; Joseph A. Arcesi, and John R. Guild, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 12, 1969, Ser. No. 857,587

Int. Cl. G03f *7/02*; **G03c** *1/52*; **C07c** *117/00*

U.S. Cl. 96—33 **23 Claims**

Polyalkylene glycols end-capped with o-quinone diazide groups are a novel class of light-sensitive polymers which range from viscous liquid to waxy materials. The polymers can be used alone or in conjunction with other light-sensitive and nonlight-sensitive polymers to prepare light-sensitive coating compositions. Preparation of photoresists and printing plates using polymer compositions of this invention is described.

3,647,444

LITHOGRAPHIC PRINTING PLATE PREPARED FROM LINEAR LIGHT-SENSITIVE POLYMERS CONTAINING THE STYRYL KETONE GROUP

Douglas G. Borden; Cornelius C. Unruh, and Stewart H. Merrill, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 828,455, July 21, 1959, now Patent No. 3,453,237. This application Nov. 15, 1968, Ser. No. 776,263. The portion of the term of this patent subsequent to July 1, 1986, has been disclaimed.

Int. Cl. G03c *1/68*; **G03f** *7/02*

U.S. Cl. 96—33 **18 Claims**

Photosensitive elements are described which are useful for preparing lithographic printing plates and which employ, as the light-sensitive component, polyesters, including polycarbonates, which contain the styryl ketone group as an integral part of the polymer backbone.

3,647,445

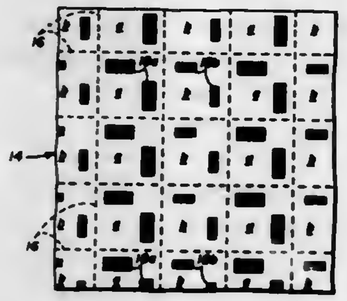
STEP AND REPEAT PHOTOMASK AND METHOD OF USING SAME

Carmen D. Burns, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 24, 1969, Ser. No. 869,218

Int. Cl. G03c *5/00*

U.S. Cl. 96—35 **8 Claims**



A method is described for exposing a layer of photoresist so as to eliminate the defects which would otherwise be caused by a defective photomask. The method utilizes a unique mask in which the repetitive opaque patterns are identical except that the patterns in alternate rows are slightly larger than the patterns in the other alternate rows. The photomask is aligned with the photoresist in the usual manner and the photoresist exposed. Then the photomask is indexed one row and the photoresist again exposed so that all areas of the photoresist are double exposed through different portions of the photomask, yet the edges of the unexposed areas are defined by a single exposure corresponding in size to the patterns in the rows which have the larger opaque areas.

3,647,446

PROCESS FOR PREPARING HIGH-RELIEF PRINTING PLATES

Michael J. Alsup, Rochester, and Alfredo R. Guevara, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 5, 1970, Ser. No. 16,975

Int. Cl. G03c *1/68*

U.S. Cl. 96—35.1 **19 Claims**

Polymeric relief images suitable for use in the production of stereotype printing plates are provided by imagewise exposing to actinic radiation a relatively thick photosensitive layer comprising a light-sensitive polymer capable of being efficiently sensitized and a sensitizing agent to insolubilize in depth the exposed areas of the photosensitive layer, after which a relief image can be developed by removing the unexposed areas of the layer.

3,647,447

DYED PHOTORESIST COMPOSITIONS

Richard E. Gilson, and Frederick J. Rauner, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 3, 1969, Ser. No. 803,996

Int. Cl. G03c *5/100, 1/68*

U.S. Cl. 96—35.1 **9 Claims**

A photosensitive coating composition is described which comprises a photoinsolubilizable polymer, such as a cinnamic acid ester of a hydroxyl-containing polymer, and a dye which is insoluble in the developer solvent and which is essentially transparent to radiation of the wavelength to which the photoinsolubilizable polymer is sensitive. The photosensitive compositions are useful in preparing highly colored photoresists without a loss in photographic speed.

3,647,448

LIGHT SENSITIVE HALOCARBON AND PHENOL DERIVATIVE COMPOSITION

Dennis E. DeMeyer, Rochester, N.Y., and Frank D. Allen, deceased, late of Rochester, N.Y. (by Mona Armstrong Allen, executrix), assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1970, Ser. No. 15,890

Int. Cl. G03c *5/24, 1/72*

U.S. Cl. 96—48 **6 Claims**

Photographic elements having a support on which is coated a layer including a light-sensitive halocarbon and a phenol derivative like 1-naphthol, pyrocatechol or 1-methoxy-2-naphthol, yield printout images on exposure to actinic rays. The printout image can be intensified by heating.

3,647,449

NEUTRALIZING BATH FOR USE IN PHOTOGRAPHIC PROCESSING

Richard J. Malloy, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 8, 1970, Ser. No. 44,576

Int. Cl. G03c *5/26*

U.S. Cl. 96—50 **3 Claims**

A neutralizing bath, employed in processing photographic elements to neutralize residual aldehyde resulting from prior treatment in an aldehydic prehardening bath and thereby to avoid the deleterious effects of carry through of the aldehyde into subsequent processing baths, is comprised of hydroxylamine or a water-soluble acid addition salt thereof and an hydroxyalkylidene diphosphonic acid or water-soluble salt thereof. The hydroxylamine serves to neutralize the aldehyde by reacting therewith, while the hydroxyalkylidene diphosphonic acid serves to stabilize the bath and facilitate its long term storage by inhibiting decomposition of the hydroxylamine.

3,647,450

ELECTROLESS DEPOSITION OF NI OR CO LIGHT-GENERATED AG NUCLEI

Ennio Calligaris, and Mario Rossello, both of Savona, Italy, assignors to Societa per Azioni Ferrania, Milan, Italy

Filed Sept. 9, 1968, Ser. No. 758,608

Claims priority, application Italy, Sept. 14, 1967, 39409 A/67

Int. Cl. G03c *5/24*

U.S. Cl. 96—48 **7 Claims**

An imaging process is shown wherein a recording element having a photosensitive layer comprising a composition which, upon light exposure, is capable of producing silver nuclei is exposed to a light image to cause formation of said nuclei. Upon said nuclei is then deposited a nonnoble metal by electroless deposition from a solution comprising a nonnoble metal and a reducing agent selected from the group consisting of an amine borane, a borohydride, and a combination of an amine borane and a borohydride. Also shown are recording elements produced by this method.

3,647,451

ANTIBRONZING AGENTS FOR PHOTOGRAPHIC SILVER IMAGES

Anita von Konig, Leverkusen, and Helmut Timmler, Wuppertal-Vohwinkel, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 21, 1969, Ser. No. 809,415

Claims priority, application Germany, Mar. 28, 1968, P 17 70 074.2

Int. Cl. G03c *7/00, 5/38, 1/76*

U.S. Cl. 96—52 **8 Claims**

Antibronzing agents for silver images dried at high temperatures, which agents have 1,3,4-triazole-3-mercaptan rings bridged together at their 5-positions by an interrupted hydrocarbon linkage.

3,647,452

DIRECT REVERSAL PHOTOGRAPHIC ELEMENT AND PROCESS

Raymond W. Hendess, Webster, and Hugh S. A. Gilmour, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 6, 1970, Ser. No. 52,721

Int. Cl. G03c *7/00, 5/52, 1/40*

U.S. Cl. 96—55 **34 Claims**

A light-sensitive color photographic element containing nondiffusible dye-forming couplers that react with oxidized aromatic primary amine color developing agents to form nondiffusible dye images and a sufficient amount of a competing coupler to react with substantially all of the color-developing agent oxidized during negative silver development, but not enough to interfere with positive dye image formation during subsequent fogging development, is used for direct reversal image reproduction. A coupler-incorporated photographic element that produces nondiffusible dye images during color development is direct reversal color processed by (1) contacting the element with a color developer solution in the presence of sufficient competing coupler to react with substantially all of the color-developing agent oxidized during negative silver development, but not enough to interfere with subsequent positive dye image formation and (2) contacting the element with bleach, then fix or bleach-fix to remove silver and silver halide.

3,647,453

STABILIZATION OF SILVER HALIDE EMULSIONS WITH 1,1 BIS-SULFONYL ALKANES

Grant M. Haist, Rochester; James R. King, Webster, and David A. Pupo, Churchville, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 1, 1970, Ser. No. 42,580

Int. Cl. G03c *5/38, 1/34*

U.S. Cl. 96—61 **20 Claims**

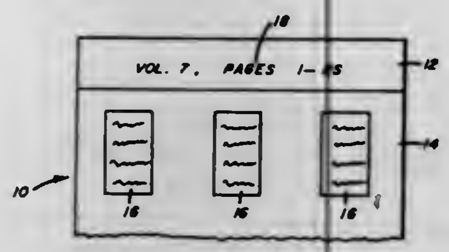
Silver halide emulsions and photographic elements containing a 1,1 bis-sulfonyl alkane stabilizing agent are stabilized after exposure by an alkaline activation treatment.

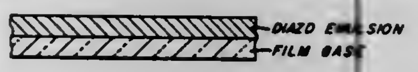
3,647,454
TITLE-BACKED PHOTOSENSITIVE MICROFICHE

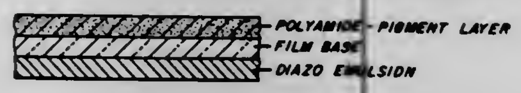
Clarence S. Hunter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 9, 1970, Ser. No. 9,586
Int. Cl. G03c *1/52, 1/00, 1/78*

U.S. Cl. 96—67 **6 Claims**







A thin layer containing a suitable pigment in a polymeric binder is striped on a film base to provide, in the header region of a microfiche a surface that is receptive of titles (e.g., written, printed or typed images), makes photographically recorded images eyeball readable, is translucent to visible light, yet transparent to photographically active radiation (i.e., radiation capable of being detected after processing using conventional photosensitive materials and processes) thereby permitting conventional reproduction of the entire microfiche including the header region.

3,647,455
DIRECT POSITIVE EMULSIONS CONTAINING IODIDE IONS AND A SENSITIZING DYE

Cortland Russell Burt, and Peter Anthony Ciavarri, both of Rochester, N.Y., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 13, 1969, Ser. No. 865,976
Int. Cl. G03c *1/36*

U.S. Cl. 96—64 **7 Claims**

Preparation of silver halide emulsions by (a) adding 5–15 mg. per mole of silver halide of a water-soluble inorganic iodide to an aqueous redispersion of a precipitated, ripened and washed, water-permeable colloid silver chlorobromide or bromide emulsion, and (b) adjusting the pH to 5–9 and digesting the emulsion at 110° to 150° F. for about 15–60 minutes, there being added per mole of silver halide 0.00033 to 12.0 g. of an amine borane as a fogging agent; characterized in that after the digesting step, there is added per mole of silver halide approximately 10–100 mg. of an optical sensitizing dye.

3,647,456
METHOD OF MAKING CONDUCTIVE SILVER IMAGES AND EMULSION THEREFOR

Harold H. Herd, Ossining, and Theresa I. Sun, Peekskill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1968, Ser. No. 786,366
Int. Cl. G03c *5/26*

U.S. Cl. 96—38.4 **1 Claim**

A silver bromide emulsion containing cadmium iodide and coated on a substrate is employed to produce a latent silver image thereon. This latent image is developed in a high-resolution pattern developer to produce a silver image which when heated to a temperature of 200° to 450° C. produces an image having an electrical conductivity closely approaching that of bulk silver. The high-resolution pattern developer results in a feltlike structure of silver wires which when heated at higher temperatures decreases in reflectivity.

3,647,457
TECHNIQUE FOR RECORDING AND TESTING THE REGISTRATION OF SEQUENTIAL MASK SETS

Robert E. Kerwin, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 13, 1969, Ser. No. 865,971
Int. Cl. G03c *5/04, 7/26*

U.S. Cl. 96—41 **7 Claims**

A technique for recording the registration of a sequence of photomasks involves coating a reflective substrate with a photosensitive film and exposing the substrate to light through the first of the sequence of masks until a visible image is obtained. The next mask in the set is then aligned and the procedure repeated.

3,647,458
SOLARIZATION OF SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Giovan Battista Tagliafico, Albisola Mare, and Ferdinando Grazzino, Veneto, both of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 26, 1970, Ser. No. 14,454
Claims priority, application Italy, Mar. 11, 1969, 35625
Int. Cl. G03c *5/32*

U.S. Cl. 96—45.2 **9 Claims**

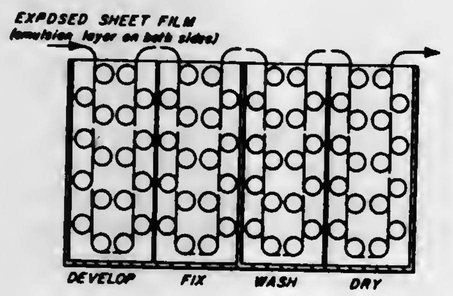
Silver halide is solarized by treatment with an aldehyde having more than one carbon atom or a ketone to provide direct positive photographic emulsions.

3,647,459
NOVEL PHOTOGRAPHIC ELEMENTS AND MEANS FOR RAPID PROCESSING OF PHOTOGRAPHIC ELEMENTS

Robert C. Taber, and William H. Russell, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 649,697, June 28, 1967, now abandoned. This application Feb. 1, 1968, Ser. No. 702,381
Int. Cl. G03c *1/08, 5/30*

U.S. Cl. 96—66.5 **25 Claims**



A photographic element comprising an acrylic interpolymer can be rapidly processed at high temperatures to provide an image record exhibiting reduced haze and improved photographic properties. The acrylic interpolymer contained in the photographic element is compatible with gelatin and has a Tg of less than 20° C. In another aspect of this invention, a photographic element comprising an acrylic interpolymer and a development modifier exhibit improved photographic properties.

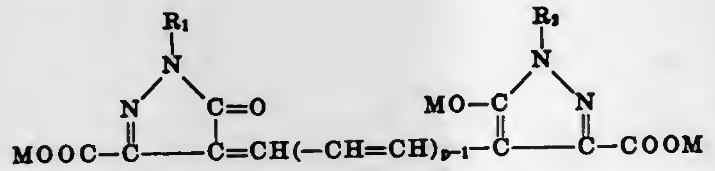
3,647,460
METHOD OF PRODUCING PHOTOGRAPHIC IMAGES BY RAPID PROCESSING

Emiel Alexander Hofman, Mortsel; Theofiel Hubert Ghys, Kontich, and Henri Depoorter, Mortsel, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed May 18, 1970, Ser. No. 38,483
Claims priority, application Great Britain, May 30, 1969, 27,576/69
Int. Cl. G03c *5/30, 1/84, 1/06*

U.S. Cl. 96—66 **17 Claims**

A rapid process for producing a photographic image is disclosed wherein the photographic silver halide element comprises as light absorbing antihalation or filter dye, a dye of the formula:



$$\mathrm{MOOC{-}C{=}N{-}N(R_1){-}C({=}O){-}C{=}CH({-}CH{=}CH)_{p-1}{-}C{=}C(OM){-}N(R_2){-}N{=}C{-}COOM}$$

wherein: p stands for 1. 2 or 3. each of R_1 and R_2 is an aryl group, and M is a cation.

The dye is very rapidly discharged upon processing of the exposed element and leaves no stains in the processed element. The dye is, therefore, particularly suitable for use in a photographic silver halide film element in which upon exposure a stable silver image is formed in the least possible time by "stabilization processing" which comprises developing the exposed element and treating the developed element with a stabilizing solution.

3,647,461
METHODS AND MATERIALS FOR REPLENISHMENT OF DEVELOPERS FOR COLOR PHOTOGRAPHIC FILMS

John J. Surash; Edward J. Giorgianni, and Lynn R. Hotter, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 19, 1969, Ser. No. 800,708
Int. Cl. G03c *5/30*

U.S. Cl. 96—66 **17 Claims**

Developer replenishers having buffer controlled high pH and high potassium/sodium weight ratio are effective at low replenishment rates; for example, developer replenishers having a pH of 10.5 to 11 containing a potassium/sodium weight ratio of at least 5.4/1,p-phenylenediamine developing agent and benzyl alcohol in weight ratio of between about 1/1.5 and 1/2 and sulfite are especially effective. Such replenishers are advantageously prepared from kits comprising at least two solutions, one a buffered aqueous alkaline solution containing alkali metal ions in a high potassium/sodium weight ratio and another an aqueous solution having low pH and containing p-phenylenediamine developing agent in high concentration. The replenishers are utilized in conjunction with the processing of imagewise exposed, multilayer, incorporated coupler, silver halide sensitized, color photographic film materials.

3,647,462
METHODS AND MATERIALS FOR REPLENISHMENT OF DEVELOPERS FOR COLOR PHOTOGRAPHIC FILMS (B)

John J. Surash; Edward J. Giorgianni, and Lynn R. Hotter, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 19, 1969, Ser. No. 800,728
Int. Cl. G03c *5/30*

U.S. Cl. 96—66 **18 Claims**

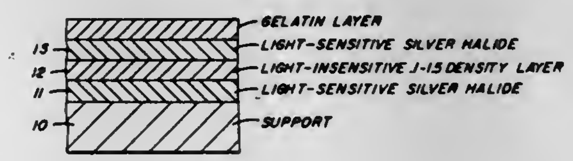
Developer replenishers having buffer controlled high pH and high potassium/sodium weight ratio are effective at low-replenishment rates; for example, developer replenishers having a pH of 10.5 to 11 containing a potassium/sodium weight ratio of at least 5.4/1,p-phenylenediamine developing agent and benzyl alcohol in weight ratio of between about 1/1.5 and 1/2 and sulfite are especially effective. Such replenishers are advantageously prepared from kits comprising at least two solutions, one a buffered aqueous alkaline solution containing alkali metal ions in a high potassium/sodium weight ratio and another an aqueous solution having low pH and containing p-phenylenediamine developing agent in high concentration. The replenishers are utilized in conjunction with the processing of imagewise exposed, multilayer, incorporated coupler, silver halide sensitized, color photographic film materials.

3,647,463
DIRECT-POSITIVE PHOTOGRAPHIC ELEMENTS CONTAINING MULTIPLE LAYERS

Robert C. Taber, and James E. Koller, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 14, 1969, Ser. No. 850,197
Int. Cl. G03c *1/76*

U.S. Cl. 96—68 **16 Claims**


GELATIN LAYER
13
LIGHT-SENSITIVE SILVER HALIDE
12
LIGHT-INSENSITIVE J-15 DENSITY LAYER
11
LIGHT-SENSITIVE SILVER HALIDE
10
SUPPORT

This invention relates to direct-positive silver halide elements comprising (1) duplicate layers containing silver halide emulsions having substantially the same light-response characteristics and (2) means for providing a sensitivity difference between said duplicate layers of at least 0.5 log exposure. In certain preferred embodiments, relatively light-insensitive absorbing silver halide emulsions and/or light-absorbing dyes are used in an interlayer to provide an effective density of 0.1 to 1.5.

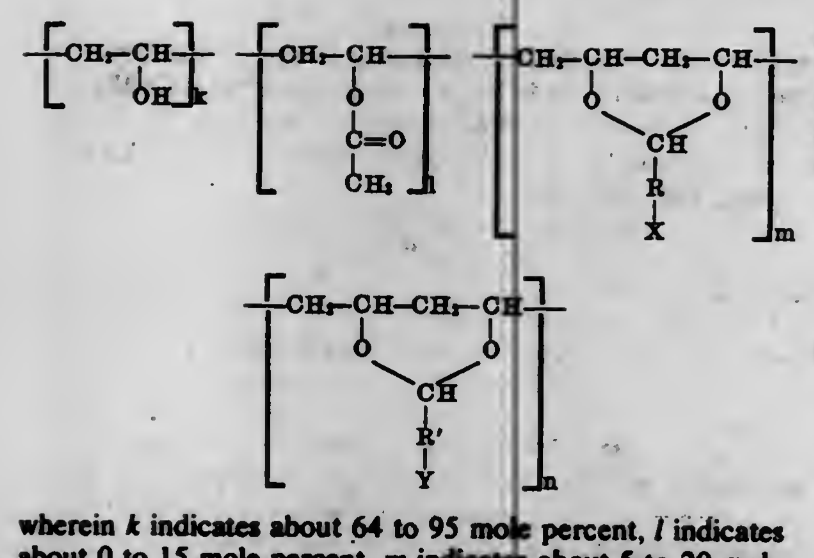
3,647,464
SULFONATED POLY(VINYL ALCOHOL) DERIVATIVES AS ABSORBENT LAYERS IN PHOTOGRAPHIC PROCESSING WEBS

Donald A. Smith, Rochester, and Joseph A. Verdone, Greece, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

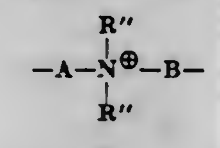
Filed Apr. 22, 1970, Ser. No. 30,968
Int. Cl. G03c *1/48*

U.S. Cl. 96—76 **23 Claims**

A photographic processing web comprising a support having an absorbent layer for alkaline photographic processing solutions, said layer comprising a cross-linked polymer product of a polymer composed of recurring segments having the structure:



wherein *k* indicates about 64 to 95 mole percent, *l* indicates about 0 to 15 mole percent, *m* indicates about 5 to 20 mole percent, *n* indicates about 0 to 10 mole percent; X is SO_3 or $-SO_3Z$ wherein Z is an alkali metal or hydrogen; R′ is an alkylamino group; Y is a radical containing an active methylene group and R is a phenylene group or the positively charged portion of an inner salt having the structure:

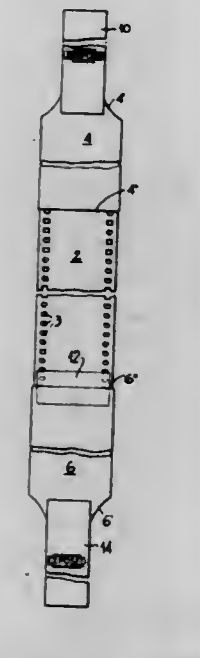


$$-A-\underset{R''}{\overset{R''}{N^{\oplus}}}-B-$$

wherein A and B are alkylene groups and R″ is hydrogen or an alkyl group, with the proviso that when R is the positively charged portion of an inner salt, X is SO_3 , said layer having incorporated therein a silver precipitating agent.

3,647,465
PHOTOGRAPHIC FILM ROLL
Menashe Shamay, 130 Hanassi Ave., Haifa, Israel
Filed Aug. 22, 1969, Ser. No. 852,218
Int. Cl. G03c *3/02*

U.S. Cl. 96—78 **8 Claims**



A photographic film roll including a filmstrip wound on a film spool comprises two masking strips of an opaque plastic material one covering the beginning end of the filmstrip and the other covering the completed end. The outer end of the one masking strip and the inner end of the other masking strip are each attached to the nonemulsion side of the filmstrip. Each masking strip is wound with, and overlies the nonemulsion side of, its respective end of the filmstrip for at least several windings of the filmstrip when wound on the spool. The masking strips are slightly wider than the filmstrip so as to project slightly beyond its edges while covering the sprocket holes, and are made of thin, flexible plastic material such that the camera feeding sprockets passing through the sprocket holes of the filmstrip will emboss the masking strips but will not puncture them.

3,647,466
PHOTOGRAPHIC MATERIAL FOR THE SILVER DYESTUFF BLEACHING PROCESS
Heinrich Bruengger, Basel, and Carlo Boragine, Fribourg, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland
Filed Aug. 21, 1969, Ser. No. 852,083
Claims priority, application Switzerland, May 26, 1968, 12772/68
Int. Cl. G03c *1/10*

U.S. Cl. 96—99 **11 Claims**

Photographic material for the silver dyestuff bleaching process is provided wherein at least one silver halide emulsion layer, containing a bleachable azo dyestuff as the image dyestuff also contains a benzselenazole-benzelenazole or benselenazole-benzthiazole carbocyanine as red-sensitizer. This photographic material is characterized by an unexpectedly high relative sensitivity, especially in the presence of polyazo dyestuffs.

3,647,467
HEXAARYLBIIMIDAZOLE-HETEROCYCLIC COMPOUND COMPOSITIONS
Eugene L. Grubb, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed May 22, 1969, Ser. No. 827,072
Int. Cl. G03c *1/72, 1/68*

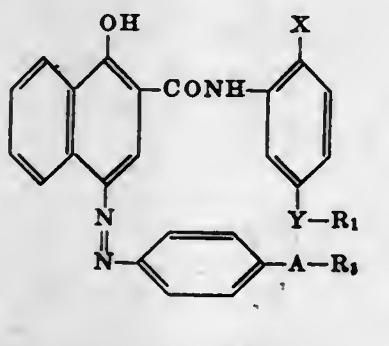
U.S. Cl. 96—90 **35 Claims**

Photoactivatable compositions comprising a hexaarylbiimidazole and a heterocyclic compound of the formula Ar^1-—G—Ar^2 where Ar^1 is aryl of six to 12 nuclear carbons, Ar^2 is Ar^1 or arylene—G—Ar^1 and G is a divalent furan, oxazole or oxadiazole ring, and optionally, a leuco dye and/or a polymerizable monomer or inert components such as binders, solvents, and the like. The compositions are photoactivated in the near ultraviolet or visible light wavelengths.

3,647,468
PHOTOGRAPHIC SILVER HALIDE ELEMENTS HAVING MAGENTA-COLORED COUPLER DYES
Alberto Guzzi; Remo Magagnoli, both of Ferrania, and Lorenzo Vittore, Pietra Ligure, all of Italy, assignors to Societa per Azioni Ferrania, Milan, Italy
Filed May 14, 1968, Ser. No. 728,887
Claims priority, application Italy, May 15, 1967, 800,361
Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **12 Claims**

Photographic elements are shown which contain coupler dyes of the general formula:



—

wherein X is an alkyl group or a halogen group, Y is a —C-O— divalent radical or an $-SO_2-$ divalent radical, R_1 is an alkyl group having one to 18 carbon atoms, A is an $-NR_2SO_2-$divalent radical in which R_2 is an alkyl group having one to 18 carbon atoms, and R_3 is an aryl group.

3,647,469
BISAMINOALKYL DISULFIDES AS SENSITIZERS AND STABILIZERS FOR SILVER HALIDE EMULSIONS
Harald Huckstadt, Cologne; Wilhelm Saleck, Schildgen-Berg-**Gladbach; August Randolph, and Franz Moll, both of Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany**
Filed Dec. 19, 1969, Ser. No. 886,747
Claims priority, application Germany, Dec. 23, 1968, P 18 16 571.4
Int. Cl. G03c *1/28, 1/34*

U.S. Cl. 96—107 **3 Claims**

The present invention relates to a process for increasing the sensitivity of photographic silver halide emulsions together with reduced fogging by the addition of bis-aminoalkyl disulfides.

3,647,470
PHOTOSENSITIVE COMPOSITIONS CONTAINING FURYLACRYLYL-CONTAINING POLYMER
Minoru Tsuda, Kanagawa-ken, Japan, assignor to Agency of Industrial Science and Technology, Tokyo, Japan
Continuation-in-part of application Ser. No. 554,341, June, 1966, now abandoned. This application Oct. 21, 1969, Ser. No. 868,201
Claims priority, application Japan, June 9, 1965, 40/33784
Int. Cl. G03c *1/68*

U.S. Cl. 96—115 **6 Claims**

The present invention provides photosensitive compositions of high sensitivity comprising a photosensitive furylacrylyl-containing polymer having a polymerization degree of 500 or more wherein the furylacrylyl group is the photosensitive component of said polymer and wherein said furylacrylyl-containing polymer has been produced by the aqueous alkaline process. The photosensitive compositions are preferably mixtures of a photosensitive polymer and a sensitizer and/or other polymers.

3,647,471
PHOTOGRAPHIC REPRODUCTION OF HALFTONE SCREENS
Edward R. Thompson, North Hollywood, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Nov. 19, 1969, Ser. No. 878,087
Int. Cl. G03f *5/00*

U.S. Cl. 96—116 **2 Claims**

The method of making, and article of manufacture therefor, of a photographic master wherein an unexposed sheet of orthochromatic film is secured to a rotatable drum, moving the drum longitudinally during rotation, and permitting a narrow light source to be exposed to the film resulting in a sheet of film having a series of extremely close parallel lines, and developing the film. The method of making, and article of manufacture therefor, of a halftone screen wherein an unexposed sheet of orthochromatic film is placed adjacent a photographic master, exposing the master onto the film, removing and replacing the master so that the lines of the master are at 90° to the first position, exposing again the film, and developing the film. The method of making and article of manufacture therefor of a halftone screen wherein an unexposed sheet of orthochromatic plate is placed adjacent a photographic master, exposing the master onto the plate, developing the plate, repeating the procedure to a second plate, placing the two exposed plates adjacent with the lines at 90°.

3,647,472
BEVERAGE MIX
Steven R. Speech, St. Paul; Joseph W. Opie, Minneapolis, and John A. Bridge, Eden Prairie, all of Minn., assignors to General Mills, Inc.
Continuation-in-part of application Ser. No. 732,026, May 27, 1968, now abandoned. This application May 8, 1970, Ser. No. 35,908
Int. Cl. C12f *1/00;* **C12g** *3/04*

U.S. Cl. 99—34 **9 Claims**

A nonalcoholic cocktail mix containing ingredients in such proportions that the mix can be stored under subfreezing conditions, in a frozen slush form. A chilled beverage, such as a cocktail, is prepared by combining and stirring a packet containing a predetermined amount of the frozen slush with a prescribed amount of at least one other ingredient, such as an alcoholic distillate.

3,647,473
MALTING GRAIN
Keith Christopher Stowell, Newark, and Peter Michael Howlett, Newark-on-Trent, both of England, assignors to A.B.M. (Malting) Limited, Newark-on-Trent, England
Filed July 15, 1968, Ser. No. 745,038
Claims priority, application Great Britain, July 21, 1967, 33,680/67
Int. Cl. C12c *1/00*

U.S. Cl. 99—52 **20 Claims**

A process and apparatus for dehusking cereal grain by a dry mechanical method at a temperature not above about 105° F., and wherein the moisture content of the grain is above about 8 percent by weight in order to damage the grain so that substantial rootlet growth is prevented without substantially damaging the aleurone layer. The dehusked grain is subsequently malted and there are advantages compared with conventional malting of husked grain.

3,647,474
SNACK FOOD PRODUCT AND PROCESS
Charles Dame, Jr., Wheaton, Ill.; William S. Stinson, Jr., New City, N.Y., and Anthony C. Capossela, North Tarrytown, N.Y., assignors to General Foods Corporation, White Plains, N.Y.
Filed Oct. 30, 1969, Ser. No. 872,758
Int. Cl. A23l *1/10*

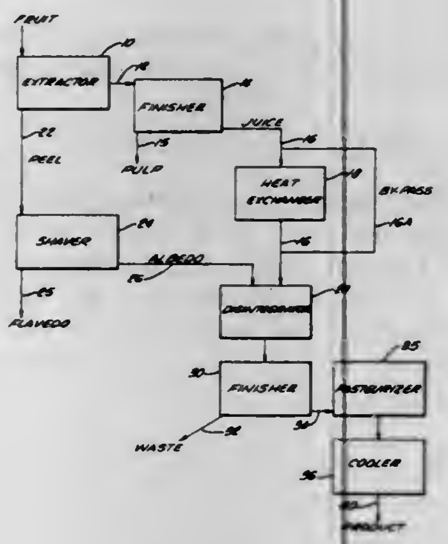
U.S. Cl. 99—83 **9 Claims**

A snack food product comprises popped popcorn in a dough matrix containing tapioca flour, corn flour and potato starch and is deep fat fried. The snack food product contains sucrose and an alkali metal bicarbonate which serve to improve the stability of the deep fat fried snack food product as well as to enhance the flavor thereof. The process for preparing the snack food is also described.

3,647,475
CLOUD FORTIFIED CITRUS FRUIT JUICES
Peter L. Douglas, Glendora, Calif., assignor to Brown International Corporation, Whittier, Calif.
Continuation of application Ser. No. 496,970, Oct. 18, 1965, now abandoned. This application Aug. 6, 1969, Ser. No. 850,326
Int. Cl. A23l *1/02*

U.S. Cl. 99—105 **13 Claims**

A cloud fortified citrus fruit juice product is prepared by incorporating into an extracted citrus fruit juice a quantity of finely divided albedo, or inner white layer of the rind or peel



of the citrus fruit, from which the outer flavedo layer containing the oil has been removed.

3,647,476

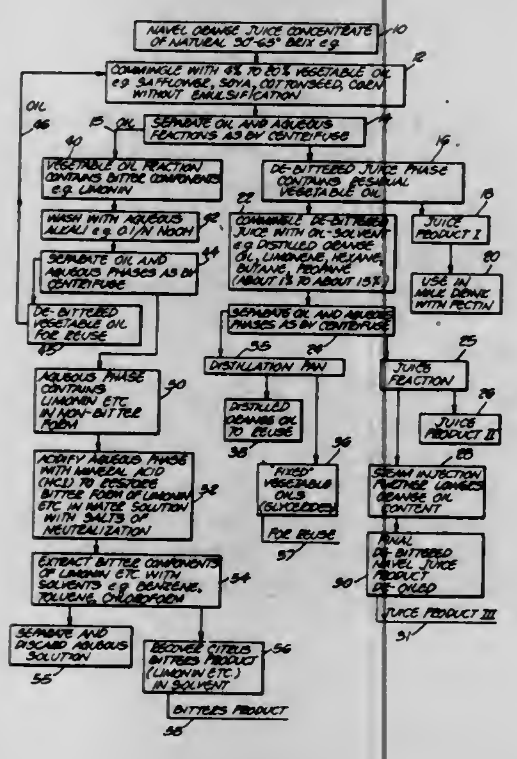
LIMONIN FREE NAVAL ORANGE JUICE AND DRINK OF MILK EMBODYING SUCH ORANGE JUICE

Horton E. Swisher, Upland, Calif., assignor to Sunkist Growers, Inc., Los Angeles, Calif.

Filed Nov. 24, 1969, Ser. No. 879,432

Int. Cl. A23l *1/02*

U.S. Cl. 99—105 **14 Claims**


NAVEL ORANGE JUICE CONCENTRATE OF NATURAL 30°-65° BRIX e.g.
10
COMMINGLE WITH 4% TO 80% VEGETABLE OIL e.g. SAFFLOWER, SOYA, COTTONSEED, CORN WITHOUT EMULSIFICATION
12
OIL
46
15
OIL
SEPARATE OIL AND AQUEOUS FRACTIONS AS BY CENTRIFUGE
14
40
VEGETABLE OIL FRACTION CONTAINS BITTER COMPONENTS e.g. LIMONIN
16
DE-BITTERED JUICE PHASE CONTAINS RESIDUAL VEGETABLE OIL
22
18
WASH WITH AQUEOUS ALKALI e.g. 0.1/N NaOH
42
COMMINGLE DE-BITTERED JUICE WITH OIL-SOLVENT e.g. DISTILLED ORANGE OIL, LIMONENE, HEXANE, BUTANE, PROPANE (ABOUT 1% TO ABOUT 15%)
JUICE PRODUCT I
20
SEPARATE OIL AND AQUEOUS PHASES AS BY CENTRIFUGE
44
USE IN MILK DRINK WITH PECTIN
DE-BITTERED VEGETABLE OIL FOR REUSE
45
SEPARATE OIL AND AQUEOUS PHASES AS BY CENTRIFUGE
35
24
25
DISTILLATION PAN
JUICE FRACTION
AQUEOUS PHASE CONTAINS LIMONIN ETC IN NON-BITTER FORM
30
26
DISTILLED ORANGE OIL TO REUSE
JUICE PRODUCT II
38
36
28
ACIDIFY AQUEOUS PHASE WITH MINERAL ACID (HCL) TO RESTORE BITTER FORM OF LIMONIN ETC IN WATER SOLUTION WITH SALTS OF NEUTRALIZATION
32
"FIXED" VEGETABLE OILS (GLYCERIDES)
STEAM INJECTION FURTHER LOWERS ORANGE OIL CONTENT
FOR REUSE
37
FINAL DE-BITTERED NAVEL JUICE PRODUCT DE-OILED
EXTRACT BITTER COMPONENTS OF LIMONIN ETC. WITH SOLVENTS e.g. BENZENE, TOLUENE, CHLOROFORM
34
30
JUICE PRODUCT III
31
SEPARATE AND DISCARD AQUEOUS SOLUTION
RECOVER CITRUS BITTERS PRODUCT (LIMONIN ETC.) IN SOLVENT
56
55
BITTERS PRODUCT
58

This invention involves debittered navel orange juice and a method of debittering such juice, as well as a juice and cow's milk drink in which such debittered juice is employed, a preferably high-ester level pectin being employed in the drink to avoid large curd formation from the milk by the acid of the juice. Recovery of the bitter principle extracted from the juice is also an element.

3,647,477

SURFACTANT COMPOSITION FOR FROZEN CONFECTIONS

James W. Du Ross, Claymont, and Gabriel P. Lensack, Wilmington, both of Del., assignors to Atlas Chemical Industries, Inc., Wilmington, Del.

Continuation-in-part of application Ser. No. 807,988, Mar. 17, 1969, now abandoned. This application Feb. 10, 1970, Ser. No. 10,267

Int. Cl. A23g *5/00*

U.S. Cl. 99—136 **12 Claims**

Ethylene oxide adducts of partial esters of sorbitan and mixed saturated and unsaturated long chain fatty acid and of mixed partial esters of sorbitan and saturated long chain fatty acid and of sorbitan and unsaturated long chain fatty acid are provided as surfactant materials useful, for example, in the preparation of frozen confections.

3,647,478

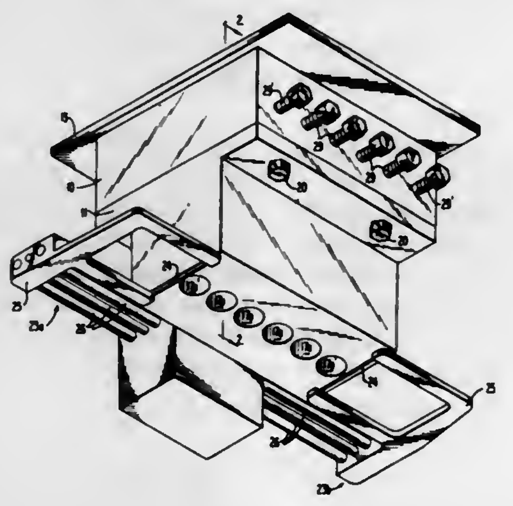
METHOD FOR EXTRUSION OF ICE CREAM

Ronald E. Minor, and Sidney B. McMillion, both of Richmond, Va., assignors to Eskimo Pie Corporation, Richmond, Va.

Original application Nov. 13, 1968, Ser. No. 775,340, now Patent No. 3,572,259. Divided and this application June 16, 1970, Ser. No. 57,844

Int. Cl. A21d *8/00;* **A23p** *1/00*

U.S. Cl. 99—137 **4 Claims**



Method for manufacturing in quantity, pellets of ice cream and other frozen dessert confections of uniform size by continuously extruding lengths of the dessert in the form of a congealable mass from a plurality of orifices in a single extruder head and periodically severing the extruded lengths to form the individual pellets, each orifice being provided with means for adjusting the rate of flow of the congealable mass from the orifice.

3,647,479

METHOD OF FLAVORING FOOD BY ADDITION OF BENZOXEPIN-3-ONES AND BENZODIOXEPIN-3-ONES

John J. Beereboom, Old Lyme; Donald P. Cameron, and Charles R. Stephens, both of New London, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Original application Aug. 15, 1966, Ser. No. 572,206. Divided and this application Oct. 28, 1969, Ser. No. 2,058

Int. Cl. A23l *1/22*

U.S. Cl. 99—140 R **4 Claims**

Benzoxepin-3-ones and Benzodioxepin-3-ones, prepared by a novel synthesis, are useful as flavor and odorant agents for foods and perfumes respectively to impart a watermelon-like taste and odor.

3,647,480

PROCESS FOR PREPARING CONDIMENT-CONTAINING FATTY PARTICULATES

Robert E. Cermak, Chicago, Ill., assignor to SCM Corporation, Cleveland, Ohio

Filed Feb. 6, 1969, Ser. No. 797,236

Int. Cl. A23l *1/26*

U.S. Cl. 99—140 R **7 Claims**

An improvement in a process for preparing a condiment-containing fatty particulate comprises contacting condiment in a zone with preformed fatty matrix particles. The temperature during the contacting operation is sufficiently low and the contact is conducted for a time sufficient for making discrete composite particles of the matrix particles and the condiment without substantial uncontrolled agglomeration of either the matrix or resulting composite particles. The exterior of the fatty matrix particle during the contacting operation, usually a physically blending, advantageously is softened or slightly plasticized. The fatty matrix particle can act to substantially enrobe or to sorb the condiment. The resulting discrete particles can be substantially simultaneously formed or post-formed into agglomerates of predetermined size or size range by uniting a plurality of the discrete composite particles. Both the discrete composite particles and their agglomerates are useful in the production of foodstuffs such as cakes, doughnuts, rolls, bread, coffee cake, frosting mixes, whipped toppings, and the like.

3,647,481

METHOD OF MAKING ALIPHATIC DI- AND TRISULFIDE FLAVORING MATERIALS

Michael H. Brodnitz, Matawan, and John V. Pascale, Old Bridge, both of N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Filed June 13, 1969, Ser. No. 833,158

Int. Cl. A23l *1/26*

U.S. Cl. 99—140 R **10 Claims**

Processes for the production of alliaceous flavoring compositions comprising reacting specified mixtures of Bunte salts (S-alkyl and/or S-alkylene thiosulfates) wherein the alkyl and alkylene groups contain up to three carbon atoms, with an alkali metal sulfide at temperatures of 0° to 100° C. to obtain a mixture of dialkyl, dialkylene, or alkyl alkylene di- and trisulfides having an alliaceous flavor impression.

3,647,482

REDUCTION AND MODIFICATION OF THE UNPLEASANT AFTERTASTE OF SACCHARIN

Mao Hsun Yueh, Minneapolis, Minn., assignor to General Mills, Inc.

Continuation-in-part of application Ser. No. 539,669, Apr. 4, 1966, now abandoned. This application Mar. 4, 1970, Ser. No. 16,602

Int. Cl. A23l *1/26*

U.S. Cl. 99—141 A **4 Claims**

The unpleasant aftertaste of saccharin-containing compositions is reduced by incorporating with the saccharin a flavor modifier selected from the group consisting of ribonucleosides, ribonucleotides and their deoxy analogs. The saccharin and flavor modifier mixture is heat-treated such as by boiling the mixture in water.

3,647,483

CYCLAMATE-FREE CALORIE-FREE SWEETENER

Marvin E. Eisenstadt, Belle Harbor, N.Y., assignor to Cumberland Packing Corporation, Brooklyn, N.Y.

Continuation-in-part of application Ser. No. 869,383, Oct. 24, 1969, now abandoned. This application Mar. 30, 1970, Ser. No. 23,987

Int. Cl. A23l *1/26*

U.S. Cl. 99—141 A **4 Claims**

This invention relates to noncaloric saccharine artificial sweetening compositions, and more particularly to sweetening compositions which are free of cyclamate, contain only saccharine as the artificial sweetener, but which contain additives which do not add calories but nevertheless eliminate the undesired bitter aftertaste of the saccharine. The additives which are used according to this invention, and which must be used in combination because the only sweetening agent is saccharine, are glucono delta lactone, sodium gluconate and/or potassium gluconate and cream of tartar powder (potassium bitartrate).

3,647,484

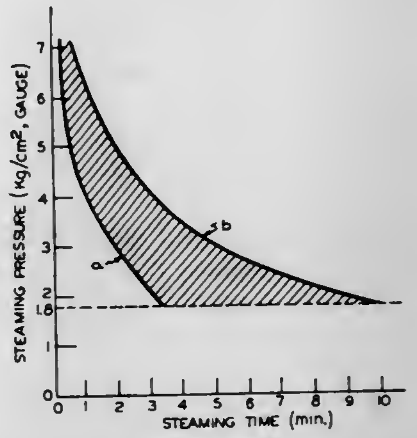
METHOD OF PREPARING SOY

Tamotsu Yokotsuka, Higashikatsushika-gun; Tatsuo Aonuma, Kashiwa-shi; Koya Mogi; Danji Fukushima; Atsushi Yasuda; Hiroharu Watanabe; Naoshi Tsukada, and Akira Arai, all of Noda-shi, Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda-shi, Japan

Filed Feb. 27, 1969, Ser. No. 802,969

Int. Cl. A23l *1/20, 1/22*

U.S. Cl. 99—145 **5 Claims**



A method of preparing soy which is featured in that soybeans obtained by steaming soybeans of a moisture content of 30–70 percent by weight with saturated steam of a gauge pressure not less than 1.8 kg./cm.² for a short period of time not exceeding 10 minutes, followed by rapid cooling to a temperature not exceeding 100° C. are used as the starting material for the preparation of soy. And the method can provide a soy of superior flavor and of high quality wherein the possibility of the formation of clouds and precipitates when diluted and heated in its use does not occur, and can be carried out industrially advantageously with improved yield and good reproducibility.

3,647,485

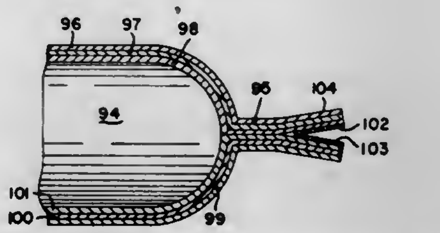
PACKAGE AND METHOD OF MAKING SAME

Oscar E. Seiferth; Robert L. Goller; Paul E. Grindrod, all of Madison, and Harry L. Radloff, Sun Prairie, all of Wis., assignors to Oscar Mayer & Co., Inc., Chicago, Ill.

Filed Aug. 21, 1968, Ser. No. 754,361

Int. Cl. B65b *25/06*

U.S. Cl. 99—174 **17 Claims**



A hermetically sealed package and method of making the same which package includes a breakaway or peelable seal formed between an ethylene-polar monomer copolymer film or coating material, such as, ethylene-vinyl acetate, and a thermoplastic film, such as, polyvinylidene chloride. Preferably, during seal formation, the seal interface is heated to a temperature between the melt temperatures of the film materials which make up the seal to provide improved sealing without destroying the breakaway property or peelability of the seal so formed.

3,647,486
METHOD OF PREPARING CANNED COOKED RICE

Charles I. Tollefson, and Claude W. Blee, both of Rochester, N.Y., assignors to The R. T. French Company, Rochester, N.Y.

Filed Apr. 3, 1968, Ser. No. 718,333
Int. Cl. A23b *7/00*

U.S. Cl. 99—186 **2 Claims**

Raw rice is cooked in acidified water at a temperature above the gelatinization point of starch but below the boiling point of water for a sufficient period to achieve a moisture content between 58 and 65 percent. The cooked rice is then canned and the cans sealed and sterilized. Then the cans are cooled and the product is allowed to remain in the cans ("aged") for several days before consumption.

3,647,487
TWO-STEP METHOD FOR PRODUCING STERILIZED GROUND SPICES

Louis Sair, Evergreen Park, Ill., assignor to The Griffith Laboratories, Inc., Chicago, Ill.

Filed Aug. 5, 1968, Ser. No. 749,997
Int. Cl. A23l *3/34*

U.S. Cl. 99—225 **6 Claims**

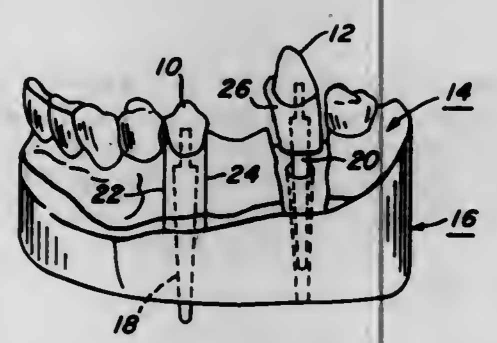
Spices are effectively sterilized without the formation of untoward quantities of ethylene chlorohydrin by subjecting whole, unground spices to an atmosphere of ethylene oxide, which is effective to substantially kill the bacteria on the surface of the spices, grinding the thus treated spices, and finally subjecting the ground spices to an atmosphere of propylene oxide which is effective to substantially kill the remaining bacteria or any bacteria picked up during the grinding step.

3,647,488
DENTAL PROSTHESIS MODEL BASE COMPOSITION CONTAINING CALCIUM FLUORIDE

Kristin Brigham, New York, and Ronald C. Vickery, Northport, both of N.Y., assignors to Ceramco, Inc., Long Island City, N.Y.

Filed Nov. 4, 1969, Ser. No. 873,790
Int. Cl. A61k *5/00;* **C04b** *35/04, 35/66*

U.S. Cl. 106—35 **4 Claims**



A composition and method for preparing model bases in the manufacture of dental prostheses, in which the model base is made of a castable-refractory composition that is stable at high temperatures and is compatible with commercially available dental porcelains and gold alloys, as well as with the implaced dies and dowels. The catable-refractory composition of the invention is made by a dry blend consisting essentially of 40–50 weight percent of a refractory oxide, 6–8 percent by weight of an alkali phosphate, and 42–47 percent by weight of an alkaline-earth fluoride, and then mixing that dry blend with a colloidal silica sol of 40 weight percent content, using a ratio of 4 to 5 parts of blend to 1 part of sol.

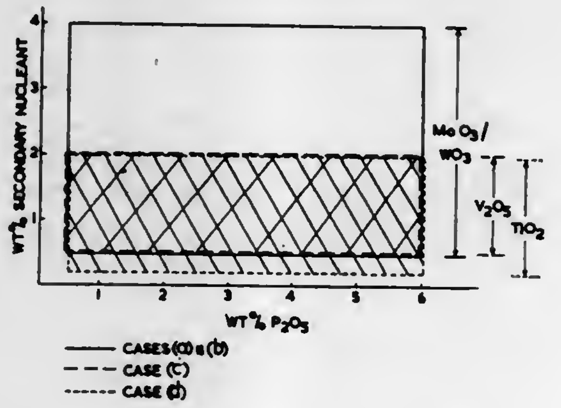
3,647,489
GLASS CERAMICS

Peter William McMillan, and Graham Partridge, both of Stafford, England, assignors to The English Electric Company, Limited, London, England

Continuation of application Ser. No. 636,267, May 5, 1967, now abandoned , Continuation-in-part of application Ser. No. 552,422, May 24, 1966, now abandoned , Continuation-in-part of application Ser. No. 283,371, May 27, 1963, now abandoned , Continuation-in-part of application Ser. No. 201,718, June 11, 1962, now abandoned. This application Aug. 13, 1969, Ser. No. 849,794. The portion of the term of this patent subsequent to Nov. 14, 1984, has been disclaimed. Claims priority, application Great Britain, June 20, 1961, 22,232/61

Int. Cl. C04b *33/00;* **C03b** *29/00*

U.S. Cl. 106—39 DV **8 Claims**



A high-alumina glass-ceramic product with a substantial proportion microcrystalline is formed from a glass by thermal treatment, the main crystal phase being beta-spodumene or beta-eucryptite, and the product having a thermal coefficient of expansion of less than 40×10⁻⁷/°C. At least 90 percent of the composition comprises major constituents and nucleating agents as follows, in percentages by weight:

Major constituents:	
SiO_2	55–75
Al_2O_3	15–30
Li_2O	2–15
MgO	0–20

Nucleating agents: P_2O_5, 0.5–6.0 percent, together with one of the following metallic oxides:

(a) MoO_3	0.5–4.0
(b) WO_3	0.5–4.0
(c) V_2O_5	0.5–2.0
(d) TiO_2	0.2–less than 2.

The thermal coefficient of expansion is less than 40×10^{-7}. An alternative nucleating agent is cadmium sulpho-selenide.

3,647,490
OPALIZABLE BOROSILICATE GLASS COMPOSITIONS

Perry P. Pirooz, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Continuation of application Ser. No. 653,404, July 14, 1967, now abandoned. This application May 15, 1970, Ser. No. 37,540
Int. Cl. C03c *3/04*

U.S. Cl. 106—54 **5 Claims**

A system of thermally opalizable glass compositions, suitable for use in making opal glass containers and low-expansion, heat-resistant ovenware consisting essentially of SiO_2, Al_2O_3, B_2O_3, CaO, MgO and Na_2O in specified critical amounts. The thermally opalizable glass compositions that

can be used to form glass containers at low cost by conventional high-speed glass-forming techniques have the following ingredients in approximate percentages by weight:

Ingredients	Percent
SiO_2	66–69
Al_2O_3	6
B_2O_3	4– 8
CaO + MgO	13–18
Na_2O	5

in which the weight percent ratio of CaO:MgO is about 1.4. Preferably, an article is formed of the above glass composition, and heat-treated to provide an in situ glass-in-glass phase separation by maintaining the article at a temperature in the neighborhood of 1,050° to 1,500° F. for about 1/4 to 8 hours.

3,647,491
SINTERED BOROSILICATE GLASS

Wilhelm Baum, Mainz-Mombach, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 23, 1969, Ser. No. 887,576
Claims priority, application Germany, Dec. 24, 1968, P 18 16 855.3
Int. Cl. C04c *3/04*

U.S. Cl. 106—54 **2 Claims**

Sintered glass consists essentially of 60% to 62% by weight of SiO_2, 22% to 25% by weight of B_2O_3, 8% to 10% by weight of Na_2O, 3.5% to 5% by weight of Al_2O_3 and at least one of the following: 0% to 1.5% by weight of K_2O, 0% to 2.5% by weight of CaO, 0% to 1% by weight of MgO, 0% to 3% by weight of BaO, 0% to 1% by weight of Li_2O and 0% to 2% by weight of ZnO.

3,647,492
METHOD OF MAKING COLORED PIGMENTS HAVING PEARLESCENT QUALITIES

Douglas W. Chapman; Richard Dean Overley; Robert D. Rands, Jr., and Ronald S. Schreiber, all of 3600 North Second St., St. Louis, Mo.

Continuation-in-part of application Ser. No. 15,887, Mar. 2, 1970. This application Nov. 20, 1970, Ser. No. 91,585
Int. Cl. C08h *17/04;* **C09c** *1/00*

U.S. Cl. 106—291 **11 Claims**

Pearlescent substrate may be modified with finely divided insoluble pigments by dispersing an adhesive binder substance in an aqueous suspension of the said substrate and pigment, effecting precipitation of the said binder, and recovering from the reaction mixture a modified, e.g., colored, product which substantially retains the pearlescent luster of the substrate. The product comprises the said substrate to which particles of the finely divided pigment are intimately bound by means of the binder. For example, the substrate may be a pearlescent bismuth oxychloride. The binder material may be selected from fatty acids or insoluble salts of fatty acids, silicic acid or insoluble salts of silicic acid, insoluble salts of alginic acid or suitable water-dispersible polymeric adhesives. Simple mixtures of the base with the pigment but without the binder of the present invention generally fail to exhibit the pearlescent qualities of the unpigmented substrate.

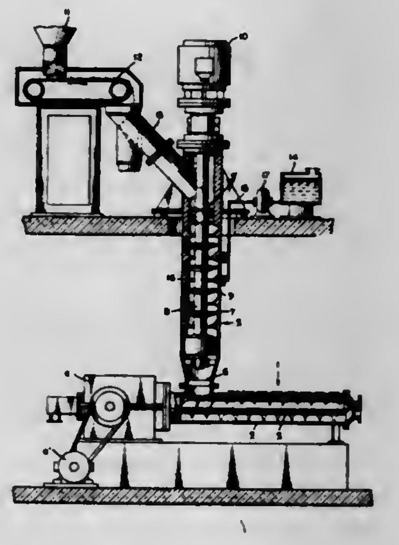
3,647,493
METHOD AND APPARATUS FOR CONTINUOUSLY PRODUCING SOLUTIONS AND SUSPENSIONS

Walter Gresch, Muttenz; Horst Pilch, Pratteln, and Erwin Ruttener, Riben, all of Switzerland, assignors to Buss AG, Basel, Switzerland

Continuation-in-part of application Ser. No. 600,538, Dec. 9, 1966. This application Nov. 12, 1969, Ser. No. 875,962
Claims priority, application Switzerland, Dec. 20, 1965, 17696/65
Int. Cl. C08b *27/48*

U.S. Cl. 106—187 **3 Claims**

A novel method and apparatus for continuously producing chemical solutions and suspensions is disclosed. The novel invention serves to effect a continuous dissolving process of a chemical solute in a solvent and does so in a fashion which prevents the formation of agglomerates and jellylike skin on the particles and serves to dissolve or suspend such materials without introducing high sheer force into the product. In a preferred embodiment, the novel invention contemplates to effect a high-speed whirling or fluffing of the particles and, at the same time, to impart a positive downward movement thereto. The solvent is then sprayed into the whirling mass at different stepwise spaced locations along the direction of downward movement of the particles, which particles or mass, now full wetted, are then continuously agitated at a relatively low speed providing mild agitation and kneading and a dwell time sufficient for the time required for the dissolving or suspension reactions to complete.



3,647,494
PROCESS FOR MAKING SOLID SOLUTIONS OF QUINACRIDONE AND DERIVATIVES THEREOF

Felix Frederick Ehrich, Westfield, N.J., and William J. Marshall, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 515,229, Dec. 20, 1965, now abandoned. This application Aug. 27, 1969, Ser. No. 853,530
Int. Cl. C08h *17/02*

U.S. Cl. 106—288 Q **6 Claims**

A solid solution of a quinacridone and the quinacridonequinone corresponding thereto is made by a process including the step of digesting, in the temperature range of 50° C. to the boil, an aqueous, acidic dispersion of the quinacridone in comminuted condition in the presence of an amount of a chromate oxidizing agent stoichiometrically sufficient to oxidize a desired proportion of the quinacridone to quinacridonequinone.

3,647,495
TITANIUM DIOXIDE PIGMENT HAVING IMPROVED DISPERSIBILITY IN COATING COMPOSITIONS

Charles W. Cline, Somerville, N.J., assignor to N L Industries, Inc., New York, N.Y.

Filed Jan. 29, 1970, Ser. No. 6,949
Int. Cl. C09c *1/36*

U.S. Cl. 106—300 **6 Claims**

A highly dispersible titanium dioxide pigment which may or may not be coated with a hydrous oxide such as alumina, titania or silica and mixtures thereof contains a coating of from 0.35 to 1.50 percent 2,2,4-trimethyl-1,3-pentanediol on pigment weight basis.

3,647,496
PIGMENT COMPOSITIONS

Satish Kumar Bagai, and Arthur Topham, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 6, 1970, Ser. No. 26,167
Claims priority, application Great Britain, Apr. 9, 1969, 18,215/69
Int. Cl. C08h *17/14*
U.S. Cl. 106—309 **10 Claims**

Phthalocyanines, halogenomethylphthalocyanines and aliphatic primary or secondary amines are milled together in presence of solid grinding acids which are soluble in, and subsequently removed by, aqueous media. Reaction of the amines and halogenomethylphthalocyanines takes place and pigment compositions are obtained which are readily dispersible in organic solvents and which are of value in inks and paints.

3,647,497
MASKING METHOD IN METALLIC DIFFUSION COATING

David J. Levine, and Bruce E. Sherrill, Jr., both of Cincinnati, Ohio, assignors to General Electric Company

Filed Nov. 29, 1968, Ser. No. 780,176
Int. Cl. C23c *11/08;* **B44d** *1/52*
U.S. Cl. 117—5.5 **3 Claims**

A metallic article surface, not intended to be coated during a metallic diffusion coating method employing a halide vapor to carry coating elements, is protected with a masking material including a compound which has an energy of formation less than the energy of formation of a halide of a metallic element of the compound. Examples of the compound are the oxides of Ca, Mg and Ba.

3,647,498
PROCESS FOR PRODUCTION OF DENTAL CROWNS

Emery W. Dougherty, Milford, Del., assignor to Dentsply International Inc., York, Pa.

Filed Mar. 27, 1970, Ser. No. 23,483
Int. Cl. A61c *5/08;* **B44c** *1/22;* **B44d** *1/36*
U.S. Cl. 117—8 **7 Claims**

A dental composition in the form of a thickened paste comprising: A. a solid phase consisting essentially of polymers and copolymers of esters of methacrylic acid with average particle diameters of 10–200 microns and a glass transition temperature of approximately 75° C. or less, and B. a polymerizable liquid phase consisting essentially of 1. from 70 to 90 percent by weight of a polyglycol dimethacrylate or diacrylate and 2. 10 to 30 percent by weight of bisphenol A dimethyacrylate. Such a thickened dental composition based upon acrylic resins can be used for dental crowns and inlays, particularly as produced by the coating of noble metal crown with subsequent heating to set the coating and shaping to match that of a natural tooth. The presence of a minor amount of bisphenol A dimethacrylate provides the composition with the ability to provide porosity free. strong. hard and stiff moldings with reduced plasticization by water.

3,647,499
PROCESS FOR TRANSFERRING DRY DEVELOPED ELECTROGRAPHIC IMAGES

Ralph C. Colt, and Kenneth F. Sell, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 19, 1969, Ser. No. 851,440
Int. Cl. G03g *13/16*
U.S. Cl. 117—17.5 **12 Claims**

A process of transferring dry developed electrographic images is described which results in the transfer of substantially all of the toner powder from an image-bearing element to a receiver sheet. This process involves moistening the receiver prior to placing it in contact with the dry element bearing a developed image. This process is useful in forming lithographic printing plates.

3,647,500
OIL-FREE SLIDER BEARING MATERIAL AND METHOD OF MAKING THE MATERIAL

Koichi Mizuno, Tokyo, Japan, assignor to Taiho Kogyo Co., Ltd., Toyota, Japan, a part interest

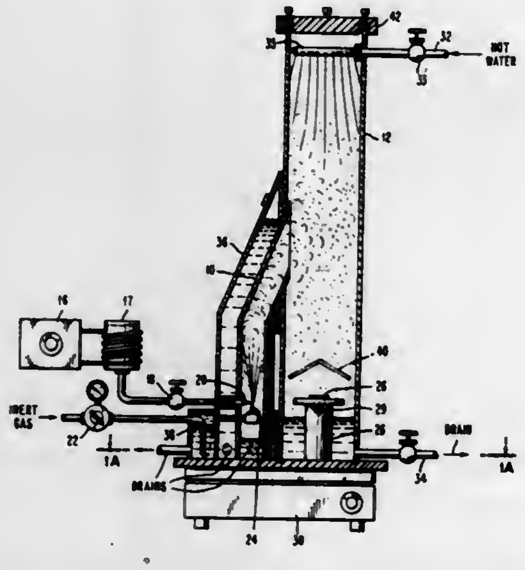
Filed Sept. 8, 1969, Ser. No. 856,003
Claims priority, application Japan, Apr. 24, 1969, 44/31260
Int. Cl. B44d *1/094, 1/14*
U.S. Cl. 117—21 **8 Claims**

An oil-free bearing material formed on a substrate metal surface, which consists of a porous resin layer integrally sintered with the metal surface, and wherein the said resin consists essentially of one member selected from the group consisting of polycarbonate, polysulfone, and polyphenylene oxide. The resin layer additionally contains up to 30 weight percent of at least one porosity-improving auxiliary ingredient selected from the group consisting of particles of polytetrafluoroethylene, glass and graphite. The porous resin layer additionally includes mineral wax impregnated therein. A method of making the bearing material comprising the steps of wetting desired portions of the metal surface with a solution of the resin dissolved in a solvent thereof, scattering powder particles of the resin onto said portions of the metal surface thus wet, and sintering the metal surface with the resin powder particles to form a porous resin layer integrally sintered directly on the metal surface.

3,647,501
METHOD FOR PRODUCING PHOTOGRAPHIC EMULSION COATINGS

Robert L. Buckingham, Hawthorne, and Harold H. Herd, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,688
Int. Cl. B44d *1/08;* **G03c** *1/74;* **B05b** *1/28*
U.S. Cl. 117—34 **5 Claims**

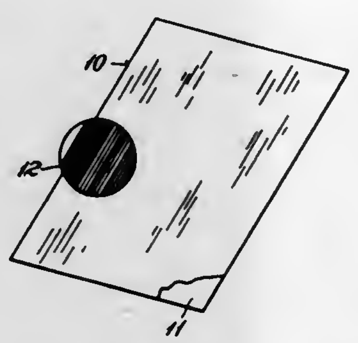


A surface of an object is coated with a uniform thickness of a photographic emulsion. In the coating method, there is utilized an apparatus which comprises a smaller substantially enclosed chamber which communicates at its upper end with a vertical open larger chamber. Jet streams of liquid emulsion droplets and an inert gas are introduced into the smaller chamber. By elutriation, larger droplets fall to the bottom of the smaller chamber and droplets sufficiently small in accordance with Stokes law pass into the larger chamber. Here, those droplets which are small enough according to Stokes law for the larger chamber rise to leave the larger chamber from its open end and droplets having a size large enough to descend according to Stokes law settle on the surface of an object positioned within and at the base of the larger chamber to form the emulsion coating on the surface.

3,647,502
PRESSURE-SENSITIVE TRANSFER ELEMENTS

Douglas A. Newman, Glen Cove, N.Y., assignor to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Continuation-in-part of application Ser. No. 639,374, May 18, 1967, now abandoned. This application Nov. 3, 1969, Ser. No. 873,391
Int. Cl. B41m *5/10*
U.S. Cl. 117—36.1 **2 Claims**



Pressure-sensitive transfer elements for the pressure placement of automatically sensible images comprising a multiplicity of evenly visually spaced vertical columns of sensible composition capable of generating a multiplicity of voltage signals characteristic of each image being sensed, and the method of sensing such images.

3,647,503
MULTICOLORED HEAT-TRANSFER SHEET AND PROCESSES FOR HEAT TRANSFER OF MULTICOLORED INK IMPRESSIONS

Takashi Mizutani; Masao Anzai, and Akio Ebihara, all of Tokyo, Japan, assignors to Toppan Printing Company, Limited, Tokyo, Japan

Filed Aug. 8, 1969, Ser. No. 848,703
Claims priority, application Japan, Dec. 18, 1968, 43/84387; Apr. 9, 1969, 44/27397; 44/27398
Int. Cl. B41c *1/06;* **B44d** *1/14*
U.S. Cl. 117—36.4 **12 Claims**

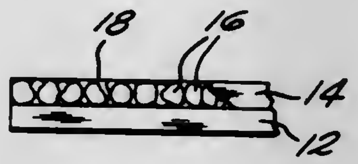
Processes for the transfer of multicolored ink impressions by the application of heat and the multicolored heat-transfer sheets which enable these processes to be carried out. A sheet is printed on with a plurality of layers having ink impressions, each layer comprising one of a number of color agents which are respectively distributed in a dry solid resinous binder. The color agents are selected for their sublimation characteristics and said binder includes a quantity of a filler to cause each of said printed layers of inks to be porous to be able to pass the vaporized color agents. The layers are printed in successive order such that the binders have progressively different porosities and/or the color agents possess progressively different sublimation characteristics.

3,647,504
PRESSURE SENSITIVE LAMINATE

Edward J. Hayes, Jr., and Brian Hayes, both of 1801 Arlington Blvd., Ann Arbor, Mich.

Filed Aug. 19, 1969, Ser. No. 851,335
Int. Cl. B41m *5/00*
U.S. Cl. 117—36.7 **1 Claim**

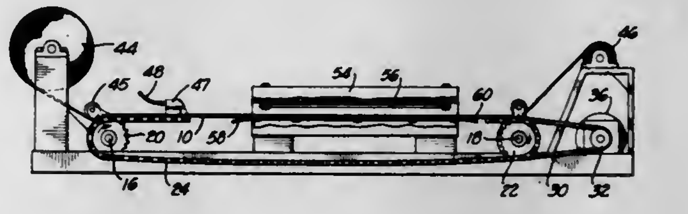
A pressure sensitive laminate comprising a backing sheet and a coating consisting of a profusion of capsules, each capsule containing a material, such as a liquid material, capable of marking a certain color. The capsules are constructed so that they will rupture in response to the application of a predetermined compressive pressure and when ruptured will release the marking material therein. All of the capsules containing a marking material of the same color will rupture at the same pressure, and capsules containing marking material of different colors will rupture at different pressure, thereby enabling marking of a part which is used to apply pressure to the laminate to indicate areas of varying pressure on the part.



3,647,505
METHOD OF FORMING FRICTION PROTRUSIONS ON ELASTIC, OPEN-MESH GARMENT FABRIC

Knut L. Bjorn-Larsen, 128 South Hacienda Ave., Glendora, Calif.

Continuation of application Ser. No. 830,193, May 19, 1969, now abandoned, which is a continuation of application Ser. No. 494,822, Oct. 11, 1965, now abandoned. This application Aug. 10, 1970, Ser. No. 62,604
Int. Cl. B05c *8/04, 11/14*
U.S. Cl. 117—37 R **15 Claims**



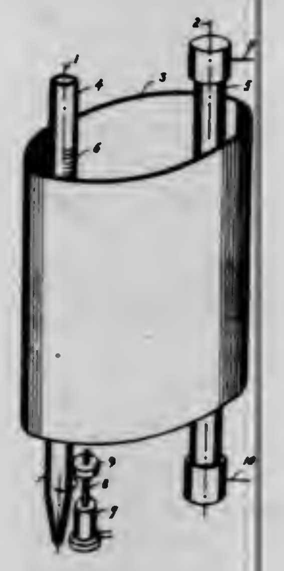
A method of applying a resinous material to an elastic, open-mesh fabric in spaced globs or in a narrow band and subsequently passing the fabric to an area maintained at an elevated temperature so as to set the resinous material and thus form friction protrusions on the open-mesh fabric.

3,647,506
METHOD OF AND APPARATUS FOR BURNING GRADUATIONS SYMBOLS AND LETTERING INTO GLASS ARTICLES

Erich Greil, Wertheim, Germany, assignor to Forschungsgemeinschaft fur technisches Glas e.V., Wertheim, Germany

Filed July 12, 1968, Ser. No. 744,466
Claims priority, application Germany, July 14, 1967, P 15 96 803.3
Int. Cl. C03c *17/22, 17/26*
U.S. Cl. 117—37 R **7 Claims**

The invention provides a method of and apparatus for burning graduations, symbols and lettering into glass articles by using a glass substrate and a marking enamel or stain which have different absorptions for light and radiant heat in such a way that firing by radiation heating between 400×10^{-9} m. and $2{,}500\times10^{-9}$ m. raises the temperature of the colored areas on the glass above that of the glass substrate itself by about 150° C.



3,647,507

RESIN COMPOSITION CONTAINING A POLYACRYLIC ACID-POLYACRYLAMIDE COPOLYMER AND METHOD OF USING THE SAME TO CONTROL RESIN COMPOSITION

Charles Ray Ashcraft, Salt Lake City, Utah, assignor to Johnson & Johnson

Filed Jan. 7, 1970, Ser. No. 1,299
Int. Cl. B44d *1/092, 1/52*

U.S. Cl. 117—38 **13 Claims**

A new resin composition comprising an emulsion polymerized resin, a surfactant, and a polyacrylic acid-polyacrylamide copolymer; and a method of controlling the deposition of such resin composition on porous, absorbent materials by giving it a pH of from about 7 to about 9, or greater, at which it is stable, and then depositing it on the porous, absorbent sheet materials which have a pH of below 7 and which possess sufficient acidity as to bring the pH of the resin composition deposited thereon to below 7, at which it is unstable, whereupon it immediately coagulates and immediately precipitates on the porous, absorbent sheet materials with a minimum of lateral spread or migration thereon.

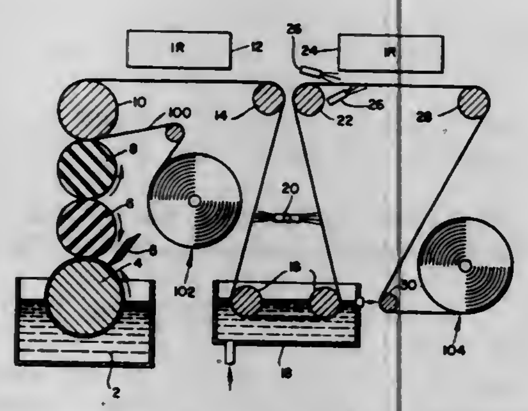
3,647,508

METHOD OF MAKING PATTERNED METAL COATINGS BY SELECTIVE ETCHING OF METAL

John H. Gorrell, Billerica, Mass., assignor to King-Seeley Thermos Co., Ann Arbor, Mich.

Filed Aug. 27, 1968, Ser. No. 755,627
Int. Cl. B44c *1/22*

U.S. Cl. 117—38 **8 Claims**



Web substrates (such as plastic film) are coated with metal (as by vacuum aluminizing) and etched in selected areas of the metal coating. The etching medium comprises an etchant, a body-forming member to trap the etchant, a volatile carrier and a dispersing member which holds the etchant and body-forming member in intimate mixture.

3,647,509

METHOD OF PRODUCING PORCELAIN ENAMEL COATINGS

John E. Keiser, Findlay, and Earl Krieger, Rawson, both of Ohio, assignors to Whirlpool Corporation

Filed May 8, 1970, Ser. No. 35,610
Int. Cl. C23d *5/00;* **B44d** *1/14*

U.S. Cl. 117—45 **9 Claims**

A method of applying porcelain enamel to a ferrous enameling sheet stock which permits the use of an electrostatic spray in the method and which further permits eliminating the commonly required application of a ground coat of enamel and the subsequent firing. In this new method the stock is electrostatically sprayed with a flowable enamel material such as a liquid suspended frit to a thickness of a fraction only of the desired final thickness followed by drying this fractional coating slightly until it attains a self-sustaining setup condition which is nonflowing under the conditions to which it is subjected followed by hand spraying over this preliminary coating with a further coating of the enamel material to the desired final thickness and then firing the coatings to flow the enamels to a smooth glassy surface condition. This method is particularly applicable to applying two colors of porcelain enamel to ferrous stock in which one color blends smoothly into the other.

3,647,510

POLYSULFONES COATED WITH ORGANOPOLYSILOXANES

Donald W. Gagnon, Sylvania, and James J. Tillman, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed June 9, 1969, Ser. No. 831,752
Int. Cl. B44d *1/092, 5/04*

U.S. Cl. 117—46 FC **10 Claims**

Process, and the article produced thereby, for providing a hard, acetone-resistant and mar-resistant coating on articles having a polysulfone surface by applying to the surface a solvent-soluble, further curable organopolysiloxane in an organic solvent and thereafter evaporating the solvent and finally curing the organopolysiloxane. The solvent-soluble, further curable organopolysiloxane is made by heating methyltrialkoxysilane or a mixture of methyltrialkoxysilane and phenyltrialkoxysilane and water in the presence of a hydrolysis catalyst at a sufficient temperature and for a suitable time to form a partial condensation product, concentrating this product by heating it to remove some alkanol byproduct and water and thereafter heating the product below the gel point thereof to provide the solvent soluble, further curable organopolysiloxane.

3,647,511

METHOD OF PREPARING CURVED PYROLYTIC GRAPHITE BODIES HAVING INCREASED THICKNESS TO RADIUS RATIOS

Thomas J. Clark, Birmingham, and Howard W. Brown, St. Clair Shores, both of Mich., assignors to General Electric Company

Continuation of application Ser. No. 520,213, Jan. 12, 1966, now abandoned. This application Mar. 20, 1969, Ser. No. 834,183
Int. Cl. C23c *11/08*

U.S. Cl. 117—46 CG **5 Claims**

Curved pyrolytic graphite bodies of increased thickness-to-radius ratios are produced by codepositing with the pyrolytic graphite a refractory element in progressively decreasing quantities from the outer to the inner surface of the body. The addition of the refractory alloy metal has been found to lower the stress levels and hence permit greater thicknesses of the pyrolytic graphite body.

3,647,512

PRETREATMENT OF MOLDED POLYOLEFINS FOR ELECTROLESS PLATING

John J. Grunwald, New Haven, and Eugene D. D'Ottavio, Thomaston, both of Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

Original application Mar. 28, 1968, Ser. No. 717,006, now Patent No. 3,567,649. Divided and this application July 2, 1970, Ser. No. 52,090
Int. Cl. B44d *1/092, 1/02*

U.S. Cl. 117—47 A **6 Claims**

The invention discloses compositions for and methods of treating the surface of molded polyolefins, more especially polypropylene, polyethylene and polybutylene, prior to the deposition of a metallic plate thereon in order to improve the adherence of the plate to the surface of the polyolefin substrate. The compositions comprise stable, aqueous microemulsions of the oil-in-water-type containing as the principal active agents a mixture of white phosphorus and trichloroethylene.

3,647,513

METHOD FOR IMPROVING THE ADHESION OF POLYESTER COMPOSITIONS

William E. Jackson, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 689,759, Dec. 12, 1967, now abandoned. This application Oct. 26, 1970, Ser. No. 84,219
Int. Cl. B44d *1/092*

U.S. Cl. 117—47 A **8 Claims**

This invention relates to a method of improving the adhesion of a polyester composition to itself or to metals. This is achieved by treating the surface of the polyester composition with a treating agent preferably in a solvent to enhance the bond strength between isocyanate-type adhesives and the surface of the polyester composition. The treating agent is a tertiary amine of the aliphatic, cycloaliphatic and aromatic-type.

3,647,514

SURFACE-PRETREATMENT OF ARTICLES MADE FROM POLYETHYLENE OR POLYPROPYLENE OR CORRESPONDING COPOLYMERS FOR CHEMICAL NICKEL-PLATING

Michael Ahlgrim, Bliesheim; Joachim Kandler, Lechenich; Hans-Joachim Lenz, Lorsbach Taunus; Gerhard Mietens, Efferen near Cologne, and Willy Ott, Lorsbach Taunus, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Aug. 12, 1969, Ser. No. 849,517
Claims priority, application Germany, Aug. 28, 1968, P 17 94 029.3
Int. Cl. C23c *3/02*

U.S. Cl. 117—47 A **8 Claims**

Pretreatment of surfaces of articles made from polyethylene or polypropylene or corresponding copolymers for chemical nickel-plating. The surface of the article is treated using a pickling solution of concentrated sulfuric acid or a combination of said acid with concentrated phosphoric acid, sensitized using an aqueous $SnCl_2$ solution, and activated using an aqueous solution containing one or more noble metal salts. The pickling step is carried out at a temperature of between about 75° and 95° C., using a pickling solution containing one or more noble metal salts in a concentration between about 0.1 and 0.5 gram per liter.

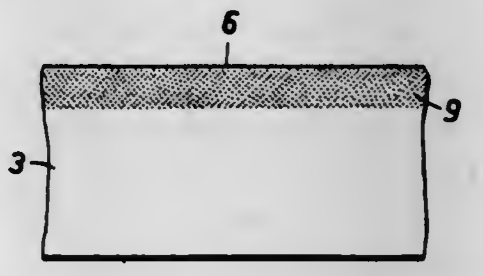
3,647,515

PROCESS FOR TREATING WINDSHIELDS OF ORGANIC GLASS AND, RESPECTIVELY, THE OUTER LAYERS THEREOF

Hans-Jurgen Wilhelm Hahn, Hamburg, Germany, assignor to Hamburger Flugzeugbau GmbH

Filed Sept. 30, 1968, Ser. No. 763,818
Claims priority, application Germany, Sept. 29, 1967, P 16 94 393.4
Int. Cl. B44d *1/18, 5/12*

U.S. Cl. 117—62 **6 Claims**



An airplane windshield in the cockpit made of organic glass provided with a reliably effective antistatic coating which can withstand any external influences on a permanent basis and for preventing static charges under adverse weather and flight conditions, having its surfaces treated with bromine vapor, diluted bromine solution and/or other halogens.

3,647,516

AIR-DRIED POLYESTER COATING AND APPLICATION

Kenneth N. Edwards, 1130 Rossmoyne Ave., Glendale, Calif.

Filed Oct. 27, 1969, Ser. No. 869,873
Int. Cl. B44d *1/26;* **C09d** *3/68*

U.S. Cl. 117—64 **9 Claims**

An air-dried polyester coating which is adapted to be applied in successive layers with a very short time interval between applications and which cures to a sandable hardness very rapidly. The polyester is an air-drying resin, and it is cross-linked with bromo- or chlorostyrene monomer.

3,647,517

IMPACT RESISTANT COATINGS FOR COBALT-BASE SUPERALLOYS AND THE LIKE

Thomas Milidantri, Spring Valley, and Harry W. Brill-Edwards, New York, both of N.Y., assignors to Chromalloy American Corporation, Orangeburg, N.Y.

Filed June 22, 1970, Ser. No. 48,515
Int. Cl. C23c *9/02*

U.S. Cl. 117—71 M **16 Claims**

In the production of impact and oxidation resistant metal coatings on superalloy substrates, e.g., cobalt-base superalloys, by pack cementation, such as a nickel aluminide coating, the improvement wherein nickel is first diffusion coated onto the substrate from a pack containing a small but effective amount of sulfur as a metal transfer agent, following which the nickel coated substrate is then coated with another metal, such as aluminum.

3,647,518

CRYSTAL PAPER HAVING METALLIC LUSTER

Hisao Imai, Fuji, Japan, assignor to Goji Paper Mfg. Co., Ltd., Fuji-shi, Shiguoka-ken, Japan

Filed Dec. 3, 1969, Ser. No. 881,863
Claims priority, application Japan, Sept. 12, 1969, 44/72519
Int. Cl. B32b *29/04*

U.S. Cl. 117—71 R **10 Claims**

A crystal paper having a metallic luster which is prepared by uniformly dispersing (A) either (1) crystals of an inorganic metal salt or (2) a crystalline organic compound and (B) metal powder together with (C) a film-formable substance, onto a supporting paper having a smooth surface. Two layers may be applied to the paper with metal flakes being present in one of the layers.

3,647,519
METHOD FOR METALLIZING BERYLLIUM OXIDE AT LOW TEMPERATURES

John M. White, Gainesville, Fla., assignor to Sperry Rand Corporation

Filed Sept. 26, 1969, Ser. No. 861,454

Int. Cl. B44d *1/02;* **C23c** *3/00*

U.S. Cl. 117—71 R **1 Claim**

A method for bonding a metallizing coating to beryllium oxide comprising applying a metallizing paint to the beryllia. The paint, which comprises molybdenum trioxide and a glass frit in an alcohol suspension, is sintered at a temperature in the range from about 1,000° C. to about 1,200° C. A metallizing coating is then bonded to the sintered paint.

3,647,520
ELECTRON BEAM CROSS-LINKING OF COATING COMPOSITIONS CONTAINING ETHYLENE UNSATURATED CARBOXYLIC ACID COPOLYMERS AND A MELAMINE COMPOSITION

Vishnu J. Gor, Blue Island, and Ernesto H. Manuel, Park Forest, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed July 6, 1970, Ser. No. 52,722

Int. Cl. B44d *1/50*

U.S. Cl. 117—93.31 **8 Claims**

A process for coating articles wherein a thin film containing a mixture of a copolymer of ethylene and an ethylenically unsaturated carboxylic acid and a melamine composition is applied to the surface of the article and the film mixture cross-linked to form a hardened coating by irradiation with a beam of high-energy electrons.

3,647,521
HYDRODYNAMIC FORMING

Marshall P. Tulin, Bethesda, Md., assignor to Hydronautics, Incorporated, Laurel, Md.

Original application Feb. 21, 1968, Ser. No. 707,258, now Patent No. 3,592,763. Divided and this application Jan. 8, 1970, Ser. No. 7,307

Int. Cl. B44d *1/09, 1/02*

U.S. Cl. 117—95 **9 Claims**

A hydrodynamic method and apparatus are provided for forming tubular members useful in reverse-osmosis apparatus. A conventional film-forming liquid is forced through a tubular support by a pressurized column of gas to form a film of liquid on the inner wall of the tube. The liquid is then cured to solidify the film of liquid in tubular form. The disclosed hydrodynamic method and apparatus make possible an advantageous reverse-osmosis process and apparatus for recovering water of a low-salt concentration from saline water. Tubular membranes are hydrodynamically formed within a porous tubular support to form a porous structure, and saline water is supplied under pressure to the interior of the resulting structure to recover water having a low-salt concentration outside of the tubular support. When it becomes necessary to replace the tubular membrane, the supply of saline water is discontinued and a solvent is forced axially along the tubular membrane to dissolve it. Subsequently, the tubular membrane is hydrodynamically regenerated and the reverse-osmosis operation can be resumed.

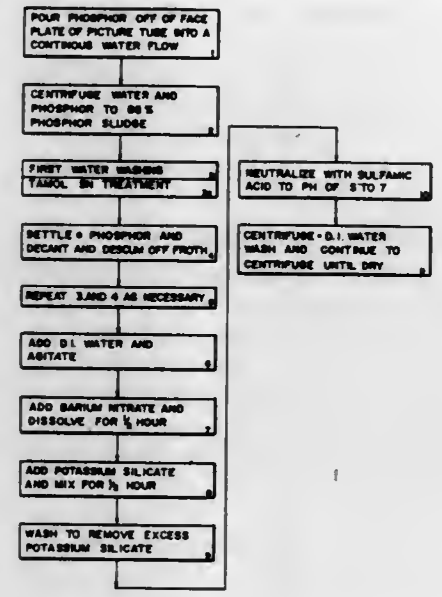
3,647,522
METHOD OF RECLAIMING AND COATING PHOSPHOR

David Single, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Apr. 29, 1970, Ser. No. 33,001

Int. Cl. H01j *1/63;* **C09k** *1/04*

U.S. Cl. 117—100 B **11 Claims**


POUR PHOSPHOR OFF OF FACE PLATE OF PICTURE TUBE INTO A CONTINOUS WATER FLOW
CENTRIFUGE WATER AND PHOSPHOR TO 86 % PHOSPHOR SLUDGE
FIRST WATER WASHING
TAMOL SN TREATMENT
SETTLE PHOSPHOR AND DECANT AND DESCUM OFF FROTH
REPEAT 3 AND 4 AS NECESSARY
ADD D.I. WATER AND AGITATE
ADD BARIUM NITRATE AND DISSOLVE FOR ½ HOUR
ADD POTASSIUM SILICATE AND MIX FOR ½ HOUR
WASH TO REMOVE EXCESS POTASSIUM SILICATE
NEUTRALIZE WITH SULFAMIC ACID TO PH OF 5 TO 7
CENTRIFUGE - D.I. WATER WASH AND CONTINUE TO CENTRIFUGE UNTIL DRY

A method for reclaiming blue and green phosphor after it is used to form part or all of a coating on the faceplate of a color television picture tube so that such phosphor can be reused, and a method for applying a silicate coating to such phosphor particles with improved characteristics by suspending the phosphor particles in a solution of barium nitrate forming an ionic coating about the particles and then adding potassium silicate to the solution which molecularly and adhesively bonds to the surface of the phosphor particles to coat the same.

3,647,523
COATED CHLORINE-GENERATING MATERIALS FOR TREATING FLUIDS

Roland J. Horvath, South Euclid, and Charles G. Parsons, Mentor, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Aug. 28, 1969, Ser. No. 853,967

Int. Cl. C01b *11/06*

U.S. Cl. 117—100 B **8 Claims**

Coatings for chlorine-containing compositions which control the rate of chlorine release from the composition when contacted with fluid medium, minimize the release of noxious chlorine odors to the atmosphere and improve the storage of the composition. The coating is established on the chlorine-containing composition by contacting the composition with a solution of the coating agent and allowing the coating agent to air dry on the composition.

3,647,524
VAPOR PHASE METAL PLATING PROCESS

Robert O. Lindblom, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

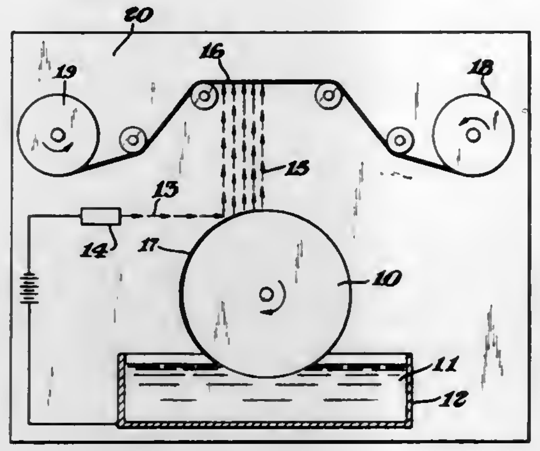
Filed July 18, 1969, Ser. No. 848,136

Int. Cl. C23c *13/00, 13/02*

U.S. Cl. 117—107.1 **1 Claim**

A process for the uniform evaporation of metals is accomplished by rotating a substantially cylindrical refractory element through a source of molten metal to coat the surface of said element with a thin film of molten metal, heating a portion of the molten metal coated surface of the refractory element to a temperature sufficient to vaporize at least a portion of the metal thereon. Condensing the metal vapors thus

produced on a cooler substrate produces a solid metal film thereon. Passing the metal vapors into a cooler space containing an inert gas under low pressure or submicroscopic nucleic particles produces metal powders.



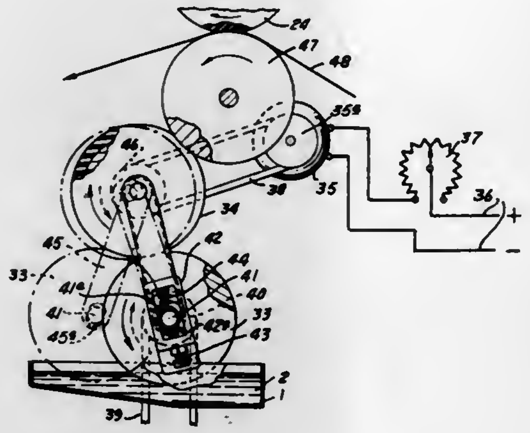
3,647,525
METHOD AND MEANS FOR APPLYING LIQUID TO A MOVING WEB

Harold P. Dahlgren, Dallas, Tex., assignor to Dahlgren Manufacturing Company, Inc., Dallas, Tex.

Continuation-in-part of application Ser. No. 600,650, Dec. 9, 1966, which is a continuation of application Ser. No. 414,574, Nov. 30, 1964, now abandoned , and a continuation-in-part of 26,035, May 2, 1960, now Patent No. 3,168,037, and a continuation-in-part of 844,372, Oct. 5, 1959, now abandoned. This application Apr. 26, 1967, Ser. No. 633,799

Int. Cl. B41l *43/02*

U.S. Cl. 117—111 **46 Claims**



A method and apparatus for applying a controlled quantity of liquid to a moving web of liquid receptive material comprising a smoothly finished hydrophilic transfer roller in rotative pressure engagement with the web. Pressure between a smooth surfaced metering roller and the transfer roller is adjustable to accurately control the thickness of a film of fluid having low viscosity which is delivered by the transfer roller to the web. The relative surface speeds of the transfer roller and the web are adjustable to control the rate at which the metered film is delivered to the web and to control the hydraulic pressure exerted to the film to urge it into the web. A backup roller is employed to further control the hydraulic pressure of fluid transferred to the web. The metering roller and the transfer roller are skewed to regulate the moisture profile across the width of the web.

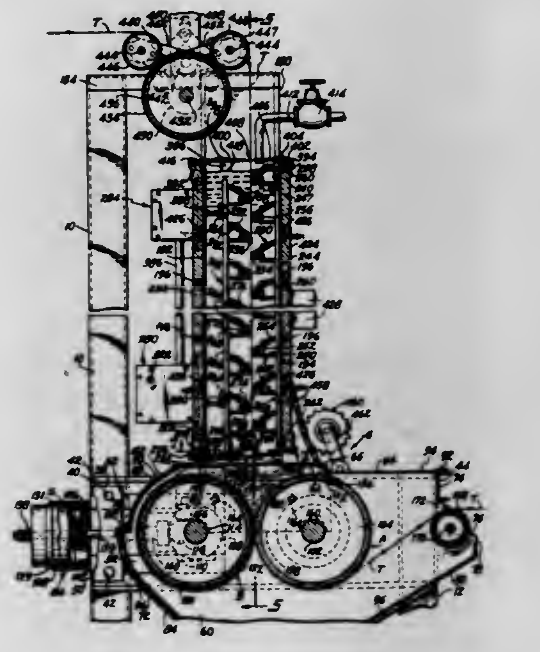
3,647,526
METHOD FOR TREATING TEXTILE MATERIALS

Donald A. Barnes, Route 1, Templeton Road, Mooresville, N.C.

Original application May 13, 1966, Ser. No. 549,894, now Patent No. 3,465,716, dated Sept. 9, 1969. Divided and this application July 17, 1969, Ser. No. 842,640

Int. Cl. B65g *49/04;* **B05c** *3/12*

U.S. Cl. 117—115 **12 Claims**



The method of treating textile material by passing the same under tension through a body of treating liquid in a treating zone while applying rubbing contact to the textile material at staggered points on opposite sides thereof and while subjecting the treating liquid and points of rubbing contact to vibration. A constant head of the treating liquid is maintained in the treating zone by adding treating liquid to the zone at a rate faster than it is being absorbed by the textile material. The excess treating liquid is collected, filtered and returned to the treating zone so that continuous circulation thereof occurs.

3,647,527
PROCESS FOR IMPROVING THE RESISTANCE TO SOILING OF POLY(BETA-LACTONE) FIBERS

John C. Moseley, Manaccan, Shaftsbury Road, Woking, Surrey; Rupert E. Schaffer, 3 Robin Lane, Sandhurst, Camberley, Surrey, and Anthony N. Radziwill, Ridgend, Ridgemead Road, Engelfield Green, Egham, Surrey, all of England

Filed Apr. 27, 1970, Ser. No. 32,352

Claims priority, application Great Britain, May 9, 1969, 23,760/69

Int. Cl. B32b *27/02, 27/36*

U.S. Cl. 117—138.8 A **9 Claims**

A process for improving the resistance to soiling, i.e., reducing the soilability, of polypivalolactone fibers is described which comprises (1) applying to said fibers a polymeric compound comprising polymerized oxyalkylene units and polymerized beta-lactone units and (2) heating the treated fibers to a temperature of at least 140° C.

3,647,528
POLYVINYL ALCOHOL COATING COLORS

David O. Barlow, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 7, 1970, Ser. No. 1,157

Int. Cl. D21h *1/32;* **C08f** *29/26*

U.S. Cl. 117—155 UA **7 Claims**

Polyvinyl alcohol having a 4 percent solution viscosity at 20° C. in the range of 7.5 to 16 centipoises is uniquely adapted to function as the sole pigment binder in paper coating colors and to improve the rheological properties thereof.

3,647,529

REINFORCED STRUCTURAL PLASTICS

Hyman R. Lubowitz, Redondo Beach; William P. Kendrick, Manhattan Beach; John F. Jones, Torrance; Richard S. Thorpe, Costa Mesa, and Eugene A. Burns, Palos Verdes Estates, all of Calif., assignors to TRW Inc.,, Redondo Beach, Calif.

Filed July 10, 1967, Ser. No. 651,972

Int. Cl. C03c *25/00*

U.S. Cl. 117—161 UN **6 Claims**

0000

This invention relates to reinforced polyimide structures. Reinforcing materials are impregnated with a suspension of polyimide prepolymer and bonded together by heat and pressure to form a cured, hard-reinforced, polyimide structure.

3,647,530

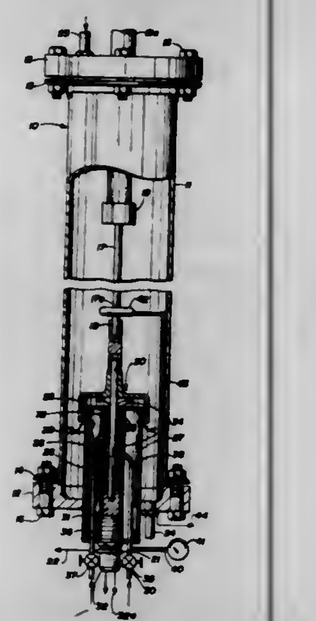
PRODUCTION OF SEMICONDUCTOR MATERIAL

Lawrence D. Dyer, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 13, 1969, Ser. No. 876,243

Int. Cl. H01l *3/12*

U.S. Cl. 117—201 **17 Claims**



When producing semiconductor bodies by a process of depositing semiconductor material from a gaseous mixture on an elongated crystalline semiconductor starting filament held between two laterally fixed supports, lateral stresses in the filaments are removed by allowing substantially friction-free, lateral movement of the filament as it is heated prior to the vapor deposition. This movement is allowed by melting a coupling segment between the filament and at least one of the supports to thereby allow lateral deformation of the coupling segment as any lateral stress of the filament is relieved. When this method is coupled with conventional means of relieving longitudinal stress in the filament, perfection in grown semiconductor bodies is maintained.

3,647,531

METHOD OF APPLYING COATING OF METAL OXIDES UPON SUBSTRATES

Toru Matsushita, Yokohama-shi; Kunimoto Suzuki, Tokyo, and Shoji Hasegawa, Yokohama-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Apr. 8, 1968, Ser. No. 719,702

Claims priority, application Japan, Apr. 11, 1967, 42/22597; Oct. 13, 1967, 42/65390

Int. Cl. C03c *17/22*

U.S. Cl. 117—211 **4 Claims**

A composition consisting of an organic stannous compound wherein organic radicals and divalent tin are bonded together by the aid of oxygen such as a stannous alkoxide $Sn(OR)_2$ or stannous acyl compound $Sn(OOCR)_2$ and an organic material compound wherein organic radicals and titanium or antimony atom are bonded together by the aid of oxygen such as antimonous alkoxide $Sb(OR)_3$, antimonous acyl compound $Sb(OOCR)_2$, titanium (IV) alkoxide $Ti(OR)_4$ or titanium (IV) acyl compound $Ti(OOCR)_4$ is applied upon the surface of a substrate and the applied composition is pyrolyzed to form a coating of electroconductive metal oxide on the substrate.

3,647,532

APPLICATION OF CONDUCTIVE INKS

Arnold I. Friedman, South Euclid, and Ralph L. Bartholomew, Painesville, both of Ohio, assignors to General Electric Company

Filed Feb. 17, 1969, Ser. No. 799,979

Int. Cl. H01b *1/02*

U.S. Cl. 117—212 **7 Claims**

Conducting inks comprising metalic powders such as copper suspended with glass frits in fugitive or temporary organic binders, preferably with reducing compounds, can be used to make printed conductors by firing a refractory substrate coated with the ink in an atmosphere which is essentially neutral except that it contains sufficient oxygen to burn out the temporary binder, but with the oxygen at a low enough partial pressure that it will not cause any substantial oxidation of the metal particles.

3,647,533

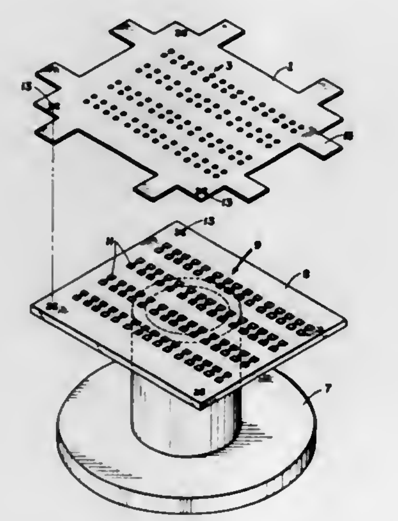
SUBSTRATE BONDING BUMPS FOR LARGE SCALE ARRAYS

Robert E. Hicks, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 8, 1969, Ser. No. 848,448

Int. Cl. B44d *1/52*

U.S. Cl. 117—212 **4 Claims**



A method for producing reliable bonding bumps on large-scale array substrates and hybrid add-on components, the present invention is compatible with a wide variety of microcircuit components. Generally, the method envisions fabrication of bonding bumps by thin-film vacuum deposition through a mechanical mask. In particular, a first metal is deposited on a substrate to a desired thickness whereupon said first metal is then codeposited with a second metal. The bump is completed with the sole deposition of the second metal. A bump thus produced may be further processed to produce a "solder-dipped bump" or may be used in the thin-film state for component mounting.

3,647,534

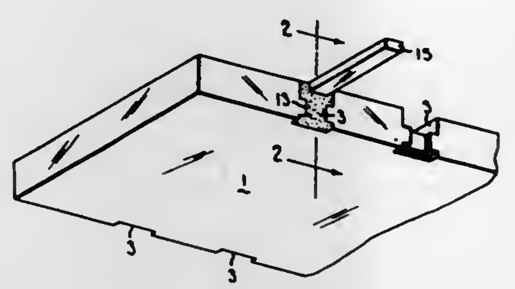
PREPARATION OF WELDING SURFACES ON SEMICONDUCTORS

Stanley B. Rice, Jr., Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Original application Oct. 29, 1965, Ser. No. 505,687, now Patent No. 3,494,790, dated Feb. 10, 1970. Divided and this application Apr. 16, 1969, Ser. No. 851,507

Int. Cl. B44d *1/18*

U.S. Cl. 117—212 **2 Claims**



A method of forming a weldable surface on a ceramic member by: 1. dispersing particles of cuprous oxide which will react with the ceramic onto the ceramic surface; 2. heating the particles under time and temperature conditions which cause the particles to react with the ceramic; and 3. immersing the ceramic in a nickel solution for depositing a layer of nickel on the reacted area.

3,647,535

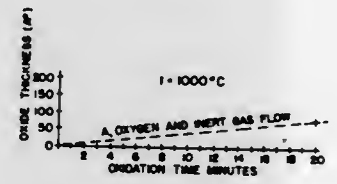
METHOD OF CONTROLLABLY OXIDIZING A SILICON WAFER

Charles T. Naber, Centerville, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Oct. 27, 1969, Ser. No. 869,699

Int. Cl. H01l *7/60*

U.S. Cl. 117—212 **7 Claims**



The present invention relates to a method of growing an optimum-thickness silicon dioxide layer for a nonvolatile metal-silicon nitride-silicon oxide-silicon field effect memory transistor near atmospheric pressure in a controllable manner. A silicon wafer, having source and drain regions therein, is placed within an epitaxial reactor through which an inert gas is then made to flow at a rate of 30 liters/minute. The silicon wafer is heated to 1,000° centigrade, and a 1.2-liter flow of oxygen is introduced into said epitaxial reactor for 15 minutes. The flow of oxygen gas is dispersed throughout the flow of the inert gas. The silicon crystal is slowly oxidized to form a 52.5-angstrom thick silicon dioxide layer thereon. When the selected time of oxidation has passed, the small flow of the oxygen into the epitaxial reactor is stopped. The total oxygen-inert flowing gas pressure in the epitaxial reactor is slightly above atmospheric pressure. A precise regulation of the thickness of a silicon dioxide layer grown on a silicon crystal is achieved by regulating the flow rate of oxygen relative to the flow rate of inert gas and regulating the oxidation temperature. The method of the present invention allows one to produce a 52.5-angstrom thick silicon dioxide layer on a silicon crystal. The 52.5-angstrom thick silicon dioxide layer is then covered with a 1,000-angstrom thick silicon nitride layer by chemical decomposition in the epitaxial reactor. A metal electrode in the silicon nitride layer and metal electrodes on the uncovered source and drain regions complete an MNOS field effect memory transistor which has very good switching characteristics.

3,647,536

OHMIC CONTACTS FOR GALLIUM ARSENIDE

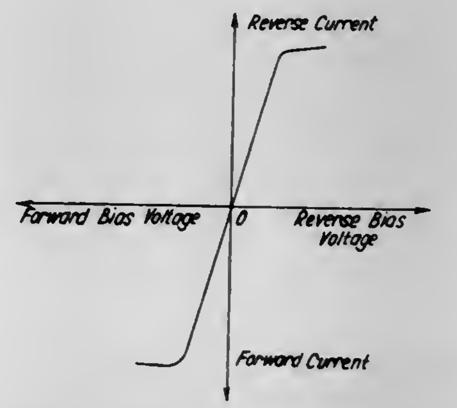
George King; John William Frederick Rayner, both of Harlow, and Anthony Charles Powell, Dunmow, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 5, 1970, Ser. No. 43,871

Claims priority, application Great Britain, Aug. 1, 1969, 38,730/69

Int. Cl. C23b *5/50;* **C23c** *1/04, 13/04*

U.S. Cl. 117—227 **7 Claims**



Improved contact resistance to a gallium arsenide body is obtained by alloying the contact metal into the GaAs body in an arsenic vapor atmosphere.

3,647,537

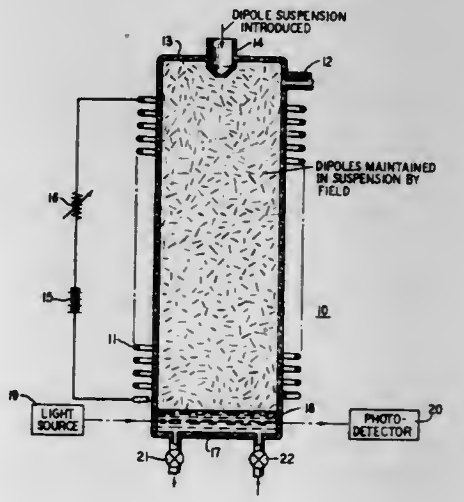
METHOD FOR MAKING ELECTRO-OPTIC DIPOLES

Charles M. Pleass, Reiffton, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 21, 1969, Ser. No. 792,521

Int. Cl. C23c *3/02*

U.S. Cl. 117—227 **2 Claims**


DIPOLE SUSPENSION INTRODUCED
13
14
12
DIPOLES MAINTAINED IN SUSPENSION BY FIELD
16
15
11
10
19
LIGHT SOURCE
18
PHOTO-DETECTOR
20
21
17
22

Electro-optic dipoles are produced by metal coating of presized substrates to the desired resistivity. Substrate materials and processes are described. Coating of substrates is provided with nickel or other metals to finely controlled thicknesses. Uses described include dye pigment and electro-optic shutter.

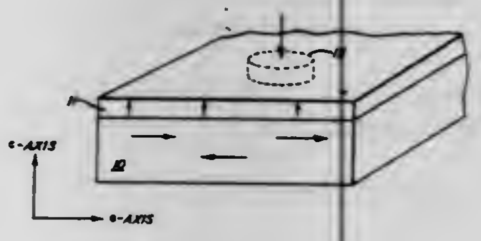
3,647,538
MAGNETIC ELEMENT USING ISOLATED DOMAINS IN RARE EARTH ORTHOFERRITES

Raymond Wolfe, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 5, 1968, Ser. No. 703,162

Int. Cl. H01f *10/02, 10/04*

U.S. Cl. 117—234 **9 Claims**



The disclosure describes a structure useful for isolated magnetic domain devices. The structure is a composite of samarium-rich orthoferrite and samarium-poor orthoferrite one of which is epitaxially deposited on the other. The result is that the epitaxial layer is magnetically isolated from the substrate since in these materials the crystallographic direction of net magnetic moment is 90° apart.

3,647,539
MAGNETIC RECORDING TAPE AND METHOD FOR PREPARING THE SAME

Sheldon Alan Weber, San Mateo, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Feb. 9, 1970, Ser. No. 10,019

Int. Cl. H01f *10/02*

U.S. Cl. 117—235 **6 Claims**

Dispersion of magnetic pigments such as gamma ferric oxide, along with a small amount of finely divided carbon, in a resin binder composition applied as a coating to a backing material for use in magnetic recording media is facilitated by use of a triloweralkyl polypropyleneoxy quaternary ammonium dispersant compound. Said dispersant compounds offer the advantages of improved pigment dispersion in less mixing time than has heretofore been possible and of improved electrical conductance in the final recording product. At the same time, the final product is one having improved adhesion between the coating and the substrate.

3,647,540
MAGNETIC COMPOSITIONS OF PRASEODYMIUM MODIFIED CHROMIUM OXIDE, METHODS OF MANUFACTURE, AND MAGNETIC RECORDING MEDIA CONTAINING SAME

Robert Samuel Haines, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 25, 1970, Ser. No. 40,378

Int. Cl. G11b *5/70;* **C04b** *35/00*

U.S. Cl. 117—235 **7 Claims**

This invention relates to the formation of praseodymium modified ferromagnetic chromium oxide compositions containing 56 to 61 percent chromium combined with oxygen and 1 to 6 percent praseodymium, in the form of uniform finely divided particles. These particles are of tetragonal crystalline structure and have a length-to-width ratio of as much as 20 to 1 and an actual length in the range of about 1 to 7 microns and are utilized in the preparation of magnetic recording media. The process of forming praseodymium modified chromium oxide ferromagnetic compositions consists of mixing a chromium compound with a source of praseodymium, and then subjecting the mixture to heat and pressure.

3,647,541
PROCESS FOR APPLYING A MAGNETIC TRACK DIRECTLY ON AN ANTIHALATION BACKING OF A CINEMATOGRAPHIC FILM

Rene Prevot, Vincennes, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 28, 1970, Ser. No. 41,582

Int. Cl. H01f *10/06*

U.S. Cl. 117—239 **3 Claims**

A magnetic sound track is applied on the antihalation backing layer of a cinematographic film, such as cellulose acetate, by coating the magnetic particles from a solution containing a polymeric binder (such as nitrocellulose) dissolved in a solvent mixture consisting essentially of about 15 to 35 percent of a dioxane (such as 1,4-dioxane or 4-methyl-1,3-dioxane) and 65 to 85 percent of 2-methoxy ethanol, by weight. This track is firmly adhered to the support and is irremovable by alkaline photographic processing solutions which remove the backing layer. Moreover, undesirable curl of the film, and cracking of the magnetic stripe are avoided with this solvent mixture.

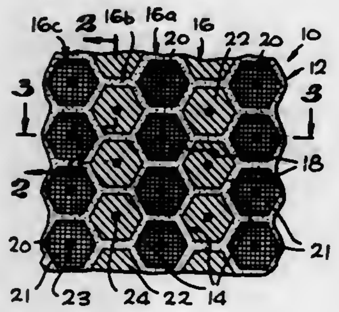
3,647,542
SOLID-FLUID BATTERY

Carl Berger, Santa Ana, Calif., assignor to McDonnell Douglass Corporation, Santa Monica, Calif.

Filed Dec. 19, 1966, Ser. No. 603,019

Int. Cl. H01m *35/04, 3/02, 3/04*

U.S. Cl. 136—6 **14 Claims**



An electrode-separator unit in the form of a nonmetallic honeycomb matrix, e.g., of porous organic or inorganic material, and having first catalyst electrode material, e.g., platinum, and second active battery electrode material, e.g., zinc, separately contained in cells of the honeycomb matrix. A fluid operable battery incorporating the above honeycomb electrode-separator unit.

3,647,543
LOW-MAINTENANCE BATTERIES HAVING ELECTROLYTE RESERVOIR IN VAPOR CONTACT WITH THE CELLS

Royce E. Biddick, Edina, Minn., assignor to Gould Inc., St. Paul, Minn.

Filed Nov. 14, 1969, Ser. No. 876,724

Int. Cl. H01m *11/00*

U.S. Cl. 136—6 **7 Claims**

A low-maintenance lead acid pile battery is disclosed in which a reservoir of water or electrolyte is positioned in vapor contact with the cells. A porous nonconductive member separates the reservoir from the cells but permits vapor diffusion therethrough to replenish water lost due to evaporation and electrolysis. The porous member also permits oxygen transfer from the positive plates to the negative plates of the battery.

3,647,544
BATTERY PLATE HAVING DUAL POROSITY

Friedrich August Schneider, Nuenen, Netherlands, assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 707,312, Feb. 21, 1968, now abandoned , Continuation-in-part of application Ser. No. 809,423, Mar. 21, 1969, now abandoned. This application Nov. 24, 1969, Ser. No. 879,600

Claims priority, application Great Britain, Apr. 5, 1968, 16,585/68

Int. Cl. H01m *43/04*

U.S. Cl. 136—24 **8 Claims**

Directed to the production of battery plates having dual porosity and having a plurality of expanded metal grids electrically connected in parallel with the grids having a porous galvanically active material such as cadmium adhering thereto, the larger pores formed by pockets in the expanded metal communicating with finer pores in the porous metal surrounding the pockets and with a greater proportion of the galvanically active material being placed in the interior of the plate, and to bipolar plates so produced.

3,647,545
BATTERY ELECTRODE GRIDS MADE FROM TIN-LITHIUM-LEAD ALLOY

George W. Mao, St. Paul, Minn., assignor to Gould-National Batteries, Inc., St. Paul, Minn.

Filed June 2, 1969, Ser. No. 829,745

Int. Cl. C22c *11/02;* **H01m** *35/02*

U.S. Cl. 136—26 **6 Claims**

A grid supporting structure made of an alloy consisting of 0.05–0.5 percent tin, 0.02–0.03 percent lithium and balance lead which gives improved service in lead acid battery cells is described.

3,647,546
TUBULAR-TYPE POSITIVE PLATES

Wesley Townsend Cording, Plymouth Meeting, Pa., assignor to ESB Incorporated

Filed May 21, 1970, Ser. No. 39,433

Int. Cl. H01m *35/04*

U.S. Cl. 136—43 **11 Claims**

A tubular-type positive plate for use in lead acid storage batteries is described having tight fitting individual sleeve of a shrinkable material surrounding and closing the end of the tube and the spine. In a first alternate, a plug within the tube provides a backup for the clamping action of the shrinkable sleeve. In a second alternate, a multiopening shrinkable sleeve is provided surrounding several or all the tubes of a single plate.

3,647,547
PROCESS FOR REMOVAL OF NITRATES FROM SINTERED NICKEL PLAQUES IMPREGNATED WITH NICKEL SALTS

Torbjorn Nervik, Selbu, Norway, assignor to ESB Incorporated

Filed Aug. 26, 1970, Ser. No. 67,265

Int. Cl. H01m *35/18*

U.S. Cl. 136—75 **4 Claims**

A process is described for the removal of residual nitrates from battery plaques impregnated with nickel hydroxide by a treatment in basic potassium persulfate.

3,647,548
METHOD AND APPARATUS FOR ELECTRODE CONVERSION

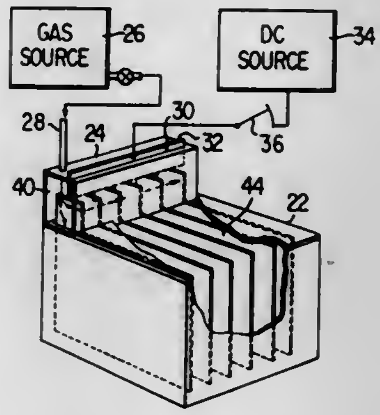
John Lennart Andersson, Ytterby, and Ove Karl-Gustav Nilsson, Nol, both of Sweden, assignors to Aktiebolaget Tudor, Stockholm, Sweden

Filed Mar. 5, 1970, Ser. No. 16,738

Int. Cl. H01m *35/18*

U.S. Cl. 136—82 **9 Claims**

Method and apparatus for passing a current of gas over the electrical contact between a conductor of direct current and the material to be electrochemically converted into an electrode for a lead-acid storage battery, the electrical contact being out of contact with the electrolyte.



3,647,549
SOLID STATE CELL WITH A TELLURIUM TETRAIODIDE CATHODE

Joseph H. Christie, Fort Collins, Colo., and James R. Humphrey, Albany, Oreg., assignors to North American Rockwell Corporation

Filed July 21, 1970, Ser. No. 56,790

Int. Cl. H01m *21/00*

U.S. Cl. 136—83 R **15 Claims**

An electron-acceptor material selected from tellurium tetraiodide and its complexes as a cathode component for a solid state electric cell containing a silver anode and a silver-ion-conducting solid electrolyte. The tellurium tetraiodide compositions utilized as electron-acceptor cathode component consist of tellurium tetraiodide alone or as a complex of tellurium tetraiodide preferably with selected alkali metal iodides or organic ammonium iodides.

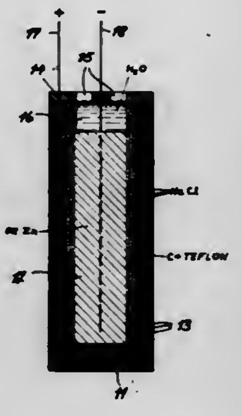
3,647,550
DISPOSABLE ELECTROCHEMICAL CELLS AND METHOD OF OPERATING SAME

Frederick P. Kober, Bayside, and Hiry B. West, New York, N.Y., assignors to Yardney International Corp., New York, N.Y.

Continuation-in-part of application Ser. No. 854,736, Sept. 2, 1969. This application Jan. 28, 1970, Ser. No. 6,461

Int. Cl. H01m *29/02, 29/04*

U.S. Cl. 136—86 A **3 Claims**



An electrochemical cell with an air-depolarizable cathode, a consumable anode of a base metal (e.g. zinc or aluminum) and an interelectrode separator laden with the anhydride of an aqueous electrolyte, such as sodium chloride, is activated by the introduction of a volume of water sufficient for only a fractional discharge of the stored electric energy. Upon prolonged idleness after activation, the depletion of the residual water supply by chemical action and evaporation halts the interaction between the stored electrolyte and the anode material, thereby conserving the remaining energy and inhibiting corrosion.

3,647,551

METHOD OF MAKING A POROUS CARBON MATERIAL

Madison W. Reed, Jr., Forf Worth, and Warren C. Schwemer, Arlington, Tex., assignors to Advanced Technology Center, Inc., Grand Prairie, Tex.

No Drawing. Filed Nov. 7, 1966, Ser. No. 592,306

Int. Cl. H01m *13/04*

U.S. Cl. 136—122 **26 Claims**

A method of making a monolithic carbon material having a metallic activator or the like uniformly distributed throughout the finished material, including the steps of preparing a dry mixture of polyvinylidene chloride and the desired metallic activator (or a precursor therefor), and then pyrolyzing the mixture. The carbon material may be used as a battery electrode, fuel cell electrode, etc., and the metallic activator is selected from the group including tungsten, silver, gold, copper, tantalum, nickel, etc. An optional step in the process involves grinding a mixture of particles of polyvinylidene chloride and a desired metal with pieces of solid carbon dioxide so that the polyvinylidene chloride will be reduced in size and not just deformed during grinding.

3,647,552

DRY CELLS

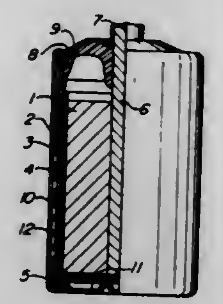
Jun Watanabe, Osaka, Susumu Hosoi, Neyagawa-shi, Masahiro Kuwazaki and Akira Ota, Osaka, and Toshikatsu Takata and Junichi Asaoka, Moriguchi-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 22, 1969, Ser. No. 843,598

Claims priority, application Japan, July 24, 1968, 43/52,889; July 31, 1968, 43/54,749

Int. Cl. H01m *3/02*

U.S. Cl. 136—131 **3 Claims**



A dry cell of excellence in performances, particularly in discharge characteristics, in which a membrane is interposed between a cathode mixture and a negative electrode constituting zinc casing, and more specifically between the cathode mixture and a paste layer, said membrane being of such a character that it blocks the transfer of water and a paste from the paste layer side to the cathode mixture side without being dissolved during storage and in the earlier stages of discharge of the cell, whereas it is dissolved to prevent a sharp increase of the zinc ion concentration in the vicinity of the paste layer in the latter stage of discharge of the cell when the zinc ion concentration in the electrolyte is increased.

3,647,553

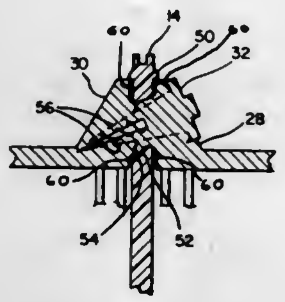
INTERCELL CONNECTION FOR STORAGE BATTERIES

James P. Coffey, Hatboro, Pa., assignor to ESB Incorporated

Filed June 22, 1970, Ser. No. 47,988

Int. Cl. H01m *5/00*

U.S. Cl. 136—134 R **9 Claims**



The internal connection between cell elements of a multi-cell storage battery is effected by forcing and rotating a metallic connector member through a metallic extension of a first cell element, through the intercell partition and into a metallic extension of the second cell element. In so doing, the metal of the insert is thermally fused to the metal of the two metallic extensions.

3,647,554

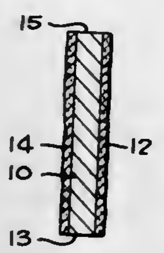
BATTERY SEPARATOR AND METHOD OF PRODUCING SAME

Frank C. Arrance, Costa Mesa, and Albert G. Rosa, Placentia, Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Apr. 17, 1969, Ser. No. 817,085

Int. Cl. H01m *3/02*

U.S. Cl. 136—145 **21 Claims**



Production of an improved separator having extended life, particularly over a large number of deep discharge cycles when employed in a high energy density battery, such as a silver-zinc battery, by overcoating a rigid inorganic separator, with a thin layer of a flexible substantially inorganic separator film, the inorganic material of the rigid separator and of the flexible overcoating being the same, or different, inorganic materials. Thus the inorganic separator material for the rigid separator and flexible overcoating can be a solid solution of magnesium silicate and iron silicate; or the inorganic material of the rigid separator can be the latter inorganic material and the inorganic material of the flexible separator can be zirconia.

3,647,555

WATER ACTIVATED DRY CHARGED STORAGE BATTERY HAVING BUOYANT INTERNAL TEAR STRIP PLASTIC BAG CONTAINING ELECTROLYTE PRODUCING SUBSTANCE

Fred P. Daniel, North Olmstead, Ohio, assignor to ESB Incorporated

Filed Oct. 3, 1969, Ser. No. 863,579

Int. Cl. H01m *11/00*

U.S. Cl. 136—162 **6 Claims**

A dry charged storage battery has an internal plastic bag inside of which is a suubstance which in the presence of water will produce the battery's electrolyte. A tear strip connected to the bag becomes accessible from outside the battery through an opening in the battery's cover after water has been added due to the buoyancy of the bag and/or a float attached to the tear strip.

3,647,556

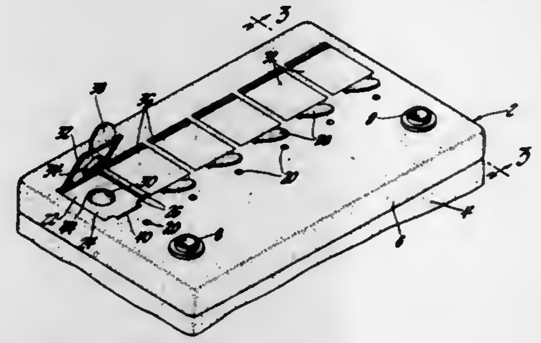
STORAGE BATTERY COVER

John M. Cox, Pendleton, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed June 26, 1970, Ser. No. 50,222

Int. Cl. H01m *1/02*

U.S. Cl. 136—170 **2 Claims**



A one-piece storage battery cover having electrolyte filler openings covered and sealed by integrally formed life-hinged lids having integrally formed plugs which engage the openings in an interference fit. In the closed position, the lids are substantially flush with the top of the battery cover. Tabs for lifting the lids are provided.

3,647,557

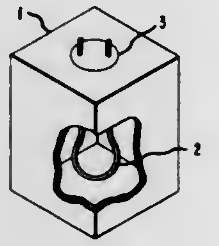
HOLLOW, GAS PERMEABLE FIBER VENTED SEALED GALVANIC CELLS

Matthew Roland Kegelman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 19, 1970, Ser. No. 65,200

Int. Cl. H01m *1/06*

U.S. Cl. 136—177 **8 Claims**



Sealed galvanic cells having high structural strength and minimum volume can be produced that have sufficient gas venting systems by disposing at least one liquid impervious, gas pervious hollow fiber in the galvanic cell such that the interior of the hollow fiber communicates only with the external atmosphere surrounding the cell.

3,647,558

PROTECTED THERMOCOUPLE AND PROTECTION TUBE

Carl H. McMurtry, Lewiston, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed June 26, 1967, Ser. No. 648,821

Int. Cl. H01r *1/04*

U.S. Cl. 136—234 **11 Claims**

A composite protection tube for protecting a temperature measuring means in a molten metal bath comprising an inner refractory tube, a consumable outer metallic casing, and an intermediate layer of a carbon impregnated refractory grain to minimize thermal shock and resist the corrosive attack of molten metals and their associated slag.

3,647,559

MEASURING DEVICE FOR CONTINUOUSLY MEASURING THE TEMPERATURE OF METAL BATHS

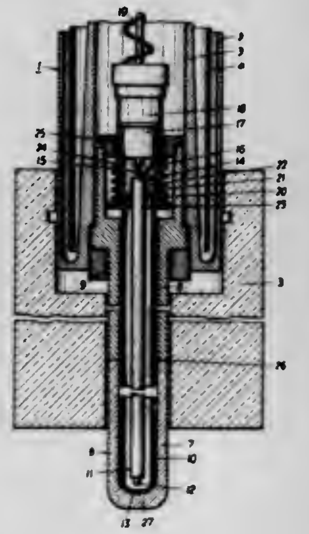
Meinhard Truppe, Matthias Schernthaner, and Günter Poferl, Linz, Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Oct. 12, 1970, Ser. No. 79,825

Claims priority, application Austria, Oct. 16, 1969, 9,728

Int. Cl. G01k *1/12;* **H01v** *1/02*

U.S. Cl. 136—234 **7 Claims**



The invention relates to a measuring device for continuously measuring the temperature of metal baths comprising a thermocouple with a hot junction, a capillary tube enclosing said thermocouple, and a sheath tube enclosing said capillary tube, said thermocouple having its leads connected to a socket of a coaxial plug providing for a connection to the compensating line of said thermocouple, said capillary tube and said socket being joined by a sleeve of electrically insulating material to form an integrally connected unit, wherein the improvement resides in that the device further comprises a gas-tight tube surrounding said capillary tube and extending with its upper end into said sleeve and being connected therewith so that the gas-tight tube is included into the integrally connected, exchangeable unit, the lower end of the gas-tight tube being closed and the hot junction of said thermocouple being arranged at a distance from the bottom of the gas-tight tube. By this invention an excellent heat transfer between the sheath tube and the gas-tight tube is obtained as well as an excellent temperature indication of the thermocouple although its tip does not immediately contact the bottom of the gas-tight tube. The danger that the thermocouple might break owing to shocks or the occurrence of thermal stresses and the penetration of humidity to the thermocouple leads is avoided.

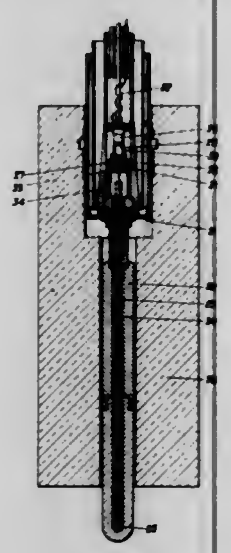
3,647,560
MEASURING LANCE FOR CONTINUOUSLY MEASURING THE TEMPERATURE OF METAL BATHS

Meinhard Truppe, Matthias Schernthaner, and Günter Poferl, Linz, Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed May 12, 1969, Ser. No. 823,858
Claims priority, application Austria, May 15, 1968, 4,656/68, 4,658/68
Int. Cl. G01k *1/12;* **H01v** *1/02*

U.S. Cl. 136—234 **3 Claims**

A measuring lance used for continuously measuring the temperature of metal baths during refining by top-blowing oxygen with the aid of a blowing lance is described. The measuring lance is introduced with its sensing portion into a hot metal bath and is adjusted to a predetermined distance from the axis of said blowing lance, clear of the refractory, and to a predetermined depth below the initial metal bath surface for the duration of the measuring process. In the intervals between measurements continued over a plurality of heats, the sensing portion of the measuring lance is kept hot by introducing it into a warming chamber arranged outside the converter. The measuring lance comprises a sheath tube supporting a thermocouple-containing capillary tube, connection of the thermocouple branches to their compensating line being accomplished by connecting them to a coaxial plug socket joined to be integral with said capillary tube by a sleeve of insulating material.



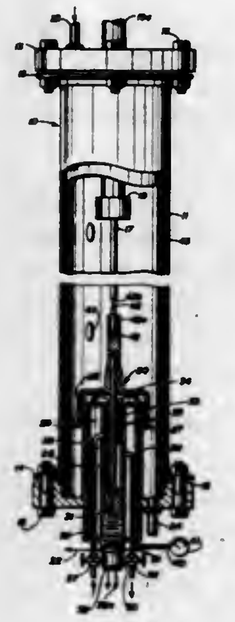
3,647,561
PRODUCTION OF SINGLE CRYSTAL SEMICONDUCTOR MATERIAL

Lawrence D. Dyer, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1969, Ser. No. 889,573
Int. Cl. B01j *17/00*

U.S. Cl. 148—1.6 **6 Claims**

The perfection of single crystal semiconductor material is maintained within a body grown by the vapor phase deposition of the semiconductor material on a heated single crystal seed filament by allowing substantially friction-free lateral and longitudinal movement of the filament as it is heated prior to the vapor deposition, allowing substantially friction-free longitudinal movement of the body as it contracts while cooling after the deposition process, and maintaining the difference in temperature throughout the cross section of the filament and the growing body at a value to prevent substantial densities of dislocations from forming in the crystal structure during the entire process.



3,647,562
METHOD OF THE PREPARATION OF A SOLID INSULATED CONDUCTOR

Roger J. Schoerner, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

No Drawing. Division of application Ser. No. 814,182, Apr. 7, 1969, now Patent No. 3,513,250, which is a continuation-in-part of application Ser. No. 795,055, Jan. 29, 1969, which is a continuation-in-part of application Ser. No. 779,376, Nov. 27, 1968, which in turn is a continuation-in-part of application Ser. No. 730,933, May 21, 1968. This application Apr. 1, 1970, Ser. No. 31,460
Int. Cl. C22f *1/04*

U.S. Cl. 148—2 **9 Claims**

A solid insulated conductor prepared from an aluminum alloy wire having an electrical conductivity of at least sixty-one percent based on the International Annealed Copper Standard and unexpected properties of increased ultimate elongation, bendability and fatigue resistance when compared to conventional EC wire of the same tensile strength. The aluminum alloy wire contains substantially evenly distributed iron aluminate inclusions in a concentration produced by the addition of more than about 0.30 weight percent iron and no more than 0.15 weight percent silicon to an alloy mass containing less than about 99.70 weight percent aluminum and trace quantities of conventional impurities normally found within a commercial aluminum alloy. The substantially evenly distributed iron aluminate inclusions are obtained by continuously casting an alloy consisting essentially of less than about 99.70 weight percent aluminum, more than 0.30 weight percent iron, no more than 0.15 weight percent silicon and trace quantities of typical impurities to form a continuous aluminum alloy bar, hot-working the bar substantially immediately after casting in substantially that condition in which the bar is cast to form continuous rod which is subsequently drawn into wire without intermediate anneals, annealed after the final draw and insulated. After annealing, the wire has the aforementioned novel and unexpected properties of increased ultimate elongation, electrical conductivity of at least sixty-one percent of the International Annealed Copper Standard and increased bendability and fatigue resistance.

3,647,563
METHOD OF THE PREPARATION OF A MULTI-FILAMENT CONDUCTOR

Roger J. Schoerner, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

No Drawing. Division of application Ser. No. 814,198, Apr. 7, 1969, now Patent No. 3,513,251, which is a continuation-in-part of application Ser. No. 779,376, Nov. 27, 1968, which in turn is a continuation-in-part of application Ser. No. 730,933, May 21, 1968. This application Apr. 1, 1970, Ser. No. 31,462
Int. Cl. C22f *1/04*

U.S. Cl. 148—2 **10 Claims**

An insulated multi-filament conductor prepared from aluminum alloy having an electrical conductivity of at least sixty-one percent (61%) based on the International Annealed Copper Standard and unexpected properties of increased ultimate elongation, bendability and fatigue resistance when compared to conventional EC wire of the same tensile strength. The aluminum alloy wires contain substantially evenly distributed iron aluminate inclusions in a concentration produced by the addition of more than about 0.30 weight percent iron to an alloy mass containing less than about 99.70 weight percent aluminum, no more than 0.15 weight percent silicon, and trace quantities of conventional impurities normally found within a commercial aluminum alloy. The substantially evenly distributed iron aluminate inclusions are obtained by continuously casting an alloy consisting essentially of less than about 99.70 weight percent aluminum, more than 0.30 weight percent iron, no more than 0.15 weight percent silicon and trace quantities of typical impurities to form a continuous aluminum alloy bar, hot-working the bar substantially immediately after casting in substantially that condition in which the bar is cast to form continuous rod which is subsequently drawn into wire without intermediate anneals and annealed after the final draw. After annealing, the wire has the aforementioned novel and unexpected properties of increased ultimate elongation, electrical conductivity of at least sixty-one percent (61%) of the International Annealed Copper Standard, and increased bendability and fatigue resistance.

3,647,564
METHOD OF THE PREPARATION OF AN INSULATED TELEPHONE CABLE

Roger J. Schoerner, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

No Drawing. Division of application Ser. No. 814,200, Apr. 7, 1969, now Patent No. 3,515,796, which is a continuation-in-part of application Ser. No. 779,376, Nov. 27, 1968, which in turn is a continuation-in-part of application Ser. No. 730,933, May 21, 1968. This application Apr. 1, 1970, Ser. No. 31,463
Int. Cl. C22f *1/04*

U.S. Cl. 148—2 **11 Claims**

An insulated telephone cable is prepared from individually insulated conductors which are gathered together and insulated as a unit. The individually insulated conductors are prepared from aluminum alloy wires having an acceptable electrical conductivity of at least sixty-one percent based on the International Annealed Copper Standard and an increased tensile strength when compared to conventional aluminum alloy wire of the same percent ultimate elongation. In addition, the present wire has an increased percent ultimate elongation when compared to conventional wire of the same tensile strength. The aluminum alloy wires contain substantially evenly distributed iron aluminate inclusions in a concentration produced by the addition of more than about 0.30 weight percent iron and no more than 0.15 weight percent silicon to an alloy mass containing less than about 99.70 weight percent aluminum and trace quantities of conventional impurities normally found within a commercial aluminum alloy. The substantially evenly distributed iron aluminate inclusions are obtained by continuously casting an alloy consisting essentially of less than about 99.70 weight percent aluminum, more than 0.30 weight percent iron, no more than 0.15 weight percent silicon and trace quantities of typical impurities to form a continuous aluminum alloy bar, hot-working the bar substantially immediately after casting in substantially that condition in which the bar is cast to form continuous rod which is subsequently drawn into wire without intermediate anneals, annealed after the final draw and insulated. After annealing and insulating, the individual wires are brought together and insulated with an outer sheath. The telephone cable generally consists of two or more individually insulated wires brought together in a conventional stranding operation.

3,647,565
METHOD OF THE PREPARATION OF AN INSULATED ALUMINUM ALLOY MAGNET WIRE

Roger J. Schroerner, Carrollton, Ga., assignor to Southwire Company, Carollton, Ga.

No Drawing. Division of application Ser. No. 814,201, Apr. 7, 1969, now Patent No. 3,513,252, which is a continuation-in-part of application Ser. No. 795,038, Jan. 29, 1969, which is a continuation-in-part of application Ser. No. 779,376, Nov. 27, 1968, which in turn is a continuation-in-part of application Ser. No. 730,933, May 12, 1968. This application Apr. 1, 1970, Ser. No. 31,464
Int. Cl. C22f *1/04*

U.S. Cl. 148—2 **10 Claims**

An insulated solid magnet wire, prepared from an aluminum alloy wire having an acceptable electrical conductivity of at least sixty-one percent (61%) based on the International Annealed Copper Standard and a minimum of fifteen percent (15%) ultimate elongation, has improved physical properties of increased tensile strength and fatigue resistance when compared to conventional magnet wire. The aluminum alloy wire contains substantially evenly distributed iron aluminate inclusions in a concentration produced by the addition of more than about 0.30 weight percent iron and no more than 0.15 weight percent silicon to an alloy mass containing less than about 99.70 weight percent aluminum and trace quantities of conventional impurities normally found within a commercial aluminum alloy. The substantially evenly distributed iron aluminate inclusions are obtained by continuously casting an alloy consisting essentially of less than about 99.70 weight percent aluminum, more than 0.30 weight percent iron, no more than 0.15 weight percent silicon and trace quantities of typical impurities to form a continuous aluminum alloy bar, hot-working the bar substantially immediately after casting in substantially that condition in which the bar is cast to form continuous rod which is subsequently drawn into wire without intermediate anneals and annealed after the final draw. After annealing, the wire has the aforementioned novel and unexpected properties of a minimum of fifteen percent (15%) ultimate elongation, electrical conductivity of at least sixty-one percent (61%) of the International Annealed Copper Standard and increased tensile strength, bendability and fatigue resistance.

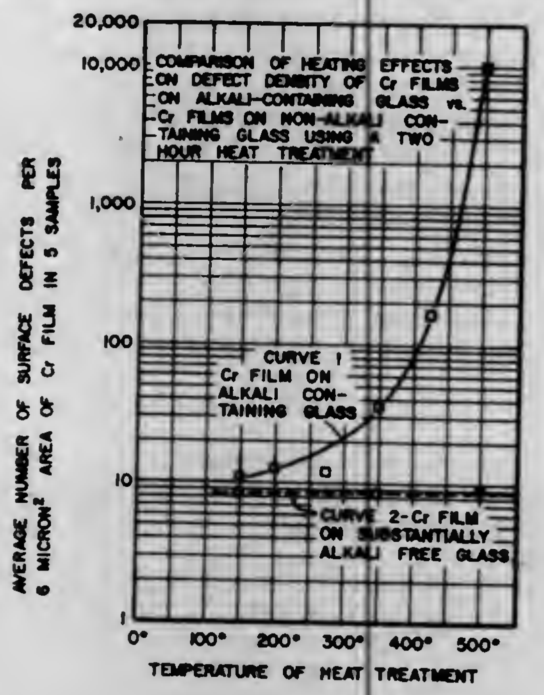
3,647,566
CHROMIUM FILMED GLASS ARTICLES AND METHOD FOR MAKING THE SAME

Raymond E. Szupillo, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 14, 1968, Ser. No. 775,860
Int. Cl. C23c *11/04, 11/00*

U.S. Cl. 148—6.3 **17 Claims**

Improved chromium film glass based articles having a low incidence of film surface defects, and highly hardened extremely scratch and wear resistant quality. The method includes the use of a substantially alkali-free glass substrate upon which is formed a chromium film,



after which the composite so formed is heat treated to obtain the desired film hardness and electromagnetic energy reflective quality.

3,647,567
POST-DIPPING OF ACIDIC DEPOSITION COATINGS

Raphael Joseph Schweri, Louisville, Ky., assignor to Celanese Coatings Company, New York, N.Y.
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,981
Int. Cl. B44d *1/44*
U.S. Cl. 148—6.15 R **10 Claims**

Metallic articles are coated with an adherent polymer film by the acidic deposition process which comprises contacting these metallic articles with an aqueous bath containing a synthetic resinous film forming emulsion and an oxidizing acid system. By subjecting these acidic deposition coatings to a solution, about 0.25 to 7.0 weight percent of which contains a material selected from phosphoric acid, chromium trioxide and water or acid soluble chromates and dichromates, the resistance properties—especially water and salt spray resistance—of these coatings are enhanced.

3,647,568
COLORED PHOSPHATE COATINGS AND METHOD OF APPLICATION

Gary B. Larson, Warren, Mich., assignor to MacDermid Incorporated, Waterbury, Conn.
No Drawing. Filed Oct. 28, 1969, Ser. No. 871,952
Int. Cl. C23f *7/10*
U.S. Cl. 148—6.15 Z **7 Claims**

Phosphate compositions containing at least one copper salt are utilized for coating surfaces of ferrous metals. The phosphate coatings achieved, which possess a reddish color, serve as an excellent means of identification of the articles thus coated and, in addition, the finish is of good corrosion resistance.

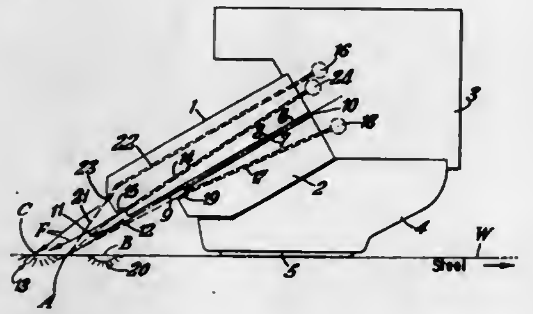
3,647,569
METAL COATING RINSE COMPOSITION

George Schneider, Lynbrook Hills, Trevose, Pa., assignor to Amchem Products, Inc., Ambler, Pa.
No Drawing. Filed Nov. 27, 1968, Ser. No. 779,616
Int. Cl. C23f *7/26*
U.S. Cl. 148—6.16 **15 Claims**

A dilute aqueous rinse composition for rinsing conversion-coated metal surfaces, the composition comprising water, at least about 0.02 g./l. of trivalent chromium, and ferricyanide in an amount at least sufficient to reduce the tendency of chromium from precipitating from the composition, the composition being prepared from an aqueous concentrate containing the trivalent chromium and ferricyanide constituents, the concentrate being aged prior to its being used to prepare the dilute aqueous rinse composition.

3,647,570
OXYGEN TRAP SCARFING METHOD AND APPARATUS

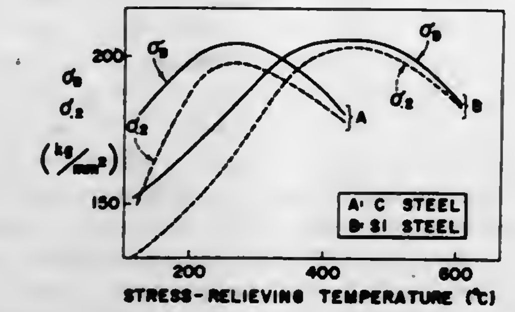
Thomas James Lytle, West Orange, N.J., assignor to Union Carbide Corporation, New York, N.Y.
Filed June 25, 1969, Ser. No. 836,233
Int. Cl. B23k *7/00*
U.S. Cl. 148—9.5 **4 Claims**



The time required for scarfing the surface of a metal body is decreased by shortening the preheating time. This is accomplished by directing a row of "trap" oxygen streams from ports located above the upper preheat fuel gas ports so that the oxygen streams form a plane which intersects the surface of the metal body in such way as to form a wedge shaped pocket to confine the burning preheating gases. This results in faster puddle formation and causes the puddle to be formed at a location just ahead of the projected converging point of the fuel and oxygen gas streams, rather than in back of the converging point where it would be formed by prior art methods.

3,647,571
PROCESS FOR MANUFACTURING ALLOY STEEL WIRES HAVING LOW RELAXATION CHARACTERISTICS

Kazuo Okamoto, Hikari-shi, Naoki Eguchi, Mitaka-shi, Nasuo Sakao, Hikari-shi, Ichiro Honda, Tokyo, and Eizo Suzuki, Funabashi-shi, Japan, assignors to Nippon Steel Corporation and Suzuki Metal Industry Co., Ltd., Tokyo, Japan
Filed July 14, 1969, Ser. No. 841,343
Claims priority, application Japan, July 18, 1968, 43/50,437
Int. Cl. C21d *9/54, 9/58*
U.S. Cl. 148—12.3 **16 Claims**



A process for manufacturing low-alloy steel wires having low relaxation characteristics at room and elevated temperatures characterized by heating a starting wire material made of low alloy steel containing, as the alloying eyement(s), either silicon alone or a combination of silicon with at least one other element such as chromium, to a temperature above its A_3 transformation point; either cooling the heated wire material at a specific cooling rate to a temperature just above its Ms point by means of natural or forced air cooling and reheating the cooled wire material, when the material is such that the specific cooling rate can be equal to or higher than the lower critical cooling rate of the material, or cooling the heated wire material by passing it through a bath of molten lead or salt at a temperature of 450–650° C. when the material is such that its air cooling rate is lower than its lower critical cooling rate, in order to obtain a wire material having a highly cold-workable sorbitic structure and high tensile strength; and draw working the thus-obtained wire material and then artificially aging the draw worked wire material to manufacture the desired low-alloy steel wires.

3,647,572
NITRIDING PROCESS

Hoyt H. Todd, La Habra, John F. McIntyre, Downey, and Le Roy Lewis, Los Angeles, Calif., assignors to Ametek, Inc., New York, N.Y.
No Drawing. Filed Aug. 25, 1969, Ser. No. 852,941
Int. Cl. C23c *11/16*
U.S. Cl. 148—16.6 **13 Claims**

A nitriding method for case hardening of chromium ferrous alloys is described which employs a pretreatment of the alloy to deposit nickel or a nickel salt on the alloy surface. The pretreatment permits efficient nitriding of the alloys which, in the absence of such pretreatment, resist nitriding by the presence of an oxide protective surface.

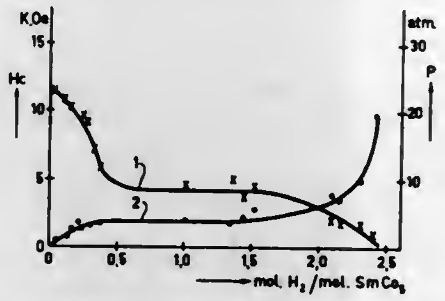
3,647,573
METHOD OF MAKING A BRONZE-IRON COMPOSITE

Edward O. Fuchs, Union, and James H. Swisher, Stirling, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 5, 1969, Ser. No. 830,721
Int. Cl. B22f *7/00;* **H01f** *1/08*
U.S. Cl. 148—101 **5 Claims**

A bronze-iron composite containing from 5 to 75 volume percent iron, when produced by; mixing fine powders of bronze and iron oxide, compacting the mixture, reducing the iron oxide to metallic iron, sintering the reduced compact to a billet, followed by cold working the billet to an area reduction in excess of 96 percent, exhibits good permanent magnet properties as well as excellent mechanical strength, and corrosion resistance.

3,647,574
METHOD OF REDUCING THE COERCIVE FORCE OF PERMANENT-MAGNETISABLE MATERIAL

Frans Frederik Westendorp and Hinne Zijlstra, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 28, 1969, Ser. No. 853,964
Claims priority, application Netherlands, Mar. 14, 1969, 6903931
Int. Cl. H01f *1/04, 1/06*
U.S. Cl. 148—103 **5 Claims**



A method of temporarily reducing the corecive force of a permanent-magnetisable material consisting of the compound M_5R, in which M is cobalt or a combination of Co with at least one of the elements Fe, Ni and Cu and R is at least one of the rare earth elements and Th in which the material is subjected, either during or after exposure to a magnetizing field, to hydrogen gas at pressure up to 30 atmospheres.

3,647,575
METHOD FOR REDUCING LOSSINESS OF SHEET METAL

Alfred Fiedler, Duisburg-Huckingen, and Werner Pepperhoff, Duisburg, Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
No Drawing. Filed Oct. 17, 1969, Ser. No. 867,406
Claims priority, application Germany, Oct. 17, 1968, P 18 04 208.5
Int. Cl. H01f *1/16*
U.S. Cl. 148—111 **9 Claims**

Lossiness of grain-oriented iron alloy sheets is reduced by partial plastic deformation of the surface of the sheet, e.g., by providing narrowly spaced, shallow grooves, preferably at different orientations in opposite sides of the sheet.

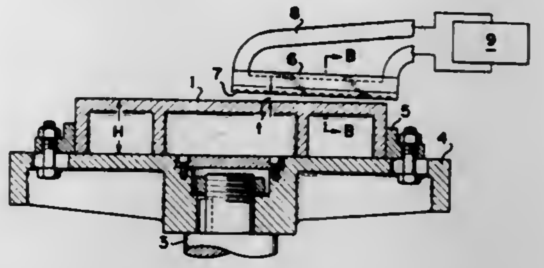
3,647,576
METHOD OF HARDENING SINTERED CEMENTED-CARBIDE COMPOSITIONS BY BORONIZING

Katsumi Yamamura and Masami Kasai, Nagano, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Dec. 19, 1968, Ser. No. 785,106
Claims priority, application Japan, Dec. 26, 1967, 42/83,120; Dec. 30, 1967, 43/84,648, 43/84,649
Int. Cl. C21d *1/00*
U.S. Cl. 148—126 **2 Claims**

Sintered, cemented-carbide compositions, e.g., cobalt-bonded tungsten carbide, are hardened by permeating a boron-containing material into the surface of the sintered composition. This boronizing treatment can be effected, for example, by heating the composition with a solid form of the boron-containing material, or by electrolysis in a molten boron salt bath.

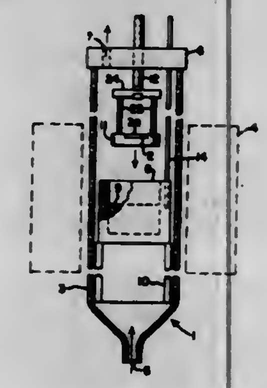
3,647,577
INDUCTION HARDENED, ANTI-WEAR MECHANICAL MEMBERS

Nobuyasu Gomada and Genzo Kosaka, Hiroshima-shi, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan
Filed Aug. 21, 1968, Ser. No. 754,340
Claims priority, application Japan, Aug. 30, 1967, 42/55,601; Sept. 14, 1967, 42/56,674
Int. Cl. C21d *1/10*
U.S. Cl. 148—150 **5 Claims**



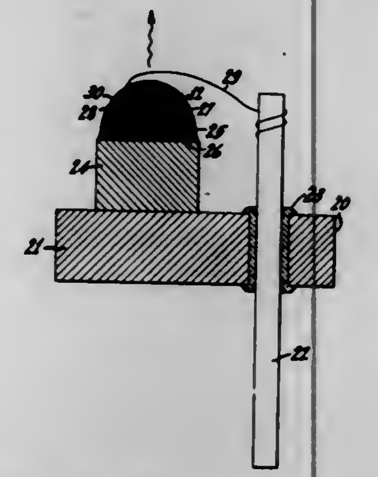
A mechanical member with a flat anti-wear surface with which a mating member moves in sliding contact wherein the member is partially induction hardened at the surface layer thereof in such manner as to form many separate hardened layers which are distributed in the surface layer radially and concentrically with respect to the center of the surface of the member; a process for the partial induction hardening of a flat member which comprises the steps of supporting an induction heating coil above a radius vector of the surface layer to be partially hardened of the flat member so that an alternate magnetic flux density is kept uniform throughout the surface layer by applying a high frequency electric current intermittently through the heating coil to heat the layers to be hardened on said surface layer while revolving the member, and quenching the heated layers by a cooling medium thereby to form many separate hardened layers which are distributed as mentioned above.

3,647,578
SELECTIVE UNIFORM LIQUID PHASE EPITAXIAL GROWTH
Allen M. Barnett, Schenectady, Harold A. Jensen, Liverpool, and Virginia F. Meikleham, Syracuse, N.Y., assignors to General Electric Company
Filed Apr. 30, 1970, Ser. No. 33,353
Int. Cl. H01l *7/38*
U.S. Cl. 148—171 **16 Claims**



A process for performing liquid phase epitaxial growth of semiconductor material, particularly III–V compounds, providing both dissolution and growth of extremely uniform dimensions over a large area, and further wherein said epitaxial growth may be accomplished in a selective fashion. The process has significant application to an array fabrication of high efficiency light emitting diodes composed of III–V compound materials such as GaAs.

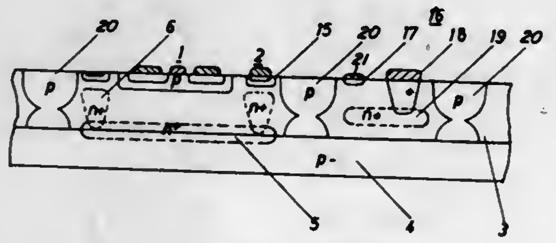
3,647,579
LIQUID PHASE DOUBLE EPITAXIAL PROCESS FOR MANUFACTURING LIGHT EMITTING GALLIUM PHOSPHIDE DEVICES
Ivan Ladany, Skillman, N.J., assignor to RCA Corporation
Filed Mar. 28, 1968, Ser. No. 716,970
Int. Cl. H05b *33/00;* H01l *3/00, 7/38*
U.S. Cl. 148—171 **9 Claims**



Gallium phosphide light emitting diodes with reproducible external quantum efficiencies greater than 1% are manufactured by successive liquid phase epitaxial growth of N type and P type layers on a gallium phosphide substrate which may be of either conductivity type.

The N type layer is grown first from a melt of tellurium and gallium phosphide in a gallium solvent. The P type layer is subsequently grown on the N type layer from a melt of zinc oxide, gallium oxide and gallium phosphide in a gallium solvent.

3,647,580
METHOD FOR THE MANUFACTURE OF A SOLID STATE CIRCUIT ADAPTABLE AS H.F. TUNER
Hans Weinerth, Eindhoven, Woensel, Netherlands, assignor to International Standard Electric Corporation, New York, N.Y.
Filed June 27, 1968, Ser. No. 740,727
Claims priority, application Germany, July 6, 1967, D 53,520
Int. Cl. H01l *3/00, 5/00, 11/00*
U.S. Cl. 148—175 **4 Claims**



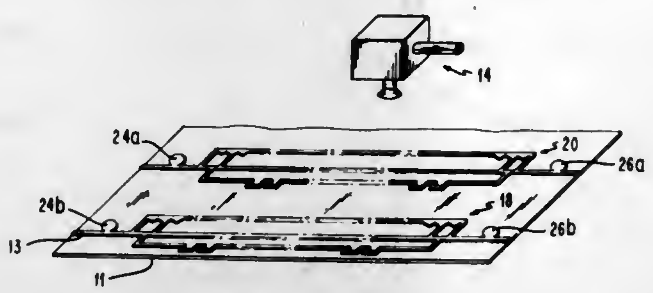
This is a method of manufacturing a monolithic H.F. tuner by forming low resistive regions which surrounds a planar transistor and a capacitive diode formed within the substrate. These low resistive regions are formed by subepitaxial diffusion of buried layers in two steps. These low resistive regions are responsible for reducing unwanted barrier layer capacitance and result in better control over the tuning characteristics of the device.

3,647,581
MANUFACTURE OF SEMICONDUCTOR DEVICES
Derek Hubert Mash, Harlow, Essex, England, assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed June 11, 1969, Ser. No. 832,360
Claims priority, application Great Britain, July 11, 1968, 33,042/68
Int. Cl. H01l *7/36*
U.S. Cl. 148—175 **6 Claims**

A single crystal layer of semiconductor material, having a thickness greater than 50μ, has an electrically active region formed within one surface. The surface with the electrically active region is temporarily attached to a substrate, and semiconductor material is then removed from the opposite surface to form a layer having a thickness of less than 20μ. An epitaxially deposited layer on a substrate, with an electrically active region in said layer, may be similarly reduced in thickness by removing the substrate and a portion of said deposited layer to provide an unsupported single crystal of less than 20μ thickness.

3,647,582
METHOD FOR LOCATING PRINTED CIRCUIT WORK PIECE
David T. Putnam, Raleigh, and William C. Tatum, Durham, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1969, Ser. No. 837,565
Int. Cl. H05k *1/00, 3/00*
U.S. Cl. 156—3 **3 Claims**

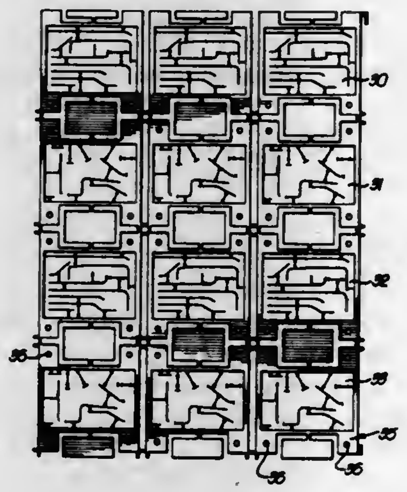
A method for precision location of an etched pattern on a metal-clad plastic laminate for use with a machine tool for punching, blanking, etc. by etching in the pattern, raised metallic surfaces, and positioning these metallic reference surfaces in fixtures forming a part of an instrumentality such as a machine tool.



3,647,583
METHOD OF MANUFACTURING A GLASS ARTICLE HAVING A LIGHT-DISPERSING LAYER
Hubertus Johannes De Rouw, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
No Drawing. Filed Dec. 3, 1969, Ser. No. 881,877
Claims priority, application Netherlands, Dec. 10, 1968, 6817661
Int. Cl. C03c *15/02*
U.S. Cl. 156—6 **1 Claim**

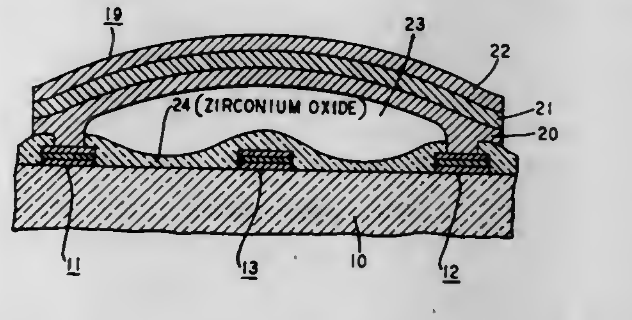
The manufacture of a light-dispersing layer on the surface of BaO-containing glass, particularly the face plate of a television display tube by first polishing the surface with a polishing agent having a grain size of no more than 100μ and by subsequently treating it with a solution containing between 25 and 50% by weight of HF and between 15 and 50% by weight of HNO_3.

3,647,584
CHEMICAL MILLING PROCESS
Gregory A. Duffy, 15001 Altata Drive, Pacific Palisades. Calif. 90272
Filed Jan. 5, 1970, Ser. No. 624
Int. Cl. H05k *1/00;* C23f *1/02*
U.S. Cl. 156—11 **17 Claims**



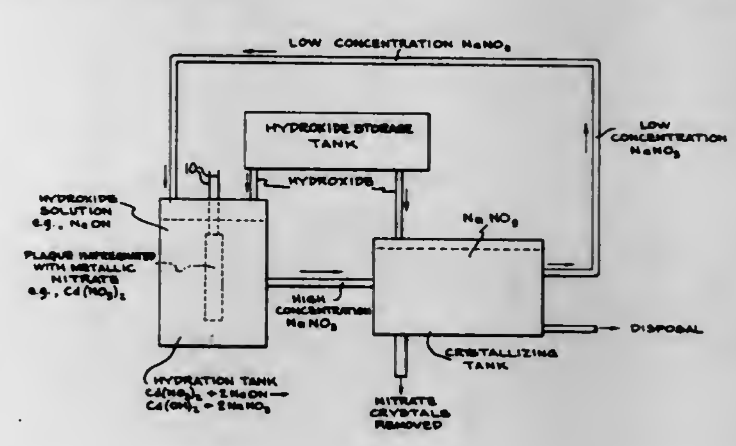
Improved chemical milling process and resulting product utilizing photographically exposed and developed resist designs on a metal plate with unexposed portions of the resist emulsion dissolved away, characterized by a baking step or steps harder than conventional, a series of controlled etching treatment on one side, and a series of differently controlled harsher etching treatment on the other side, resulting in a design of suspended metal areas having substantially flat plane or slightly concave etched edges as distinguished from shoulders or ridges. A particular application is for producing electrical circuitry utilizing a metallic plate containing identical circuit designs on both sides formed of the photographic etch resist, and upon removal of the unwanted metal by the differential etching steps on opposite sides of the plate, obtaining an integrated circuit structure with conductors responding to the etch resistant pattern and in cross section being substantially rectangular with parallel top and bottom and parallel sides, or with the sides very slightly concaved, thus providing adequate surfaces on the sides for attachment of wires by welding.

3,647,585
METHOD OF ELIMINATING PINHOLE SHORTS IN AN AIR-ISOLATED CROSSOVER
Larry B. Fritzinger, Piscataway, and Martin P. Lepselter, New Providence, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 23, 1969, Ser. No. 827,215
Int. Cl. H01l *7/50;* H05k *3/06*
U.S. Cl. 156—17 **4 Claims**



Pinhole shorts are eliminated in an air-isolated crossover by including a compressively stressed layer in the upper conductor. When a filler material between the upper and lower conductors is etched away, the stressed layer will expand, causing the upper conductor to arch away from the lower conductor and breaking any pinhole shorts between the two conductors.

3,647,586
METHOD OF HYDRATING A BATTERY PLAQUE IMPREGNATED WITH METAL NITRATE IN A HYDROXIDE SOLUTION AND SUBSEQUENT RECOVERY OF NITRATE BYPRODUCT AS CRYSTALS
Bernard C. Bergum, Monona, and Per S. Svardal, Madison, Wis., assignors to ESB Incorporated
Filed Jan. 22, 1970, Ser. No. 4,824
Int. Cl. H01m *35/02*
U.S. Cl. 136—20 **6 Claims**

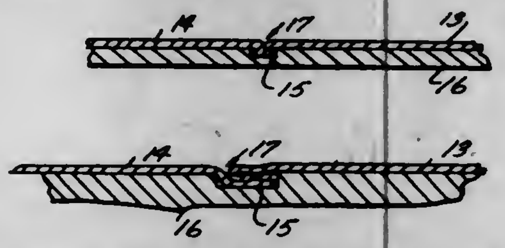


A battery plaque impregnated with a metal nitrate is hydrated by being submerged in a hot, concentrated hydroxide solution to produce a metal hydroxide deposit in the plaque and a hydroxide solution containing a nitrate byproduct. The hydroxide solution containing the nitrate byproduct is transmitted to a crystallization tank where upon cooling nitrate crystals are formed and recovered. The solution remaining after crystallization may be returned to the hydration tank. Hydroxide solution may be added to maintain the hydroxide concentration in the hydration tank at a substantially uniform level. Both batch and continuous processing may be used.

3,647,587

METHOD OF INSTALLING INVISIBLE SEAMS

John Clifford MacDonald, Andover, Mass., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed June 23, 1969, Ser. No. 835,552
Int. Cl. E04f *15/10*
U.S. Cl. 156—71 1 Claim

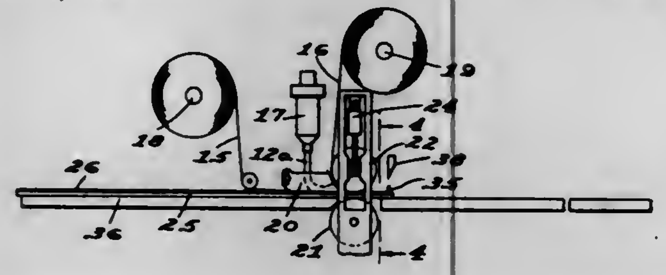


A method is provided for installing on a supporting surface plastic sheets which have been bonded using radio frequency energy to dielectrically heat seal the sheets whereby the seam formed is inserted in a groove provided in the supporting surface to render said seam invisible.

3,647,588

METHOD FOR MAKING FOAM PANEL

James W. Greig, Grosse Pointe Park, Mich., assignor to Woodall Industries Inc.
Continuation-in-part of abandoned application Ser. No. 514,605, Dec. 17, 1965. This application Nov. 28, 1969, Ser. No. 880,745
Int. Cl. B32b *5/20*
U.S. Cl. 156—79 8 Claims



A process for making cellular foam sheets and panels embodying a preselected contour by foaming in situ a layer of a liquid reaction mixture deposited in a selected pattern of controlled thicknesses corresponding to the variations in thickness of the resultant contoured panel, providing therewith a substantially uniform cell structure devoid of any blow channels. The invention further encompasses the apparatus for practicing the foregoing process, as well as the improved panels produced thereby.

3,647,589

METHOD OF MANUFACTURING RUBBER WEAR COVER FOR ROLLERS AND METHOD OF APPLYING SAME

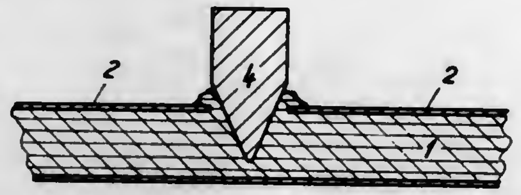
Alois Peter Felden, Munich, Germany, assignor to Stahlgruber, Otto Gruber & Company, Munich, Germany
Filed June 23, 1970, Ser. No. 49,057
Claims priority, application Germany, June 26, 1969, P 19 32 320.7
Int. Cl. B32b *31/00*
U.S. Cl. 156—165 5 Claims

A rubber cover for protecting conveyor belt rollers and return idlers is characterized by an outer wear resistant vulcanized rubber layer and an inner connecting layer of unvulcanized cold vulcanizable rubber mixture.

3,647,590

METHOD OF BENDING PLATES

Emanuel Wolf, Horgen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Filed Jan. 22, 1970, Ser. No. 5,040
Claims priority, application Switzerland, Jan. 23, 1969, 947/69
Int. Cl. B31f *5/02*
U.S. Cl. 156—211 11 Claims



A method of bending a composite plate composed of an inner core of synthetic material and an outer strip of a second different material, on at least one side thereof, provides for removing a portion of said cover strip near the region of bending, thereby creating a groove at the bending region in the core, and heating the groove; the groove creating and heating may be carried out by a wedge shaped heating sword. Thereafter the plate is bent about the groove until the faces of the groove fuse and the ends of the cover strip meet.

3,647,591

ACID BONDING NONWOVEN FABRICS

Thomas S. Morris, Shawmut, Ala., assignor to West Point-Pepperell, Inc., West Point, Ga.
No Drawing. Filed Sept. 25, 1969, Ser. No. 861,191
Int. Cl. B29j *1/00;* **B32b** *5/02*
U.S. Cl. 156—220 26 Claims

A process for making a bonded nonwoven fabric from a blend of nylon fibers and fibers of another kind of material. The fibers are formed into a web which is treated with a concentrated solution of a strong acid which affects the nylon but does not substantially affect the other material. The nylon is softened and swollen by the concentrated acid. Then, the web is contacted with water which dilutes the concentrated acid and coagulates the nylon. Subsequently, the web is subjected to pressure. The acid treatment makes the nylon more susceptible to pressure but does not have this effect on the fibers of the other material. When pressure is applied, the nylon flows and causes the other fibers to be bonded to each other.

3,647,592

POLYESTER BONDING PROCESS

Paul T. Woodberry, Reading, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.
No Drawing. Filed July 24, 1968, Ser. No. 747,069
Int. Cl. B32b *17/02, 17/04*
U.S. Cl. 156—285 10 Claims

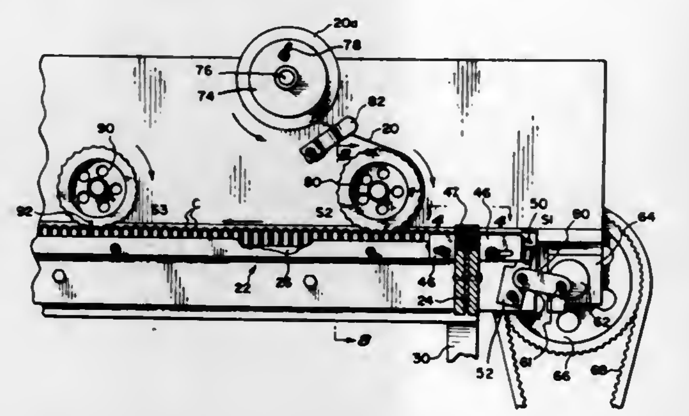
A process for forming a bond between polyester and a substrate by heating the polyester in a vacuum and thereafter bonding the polyester to the substrate by the application of temperature and pressure and/or electric potential thereto. The substrate may be an electrical conductor or semiconductor such as a metal sheet or foil, or it may be an inorganic electric insulator such as a glass.

3,647,593

METHOD OF AND APPARATUS FOR PRODUCING UNIFORM LENGTHS OF RIBBON-CONNECTED FASTENER CLIPS

Harrison C. Lingle, Wilmette, and Arthur Langas, Glenview, Ill., assignors to Hartco Company, Wilmette, Ill.
Filed Dec. 1, 1969, Ser. No. 881,005
Int. Cl. B32b *31/10;* **B65d** *83/08*
U.S. Cl. 156—300 4 Claims

A method and fully automatic collating apparatus for producing uniform lengths of preformed, U-shaped, ribbon-connected fastener clips, such lengths being suitable for loading into the magazine of a clip-clinching tool. The disclosed exemplary apparatus for practicing the method embodies a clip-receiving and stacking station to which successive clips are fed in endwise fashion, at which they are arranged in side-by-side contiguity, and from which they are fed in a continuous stack to a ribbon-applying station. At the ribbon-applying station a rotatable transfer wheel impresses a continuous ribbon upon the crown portions of the clips and the thus connected continuous string of clips advances to a severing station where predetermined lengths of the ribbon-connected clips are severed and further impelled to a discharge station.



3,647,594

PROCESS FOR PRODUCING ARTIFICIAL LEATHER

Ernst Demme, Theodor Schachowskoy, Guenther Schuhmacher, and Juergen Fehlhaber, Weinheim, and Ludwig Hartmann, Ober-Flockenbach, Germany, assignors to Carl Freudenberg Kommanditgesellschaft, Weinheim, Germany
No Drawing. Continuation of application Ser. No. 405,292, Oct. 20, 1964. This application Jan. 20, 1970, Ser. No. 4,436
Claims priority, application Germany, Oct. 4, 1963, P 15 60 774.6
Int. Cl. B32b *5/16, 5/22*
U.S. Cl. 156—306 16 Claims

Process of producing artificial leather by applying a fusible cobweb fabric on to the major surface of a nonwoven fabric substrate and then laminating the cobweb to the base fabric by heat and pressure.

3,647,595

METHOD FOR THE PRODUCTION OF DECORATIVE LAMINATES HAVING LOW TENDENCY TO FLAME-SPREADING

Nils B. Sundén, Perstorp, Sweden, assignor to Perstorp AB, Perstorp, Sweden
No Drawing. Filed July 8, 1968, Ser. No. 743,036
Claims priority, application Sweden, Sept. 1, 1967, 12,133/67
Int. Cl. C09j *3/14*
U.S. Cl. 156—331 1 Claim

A process for the production of decorative laminates having core sheets and decorative overlay sheets which comprises

coating a core of phenol-formaldehyde resin impregnated paper sheets containing an amine-phosphate as a fire retardant

with a resin selected from the group consisting of melamine-formaldehyde resin and urea-formaldehyde resin having dispersed therein

at least one member selected from the group consisting of polyvinyl chloride and polyvinylidene chloride and

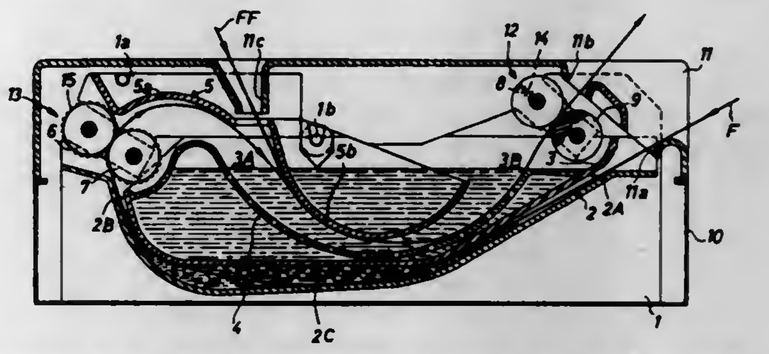
at least one member from the group consisting of antimony trioxide and alumina

and disposing said coated core sheets immediately adjacent to the lowermost of said decorative overlay sheets, said decorative overlay sheets comprising paper sheets impregnated with a resin selected from the group consisting of melamine-formaldehyde resin and urea-formaldehyde resin.

3,647,596

APPARATUS FOR WET TREATMENT OF FILMS OR THE LIKE

Kurt Thate and Jurgen Muller, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Jan. 14, 1970, Ser. No. 2,791
Claims priority, application Germany, Jan. 17, 1969, P 19 02 216.3
Int. Cl. C23g *3/00*
U.S. Cl. 156—345 14 Claims

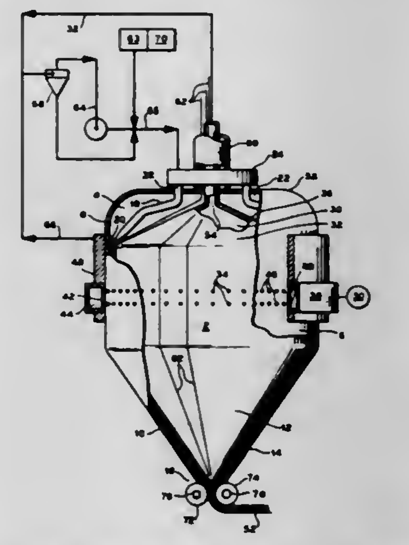


Apparatus for wet treatment of films or like sheet materials wherein a receptacle accommodates two superimposed vessels each containing a supply of liquid. One side of the receptacle has two openings one of which admits sheet material into the inlet of the lower vessel and the other of which receives treated material from the outlet of the upper vessel. A curved guide structure is provided in the receptacle at the other side of the receptacle to direct sheet material from the outlet of the lower vessel into the inlet of the upper vessel. A first pair of driven rollers advances sheet material between the outlet of the lower vessel and the inlet of the upper vessel, and a second pair of driven rollers advances sheet material between the outlet of the upper vessel and the other opening of the receptacle. A third opening is provided in the receptacle to direct sheet material directly into the inlet of the upper vessel.

3,647,597

APPARATUS FOR FORMING A NON-WOVEN WEB

Raymond G. Voss and Ray D. Ramsay, Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Mar. 9, 1970, Ser. No. 17,397
Int. Cl. B29j *5/08*
U.S. Cl. 425—83 9 Claims

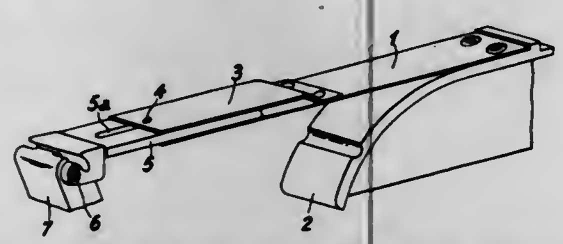


An apparatus and method for laying down fibers in a cylindrical or modified cylindrical shape for forming a non-woven fiber web. Said apparatus has a rotating fiber conduit for placing fibers between two forming elements.

3,647,598

RADIAL TIRE MAKING DRUM

Georges Gazuit, Montlucon, France, assignor to NRM Corporation, Akron, Ohio
Filed Nov. 17, 1969, Ser. No. 877,359
Claims priority, application France, Nov. 27, 1968, 175,506
Int. Cl. B29h *17/26*
U.S. Cl. 156—415 **8 Claims**

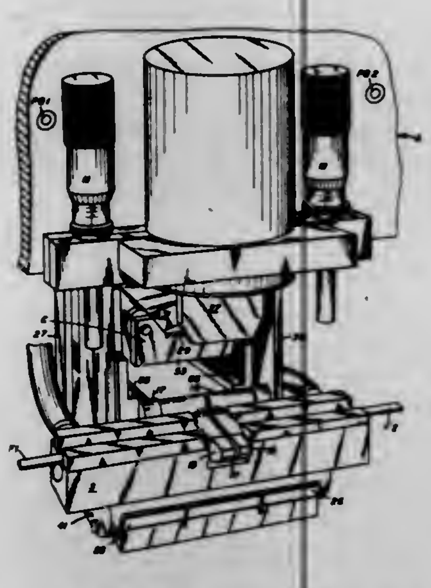


In this tire making drum of the rind type, described in the copending application Ser. No. 617,658, now abandoned in favor of applicant's continuation application Ser. No. 28,281, filed Apr. 22, 1970, entitled "Tire Building Machine," each one of the two ends of each spring blade is shaped for receiving a rigid sliding pull member of which the outer end carries means for pivotally connecting same to a pivot pin carried by the edge of the corresponding flange. The cavity receiving said rigid pull member is formed at either end of the spring blade by a shorter spring blade secured to the former and extending parallel thereto along a distance determined by a small distance piece, said pull member being flat and having a width preferably equal to that of said spring blades; it is guided for longitudinal sliding movement therebetween and retained in either of two end positions by the distance-piece engaging an elongated aperture formed in said pull member.

3,647,599

ULTRASONIC FILM SPLICING APPARATUS

Ray E. Gardner, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed June 16, 1969, Ser. No. 833,438
Int. Cl. B31f *5/00;* **B29c** *27/08;* **G03d** *15/04*
U.S. Cl. 156—502 **12 Claims**

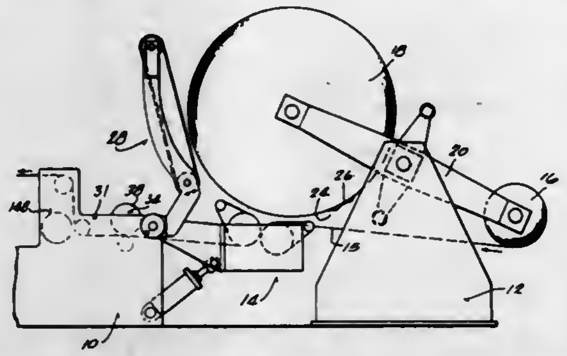


Apparatus for ultrasonically splicing together end-to-end two lengths of moving picture film or the like with a patch of splicing tape therebetween, comprising an ultrasonic horn, a stage for the lengths of film which is movable toward and away from the horn, tape feeding mechanism for intermittently feeding tape from a roll into position on the surface of said horn, and mechanism for cutting a patch of the desired width from the end of said tape. The stage and the horn are provided with vacuum apertures for holding the films and the patch in place. An automatic control system acts to perform the operating steps in the necessary sequence.

3,647,600

UNIVERSAL WEB SPLICER

George Vischulis, Menomonee Falls, and Charles K. Sedlak, Wauwatosa, Wis., assignors to Zerand Corporation, New Berlin, Wis.
Filed Jan. 20, 1970, Ser. No. 4,188
Int. Cl. B65h *19/16;* **G03d** *15/04*
U.S. Cl. 156—504 **13 Claims**

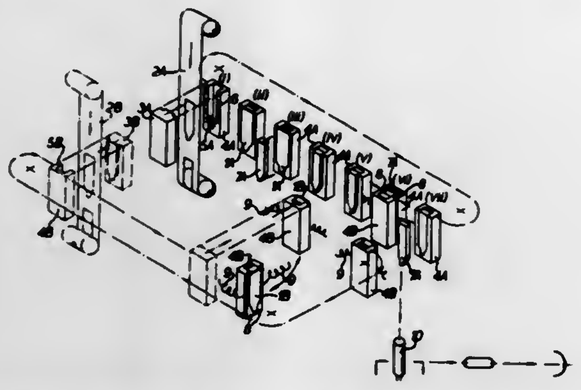


A universal tape applying apparatus for applying tape to both sides of a butt joint formed in a running web and between a new web and an expiring web. The apparatus includes a top tape applying roll assembly and a bottom tape applying roll assembly, each roll assembly having a tape roll in the form of a cylinder with a flat side or section on its outer periphery and a tape carrier spirally mounted on the remaining portion of the outer periphery of the tape roll at an angle conforming to the angle of the butt joint splice. The tape rolls are accelerated to the speed of the running web by air cylinders which are preloaded and pressurized to provide a thrust (torque) force to thereby accelerate the tape rolls to the speed of the running web. The air cylinder for the top tape roll is released on a given signal to provide a thrust force to the top tape roll through a pawl and ratchet assembly. Release of the air cylinder for the bottom tape roll is synchronized with the movement of the top tape roll through a mechanical linkage to provide a thrust force through a ratchet and pawl assembly.

3,647,601

APPARATUS FOR THE AUTOGENOUS BONDING OF CONTRACEPTIVE SHEATHS

Francis Douglas Berry, Theydon Bois, and Stanley Charles Blyther, North Weald, England, assignors to LR Industries Limited, London, England
Filed Nov. 12, 1969, Ser. No. 875,894
Claims priority, application Great Britain, Aug. 17, 1969, 41,323/69
Int. Cl. B32b *31/18*
U.S. Cl. 156—511 **6 Claims**

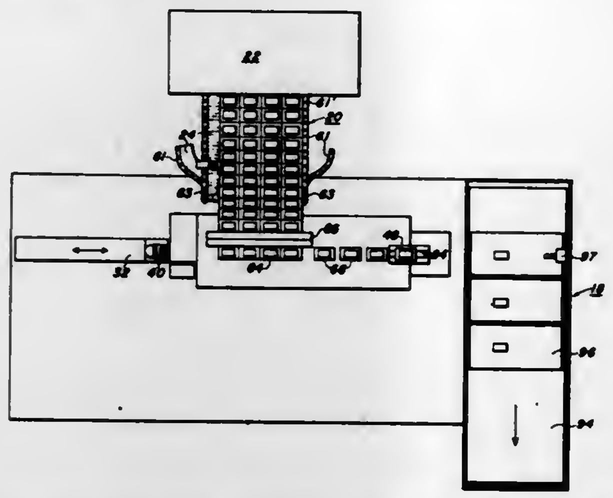


Contraceptive sheaths are made from thermoplastic film material by forming two substantially identical blanks each corresponding in shape to the shape of the required sheath and welding the edges of the blanks together except at the intended open end of the sheath.

3,647,602

SELECTIVE ARTICLE LABELING CONTROL FORM

John V. McGuire, Deerfield, and Donald W. Watson, Arlington Heights, Ill., assignors to Xerox Corporation, Rochester, N.Y.
Filed Nov. 10, 1969, Ser. No. 875,006
Int. Cl. B43m *11/00*
U.S. Cl. 156—528 **3 Claims**



An article labeling system including article supply means; an addressing machine with article labeling head, said labels being in the form of an endless sheet-like piece having at least one label row with a control tape portion bearing control data for individual labels extending therealong; and means for operating the labeling system in accordance with the control data on the label form control tape.

3,647,603

COLD-FORMABLE DECORATIVE LAMINATE AND METHOD OF MAKING SAME

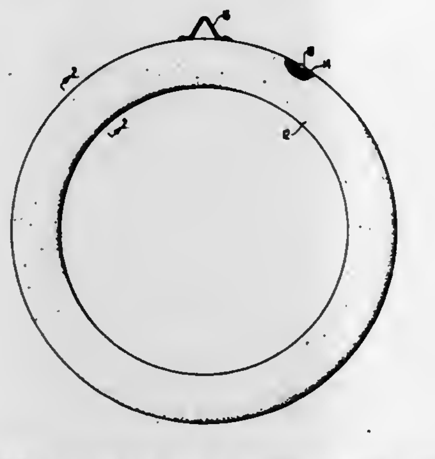
Pascal E. Esemplare, Mountainside, and Charles P. West, Metuchen, N.J., assignors to Vi-Vox, Incorporated, Pittsburgh, Pa., and Frankel Company, Incorporated, Detroit, Mich., fractional part interest to each
No Drawing. Filed Jan. 6, 1969, Ser. No. 789,420
Int. Cl. B32b *15/08, 27/42;* **D06n** *7/00*
U.S. Cl. 161—5 **11 Claims**

A cold post-formable, sheet-like, decorative laminate of high chemical-, abrasion-, heat-, and crack-resistance, comprising a flexible metal base sheet, a paper interlayer bonded to the metal and to a flexible surface layer comprising a thermosetting mixture of melamine formaldehyde resin and alkyd resin.

3,647,604

REINFORCED FOAMED PLASTIC WREATH RING

Leonard W. Schoenherr, Robert O. Schoenherr, and John W. Schmock, Ludington, Mich., assignors to Foliage Co. of America, Ludington, Mich.
Filed Nov. 4, 1969, Ser. No. 873,955
Int. Cl. A47g *33/08, 33/10*
U.S. Cl. 161—15 **8 Claims**

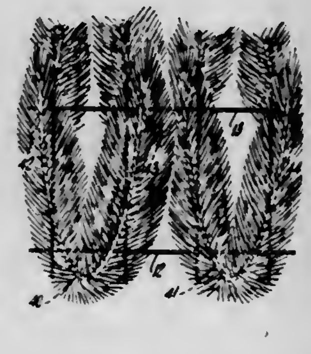


This disclosure relates to a wreath ring comprising an annular ring formed of foamed plastic material reinforced with a metal band in compressive relationship thereto and positioned within an annular circumferential depression in the annular ring. A hook is formed in the shape of a loop with the ends thereof extending along the circumference of the annular ring and fixed to the metal band.

3,647,605

ARTIFICIAL PLANT UTILIZING A THREE-DIMENSIONAL SHELL FRAMEWORK

Si I. Spiegel, Briarcliff, N.Y., assignor to American Technical Industries, Inc., New York, N.Y.
Filed Jan. 14, 1970, Ser. No. 2,853
Int. Cl. A47g *33/04*
U.S. Cl. 161—31 **17 Claims**

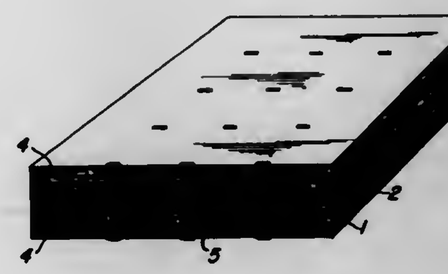


An artificial tree or bush utilizing a three-dimensional shell or basket-like framework having the general shape of the tree or bush. The framework is comprised of upstanding rods or wire stringers attached to a series of horizontal members, the upstanding rods and horizontal members thus providing a gridwork of wires to which artificial branches can be attached. The foliage of the bush or tree is comprised of a plurality of needle, flower or leaf-bearing branches bent into a general U shape and attached to the gridwork so that each such branch provides two outwardly and upwardly extending extremities. The branches are overlapped upon the framework so that the U-shaped base portions of the branches and the framework are hidden by the outwardly extending branch ends of lower branches.

3,647,606

SEMIRIGID MULTILAYER THERMAL INSULATION AND METHOD OF MAKING SAME

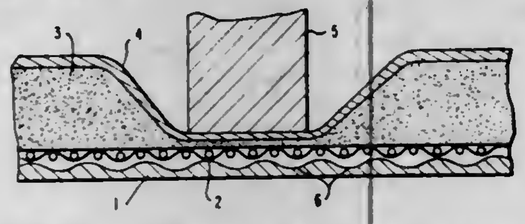
Frank Notaro, Buffalo, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed Nov. 21, 1969, Ser. No. 878,855
Int. Cl. B32b *7/08*
U.S. Cl. 161—52 **22 Claims**



A multilayer thermal insulation semirigidized to resist compression and bending by means of a plurality of spaced, thin columns which extend through the insulation layers and are bonded to at least some of said layers.

3,647,607
HIGH FREQUENCY WELDING OF POLYVINYL CHLORIDE FOAMS TO PERFORATED MATERIALS

Theo Hillers, Troisdorf, Germany, assignor to Dynamit Nobel AG, Troisdorf, Germany
Filed June 5, 1970, Ser. No. 43,724
Claims priority, application Germany, June 6, 1969, P 19 28 662.5
Int. Cl. B32b *3/30, 5/18, 31/06*
U.S. Cl. 161—89 **13 Claims**



The high frequency welding of polyvinyl chloride foams to sievelike perforated materials, such as tricot, nettle cloth, perforated films and the like, is conducted in order to obtain a high welding seam strength by providing the side of the insulating layer facing the material to be welded with numerous, relatively small projections and/or depressions. The PVC foam, heated and plasticized by the high frequency current, penetrates through the fabric to between the projections or into the depressions and thus becomes mechanically anchored in the fabric after cooling.

3,647,608
CUT-RESISTANT FOAM ARTICLE

Dale S. Enlow, Cuyahoga Falls, and Lawrence C. Varner, Jr., Akron, Ohio, assignors to The General Tire & Rubber Company
No Drawing. Filed Jan. 26, 1970, Ser. No. 5,934
Int. Cl. B32b *3/26, 5/14, 5/18*
U.S. Cl. 161—95 **9 Claims**

Slashing and cutting of foam seats has been one of the principal aspects of vandalism of public and private property. Efforts to protect foam seats from cutting have not been successful because of the high costs involved and the general decrease in comfort arising from use of armor. This situation has caused many seat manufacturers to change to cut-proof, rigid seats. This invention is a cut-resistant foam article, such as a seat, that retains the desirable degree of resiliency and comfort and a method of making the article.

3,647,609
FLAME RETARDED COMPOSITE

Henryk A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Sept. 26, 1969, Ser. No. 861,495
Int. Cl. B32b *5/18, 27/40*
U.S. Cl. 161—160 **8 Claims**

A flame retarded composite of plastic, resin or foam bonded to a solid material by means of a flame retarded adhesive, the flame retardant in both materials being of similar chemical composition. An example is flame retarded urethane foam bonded to flame retarded urethane foam by an adhesive containing the same flame retardant as in the foam.

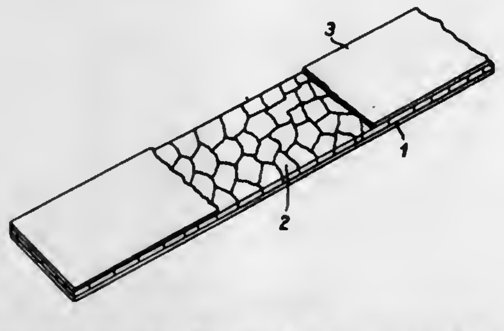
3,647,610
PRESERVATION OF AQUEOUS DISPERSIONS WITH BROMOCYANOACETAMIDES

Paul A. Wolf, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation-in-part of application Ser. No. 650,264, June 30, 1967. This application July 31, 1970, Ser. No. 60,095
Int. Cl. D21h *5/22*
U.S. Cl. 162—161 **19 Claims**

A method useful for preserving aqueous dispersions of biodegradable cellulosic matter such as wood pulp suspensions from microbial attack comprises adding to the dispersion an antimicrobial amount of a bromocyanoacetamide compound such as 2,2-dibromo-2-cyanoacetamide. In a preferred embodiment, the method comprises the further step of treating the dispersion to which the bromocyanoacetamide compound has been added with sufficient of a base to inactivate such compound prior to discharging any of the dispersion into the environment.

3,647,611
INSULATING TAPE FOR PRODUCING AN INSULATING SLEEVE FOR ELECTRICAL CONDUCTORS, IMPREGNATED WITH A THERMOSETTING IMPREGNATION EPOXY RESIN MIXTURE

Willi Mertens, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Aug. 19, 1969, Ser. No. 851,411
Claims priority, application Switzerland, Aug. 22, 1968, 12,597
Int. Cl. B32b *5/16, 17/10, 19/02*
U.S. Cl. 161—163 **11 Claims**



As a binder for an accelerator containing mica tape for producing the micalastic insulation, I use polymerizable additives of acid components, containing at least one polymerizable double compound, and epoxide compounds to which organic peroxides are added. This binder is self hardening in the impregnation resin.

3,647,612
MULTILAYER PLASTIC ARTICLES

Walter J. Schrenk, Bay City, and Douglas S. Chisholm, Kenneth J. Cleereman, and Turner Alfrey, Jr., Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Application June 6, 1969, Ser. No. 863,729, now Patent No. 3,576,707, dated Apr. 27, 1971, which is a continuation of application Ser. No. 445,851, Mar. 29, 1965, which in turn is a continuation-in-part of application Ser. No. 431,336, Feb. 9, 1965. Divided and this application Sept. 15, 1970, Ser. No. 72,445
Int. Cl. B32b *7/02, 27/08*
U.S. Cl. 161—165 **3 Claims**

Multiple layer films are made by arranging a minimum of two streams into one stream having a plurality of generally parallel layers. By mechanically manipulating the layered stream an increased number of layers are obtained and the manipulating stream is shaped into a desired configuration having a plurality of layers generally adjacent to a major surface thereof. Under certain conditions, iridescent products are obtained without the use of pigment.

3,647,613
PLASTICS CONTAINERS FOR FUEL STORAGE

John Louis Scotland, Cowbridge, Wales, assignor to British Resin Products Limited, London, England
No Drawing. Filed Jan. 30, 1969, Ser. No. 795,339
Claims priority, application Great Britain, Feb. 2, 1968, 5,329/68; Mar. 13, 1968, 12,156/68
Int. Cl. B32b *27/28;* **B65d** *89/00;* **C07c** *21/08*
U.S. Cl. 161—165 **6 Claims**

Containers for petroleum hydrocarbons made from high density polyethylene having a surface fluorinated to a concentration of 0.01 to 30 micrograms of fluorine per square centimetre.

3,647,614
IMPACT MOLDED ARTICLE

Kenneth J. Cleereman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Application Feb. 13, 1967, Ser. No. 615,535, now Patent No. 3,488,747, dated Jan. 6, 1970, which is a continuation-in-part of application Ser. No. 384,641, July 23, 1964. Divided and this application Dec. 29, 1969, Ser. No. 1,935
Int. Cl. B29c *3/00;* **B32b** *5/14*
U.S. Cl. 161—166 **3 Claims**

Articles of unique structural properties are manufactured by impact molding a plurality of multiphase thermoplastic slugs, said slugs being flattened by impact force and spread out in interleafed fashion to form the walls of the article.

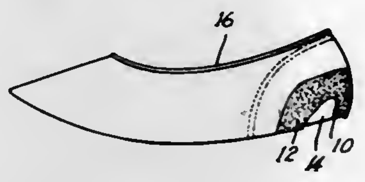
3,647,615
ETHYLENE/VINYL CHLORIDE/N-METHYLOL ACRYLAMIDE

William F. Fallwell, Jr., St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed July 16, 1970, Ser. No. 55,613
Int. Cl. B32b *17/04, 21/28*
U.S. Cl. 161—170 **16 Claims**

Ethylene/vinyl chloride/N-methylol acrylamide terpolymer useful as bonding agent for nonwoven fibrous products.

3,647,616
STIFFENER AND PROCESS FOR STIFFENING FLEXIBLE SHEET MATERIAL

John C. Zemlin, Reading, Mass., assignor to USM Corporation, Boston, Mass.
Continuation-in-part of application Ser. No. 787,175, Dec. 26, 1968. This application Feb. 6, 1970, Ser. No. 9,168
Int. Cl. A43b *13/42;* **B31f; B32b** *27/40*
U.S. Cl. 161—190 **11 Claims**



Stiffener and stiffening process for flexible sheet material, particularly for parts of shoe uppers in which the novel stiffener is a normally stiff, resilient cross-linked cured polyurethane sheet with a layer of heat-activatable adhesive on its surface. The stiffener is heated to activate the adhesive and soften the polyurethane sheet to a rubbery state, the heated stiffener is pressed against a sheet material to establish adhesive engagement and the assembly of sheet material and stiffener is shaped and cooled to resilient, shape-retaining condition.

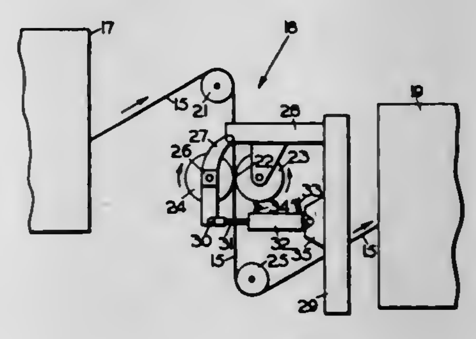
3,647,617
THIN METAL LAMINATES

James K. Rieke, Douglas Raymond Behr, and Otis R. McIntire, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation-in-part of application Ser. No. 586,372, Oct. 13, 1966. This application May 4, 1970, Ser. No. 34,616
Int. Cl. B32b *15/08;* **C09j** *3/14*
U.S. Cl. 161—216 **9 Claims**

A thin metal laminate useful, for example, as household foil comprising two thin metal layers such as aluminum bonded together with an adhesive polymer layer such as a copolymer of ethylene and acrylic acid is produced by forming a composite of the two metal layers with the adhesive polymer layer disposed between the metal layers, subjecting the composite to heat and pressure to form a bond between the metal layers and the adhesive polymer layer and thereby produce a laminate, and rolling the laminate at a temperature of not more than about 75° C. to reduce the thickness of the laminate at least about 5 percent.

3,647,618
METHOD AND APPARATUS FOR IMPROVING FORMATION UNIFORMITY OF PAPER

Sangho E. Back and Rueben A. Marti, Vancouver, Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.
Filed Aug. 18, 1969, Ser. No. 850,861
Int. Cl. D21f *5/00*
U.S. Cl. 162—205 **10 Claims**



To improve the formation properties of a nonwoven web of cellulosic fiber, the web is dried to a moisture content of between 18–40% moisture and advanced through a pressure nip between a pair of opposed rolls. The rolls are each very slightly resilient but have a hard surface of between 0 and 10 P & J Plastometer ⅛" ball).

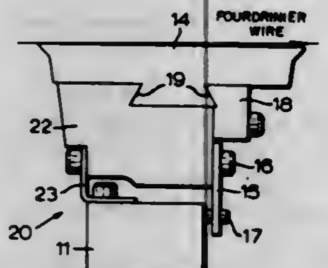
The pressure nip compaction also contributes to densification, improved surface smoothness and improved uniformity of fiber distribution.

3,647,619
HIGH PRESSURE CALENDERING OF A PAPER WEB BETWEEN HEATED CALENDER ROLLS HAVING NON-RESILIENT SURFACES

Richard C. Mack, George Lejnieks, and Edward D. Morrison, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 10, 1969, Ser. No. 875,230
Int. Cl. D21f *11/00*
U.S. Cl. 162—206 **5 Claims**

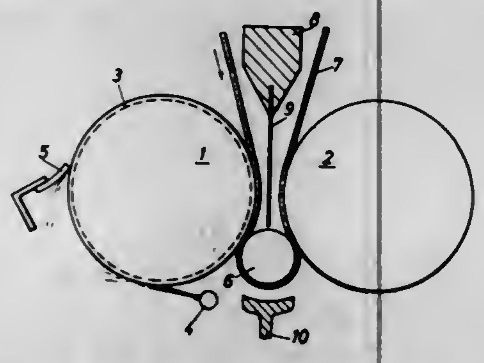
High density paper which has high surface smoothness and high gloss and is especially well adapted for use as a photographic paper is prepared by hot calendering a paper web, with the web being passed through at least one nip defined by heated calender rolls having hard smooth non-resilient surfaces and directed along a path which prevents it from wrapping around the heated rolls. The desired combination of physical properties in the paper is obtained by exerting a pressure on the web in the range from about 10,000 to about 50,000 pounds per square inch while maintaining the heated calender rolls with a surface temperature in the range from about 250° F. to about 500° F. and providing an initial water content in the web which is at least about two percent by weight but is below the water content at which blistering of the paper occurs.

3,647,620
DRAINAGE FOIL FOR A PAPERMAKING MACHINE
Leslie Truxa, Montreal, Quebec, Canada, assignor to Dominion Engineering Works, Limited, Lachine, Quebec, Canada
Filed May 2, 1969, Ser. No. 821,218
Claims priority, application Canada, May 14, 1968, 19,919
Int. Cl. D21f *1/48*
U.S. Cl. 162—211 **10 Claims**



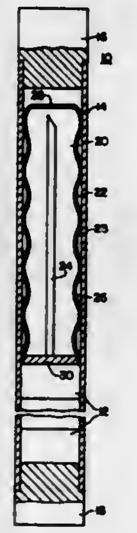
A drainage foil which includes a non-flexing foil section having a top surface leading portion and a top surface trailing portion. The foil section is mounted on a lower support section by a plate spring located beneath the top surface leading portion of the foil section and a cam bar adjustment system located beneath the top surface trailing portion. Adjustment of the cam bar system results in angular tilting of the foil section about the plate spring such that the leading portion of the foil section remains in contact with a fourdrinier wire but bending of the foil section is avoided.

3,647,621
ROLLER PRESS, ESPECIALLY A WASHING PRESS FOR PAPER MACHINE FELTS, HAVING A FLOATING ROLLER
Christian Schiel, Heidenheim, Germany, assignor to J. M. Voith, GmbH, Heidenheim (Brenz), Germany
Filed Oct. 27, 1969, Ser. No. 869,831
Int. Cl. D21f *7/12*
U.S. Cl. 162—274 **9 Claims**



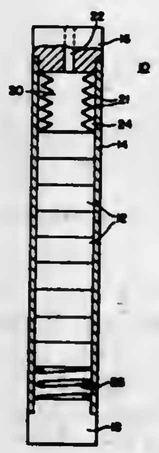
The specification discloses a roller press for pressing out wet felts and having two larger pressure rollers rotating on parallel axes and spaced apart and a smaller intermediate roller which is located between the two larger pressure rollers so as to define two nips and which intermediate roller is offset to one side of the common plane containing the axes of the two larger rollers. The felt to be pressed out extends through the first nip between the larger roller and the intermediate roller, directly envelopes the smaller roller and then goes back through the second nip thus forming the entire support for the smaller roller. The smaller roller may be formed in axial segments rotatable relative to each other and contoured to compensate for improper movement of the felt. A suction box can be coordinated to the press to exert suction on the press in the region where the felt passes around the smaller intermediate roller. The two pressure rollers can be interconnected so the roller on the side where the felt leaves the press runs slightly faster than the pressure roller where the felt enters the press and whereby the felt is additionally tensioned within the press. At least one of the larger pressure rollers can be peripherally grooved and the intermediate roller can be perforated and have air supplied to the inside thereof while, furthermore, the larger pressure rollers can be perforated and subjected to internal suction. The larger rollers may be provided with deflection compensating devices.

3,647,622
FUEL ELEMENT FOR A NUCLEAR REACTOR
Harry N. Andrews, Export, and John F. Patterson and John F. Wilson, Murrysville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 13, 1968, Ser. No. 752,299
Int. Cl. G21c *3/04*
U.S. Cl. 176—68 **6 Claims**



A metallic clad sealed fuel element for a nuclear reactor which may be initially pressurized to resist creep collapse in the early stages of burnup and which has one or more normally sealed plenum chambers which are automatically punctured when predetermined increased pressures are reached during burnup to provide void space for fission gases. In one example, the plenum chambers each comprise an elongated bellows-like structure which when compressed by the increasing pressures within the fuel element cause a wall thereof to be punctured by an internally mounted pin.

3,647,623
FUEL ELEMENT FOR A NUCLEAR REACTOR
Michael B. L. Hepps, North Versailles, and Harry M. Ferrari, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 26, 1969, Ser. No. 802,544
Int. Cl. G21c *3/04*
U.S. Cl. 176—68 **4 Claims**



A metallic clad fuel element for nuclear reactors which has a bellows-like member internally supported therein and communicably coupled with the environment of the fuel element so as to maintain an internal pressure substantially equal to the external or environmental pressure during burnup and load follow. The bellows-like member is preferably constructed of a material with a relatively high modulus of elasticity so that it may readily expand and contract to compensate for the amount of fission gas given off by the fuel during burnup.

3,647,624
TREATMENT OF BLOOD WITH OLEAGINOUS SUBSTANCE
Merle A. Evenson, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.
Filed July 24, 1969, Ser. No. 844,426
Int. Cl. A61k *27/10*
U.S. Cl. 195—1.8 **20 Claims**

Method and means for the treatment of blood and other body fluids to add or subtract ingredients with respect to the blood by passing the blood in liquid-liquid contact with an immiscible oleaginous material.

3,647,625
METHOD OF REDUCING RAFFINOSE CONTENT OF BEET MOLASSES
Hideo Suzuki, Yoshiko Ozawa, and Osamu Tanabe, Chiba-shi, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan
No Drawing. Filed Mar. 5, 1968, Ser. No. 710,679
Claims priority, application Japan, Apr. 5, 1967, 42/21,629
Int. Cl. C12b *1/00*
U.S. Cl. 195—11 **2 Claims**

When α-galactosidase is formed in the mycelium of *Mortierella vinacea* var. *raffinoseutilizer* (ATCC No. 20034), it is substantially free from invertase. Mycelial matter taken from this mold and preparation containing the enzyme may thus be added to sugar beet juice or beet molasses for reducing the raffinose content of the same, thereby greatly increasing the recovery of sucrose content.

3,647,626
PROCESS FOR THE PRODUCTION OF ADENOSINE BY MICROORGANISMS
Osamu Shoji, Ikeda-shi, Jouji Hironaka, Takatsuki-shi, and Hirotada Kotani, Sakai-shi, Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan
No Drawing. Filed Jan. 19, 1966, Ser. No. 521,522
Claims priority, application Japan, Jan. 25, 1965, 40/3,949
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 N **2 Claims**

A process for the production of adenosine which employs microorganisms of genus Sarcina which are cultured in a medium containing sources of carbon, nitrogen, inorganic salts, and adenine and subsequently accumulating and separating the adenosine formed in the fermented medium.

3,647,627
PROCESS FOR PRODUCING FLAVIN-ADENINE DINUCLEOTIDE
Masao Tanaka, Machida-shi, Nobuo Nakamura, Tokyo, and Seigo Takasawa, Machida-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Continuation of application Ser. No. 569,814, Aug. 3, 1966. This application July 12, 1968, Ser. No. 744,296
Claims priority, application Japan, Aug. 13, 1965, 40/48,942
The portion of the term of the patent subsequent to May 20, 1986, has been disclaimed
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 N **15 Claims**

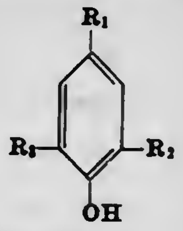
Flavin-adenine dinucleotide is produced by fermentation. A microorganism of Brevibacterium, Micrococcus, Corynebacterium or Flavobacterium is cultured in an aqueous medium under aerobic conditions at 20°–40° C. The product is recovered by ion-exchange resin treatment.

3,647,628
PROCESS FOR PRODUCING L-THREONINE
Kiyoshi Nakayama, Sagamihara-shi, Japan, assignor to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Filed Oct. 24, 1968, Ser. No. 770,387
Claims priority, application Japan, Aug. 17, 1968, 43/58,239
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 **3 Claims**

A process for producing L-threonine by fermentation which comprises culturing a microorganism which requires methionine for its growth under aerobic conditions in an aqueous nutrient medium containing (1) the required amount or more of nitrogen sources necessary for the growth of the microorganism and (2) the required amount or less of methionine for the maximum growth of the microorganism. Advantageously, at least 5 parts by weight of nitrogen per 100 parts of carbon are employed in the medium. Strains belonging to Aerobacter, Pseudomonas, Arthrobacter and Escherichia are exemplified.

3,647,629
PROCESS FOR DEMETHOXYLATION BY MICRO-ORGANISMS
Atsushi Yamamoto, Machida-shi, Tairiku Omori, Kitakyushu-shi, and Hiroshi Yasui, Machida-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Continuation of application Ser. No. 617,057, Feb. 20, 1967. This application June 14, 1968, Ser. No. 736,980
Int. Cl. C12d *13/00*
U.S. Cl. 195—30 **13 Claims**

The present disclosure relates to a process for the demethoxylation of certain organic compounds, particularly benzoic acid and benzaldehyde derivatives having the formula



wherein R_1 is CHO or COOH, R_2 is OCH_3 and R_3 is H, OH or OCH_3. This is accomplished by culturing a micro-organism capable of splitting off a methoxyl group, for example, those of the genera Saccharomyces or Torula, under aerobic conditions in an aqueous nutrient medium containing the compound to be demethoxylated.

3,647,630
ENZYMATICALLY ACTIVE COMPOSITION HAVING AN INSOLUBILIZED PROTEASE ENZYME COVALENTLY BONDED TO A WATER INSOLUBLE POLYANHYDROGLUCOSE
Neal E. Franks, Greenhills, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Sept. 29, 1969, Ser. No. 862,072
Int. Cl. C08g *7/02*
U.S. Cl. 195—63 R **4 Claims**

An enzymatically active, water-soluble composition is provided consisting essentially of (1) a protease enzyme covalently bonded to a water-insoluble matrix which is a diazotized anthranilate ester of a polyanhydroglucose compound. The composition is useful for applications where it is desired to employ a water-insoluble enzymatically active catalyst having a preformed matrix with good mechanical characteristics and specifically selected enzyme activity.

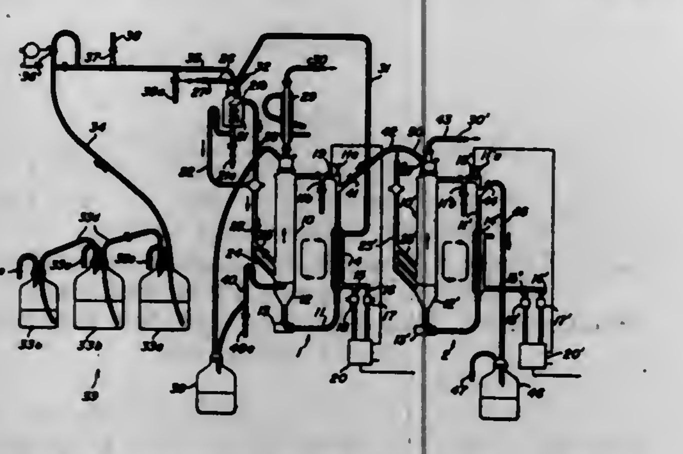
3,647,631
METHOD FOR PRODUCING TRIOSTIN
Ken Katagiri, Ikeda-shi, Japan, assignor to
Shionogi & Co., Ltd., Osaka, Japan
No Drawing. Filed Feb. 19, 1968, Ser. No. 706,678
Int. Cl. C12d *9/00*
U.S. Cl. 195—80 **3 Claims**

A method for producing an antibiotic, triostin, having antibacterial properties, characterized by cultivating *Streptomyces triostinicus,* n. sp. ATCC No. 21,043, in an aqueous nutrient medium under a submerged aerobic condition, recovering from the cultured broth a triostin complex consisting substantially of triostin A, triostin B and triostin C and, if desired, isolating each component of the triostin complex.

3,647,632
APPARATUS FOR CELL CULTURE
Dennis E. Johnson, Cambridge, and Lawrence R. Woodland, Sudbury, Mass., Charles J. Kensler, North Hampton, N.H., and Philip Himmelfarb, Wayland, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.
Filed Apr. 11, 1968, Ser. No. 720,711
Int. Cl. C12b *1/10*
U.S. Cl. 195—142 **6 Claims**

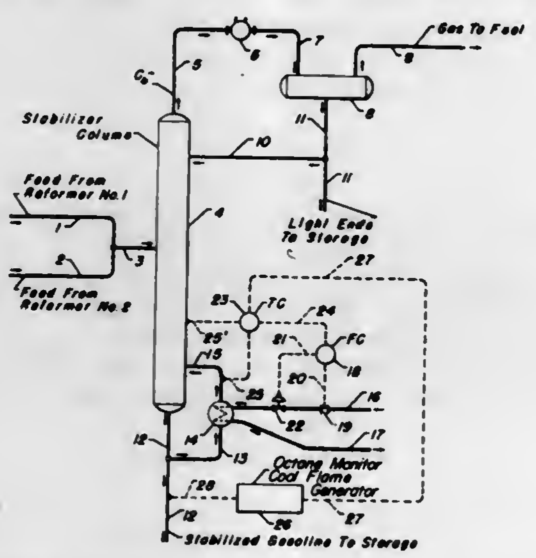
Method and apparatus for handling cells which may be microorganisms or may be derived from the tissues of living organisms. The method and apparatus permit growing such cells in an active growth state to population densities which may be from 2 to 35 times the densities now possible with present methods and equipment. The cells are maintained suspended in a liquid medium in which is placed a rotating filter. Liquids may be introduced and withdrawn without disturbing the cells. Cell densities may be built up to a high level and used as model tissues to determine the effect of chemical agents on them under conditions which are similar to those in living organisms. The method and apparatus are also suitable for carrying out large-scale industrial processes including the synthesis of organic chemicals as well as the treatment of sewage.

3,647,633
APPARATUS FOR THE CONTINUOUS PHASED CULTURING OF CELLS
Peter S. S. Dawson, Saskatoon, Saskatchewan, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Original application Nov. 22, 1967, Ser. No. 689,231, now Patent No. 3,419,473, dated Dec. 31, 1968. Divided and this application Aug. 16, 1968, Ser. No. 810,397
Int. Cl. C12b *1/20*
U.S. Cl. 195—139 **3 Claims**



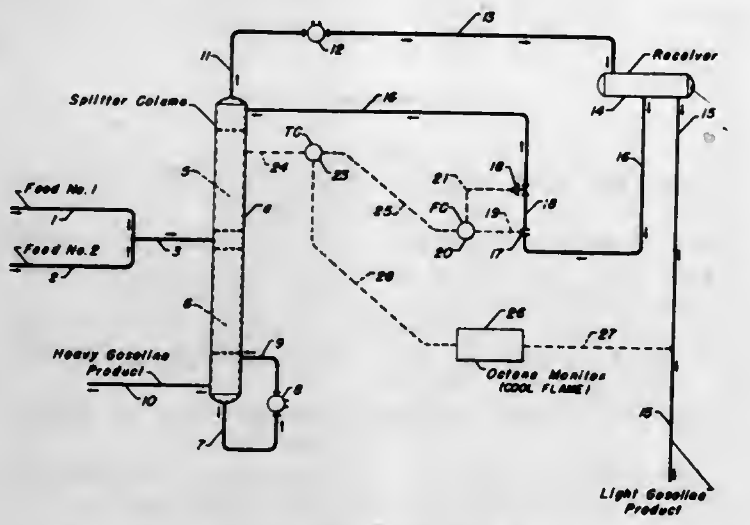
A method of improving or maintaining the phasing of cells in a cell culture by growing the cell culture at a predetermined rate in a nutrient medium which is present in an amount sufficient only for the cells in the cell culture to complete their cycle and at the doubling time of the cell culture i.e. the time when from 70 to 90% of the cells are on the point of dividing, adding further cell culture medium to at least a portion of the cell culture such that the cells have sufficient medium for completion of a further cycle.

3,647,634
OCTANE NUMBER CONTROL OF DISTILLATION COLUMN BOTTOMS BY VARYING HEAT INPUT
Walter A. Bajek, Lombard, and James H. McLaughlin, La Grange, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Oct. 22, 1969, Ser. No. 868,458
Int. Cl. B01d *3/42*
U.S. Cl. 196—132 **7 Claims**



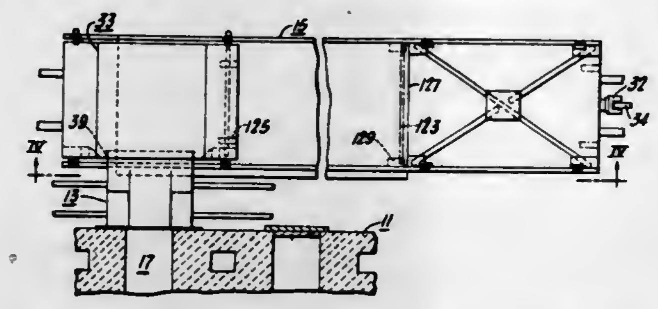
A fractional distillation column operating as a gasoline stabilizer or splitter is controlled by measuring the octane number of the column bottoms and adjusting the heat input to the column in response to the octane number. The octane measurement is effected by the analyzer comprising a stabilized cool flame generator with servo-positioned flame front which provides a real time output signal indicative of sample octane number.

3,647,635
OCTANE NUMBER CONTROL OF DISTILLATION COLUMN OVERHEAD BY VARYING REFLUX
Walter A. Bajek, Lombard, and James H. McLaughlin, La Grange, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Oct. 22, 1969, Ser. No. 868,459
Int. Cl. B01d *3/42;* **C10g** *7/00*
U.S. Cl. 196—132 **7 Claims**



A fractional distillation column operating as a gasoline splitter is controlled by measuring the octane number of the column overhead fraction and adjusting the reflux to the column in response to the octane number. The octane measurement is effected by an analyzer comprising a stabilized cool flame generator with servo-positioned flame front which provides a real time output signal indicative of sample octane number.

3,647,636
SYSTEM FOR COLLECTING DUST AND SMOKE WHEN COKE IS PUSHED FROM A COKE OVEN
Edward J. Helm, Pittsburgh, Pa., assignor to
Koppers Company, Inc.
Continuation-in-part of application Ser. No. 840,447, Oct. 13, 1969. This application Jan. 19, 1970, Ser. No. 3,769
Int. Cl. C10b *33/00*
U.S. Cl. 202—263 **13 Claims**

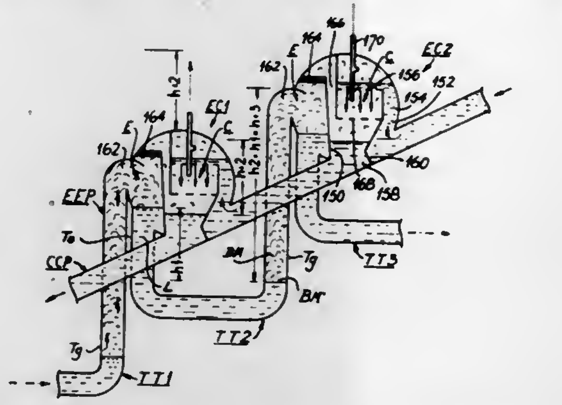


A hood is movably mounted to a coke quenching car and cooperates with a coke guide that keeps the hood in place relative to the coke guide as the coke quenching car moves relative to the hood. Dust and smoke from pushed coke passing through the hood are collected in the hood. Gas scrubbing equipment is associated with the coke guide and the hood to remove particulate matter from the gasses collected in the hood.

3,647,637
DISTILLATION OF STYRENE WITH ADDITION OF POLYMERIZATION INHIBITOR
Robert H. Rosenwald, Western Springs, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Aug. 27, 1970, Ser. No. 67,613
Int. Cl. B01d *3/34*
U.S. Cl. 203—9 **5 Claims**

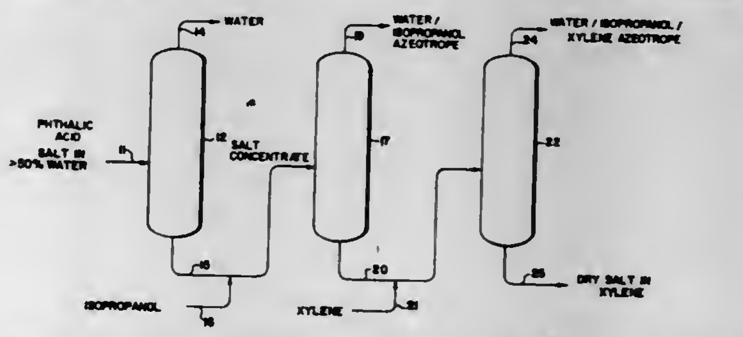
Stabilizing styrene during distillation thereof by effecting the distillation in contact with a dehydrogenation catalyst.

3,647,638
ASCENDING MULTI-STAGE DISTILLATION APPARATUS AND METHOD UTILIZING A FEED-LIQUID-LIFT SYSTEM
Asriel Osdor, Tel Aviv, Israel, assignor to Hydro Chemical & Mineral Corp., New York, N.Y.
Filed July 5, 1968, Ser. No. 742,865
Claims priority, application Israel, July 17, 1967, 28,336
Int. Cl. B01d *3/06, 1/14*
U.S. Cl. 203—11 **7 Claims**



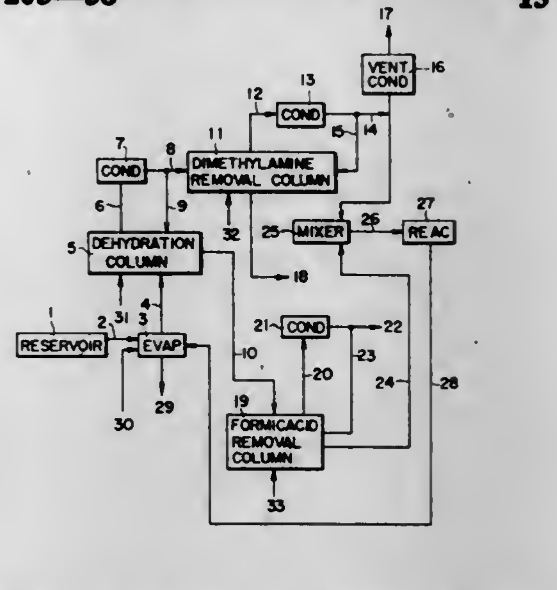
A multi-stage distillation system, particularly useful for desalination of sea water, is described comprising a plurality of evaporators and condensers disposed at elevations increasing from the first stage of highest temperature and pressure to the last stage of lowest temperature and pressure, the feed liquid being moved upwardly against gravity through the evaporators by the energy of vaporization and difference in pressure between stages, and the cooling liquid moving downwardly by gravity through the condensers against increasing pressure. A feed-liquid-lift system is described including a downflowing liquid column of the feed liquid continuously driving a longer up-flowing boiling-mixture column of the feed liquid mixed with vapor, while liquid at the lower end of the up-flowing boiling-mixture column continuously effect a hydraulic seal between adjacent stages.

3,647,639
SALT DRYING BY PLURAL STAGE AZEOTROPIC DISTILLATION WITH PLURAL ENTRAINERS
Vernon W. Buls, Alamo, and F. Norman Grimsby, Orinda, Calif., assignors to Shell Oil Company, New York, N.Y.
Filed July 7, 1969, Ser. No. 839,556
Int. Cl. B01d *3/34*
U.S. Cl. 203—14 **4 Claims**


WATER
WATER / ISOPROPANOL AZEOTROPE
WATER / ISOPROPANOL / XYLENE AZEOTROPE
PHTHALIC ACID SALT IN >50% WATER
SALT CONCENTRATE
ISOPROPANOL
XYLENE
DRY SALT IN XYLENE

Water is removed from solutions of salts of phthalic acids by a three step process wherein water is removed by consecutive non-azeotropic distillation, azeotropic distillation with a low-boiling azeotroping agent, and azeotropic distillation with a higher-boiling azeotroping agent.

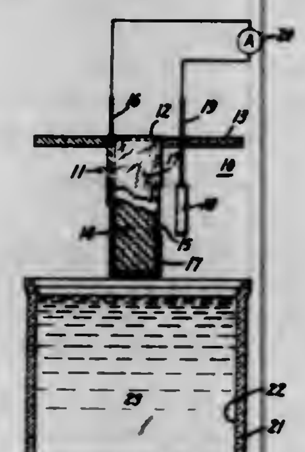
3,647,640
PROCESS FOR RECOVERING DIMETHYLFORMAMIDE BY DISTILLATION WITH DIMETHYLAMINE ADDITION
Hideo Matsuzawa, Hirotoshi Itoh, and Teruhiko Yoshioka, Hiroshima, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan
Filed Mar. 31, 1970, Ser. No. 24,177
Claims priority, application Japan, Apr. 17, 1969, 44/29,933; May 31, 1969, 44/42,786
Int. Cl. B01d *3/34;* **C07c** *97/16*
U.S. Cl. 203—38 **13 Claims**



Dimethylformamide is recovered from the mixture containing formic acid by adding dimethylamine to the mixture and heating the mixture at a temperature between 90° C. and 180° C. to resynthesize dimethylformamide.

3,647,641
REACTANT SENSOR AND METHOD OF USING SAME

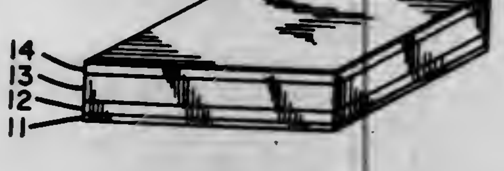
Willard T. Grubb, Schenectady, N.Y., and Robert A. Macur, Milwaukee, Wis., assignors to General Electric Company
Filed Oct. 26, 1970, Ser. No. 83,928
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T **5 Claims**



A reactant sensor is described which has a gas diffusion cathode, an anode spaced from the cathode, the anode with a catalytic coating of platinum, palladium, and a third less noble metal on a substrate the cathode being larger than the anode in a geometric area ratio of at least 3 to 1, and a current meter connected across the cathode and anode.

3,647,642
METHOD OF MAKING MIRROR-LIKE FINISHES ON METAL MASTERS

Roger A. Olson, Amery, Wis., assignor to Buckbee-Mears Company, St. Paul, Minn.
Filed July 8, 1969, Ser. No. 839,919
Int. Cl. C23b *7/00, 7/02;* **B01k** *1/00*
U.S. Cl. 204—11 **7 Claims**

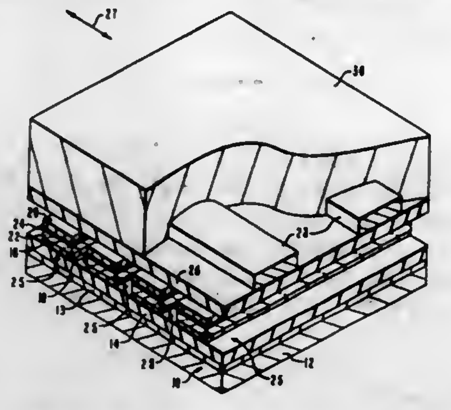


A method for producing an optical or mirror-like finish on a metallic master by electroforming the metal master on a glass surface.

3,647,643
PROCESS OF FABRICATING A HYBRID MAGNETIC FILM

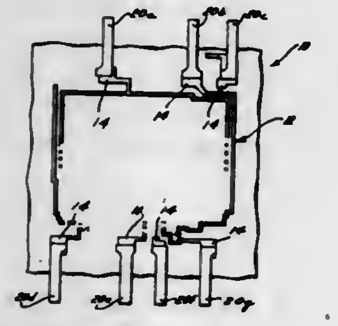
Gene S. Alberts, Essex Junction, and Barry L. Flur, Burlington, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 29, 1969, Ser. No. 861,883
Int. Cl. C23b *5/46, 5/48;* **G11b** *5/00*
U.S. Cl. 204—15 **10 Claims**

Multilayer magnetic film devices are prepared in which a first magnetic film is vacuum deposited, and a second magnetic film is electroplated. The first magnetic film is vacuum evaporated on a suitable substrate, such as silicon monoxide-coated or polyimide-coated metal. An electrically continuous copper layer is vacuum evaporated on the first magnetic film. An additional thickness of copper is electroplated on the electrically continuous copper layer. A second magnetic film is then electroplated on the additional thickness of copper. The layers so deposited may then be etched into an array of magnetic film devices in a single step etching process, using a suitable etchant for both the magnetic films and the copper, such as ferric chloride in the case of nickel-iron magnetic films. Single step etching results in better definition, allowing substantially greater density of individual storage locations in a memory employing the magnetic film devices.



3,647,644
BEAM LEAD BONDING PROCESS

Edward J. Russell, Salt Lake City, Utah, assignor to General Instrument Corporation, Newark, N.J.
Filed Nov. 7, 1969, Ser. No. 874,829
Int. Cl. B01j *17/00;* **B29c** *17/08;* **C23b** *5/48*
U.S. Cl. 204—15 **23 Claims**

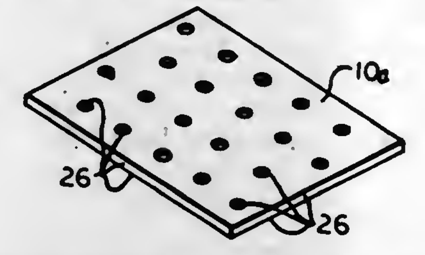


A method of forming a beam lead on a wafer of semiconductor material containing a plurality integrated circuits in which the beam lead is deposited on a layer of conductive material whereby it becomes physically bonded and electrically connected to the conductor pad of one of such integrated circuits and overlays said wafer outside said one circuit. Bonding to the conductive material outside said one circuit is inhibited by chemical treatment of such conductive material. Hence the wafer of semiconductor material may be divided readily into a plurality of chips each having beam leads attached thereto and extending therefrom in cantilever fashion. Also disclosed is a method of scribing the backside of said wafer remote from said beam leads such that the wafer may be broken into a plurality of chips along lines spanned by said beam leads. This is accomplished by directing infrared radiation through said wafer to establish a pattern indicating, on the backside of the wafer, the position of the beam leads or other circuit components located on the front side of the wafer.

3,647,645
METHOD FOR SELECTIVE ANODIZING OF PERFORATED PANELS

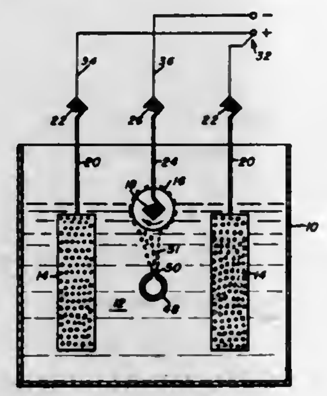
Gilberto Carrillo and William D. Brown, Riverside, Calif., assignors to Rohr Corporation, Chula Vista, Calif.
Filed Nov. 14, 1969, Ser. No. 876,863
Int. Cl. C23b *5/48;* **B44c** *1/04*
U.S. Cl. 204—15 **8 Claims**

A method for anodizing only a selected side, edges and the interiors of perforations of a perforated panel, in which a pressure sensitive tape is applied to the selected side of the panel and over the perforations. A filler is placed in the perforations from the opposite side of the panel ovei which a maskant is applied. The tape is then removed and the panel is tapped and rinsed to remove the filler, after which the masked panel is anodized. The maskant is then removed from the panel.



3,647,646
METHOD AND APPARATUS FOR ELECTROPLATING CYLINDRICAL OBJECTS

William M. Tucker, Barrie M. Gardner, and John W. Hayford, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 4, 1968, Ser. No. 710,035
Int. Cl. C23b *5/56, 5/68;* **B01k** *3/00*
U.S. Cl. 204—25 **26 Claims**



In electroplating a cylindrical object which serves as cathode in the plating process and is positioned adjacent to an anode immersed in the plating bath, the object is mounted in such manner that it is only partially submersed and the bath is agitated with sufficient force that the exposed surface of the object is maintained completely awash with the electrolyte solution. Defects in the plating resulting from occlusion of air bubbles or solid particles are thereby minimized and a high plating rate is attained.

3,647,647
PROCESS FOR PLATING TITANIUM

Jules P. Winfree, Jupiter, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Feb. 19, 1969, Ser. No. 800,549
Int. Cl. C23b *3/02, 5/08*
U.S. Cl. 204—32 R **6 Claims**

A process for forming a smooth adherent nickel plate on the titanium alloys utilizing a controlled half-wave anodic etch in a quiescent acid bath to achieve selective key-holing of the substrate surface, followed by cathodically applied nickel plating.

3,647,648
PLATING HIGH STRENGTH STEEL WITHOUT HYDROGEN EMBRITTLEMENT

Wilfred Dingley, Ottawa, Ontario, John S. Bednar, Gatineau Pointe, Quebec, and Raymond R. Rogers, Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
No Drawing. Filed May 18, 1967, Ser. No. 639,312
Int. Cl. C23b *1/00*
U.S. Cl. 204—34 **19 Claims**

A procedure is provided for the treatment of high strength steels so that they may later be electroplated in certain stable cyanide-zinc and stable cyanide-cadmium plating baths of precise composition. The procedure involves firstly cleaning away visible films from the steel surface, e.g. by using hydrochloric acid or sulfuric acid. The second step involves producing a thin fugitive porous metal film which is cathodic to the steel on the steel surface, e.g. by immersing the steel in a bath of copper sulphate to produce such a copper film. The third step involves removing the metal coating and simultaneously forming a smooth surface free of minute sharp edges, e.g. by treatment with an aqueous nitric acid-acetic acid cleaning solution or an aqueous nitric acid-acetic acid-phosphoric acid cleaning solution. The final step involves removing smut from the steel surface, e.g. by washing with water under hydraulic pressure, with added ultrasonic vibration or water under pneumatic pressure.

The procedure also includes using a stable cyanide-zinc bath whose composition satisfies the formula

$(OH^{-}\text{ normality})-(CN^{-}\text{ normality})=1.2$ and the ratio of CN^{-} normality/Zn^{++} normality ranges from 1.07 to 1.25; and the use of a stable cyanide-cadmium bath whose composition satisfies the formula

$(OH^{-}\text{ normality})=(CN^{-}\text{ normality})$ and the ratio of CN^{-} normality/Cd^{++} normality is about 2.8.

3,647,649
METHOD AND COMPOSITION FOR SEALING ANODIZED ALUMINUM SURFACES

Robert L. Treiber, Elgin, Ill., assignor to Alcor Chemical Co., Inc., Chicago, Ill.
No Drawing. Filed Feb. 24, 1970, Ser. No. 13,832
Int. Cl. C23b *5/50*
U.S. Cl. 204—35 N **9 Claims**

Process and composition for sealing anodized aluminum surfaces. The composition contains 35–60% nickel acetate or cobalt acetate; 35–60% of the ammonium salt of naphthalene sulfonic acid, and minor quantities of a condensation product of octyl phenol with ethylene oxide and malic acid. The composition is applied in hot aqueous solution to the aluminum surfaces to be sealed.

3,647,650
METHOD OF TREATING TIN PLATE OR GALVANIZED SHEET

Hidehisa Yamagishi, Yokohama-shi, Naoki Gunji, Tokyo, and Masao Takeuchi, Zushi-shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
No Drawing. Continuation-in-part of application Ser. No. 755,803, Aug. 28, 1968. This application July 16, 1969, Ser. No. 842,337
Int. Cl. C23f *13/00*
U.S. Cl. 204—35 R **14 Claims**

A process for making tin plate or galvanized sheet which comprises subjecting the electrolytically plated sheet first to a post-treatment with an alkaline solution, then washing the sheet with water, and thereafter subjecting it to an electrolytic passivating treatment in a solution containing (a) a hexavalent chromium ions-furnishing compound and (b) a water-soluble saturated carboxylic acid selected from the group consisting of monobasic fatty acids, dibasic fatty acids, aromatic carboxylic acids, salts of such acids and mixtures of such acid or salts.

Sheets with improved resistance against corrosion and oxidation are obtained.

3,647,651
PROCESS FOR ELECTROLYTIC HYDRODIMERIZATION OF ALPHA,BETA-UNSATURATED COMPOUNDS

James B. Ganci, Wilmington, and Sebastian V. R. Mastrangelo, Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Aug. 31, 1970, Ser. No. 68,497
Int. Cl. C07b *29/06;* **C07c** *121/02, 121/26*
U.S. Cl. 204—73 A **4 Claims**

The process of electrolytic hydrodimerization of alpha, beta-olefinically unsaturated compounds in a conductive aqueous medium consisting essentially of a hydrodimerizable alpha,beta-olefinically unsaturated compound dissolved in an aqueous, conductive salt solution wherein an alternating current is passed between electrodes at a frequency that will maintain a preselected pH range and minimize by-product formation.

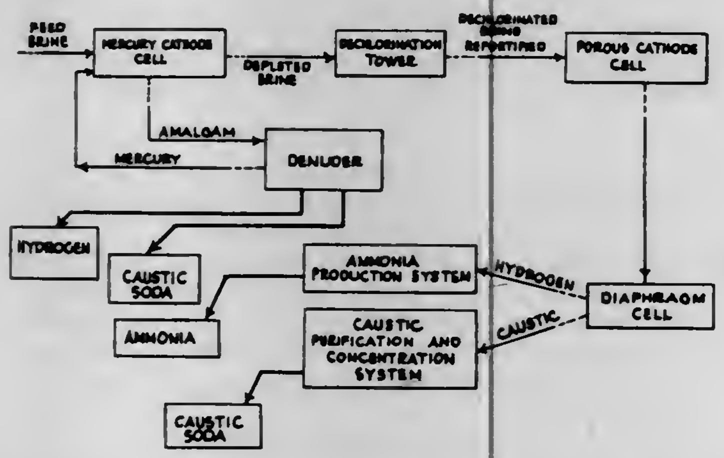
3,647,652
STABILIZED PEPTONE SOLUTIONS AND PLATING BATHS CONTAINING THE SAME

Nicholas J. Spilliotis, Parsippany, N.J., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Nov. 20, 1968, Ser. No. 777,477
Int. Cl. C23b *5/10, 5/14, 5/46*
U.S. Cl. 204—43 **18 Claims**

Invention relates to the stabilization of peptone solutions by the addition thereto of a stabilizing effective amount of an additive compound selected from carboxylic acids, esters of such acids, ketones, alcohols, aldehydes and the linear and cyclic polymers thereof and the use of such stabilized peptone solutions in the electrodeposition of metals from plating baths containing such stabilized peptone solutions.

3,647,653
PURIFICATION OF BRINE

Gordon A. Carlson, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Mar. 11, 1969, Ser. No. 806,204
Int. Cl. B01k *1/00;* **C01d** *1/08;* **C22d** *1/04*
U.S. Cl. 204—130 **29 Claims**



Disclosed is an electrolytic cell and a method for removal of mercury and other impurities from brine. The brine, having a low free chlorine content, is passed through a porous cathode and the impurities are electrolytically deposited on the cathode. The cathode is preferably regenerated by reversing the electrical potential and/or flushing with brine containing chlorine followed by flushing with hydrochloric acid solution.

3,647,654
BERYLLIUM-COPPER ELECTROPOLISHING SOLUTION

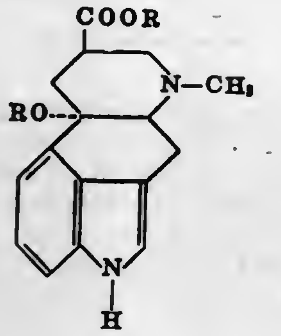
Emil Toledo, Natick, Mass., and Dennis R. Sprague, Tustin, Calif., assignors to Raytheon Company, Lexington, Mass.
No Drawing. Filed Oct. 15, 1969, Ser. No. 866,725
Int. Cl. C23b *1/00, 3/06*
U.S. Cl. 204—140.5 **8 Claims**

An aqueous electrolyte for leveling and polishing a beryllium-copper surface, said electrolyte comprising phosphoric acid, chromic acid, a maximum of 44 ml./liter of sulfuric acid, 12 to 22 ml./liter of fluoboric acid and a maximum of 22 ml./liter of hydrofluoric acid.

3,647,655
PROCESS FOR THE PREPARATION OF LUMILYSERGIC ACID DERIVATIVES

Luigi Bernardi, Milan, Germano Bosisio, Palazzolo Milanese, and Aldemio Temperilli, Milan, Italy, assignors to Societá Farmaceutici Italia, Milan, Italy
No Drawing. Filed May 12, 1970, Ser. No. 36,661
Claims priority, application Italy, May 13, 1969, 16,762/69
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 **7 Claims**

A process for preparing lumilysergic acid derivatives of the formula

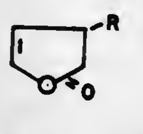


wherein R is a lower alkyl radical containing from 1 to 4 carbon atoms. The process comprises reacting the lysergic acid with a lower aliphatic alcohol containing from 1 to 4 carbon atoms in the presence of light and of a mineral acid. The light source is preferably a U.V. ray lamp. The mineral acid is preferably sulphuric acid.

3,647,656
METHOD OF PREPARING α SUBSTITUTED β, γ UNSATURATED LACTONES FROM ALKOXYFURANS

Rangaswamy Srinivasan and Hiroyuki Hiraoka, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
No Drawing. Filed Apr. 9, 1969, Ser. No. 814,791
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 **8 Claims**

Alpha substituted β, γ unsaturated lactones having the general formula

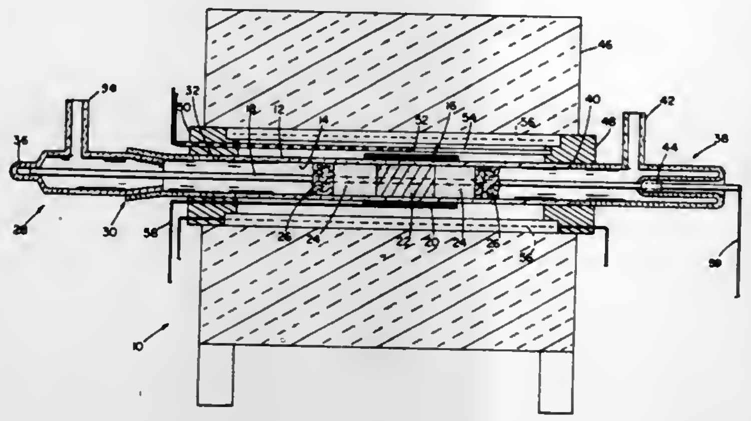


where R is an alkyl or aromatic group, is prepared. An alkyl or aromatic substituted alkoxyfuran is irradiated in the presence of actinic radiation either in the vapor phase or in solution.

3,647,657
PROCESS FOR PRODUCING PROPYLENE

Richard N. Foster, 182 Beacon St., Boston, Mass. 02172
Filed Aug. 19, 1970, Ser. No. 65,214
Int. Cl. C07b *29/06;* **C07c** *5/18*
U.S. Cl. 204—168 **7 Claims**

In a process for producing propylene by dehydrogenation of propane wherein propane is introduced into a reactor having walls defining a chamber, a reaction zone within said chamber, an inlet to admit the propane to the chamber, an outlet to discharge propylene and hydrogen from the chamber, a structure of electrically nonconductive material supported in said reaction zone, said structure having channels for the passage of propane, hydrogen, and propylene, and a plurality of electrically conductive, catalytically active particles separately supported on said structure, said particles being electrically insulated one from another and having surface portions exposed to direct contact with said propane in said channels, wherein the propane is heated to a temperature in the range 400° F. to 1200° F., and wherein the propane is then brought into contact with the surface portions of the particles to catalyze the dehydrogenation of the propane to form propylene, and wherein the propylene is then withdrawn from the reactor, an improvement comprising applying, while said propane is in contact with said surface portions, an electric potential, difference between electrodes spaced apart one from another and opposed across said reaction zone, thereby causing said propane to react more rapidly to form propylene.



3,647,658
METHOD OF MAKING LACQUER COATINGS BY MEANS OF ELECTRO-PHORETIC DEPOSITION

Erich Hofling and Hanspeter Breu, Kreuzlingen, Switzerland, assignors to Swiss Aluminum, Ltd., Chipps, Switzerland
No Drawing. Filed Sept. 17, 1970, Ser. No. 73,186
Claims priority, application Switzerland, Sept. 18, 1969, 14,449/69
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—181 **6 Claims**

Method of covering a metal object with electro-phoretically deposited coatings having high dielectric strength wherein the previously electro-phoretically coated object after its burning-in the lacquer coating is exposed to a voltage stress in a liquid capable of conducting electrical current, the voltage is increased until the breakdown of the weak points of the coating takes place, and subsequently the object is electrophoretically lacquered again to cover the points of breakdown with a new lacquer layer without substantially changing the thickness of the previous coating.

3,647,659
PHOTOELECTROPHORETIC IMAGING PROCESS WHEREIN THE IMAGING ELECTRICAL FIELD IS APPLIED SUBSEQUENT TO IMAGEWISE EXPOSURE

Carol K. Keller, Rochester, Stephen F. Royka, Fairport, and Christopher Snelling, Penfield, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Oct. 29, 1969, Ser. No. 872,174
Int. Cl. G03g *13/22;* **B01k** *5/00*
U.S. Cl. 204—181 **6 Claims**

A photoelectrophoretic imaging system wherein a suspension of electrically photosensitive particles in an insulating liquid migrate in image configuration when exposed to imagewise light and, subsequently, to electrical field. Separation of the exposing and field application steps is made possible by coating the suspension on an electrode using a biased coating member or by application of corona to the surface of the suspension just prior to the imagewise exposure step. Subsequent application of field then causes imagewise particle migration.

3,647,660
PHOTOELECTROPHORETIC IMAGING METHOD EMPLOYING A HALOGEN CONTAINING SUSPENSION

John B. Wells, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Dec. 19, 1969, Ser. No. 886,534
Int. Cl. B01k *5/00;* **G03g** *13/00*
U.S. Cl. 204—181 **6 Claims**

This invention relates to a photoelectrophoretic imaging system whereby upon the addition of a halogen to the imaging suspension it is possible by regulating the polarities of the electrodes in the system to obtain both negative and positive images from a single sense input.

3,647,661
ELECTRODEPOSITION OF COATING LAYERS ON SUBTRATE STRUCTURES

Akira Matsushita, 99, 2-chome, Kosugigoten-cho, Kawasaki-shi, Japan
Filed Dec. 18, 1968, Ser. No. 784,552
Claims priority, application Japan, Dec. 23, 1967, 42/83,133
Int. Cl. B01k *5/00;* **C23b** *13/00*
U.S. Cl. 204—181 **12 Claims**

A current is passed through a cathode and an article adapted to function as an anode, the cathode and anode being disposed in an electrolytic vessel containing an emulsion prepared by dispersing fine particles of a filler in an aqueous solution having as its principal constituent an anionic, polyvalent polyelectrolyte consisting of a resin component, whereby a mixture of the fine particles and resin component is electrodeposited on the article. The coating layer is then dried to cause polycondensation of the resin component to form a film which functions directly as a binder between the fine particles.

3,647,662
TECHNIQUE FOR THE FABRICATION OF HAFNIUM NITRIDE RESISTOR

Dieter Gerstenberg, Allentown, Pa., and Frank Thomas John Smith, Bedford, Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Original application Feb. 26, 1968, Ser. No. 708,159, now Patent No. 3,575,833, dated Apr. 20, 1971. Divided and this application June 1, 1970, Ser. No. 41,876
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **4 Claims**

A technique for fabricating hafnium nitride film resistors involves reactively sputtering hafnium in a nitrogen ambient upon a nonconducting substrate. Resistors fabricated in accordance with the described procedure manifest a wider range of available electrical properties such as temperature coefficient of resistance and resistivity than the widely used tantalum nitride devices.

3,647,663
METHOD OF FORMING A COMPOSITE INSULATING LAYER

James A. Cunningham, Dallas, and Clyde R. Fuller and Samuel J. Wood, Jr., Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 19, 1968, Ser. No. 699,169
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **7 Claims**

Disclosed is a method of forming a composite insulating layer for use, primarily, in multilevel integrated circuits. An RF-sputtered silicon oxide layer is deposited over the first layer contacts of a monocrystalline integrated circuit followed by the deposition of a layer of oxidative silicon oxide resulting from a reaction of silane SiH_4 with oxygen O_2 to form a composite insulating layer. The composite insulating layer combines the advantage of the silicon oxide layer formed by either method but with none of the disadvantages inherent in either.

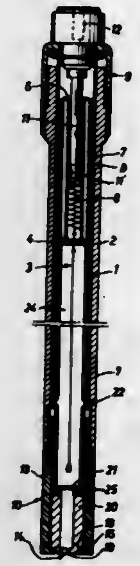
3,647,664
METHOD OF MAKING A CURRENT CONTROLLING DEVICE INCLUDING A VO_2 FILM
Gordon R. Fleming, Pontiac, and Stanford R. Ovshinsky, Bloomfield Hills, Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.
Application May 27, 1969, Ser. No. 830,582, now Patent No. 3,588,639, dated June 28, 1971, which is a continuation-in-part of application Ser. No. 809,205, Mar. 21, 1969. Divided and this application Sept. 8, 1970, Ser. No. 70,156
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **4 Claims**

A current controlling device for an electrical circuit including a semiconductor element and electrodes in low electrical resistance contact therewith, wherein said semiconductor element has a threshold voltage value and a high electrical resistance to provide a blocking condition for substantially blocking current therethrough, wherein the high electrical resistance is substantially instantaneously decreased to a low resistance in response to a voltage above said threshold voltage value to provide a conducting condition for substantially conducting current therethrough, and wherein the semiconductor element between the electrodes comprises a thin substantially amorphous film of substantially VO_2 having high electrical resistance.

3,647,665
ELECTROCHEMICAL DEVICE FOR PRODUCING A RECORD
William W. Lester, Rockville, Md., assignor to Tracor, Inc., Austin, Tex.
Filed July 30, 1969, Ser. No. 845,968
Int. Cl. B01k *3/00;* **H01v** *7/00*
U.S. Cl. 204—194 **7 Claims**

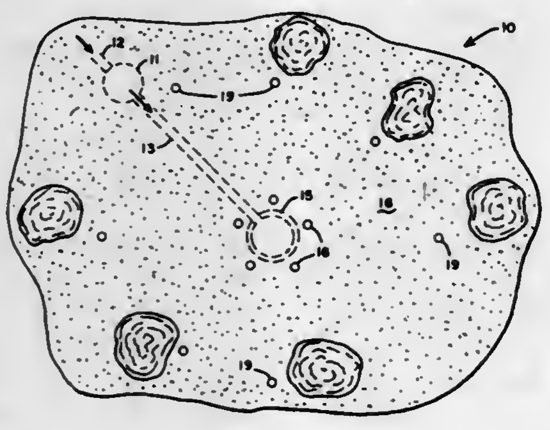
An apparatus for producing a record in the nature of a photograph wherein small electrical currents are caused to pass through a silver halide emulsion of the type normally used in photographic printing paper. The invention is especially useful in producing a record of a pressure pattern such as an ultrasonic pattern in a fluid medium wherein one surface of a piezoelectric transducer is exposed to the pressure pattern, that surface being coated with a thin layer of an electrically conductive material. A planar array of semiconductor diodes is placed in a parallel contacting relationship with the other surface of the piezoelectric transducer to rectify the charge pattern resulting from stress in the transducer due to the pressures applied thereto. The rectified signals on the output side of the diode array are applied to a major face of a moistened layer of silver halide emulsion of a type normally used in photographic printing papers or films. The back of the emulsion sheet is coated with, or is in contact with, an electrically conductive sheet which is electrically connected to the conductive layer on the piezoelectric transducer. After exposure of the emulsion layer to currents generated by the piezoelectric crystal the emulsion is removed and processed in a conventional manner to develop the latent image produced therein by the electrical currents and thereby produce a record of the pressure patterns applied to the piezoelectric transducer. In the use of the apparatus described herein and in the method of producing the record, the emulsion is shielded from light of a kind which would produce an image.

3,647,666
MEASURING ELECTRODE FOR MEASURING OF IONS IN SOLUTIONS
Wilhelm Simon, Oberembrach, Zurich, Willi Möller, Zurich, and René Dohner, Affoltern am Albis, Switzerland, assignors to Gebruder Moller, Glasblaserei Inhaber and Willi Moller, Zurich, Switzerland
Filed June 10, 1970, Ser. No. 45,191
Claims priority, application Switzerland, June 12, 1969, 8,994/69
Int. Cl. G01n *27/30*
U.S. Cl. 204—195 **13 Claims**



A measuring electrode for measuring ions in solution comprises an electrically insulating cylindrical casing which contains a glass or plastics cylinder having open top and bottom ends and a transverse partition wall, and a detachable electrode base carrying the ion selective member and closing the bottom end of said cylinder to form a hollow space within the cylinder between said partition wall and the electrode base adapted to contain the reference solution. An internal reference electrode is immersed in the solution and sealingly leads through said transverse partition wall and extends to the top of the casing where it is connected to junction means. Means are provided to enable an easy exchange of the electrode base of the reference solution and of the ion-selective material.

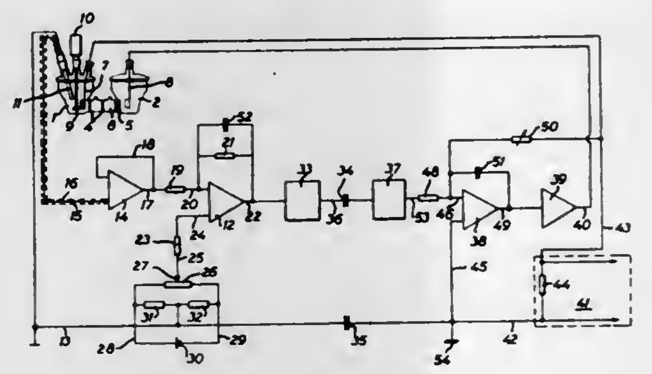
3,647,667
SEWAGE TREATMENT
Earl C. Peterson, 1300 Kelly Drive N., Minneapolis, Minn. 55427
Filed June 11, 1970, Ser. No. 45,319
Int. Cl. B01d *13/02;* **B01k** *5/00;* **C02b** *1/82*
U.S. Cl. 204—299 **7 Claims**



Means of dispersing aqueous effluents from a sewage treatment system utilizing a generally closed septic or

retention tank and a subterranean disposal field area. The septic tank is arrange to receive raw sewage and to retain solids and discharge aqueous fluid effluent therefrom. The disposal field is normally disposed adjacent the septic tank vessel and is arranged to receive and disperse the aqueous fluid effluent discharged from the septic tank. Electrode means are provided for electrolytically treating the aqueous effluent by the application of a DC electrical field through the effluent, the electrode means including an expendable anode situated in the disposal field at a point adjacent the septic tank vessel, and a generally non-expendable cathode situated in the disposal field at a point remote from the septic tank vessel and anode, the electrode means being electrolytically coupled, one to another.

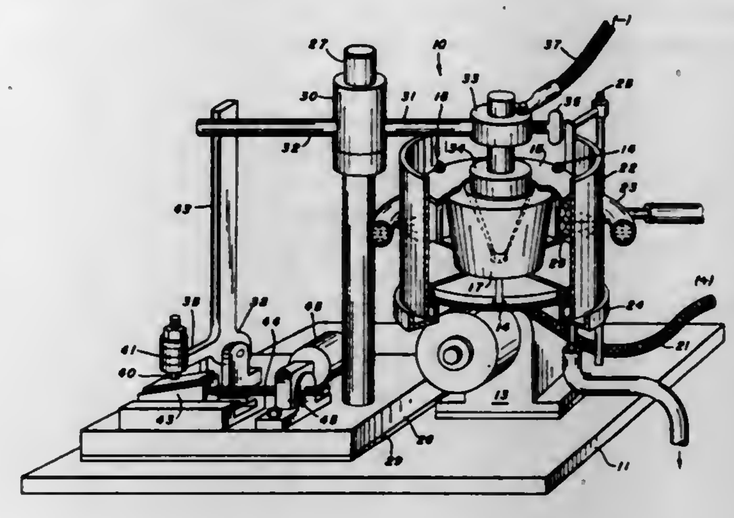
3,647,668
COULOMETRIC TITRATION APPARATUS
Lars Alfred Lindblad, Klinten, and Nils Rune Kahlbom, Upplands-Vasby, Sweden, assignors to Jungner Instrument Aktiebolag, Stockholm, Sweden
Filed June 3, 1968, Ser. No. 734,172
Claims priority, application Sweden, June 6, 1967, 7,902/67
Int. Cl. G01n *27/44*
U.S. Cl. 204—195 **4 Claims**



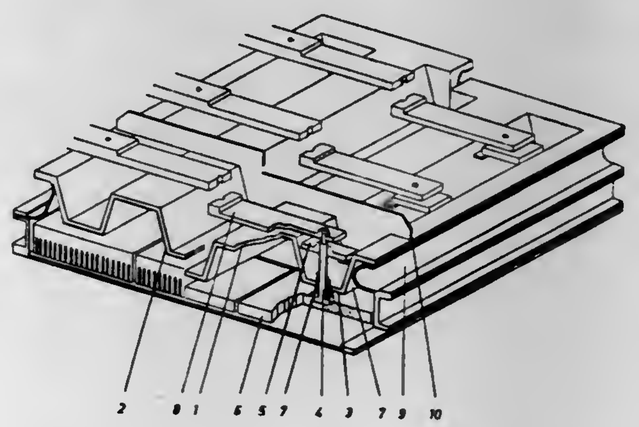
A coulometric titration apparatus which has a Coulomb measuring device and an electrolytic titration device with a titration electrode system and a measuring electrode system is provided with an electronic apparatus which has a measuring section and a feeding section, said measuring section containing a difference amplifier connected to the measuring electrode system and having a voltage level changing device in one of the input channels thereto, and said feeding section being connected to the titration electrode system and provided with a current feedback path for obtaining rapid titration without oscillations.

3,647,669
APPARATUS FOR FINISHING DIE NIBS
John W. Kelso, Dravosburg, Pa., assignor to United States Steel Corporation
Filed May 26, 1969, Ser. No. 827,609
Int. Cl. B23p *1/00;* **C23b** *5/68*
U.S. Cl. 204—212 **1 Claim**

A turntable has means for securing thereto a drawing die, the encased nib of which has an axial hole therethrough. A cylinder surrounding the die and extending upwardly from the table holds a slurry of abrasive particles in an electrolyte. A lapping tool is suspended eccentrically in the hole in the nib for contact with the surface defining the hole. The tool is mounted on a crank arm projecting from a sleeve journaled on a vertical shaft. A second arm extending from said sleeve is engaged by a bell crank to apply torque thereto. A cooling-spray pipe extends around the cylinder and an annular collecting trough is disposed below the lower edge of the latter. An agitator supported from outside the cylinder projects thereinto.



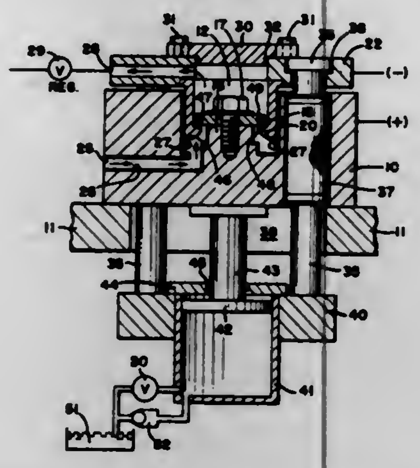
3,647,670
COVER FOR ELECTROLYTIC CELL WITH MERCURY CATHODES AND ADJUSTABLE ANODES
Luciano Mosè and Gerhard Heuser, Dortmund, Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany
Filed May 14, 1969, Ser. No. 824,656
Claims priority, application Germany, May 17, 1968, P 17 71 392.7
Int. Cl. C22d *1/04, 1/02*
U.S. Cl. 204—219 **2 Claims**



A cover for a horizontal electrolytic cell having mercury cathode and adjustable anodes and in which the anodes have vertical current carrying shafts extending through the cover, the cover having downwardly projecting bulges at the passage points of the anode shafts, thereby effecting a saving in the material for the shafts and a gain in voltage because of the short current feed.

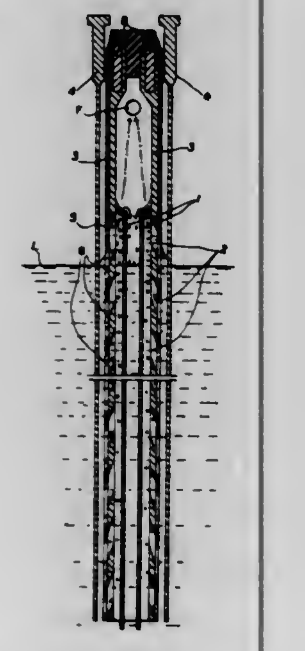
3,647,671
ELECTROCHEMICAL MACHINING APPARATUS
Ronald C. Abt, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Mar. 24, 1969, Ser. No. 809,706
Int. Cl. B23p *1/04, 1/12*
U.S. Cl. 204—224 **8 Claims**

An electrochemical machining apparatus for machining to precise dimensions workpieces, such as gears, includes an electrolyte chamber in which is mounted the workpiece and an electrochemical machining tool. The tool is so positioned relative to the workpiece, and the chamber is so constructed, that electrolyte under pressure introduced into the chamber flows first over the tool and then between the tool and the workpiece. The hydrostatic forces generated within the chamber by the electrolyte under pressure cause the tool to be moved into the workpiece. Control means outside the electrolyte chamber govern the rate of movement of the tool relative to the workpiece so variable feed rates and accurate dimensioning and repeatability of machining is obtained. The control means may include a constant flow hydraulic valve or a constant speed hydraulic or electric motor which allows, but which does not cause, a constant rate of movement between the tool and workpiece.



3,647,672
ELECTRODE WITH AEROLIFTING AND GAS-SEPARATION EFFECTS FOR ELECTROLYSIS OF SOLUTIONS OF ELECTROLYTES

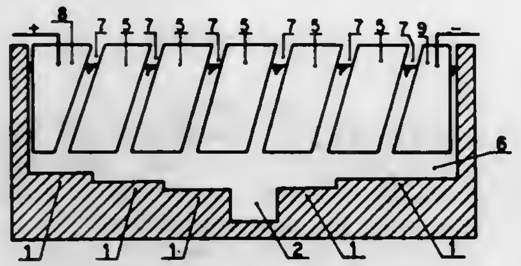
Marin Russev Mehandjiev, Plovdiv, Bulgaria, assignor to Nautchno-Izsledovatelski Institut po Tzvetna Metalurgiya, Plovdiv, Bulgaria
Filed Nov. 12, 1968, Ser. No. 775,042
Claims priority, application Bulgaria, Nov. 13, 1967, 8,871
Int. Cl. B01k *3/04*
U.S. Cl. 204—284 **9 Claims**



An electrode for electrolytic processes has a thin-walled hollow body with a pair of internal partitions of inert or nonconductive material defining with the electrode walls a pair of narrow air-lifting channels which communicate through inclined slots with the outer electrode surface; these partitions terminate within the electrode body above the electrolyte level but below the top of the electrode whereby gases evolving at the outer electrode surface, entering the channels through the inclined slots, rise in the channels and generate a circulation of electrolyte liquid which overflows the partitions and returns to the external electrolyte pool through a central compartment and the open bottom of the electrode.

3,647,673
STEPPED BOTTOM FOR MULTICELL FURNACE FOR PRODUCTION OF ALUMINUM BY ELECTROLYSIS

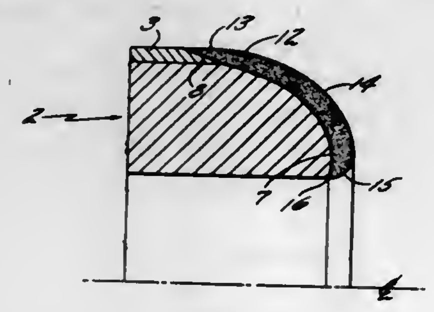
Giuseppe de Varda and Alberto Vajina de Pava, Milan, Italy, assignors to Montecatini Edison S.p.A., and Giuseppe de Varda, both of Milan, Italy, fractional part interest to each
Filed Mar. 24, 1969, Ser. No. 809,852
Claims priority, application Italy, Mar. 26, 1968, 14,381/68
Int. Cl. C22d *3/02, 3/12*
U.S. Cl. 204—244 **7 Claims**



Described is a multicell furnace with bipolar suspended electrodes for the production of aluminum by means of thermal electrolysis of alumina dissolved in molten baths containing fluoro compounds, equipped with a vat of refractory electrically non-conducting material, with a bottom provided with grooves or pockets for collecting and tapping the aluminum produced through the electrolysis. The furnace bottom is characterized in that said grooves or said collecting pockets are less numerous than the interspaces or cells between electrode and electrode. Furthermore, said bottom is step-shaped, every step comprising a practically horizontal surface and a practically vertical surface, the steps sloping down towards said grooves or said collecting pockets.

3,647,674
ELECTRODE FOR SMALL HOLE ELECTROCHEMICAL DRILLING

Frederick R. Joslin, Lebanon, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed July 13, 1970, Ser. No. 54,496
Int. Cl. B01k *3/04;* **C23b** *5/74;* **B23p** *1/00*
U.S. Cl. 204—284 **10 Claims**

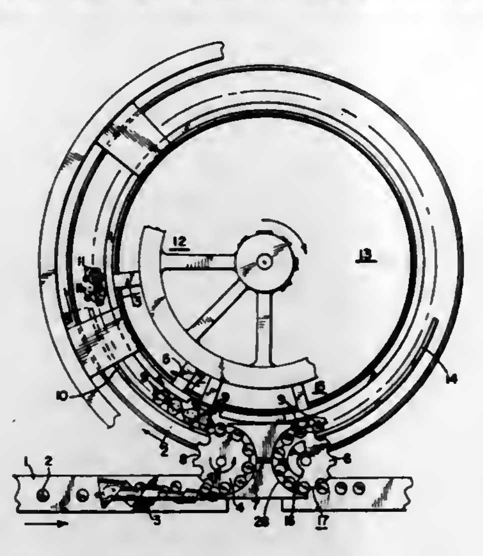


An electrode for electro-chemical drilling in which the dielectric on the outer surface of the tube is held in place at the working end of the electrode by an overlying metallic plating that covers the end surface of the tube.

3,647,675
AUTOMATIC ROTARY ELECTRODEPOSITION APPARATUS

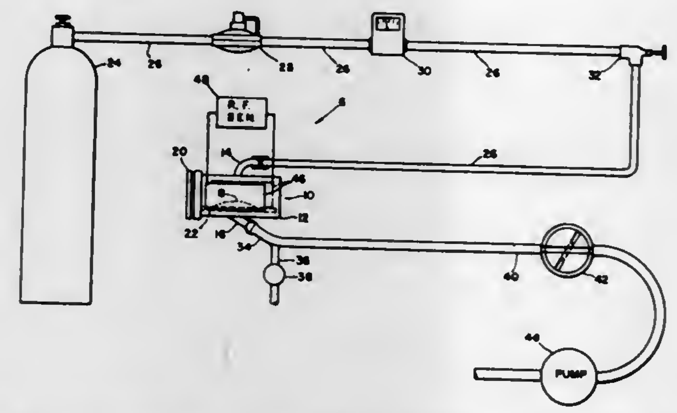
Edward J. Fiala, Oak Lawn, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed June 2, 1969, Ser. No. 829,412
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—300 **7 Claims**

An automatic electrodeposition machine which electrodeposits a coating onto a can body. The can body is passed along a ring shaped trough which is filled with coating solution and an electric potential is applied between the solution and the can body to deposit a coating onto the can body. The can body is dipped into the trough and is moved along in the trough a distance sufficient to allow the desired amount of coating to cover the inside and outside of the can body.



3,647,676
METHOD AND APPARATUS FOR REACTING IONIZED GAS WITH A NON-GASEOUS SUBSTANCE

Richard L. Bersin, Kensington, Calif., assignor to International Plasma Corporation
Filed Aug. 19, 1968, Ser. No. 753,683
Int. Cl. B01k *1/00*
U.S. Cl. 204—312 **4 Claims**



A method for ionizing gas and reacting it with a nongaseous substance in which the gas is ionized by an electrical radio frequency (RF) field generated in the space surrounding the substance. The apparatus comprises a container defining a reaction chamber and a pair of electrodes coupled with an RF generator and placed closely adjacent an exterior surface of the container. The container includes an intake conduit and an exhaust conduit which is preferably diammetrically opposite the former. An access opening to the chamber is closed and sealed from the exterior of the container by a cover biased toward the portion of the container defining the opening.

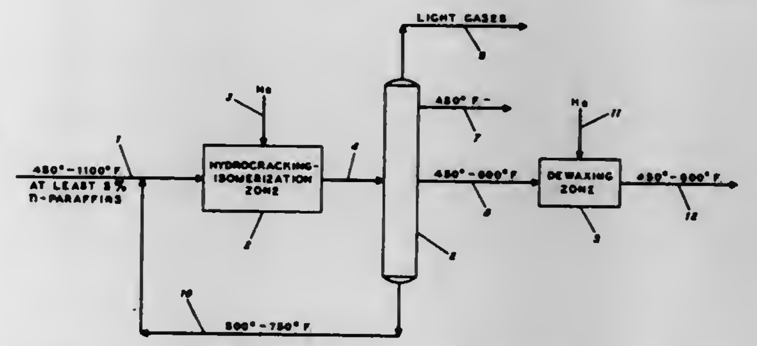
3,647,677
RETARDATION OF COKE FORMATION

William F. Wolff, Park Forest, Ill., and Robert J. Rosscup, Valparaiso, and John A. Ridgway, Jr., La Porte, Ind., assignors to Standard Oil Company, Chicago, Ill.
No Drawing. Filed June 11, 1969, Ser. No. 832,427
Int. Cl. C07c *11/04;* **C10g** *9/16, 9/36*
U.S. Cl. 208—48 **6 Claims**

The formation of coke in high-temperature petroleum treatments is retarded by adding to the oil a coke-retarding amount of a coke retarder selected from the group consisting of elemental phosphorus and compounds thereof. Very small amounts of these coke retarders are effective, while they generally become ineffective above about 0.5%, based on the weight of the oil.

3,647,678
PROCESS FOR PRODUCING HIGH YIELDS OF LOW FREEZE POINT JET FUEL

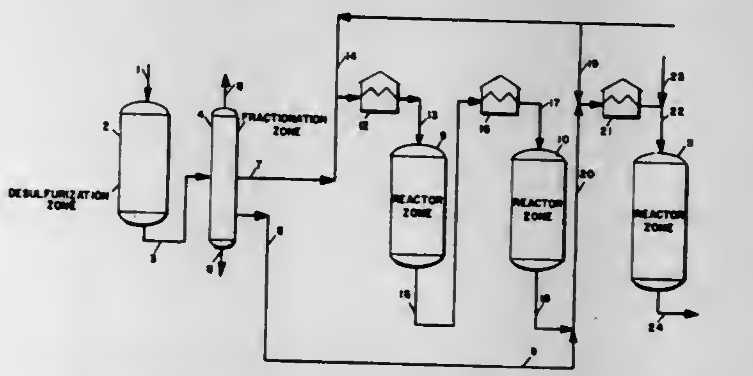
Clark J. Egan, Piedmont, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Mar. 17, 1970, Ser. No. 20,238
Int. Cl. C10g *13/04, 37/02*
U.S. Cl. 208—59 **7 Claims**



Process for obtaining a high yield of low freeze point jet fuel from a hydrocarbon feedstock containing materials boiling above the jet fuel boiling range and containing at least 5 volume percent normal paraffins which comprises subjecting said feedstock to hydrocracking and isomerization in the presence of hydrogen and a catalyst comprising a crystalline zeolitic molecular seive component substantially free of any catalytic metal or metals, a silica-containing gel component, a Group VI hydrogenating component and a Group VIII hydrogenating component, whereby the amount of jet fuel boiling range materials is increased and normal paraffins are isomerized, and selectively hydrocracking the remaining normal paraffins in the presence of hydrogen and a catalyst comprising mordenite in hydrogen form and at least one hydrogenating component.

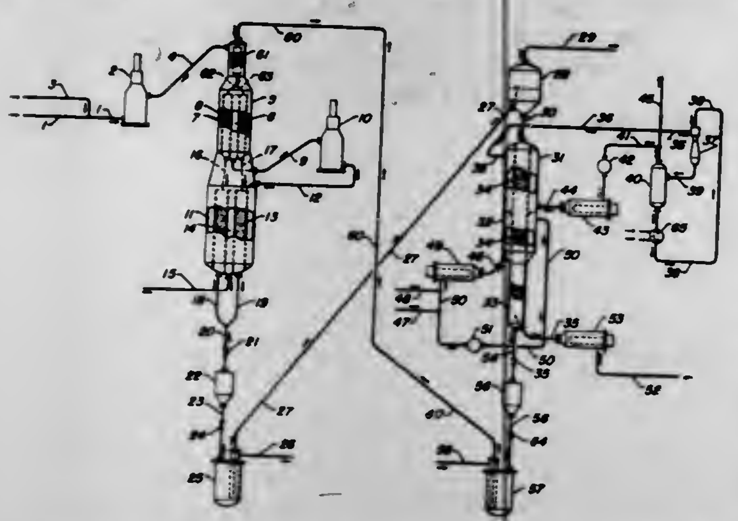
3,647,679
PROCESS FOR REFORMING HEAVY NAPHTHA

Merritt C. Kirk, Jr., Thornton, and Ernest W. Dobson, Westtown Township, Chester County, Pa., assignors to Sun Oil Company, Philadelphia, Pa.
Filed June 25, 1970, Ser. No. 49,606
Int. Cl. C10g *39/00*
U.S. Cl. 208—63 **2 Claims**



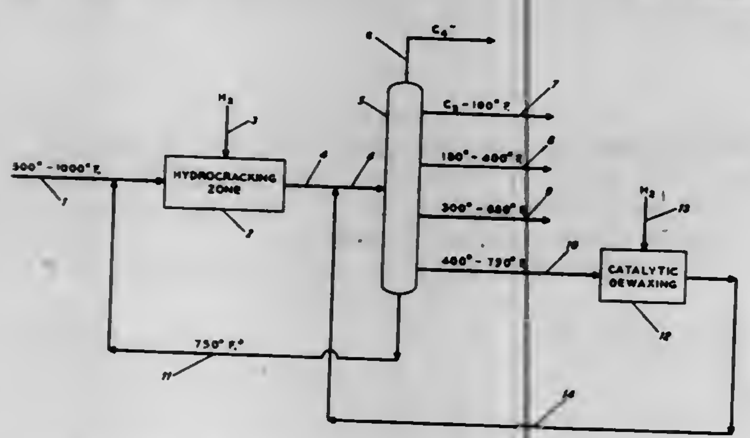
This invention relates to a process for reforming heavy naphtha wherein a naphtha feed boiling in the range of below about 390° F. is reformed in a series of reactors while a naphtha fraction boiling between about 390° to 415° F. is added to the feed into the last reactors of the series. The last reactors are provided with an excess of hydrogen. The invention provides an increased amount of reformate of increased octane. The invention also provides for the upgrading of a heavy naphtha fraction without excessive coke formation.

3,647,680
CONTINUOUS REFORMING-REGENERATION PROCESS
Arthur R. Greenwood, Niles, and Kenneth D. Vesely, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Sept. 25, 1969, Ser. No. 860,905
Int. Cl. C10g *39/00*
U.S. Cl. 208—65 **22 Claims**



A method of operating a continuous reforming-regeneration process comprising one or more reforming reactors and employing a platinum catalyst wherein catalyst activity is maintained at a predetermined level by continuous regeneration thereof without the removal of any reactor from the process stream.

3,647,681
CATALYTIC DEWAXING
Clark J. Egan, Piedmont, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Sept. 9, 1969, Ser. No. 856,401
Int. Cl. B01j *11/40;* **C10g** *13/02, 23/00*
U.S. Cl. 208—111 **14 Claims**



The normal paraffin content of a hydrocarbon oil is reduced by contacting said hydrocarbon oil at catalytic dewaxing conditions with hydrogen and a catalyst comprising mordenite in hydrogen form, at least one hydrogenating component, and carbon in an amount of at least one-half weight percent.

3,647,682
OLEFIN PRODUCTION BY THE CATALYTIC TREATMENT OF HYDROCARBONS
Jule Anton Rabo, Armonk, Charles Leslie Angell, Pleasantville, and Gary William Skeels, Jr., Brewster, N.Y., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Oct. 23, 1968, Ser. No. 770,084
Int. Cl. C10g *11/04;* **C01b** *33/28;* **C07c** *11/02*
U.S. Cl. 208—120 **5 Claims**

Olefins are obtained in high yield by the catalytic cracking of petroleum feedstocks, particularly those rich in saturated hydrocarbons, using novel zeolitic molecular sieve catalysts which are fully cationized with monovalent and/or bivalent metal cations and which have less than three surface structural hydroxyls per hundred framework aluminum atoms.

3,647,683
HYDROCARBON SWEETENING WITH H_2O_2-CONTAINING MICELLAR DISPERSIONS
Joe T. Kelly, deceased, late of Littleton, Colo., by La Verne S. Kelly, executrix, 5713 Morning Glory Lane, Littleton, Colo. 80120
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,959
Int. Cl. C10g *27/04, 27/08*
U.S. Cl. 208—196 **6 Claims**

Hydrogen peroxide is solubilized in a micellar dispersion, i.e. stable systems containing hydrocarbon, aqueous medium, and surfactant. The hydrogen peroxide-containing micellar dispersion is then admixed with any liquid media in which hydrogen peroxide is to be used as a reactant or catalyst to effect intimate contact and dispersion of the hydrogen peroxide within the liquid media. In this manner sour hydrocarbon streams are sweetened, for instance.

3,647,684
ADDING CATIONIC MATERIAL TO SILICIC ACID SORBENT CHROMATOGRAPHIC SHEET FOR IMPROVED PERFORMANCE
Earl W. Malcolm, Bloomfield, Conn., assignor to The Dexter Corporation, Windsor Locks, Conn.
No Drawing. Filed Apr. 17, 1968, Ser. No. 721,951
Int. Cl. B01d *15/08;* **D21h** *5/18*
U.S. Cl. 210—31 **12 Claims**

A chromatographic medium exhibiting the high resolution of thin layer chromatography but substantially greater chromatographic capacity takes the form of a self-supporting, flexible sheet structure comprising a major proportion, or about 50% to 90% by weight, of a chromatographic adsorbent, such as silicic acid, uniformly and homogeneously dispersed with a minor proportion of structurally stabilizing inorganic fibers such as glass fibers disposed in a randomly oriented network and about 0.01% to about 1.5% by weight of a cationic material such as cationic starch.

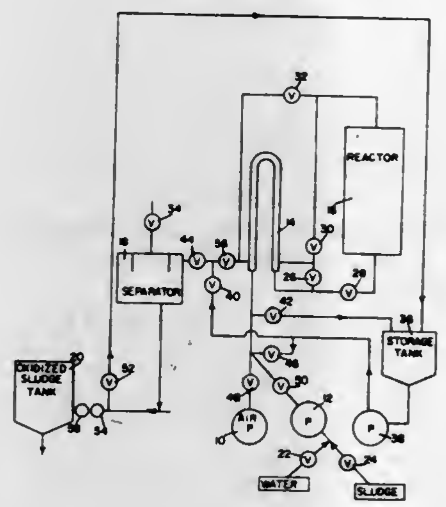
3,647,685
PROCESS FOR DECOLORIZING DRY CLEANING SOLVENTS
Jameel Menashi, Lexington, and Paul F. Troiano, Norwood, Mass., assignors to Cabot Corporation, Boston, Mass.
No Drawing. Filed Feb. 25, 1970, Ser. No. 14,203
Int. Cl. B01d *15/00*
U.S. Cl. 210—39 **6 Claims**

Dry cleaning solvents are decolorized by contact thereof with certain carbon blacks. An improved process for the decolorization of dry cleaning solvents with such blacks is described.

3,647,686
METHOD OF TREATING INDUSTRIAL WASTE WATER WITHOUT CONTAMINATION OF THE ENVIRONMENT
Karl Einar Gunnarsson, Torshalla, Sweden, assignor to Nyby Bruks Aktiebolag, Nyby bruk, Sweden
No Drawing. Filed Oct. 16, 1970, Ser. No. 81,577
Int. Cl. C02c *5/02*
U.S. Cl. 210—48 **7 Claims**

The invention consists in a mode of treating industrial waste water contaminated with metal ions, nitrate ions and fluoride ions which comprises the steps of converting the fluoride ions of the waste water to insoluble fluorides, neutralizing the waste water with an ammoniacal neutralizing agent and adding excess ammonia to a pH of at least 8, filtering, adding an alkali hydroxide to the filtrate, distilling off the content of ammonia and finally removing any solid phase from the distillation residue.

3,647,687
PROCESS OF CONDITIONING SEWAGE SLUDGE IN SYSTEM WITH BY-PASS VALVE SYSTEM FOR A SOLVENT WASH
Albert H. Matthiesen, Schofield, Wis., assignor to Sterling Drug Inc., New York, N.Y.
Filed July 2, 1970, Ser. No. 51,850
Int. Cl. C02c *1/40*
U.S. Cl. 210—63 **8 Claims**



A solvent washing system utilizing a by-pass for removing scale on the tubes and shells of the heat exchange parts of a system for treating sewage sludge.

3,647,688
DEEMULSIFIERS FOR OIL-BASED EMULSIONS
James S. Morrison, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Jan. 24, 1969, Ser. No. 793,908
Int. Cl. C09k *3/00;* **B01d** *17/04*
U.S. Cl. 252—8.55 C **3 Claims**

Propylene oxide adducts of fatty alcohol phosphates having the average formula $R_n(PO_4)[(C_3H_6OH)_{1.5}]_{3-n}$, with up to about 0.5 milliequivalent of acidity per gram of adduct as $R_n(PO_4)(—H)_{3-n}$, where R is C_{8-20} alkyl and *n* is 1–2; and

Processes for resolving oil-brine and oil-hydrochloric acid emulsions by subjecting them to the action of these adducts.

3,647,689
MOLYBDENUM DISULPHIDE
Aleksander Jerzy Groszek, London, England, assignor to The British Petroleum Company Limited, London, England
No Drawing. Filed Sept. 24, 1969, Ser. No. 860,817
Claims priority, application Great Britain, Sept. 27, 1968, 45,973/68
Int. Cl. C10m *5/02*
U.S. Cl. 252—25 **3 Claims**

A process for the reduction of the corrosivity of oleophilic metal sulphides in which, either during or after grinding of a metal disulphide in an organic grinding liquid, the metal sulphide is contacted with organic bases especially organic amines.

3,647,690
CORROSION-INHIBITING COMPOSITIONS
Edward A. Cross, Beaumont, Tex., assignor to Texaco Inc., New York, N.Y.
No Drawing. Filed Mar. 25, 1969, Ser. No. 810,345
Int. Cl. C10m *5/22*
U.S. Cl. 252—33.3 **5 Claims**

This invention concerns oil-soluble corrosion inhibiting compositions comprising at least one anti-corrosive metal salt of naphthenic or aromatic type acids combined with at least one oil-soluble surfactant having an HLB value between 1 and 6. These compositions have substantially greater corrosion-inhibition properties than do the anti-corrosive salts themselves.

3,647,691
MONO- AND BIS-NITROGEN-CONTAINING COMPOUNDS
Billy D. Vineyard, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of abandoned application Ser. No. 507,066, Nov. 9, 1965. This application Mar. 10, 1969, Ser. No. 805,897
Int. Cl. C10m *1/38, 1/36, 1/34*
U.S. Cl. 252—51.5 A **6 Claims**

Mono- and bis-nitrogen-containing compounds useful as ashless detergents in lubricating oil compositions. The mono-compounds are prepared by reacting a long-chain ketone or aldehyde, a divalent nitrogen-containing compound, and a carbonyl-containing compound. The bis-compounds are prepared by reacting a long-chain ketone or aldehyde, a divalent nitrogen-containing compound, and a dicarboxylic acid or a dialdehyde or diketone.

3,647,692
NITROGEN-CONTAINING REACTION PRODUCTS AND THEIR USE IN LUBRICATING OILS AND FUELS
Richard J. Lee, Park Forest, Ill., assignor to Standard Oil Company, Chicago, Ill.
No Drawing. Filed Nov. 5, 1969, Ser. No. 874,396
Int. Cl. C10m *1/32;* **C10l** *1/18, 1/22*
U.S. Cl. 252—51.5 A **8 Claims**

Oil-soluble compounds are prepared by heating a mixture comprising (a) a reduced nitro-nitrito alkane, containing at least ten carbon atoms, (b) an organic polybasic aliphatic or aromatic acid or anhydride, or long chain alkenyl substituted derivatives thereof, and (c) a polyalkylene amine, in the molar ratio of from about 1:1:0 to about 1:1:0.5, respectively; compounds so formed are useful additives in oleaginous compositions.

3,647,693
BASE COATINGS FOR LAUNCHING LUBRICANTS
Fred T. Crookshank, Port Arthur, Tex., assignor to Texaco Inc., New York, N.Y.
No Drawing. Filed Jan. 6, 1969, Ser. No. 789,407
Int. Cl. C10m *5/16*
U.S. Cl. 252—57 **14 Claims**

This invention concerns improved and novel base coatings for launching lubricants comprising petrolatum, paraffin wax, polyalkylene polymer and an optional tall oil component.

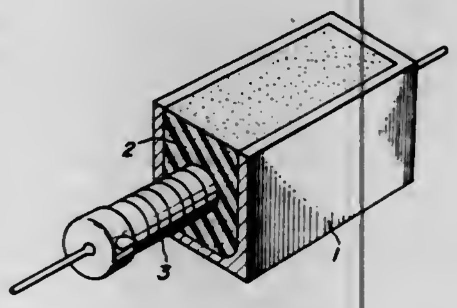
3,647,694
LUBRICATING OIL COMPOSITION
John W. Swanson, Yardley, Pa., and David A. Hartman and Russel L. Beers, Trenton, and Ernest J. Jamieson, Highland Park, N.J., assignors to Cities Service Oil Company, Tulsa, Okla.
No Drawing. Filed May 29, 1969, Ser. No. 829,142
Int. Cl. C10m *1/32;* **C10l** *1/22*
U.S. Cl. 252—51.5 A **7 Claims**

An improved lubricating oil composition, particularly for use as a two-cycle engine oil, and the operation of a two-cycle engine therewith. The lubricating oil composition comprises a major proportion of a hydrocarbon lubricating oil and a minor proportion of an additive which acts as a dispersant in addition to enhancing the lubricity of the composition. The additives are organic compounds containing at least two amide linkages. A novel additive of this invention is obtained by condensing one mole of a dicarboxylic acid with two moles of a 1-(β-aminoethyl)-2-hydrocarbyl-2-imidazoline to form the corresponding diamide.

3,647,695
HEAT RESISTING INSULATING MATERIALS FOR ELECTRIC PARTS

Nobuo Hasegawa, Uji-shi, and Takahiro Kamo, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed June 18, 1969, Ser. No. 834,455
Claims priority, application Japan, June 25, 1968, 43/44,720, 43/44,721
Int. Cl. F16l *59/00;* **H01b** *3/10*
U.S. Cl. 252—62 **3 Claims**



A heat resisting insulating inorganic material which consists of a phosphate, a siliceous sand and a plurality of metal oxides, and which is adapted for use, in the form of an aqueous slurry, in covering electric parts, such as resistors and heaters, by dipping, molding or coating, said slurry being hardened by a heat treatment at a temperature not higher than 400° C.

3,647,696
UNIFORM POLARITY RESIN ELECTROSTATIC TONERS

James R. Olson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 736,552, June 13, 1968. This application Oct. 23, 1968, Ser. No. 770,122
Int. Cl. G03g *9/02*
U.S. Cl. 252—62.1 **10 Claims**

A uniform polarity, particulate, dyed resin electrostatic toner is prepared by dissolving at least one mono- or difunctional organic acid nigrosine salt in a thermoplastic resin binder. Admixing the composite toner with a carrier such as powdered iron produces a developer for electrostatic latent images.

3,647,697
GROWTH OF CRACK-FREE BARIUM SODIUM NIOBATE AND RELATED MATERIALS

Albert A. Ballman, Woodbridge, and John R. Carruthers, Murray Hill, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed May 26, 1969, Ser. No. 827,702
Int. Cl. C04b *35/60;* **B01j** *17/18*
U.S. Cl. 252—62.9 **8 Claims**

A commercial technique for growth of optical grade material of the nominal composition $Ba_2NaNb_5O_{15}$ is described. The usually encountered cracking problem is minimized by following a critically slow cooling rate over a short temperature interval of from about 600° C. to about 400° C. Initial cooling from the crystallizing temperature to this interval and from this range to room temperature is not critical and may be rapid.

3,647,698
COMPOSITION FOR CLEANING ALUMINUM AND METHOD UTILIZING SAME

Kenneth P. Bellinger, Rockville, and Joseph F. Conoby, Somers, Conn., assignors to Conversion Chemical Corporation, Rockville, Conn.

No Drawing. Filed Nov. 5, 1969, Ser. No. 874,412
Int. Cl. C23f *3/02*
U.S. Cl. 252—79.4 **16 Claims**

A composition for cleaning aluminum comprises an aqueous bath of urea nitrate and ferric sulfate. The bath is effective at ambient temperature to rapidly remove smut from aluminum alloy articles, and the rate of activity is substantially uniform throughout the useful life of the composition.

3,647,699
SURFACE CONDITIONER COMPOSITION FOR ABS RESIN

Warren R. Doty, Royal Oak, and Bobbie D. Knight, Tecumseh, Mich., assignors to General Motors Corporation, Detroit, Mich.

No Drawing. Original application Dec. 22, 1967, Ser. No. 692,702, now Patent No. 3,598,630. Divided and this application July 6, 1970, Ser. No. 60,981
Int. Cl. B44d *1/22;* **C09d** *3/36;* **C08d** *13/24*
U.S. Cl. 252—79.2 **2 Claims**

A treatment for ABS polymers to improve the adhesion of coatings thereto. Improved wettability of the surface results from the oxidation of a portion of the available double bonds on the surface of the polymer. The polymer is treated in a solution containing from 50 to 80 percent by volume of U.S.P. grade orthophosphoric acid (05.3% H_3PO_4) and from 5 grams per liter to saturation of potassium permanganate.

3,647,700
K_2ZrF_6

Walt Phillips, Newark, N.J., assignor to Commodity Improvements Inc., New York, N.Y.

No Drawing. Filed Aug. 14, 1967, Ser. No. 660,894
Int. Cl. C11d *9/10*
U.S. Cl. 252—89 **2 Claims**

Compositions containing and method of using K_2ZrF_6. The compositions described herein include detergents, toothpastes, deodorants, facial creams, hair products and storage battery fluids.

3,647,701
PROCESS FOR PREPARING A MIXTURE OF 4-METHYL-Δ-TETRAHYDROPHTHALIC ANHYDRIDES AS A CURING AGENT

Robert E. Robinson, Columbia, S.C., and Ronald L. De Hoff, Maplewood, N.J., assignors to R. T. Vanderbilt Company, Inc., New York, N.Y.

No Drawing. Filed Jan. 6, 1970, Ser. No. 1,049
Int. Cl. C07d *5/38;* **C08f** *45/72*
U.S. Cl. 252—182 **8 Claims**

The specification relates to a process for preparing liquid isomermized anhydride curing agent by reacting isoprene, butadiene, maleic anhydride or the like to provide an intermediate product which is subsequently rearranged in the presence of an organic sulfonic acid. The specification also relates to the curing agent prepared therefrom and its use in epoxy resins.

3,647,702
LIQUID EUTECTIC MIXTURES OF ORTHO-TOLYLENEDIAMINE, META-TOLYLENEDIAMINE AND BIS(AMINOPHENYL)METHANE

Louis F. Cole, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 628,263, Apr. 4, 1967, now Patent No. 3,546,169. This application Mar. 20, 1970, Ser. No. 21,482
Int. Cl. C08g *51/84*
U.S. Cl. 252—182 **16 Claims**

This application relates to liquid eutectic mixtures of ortho - tolylenediamine, meta - tolylenediamine and bis (aminophenyl)methane which are particularly useful as curing agents for polyepoxides.

3,647,703
SYNERGISTIC COMPOSITION AND ITS USE

Bernard F. Shema, Glenside, Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Filed Jan. 2, 1970, Ser. No. 443
Int. Cl. A01n *9/120;* **A61k** *23/00*
U.S. Cl. 252—180 **12 Claims**

The present invention relates to certain processes and compositions useful for inhibiting the growth of slime in water employed for industrial purposes, particularly water employed in the manufacture of pulp and paper, water employed in cooling water systems, as well as other industrial waters. The novel processes and compositions of the present invention are processes or mixtures which show unexpected synergistic activity against microorganisms, including bacteria, fungi and algae, which produce slimes in aqueous systems or bodies which are objectionable from either an operational or aesthetic point of view. Specifically, the invention is directed to the use of compositions comprising a combination of 3,5-dimethyltetrahydro-1,3,5-2H-thiadiazine-2-thione and a mixture comprising 2-nitro-2-ethyl-1,3-dimorpholino propane, and N-(2-nitrobutyl)morpholine.

3,647,704
PREMIXED ELASTOMERIC COMPOUNDING COMPOSITION AND PROCESS

William J. Schrantz, Jr., Louisville, Ky., assignor to International Rubber Industries, Inc., Louisville, Ky.

No Drawing. Filed Mar. 28, 1969, Ser. No. 817,171
Int. Cl. C08c *11/02;* **C08d** *13/28*
U.S. Cl. 252—182 **11 Claims**

A premixed elastomeric compounding composition having extended shelf-life and rapid cure characteristics and comprising, in synergistic combination, zinc oxide, sulfur, zinc oxide-fatty acid reaction product, and accelerators. The compounding composition is a mixture of granulated bound-together material of uniform composition which resists stratification into individual components.

3,647,705
SELF-EMULSIFIABLE PENETRANT COMPOSITION

Adolf Mlot-Fijalkowski, Elmwood Park, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

No Drawing. Filed Sept. 15, 1969, Ser. No. 858,182
Int. Cl. G01n *13/00;* **C09k** *1/02*
U.S. Cl. 252—301.2 R **6 Claims**

Self-emulsifiable penetrant composition particularly designed for use in the penetrant method for detecting surface discontinuities, the composition containing (1) at least one straight chain alcohol containing from 8 to 15 carbon atoms per molecule ethoxylated with from 3 to 12 mols of ethylene oxide per mol of alcohol, (2) a water immiscible fatty alcohol, (3) a vegetable oil, particularly castor oil, (4) an aliphatic hydrocarbon solvent, and (5) a dye.

3,647,706
PHOSPHOR AND METHOD OF MAKING

Costas Lagos, Danvers, Mass., assignor to Sylvania Electric Products Inc.

No Drawing. Filed May 6, 1968, Ser. No. 727,086
Int. Cl. C09k *1/36, 1/44*
U.S. Cl. 252—301.4 P **1 Claim**

In a process of preparing a europium activated yttrium phosphate vanadate phosphor, yttrium oxide is blended with stoichiometric amounts of an ammonium phosphate compound and a vanadium compound. Europium oxide is then added to the blend and the blend is fired in air at a temperature between 1100° C. and 1400° C. After cooling, the blend is pulverized to a powder and the powder is washed in a dilute acid.

3,647,707
ALKALI MONOSULFIDE RECRYSTALLIZATION OF LANTHANIDE OXYSULFIDE LUMINESCENT MATERIAL

George R. Gillooly, Cleveland Heights, and Jacob G. Rabatin, Chardon, Ohio, assignors to General Electric Company

No Drawing. Filed Sept. 8, 1969, Ser. No. 856,153
Int. Cl. C09k *1/14*
U.S. Cl. 252—301.4 S **4 Claims**

Y_2O_2S:Eu or related luminescent materials are recrystallized in liquid Na_2S or other alkali monosulfides to increase particle size and improve crystallinity and light production of the luminescent material. The starting material is preferably prepared by firing europium-containing Y_2O_3 or related oxides in H_2S gas.

3,647,708
LUMINESCENT MATERIAL

Willem Lambertus Wanmaker, Johannes Wilhelmus ter Vrugt and Johannes Guiljelmus Cornelis Maria de Bres, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed July 23, 1970, Ser. No. 57,823
Claims priority, application Netherlands, July 29, 1969, 6911548
Int. Cl. C09k *1/44*
U.S. Cl. 252—301.6 R **3 Claims**

A luminescent material activated by trivalent europium defined by the formula:

$$Me^{3+}{}_{(1-p-2/3q)}Eu_pMe_q{}^{2+}(VO_4)_{1-x-y}(RO_4)_x(BO_3)_y$$

in which Me^{3+} represents yttrium and/or gadolinium, Me^{2+} represents zinc and/or cadmium and R represents phosphorous and/or arsenic. Furthermore:

$$0.01 \leq p \leq 0.18$$
$$0.01 \leq q \leq 0.25$$
$$0 \leq x \leq 0.80$$
$$0.02 \leq y \leq 0.60$$
$$x + y \leq 0.90$$

3,647,709
PRODUCTION OF SILICA GELS

Thomas Hill, Falkirk, Scotland, assignor to BP Chemicals Limited, London, England

No Drawing. Filed Nov. 24, 1969, Ser. No. 879,526
Claims priority, application Great Britain, Nov. 25, 1968, 55,796/68
Int. Cl. B01j *13/00;* **C01b** *33/14*
U.S. Cl. 252—317 **8 Claims**

Silica gels from "densified" silica sols e.g. "Ludox" by process including a hydrothermal treatment at a temperature from 100° C. to 370° C. for from 12 to 200 hours at such a pressure that the water in the liquid phase does not evaporate.

3,647,710
METHOD FOR DISPERSING FOG WITH PHOSPHATE SALT COMPOSITIONS

Hugo Stange, Princeton, N.J., assignor to FMC Corporation, New York, N.Y.
No Drawing. Filed Feb. 10, 1970, Ser. No. 10,315
Int. Cl. B01d *17/00*
U.S. Cl. 252—319 **5 Claims**

A composition useful for dispersing fog consists essentially of a buffering hygroscopic phosphate containing from 1 to 2 cations of the group consisting of sodium, potassium and ammonium for each phosphorus, the phosphate particles being substantially all in a particle size range of above about 2 and under about 80 microns, the composition containing about 0.5 to 5% of a finely divided high-surface-area silica admixed therein.

3,647,711
USE OF CYCLIC AMIDINE POLYMERS AS OIL-IN-WATER DEMULSIFIERS

Robert R. Annand, St. Louis, and Derek Redmore, Ballwin, Mo., and Brian M. Rushton, Williamsville, N.Y., assignors to Petrolite Corporation, Wilmington, Del.
No Drawing. Original application Oct. 22, 1965, Ser. No. 502,636, now Patent No. 3,531,496, dated Sept. 29, 1970. Divided and this application May 18, 1970, Ser. No. 38,509
Int. Cl. B01d *17/04*
U.S. Cl. 252—344 **10 Claims**

The use of cyclic amidine polymers as oil-in-water demulsifiers. These polymers are formed (1) by reacting cyanohydrins with (2) cyclic amidine-forming polyamines to form polyaminonitriles; and by further reacting these polyaminonitriles intermolecularly or with a polyamine under cyclic amidine-forming conditions to form the polymers.

3,647,712
MIXTURE OF ALCOHOLS AND FLUORINATED BETA-DIKETONES USEFUL AS EXTRACTANT IN RECOVERY OF VANADIUM

Michael F. Lucid, Oklahoma City, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.
No Drawing. Filed Sept. 4, 1970, Ser. No. 69,937
Int. Cl. B01f *1/00*
U.S. Cl. 252—364 **4 Claims**

A method for the extraction of vanadium from acidic solutions is provided which comprises extracting vanadium in the pentavalent state using a mixture of a fluorinated β-diketone and an alcohol in an organic solvent, the vanadium(V) being complexed with the extractant mixture and extracted into the organic phase.

3,647,713
NONAGGLOMERATING BLENDING PROCESS

Philip Morse, La Habra, Calif., assignor to Xerox Corporation, Rochester, N.Y.
No Drawing. Filed Feb. 10, 1969, Ser. No. 800,822
Int. Cl. B01f *3/18*
U.S. Cl. 252—408 **16 Claims**

This application relates to a process for uniformly blending a plurality of particulate materials wherein the finely divided materials are mixed with an inert carrier to form a slurry, blended for a period of time sufficient to achieve a homogenous mixture of materials throughout the slurry, and removing the carrier without adversely affecting the chemical activity of the mixture or disturbing the uniformity of blend.

3,647,714
CATALYST REGENERATION WITH TRANSFER LINE COMBUSTION AND DISPERSE PHASE DISCHARGE INTO A REGENERATOR

Frederick K. White, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
Filed May 14, 1969, Ser. No. 824,598
Int. Cl. B01j *11/72, 11/04*
U.S. Cl. 252—417 **6 Claims**

When spent fluid cracking catalyst is at least partially regenerated by burning of carbon in the transfer line leading to the regenerator and the temperature in the regenerator chamber is at least 1220° F., regenerator residence times as low as 3 to 10 minutes provide carbon on regenerated catalyst levels as low as about 0.2 weight percent.

3,647,715
PROCESS FOR THE OXIDATION OF HYDROCARBONS

Derek Bryce-Smith, Sonning Common, and Stuart Samuel Adcock, Reading, England, assignors to Ethyl Corporation, New York, N.Y.
No Drawing. Original application Dec. 6, 1966, Ser. No. 599,382. Divided and this application Nov. 12, 1969, Ser. No. 871,281
Int. Cl. C07c *51/20*
U.S. Cl. 252—429 **4 Claims**

A catalyst system composed of a silver substance (e.g., $AgBF_4$) and a carboxylic acid anhydride (e.g., acetic anhydride) is suitable for use in the liquid phase oxidation of non-acetylenic hydrocarbons, particularly alkyl aromatics.

3,647,716
TRANSPORT REACTOR WITH A VENTURI TUBE CONNECTION TO A COMBUSTION CHAMBER FOR PRODUCING ACTIVATED CARBON

Charles F. Koches, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.
Filed Apr. 3, 1970, Ser. No. 25,442
Int. Cl. C01b *31/08;* **C10b** *1/04*
U.S. Cl. 252—445 **7 Claims**

A continuous process and apparatus is described for producing a high yield activated carbon, or for regenerating a spent activated carbon. The activation process is carried out by introducing the raw material in a finely divided state into a fired reactor chamber where the raw material is subjected to a uniform heat transfer during its transport by the gaseous phase of the reactor chamber combustion products.

3,647,717
PROCESS FOR IMPROVING THE ACTIVITY OF ZEOLITIC CATALYST COMPOSITIONS

Anthony Peter Bolton, Valley Cottage, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Aug. 26, 1970, Ser. No. 67,222
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z **6 Claims**

The catalytic activity of catalyst compositions comprising a zeolitic aluminosilicate in conjunction with a Group VIII noble metal oxide hydrogenation promoter are improved by converting the noble metal to its corresponding sulfide form, the sulfide to the corresponding hydroxide, the hydroxide to the corresponding noble metal ammine complex and thereafter decomposing the ammine complex in an oxidizing atmosphere followed by an activation by reduction in hydrogen.

3,647,718
MICROSPHERICAL ZEOLITIC MOLECULAR SIEVE COMPOSITE CATALYST AND PREPARATION THEREOF

Walter L. Haden, Jr., Metuchen, and Frank J. Dzierzanowski, Somerset, N.J., assignors to Engelhard Minerals & Chemicals Corporation, Township of Woodbridge, N.J.
No Drawing. Continuation-in-part of application Ser. No. 738,384, June 20, 1968. This application Mar. 25, 1969, Ser. No. 810,325
Int. Cl. B01j *11/40;* **C01b** *33/28*
U.S. Cl. 252—455 Z **8 Claims**

A fluid zeolitic molecular sieve composite catalyst is prepared by reacting a mixture of two different forms of calcined kaolin clays in an aqueous alkaline reaction liquid, the two different forms of calcined kaolin clay being present in separate preformed microspheres which retain substantially their size and form throughout the reaction. Silica is extracted from the microspheres during reaction. The reacted microspheres are separated from the mother liquid and then they are ion exchanged.

3,647,719
DEHYDROGENATION METHOD AND CATALYTIC COMPOSITE FOR USE THEREIN

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Aug. 21, 1969, Ser. No. 852,104
Int. Cl. B01j *11/12*
U.S. Cl. 252—466 PT **10 Claims**

Dehydrogenatable hydrocarbons are dehydrogenated by contacting them at dehydrogenatable conditions with a catalytic composite comprising a combination of catalytically effective amounts of a platinum group component, a germanium component, and an alkali or alkaline earth metal with a porous carrier material. A specific example of the catalytic composite disclosed herein is a combination of a platinum component, a germanium component, and an alkali or alkaline earth component with an alumina carrier material wherein the components are present in amounts sufficient to result in the composite containing, on an elemental basis, 0.01 to 2 wt. percent platinum, 0.01 to 5 wt. percent germanium, and 0.1 to 5 wt. percent of the alkali or alkaline earth metal.

3,647,720
METALS AND METAL COMPOUNDS

Derek Bryce-Smith, Highland Wood House, Mill Lane, Kidmore End, England, and Ernest T. Blues, 36 Reeds Ave., Earley, England
No Drawing. Filed Mar. 20, 1970, Ser. No. 21,529
Claims priority, application Great Britain, Mar. 21, 1969, 14,998/69; Mar. 27, 1969, 16,141/69
Int. Cl. B01j *11/08;* **B22f** *9/00*
U.S. Cl. 252—476 **10 Claims**

The invention relates to material containing a new form of silver referred to as cluster silver in which the atoms are arranged in a lattice different from the face-centred configuration of conventional silver, and in particular to silver metal, silver compounds, silver complexes and to a new compound silver ketenide, containing cluster silver, which material is characterized in possessing a magnetic susceptibility which is field dependent, such magnetic properties being developed in the cluster silver by thermal treatment or treatment with aqueous media or methanol. The invention also relates to the uses of such material, particularly its use as a catalyst in the oxidation of organic material, and its capacity to generate carbon suboxide.

3,647,721
POROUS STRUCTURE AND METHOD

Ival O. Salyer, Dayton, and Robert T. Jefferson, West Carrollton, Ohio, assignors to the United States of America as represented by the United States Atomic Energy Commission
Continuation-in-part of applications Ser. No. 586,923, Oct. 17, 1966, and Ser. No. 828,647, May 28, 1969. This application July 13, 1970, Ser. No. 54,298
Int. Cl. C08g *22/44;* **B22f** *9/00*
U.S. Cl. 260—2.5 AK **9 Claims**

An open-pore polyurethane structure containing powdered metal comprising coherent spherical particles separated by interconnected interstices and a method of producing this structure comprising mixing metal powder with the components to make a polyurethane structure in a container, polymerizing the mixture in place without stirring after onset of gellation. The polyurethane can be removed preferably by heating in air at a temperature below the sintering temperature for the metal, and the remaining metal can then be sintered forming a sintered porous metal or metal oxide structure depending on the metal used and sintering conditions. A number of porous nickel products were made by the process of the invention and after the removal of the polyurethane depending on the particle size of the nickel and the amount and conditions of sintering densities of the products ranged from 1 to 5 g./cc., compressive strengths from 100 to 20,000 and porosity from 20 to 80%. The porous metals or sintered porous metals can be used in mechanical support, air and liquid filters, porous bearings, porous electrodes, acoustic filters, impact absorbers, capillary wicks, void fillers, integral conductor-insulator rods, and three-dimensional high-modulus reinforcements.

3,647,722
FRICTION ELEMENTS AND METHODS OF THEIR MANUFACTURE

Clarence E. Albertson, 240 S. Monterey, Villa Park, Ill. 60181, and Howard S. Okubo, 3318 N. Keystone, Chicago, Ill. 60641
Continuation-in-part of application Ser. No. 311,108, Sept. 24, 1963. This application Nov. 24, 1967, Ser. No. 689,237
Int. Cl. F16d *69/02;* **C08g** *37/08, 51/12*
U.S. Cl. 260—2.5 F **9 Claims**

A method of manufacturing friction materials and/or elements by felting a slurry containing 70–100 percent asbestos fibers and 0–30 percent (based on dry ingredients) of a friction modifier such as barytes, cashew nut shell resin granules or other non-cellulosic fibers. A slurry is made by mixing the dry ingredients with phenolic, varnish-type resin dissolved in a suitable solvent. The amount of resin in the solution is adjusted to assure that the final material has a resin content of 15–35 percent. The solvent is evaporated from the felted material by drying and then the resin is set by heating at a higher temperature. Methods of forming coated friction elements are also described.

3,647,723
PROCESS FOR PREPARING EXPANDABLE VINYL AROMATIC POLYMERS

Stanislav Mysik and Jaromir Trneny, Kralupy nad Vltavou, Czechoslovakia, assignors to Kaucuk, narodni podnik, Kralupy, Czechoslovakia
No Drawing. Filed Sept. 12, 1969, Ser. No. 857,545
Claims priority, application Czechoslovakia, Sept. 20, 1968, 6,592/68
Int. Cl. C08j *1/26*
U.S. Cl. 260—2.5 B **10 Claims**

Expandable vinyl aromatic polymers having reduced lumping and stickiness in the course of preexpansion are prepared by polymerizing a vinyl aromatic monomer in an aqueous suspension in presence of a wax having a melting point from 70° C. to 120° C., acid number from 0 to 45, saponification number from 3 to 150. The polymerization temperature is raised above the melting point of the wax, but not exceeding 130° C. for 0.5 to 25 hours in presence of the wax.

3,647,724

URETHANE FOAMS WITH REDUCED SMOKE LEVELS

Herman P. Doerge, Verona, and Marco Wismer, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,639

Int. Cl. C08g *22/44, 41/00, 51/58*

U.S. Cl. 260—2.5 AJ **20 Claims**

This invention relates to fire retardant polyurethane foams having reduced smoke levels. The invention comprises incorporating chlorendic acid into a fire-retardant foam formulation.

3,647,725

ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER STOCKS

Siegfried Nitzsche, Wolfgang Kaiser, Ernst Wohlfarth, and Paul Hittmair, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,787

Claims priority, application Germany, Feb. 27, 1969, P 19 10 014.2

Int. Cl. C08h *9/00*

U.S. Cl. 260—18 S **11 Claims**

Organosilicone room-temperature vulcanizing silicone rubber stocks are prepared by admixing α,ω-dihydroxydiorganopolysiloxanes with crosslinking agents of the formula $R_3SiO(R_2SiO)_nSiY_3$ where R is a hydrocarbon or substituted hydrocarbon radical, Y is a hydrolyzable group and n is 0 to 20.

3,647,726

FLUID POWDER COATING COMPOSITION

William W. Ulmer, Muskegon, Mich., assignor to Anaconda Wire and Cable Company, New York, N.Y.

No Drawing. Filed Jan. 2, 1969, Ser. No. 788,631

Int. Cl. C08g *30/12, 30/14, 45/04*

U.S. Cl. 260—18 EP **29 Claims**

An epoxy fluid coating powder suitable for coating electrical conductors in a fluidized bed or an electrostatic fluid bed is prepared by mixing two solid diglycidyl ether bisphenol A resins of which the first has an epoxy equivalent weight of 825 to 1025 and a Durran's melting point of 93° to 105° C. and the second has an epoxy equivalent weight of about 1550 to 2500 and a Durran's melting point of 113° to 135° C. The resinous mixture contains about 80% to 90% weight of the first epoxy resin and a 10% to 20% by weight of the second epoxy resin. The resinous composition is mixed with 8 to 12.5 parts per 100 parts resins by weight (phr.) of trimellitic anhydride and about .11 to about .46 phr. of an activator, such as hexamethylene tetramine. The resultant coating from these powder mixtures has high flexibility, which is capable of passing a 180° edgewise bend with smoothness of the coating and has a thermoplastic flow of higher than 240° C. The resultant electrical conductor with a 2 mil coating can withstand more than 300 volts with less than 50 breaks per 100 feet.

3,647,727

METHOD FOR RENDERING A SYNTHETIC RESINOUS MATERIAL ANTISTATIC

Kimiaki Kabuki, Tokyo, and Bunjiro Murai, Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

No Drawing. Filed Feb. 17, 1969, Ser. No. 800,003

Claims priority, application Japan, Feb. 24, 1968, 43/11,388

Int. Cl. C08g *31/18*

U.S. Cl. 260—18 **4 Claims**

An antistaticizing composition comprising (a) a polyhydric alcohol containing hydroxyl groups or a derivative thereof, (b) an organosilicon compound, and (c) an organometallic compound having one or more organic radicals bonded through an oxygen atom to a tin, boron, lead, phosphorus or antimony atom. From said composition, an antistatic agent, i.e., an organosilicon compound containing a polyoxyalkylene group bonded to a silicon atom through an oxygen atom, is formed upon heating in the process of conventional plastic molding operation.

3,647,728

PREPARATIONS OF POLYADDITION PRODUCTS, PROCESSES FOR THEIR MANUFACTURE AND USE

Alberto Deflorin, Riehen, Heinz Abel and Alfred Berger, Reinach, Basel-Land, Richard Casty, Kaiser-Augst, and Rosemarie Toepfl, Basel, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed July 29, 1969, Ser. No. 845,881

Claims priority, application Switzerland, Aug. 8, 1968, 11,948/68

Int. Cl. C08g *41/04*

U.S. Cl. 260—18 **8 Claims**

Polyaddition products are prepared by reacting epoxides with basic polyamides in an equivalent ratio of 1:1 to 1:5. The polyamides are from polymeric unsaturated fatty acids and polyalkylene polyamines. The reaction is carried out in the presence of organic solvents at at most 80° C. No later than after completion of the reaction, it is ensured that a sample of the reaction mixture has a pH-value of 2 to 8 after dilution with water. The resulting polyaddition products are soluble or dispersible in water and are useful in the textile industry e.g. for rendering wool non-felting or for rendering textiles water repellent, when applied in combination with silicone oils.

3,647,729

INFRARED-ABSORBENT METHYL METHACRYLATE RESIN COMPOSITION AND SHAPED ARTICLES THEREOF

Haruo Nagai and Naohisa Sugiyama, Niigata-ken, Japan, assignors to Kyowa Gas Chemical Industry Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1969, Ser. No. 820,064

Claims priority, application Japan, Apr. 10, 1967, 42/22,466, 42/51,264

Int. Cl. C08f *45/62*

U.S. Cl. 260—23 AR **20 Claims**

A thermic ray-absorbent methyl methacrylate resin composition comprising a methyl methacrylate resin which may contain not over 50% by weight of a copolymerizable monomer, said resin being incorporated with a nickel compound selected from the group consisting of organic acid salts of nickel and nickel complexes, in an amount of 0.07–5% by weight, calculated as nickel and shaped articles made therefrom.

3,647,730

MASKING COMPOSITIONS

Dennis A. Rott, Bethlehem, Pa., and John P. Smiljanic, Chicago, Ill., assignors to Western Electric Company, Incorporated, New York, N.Y.

No Drawing. Filed Aug. 27, 1969, Ser. No. 853,486

Int. Cl. B44d *1/52;* **C09d** *3/44, 5/20*

U.S. Cl. 260—23 R **8 Claims**

Masking compositions for strip plating of metal stock and for anodizing of metallic surfaces are composed of high-melting microcrystalline wax and organophilic kaolinite blended with ethylene-vinyl acetate copolymer and pentaerythritol abietate. These compositions are flexible, tough and nonblocking, cool rapidly to solids, adhere well to metals, have good dielectric properties and can be cleanly removed from metal surfaces.

3,647,731

CONDENSATION PRODUCT OF OIL-SOLUBLE POLYMERS WITH POLYAMINE

Thomas J. Clough, Webster Groves, Mo., assignor to Sinclair Research, Inc., New York, N.Y.

No Drawing. Division of application Ser. No. 656,065, July 26, 1967, now Patent No. 3,483,125, which is a continuation-in-part of applications Ser. No. 440,949, Mar. 18, 1965, and Ser. No. 513,125, Dec. 10, 1965, which in turn is a continuation-in-part of application Ser. No. 446,410, Apr. 7, 1965. Divided and this application Apr. 28, 1969, Ser. No. 840,573

Int. Cl. C08f *37/18*

U.S. Cl. 260—23.7 **16 Claims**

Extreme pressure additives for lubricating oils are prepared by Friedel-Crafts-catalyzed interpolymerization of a mono-1-alkene, an olefinically-unsaturated carboxylic acid (or ester thereof) wherein the olefinic bond is at least 2 carbon atoms away from the carboxyl group and, optionally, a conjugated diene hydrocarbon. Preferably, the mono-1-alkene is normal and has about 14 to 21 carbon atoms, the unsaturated acid has about 10 to 21 carbon atoms and, if the ester is used, is esterified with a lower alkanol, and the diene has 4 to 5 carbon atoms. Detergents for lubricating oils are prepared by condensation of these polymers with an essentially aliphatic polyamine having up to about 11 amino groups, at least one of which is primary, e.g., pentaethylene hexamine.

3,647,732

COATING COMPOSITION

Bob G. Gower, Park Forest, and Richard F. Poss, Flossmoor, Ill., assignors to Sinclair Research, Inc., New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 717,934, Apr. 1, 1968. This application Nov. 17, 1970, Ser. No. 90,425

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 **11 Claims**

A coating composition that contains up to about 90 weight percent of a polymeric film former, up to about 50 weight percent of a hydrocarbon wax, about 5 to 90 weight percent of a carboxyl group-containing leveling resin and about 0.2 to 40 weight percent of a leveling aid, gloss-improving lactam is disclosed. Additionally, about 0.05 to 0.4 weight percent of a carboxyl group-reactive, complexing metal is disclosed for the embodiment of detergent-resistant waxes.

3,647,733

AQUEOUS DISPERSION OF ETHYLENE/VINYL ALKANOATE COPOLYMER AND WAX CONTAINING NEOPRENE

John William McDonald, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 743,335, July 9, 1968. This application Jan. 11, 1971, Ser. No. 105,705

Int. Cl. C08f *45/24, 45/52*

U.S. Cl. 260—28.5 AV **8 Claims**

A coating based on an ethylene/vinyl alkanoate copolymer and wax and formed from an ethylene/vinyl alkanoate copolymer and wax dispersion has increased coating adhesion to substrates at high-humidity or water-soaked conditions when neoprene is added thereto.

3,647,734

PREPARATION OF FLAME RETARDANT COMPOSITION FOR CELLULOSIC MATERIAL

James E. Hardwicke, Columbia, and Bernard Scheffler and Herman S. Weisz, Rock Hill, S.C., assignors to M. Lowenstein & Sons, Inc., New York, N.Y.

No Drawing. Filed Mar. 26, 1970, Ser. No. 23,079

Int. Cl. C08g *51/24, 37/32*

U.S. Cl. 260—29.4 R **5 Claims**

A composition for rendering cellulosic material flame retardant is prepared by maintaining the intermediate reaction product 3-(di-isopropylphosphono) proprionamide in aqueous solution below its melting point for methylolation with formaldehyde to form the N-hydroxymethyl derivative, and then formulating this derivative with an aqueous methyolmelamine resin solution and an acid catalyst for pad-dry-cure application to the cellulosic material. Cellulosic material treated with the resulting composition is rendered self-extinguishing and retains this characteristic after fifty washings.

3,647,735

PIGMENTED FINISHES FOR FIBROUS ARTICLES

John G. Brodnyan, Langhorne, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Jan. 29, 1970, Ser. No. 6,919

Int. Cl. C08f *39/00*

U.S. Cl. 260—29.4 UA **3 Claims**

The present invention concerns pigment-finishing, i.e. pigment-dyeing or pigment-printing of fibrous materials, such as textile fabrics of all kinds including those formed of siliceous fibers. The pigment-binding composition of the present invention comprises a mixture of a relatively soft linear addition polymer and a relatively hard addition polymer. The pigmented finishes show improved crockfastness and abrasion-resistance.

3,647,736

HYDROPHILIC CONTACT LENS MATERIAL

David G. Ewell, Richmond, Calif., assignor to Kontur Kontact Lens Company, Inc., Richmond, Calif.

No Drawing. Filed May 25, 1970, Ser. No. 40,456

Int. Cl. C08f *19/00, 33/04;* **G02c** *7/04*

U.S. Cl. 260—29.6 WB **5 Claims**

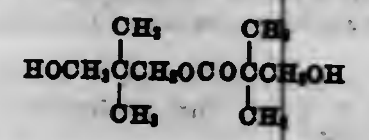
A hydrogel of a hydrophilic polymer formed from a major proportion of a hydroxyalkyl methacrylate and a minor portion of a polyalkene lactam, its preparation and use as a soft corneal contact lens.

3,647,737
NOVEL MIXTURES OF ACRYLIC MONOMERS AND THE PREPARATION THEREOF

Rostyslaw Dowbenko and Roger M. Christenson, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed May 26, 1969, Ser. No. 827,974
Int. Cl. C08f *3/64, 15/16*
U.S. Cl. 260—31.6 22 Claims

Novel acrylic monomers and mixtures of acrylic monomers are prepared by reacting a diol such as



$$HOCH_2\overset{CH_3}{\underset{CH_3}{C}}CH_2OCOO\overset{CH_3}{\underset{CH_3}{C}}CH_2OH$$

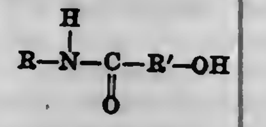
with an acrylic or methacrylic acid or their anhydrides or acid chlorides and a monofunctional aliphatic, alicyclic or aromatic acid. The reaction product is a mixture of monomers which may be copolymerized as such by subjecting it to ionizing irradiation, actinic light, or to free-radical catalysts and the resulting copolymer is a hard, mar-resistant and relatively flexible material, or the mixture may be separated into individual components which can be polymerized separately.

3,647,738
α-OLEFIN POLYMER COMPOSITIONS

George N. Foster, Somerville, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Nov. 3, 1970, Ser. No. 86,613
Int. Cl. C08k *1/44*
U.S. Cl. 260—32.6 13 Claims

α-Olefin polymer compositions characterized by affording films having a low coefficient of friction, a low blocking force, and no blooming have been developed by incorporating therein about 0.01 to 5.0% by weight of an amide having the formula:



$$R-\overset{H}{\overset{|}{N}}-\underset{\underset{O}{\|}}{C}-R'-OH$$

wherein R is an alkenyl radical having 18 to about 22 carbon atoms and R′ is a divalent hydrocarbon radical containing 3 to 15 carbon atoms.

3,647,739
STABILIZED CONJUGATED DIENE RUBBER POLYMERS

Edward Leo Kay, Akron, and Jerry Donald Hunt, Cuyahoga Falls, Ohio, and Robert Paul Spitz, West Lafayette, Ind., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed June 4, 1970, Ser. No. 43,573
Int. Cl. C08d *9/00, 11/04*
U.S. Cl. 260—33.6 UA 5 Claims

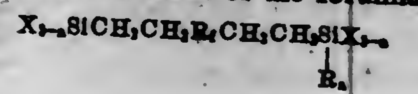
Unvulcanized rubbery interconnected polymers are stabilized with a tetra-aryl titanate or a complex thereof with N-alkyl-alkanediamines.

3,647,740
FLUOROCARBON SILICONE COMPOSITIONS

Lorne A. Loree, Ogden R. Pierce, and Yung Ki Kim, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

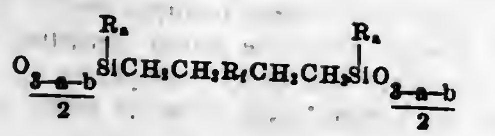
No Drawing. Continuation-in-part of application Ser. No. 749,577, Aug. 2, 1968. This application June 23, 1970, Ser. No. 57,022
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB 25 Claims

Organosilanes and silanols of the forumla



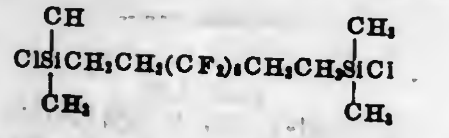
$$X_{3-a}SiCH_2CH_2R_fCH_2CH_2\underset{\underset{R_a}{|}}{Si}X_{3-a}$$

and siloxanes of the formula



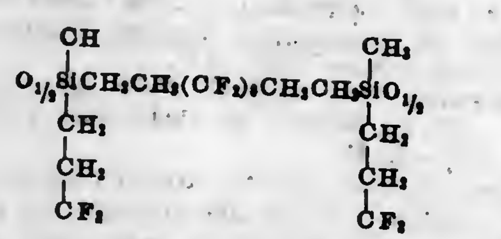
$$O_{\frac{3-a-b}{2}}\overset{R_a}{\overset{|}{Si}}CH_2CH_2R_fCH_2CH_2\overset{R_a}{\overset{|}{Si}}O_{\frac{3-a-b}{2}}$$

are disclosed. Examples of such compounds include



$$Cl\overset{CH}{\underset{CH_3}{Si}}CH_2CH_2(CF_2)_8CH_2CH_2\overset{CH_3}{\underset{CH_3}{Si}}Cl$$

and



$$O_{1/2}\overset{OH}{\underset{CH_2CH_2CF_3}{Si}}CH_2CH_2(CF_2)_8CH_2CH_2\overset{CH_3}{\underset{CH_2CH_2CF_3}{Si}}O_{1/2}$$

Certain polymers are particularly useful for making reversion resistant siloxane rubbers and resins.

3,647,741
STABILIZED HEAT CURABLE SILICONE ELASTOMERS

William Earl Hutchinson, Erie, Pa., assignor to Stauffer-Wacker Silicone Corporation

No Drawing. Filed Dec. 18, 1968, Ser. No. 784,902
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 7 Claims

Silicone elastomers having improved heat stability, compression set and resistance to reversion may be obtained by incorporating fumed titanium dioxide in heat curable organopolysiloxane compositions.

3,647,742
TREATMENT OF ALUMINA FILLERS WITH SILANE COUPLING AGENTS FOR EPOXY RESINS

John J. Stevens, Jr., Highland Park, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Nov. 7, 1969, Ser. No. 874,972
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 EP 21 Claims

Organo-functional silane coupling agents are employed to treat hydrated alumina incorporated filler in cycloaliphatic epoxy resin compositions.

3,647,743
GLASS FIBRE REINFORCED POLYACETAL RESIN COMPOSITION

Kazuo Nagamatsu, Tokyo, Masatsugu Yoshino and Tsugio Konno, Irumagun, and Shinichi Ishida, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Osaka Prefecture, Japan

No Drawing. Filed Dec. 17, 1969, Ser. No. 885,987
Claims priority, application Japan, Dec. 24, 1968, 43/94,170
Int. Cl. C08g *51/10*
U.S. Cl. 260—37 AL 6 Claims

This invention discloses a glass fibre reinforced polyacetal resin composition comprising 5 to 65% by weight, based on the weight of the composition, of glass fibres coated with styrene-type polymer, and a polyacetal resin. The glass fibre reinforced polyacetal resin composition of this invention is produced by mixing glass fibres with a polyacetal resin after a styrene-type resin is coated on and adhered to the surface of the glass fibres. Thus, not only the impact strength but also other properties such as heat distortion temperature, mold shrinkage, hue and heat resistance can be greatly improved. Moreover, not so much gas is evolved on melting and heating the glass fibre reinforced polyacetal resin of this invention, as compared with conventional ones.

3,647,744
FRICTION MATERIAL ADDITIVES FOR IMPROVED PERFORMANCE

James L. Rich, Allen Park, and Marvin H. Weintraub, Oak Park, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 22, 1970, Ser. No. 5,060
Int. Cl. C08k *1/18*
U.S. Cl. 260—38 2 Claims

This invention teaches that conventional automotive brake linings which are basically compounded from asbestos and a synthetic thermosetting resin can be greatly improved by the addition of a small amount of any of the alkali metal fluorides and especially by the addition of sodium fluoride.

3,647,745
SEALING COMPOSITIONS CONTAINING PHOSPHORUS- AND METAL-CONTAINING ANTI-SAG AGENTS

Thomas Charles Jennings, Lyndhurst, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Continuation-in-part of application Ser. No. 739,956, May 8, 1968, which is a division of application Ser. No. 565,740, July 18, 1966, now Patent No. 3,470,222, which in turn is a continuation-in-part of application Ser. No. 493,240, Oct. 5, 1965. This application Apr. 20, 1970, Ser. No. 30,305
Int. Cl. C08f *45/62*
U.S. Cl. 260—41 R 5 Claims

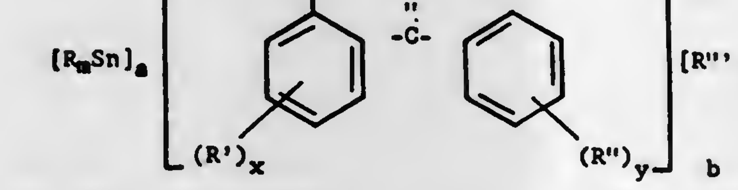
Phosphorus- and metal-containing compositions, prepared by reacting phosphoric acid with an organic epoxide and further reacting the intermediate thus formed with a metal base (especially zinc oxide), are useful as anti-sag agents in sealing compositions.

3,647,746
LIGHT-STABILIZED POLYMERS

Toshio Seki, Osaka, Kozaburo Suzuki, Kobe, and Takashi Matsuzaki, Osaka, Japan, assignors to Nitto Kasei Co., Ltd., Osaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 851,519, June 24, 1969, which is a division of application Ser. No. 646,465, June 16, 1967, which in turn is a continuation-in-part of application Ser. No. 567,823, July 26, 1966, now Patent No. 3,498,947. This application June 15, 1970, Ser. No. 46,479
Claims priority, application Japan, July 26, 1965, 40/44,846
The portion of the term of the patent subsequent to Mar. 3, 1987, has been disclaimed
Int. Cl. C08f *45/62*
U.S. Cl. 260—45.75 K 12 Claims

Organotin compounds of the formula



prepared by the reaction of an aromatic hydroxy carbonyl compound and an organotin oxide or alkoxide may be used as stabilizers for synthetic resins.

3,647,747
HIGH TEMPERATURE MOLDING FLAME RETARDANT POLYCARBONATE COMPOSITION

Charles A. Bialous, Mount Vernon, Ind., assignor to General Electric Company

No Drawing. Filed Apr. 15, 1970, Ser. No. 28,952
Int. Cl. C08g *39/10, 51/56*
U.S. Cl. 260—45.75 R 6 Claims

A high temperature molding polycarbonate composition having in admixture an aromatic polycarbonate and 0.05 to about 2.0 weight percent of an alkaline earth carbonate based on the weight of the polycarbonate composition. Preferably, the alkaline earth carbonate is barium carbonate.

3,647,748
STABILIZED VINYL HALIDE RESIN COMPOSITIONS

John W. Brook, Plainfield, N.J., and Samuel Hoch, Brooklyn, N.Y., assignors to Tenneco Chemicals, Inc.

No Drawing. Filed Feb. 19, 1969, Ser. No. 800,750
Int. Cl. C08f *45/58, 45/62*
U.S. Cl. 260—45.75 23 Claims

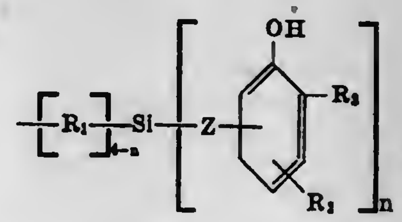
Vinyl halide resin compositions that contain a stabilizer system comprising an organotin carboxylate, an organic disulfide or polysulfide, and, optionally, a small amount of thiodipropionic acid, and thiodipropionate ester, and/or an organic phosphite have excellent processing characteristics, excellent heat and light stability, and other valuable properties.

3,647,749
ANTIOXIDANT COMPOSITION FOR ORGANIC MATERIALS

Edward F. Zaweski, Pleasant Ridge, and Bernard R. Meltsner, Royal Oak, Mich., assignors to Ethyl Corporation, New York, N.Y.

No Drawing. Original application July 28, 1966, Ser. No. 568,390, now Patent No. 3,491,137, dated Jan. 20, 1970. Divided and this application Sept. 26, 1969, Ser. No. 861,458
Int. Cl. C08d *11/04;* **C08f** *45/60;* **C08g** *51/60*
U.S. Cl. 260—45.85 12 Claims

Organic material such as polypropylene is stabilized by addition of dihydrocarbyl-hydroxyphenoxy hydrocarbyl silanes having the formula:



wherein R_1 and R_2 are hydrocarbon radicals, Z is oxygen, sulfur or the imino group, and R_3 is a hydrocarbon radical, an alkoxy radical or a halogen. A typical example is diphenyl bis(3,5 - di-tert-butyl-4-hydroxyphenoxy)silane. Effectiveness is improved by including a dihydrocarbylthiodialkanoate such as dilaurylthiodipropionate, or a phosphonate such as tri-p-nonylphenylphosphite.

3,647,750
PREPARATION OF HYDROXYALKYL ESTERS OF AROMATIC ACIDS

Marvin A. McCall, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 13, 1969, Ser. No. 866,039
Int. Cl. C07c *69/78, 69/82*
U.S. Cl. 260—475 P 17 Claims

In the preparation of 2-hydroxyalkyl esters of aromatic mono- or dicarboxylic acids by reaction of aromatic mono- or dicarboxylic acid with an alkylene oxide of 2 to 8 carbon atoms, the improvement which comprises conducting the reaction in hexamethylphosphoric triamide as a reaction medium.

3,647,751

POLYARYLETHER-SULPHONES

Gerhard Darsow, Krefeld-Uerdingen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed May 19, 1970, Ser. No. 38,870
Claims priority, application Germany, June 25, 1969, P 19 32 067.3
Int. Cl. C08g *23/24*
U.S. Cl. 260—49 **7 Claims**

New polyaryl ether sulphones are provided which are valuable thermoplastic resins and which are the reaction products of molar amounts of dihalo-diphenyl-disulphone-aryls and of alkali metal bis-phenolates.

3,647,752

TREATMENT OF POLYPHENYL THIOETHERS

Carl W. Gieseking, St. Louis, and James D. Sullivan, Webster Groves, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Nov. 27, 1968, Ser. No. 779,638
Int. Cl. C07c *149/30*
U.S. Cl. 260—609 E **8 Claims**

The oxidative stability of polyphenyl thioethers is increased and their corrosiveness towards metals is decreased by contacting the polyphenyl thioethers under basic conditions in the liquid phase with an oxidizing agent which maintains its oxidation functionality under basic conditions. For example, m-bis(phenylmercapto) benzene is contacted with a basic aqueous solution of sodium hypochlorite at 100° C. for 8 hours to improve its oxidative stability.

3,647,753

ALTERNATING COPOLYMERS OF CONJUGATED COMPOUNDS AND UNSATURATED HYDROCARBON COMPOUNDS AND PROCESS FOR PRODUCTION THEREOF

Kohei Nakaguchi, Osaka, Shohachi Kawasumi, Kobe, Masaaki Hirooka, Ibaraki-shi, Hiroshi Yabuuchi, Takatsuki-shi, and Hiroyoshi Takao, Ashiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
No Drawing. Continuation of abandoned application Ser. No. 565,726, July 18, 1966. This application Oct. 15, 1969, Ser. No. 866,775
Claims priority, application Japan, July 22, 1965, 40/44,060; July 30, 1965, 40/46,495; July 2, 1966, 41/35,764
Int. Cl. C08f *3/40, 3/74, 9/00*
U.S. Cl. 260—63 R **13 Claims**

A compound having a $C\equiv N$ or $C=O$ group in the conjugated position relative to the $C=C$ bond forms a complex with an organohalide of aluminum or boron. An alternating copolymer is obtained from a monomer satisfying said requirement and inner olefinic monomers or polymers or acetylenes having a donor property. In this case, an organoaluminum halide or an organoboron halide is suitable as the catalyst for said copolymerization. This type of active species can also be obtained by mixing an organic compound of a metal of Group II, III or IV of the Periodic Table with a halide of a metal of Group III or IV in the presence of the above-mentioned conjugated monomer.

3,647,754

PREPARATION OF MACROMOLECULAR FORMALDEHYDE POLYMERS

Jentje Bonnema, Beek, and Emanuel M. J. Pijpers, Elsloo, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands
No Drawing. Continuation-in-part of application Ser. No. 509,606, Nov. 24, 1965. This application Mar. 27, 1970, Ser. No. 23,488
Int. Cl. C08g *1/02, 1/12*
U.S. Cl. 260—67 **15 Claims**

A process for the preparation of macromolecular formaldehyde polymers is described wherein formaldehyde containing substantial amounts of water, e.g., from 0.5% up to 7% or even more, may be polymerized. The catalysts used for this process are certain titanium compounds dissolved in an inert liquid medium, such as titanic esters of alcohols, cyclo alcohols, phenols and thiophenols; titanium salts of organic salts and other organic titanium compounds.

3,647,755

PROCESS FOR THE PREPARATION OF ETHERIFIED MELAMINE RESINS

Arnold Giller, Wehen, Taunus, Germany, assignor to Chemische Werke Albert, Weisbaden-Biebrich, Germany
No Drawing. Continuation of application Ser. No. 724,294, Apr. 25, 1968. This application June 26, 1970, Ser. No. 56,069
Claims priority, application Germany, Apr. 28, 1967, C 42,180; Jan. 20, 1968, C 44,436
Int. Cl. C08g *9/30*
U.S. Cl. 260—67.6 R **9 Claims**

A process for the manufacture of etherified melamine resins by reacting one mol of melamine at an elevated temperature with less than 3 mols of formaldehyde polymer and at least 4 mols of a monohydric aliphatic water-immiscible alcohol in the presence of a catalytic quantity of an acid and continuously removing water by destillation, coatings and an impregnated material containing the products of the process.

3,647,756

PROCESS FOR THE PREPARATION OF GRAFT COPOLYMERS OF ACETALIZED POLYVINYL ALCOHOL WITH METHYL METHACRYLATE

Takuji Okaya and Hirotoshi Miyazaki, Kurashiki, Japan, assignors to Kurashiki Rayon Co., Ltd., Kurashiki, Okayama Prefecture, Japan
No Drawing. Filed Mar. 11, 1969, Ser. No. 806,307
Claims priority, application Japan, Mar. 14, 1968, 43/16,649
Int. Cl. C08f *29/30*
U.S. Cl. 260—73 R **5 Claims**

Process for preparation of graft copolymers by two-stage reaction in which at the first stage, a thermoplastic, natural or synthetic high molecular compound such as in the form of fibers, filaments and film is contacted with a vinyl monomer such as acrylic acid, its esters, alkyl methacrylate and acrylonitrile in the presence of at least 20 ppb. of molecular oxygen to the total amount of the reaction liquid; at the second stage, the resulting high molecular compound is contacted, in a system different from the first contact system, with at least one radical-polymeribazle monomer such as acrylonitrile, vinyl chloride, styrene and vinyl acetate, in the optional presence of an inert diluent, in the absence of oxygen or in the presence of no more than 600 ppb. of molecular oxygen to the total amount of the reaction liquid at temperatures ranging from 40 to 120° C. Thus, graft-copolymers in which the radical-polymerizable monomer is grafted uniformly and in great quantity even to the interior of the high molecular compound can be obtained with a very easy operation.

3,647,757

FLEXIBLE, CURABLE HETEROCHAIN POLYMERS

Sung Ki Lee, Niagara Falls, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 569,043, Aug. 1, 1966, now Patent No. 3,489,701. This application Dec. 29, 1969, Ser. No. 888,839
Int. Cl. C08g *17/14, 13/00*
U.S. Cl. 260—72.5 **11 Claims**

Polymeric materials useful for further reaction with phenol formaldehyde resins to make compositions useful for interior can coatings, drum and pail linings, wire coatings, laminating resins, baking primers, adhesives, pipe coatings, phenolic molding resins, foundry resins and the like are produced by the method comprising steps of:

(1) Reacting a polymer containing alpha,beta-carbon-to-carbon unsaturated carbonyl function with a nucleophilic compound having at least two active hydrogens to form a polymer containing an active pendant nucleophilic group containing at least one active hydrogen.

(2) Reacting the resultant nucleophilic group containing active hydrogen on the said polymer with an aldehyde to form a polymer containing an active pendant methylol derivative group.

The above steps may be carried out as a separate reaction and separately controlled to give the resultant desired polymer properties in a single reaction vessel in sequence.

3,647,758

PROCESS AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF POLYAMIDES AND POLYESTERS

Kaspar Ryffel, Gomat-Ems, Grisons, and Heinz Schneller, Chur, Grisons, Switzerland, assignors to Inventa AG fur Forschung und Patentverwertung, Zurich, Switzerland
Filed Jan. 22, 1970, Ser. No. 4,878
Claims priority, application Switzerland, Jan. 24, 1969, 1,050/69
Int. Cl. C08g *20/10*
U.S. Cl. 260—75 M **3 Claims**

The apparatus comprises a polymerization reactor containing a monomer or a monomer precondensate and a polymerization catalyst. The monomer or monomer precondensate is introduced into the reactor by means of a pipe. Said pipe extends downwardly through the inlet port of the reactor to substantially the bottom of same and then runs in an upward direction to substantially the top of the reactor. The monomer or monomer precondensate is heated by the exothermic heat of reaction liberated during the polymerization of said monomer in said reactor. The polymer produced by the polymerization reaction is removed through an outlet port.

3,647,759

RESINOUS REACTION PRODUCT OF ETHYLENE GLYCOL AND DMT ESTERIFIED OXIDATE RESIDUE

John F. Walker, New Castle County, Del., assignor to Hercules Incorporated, Wilmington, Del.
No Drawing. Filed Feb. 4, 1970, Ser. No. 8,696
Int. Cl. C08g *17/08*
U.S. Cl. 260—75 R **2 Claims**

Disclosed is a thermoplastic resin which is the reaction product of ethylene glycol and dimethyl terephthalate esterified oxidate residue. The normally solid embodiments of the resin have utility as binders for air or water laid wood or mineral fiber composites. The normally solid and liquid embodiments have utility as polyol reactants for reaction with polyisocyanate material in the production of polyurethane foams, coatings, and films.

3,647,760

TERPOLYMERS OF AN N-VINYL URETHANE, AN ACRYLATE AND AN UNSATURATED NITRILE CARBONATE

Larry G. Wohlgemuth, Cherry Hill, N.J., and William H. Fritock, Glenolden, Pa., assignors to Atlantic Richfield Company, New York, N.Y.
No Drawing. Filed Jan. 14, 1970, Ser. No. 2,973
Int. Cl. C08g *22/00*
U.S. Cl. 260—77.5 BB **10 Claims**

Self-curing terpolymers comprising the residues of an N-vinyl urethane, an acrylate and a terminally ethylenically-unsaturated nitrile carbonate are useful in the preparation of thermosetting coatings by baking, in the absence of cross-linking agents or catalysts. These thermosetting coatings may be incorporated into paint coating systems, electrocoating systems, fibers or adhesives.

3,647,761

POLYAMIDES OF A C_{7-12} ALIPHATIC DICARBOXYLIC ACID, TEREPHTHALIC ACID AND AN ALIPHATIC DIAMINE

James S. Ridgway and Oscar A. Pickett, Jr., Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of application Ser. No. 760,087, Sept. 16, 1968. This application June 19, 1970, Ser. No. 47,899
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **10 Claims**

Fiber-forming polyamides prepared by the condensation of substantially equimolecular proportions of hexamethylene diamine and a mixture of dibasic acids consisting of 50 to 80 mole percent of a C_{7-12} saturated n-aliphatic dicarboxylic acid and from 50 to 20 mole percent of terephthalic acid are particularly useful in the manufacture of hosiery and conjugate yarn.

3,647,762

COPOLYAMIDEIMINE AND COPOLYAMIDEBENZIMIDAZOLE, AND PROCESSES FOR THEIR PREPARATION

Shigeyoshi Hara, Masao Senoo, Tsunemasa Yoshida, and Moriya Uchida, Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan
No Drawing. Filed Jan. 26, 1970, Ser. No. 5,973
Int. Cl. C08g *20/32*
U.S. Cl. 260—78 TF **13 Claims**

A novel film-forming aromatic copolyamideimine is provided by reacting 2,4-diaminodiphenylamine or its derivative, an aromatic diamine such as metaphenylene diamine and a benzenedicarboxylic dichloride such as terephthaloyl dichloride. The copolyamideimine is soluble in various organic solvents and easily molded into shaped articles, and can be converted to a thermally stable copolyamidebenzimidazole by heating, preferably in the presence of an acid substance.

3,647,763

CHAIN EXTENDED POLYAMINE RESIN COMPOSITIONS

Hans H. Stockmann, Plainfield, and Dilip K. Ray-Chaudhuri, Somerset, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 734,894, June 8, 1968. This application Apr. 13, 1970, Ser. No. 27,999
Int. Cl. C08g *20/38*
U.S. Cl. 260—78 SC **1 Claim**

High molecular weight, chain extended copolyamide-polyamine resin compositions comprising the reaction product of a chain extension reagent with a copolyamide-polyamine intermediate which comprises the reaction product of a lactone or an alkylester of acrylic or methacrylic acid, a polyalkylene polyamine and a carboxylic acid reagent. The resulting resin compositions display great versatility in various applications such, for example, as flocculants, and as wet strength and pigment retention additives in the paper making process.

3,647,764

POLYMERIZATION OF 2-PYRROLIDONE IN THE PRESENCE OF CARBONYL SULFIDE

Donald E. Sargent, Schenectady, N.Y., assignor to Radiation Research Corporation, Stamford, Conn.

No Drawing. Filed Aug. 28, 1969, Ser. No. 853,951

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 P **5 Claims**

2-pyrrolidone is polymerized in the presence of an alkaline polymerization catalyst and carbonyl sulfide to form a polymer useful for melt extrusion into fibers, films and other articles.

3,647,765

UNSATURATED POLYAMIDES AND PROCESS FOR OBTAINING SAME

Luigi Mortillaro and Mario Russo, Novara, and Vincenzo Guidotti, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Sept. 9, 1969, Ser. No. 856,474

Claims priority, application Italy, Sept. 11, 1968, 21,082/68

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 UA **16 Claims**

Unsaturated linear polyamides having desirable properties are obtained by reacting or condensing a substituted fumaric acid with a diamine selected from the group consisting of specified aliphatic diamines, secondary cyclic diamines, diamines containing cycloalphatic rings, and diamines containing aromatic carbocyclic rings. The unsaturated linear polyamides of the instant invention are useful for preparing molded goods, sheets, films, and fibers.

3,647,766

METHOD OF MAKING HYDROXYL-TERMINATED POLYSULFIDE POLYMERS

Eugene R. Bertozzi, Yardley, Pa., assignor to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,367

Int. Cl. C08g *11/00, 17/14, 22/14*

U.S. Cl. 260—79 **25 Claims**

Method of making liquid hydroxyl-terminated polysulfide polymers having a random distribution of diverse oxahydrocarbon groups between the polysulfide groups thereof. The hydroxyl-terminated polysulfide polymers are prepared by mixing (1) a liquid polysulfide polymer having mercapto or hydroxyl terminals and having a linear backbone consisting essentially of spaced polysulfide groups and repeating identical oxahydrocarbon groups of the structure —$ROCH_2OR$—, wherein R is lower alkylene, between the polysulfide groups thereof, (2) a hydroxyl-terminated polymer selected from linear polyesters, polyformals of polyalkylene glycols, polyformals, of linear polyesters and mixtures thereof, and (3) a catalytic amount of a strong non-oxidizing mineral acid. The initially incompatible mixture is maintained at a moderately elevated temperature with agitation to cause an interchange reaction to occur which produces a compatible mixture of hydroxyl-terminated polysulfide polymers characterized by the fact that there is a random distribution of diverse oxahydrocarbon groups between the polysulfide groups of the product polymers. In most cases the interchange reaction can be caused to proceed at temperatures within the range 20° C. to 70° C. The product polymers are adapted to be reacted with polyisocyanates to form isocyanate-terminated prepolymers that can be cured by conventional curing agents to form castings, sealants, coatings and the like.

3,647,767

CURABLE, AMORPHOUS, OLEFINIC TERPOLYMERS

Sebastiano Cesca, Arnaldo Roggero, and Walter Marconi, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

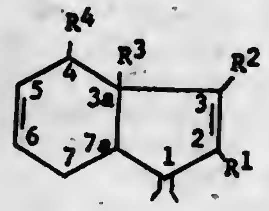
No Drawing. Filed Sept. 5, 1969, Ser. No. 855,740

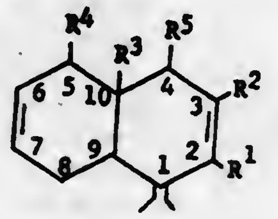
Claims priority, application Italy, Sept. 5, 1968, 20,869/68

Int. Cl. C08f *17/00*

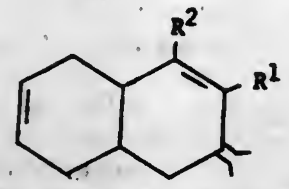
U.S. Cl. 260—80.7 **7 Claims**

Novel terpolymers are disclosed comprising two different α-olefins and an orthocondensed isopropylidene-containing polycyclic polyene having the formulas:





or



wherein each of said R′, R^2, R^3, R^4 and R^5 is H, methyl or ethyl, provided at least one of said R^1 or R^2 is methyl or ethyl, the concentration of said polycyclic polyene in the terpolymer being from 1 to 30% by weight and the mole ratio of said different alpha-olefins being in the range from 1:4 to 4:1.

3,647,768

PROCESS FOR PREPARING AMORPHOUS COPOLYMERS FROM ETHYLENE AND HIGHER α-OLEFINS BY MEANS OF MODIFIED ORGANOMETAL MIXED CATALYSTS

Helmut Schaum, Bad Soden, Taunus, Germany, assignor to Bunawerke Huls Gesellschaft mit beschrankter Haftung, Germany

Filed Sept. 27, 1968, Ser. No. 763,215

Claims priority, application Germany, Oct. 5, 1967, F 53,681

Int. Cl. C08f *1/56, 15/04*

U.S. Cl. 260—80.78 **15 Claims**

Process for preparing rubber-like amorphous copolymers of ethylene with α-olefins in the presence of modified vanadium-containing mixed catalysts containing as reactivator halogen-containing, alkyl-substituted β-lactones. The catalyst yields are so high that in the case of the precipitation polymerization the polymerization mixture can be worked up by simple filtration. The polymers have a low ash content and are chemically and physically very uniform. The vulcanization products made therefrom have improved mechanical properties.

3,647,769

REACTION PRODUCTS OF POLYNITRILES, WATER AND AMINES

Richard G. Bufton, Painesville, John R. Semancik, Mentor, and George G. King, Painesville, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Nov. 14, 1969, Ser. No. 877,008

Int. Cl. C08f *3/90, 3/76, 15/22*

U.S. Cl. 260—85.5 **10 Claims**

Water soluble reaction products are produced by reaction of a polymer or copolymer of acrylonitrile with a primary amine, a secondary amine or a polyamine having a primary or secondary amine group in the presence of water. These reaction products are useful as flocculants in the separation of suspended solids from aqueous systems. The reaction product of polyacrylonitrile, water and N,N-dimethyl-1,3-propanediamine is a useful flocculant in treatment of process water in paper making.

3,647,770

PROCESS FOR FORMATION OF A CYCLIZED ACRYLIC FIBROUS MATERIAL

Klaus H. Gump, Gillette, and Dagobert E. Stuetz, Westfield, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Nov. 21, 1968, Ser. No. 777,902

Int. Cl. C08f *3/76, 15/02;* **D01f** *7/02*

U.S. Cl. 260—85.5 S **11 Claims**

An improved process is provided for the formation of fibrous materials of enhanced thermal stability derived from acrylic polymers consisting primarily of recurring acrylonitrile units. A minor quantity of a Lewis acid capable of promoting the cyclization of pendant nitrile groups is incorporated in a solution of the acrylic polymer and a cyclized acrylic material is formed therein which is subsequently spun into a fiber which exhibits no appreciable exothermic reaction when heated to 500° C. Upon subjecting the resulting fiber to relatively mild preoxidation conditions a stabilized fibrous material may be formed which optionally may be carbonized or carbonized and graphitized at elevated temperatures while present in an inert atmosphere.

3,647,771

ALTERNATING COPOLYMERS OF ALPHA-OLEFINS AND VINYL COMPOUNDS AND A PROCESS FOR MANUFACTURING THE SAME

Kohei Nakaguchi, Shohanchi Kawasumi, Masaaki Hirooke, and Hiroshi Yabuuchi, Niihama-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Japan

No Drawing. Filed Jan. 27, 1965, Ser. No. 428,531

Claims priority, application Japan, Jan. 30, 1964, 39/4,401

Int. Cl. C08f *19/10, 15/18*

U.S. Cl. 260—86.7 **18 Claims**

A conjugated vinyl compound having carbonyl or thiocarbonyl group at the conjugated position of the double bond of the vinyl group forms a complex with an organoaluminum halide. The acrylic compound of this kind includes acrylic ester, acrylamide, acryloyl halide, acrylic acid, salts of acrylic acid, acrolein, vinyl ketone and the like. Said acrylic compound is copolymerized with a terminally unsaturated hydrocarbon, such as propylene, isobutylene, styrene, ethylene and the like to form a copolymer, which is a 1:1 alternating copolymer containing alternately the two monomer units. The present invention has, for the first time, enabled a 1:1 alternating copolymer to be produced from the combination of monomers from which only a random copolymer has heretofore been produced, and also enabled a high molecular weight polymer to be easily produced from the combination of monomers which are difficult to copolymerize. The present invention provides such alternating copolymers, and a novel copolymerization process employing a monomer complexed with an organoaluminum halide.

3,647,772

PROCESS FOR POLYMERIZING OR COPOLYMERIZING OLEFINS WITH CARRIER-SUPPORTED CATALYST

Norio Kashiwa, Otake-shi, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Chiyoda-ku, Tokyo, Japan

No Drawing. Filed Dec. 12, 1969, Ser. No. 884,738

Claims priority, application Japan, Dec. 19, 1968, 43/92,635

Int. Cl. C08f *1/56, 3/02*

U.S. Cl. 260—88.2 **9 Claims**

A process for polymerizing or copolymerizing olefins in the presence of a catalyst consisting of

(a) a transition metal component chemically bound and supported on the surface of in organic solid particles, obtained by treating solid particles of magnesium carbonate with an electron donor which is liquid or gaseous under the treating conditions, the amount of said electron donor being preferably at least 0.01 mmol per gram of solid particles of magnesium carbonate, and a transition metal compound which is selected from the group consisting of halogen compounds of titanium and vanadium, the amount of said transition metal compound being preferably such that the supported amount of said compound is 0.1–3 mmols per gram of said solid particles of magnesium carbonate; and,

(b) an organo-metallic compound, preferably in an amount of 0.01–50 mmols per liter of a polymerization solvent.

3,647,773

SUSPENSION POLYMERIZATION IN THE PRESENCE OF α-METHYL STYRENE

Keitaro Ohe, Daijiro Nishio, and Shigeru Sadamatsu, Isaida Odawara-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 22, 1969, Ser. No. 793,062

Claims priority, application Japan, Jan. 22, 1968, 43/3,589

Int. Cl. C08f *3/64, 3/30, 7/04*

U.S. Cl. 260—88.7 **8 Claims**

A process for suspension polymerization of vinyl compounds in the presence of α-methylstyrene and a slightly water soluble inorganic salt or a water soluble high molecular weight compound.

3,647,774

PROCESS AND COMPOSITION FOR WATER-SOLUBLE POLYMERS

Frederick J. Webb, Akron, and David P. Tate, Northfield, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Aug. 29, 1969, Ser. No. 854,321

Int. Cl. C08d *3/06, 5/02, 5/04*

U.S. Cl. 260—94.2 R **8 Claims**

This invention comprises water-soluble polymers from polydienes having a substantial amount of repeating units with pendent vinyl groups, such as high-vinyl polybutadiene, and the process for preparing such water-soluble polymers. The process involves the anti-Markownikoff addition of hydrogen bromide to the pendent vinyl groups to give the primary bormide derivative groups, which upon the addition of a tertiary amine, give quaternary ammonium groups which impart water solubility to the polymers. These products are particularly useful for the flocculation of solids from suspensions thereof, such as elutriated sewage.

3,647,775

N-ACYL-α-AMINO-ACID AMINES OR PEPTIDES AND THEIR PRODUCTION

Dieter Marquarding, Bonn, Ivar V. Ugi, Arzbach, Bad Tolz, Helmut Kleimann, Leverkusen, and Peter Hoffmann, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

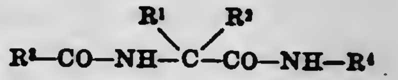
No Drawing. Filed Sept. 5, 1968, Ser. No. 757,778

Claims priority, application Germany, Sept. 25, 1967, P 16 43 362.8

Int. Cl. C07c *103/02;* **C07f** *11/00, 15/00*

U.S. Cl. 260—112.5 **7 Claims**

Thickening agents for lacquers, plasticizers for polyvinyl chloride or antibiotic-like compounds are provided of the formula:



$$R^3{-}CO{-}NH{-}\overset{R^1\quad R^2}{C}{-}CO{-}NH{-}R^4$$

in which R^1 is hydrogen, hydrocarbon of up to 15 carbon atoms, said hydrocarbon substituted by halogen, keto, mercapto, alkylmercapto, carbalkoxy, hydroxy or azido, or said hydrocarbon having an O, S or N heteroatom, R^2 is hydrogen or alkyl of 1–4 carbon atoms, R^3 is hydrogen hydrocarbon of up to 20 carbon atoms, said hydrocarbon substituted by halogen, azido, nitro, carbalkoxy or protected amino, or said hydrocarbon having an N heteroatom and R^4 is alkyl, alkenyl, aralkyl or such substituted in the α-position by a carboxylic ester or carbonamido group, or aryl.

Metallocene derivatives are included such as ferrocenylalkyls or radicals containing other transition metals such as molybdenum or chromium.

3,647,776
1-HYDROXY- AND ACETYLOXY-3-(1-HEXENYLAZOXY)-2-BUTANONE

William James McGahren, Demarest, and John Norman Porter, Ramsey, N.J., and Joseph Daniel Korshalla, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Apr. 2, 1969, Ser. No. 812,861

Int. Cl. A01n *9/20;* **C07c** *105/00;* **C12k** *1/06*

U.S. Cl. 260—143 **2 Claims**

This disclosure describes 1-hydroxy-3-(1-hexenylazoxy)-2-butanone and 1-acetyloxy-3-(1-hexenylazoxy)-2-butanone, compounds useful as antifungal agents.

3,647,777
MIXED NITROSO HYDROCARBONS

Russell L. Hudson, Kenneth C. Williams, and Martin B. Smith, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Nov. 12, 1969, Ser. No. 876,076

Int. Cl. C07c *81/00, 105/00*

U.S. Cl. 260—143 **5 Claims**

A method of making or preparing mixed nitrosoalkane or nitroso aromatic dimers for use as antiknock compounds.

3,647,778
REACTIVE DISAZO DYESTUFFS CONTAINING TRIAZINES

Herbert Francis Andrew and Cecil Vivian Stead, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

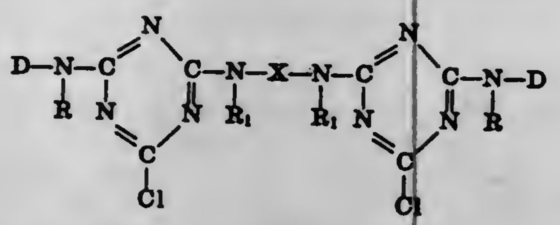
No Drawing. Filed Jan. 12, 1970, Ser. No. 2,390

Claims priority, application Great Britain, Jan. 16, 1969, 2,664/69

Int. Cl. C09b *62/08*

U.S. Cl. 260—153 **5 Claims**

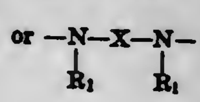
Dyestuffs represented by the general formula:



wherein D represents a radical of the azonaphthalene or phenylazo naphthalene series which contains at least three SO_3H groups,

Either R and R_1 represent H or saturated aliphatic radicals having up to 4 carbon atoms, and

X represents a benzene, diphenylene or naphthalene nucleus which may contain substituents or an aliphatic radical having at least two carbon atoms,



or $-\underset{R_1}{N}-X-\underset{R_1}{N}-$ represents 1,4-piperazinylene

are valuable reactive dyestuffs for cellulose providing a wide range of shades having excellent fastness to washing and to light. They are notable for the high proportion which fixes on the fibre, especially when applied from saline dyebaths.

3,647,779
KASUGAMYCIN SUBSTITUTED ANTIBACTERIAL AGENTS

Henry Schmitz, Syracuse, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed May 1, 1970, Ser. No. 33,982

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 R **17 Claims**

5-[2-amino - 2,3,4,6 - tetradeoxy - 4 - substituted-carboxamidino - α - D - arabinohexopyranosyl]-[IR:2S:3S:4R:5R:6R] - inositols are semi-synthetic kasugamycin derivatives possessing antibacterial properties. The compound 5-[2 - amino - 2,3,4,6 - tetradeoxy-4-(4-piperidylcarboxamidino) - α - D-arabinohexopyranosyl]-[IR:2S:3S:4R:5R:6R]-inositol has been found to be especially active against gram-negative and gram-positive bacteria, most particularly those of the Pseudomonas genus.

3,647,780
α-(α-CARBOXYACYLAMINO) ARALKYL-PENICILLINS

Kenneth David Hardy, Horsham, Sussex, England, assignor to Beecham Group Limited, Middlesex, England

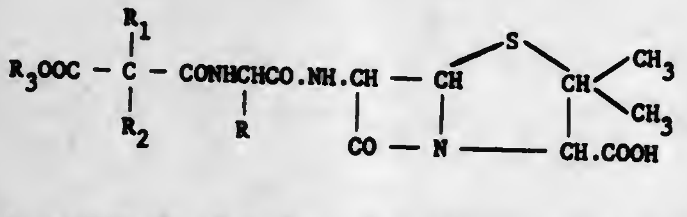
No Drawing. Continuation of abandoned application Ser. No. 792,139, Jan. 17, 1969. This application Mar. 23, 1970, Ser. No. 20,457

Claims priority, application Great Britain, Jan. 19, 1968, 2,968/68

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **7 Claims**

α-(α-Carboxyacylamino)-aralkyl penicillins having activity against micro-organisms of the genus Pseudomonas are described. The penicillins have the formula:



or a pharmaceutically acceptable non-toxic salt thereof wherein

R is phenyl or thienyl,
R_1 is lower alkyl, phenyl, benzyl, phenoxy, benzyloxy, carboxyphenyl or carboxybenzyl,
R_2 is hydrogen or lower alkyl and
R_3 is hydrogen, lower alkyl, phenyl or benzyl,

and a typical compound is D-α-[α-(benzyloxycarbonyl)β-phenylpropionamido]-benzylpenicillin.

3,647,781
IMINES OF NITROHETEROCYCLIC ALDEHYDES AND COMPOUNDS OF THE PENICILLANIC ACID OR CEPHAM SERIES

Frederick Y. Wiselogle, North Brunswick, and Jack Bernstein, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Aug. 14, 1969, Ser. No. 850,256

Int. Cl. C07d *99/24, 99/16*

U.S. Cl. 260—239.1 **7 Claims**

Imines of nitroheterocyclic aldehydes and compounds of the penicillanic acid or cepham (including cephem) series containing an α-amino-carbocyclic-alkanoylamido group in the 6 or 7 position, respectively, are prepared. These compounds are useful as antibacterial, antitrichomonal and antifungal agents.

3,647,782
BIS (3,3-DICHLORO-2-OXO-POLYMETHYLENE-IMINES)

Joseph C. Collins, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 673,926, Oct. 9, 1967. This application Sept. 29, 1969, Ser. No. 862,084

Claims priority, application Great Britain, Oct. 1, 1968, 46,633/68

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 R **8 Claims**

The invention relates to 3,3 - dichloro-2-oxopolymethylenimines and bis(3,3 - dichloro - 2-oxopolymethylenimines) having useful anti-inflammatory properties as determined by their inhibition of carrageenan induced edema in rats.

3,647,783
(2-SUBSTITUTED - 5 - OXO-CYCLOPENT-1-ENYL) ESTERS OF α-CARBOXYARYLMETHYL PENICILLINS

Donald K. Pirie, Uncasville, Conn., assignor to Chas. Pfizer & Co., Inc., New York, N.Y.

No Drawing. Filed Aug. 4, 1969, Ser. No. 847,432

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **8 Claims**

A series of α-{carbo-[1-(2-substituted-5-oxo-cyclopent-1-enyloxy]}arylmethyl penicillins wherein the substituent is lower alkyl or benzyl and methods for their preparation are described.

3,647,784
PREPARATION OF STEROIDAL FORMATE ESTERS

Reinhardt P. Stein, Conshohocken, Robert C. Smith, Jr., King of Prussia, and Herchel Smith, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 706,659, Feb. 19, 1968. This application Feb. 2, 1970, Ser. No. 8,056

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R **26 Claims**

A procedure is disclosed for the selective preparation of steroidal formate esters from corresponding steroid alcohols. Products formed by the conversion are not only hormonally useful in the animal body but are also useful for further reactions of the steroid nucleus.

3,647,785
NOVEL 3-INDOLYLALIPHATIC ACID ANHYDRIDES

Seitetsu Arasaki, Minoo-shi, and Hisao Yamamoto and Shigeho Inaba, Nishinomiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Apr. 15, 1968, Ser. No. 721,200

Claims priority, application Japan, Apr. 25, 1967, 42/26,772; May 12, 1967, 42/30,289

Int. Cl. C07d *27/32*

U.S. Cl. 260—240 J **3 Claims**

Novel 3-indolylaliphatic acid anhydrides having prominent anti-inflammatory activity are prepared by dehydrating 3-indolylaliphatic acid derivatives with a dehydrating agent such as dicyclohexylcarbodiimide in the absence or presence of an inert solvent.

3,647,786
PREPARATION OF CEPHALOSPORIN SULFOXIDES

Robin D. G. Cooper, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Oct. 3, 1968, Ser. No. 764,939

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **10 Claims**

Cephalosporins are oxidized to the corresponding cephalosporin sulfoxides by treatment with an inorganic peracid having a reduction potential of at least +1.5 volts and containing only nonmetallic elements, organic carboxylic peracids, or mixtures of hydrogen peroxide and an acid having a dissociation constant of at least 10^{-5}.

3,647,787
PROCESS IMPROVEMENT FOR CONVERTING PENICILLIN SULFOXIDE ESTERS TO CEPHEM COMPOUNDS

Robin D. G. Cooper, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of applications Ser. No. 636,592, Ser. No. 636,593, and Ser. No. 636,629, all May 8, 1967. This application July 2, 1969, Ser. No. 838,697

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **25 Claims**

Tertiary carboxamides, urea derivatives, and/or sulfonamides are used to direct the conversion of penicillin sulfoxide esters, via exposure to acid conditions at elevated temperature, more specifically toward production of desacetoxycephalosporin antibiotics.

3,647,788
CEPHALOSPORINS HAVING A 3-THIOETHER GROUP

John Colin Clark, Gerrards Cross, Brian Richard Cowley, Greenford, and Gordon Ian Gregory, Chalfont St. Peter, England, James Kennedy, Montrose, Angus, Scotland, and Alan Gibson Long, Greenford, England, assignors to Glaxo Laboratories Limited, Middlesex, England

No Drawing. Continuation-in-part of application Ser. No. 752,140, Aug. 13, 1968. This application June 13, 1969, Ser. No. 833,149

Claims priority, application Great Britain, June 14, 1968, 28,528/68

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **23 Claims**

7-acylamido cephalosporanic acids and non-toxic salts thereof having a thioether group at the 3-position, the acyl group in the 7-substituent being of the aliphatic, heterocyclic araliphatic containing 1 or 2 hetero atoms, araliphatic or cycloaliphatic series, an araliphatic acyl group having an atomic weight sum of at least 120 when the aryl moiety thereof is a carbocyclic aromatic group. Such compounds are antibiotics more resistant to metabolic processess reducing antibiotic activity than are cephalosporins possessing a 3-acetoxymethyl group and certain of them show significant absorption after oral administration.

3,647,789
CEPHALOSPORANIC ACIDS

Leonard Bruce Crast, Jr., Clay, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Nov. 13, 1969, Ser. No. 876,596

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **11 Claims**

Certain 7-[α-(2,6-dihalo-4-pyridylthio)acetamido]cephalosporanic acids and derivatives thereof have shown pronounced antibacterial activity against gram-positive and gram-negative bacteria and in particular the acid-fast bacteria, Mycobacterium tuberculosis H37Rv. A preferred compound, 7-[α-(2,6-dichloro-4-pyridylthio)acetamido]cephalosporanic acid is prepared by the condensation of 2,6-dichloro-4-mercaptopyridine with 7-(α-bromoacetamido)cephalosporanic acid.

3,647,790
QUINOXALINYL-OXAZOLIDINES AND -OXAZINES

John R. Potoski, Rosemont, and Meier E. Freed, Philadelphia, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Apr. 8, 1969, Ser. No. 814,442

Int. Cl. C07d *87/06*

U.S. Cl. 260—244 R **11 Claims**

Novel 2-quinoxalinyl-oxazolidine-3-amides and -sulfonamides and 2-quinoxalinyl-oxazine-3-amides and -sulfonamides (I) are provided, with pharmacological activity as nervous system depressants and utility to induce calming. Compounds (I) are prepared by condensing a [(2-quinoxalinylmethylene)amine]alkanol (II) with a benzoyl- or phenylsulfonyl-chloride (III).

3,647,791
2,3,4,4a,5,6-HEXAHYDRO - 1H - PYRAZINO [1,2-a] QUINOLINES AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Alberto Rossi, Oberwil, Basel-Land, and Ernst Sury, Basel, Switzerland, assignors to Ciba Corporation, New York, N.Y.

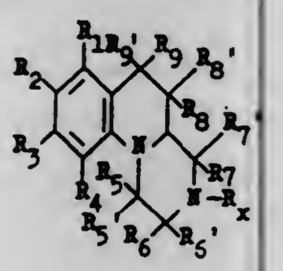
No Drawing. Filed Sept. 19, 1967, Ser. No. 668,957

Claims priority, application Switzerland, Oct. 5, 1966, 14,363/66; Feb. 2, 1967, 1,561/67, 1,562/67, 1,563/67; Aug. 11, 1967, 11,361/67, 11,362/67, 11,363/67, 11,364/67, 11,365/67

Int. Cl. C07d *51/72*

U.S. Cl. 260—268 TR **31 Claims**

Compounds of the formula



R_1 to R_4=H, alkyl, alkoxy, alkenyloxy, halogen, trifluoromethyl, methylenedioxy, hydroxy, acyloxy, nitro, amino or acylamino,

R_5, R_5', R_6, R_6', R_7, R_7', R_8, R_8', R_9, R_9'=hydrogen or alkyl,

R_x=hydrogen, an aliphatic hydrocarbon radical which may be substituted by an oxo group, by a free, etherified or acylated hydroxyl group or by a free or functionally converted carboxyl group, a cycloaliphatic hydrocarbon radical, a cycloaliphatic-aliphatic hydrocarbon radical which may be substituted in the aliphatic portion by an oxo group or by a free, etherified or acylated hydroxyl group, an araliphatic hydrocarbon radical which may be substituted in the aliphatic portion by an oxo group or by a free, etherified or acylated hydroxyl group and which may further be substituted in the aromatic portion, or a heterocyclic-aliphatic radical which may be substituted in the heterocyclic portion; and their salts and pharmaceutical compositions containing these compounds, for example: 3-benzyl-2,3,4,4a,5,6-hexahydro-1H-pyrazino[1,2-a]quinoline.

Use: antihypertensives and sedatives.

3,647,792
HETEROCYCLIC PYRAZINES

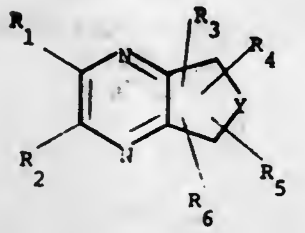
William J. Evers, Long Branch, Ira Katz, Elberon, Richard A. Wilson, Edison, and Ernst T. Theimer, Rumson, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Filed May 4, 1970, Ser. No. 34,583

Int. Cl. C07d *51/76*

U.S. Cl. 260—250 R **8 Claims**

Processes for altering the flavors of products, including foodstuffs and tobaccos, which comprise adding thereto a small but effective amount of at least one heterocyclic pyrazine having the formula:



wherein Y is —O—, —S—, —CH_2—O—, or CH_2—S—, and R_1, R_2, R_3, R_4, R_5 and R_6 are the same or different and represent hydrogen and lower alkyl; the products so produced; flavoring and flavor-enhancing compositions containing such heterocyclic pyrazines; and novel heterocyclic pyrazines and processes for their production.

3,647,793
2-PIPERIDINO-3-PHENYLQUINOXALINE COMPOUNDS

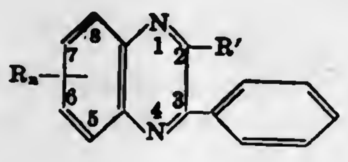
Quentin Francis Soper, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Original application Mar. 22, 1968, Ser. No. 715,144, now Patent No. 3,582,315. Divided and this application Nov. 5, 1969, Ser. No. 871,035

Int. Cl. C07d *51/78*

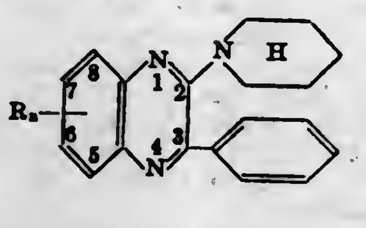
U.S. Cl. 260—250 R **2 Claims**

The present invention is concerned with methods and compositions useful in inhibiting the growth of plants, and is particularly directed to methods employing and compositions comprising an active agent which is a compound of the formula



or its acid addition salts, wherein R represents halo or methyl, said R being located on the 6 or 7 position, only; R′ represents halo, hydroxy, loweralkoxy, amino, n-loweralkylamino, di-n-loweralkylamino, or piperidino; and *n* represents an integer of from 0 to 1, both inclusive.

The present invention is also directed to the novel compound of the formula



and its acid addition salts, wherein R, as above, represents halo or methyl, said R being located on the 6 or 7 position, only, and *n* represents an integer of from 0 to 1, both inclusive.

3,647,794
s-TRIAZINE COMPOUNDS

Gilbert Regnier, Sceaux, Roger Canevari, Clamart, and Michel Laubie, Vaucresson, France, assignors to Societe en nom collectif "Science Union et Cie," Societe Francaise de Recherche Medicale

No Drawing. Filed Sept. 26, 1969, Ser. No. 861,448

Claims priority, application Great Britain, Oct. 2, 1968, 46,802/68

Int. Cl. C07d *55/22*

U.S. Cl. 260—249.6 **7 Claims**

1-(4,6-R′-amino-2-s-triazinyl)-4-R - piperazines wherein R′ is alkenyl or alkynyl which are optionally substituted and R is hydrogen, phenyl, pyridyl, pyrimidyl, pyrazinyl, benzyl, phenylalkyl or diphenylalkyl which are optionally substituted, having respiratory analeptic properties.

3,647,795
VAPOR PHASE PROCESS FOR PRODUCTION OF N,N′-DISUBSTITUTED PIPERAZINES

Bernard R. Bluestein, Glen Rock, and Jack M. Solomon, West Caldwell, N.J., assignors to Witco Chemical Company, Inc., New York, N.Y.

No Drawing. Filed Jan. 10, 1968, Ser. No. 696,707

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 SY **6 Claims**

N,N′-disubstituted piperazines are prepared in a vapor phase process at atmospheric pressure by cyclodehydration of the corresponding N-substituted ethanolamine in the presence of an activated alumina catalyst.

3,647,796
CYCLICAMINO ALKYLAMINOTHIOACRIDINE

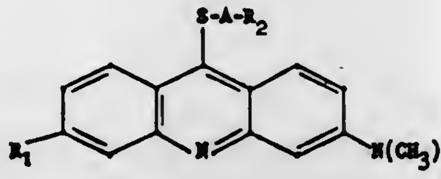
Edward F. Elslager, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed Dec. 23, 1968, Ser. No. 786,435

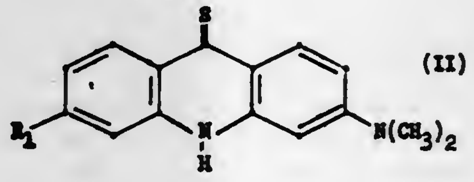
Int. Cl. C07d *37/22*

U.S. Cl. 260—279 R **6 Claims**

Novel alkylaminothioacridines (I) are provided by condensing the corresponding acridinethione (II) with a haloalkylamine of formula X—A—R_2 or by condensing 9-chloro-3-(dimethylamino)acridine with a mercaptoalkylamine of formula HS—A—R_2 where R_1 is H or dimethylamino, R_2 is a cyclic nitrogen-containing group (morpholino; morpholinyl; 2-, 3- or 4-pyridyl or 4 to 6 carbon azacycloalkyl containing at least 4 carbon atoms joined annularly with nitrogen); A is a divalent hydrocarbon group containing up to 3 carbon atoms or a direct bond attaching R_2 in a manner providing at least a two-carbon separation between the R_2-nitrogen and the attaching bond; and X is a halogen atom. The acridine products are useful as antiparasitic and antibacterial agents, and as inhibitors of blood platelet aggregation



(I)



(II)

3,647,797
6-CHLORO - 2,3-DIHYDROSPIRO(NAPHTHALENE-1(7*H*),3′-PIPERIDINE)-2′,4,6′-TRIONES

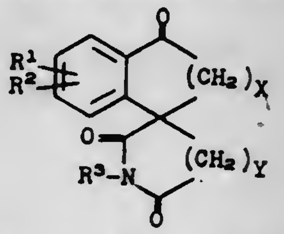
Albert A. Carr and Donald R. Meyer, Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed July 24, 1969, Ser. No. 844,613

Int. Cl. C07d *29/20*

U.S. Cl. 260—281 **2 Claims**

Compounds having the general formula:



wherein R^1 and R^2 represent hydrogen, halogen, lower alkyl, lower alkoxy, or nitro, and wherein R^1 and R^2 may be the same or different. R^3 may be hydrogen or lower alkyl, and X and Y may be one or two. They have been found to be useful sedative type depressants of the central nervous system.

Most of the compounds having the general formula indicated above are new but others such as 2,3-dihydrospiro[naphthalene - 1(4*H*),3′ - piperidine] - 2′,4,6′-trione which has useful sedative properties have been reported in the literature.

3,647,798
PIGMENTS OF THE PERYLENE TETRACARBOXYLIC ACID DIIMIDE SERIES

Georg Anton Klein, Bottmingen, Basel-Land, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Oct. 24, 1969, Ser. No. 869,367

Claims priority, application Switzerland, Nov. 5, 1968, 16,460/68

Int. Cl. C07d *55/06*

U.S. Cl. 260—281 **9 Claims**

N,N′-bis-(1,2,4-triazol-5-yl)-perylene - 3,4,9,10 - tetracarboxylic acid diimide optionally substituted in 3-position of the triazole rings are disclosed. The claimed compounds are highly valuable pigments which are distinguished by good fastness to heat, light, migration, overvarnishing and solvents. Their use in high-molecular organic material, e.g. lacquers, plastic materials, spinmasses for synthetic fibres or printing pastes, are described.

3,647,799
6,7-DIACYLOXY-TETRAHYDROISOQUINOLINE COMPOUNDS

Toshio Watanabe, Takatsuki-shi, Goro Tsukamoto and Kimiaki Hayashi, Nara-shi, Masanori Sato, Toda-shi, and Yoshio Iwasawa, Urawa-shi, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

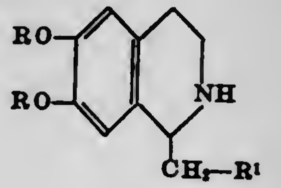
No Drawing. Filed Dec. 4, 1969, Ser. No. 882,296

Claims priority, application Japan, Dec. 10, 1968, 43/90,741

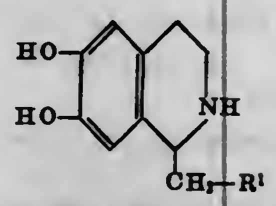
Int. Cl. C07d *35/10*

U.S. Cl. 260—286 R **6 Claims**

A process for preparing a compound having the formula:



wherein R represents a lower alkanoyl radical and R^1 represents a trimethoxyphenyl radical, and pharmaceutically acceptable acid addition salts thereof, which comprises the steps of treating with an acylating agent a 6,7-dihydroxy-tetrahydroisoquinoline compound having the general formula:



wherein R^1 is as described above. The imino radical of said tetrahydroisoquinoline compound is protected either by formation of an acid addition salt or by the addition of a protective group. When the imino radical is protected by a protective group, said group is eliminated after treating.

3,647,800

10-SUBSTITUTED - 1,2,3,4 - TETRAHYDROBENZO [b][1,6]NAPHTHYRIDINES USEFUL AS CNS DEPRESSANTS

Milton Wolf, West Chester, and James L. Diebold, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Division of application Ser. No. 760,063, Sept. 16, 1968, now Patent No. 3,580,915, dated May 25, 1971, which is a continuation-in-part of applications Ser. No. 533,793 and Ser. No. 533,802, both Mar. 14, 1966, and Ser. No. 581,756, Sept. 22, 1966. Divided and this application Apr. 30, 1970, Ser. No. 33,511

Int. Cl. C07d *39/00*

U.S. Cl. 260—287 R **5 Claims**

This invention concerns 1,2,3,4 - tetrahydrobenzo[b]-[1,6]naphthyridines, 1,2,3,4,4a,5,10,10a-octahydrobenzo-[b][1,6]naphthyridines and the pharmacologically acceptable acid addition salts thereof which are pharmacologically active as central nervous system depressants which are useful in producing a calming effect in warm-blooded animals. Further, this invention concerns a process for the preparation of 10 - amino - 1,2,3,4-tetrahydrobenzo-[b][1,6]naphthyridines.

3,647,801

THERAPEUTICALLY ACTIVE 10-METHOXY-DESERPIDINE

Theodor Petrzilka, Zurich, and Albert Hofmann, Hansruedi Schenk, and Franz Troxler, Basel, Switzerland, and Albert Frey and Hans Ott, Hanover, N.J., assignors to Sandoz Ltd. (also known as Sandoz A.G.), Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 728,112, Apr. 14, 1958. This application Dec. 12, 1963, Ser. No. 329,972

Int. Cl. C07d *57/10*

U.S. Cl. 260—287 A **1 Claim**

Disclosed are levorotatory 10-methoxy-deserpidine and related compounds useful as hypotensive agents.

3,647,802

2-AMINO-4-ARYL-3,4-DIHYDROQUINOLINES

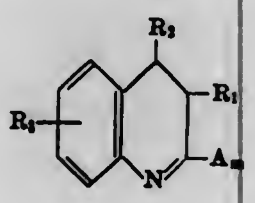
Richard William James Carney, New Providence, N.J., assignor to Ciba Corporation, Summit, N.J.

No Drawing. Continuation-in-part of application Ser. No. 638,593, May 15, 1967, now Patent No. 3,538,101. This application Jan. 22, 1970, Ser. No. 5,106

Int. Cl. C07d *33/52*

U.S. Cl. 260—288 **4 Claims**

2 - amino - 4 - aryl - 3,4 - dihydroquinolines, e.g. those of the formula



Am=an amino or hydrazino group

R_1=H, aliphatic, araliphatic or aromatic radical

R_2=aromatic radical

R_3=H, alkyl, alkoxy, alkylmercapto, halogeno, CF_3, NO_2 or amino acyl derivatives, quaternaries and salts thereof, exhibit anti-inflammatory effects.

3,647,803

METHOD FOR HYDROCARBON SOLUBLE ORGANO SODIUM COMPOUNDS

Richard J. Schlott, Arlington Heights, Donald F. Hoeg, Mount Prospect, and John F. Pendleton, Barrington, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 626,979, Mar. 30, 1967. This application Mar. 24, 1970, Ser. No. 22,394

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 T **6 Claims**

A method of providing active hydrocarbon soluble organosodium reagents by reacting organosodium compounds with aliphatic tertiary diamines and separating the homogeneous active hydrocarbon soluble organosodium products from the insoluble organosodium preparation by-products.

3,647,804

CYCLOALKANECARBOXAMIDES

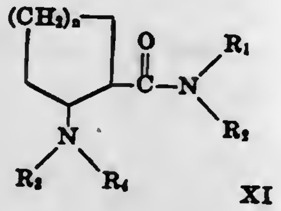
Ronald H. Rynbrandt and Louis L. Skaletzky, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 848,089, Aug. 6, 1969. This application Feb. 27, 1970, Ser. No. 15,247

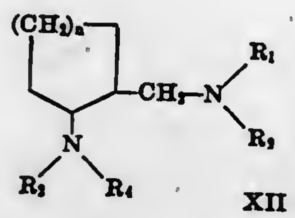
Int. Cl. C07d *29/30*

U.S. Cl. 260—293.63 **5 Claims**

Compounds of Formulae XI and XII (both in cis and trans forms)

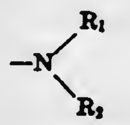


XI

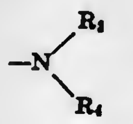


XII

wherein *n* is a number of 1 to 3, inclusive; R_1 is hydrogen, alkyl of 1 to 6 carbon atoms, inclusive, or cycloalkyl of 5 to 7 carbon atoms, inclusive; R_2 is alkyl or cycloalkyl defined as above, or together



is a heterocyclic-amino group; and R_3 and R_4 are alkyl or together



is a heterocyclic-amino group, are prepared. The compounds and the pharmacologically acceptable acid addition salts thereof have various pharmacological activities, e.g., hypoglycemic, sedative, and anti-inflammatory activities and can be used in mammals and birds to produce a lowering of blood sugar, to tranquilize or to reduce inflammatory or arthritic conditions.

3,647,805

BENZOYLAMINO SUBSTITUTED 1-BENZOYL-PIPERIDINES

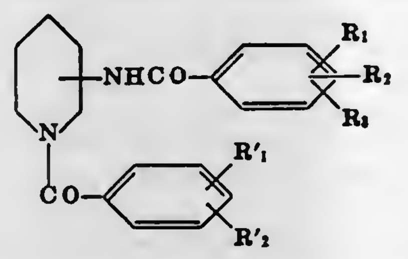
Tsutomu Irikura, Kasuga, Kazunori, and Mitsuru Segawa, Tokyo, Japan, assignors to Kyorin Seiyaku Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed July 11, 1969, Ser. No. 841,102

Int. Cl. C07d *29/30*

U.S. Cl. 260—293.77 **17 Claims**

Aminopiperidine derivatives of the formula



wherein substituted benzamide radical attaches to 2,3,4-positions in the piperidine nucleus, and each R_1, R_2, R_3 is hydrogen or lower alkoxy which can be changed independently. R'_1, R'_2 of substituted benzoyl radical which attaches to nitrogen or piperidine nucleus are hydrogen or amino radical and at least one of R'_1, R'_2 indicates amino radical.

The new compounds exhibit therapeutic effect for experimental gastric ulcer.

3,647,806

TETRAHYDROPYRANYL AND TETRAHYDRO-FURANYL BENZOMORPHAN ETHERS

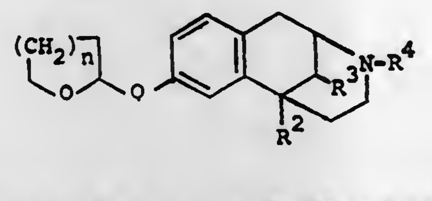
Alexander D. Cross, Mexico City, Mexico, assignor to Syntex Corporation, Panama, Panama

No Drawing. Original application Apr. 18, 1966, Ser. No. 543,028, now Patent No. 3,476,757. Divided and this application June 20, 1969, Ser. No. 844,238

Int. Cl. C07d *39/00*

U.S. Cl. 260—293.54 **10 Claims**

Compounds of the formula



wherein *n* has a value of 1 or 2; R^2 is hydrogen, lower alkyl, lower alkoxy-lower alkyl, phenyl or halophenyl; R^3 is hydrogen or lower alkyl; and R^4 is methyl, phenylethyl, cyclopropylmethyl, allyl, propargyl, 3,3-dimethylallyl or 3-chloroallyl. These compounds have analgesic and antitussive properties.

3,647,807

N-ALKYL-1,4-DIHYDROPYRIDINES

Friedrich Bossert, Wuppertal-Elberfeld, and Wulf Vater, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,946

Claims priority, application Germany, Dec. 7, 1968, P 18 13 436.6

Int. Cl. C07d *31/36*

U.S. Cl. 260—295.5 R **37 Claims**

New 1,4-dihydropyridine derivatives are provided having beneficial effects as coronary dilators and spasmolytics. A representative compound is 1,2,6-trimethyl-4-(α-pyridyl)-1,4-dihydropyridine-3,5-dicarboxylic acid dimethyl ester having typical charactertistics of the new compounds.

3,647,808

N-SUBSTITUTED DIAMINOPYRIDINES

Eberhard Hofmann, Essen-Bredeney, and Ulrich Holtschmidt, Essen, Germany, assignors to Th. Goldschmidt A.-G., Essen, Germany

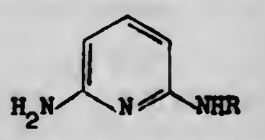
No Drawing. Filed Feb. 10, 1970, Ser. No. 10,282

Claims priority, application Germany, Feb. 18, 1969, P 19 09 065.4

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 R **7 Claims**

N-substituted diaminopyridines of the formula



wherein R is alkyl with 8 to 18 carbon atoms or stands for benzyl chlorinated or brominated in 2- and/or 4-position. The novel compounds have pronounced biocidal characteristics.

3,647,809

CERTAIN PYRIDYL-1,2,4-OXADIAZOLE DERIVATIVES

Kalman Harsanyi Jozsef Relter, Dezso Korbonits, Csaba Gonczi, Kalman Takacs, Erzsebet Bako, Gyorgy Leszkovszky, Laszlo Tardos, and Csaba Vertesy, Budapest, Hungary, assignors to Chinoin Gyogyszer-es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

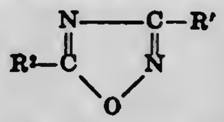
No Drawing. Filed Apr. 8, 1969, Ser. No. 815,520

Claims priority, application Hungary, Apr. 26, 1968, CI–796

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 R **4 Claims**

A 1,2,4-oxadiazole for use as a pharmaceutically active agent with spasmolytic, antipyretic, analgesic, hypnotic or antirheumatic properties. The compound is of the formula



wherein R^1 consists of 2-pyridyl, 3-pyridyl or 4-pyridyl unsubstituted or substituted with an alkyl group having 1 to 6 carbon atoms, and wherein R^2 is phenyl, halophenyl aminophenyl, hydroxyphenyl or chlorophenoxymethyl. The application also discloses the hydrochloride, hydrobromide, sulfate, phosphate, maleate, lactate, acetate or tartarate acid-addition salt of the 1,2,4-oxadiazole and its alkylhalogenide-quaternized or alkylsulfate-quaternized pharmaceutically acceptable salt wherein the alkyl group of the quaternizing compound contains 1 to 6 carbon atoms.

3,647,810

1,2,4-TRIAZOLE METAL SALT COMPLEXES

Horst O. Bayer, Levittown, Richard S. Cook, Doylestown, and William C. von Meyer, Willow Grove, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed July 3, 1969, Ser. No. 847,482

Int. Cl. C07d *55/06*

U.S. Cl. 260—299 **10 Claims**

Novel compounds belonging to the class of metal salt complexes of 4-substituted-1,2,4-triazoles. These compounds are useful fungicides.

3,647,811

PRODUCTION OF 2,2'-BIS-[1,3,4-THIADIAZOLINE-5-THIONE]

Hans-Dieter Rupp and Helmut Magerlein, Erlenbach, Germany, assignors to Glanzstoff AG, Wuppertal, Germany

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,946
Claims priority, application Germany, Dec. 14, 1968, P 18 14 772.3
Int. Cl. C07d *91/62*
U.S. Cl. 260—302 SD **10 Claims**

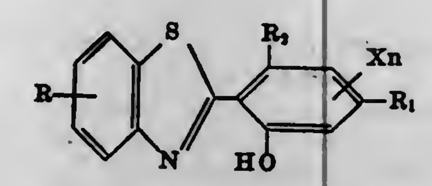
A process for the production of 2,2'-bis-[1,3,4-thiadiazoline-5-thione] by reacting oxalic acid bisamidrazone with carbon disulfide, preferably in water, at approximately room temperature up to moderately elevated temperatures. The product is useful in lithographic printing and photographic development.

3,647,812

HALOGENATED 2(2'-HYDROXYPHENYL BENZOTHIAZOLES

Richard F. Smith, 5 Courtney Court, Easton, Pa. 18042
No Drawing. Filed Apr. 22, 1969, Ser. No. 818,414
Int. Cl. C07d *11/44*
U.S. Cl. 260—304 **18 Claims**

Halogenated derivatives of 2(2'-hydroxyphenyl) benzothiazole having the formula:



wherein R represents hydrogen, SO_3H, alkyl, aryl, cycloalkyl, hydroxy or halogeno; R_1 and R_2 individually represent hydrogen, hydroxy or X, X represents a halogen such as chloro, fluoro, bromo and iodo and *n* represents the integer 1 or 2 such derivatives being water insoluble fluorescent compounds fluorescing with a green to yellow hue.

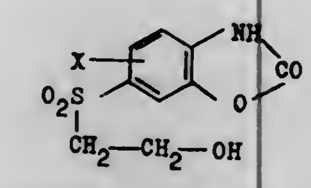
3,647,813

PROCESS FOR THE MANUFACTURE OF BENZOXAZOLONE-6-β-HYDROXY-ETHYL-SULFONE

Fritz Meininger, Frankfurt am Main, and Reinhard Hahnle, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

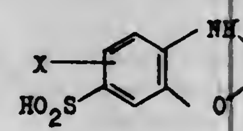
No Drawing. Filed Mar. 10, 1970, Ser. No. 18,281
Claims priority, application Germany, Mar. 14, 1969, P 19 12 954.5
Int. Cl. C07d *85/28*
U.S. Cl. 260—307 C **7 Claims**

A process for the manufacture of a benzoxazolone-6-β-hydroxyethylsulfone of the Formula II



(II)

in which X represents hydrogen, chlorine, bromine, lower alkyl or lower alkoxy, which comprises reacting 1 mol of a benzoxazolone-6-sulfinic acid of the Formula III



(III)

in which X is defined as above, with 1 to 10 mol of ethylene oxide in aqueous medium at a pH-range between about 2 and about 6 at a temperature range between about 10° C. and about 70° C.

3,647,814

METHOD FOR PREPARING 4-SUBSTITUTED-1,2,4-TRIAZOLES

Stanley A. Greenfield, Hatboro, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.
No Drawing. Filed July 3, 1969, Ser. No. 839,081
Int. Cl. C07d *55/06, 55/00, 99/10*
U.S. Cl. 260—308 R **4 Claims**

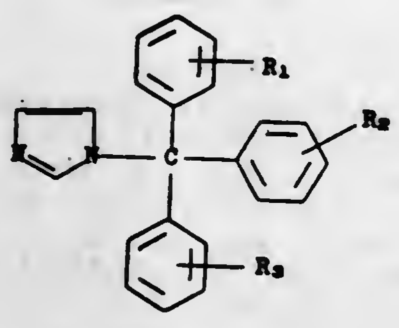
A method for preparing a 4-substituted-1,2,4-triazole which comprises reacting an N-alkoxymethylene-N'-formylhydrazine with a primary amine.

3,647,815

TRIPHENYLMETHYL IMIDAZOLES

Balthasar Hegedus, Bottmingen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed Feb. 27, 1970, Ser. No. 15,259
Claims priority, application Switzerland, Mar. 12, 1969, 3,700/69
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **5 Claims**

Compounds represented by the formula



in which

R_1 is hydrogen, lower alkyl or halogen,
R_2 is phenyl and R_3 is hydrogen or phenyl, useful as antiprotozoal agents, along with methods of their preparation from the appropriate triphenylmethane and imidazole precursors as well as novel intermediates, are disclosed.

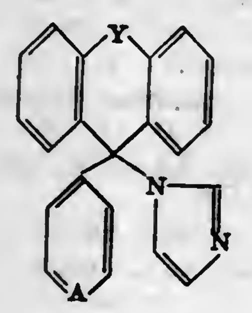
3,647,816

N-SUBSTITUTED IMIDAZOLES AND THEIR SALTS

Wilfried Draber, Karl-Heinz Buchel, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 12, 1969, Ser. No. 876,033
Claims priority, application Germany, Nov. 29, 1968, P 18 11 654.6
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **21 Claims**

Certain imidazoles and their salts having fungistatic properties are provided which have the following basic structure:



in which Y is $—(CH_2)_n—$, —CH=CH—, O or S; A is N or CH; and *n* is 0, 1 or 2. Typical fungi are trichophyton species, Microsporon species, Candida species and Penicillium species. These compounds are also active against pathogenic protozoa, viruses and bacteria.

3,647,817

REARRANGEMENT PROCESS FOR PREPARATION OF ALKYL 2 - BENZIMIDAZOLECARBAMATES FROM ALKYL 2 - AMINOBENZIMIDAZOLE-1-CARBOXYLATES

Bruce I. Dittmar, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Jan. 14, 1969, Ser. No. 791,181
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 **4 Claims**

Alkyl 2 - aminobenzimidazole-1-carboxylates undergo a thermal rearrangement to the corresponding alkyl 2-benzimidazolecarbamate at temperatures between 110° C. and the melting point of the carbamate. The heating can be conducted in an inert solvent or without solvent.

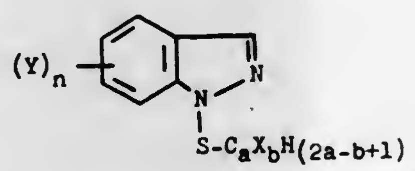
The resulting alkyl 2-benzimidazolecarbamates are useful as fungicides and intermediates in the preparation of dialkyl esters of 2-carboxyaminobenzimidazole-1-carboxylic acids, which compounds are also fungicides.

3,647,818

1-(POLYHALOALKYLTHIO) INDAZOLES

Joseph G. E. Fenyes, 8073 Hansom Drive, Oakland, Calif. 94605
No Drawing. Filed Sept. 15, 1966, Ser. No. 579,512
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 C **6 Claims**

Indazoles of the formula:



wherein *a* is 1 or 2, *b* is 3 when *a* is 1 and is from 3 to 5 when *a* is 2, X is halogen of atomic number from 17 to 35 with at least one X being bonded to the carbon atom which is bonded to the sulfur atom, Y is halogen of atomic number from 17 to 35 or nitro in positions 4 to 6 of the indazole nucleus and *n* is an integer from 0 to 1. These compounds are fungicidal and bactericidal.

3,647,819

INDAZOLYLPHENYLUREAS AND INDAZOLYLPHENYLTHIOUREAS

Frederick K. Kirchner, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.
No Drawing. Filed Sept. 19, 1969, Ser. No. 859,569
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 **14 Claims**

A series of indazolylphenylureas and indazolylphenylthioureas, useful for preventing and suppressing coccidiosis in poultry, are prepared by the condensation of an aminoindazole and a phenylisocyanate or a phenylisothiocyanate.

3,647,820

2-POSITION KETALS OF A-NORANDROSTANES AND DERIVATIVES THEREOF

Seymour D. Levine, North Brunswick, and Patrick A. Diassi, Westfield, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 792,235, Jan. 16, 1969, which is a division of application Ser. No. 621,755, Mar. 9, 1967, now Patent No. 3,468,955, which in turn is a division of application Ser. No. 440,311, Mar. 16, 1965, now Patent No. 3,330,851. This application Apr. 13, 1970, Ser. No. 28,046
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 **9 Claims**

This invention relates to new 2-ketal derivatives of A-norandrostane which are useful in the preparation of cyano-containing androstanes having fertility inhibiting activity.

3,647,821

SUBSTITUTED NAPHTHOFURAN COMPOUNDS

Marinus Los, Edinburg, Scotland, assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 708,498, Feb. 27, 1968. This application June 17, 1970, Ser. No. 47,107
Int. Cl. C07d *5/34*
U.S. Cl. 260—340.9 **7 Claims**

This invention relates to substituted naphtho[2,1-b] furans useful in the synthesis of D-homosteroids. The latter steroids are useful as estrogenic agents in the treatment of laboratory and domestic animals.

3,647,822

CERTAIN PEROXY-CONTAINING 2-OXO-TETRAHYDROFURANS

Yun Ger Chang, Austin, Tex., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.
No Drawing. Filed Sept. 5, 1968, Ser. No. 757,758
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.6 **5 Claims**

A difunctional hydroperoxide is reacted with either a γ-ketoacylhalide or a 2-aroylbenzoylhalide, in the presence of a basic reagent in an organic solvent like p-dioxane at a temperature ranging from about 10° C. to about 50° C. at a mole ratio from about 1:2 to about 1:10. The preferred temperature is between about 25° C. and 35° C. and the preferred ratio is from about 1:2 to about 1:2.5.

3,647,823

OXA-POLYCYCLIC DIOLS AND PROCESS FOR PREPARING THE SAME

Arsene Isard, St. Genis Laval, and Francis Weiss, Pierre Benite, France, assignors to Ugine Kuhlmann, Paris, France

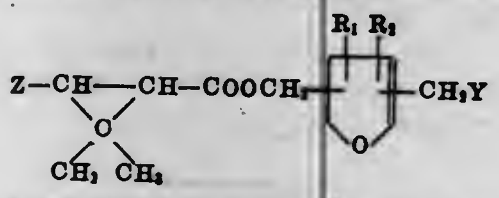
No Drawing. Filed Jan. 4, 1968, Ser. No. 695,572
Claims priority, application France, Jan. 6, 1967, 90,194
Int. Cl. C07d *5/04*
U.S. Cl. 260—347.8 **9 Claims**

4-hydroxy-1-methylol-6-oxa (3.2.1)-bicyclo-octane, 4-hydroxy - 1 - methylol-6-oxa $(3.2.1.1^{3,8})$-tricyclo-nonane, and 4-hydroxy-1-methylol-6,8-dioxa (3.2.1)-bicyclo-octane are prepared by reacting in the presence of a catalyst such as tungstic acid, a peracid with a cyclic diol such as 1,1 - dimethylol-3-cyclohexene, 2,2-dimethylol-5-norbornene, 2,2-dimethylol-3,4-dihydro (2H) pyrane. The peracid may be prepared in situ by reacting hydrogen peroxide with a carboxylic acid.

3,647,824
SUBSTITUTED FUROIC ACIDS AND ESTERS THEREOF

Michael Elliott, Harpenden, England, assignor to National Research Development Corporation, London, England
No Drawing. Division of application Ser. No. 807,406, Mar. 14, 1969, now Patent No. 3,542,928, which is a division of application Ser. No. 598,923, Dec. 5, 1966, now Patent No. 3,465,007. Divided and this application Sept. 17, 1969, Ser. No. 870,779
Int. Cl. C07d *5/28, 5/16*
U.S. Cl. 260—347.5 **3 Claims**

Insecticidal compositions are produced wherein the active ingredient is at least one compound of the formula



in which Z represents an aryl, alkenyl or carboalkoxyalkenyl group, Y represents a hydrogen atom or an alkyl, alkenyl or alkadienyl group or an aryl group or a heterocyclic group which themselves may be substituted by alkyl, alkenyl, alkadienyl or alkoxy groups or halogen atoms, and R_1 and R_2 which may be the same or different, each represent a hydrogen atom or an alkyl, alkenyl or alkadienyl group. Furoic acids and furoic acid lower alkyl esters are also disclosed.

3,647,825
METHOD OF MAKING AND USING 4-HYDROXY-5-METHYL-2,3-DIHYDROFURAN-3-ONE

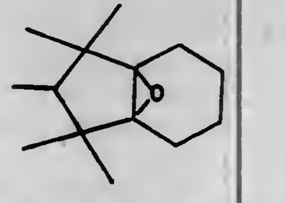
Hideo Shimazaki, Tokyo, Shuji Tsukamoto and Tadaomi Saito, Kanagawa-ken, Sadanari Eguchi, Miyagi-ken, and Yasushi Komata, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
No Drawing. Continuation-in-part of application Ser. No. 712,397, Mar. 12, 1968. This application Dec. 29, 1969, Ser. No. 888,951
Claims priority, application Japan, Mar. 15, 1967, 42/16,265; Apr. 15, 1967, 42/23,921
Int. Cl. C07d *5/10*
U.S. Cl. 260—347.8 **1 Claim**

4-hydroxy-5-methyl-2,3-dihydrofuran-3-one is produced by Maillard reaction between xylose, ribose or arabinose with glutamic acid, aspartic acid, alanine, glycine, proline or salts of these amino acids, and may be recovered in crystalline form from the reaction mixture by steam distillation, evaporation of the distillate at temperatures not higher than 40° C., and sublimation from the oily residue at or above 80° C. The compound imparts a pleasant maltol-like flavor to ingestible products such as food, drinks, but also compositions for oral hygiene. The crude Maillard reaction mixture containing the compound may be employed as a flavoring if prepared from glutamic acid, aspartic acid or their salts and from xylose or xylan.

3,647,826
INDANE DERIVATIVES

John B. Hall, Oakhurst, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.
No Drawing. Filed Aug. 18, 1969, Ser. No. 851,090
Int. Cl. C07d *1/00*
U.S. Cl. 260—348 C **1 Claim**

Saturated epoxyindane derivative having the formula

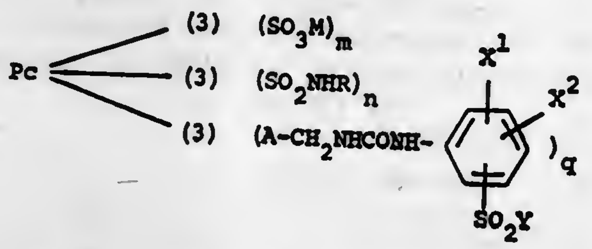


perfume compositions containing such epoxyindane and processes for producing same.

3,647,827
REACTIVE PHTHALOCYANATE DYES CONTAINING AN ARYLUREAMETHYLENE GROUP

Hiroshi Sigiyama, Ashiya-shi, Takuo Ikeda, Ibaragi-shi, and Takashi Itani, Sakai-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
No Drawing. Filed Dec. 8, 1967, Ser. No. 688,959
Claims priority, application Japan, Dec. 10, 1966, 41/81,194
Int. Cl. C09b *1/30, 62/72;* **D06p** *1/38*
U.S. Cl. 260—372 **2 Claims**

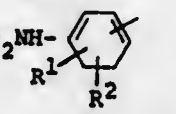
A dye suitable for dyeing cellulosic materials such as cotton, nitrogen-containing fibers such as wool and polyvinyl alcohol fibers, which has the formula,



wherein Pc is a copper or nickel phthalocyanine nucleus; X^1 and X^2 each represent hydrogen, methyl or methoxy; M is hydrogen, an alkali metal or an alkaline earth metal; Y is $—CH_2CH_2OSO_3M$ or $—CH{=}CH_2$ and the $—SO_2Y$ group is bonded with the phenyl group at a 3- or 4-position to the ureido group; R is hydrogen or

$$—CH_2CH_2OSO_3M$$

A is $—SO_2NH—$ or

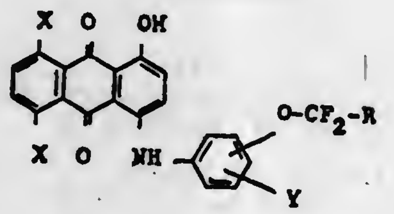


(R^1 and R^2 each represent hydrogen, sulfo or methyl); m is 0 to 3; n is 0 to 2; and q is 1 to 4, wherein $m+n+q$ is 3 or 4, and when q is 2 to 4, the A's may be the same or different, and $—SO_3M$, $—SO_2NHR$ and —A— groups are all bonded to four phenyl nucleuses in said phthalocyanine at a 3-position, respectively.

3,647,828
DYESTUFFS OF THE ANTHRAQUINONE SERIES

Ernst Spietschka, Oberauroff, and Friedrich Ische, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed June 3, 1970, Ser. No. 43,239
Claims priority, application Germany, June 11, 1969, P 19 29 564.8
Int. Cl. C09b *1/50*
U.S. Cl. 260—380 **7 Claims**

Dyestuffs of the general formula



(I)

in which the one X is hydroxy and the other X is nitro or amino or alkylamino optionally substituted by halogen, hydroxy, alkoxy, or cyano, R is fluorine or alkyl optionally substituted by fluorine and/or chlorine, and Y is hydrogen, halogen, alkyl or alkoxy optionally substituted by fluorine or hydroxy, the dyestuffs being suitable for dyeing, coloring or printing polyester material.

3,647,829
PROCESS FOR THE PREPARATION OF 3α-HYDROXY-5β-PREGNAN-20-ONE

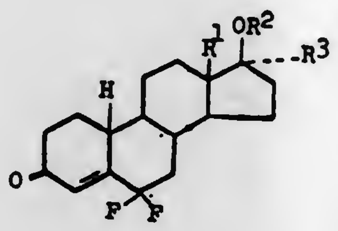
Gunther Kruger, St. Laurent, Quebec, Canada, assignor to Steele Chemicals Company Limited, Ville St. Pierre, Quebec, Canada
No Drawing. Filed Dec. 2, 1969, Ser. No. 881,604
Claims priority, application Canada, Nov. 5, 1969, 066,775
Int. Cl. C07c *169/32*
U.S. Cl. 260—397.4 **11 Claims**

Process for the preparation of 3α-hydroxy-5β-pregnan-20-one by the selective hydrogenation of a member selected from the group consisting of the Δ^4-3-ketosteroids progesterone, spirost-4-en-3-one and stigmasta-4,22-dien-3-one to form the corresponding 3-keto-5β-setroids, followed by the selective reduction of the latter ketone to the corresponding 3α-hydroxy-5β-steroid. When progesterone is used as the starting material, the desired product, 3α-hydroxy-5β-pregnan-20-one, is obtained directly; when spirost-4-en-3-one, or stigmasta-4,22-dien-3-one is used as the starting material, the desired product is obtained by subsequent degradation of side chain attached to the D-ring of the steroid nucleus. The process is very economical and results in high yields of the end product.

3,647,830
6,6 - DIFLUORO-13β-ETHYL-17α-SUBSTITUTED-17β-HYDROXY - 4 - GONEN - 3-ONES AND THEIR LOWER ESTERS

George A. Boswell, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 720,493, Apr. 11, 1968, now Patent No. 3,511,861. This application Jan. 22, 1970, Ser. No. 5,139
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.4 **8 Claims**

Described are steroid compounds of the formula



in which

R^1 is ethyl, propyl, or isopropyl;
R^2 is hydrogen, the acetyl group, or the propionyl group;
R^3 is $—CH{\equiv}CH$, $—C{\equiv}CCF_3$, $—CH{=}CH_2$, $—C{\equiv}CCH_3$, $—CH_2CH_3$, $—CH{=}CHCH_3$, or $—CH_2CH_2CH_3$.

These compounds are highly active progestational agents.

3,647,831
PROCESSES FOR PREPARING EQUILENIN COMPOUNDS

Robert Ginsig, Cuernavaca, Morelos, Mexico, assignor to Syntex Corporation, Panama, Panama
No Drawing. Filed Feb. 26, 1970, Ser. No. 14,625
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.45 **13 Claims**

Methods of synthesizing equilenin compounds from the corresponding natural or synthetic equilin compounds. The methods are characterized by the steps of (1) epoxidizing an equilin compound to the corresponding 7,8-epoxy saturated B ring compound and, (2) cleaving the epoxy ring and concomitantly introducing the equilenin B ring aromatization.

3,647,832
RUTHENIUM COMPLEXES AND PROCESSES FOR THEIR PREPARATION

Pierre Chabardes and Louis Colevray, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Mar. 18, 1968, Ser. No. 714,010
Claims priority, application France, Mar. 23, 1967, 100,058; Apr. 11, 1967, 102,292; June 29, 1967, 112,456; Dec. 11, 1967, 131,753
Int. Cl. C07f *15/00*
U.S. Cl. 260—429 J **14 Claims**

The invention provides new ruthenium complexes of the formula:

$$[Ru(Diket)_2(CO)_xL_y]_z$$

in which Diket is a β-diketone residue, L is a mono- or poly-dentate ligand residue other than a β-diketone, x and z are positive integers, y is zero or a positive integer and $x+y+z=3$, which are useful as ruthenium catalysts, e.g. in the dimerization or hydrodimerization of acrylonitrile.

3,647,833
TRICYCLOHEXYLTIN HALIDE PROCESS

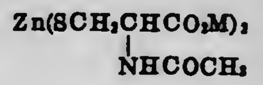
Gerald H. Reifenberg, Hightstown, and William J. Considine, Somerset, N.J., assignors to M & T Chemicals Inc., New York, N.Y.
No Drawing. Original application Nov. 4, 1968, Ser. No. 773,331, now Patent No. 3,564,033, dated Feb. 16, 1971. Divided and this application May 15, 1970, Ser. No. 48,659
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **3 Claims**

The process of this invention for preparing tricyclohexyltin halide $(C_6H_{11})_3SnX$ wherein X is selected from the group consisting of chloride and bromide, comprises reacting tricyclohexylphenyltin and tin tetrahalide.

3,647,834
ZINC MERCAPTIDE N-ACETYLCYSTEINE CARBOXYLATE SALTS

Tellis A. Martin, Evanston, Ind., assignor to Mead Johnson & Company, Evansville, Ind.
No Drawing. Filed Aug. 11, 1969, Ser. No. 849,150
Int. Cl. C07f *3/06*
U.S. Cl. 260—429.9 **14 Claims**

Zinc mercaptide N-acetylcysteine carboxylate salts of Formula I wherein M represents one chemical equivalent of a pharmaceutically acceptable salt forming cation relative to said carboxylate are prepared by reaction of the carboxylate with zinc carbonate or zinc oxide. These substances are substantially odorless and tasteless.



$$Zn(SCH_2\underset{\displaystyle NHCOCH_3}{\underset{|}{C}H}CO_2M)_2$$

Formula I

3,647,835
METHOD OF DIRECT GENERATION OF MANGANESE (III) SOLUTION FROM MANGANESE (II) SOLUTION

Stephen A. Butter, Bound Brook, N.J., assignor to Mobil Oil Corporation
No Drawing. Filed Nov. 12, 1969, Ser. No. 876,136
Int. Cl. C07c *11/26;* **C07d** *103/00*
U.S. Cl. 260—429 R **11 Claims**

A method in which an aqueous manganese (II) solution is treated with a tertiary amine or ammonia in a free oxygen-containing atmosphere results in manganese (II) oxide or manganese (II) hydroxide precipitation which, in situ, is rapidly oxidized to manganese (III) oxide from which, upon treatment with a suitable acid, particularly an aliphatic carboxylic acid, the manganese (III) salt of said acid is obtained. The compounds are useful as catalysts for the synthesis of lactones from olefins.

3,647,836

N-BROMO-N-CHLORO-SULFAMYL BENZOIC ACIDS AND SALTS THEREOF

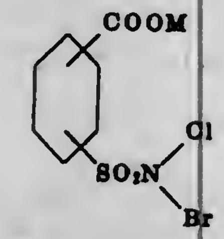
Laurence O. Paterson, Adrian, Mich., assignor to Drug Research, Inc., Adrian, Mich.

No Drawing. Application Aug. 24, 1965, Ser. No. 482,256, which is a continuation-in-part of applications Ser. No. 119,756, Apr. 7, 1961, Ser. No. 143,565, Oct. 9, 1961, Ser. No. 593,047, June 22, 1956, now Patent No. 3,147,259, Ser. No. 126,403, June 14, 1961, now Patent No. 3,147,219, and Ser. No. 674,362, May 22, 1967. Divided and this application June 17, 1970, Ser. No. 47,121

Int. Cl. C07f *7/22, 3/02, 3/04*

U.S. Cl. 260—429.7 **13 Claims**

N-bromo-N-chloro-sulfamyl benzoic acids are provided having the formula:



in which M is hydrogen or a metallic cation. These compounds have biocidal and disinfectant properties.

3,647,837

SYNTHESIS OF ORGANOLEAD COMPOUNDS

Kenneth C. Williams, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Feb. 9, 1970, Ser. No. 9,984

Int. Cl. C07f *7/24*

U.S. Cl. 260—437 R **12 Claims**

A method of making organolead compounds and particularly the synthesis of tetraneopentyllead and hexaneopentyldilead from an inorganic lead (II) salt, and the use of said lead compounds for decreasing knock in internal combustion engines.

3,647,838

METHOD OF MAKING TETRAORGANOLEAD COMPOUNDS

Kenneth C. Williams and Wilford H. Thomas, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Filed May 15, 1969, Ser. No. 824,765

Int. Cl. C07f *7/24*

U.S. Cl. 260—437 R **16 Claims**

A method of making tetraorganolead compounds comprising reacting an organo halide with a magnesium-lead alloy or a magnesium-sodium-lead in the presence of cycloalkylene monoether catalyst and/or solvent having a five-member ring, e.g., tetrahydrofuran.

3,647,839

SYNTHESIS OF TETRAMETHYLLEAD

Ronald S. Bartlett, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Nov. 20, 1969, Ser. No. 878,550

Int. Cl. C07f *7/24*

U.S. Cl. 260—437 R **12 Claims**

A process is described for the preparation of tetramethyllead which involves reacting methyl chloride and sodium-lead alloy together in the presence of a catalyst involving a lithium-aluminum alloy. The alloy is described as containing at least 30 percent by weight lithium, preferably 50 percent by weight. The temperatures of operation described are typically from 90 to 150° C.

3,647,840

CUPROUS SULFONATE SALT COMPLEXES

James L. Bills, Provo, Utah, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Feb. 10, 1970, Ser. No. 10,310

Int. Cl. C07f *1/08*

U.S. Cl. 260—438.1 **13 Claims**

Cuprous sulfonate salt complexes comprise: (a) a cuprous sulfonate salt having the formula RSO_3Cu wherein R is an organic radical containing 1 to 20 carbon atoms and having substituents which are hydrogen, chlorine, fluorine and combinations thereof; and (b) an organic complexing agent which is an aromatic hydrocarbon, an olefin hydrocarbon, a nitrile, a nitro-alkyl, a nitro-aryl, a sulfone or combination thereof. These cuprous sulfonate salt complexes have surface active properties rendering them useful as surface tension reducing agents, wetting agents, dispersing agents and emulsifying agents. These cuprous salt complexes are also useful for removing carbon monoxide impurities from gaseous streams.

3,647,841

NICKEL ORGANOPHOSPHITES

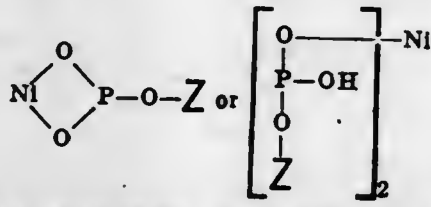
Otto S. Kauder, Jamaica, N.Y., assignor to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Original application Sept. 15, 1965, Ser. No. 487,614, now Patent No. 3,395,112, dated July 30, 1968. Divided and this application Jan. 25, 1968, Ser. No. 718,281

Int. Cl. C07f *15/04;* **C08f** *45/62*

U.S. Cl. 260—439 **8 Claims**

Nickel organophosphites are provided which have the formula



wherein Z is a monovalent or polyvalent organic radical having from one to about thirty carbon atoms, the nickel organophosphite containing at least one organic radical per molecule, but containing no more than one such organic radical per phosphite group. In addition, nickel organophosphites having at least one bivalent nickel atom ionically linked to oxygen to phosphorus, and at least one organic radical including a phenolic hydroxyl group linked to oxygen to phosphorus are also provided. These compounds have utility as stabilizers for polyolefins.

3,647,842

STABILIZATION OF COBALT CARBONYL COMPOUNDS BY OXYGEN-DENTATED LIGANDS

John B. Wilkes, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Mar. 20, 1969, Ser. No. 809,028

Int. Cl. C07f *15/06;* **C07c** *45/02*

U.S. Cl. 260—439 R **7 Claims**

At a temperature in the range 100° C. to 225° C. the destructive dissociation of cobalt carbonyl compounds to cobalt metal and residue is inhibited by the action of oxygen-dentated chelation ligands.

3,647,843

ACETYLENE-CUPROUS ALUMINUM TETRACHLORIDE COMPLEX AND A PROCESS FOR ITS PRODUCTION

David G. Walker, Baytown, and Donald A. Keyworth, Houston, Tex., assignors to Tenneco Chemicals, Inc.

Filed Nov. 20, 1969, Ser. No. 878,356

Int. Cl. C07f *1/08*

U.S. Cl. 260—438.1 **8 Claims**

Acetylene reacts with cuprous aluminum tetrachloride under ambient conditions to form a stable complex that is soluble in aromatic hydrocarbons. Since acetylene can be readily recovered from them, solutions containing the acetylene-cuprous aluminum tetrachloride are useful as a storage, transport, or reaction medium for acetylene.

3,647,844

PROCESS FOR THE PRODUCTION OF TETRAALKYL LEAD

Nikolai Vasilievich Komarov, Ulitsa Lemontova 315, kv. 32, and Tatyana Ivanovna Ermolova, Ulitsa Bograda 1, kv. 22, both of Irkutsk, U.S.S.R.

No Drawing. Filed July 29, 1969, Ser. No. 845,873

Int. Cl. C07f *7/24*

U.S. Cl. 260—437 R **6 Claims**

Production of tetraalkyl lead by reaction of alkyl halide with lead-sodium alloy in polar aprotic solvents such as tetrahydrofuran and dimethyl formamide. The temperature of reaction ranges from 20–60° C., the pressure ranges from 1–2 atm. and the ratio of alkyl halide to alloy is 1:1. The solvent and final product are distilled off in a vacuum in a stream of nitrogen.

3,647,845

STABILIZATION OF COBALT CARBONYL COMPOUNDS BY AZOXY-DENTATED LIGANDS

John B. Wilkes, 2935 Oxford Ave., Richmond, Calif. 94806

No Drawing. Filed Sept. 12, 1969, Ser. No. 857,547

Int. Cl. C07c *45/02;* **C07f** *15/06*

U.S. Cl. 260—439 R **9 Claims**

At a temperature in the range of 100° C. to 225° C. the destructive dissociation of cobalt carbonyl compounds to cobalt metal and residue is inhibited by the action of one or more azoxy-dentated chelation ligands.

3,647,846

METHOD FOR PROMOTING THE REACTION BETWEEN A SILICON-BONDED HYDROXYL RADICAL AND A SILICON-BONDED ALKOXY RADICAL

Robert C. Hartlein, Midland, and Carl R. Olson, Freeland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Dec. 1, 1969, Ser. No. 881,287

Int. Cl. C07f *7/08*

U.S. Cl. 260—448.2 E **11 Claims**

Silicon-bonded hydroxyl radicals will react rapidly and completely in the presence of an organotitanate and an organic amine when the titanate and the amine are not premixed or added simultaneously. This method is useful in the preparation of compounds and polymers having Si—O—Si bonds.

3,647,847

ISOLONGIFOLENE ESTERS

Anthony John Curtis, Ilford, Brian George Jaggers, Romford, and John Francis Janes, Epping, England, assignors to Bush Boake Allen Limited, London, England

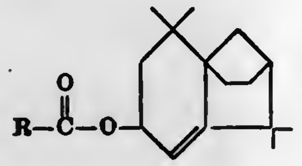
Filed Sept. 24, 1969, Ser. No. 860,638

Claims priority, application Great Britain, Sept. 27, 1968, 46,056/68

Int. Cl. C07c *69/14, 69/24*

U.S. Cl. 260—489 **2 Claims**

Novel isolongifolene esters of the formula:



wherein R is a C_1–C_5 alkyl group are prepared by allylic substitution, e.g. oxidation, of isolongifolene, followed by replacement of the substituent by an RCO_2— group. Said esters have valuable perfumery properties particularly as replacements for vetiverol derivatives.

3,647,848

BIURET DIISOCYANATES

Kuno Wagner, Leverkusen, and Gerhard Mennicken, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 16, 1968, Ser. No. 760,085

Claims priority, application Germany, Sept. 18, 1967, P 17 20 711.3

Int. Cl. C07c *119/04;* **C08g** *22/24, 22/44*

U.S. Cl. 260—453 AB **1 Claim**

Stabilized polyurethanes prepared by reacting polyisocyanates with compounds containing at least two reactive hydrogen atoms as determinable by the Zerewitinoff method wherein the polyisocyanate reactant is an aliphatic, cycloaliphatic or araliphatic polyisocyanate or an isocyanurate of an aliphatic, cycloaliphatic or araliphatic polyisocyanate with aromatic polyisocyanates, which polyisocyanate reactant contains an asymmetric dialkyl substituted semicarbazide, carbazic ester or carboxylic acid hydrazide group and at least one biuret, urethane, acylated urea or acylated isocyanurate group in the molecule.

3,647,849

PRODUCTION OF ALKYL THIOCYANATES

James T. Venerable, Huntley, James Miyashiro, Woodstock, and Alfred W. Seiling, Crystal Lake, Ill., assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of application Ser. No. 458,559, May 25, 1965. This application Jan. 17, 1968, Ser. No. 704,973

Int. Cl. C07c *161/02*

U.S. Cl. 260—454 **11 Claims**

A process for preparing lower alkyl thiocyanates which comprises reacting a thiocyanate with a lower alkyl halide in an aqueous medium under elevated temperature and pressure conditions.

3,647,850

FLUORINE SUBSTITUTED BENZYL DITHIOCARBAMATES AND THEIR PRODUCTION AND USE

Hiroshi Ono, Koga-gun, Shiga-ken, and Toshikazu Higuchi, Matsubara-shi, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka-shi, Osaka-fu, Japan

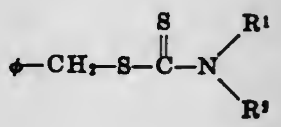
No Drawing. Filed July 26, 1968, Ser. No. 747,836

Claims priority, application Japan, July 26, 1967, 42/47,989

Int. Cl. C07c *155/08*

U.S. Cl. 260—455 A **6 Claims**

Fluorine substituted benzyl dithiocarbamates of the formula:



$$\phi\text{—CH}_2\text{—S—}\overset{\overset{\displaystyle S}{\|}}{C}\text{—N}\begin{matrix}\diagup R^1\\ \diagdown R^2\end{matrix}$$

wherein ϕ is a fluorophenyl group and R^1 and R^2 are each a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or an alkenyl group having 3 or 4 carbon atoms, having herbicidal activity against monocotyledonous and dicotyledonous weeds without any material chemical injury on crop plants.

3,647,851

SECONDARY ALCOHOL SULFATION PROCESS IN THE PRESENCE OF INORGANIC SALTS

John B. Wilkes, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed June 29, 1967, Ser. No. 649,839

Int. Cl. C07c *141/04*

U.S. Cl. 260—459 **13 Claims**

By the addition of certain finely divided salts to a chlorosulfonic acid-secondary alcohol sulfation mixture, side reactions are inhibited.

3,647,852

CARBONATES OF ETHER AND HYDROXY SUBSTITUTED FATTY AMINES

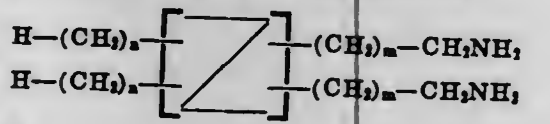
Marwan R. Kamal, Dhahran, Saudi Arabia, and Robert C. Kuder, Excelsior, Minn., assignors to General Mills, Inc.

No Drawing. Filed Apr. 25, 1969, Ser. No. 819,441

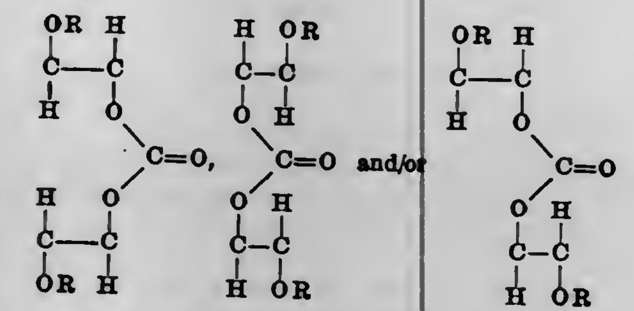
Int. Cl. C07c *93/16;* **C08g** *22/20*

U.S. Cl. 260—463 **10 Claims**

Ether carbonate diamines of the formula:



where Z is



where *n* is 4 to 19, *m* is 0 to 15, the sum of *n* and *m* is 13 to 19, and R is a monovalent organic radical. Diisocyanates derived therefrom with the same being useful for preparing polymers.

3,647,853

CARBONATES OF ETHER AND HYDROXY SUBSTITUTED FATTY NITRILES

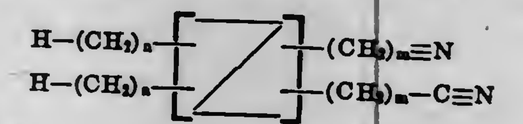
Marwan R. Kamal, Dhahran, Saudi Arabia, and Robert C. Kuder, Excelsior, Minn., assignors to General Mills, Inc.

No Drawing. Filed Apr. 25, 1969, Ser. No. 819,442

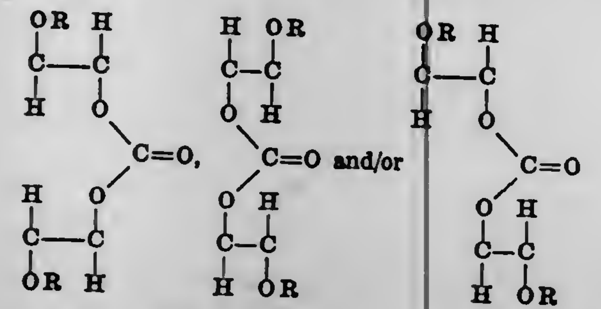
Int. Cl. C07c *12/34;* **C08g** *22/20*

U.S. Cl. 260—463 **10 Claims**

Ether carbonate dinitriles of the formula:



where Z is



where *n* is 4 to 19, *m* is 0 to 15, the sum of *n* and *m* is 13 to 19 and R is a monovalent organic radical. Diamines and diisocyanates derived therefrom with the latter being useful for preparing polymers.

3,647,854

PRODUCTION OF CYANOACETALDEHYDE

Hans Juergen Sturm and Herbert Armbrust, Grunstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,287

Claims priority, application Germany, Apr. 22, 1969, P 19 20 246.1

Int. Cl. C07c *121/34*

U.S. Cl. 260—465.1 **6 Claims**

Production of cyanoacetaldehyde by splitting isoxazolines in the presence of inorganic bases. The product is a valuable intermediate in the manufacture of dyes and pesticides.

3,647,855

PURIFICATION OF ADIPONITRILE CONTAINING FRACTIONS

Maomi Seko, Tokyo, and Yasunobu Takahashi, Takeaki Iwamoto, and Shikazo Seno, Miyazaki-ken, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,254

Claims priority, application Japan, Feb. 29, 1968, 43/13,071; Aug. 31, 1968, 43/62,196

Int. Cl. C07g *121/26*

U.S. Cl. 260—465.8 **18 Claims**

Purification of crude adiponitrile containing acrylonitrile, propionitrile, hydroxypropionitrile and bis-cyanoethyl ether (BCE) by decomposing the BCE by treating the crude at about 0 to 400° C. in the presence of preferably about 0.001 to 0.1 mole of a polyvalent metal catalyst in a valence state of at least 3 per mole of BCE. The metal catalyst is at least one compound of chromium, manganese, molybdenum, tungsten, and/or rhenium. The metal catalyst may be an oxide or alkali metal, alkaline earth metal, or ammonium compounds containing as the anionic portion thereof an oxygen-polyvalent metal moiety where the polyvalent metal is as stated above. Suitable anions include chromates, manganates, etc.; bichromates, permanganates, etc.; monosubstituted chromic sulfate, monosubstituted manganic sulfate, etc.

3,647,856

SULFINYL YLIDS

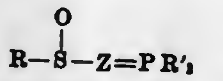
Alden Dwayne Josey, New Castle County, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 8, 1967, Ser. No. 688,958

Int. Cl. C07c *145/00*

U.S. Cl. 260—465 U **7 Claims**

Sulfinyl ylids which are useful as acid scavengers having the formula



$$R-\overset{\overset{O}{|}}{S}-Z=PR'_3$$

in which R and R′ are hydrocarbon groups or hydrocarbon groups with inert substituents and Z is nitrogen or carbon joined to an electron withdrawing group can be made by reacting the appropriate sulfinyl chloride with a compound $R'_3P=ZH$ in the presence of an acid acceptor inert to RSOCl.

3,647,857

NOVEL ESTERS OF CHRYSANTHEMIC ACID AND ALCOHOLS RELATED TO 2-INDANOL

John W. Morgan, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,127

Int. Cl. C07c *69/74*

U.S. Cl. 260—468 P **7 Claims**

Described are chrysanthemic acid (chrysanthemum carboxylic acid) esters of 2-indanol and substituted 2-indanols, and insecticidal compositions containing same. These esters possess unique insecticidal properties and are useful as such in home, garden and agricultural applications.

3,647,858

PROCESS FOR PREPARING 1-BENZYLIDENE-3-INDENYL ACETIC ACIDS

David F. Hinkley, Plainfield, and John B. Conn, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 878,210, Nov. 19, 1969. This application May 1, 1970, Ser. No. 33,977

Int. Cl. C07c *143/52*

U.S. Cl. 260—470 **3 Claims**

Process for preparing 1-benzylidene-3-indenyl acetic acids by condensing a benzylphenyl ketone. Also included are novel diphenylbutyrates and diphenylcaproates.

3,647,859

AMINOALCOHOL DERIVATIVES

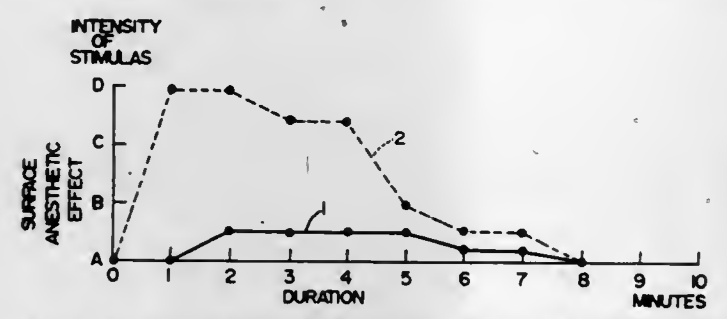
Haruo Ogura, 130 Shirokane Sankocho, Shiba, Tokyo, Japan

Filed Apr. 23, 1968, Ser. No. 723,506

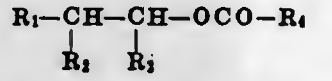
Claims priority, application Japan, Apr. 29, 1967, 42/27,490, 42/27,491

Int. Cl. C07c *93/16, 93/24*

U.S. Cl. 260—473 R **2 Claims**



A novel aminoalcohol derivative having a high narcotic effect and weak toxicity, as represented by the formula:



$$R_1-\underset{\underset{R_2}{|}}{CH}-\underset{\underset{R_3}{|}}{CH}-OCO-R_4$$

wherein R_1 represents either a cyclohexylamino group or diethylaminoethylamino group; R_2 and R_3 represent dissimilar radicals selected from the group consisting of a methyl group and hydrogen; and R_4 represents either a phenyl group, methoxyphenyl group, or ethoxyphenyl group, but when R_1 is a cyclohexylamino group and R_2 is a hydrogen atom, R_4 represents either a methoxyphenyl group or ethoxyphenyl group, and a process for preparing the same by subjecting cyclohexylamine or diethylaminoethylamine to reaction with propylene oxide to form an aminoalcohol and then benzoylating the resulting aminoalcohol.

3,647,860

FLUORENE BIS-BASIC ESTERS

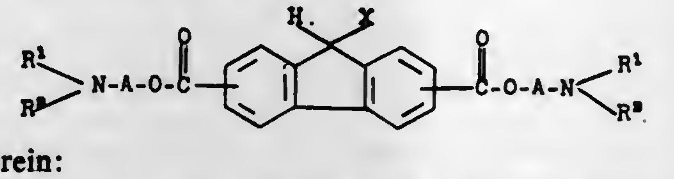
Arthur D. Sill and Robert W. Fleming, Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Jan. 9, 1969, Ser. No. 790,171

Int. Cl. C07c *69/76*

U.S. Cl. 260—475 FR **8 Claims**

Novel fluorene and fluorenol bis-basic ester compounds, their method of preparation and use as antiviral agents. The compounds are of the formula



wherein:

(A) each of R^1 and R^2 is hydrogen, (lower) alkyl, cycloalkyl of 3 to 6 ring carbon atoms, alkenyl of 3 to 6 carbon atoms or each set of R^1 and R^2 taken together with the nitrogen to which they are attached is pyrrolidino, piperidino, N - (lower)alkylpiperazino or morpholino;

(B) each A is alkylene of 2 to about 8 carbon atoms and separates its adjacent oxygen and nitrogen atoms by an alkylene chain of at least 2 carbon atoms; and

(C) X is H or OH; or a pharmaceutically acceptable acid addition salt thereof.

3,647,861

SUBSTITUTED O-CARBAMYLHYDROXAMATES

James B. Buchanan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Division of application Ser. No. 670,494, Aug. 31, 1967, now Patent No. 3,576,834, which is a continuation-in-part of application Ser. No. 602,134, Dec. 16, 1966, which in turn is a continuation-in-part of application Ser. No. 361,277, Apr. 20, 1964. This application Aug. 25, 1970, Ser. No. 66,876

Int. Cl. C07c *149/20*

U.S. Cl. 260—481 R **4 Claims**

Substituted O-carbamylhydroxamates such as methyl O-(methylcarbamyl)thiolacetohydroxamate useful as pesticides.

3,647,862

PREPARATION OF VINYL ESTER-TOLUENE TELOMERS

Joseph K. Hoffman, Oldwick, and James P. Russell, Berkeley Heights, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Original application July 31, 1964, Ser. No. 386,593. Divided and this application Dec. 22, 1969, Ser. No. 887,025

Int. Cl. C07c *67/00, 69/16, 69/22*

U.S. Cl. 260—491 **2 Claims**

Telomers of vinyl esters of lower alkanoic acids, such as vinyl acetate, wherein the telogen is toluene, are produced by reacting the vinyl ester with the telogen at a temperature of 90° to 250° C. and at a pressure of 50 to 7500 p.s.i. in the presence of a free-radical forming catalyst or initiator effective for the polymerization of vinyl acetate, the vinyl ester and the telogen having a residence time in the reaction of 0.5 to 60 minutes, preferably 1 to 10 minutes.

3,647,863

AMINOALKOXY-TRIPHENYL ETHYLENES AND THE SALTS THEREOF

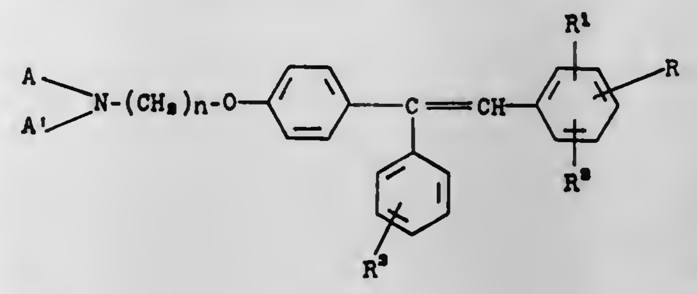
Frank P. Palopoli, Glenside, Pa., and Thomas R. Blohm and Takashi Kariya, Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Nov. 25, 1968, Ser. No. 778,782

Int. Cl. C07c *93/08*

U.S. Cl. 260—501.18 **5 Claims**

Novel compounds of the formula:



wherein:

(A) each of A and A′ is hydrogen or (lower) alkyl or A and A′ taken together with the nitrogen to which they are attached is piperidino, morpholino, pyrrolidino or 4-methylpiperazino;

(B) (*n*) is an integer of 2 to 4;

(C) each of R^1, R^2 and R^3 is hydrogen or methyl; and

(D) R is in the para- or a meta-position of the ring and is cycloalkyl of 5 to 8 ring carbon atoms or alkyl of 4 to 8 carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

3,647,864
5-SUBSTITUTED-1,3-BENZENEDIACRYLIC AND -DIPROPIONIC ACIDS

James H. Ackerman, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed Nov. 16, 1967, Ser. No. 683,455

Int. Cl. C07c *79/46, 101/44*

U.S. Cl. 260—515 P **8 Claims**

5 - amino- or 5 - hydroxy-2,4,6-triiodo-1,3-benzenediacrylic and -dipropionic acids, optionally substituted by lower-alkyl or phenyl in the α- and α′-positions, are prepared by iodination of the appropriate 5-amino- or 5-hydroxy-1,3-benzenediacrylic or -dipropionic acids; and the 5-amino and 5-hydroxy groups are further substituted by acyl and alkyl groups. The iodinated compounds are useful as intravenous cholecystographic agents.

3,647,865
α-IMINO-2-TOLUIC ACIDS

Theodore S. Sulkowski, Narberth, and Albert A. Mascitti, Norristown, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 622,883, Mar. 14, 1967. This application Apr. 16, 1968, Ser. No. 721,591

Int. Cl. C07c *101/42*

U.S. Cl. 260—518 R **7 Claims**

This invention is concerned with toluic acids which are useful precursors in the preparation of 2-[amino(lower)alkyl]phthalimidines which are utilized as intermediates in preparing 2-[amino(lower)alkyl]isoindolines which are pharmacologically efficacious as anti-depressants and anorexiants. This invention is also concerned with the process of preparing these toluic acid compounds.

3,647,866
METHOD OF OXIDIZING A SECONDARY ALKYL-SUBSTITUTED TOLUENE

Ken Ito and Hiroshi Kaminaka, Toyonaki-shi, Norio Kotera, Amagasaki-shi, Shinji Yamamoto, Iwao Dohgane, and Kosuke Shigehiro, Nishinomiya-shi, Hiroshi Kuruma, Takarazuka-shi, Takashi Chinuki, Hiroshi Yoshitake, and Kenji Tanimoto, Minoo-shi, Shinichi Hasegawa, Amagasaki-shi, and Nobuki Kobayasi, Osaka, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

No Drawing. Filed Oct. 8, 1968, Ser. No. 765,969

Claims priority, application Japan, Oct. 16, 1967, 42/66,679; July 19, 1968, 43/51,315

Int. Cl. C07c *37/08, 63/02, 73/06*

U.S. Cl. 260—524 R **10 Claims**

An oxidation product comprising an oily layer containing a tertiary hydroperoxide of a secondary alkyl toluene and an aqueous layer containing a sodium or potassium salt of a secondary alkyl benzoic acid is obtained by reacting a secondary alkyl toluene with oxygen in the presence of water and a carbonate or bicarbonate containing sodium or potassium in an amount of 0.12 atomic equivalent or more per mole of the secondary alkyl toluene, or a mixture thereof, or in the presence of water and a mixture of salts obtained by replacing up to 90% of said carbonate or bicarbonate with a sodium or potassium salt of a secondary alkyl benzoic acid, until the concentration of hydroperoxide in the oily layer formed has become 15–25% by weight or more. When the tertiary hydroperoxide in the oily layer is cleavaged according to an ordinary procedure by use of an acidic catalyst, cresols are obtained. When the secondary alkyl benzoic acids in the aqueous layer are further oxidized, benzene dicarboxylic acids are obtained.

3,647,867
PROCESS FOR THE MANUFACTURE OF ACRYLIC ACID BY THE OXIDATION OF PROPYLENE AND/OR ACROLEIN

Kurt Sennewald and Alfred Hauser, Knapsack, near Cologne, and Winfried Lork, Friesheim, near Euskirchen, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Aug. 13, 1968, Ser. No. 752,137

Claims priority, application Germany, Aug. 24, 1967, F 63,188

Int. Cl. C07c *57/04*

U.S. Cl. 260—530 N **16 Claims**

Production of acrylic acid comprising reacting propylene and/or acrolein and/or a substance yielding acrolein under the reaction conditions, such as allyl alcohol, in the gas phase with oxygen at temperatures between 280 and 600° C., under pressures between 0.1 and 10 atmospheres absolute, and for a period of time between 0.1 and 20 seconds, in the presence of steam and in contact with a catalyst consisting of the oxides of silver, iron, bismuth, molybdenum and, if desired, phosphorus, which are present in the atomic ratio of

$$Ag_{0.01-1.5}Fe_{0.1-12}Bi_{0.1-13}P_{0-5}Mo_{12}O_{20-110}$$

the catalyst being deposited on a carrier, if desired.

3,647,868
N-(2-HYDROXYALKYL) SARCOSINE-N-OXIDES

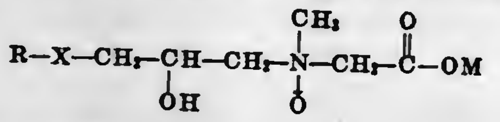
Robert Ernst, Los Angeles, Calif., assignor to Textilana Corporation, Hawthorne, Calif.

No Drawing. Filed Oct. 18, 1967, Ser. No. 676,035

Int. Cl. C07c *101/12, 101/30*

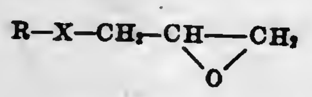
U.S. Cl. 260—534 M **18 Claims**

Amine oxide compounds having the formula:



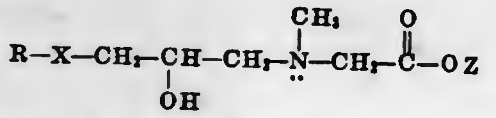
$$\mathrm{R{-}X{-}CH_2{-}\underset{\substack{|\\ OH}}{CH}{-}CH_2{-}\overset{\substack{CH_3\\ |}}{\underset{\substack{\downarrow\\ O}}{N}}{-}CH_2{-}\overset{\substack{O\\ \|}}{C}{-}OM}$$

in which X is either oxygen or a methylene radical and R is a higher alkyl group, preferably unsubstituted, having 8–18 carbon atoms when X is oxygen and 6–16 carbon atoms when X is a methylene radical, and M is an alkali metal, hydrogen, ammonia or a water soluble amine group, the compounds being prepared by reacting an alkali metal salt of sarcosine with an epoxy compound having the formula:



$$\mathrm{R{-}X{-}CH_2{-}\underbrace{CH{-}CH_2}_{O}}$$

where R and X have the meaning set forth above to yield N-(2-hydroxyalkyl) sarcosine compounds having the formula:



$$\mathrm{R{-}X{-}CH_2{-}\underset{\substack{|\\ OH}}{CH}{-}CH_2{-}\overset{\substack{CH_3\\ |}}{\underset{\cdot\cdot}{N}}{-}CH_2{-}\overset{\substack{O\\ \|}}{C}{-}OZ}$$

where R and X have the above meaning; and Z is an alkali metal preferably sodium or potassium; thereafter oxidizing these compounds with hydrogen peroxide and, if desired, replacing the alkali metal Z with hydrogen, ammonia, or a water soluble amine.

3,647,869
NOVEL PERHYDRATES OF TRI-ALKALI METAL CITRATES

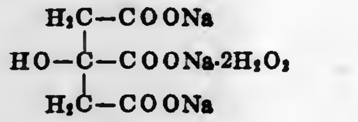
Hans K. Kaloff, Haan, Germany, assignor to Henkel & Cie, GmbH, Dusseldorf, Germany

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,049

Int. Cl. C07c *59/16*

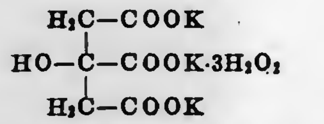
U.S. Cl. 260—535 P **7 Claims**

Perhydrates of trisodium and tripotassium citrate of the formulas



$$\begin{array}{l}\mathrm{H_2C{-}COONa}\\ \quad|\\ \mathrm{HO{-}C{-}COONa{\cdot}2H_2O_2}\\ \quad|\\ \mathrm{H_2C{-}COONa}\end{array}$$

and



$$\begin{array}{l}\mathrm{H_2C{-}COOK}\\ \quad|\\ \mathrm{HO{-}C{-}COOK{\cdot}3H_2O_2}\\ \quad|\\ \mathrm{H_2C{-}COOK}\end{array}$$

useful as oxygen-releasing bleaching components in various cleansing compositions, such as denture cleansers and laundering compositions, and as color developers in hair coloring compositions, and method of preparing such perhydrates.

3,647,870
PROCESS FOR THE PRODUCTION OF META BENZENE DISULFONYL CHLORIDES

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed May 1, 1968, Ser. No. 725,952

Int. Cl. C07c *143/70*

U.S. Cl. 260—543 R **9 Claims**

Meta benzene disulfonyl chlorides are produced by heating a mixture of a meta benzene disulfonic acid and carbon tetrachloride in the liquid phase. The reaction is catalyzed by strong mineral acids at a temperature above 130° C.

3,647,871
PROCESS FOR PRODUCING ACETYLCHLORIDE

Herbert Eck, Hans Schwarzbauer, and Hellmuth Spes, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

No Drawing. Filed Apr. 2, 1969, Ser. No. 812,902

Claims priority, application Germany, Apr. 10, 1968, P 17 68 186.6

Int. Cl. C07c *51/58*

U.S. Cl. 260—544 Y **3 Claims**

Process for producing acetylchloride which comprises reacting ketone and hydrogen chloride in acetylchloride.

3,647,872
PREPARATION OF UREA IN COMBINATION WITH THE SYNTHESIS OF AMMONIA

Petrus J. C. Kaasenbrood, Sittard, and Gerardus J. J. M. Taks, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed Dec. 23, 1968, Ser. No. 785,969

Claims priority, application Netherlands, Dec. 21, 1967, 6717524

Int. Cl. C07c *127/00*

U.S. Cl. 260—555 A **7 Claims**

A process for the manufacture of urea from ammonia and carbon dioxide is described wherein a technique for reducing the amount of inert gases supplied to urea reactor is utilized. This technique involves first absorbing the ammonia from the ammonia synthesis gas mixture (containing ammonia, hydrogen and nitrogen) in a suitable solvent (water, or an aqueous solution in which ammonia is readily absorbed), and thereafter desorbing the ammonia content of the absorbent solution in a suitable gas stream, the desorption being conducted in such a way that the ammonia content of the desorbed gas mixture is maintained sufficiently high that a relatively much smaller volume of inert gases are thereby introduced into the urea synthesis reactor.

3,647,873
NUCLEAR SULFONYL SUBSTITUTED N-ACYL-BENZENESULFONAMIDES

Carl Ziegler, Glenside, and James M. Sprague, Gwynedd Valley, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Feb. 3, 1970, Ser. No. 8,413

Int. Cl. C07c

U.S. Cl. 260—556 AC **7 Claims**

Nuclear sulfonyl substituted N-acyl-(and N-organosulfonyl)benzenesulfonamides and salts thereof, wherein the benzene ring may be substituted by halo, lower alkyl, trihalomethyl, nitro, carboxy or a hydrocarbylene moiety. The products are prepared by treating a nuclear sulfonyl substituted benzenesulfonamide with an acyl(or organosulfonyl)halide or with a carboxylic acid (or organosulfonic acid)anhydride. The nuclear sulfonyl substituted N-acyl(and N-organosulfonyl)-benzenesulfonamides are uricosuric agents useful in the treatment of gout and gouty arthritis.

3,647,874
N-CYANOBENZOYLHALOALKYLSULFONANILIDES

John F. Gerster, Woodbury, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,021

Int. Cl. C07c *143/74*

U.S. Cl. 260—556 F **7 Claims**

N-cyano benzoylhaloalkylsulfonanilides in which the aromatic rings are optionally substituted. The compounds are active anti-inflammatory agents.

3,647,875
METHOD FOR PREPARING ALKOXYPROPIONAMIDES

Lester E. Coleman, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Continuation-in-part of application Ser. No. 682,493, Nov. 13, 1967, which is a continuation-in-part of abandoned application Ser. No. 586,391, Oct. 13, 1966. This application Mar. 2, 1970, Ser. No. 15,855

Int. Cl. C07c *103/00*

U.S. Cl. 260—561 B **5 Claims**

N - 3 - oxohydrocarbon-substituted 3-alkoxypropionamides are prepared by reacting an alcohol with an N-3-oxohydrocarbon-substituted acrylamide in the presence of a strongly alkaline catalyst, the mole ratio of alcohol to substituted acrylamide being between about 8:1 and 12:1. The products are useful as chemical intermediates for the preparation of novel and useful compounds; for example, N-(1,1-dimethyl-3-oxobutyl)-3-methoxypropionamide can be converted to N-(1,1-dimethyl-3-hydroxybutyl)-acrylamide by hydrogenation followed by alkaline pyrolysis.

3,647,876
PROCESS IN THE PREPARATION OF N,N-DI-n-PROPYL-α-CHLOROACETAMIDE

Mearl A. Kise, Portsmouth, and Leonard C. Ellis, Chesapeake, Va., assignors to Virginia Chemicals, Inc., Portsmouth, Va.

No Drawing. Filed Aug. 14, 1969, Ser. No. 850,250

Int. Cl. C07c *103/10*

U.S. Cl. 260—561 HL **10 Claims**

This is a process for the preparation of N,N-di-n-propyl-α-chloroacetamide at prevailing natural temperatures, as for example, at 20–30° C. exclusive of an excess of di-n-propylamine. The product is useful as an intermediate for the production of the so-called "space repellents," N,N-di-n-propyl-2-[(p-methoxybenzyl)oxy]-acetamide, N,N - di-n-propyl-2-(benzyloxy)-acetamide and N,N-di-n-propyl-2[(2methylcyclohexyl)oxy]-acetamide. By this process, α-chloroacetyl chloride and di-n-propylamine are reacted in the presence of aqueous caustic soda (heterogeneous system) at 20–30° C., the reaction being effected in toluene, using a 15% excess of α-chloroacetyl chloride which is added dropwise into the reaction media. Free caustic soda is excluded from the reaction media during addition of the acid chloride until a substantial portion of the α-chloroacetyl chloride has been introduced and allowed sufficient time for reaction. Economically, the process is desirable because the reaction environment need not be so closely controlled at low temperature, and secondly, there is a substantial saving in the quantity of the amine required to effect a satisfactory reaction.

3,647,877
AMINOPROPIONANILIDES

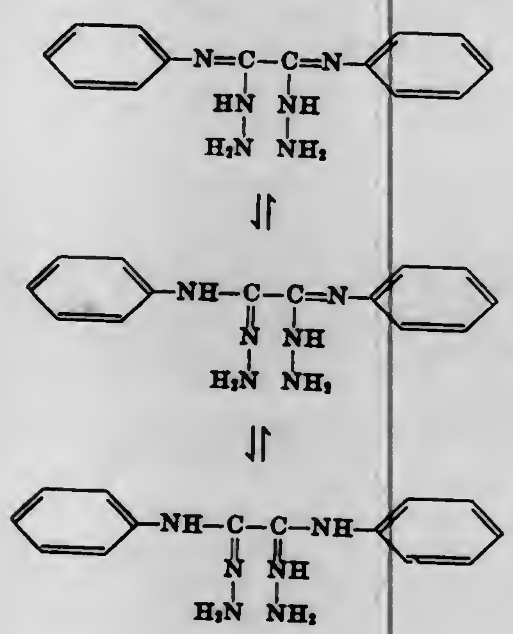
Abraham Weber, Paris, Jacques Jean Frossard, Champigny, and Daniel Bouzard, Franconville, France, assignors to Mead Johnson & Company, Evansville, Ind.
No Drawing. Filed Apr. 13, 1970, Ser. No. 28,120
Int. Cl. C07c *103/44*
U.S. Cl. 260—562 N **5 Claims**

This invention relates to aminopropionanilides which are prepared by acylation of 4′-amino-5′-chloro-2′-methoxy-(2-diethylamino)propionanilide with (lower)alkanoyl halides or (lower)alkanoic acid anhydrides. The diethylamino propionanilide products are pharmacologically active in mammals and when administered thereto in effective doses produced depression of the central nervous system with resulting hypnosis. Diethylaminopropionanilides which are particularly useful as hypnotic agents are 2′-methoxy-4′-acetamido - 5′ - chloro - (2-diethylamino)propionanilide and 2′-methoxy - 4′ - propionamido-5′-chloro-(2-diethylamino)propionanilide.

3,647,878
N,N′-BIS-(PHENYL)-OXAMIDRAZONE

Ulrich Schulze, Elsenfeld, and Gerhard Meyer, Obernburg, Germany, assignors to Glanzstoff AG, Wuppertal, Germany
Filed July 2, 1969, Ser. No. 838,429
Claims priority, application Germany, July 10, 1968, P 17 68 880.1
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 R **1 Claim**

The compound N,N′-bis-(phenyl)-oxamidrazone which is represented by the three tautomeric formulae:

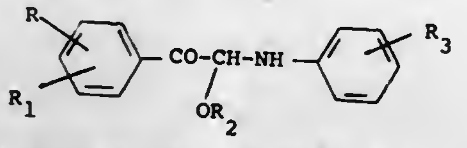


This is useful for the production of polyacyl-oxamidrazones which are valuable polymers, e.g. by reaction with terephthalic acid dichloride.

3,647,879
α-HALOACETYLANILINO-α-ALKOXY-ACETOPHENONES

Elena Massarani, Dante Nardi, and Ludwig Degen, Milan, Italy, assignors to Societe d'Exploitations Chimiques et Pharmaceutiques Seceph S.A., Lugano, Switzerland
No Drawing. Filed July 7, 1969, Ser. No. 839,702
Claims priority, application Switzerland, July 12, 1968, 10,424/68
Int. Cl. C07c *97/10*
U.S. Cl. 260—570.5 C **3 Claims**

Therapeutically active acetophenone derivatives having the formula



wherein R is hydrogen or chlorine; R_1 is hydrogen, chlorine, a nitro group, methyl, methoxy, paraphenyl, paraphenoxy, or paraphenylthio; R_2 is hydrogen or an alkyl group of 1 to 12 carbon atoms, allyl, propargyl, benzyl, or cyclohexyl; R_3 is a group having the formula

$$—CO—CHX_2$$

or $—CO—CX_3$, in which X is chlorine or bromine, the radical R_3 being fixed in position 3 or 4 of the benzene nucleus and a process for their preparation. Also intermediates thereof.

3,647,880
NOVEL FRAGRANCE MATERIALS AND PROCESSES

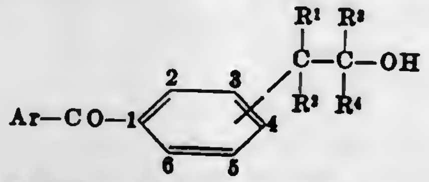
Jack H. Blumenthal, Oakhurst, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.
No Drawing. Filed Aug. 19, 1968, Ser. No. 753,728
Int. Cl. C07c *49/27, 45/00*
U.S. Cl. 260—587 **5 Claims**

The novel ketone 4-methyl-3-pinanone, mixtures and olfactory compositions containing same, and processes for the production thereof.

3,647,881
NOVEL AROYL PHENETHYL ALCOHOLS

David Edmund Bays and Roy Vivian Foster, London, England, assignors to Allen & Hanburys Limited, London, England
No Drawing. Filed Jan. 13, 1970, Ser. No. 2,665
Claims priority, application Great Britain, Jan. 13, 1969, 1,902/69
Int. Cl. C07c *49/82*
U.S. Cl. 260—591 **17 Claims**

Phenethyl alcohol derivatives of the formula



in which R^1, R^2, R^3 and R^4 which may be the same or different, each represent a hydrogen atom or a straight or branched alkyl radical containing from 1 to 4 carbon atoms; Ar represents a phenyl ring, which may be substituted by one or more trifluoromethyl, hydroxy, methoxy or methyl radicals or by one or more halogen atoms are provided. These possess useful anti-inflammatory activity.

3,647,882
PROCESS FOR THE MANUFACTURE OF ACETYLDEHYDE FROM VINYL ACETATE

Gunter Roscher, Kelkheim, Taunus, and Heinz Schmitz, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed May 16, 1968, Ser. No. 729,556
Claims priority, application Germany, May 27, 1967, F 52,529
Int. Cl. C07c *47/06*
U.S. Cl. 260—601 R **6 Claims**

Process for the production of acetaldehyde by hydrolysis of vinyl acetate in the presence of a compound containing chemically bound phosphorus, e.g. free phosphoric acids, heteropolyacids thereof, acid salts of these acids and mixtures of phosphoric acids with compounds of the elements of subgroup V or VI of the Mendeléeff Periodic Table as catalysts.

3,647,883
OLEFIN DIMERIZATION

Michael Dubeck, Birmingham, and David R. Brackenridge, Royal Oak, Mich., assignors to Ethyl Corporation, New York, N.Y.
No Drawing. Filed July 30, 1969, Ser. No. 846,224
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **14 Claims**

A process for dimerizing olefins by contacting C_{2-18} olefins with a catalyst system comprising nickel chelate and trihydrocarbyl boron compounds; for example, bis (2,4-pentanedionato) nickel and triethylboron, at temperatures from 100° to 200° C. and optionally in the presence of a non-polar solvent.

3,647,884
LIQUID-VAPOR PHASE OXIDATION METHOD FOR PRODUCING DIALKYL SULFOXIDES

Masanori Tatsumi and Hisao Abe, Kamakura, Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed Mar. 11, 1970, Ser. No. 18,501
Int. Cl. C07c *147/14*
U.S. Cl. 260—607 A **4 Claims**

An improved liquid-vapor phase oxidation method for producing dialkyl sulfoxides which comprises feeding a nitrogenous oxide gaseous catalyst, a molecular oxygen-containing gas and a liquid dialkyl sulfide into an oxidizing zone of the gas-liquid concurrent tower type from thereunder, and withdrawing the liquid reaction product containing a corresponding dialkyl sulfoxide from the upper part of the liquid phase in said zone, characterized by introducing a purge gas into the cooled upper reaction area maintained at a temperature of 15 to 45° C. to purge a part of said catalyst and withdraw it from a space at the upper end of said oxidizing zone, then conducting a flow of the liquid reaction mixture to a bubble tower-type purging zone maintained at a temperature exceeding 45° C. but not over 100° C., introducing a purge gas to purge the remainder of the catalyst present in the liquid reaction product, and withdrawing the liquid reaction product from said purging zone.

3,647,885
PROCESS FOR THE PRODUCTION OF PHENOL SULFIDES

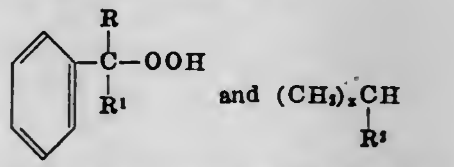
Emil J. Geering, Grand Island, and George B. Stratton, Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 666,915, Sept. 11, 1967, which is a continuation-in-part of application Ser. No. 597,228, Nov. 28, 1966. This application Dec. 30, 1968, Ser. No. 788,082
Int. Cl. C07c *149/36*
U.S. Cl. 260—608 **6 Claims**

Producing phenol sulfides by reducing a phenol-sulfide produced by reacting elemental sulfur and a phenolic reactant in the presence of a basic catalyst and carrying the reaction to a degree of completion at which the maximum number of moles of hydrogen sulfide evolved is up to about 33 percent of the number of moles of sulfur charged to said reaction, and a process for converting the phenol-sulfides to mercaptophenols.

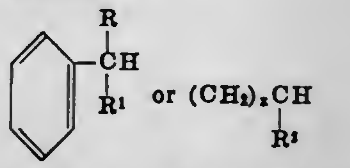
3,647,886
HYDROCARBON OXIDATION

Theodore C. Mead, Texaco Inc., P.O. Box 1608, Port Arthur, Tex. 77640; and Harry Chafetz, Texaco Inc., P.O. Box 509, Poughkeepsie, N.Y. 12508
No Drawing. Filed Feb. 8, 1968, Ser. No. 703,913
Int. Cl. C07c *73/08*
U.S. Cl. 260—610 B **4 Claims**

A method of producing a hydrocarbon hydroperoxide selected from the group consisting of



where R and R^1 are hydrogen or alkyl of from 1 to 10 carbons and at least one of said R and R^1 is alkyl, R^2 is n-alkyl of from 1 to 10 carbons and x is an integer of from 3 to 10, comprising contacting a hydrocarbon selected from the group consisting of

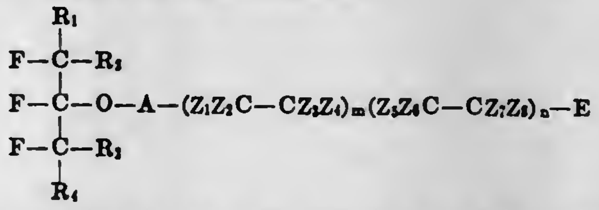


where R, R^1, R^2 and x are as heretofore defined with an oxygen containing gas in the presence of alkali metal fluoride.

3,647,887
ARYL-SUBSTITUTED POLYFLUORO-ALKOXYALKANES

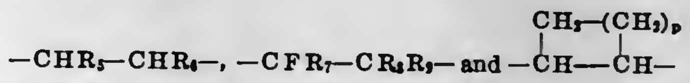
Louis G. Anello, Orchard Park, and Richard F. Sweeney, Elma, N.Y., and Morton H. Litt, Cleveland, Ohio, assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 633,359, Apr. 25, 1967. This application May 25, 1970, Ser. No. 40,431
Int. Cl. C07c *43/00*
U.S. Cl. 260—611 A **40 Claims**

Novel telomers of the formula



$$\begin{array}{l} \quad\;\; R_1 \\ \quad\;\; | \\ F—C—R_2 \\ \quad\;\; | \\ F—C—O—A—(Z_1Z_2C—CZ_3Z_4)_m(Z_5Z_6C—CZ_7Z_8)_n—E \\ \quad\;\; | \\ F—C—R_3 \\ \quad\;\; | \\ \quad\;\; R_4 \end{array}$$

wherein R_1–R_4 are each F, Cl, H, alkyl ar haloalkyl groups, or when taken together, are alkylene or haloalkylene groups forming a cycloaliphatic structure, which R_1–R_4 groups may each have from 1 to 9 carbon atoms and which halogen atoms, if any, have an atomic weight not exceeding about 79.92, with the proviso that no more than two of the four R_1–R_4 groups are alkyl groups, A is a member selected from the group consisting of radicals of the formulae

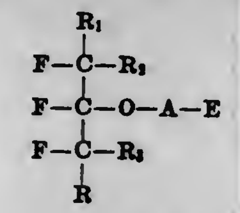


$$—CHR_5—CHR_6—,\ —CFR_7—CR_8R_9—\ \text{and}\ —\overset{\displaystyle CH_2—(CH_2)_p}{\overset{|\qquad\quad |}{CH——CH}}—$$

wherein R_5 and R_6 are independently selected from the group consisting of Cl, H and alkyl with the proviso that at least one of R_5 and R_6 is Cl; R_7 and R_8 are independently selected from the group consisting of F and H; R_9

is selected from the group consisting of F, H, Cl, Br and perfluoroalkyl; *p* is an integer of from 1 to 9; with the proviso that when both R_8 and R_9 are F, R_7 is always F; Z_1–Z_8 may each be selected from the group consisting of H, F, Cl, Br, alkyl radicals having from 1–8 carbon atoms, haloalkyl radicals having from 1–8 carbon atoms in which haloalkyl radicals the halogen atoms have an atomic weight not exceeding about 79.92; phenyl radicals and substituted phenyl radicals selected from the group consisting of alkyl-substituted phenyl radicals having up to eight carbon atoms in the alkyl group, halo-substituted phenyl radicals, and haloalkyl-substituted phenyl radicals having up to eight carbon atoms in the alkyl group, or mixtures thereof, in which haloalkyl- or halo-substituted phenyl radicals the halogen atoms have an atomic weight not exceeding about 79.92, with the provisos that Z_1–Z_8 includes at least one phenyl or substituted phenyl radical and Z_1–Z_8 do not include more than two chlorine atoms and one bromine atom; Z_1 and Z_2 or Z_6 and Z_8 may be joined together to form a cycloaliphatic ring system; *m* is an integer of from 1–75, *n* is an integer of from 0–75, and E is halogen atom selected from the group consisting of I, Br and Cl with the proviso that if E is a bromine atom there may be no further bromine in the molecule.

These compounds are prepared by radical addition reaction of polyhaloisoalkoxyalkyl halide telogens of the formula



wherein R_1–R_4 are as defined above, or dissimilar lower molecular weight telomers, with telomerizable unsaturated compounds. The telomerization reaction may be initiated by heat or by means of a free-radical initiating catalyst. The telogen starting materials may be prepared by reacting a corresponding halogenated ketone with an ionizable fluoride salt, e.g. CsF, to form a fluorinated organic salt and then reacting the organic salt with a halogen other than fluorine and an olefin. After telomerization the telomers may be stabilized by replacing the E iodine or bromine atom with hydrogen or fluorine. The novel telomers are useful as insulator and condenser fluids, hydraulic fluids, lubricants, heat transfer media and as intermediates in the preparation of useful surfactants and polyacrylate oil and stain repellent agents.

3,647,888
TRIFLUOROMETHYL-p-NITRO DIPHENYL ETHERS

Otto Rohr, Therwil, and Marcus von Orelli, Muenchenstein, Switzerland, assignors to Ciba Limited, Basel, Switzerland

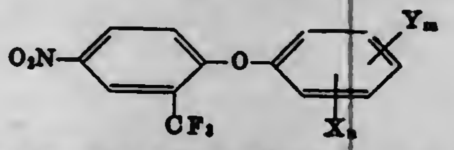
No Drawing. Continuation-in-part of application Ser. No. 680,334, Nov. 3, 1967. This application Apr. 1, 1970, Ser. No. 24,851

Claims priority, application Switzerland, Nov. 11, 1966, 16,260/66

Int. Cl. C07c *43/20*

U.S. Cl. 260—612 R **3 Claims**

The present invention relates to compounds of the general formula



wherein X is a member selected from the group consisting of a halogen atom, an alkyl group having 1 to 4 carbon atoms, the group $—OCH_3$, $—SCH_3$, $—NO_2$ and $—CF_3$, Y is a member selected from the class consisting of a halogen atom and an alkyl group having 1 to 4 carbon atoms, and *n* and *m* denote integers from 0 to 3, whose sum is at most 5, as well as to molluscicidal preparations containing such compounds.

3,647,889
POLYFLUOROISOPROPOXYALKYL ETHERS

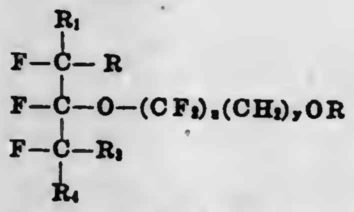
Louis G. Anello, Orchard Park, and Richard F. Sweeney, Elma, N.Y., and Morton H. Litt, Cleveland, Ohio, assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 633,359, Apr. 25, 1967. This application May 25, 1970, Ser. No. 40,434

Int. Cl. C07c *43/00*

U.S. Cl. 260—615 R **19 Claims**

Compounds of the formula:



wherein R_1–R_4 are each independently selected from the group consisting of F, Cl and perfluoroalkyl, and together can form a perfluorocycloalkylene group, with the proviso that R_1–R_4 may not contain more than two chlorine atoms, *x* is an integer from 1–81, *y* is an integer from 1–81, and R is a member selected from the group consisting of alkyl and perhydrofluoroalkyl; are useful as insulator and condenser fluids, hydraulic fluids, lubricants and heat-transfer media. These compounds are also surface-active and are useful as anti-wetting agents.

3,647,890
METHOD FOR REDUCING KETONES

Maurice M. Kreevoy, Richard F. Borch, and Jonathan E. C. Hutchins, Minneapolis, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

No Drawing. Filed Sept. 5, 1969, Ser. No. 855,735

Int. Cl. C07c *29/00, 35/00*

U.S. Cl. 260—617 C **8 Claims**

The invention provides a method for reducing ketones with the cyanoborohydride of lithium, sodium or potassium or a quaternary ammonium cyanoborohydride or their corresponding deuterides or tritides. The reaction is conducted in a solvent medium selected from tetrahydrofuran, water, methanol, ethanol, diethyl ether and mixtures there of at a pH between about 2 and 7, preferably about 2 and 4, and at a temperature between room temperature and the reflux temperature of the solvent.

3,647,891
METHYLOL-TERMINATED FLUOROCARBON POLYMERS

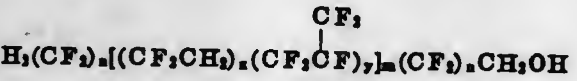
Basil L. Loudas, St. Paul, and David E. Rice, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed July 1, 1968, Ser. No. 741,299

Int. Cl. C07c *31/34*

U.S. Cl. 260—633 **4 Claims**

Methylol-terminated fluorocarbon polymers having the general formula



$$HOCH_2(CF_2)_n[(CF_2CH_2)_x(CF_2\overset{CF_3}{\overset{|}{C}}F)_y]_m(CF_2)_nCH_2OH$$

are prepared by reduction of the corresponding ester precursors, for example, with sodium borohydride. Said methylol-terminated polymers can be cured with polyisocyanate crosslinking agents and used as binders in solid rocket propellants.

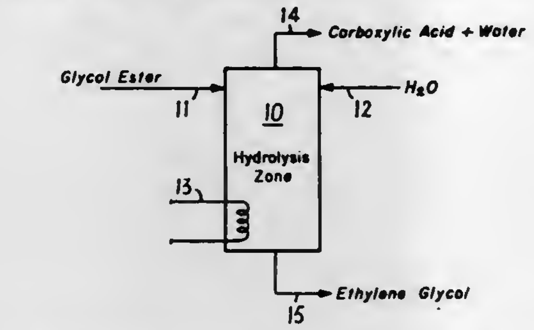
3,647,892
PREPARATION OF ETHYLENE GLYCOL

Robert Hoch, New York, N.Y., assignor to Halcon International, Inc.

Filed Apr. 28, 1969, Ser. No. 819,776

Int. Cl. C07c *31/20;* **C08g** *17/06*

U.S. Cl. 260—635 R **6 Claims**



This invention relates to a process for the preparation of ethylene glycol by the hydrolysis of a lower carboxylic acid ester of ethylene glycol which has significant advantages over those processes heretofore known. This process involves the introduction of the ester to a hydrolysis zone having at least two hydrolysis equilibration stages. Also added to the hydrolysis zone is H_2O. Within the zone, the ester is counter-currently contacted with steam in order to effect the hydrolysis and to produce a vapor mixture of carboxylic acid and water as well as liquid ethylene glycol, both the vapor mixture and the ethylene glycol being withdrawn from the zone.

3,647,893
PROCESS FOR THE PREPARATION OF ALKYL AND ARYL IODINE

Leonard S. Silbert, Apt. 105, Pastorious Bldg. 7800C, Stenton Ave., and Daniel Swern, 7803 Rugby St., both of Philadelphia, Pa. 19118

No Drawing. Original application Feb. 28, 1968, Ser. No. 708,800. Divided and this application Mar. 23, 1970, Ser. No. 24,922

Int. Cl. C07c *79/12, 25/04*

U.S. Cl. 260—646 **7 Claims**

Alkyl and aryl iodides are prepared by the decomposition of the corresponding acyl and aroyl peroxides in iodine solutions of selected solvents. Aryl iodides are prepared in high yields by complete decomposition in two hours at 110° C. of aroyl peroxides in iodine solutions of solvents such as 1,1,2,2-tetrachlorodifluorethane (Freon 112), 1,3-dichloropropane and 1,3-dibromopropane. Chlorobenzene, 1-iodobutane and Freon 112 are preferred solvents for the decomposition of aliphatic acyl peroxides but good yields are obtained using a number of other aromatic and aliphatic solvents such as anisole, toluene, benzene, 1-chloro-3-fluorobenzene, 1,3-dichloropropane, 1,2-dichloroethane, 1-chlorohexane and 1-iodopropane.

3,647,894
RECOVERY OF 1,2,4,5-TETRACHLOROBENZENE AND HEAT TRANSFER AGENTS

Larry L. Jackson and William D. Watson, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 9, 1970, Ser. No. 9,974

Int. Cl. C07c *25/04*

U.S. Cl. 260—650 R **5 Claims**

From a crude mixture of the isomers of tetrachlorobenzene, 1,2,4,5-tetrachlorobenzene may be isolated by dissolving the crude mixture in a halogenated diphenyl ether and fractionally crystallizing the 1,2,4,5-tetrachlorobenzene from solution. The mother liquor after crystallization is also useful as a fire resistant heat transfer agent having high flash and fire points.

3,647,895
PROCESS FOR THE PURIFICATION OF CHLORINATED HYDROCARBONS

Otto Fruhwirth and Ludwig Schmidhammer, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Filed Apr. 15, 1969, Ser. No. 816,385

Claims priority, application Germany, Apr. 23, 1968, P 17 68 269.8

Int. Cl. C07c *25/02, 19/00, 21/00*

U.S. Cl. 260—650 R **5 Claims**

A process for the purification of chlorinated hydrocarbons containing metallic salts of a Lewis-acid type character, as employed as catalysts in a chlorination reaction, which comprises mixing a chlorinated hydrocarbon containing metallic salts of a Lewis-acid type character with from 1 to 5 mols, based on the amount of metallic salt contaminant, of an anhydrous 1,2-monoalkanolamine having from 2 to 4 carbon atoms and from 0 to 4 mols, based on the amount of metallic salt contaminant, of dry ammonia, and separating the insoluble metallic salts from said chlorinated hydrocarbons.

3,647,896
SOLUBLE TRANSITION METAL CATALYSTS FOR PREPARING OLEFINS HAVING AN EXOCYCLIC DOUBLE BOND

James E. Lyons, Wallingford, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 805,343, Mar. 7, 1969. This application Oct. 31, 1969, Ser. No. 873,092

Int. Cl. C07c *5/24*

U.S. Cl. 260—666 A **13 Claims**

Cyclic hydrocarbons having one or more side chains containing olefinic unsaturation can be isomerized to the corresponding cyclic hydrocarbon containing double bonds exocyclic to the ring through the use of a ligand-stabilized group VIII metal complex in homogeneous solution. The catalyst used has a metal-hydrogen bond or is a complex which, in situ, can either abstract hydrogen from the olefin to form a metal-hydrogen bond, or form such a bond in the presence of added hydrogen. The complexes, which are hydrocarbon-soluble provide a homogeneous rather than a heterogeneous system for this type of reaction. The catalysts also provide a route which makes possible conversion of substituted cyclic olefins to the exocyclic olefin in higher yields than could be realized by other catalytic methods.

3,647,897
BIS-CYCLOPENTADIENYLIC COMPOUNDS AND PROCESS OF PREPARING SAME

André Lakodey and Francis Weiss, Pierre-Benite, France, assignors to Ugine Kuhlmann

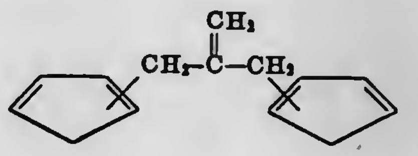
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,994

Claims priority, application France, Nov. 29, 1968, 175,924

Int. Cl. C07c *13/62*

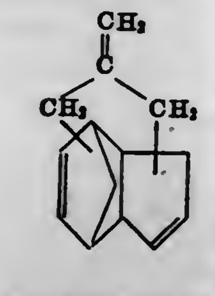
U.S. Cl. 260—666 PY **2 Claims**

Novel products comprising 1,3-bis-cyclopentadienyl 2-methylene propane of the following formula:



(I)

and its novel isomer, dicyclopentadiene having the following structure



(II)

The novel products are prepared by reacting a 1,3-dihalogeno 2-methylene propane with an organometallic derivative of cyclopentadienyl in the presence of an inert solvent.

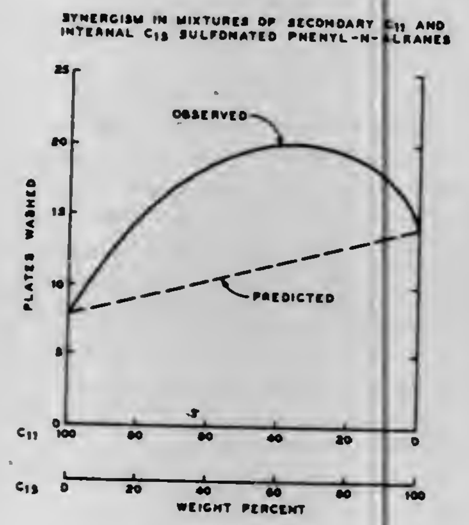
3,647,898
EQUILIBRATION OF LOWER ALKYL SUBSTITUTED POLYALKYL AROMATIC HYDROCARBONS WITH REDUCED DISPROPORTIONATION

John J. Brodbeck, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Jan. 14, 1970, Ser. No. 2,948
Int. Cl. C07c *15/08*
U.S. Cl. 260—668 A **9 Claims**

Disproportionation losses in the isomerization of C_8 aromatic hydrocarbons are reduced by the use of silica-alumina catalyst composites with high surface areas and having pore radii in the main above about 45 A.

3,647,899
LINEAR ALKYLBENZENE COMPOSITIONS

Alan E. Straus, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed June 11, 1969, Ser. No. 832,293
Int. Cl. C07c *15/04*
U.S. Cl. 260—668 **3 Claims**

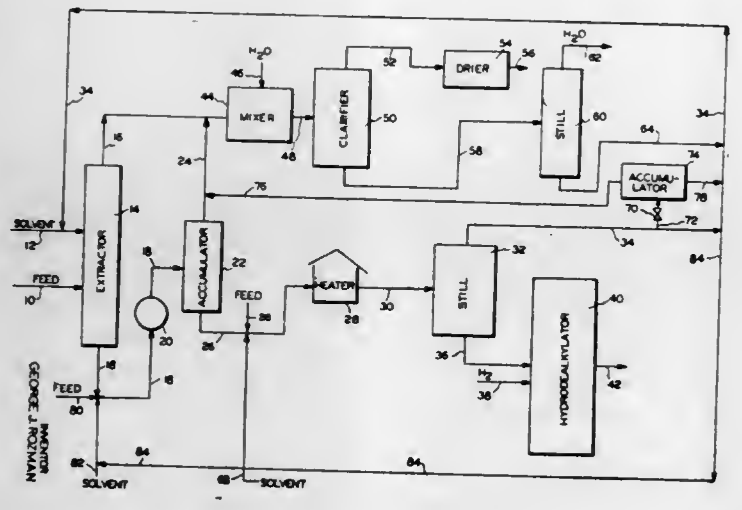


Sulfonated derivatives of novel detergent alkylate compositions exhibiting superior synergistic detergent characteristics comprise mixtures of secondary C_{11} and C_{15} sulfonated phenyl-n-alkanes in a weight ratio of from 1:10 to about 4:1, respectively.

3,647,900
PROCESS FOR CONCENTRATION AND CONVERSION OF HYDROCARBONS

George J. Rozman, Ashland, Ky., assignor to Ashland Oil & Refining Company, Houston, Tex.
Filed July 17, 1968, Ser. No. 745,516
Int. Cl. C07c *7/06, 7/10, 3/58*
U.S. Cl. 260—674 R **20 Claims**

Naphthalene is produced from hydrocarbon fractions containing substantial volumes of polycyclic aromatics, such as light cycle oils from a catalytic cracking unit, by contacting the hydrocarbon feed with an organic sulfoxide, such as dimethylsulfoxide; separating an extract phase and a first raffinate phase from one another; passing the extract phase to a vacuum distillation column under conditions to form an azeotropic mixture of a second raffinate phase and the solvent as an overhead and the extract phase as a bottoms; separating the azeotropic mixture into a second raffinate phase and a solvent phase; combining the first raffinate phase and the second raffinate phase and mixing the same with water; separating the raffinate phase from a water-solvent mixture; subjecting the water-solvent mixture to vacuum distillation to separate water as an overhead and solvent as a bottoms; recycling the solvent from the vacuum distillation and the solvent separated from the azeotrope back to the extraction unit; and subjecting the extract from the azeotropic distillation unit to hydrodealkylation to produce a dealkylated product. If desired, a third raffinate phase can be separated from the original extract phase of the extraction step by cooling the extract phase to essentially ambient temperature. When a feed material is sufficiently concentrated in polycyclic aromatics, the extraction step may be eliminated and the feed can be combined with solvent just prior to the azeotropic distillation stage, or a feed of low polycyclic aromatics may be subjected to extraction and a feed of higher polycyclic aromatic content may be added to the extract just prior to the azeotropic distillation stage.



3,647,901
COBALT SALT-PHOSPHINE-ORGANOALUMINUM CATALYSTS FOR PREPARING 1,4-DIENES

Christos Sarafidis, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 616,771, Feb. 17, 1967. This application June 22, 1970, Ser. No. 48,504
Int. Cl. C07c *11/12*
U.S. Cl. 260—680 B **10 Claims**

A catalyst for use in preparing 1,4-dienes from alphamonoolefins and conjugated dienes. The catalyst is prepared by mixing, in any order, an organoaluminum compound, a cobalt salt and a diphenyl alkenyl or dialkenyl phenyl phosphine in a liquid medium, either in the presence of the monomers or separately. The reaction for preparing the 1,4-dienes is carried out in an inert organic solvent at temperatures of 25 to 150° C. and pressures ranging from 1 atmosphere to 2000 p.s.i.g. The invention provides catalysts which are readily available and which form 1,4-dienes at feasible rates with a minimum of by-product formation.

3,647,902
PROCESS FOR PREPARING 1,4-HEXADIENE

Gisela Henrici Henrici and Salvador Olivé Martin, Zurich, Switzerland, assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Sept. 25, 1969, Ser. No. 861,499
Claims priority, application Switzerland, Oct. 2, 1968, 14,875/68
Int. Cl. C07c *3/10*
U.S. Cl. 260—680 B **6 Claims**

An improved process for preparing 1,4-hexadiene by reaction of ethylene and 1,3-butadiene under pressure in a solvent and in an inert atmosphere in the presence of a catalytic system of a combination of cobalt (II) chloride 1,2-bis-(diphenylphosphino)-ethane and triethyl aluminum wherein the solvent is 1,2-dichloroethane, the concentration of cobalt is no greater than 0.0005 mol of cobalt (II) chloride per liter of reaction mixture, the molar ratio of triethyl aluminum to cobalt chloride is at least 200, and the reaction mixture is brought to a temperature of at least 80° C. before the reaction of ethylene with 1,3-butadiene occurs.

3,647,903
METHOD OF PREPARING DIOLEFINS HAVING CONJUGATED DOUBLE BONDS

Jean Maurin, Montivilliers, France, assignor to Compagnie Francaise de Raffinage, Paris, France
Filed May 4, 1970, Ser. No. 34,172
Claims priority, application France, May 8, 1969 6914751
Int. Cl. C07c *1/00, 1/20*
U.S. Cl. 260—681 **13 Claims**

A method for preparing a diolefin such as isoprene has been provided whereby an α-glycol or an α-epoxy as a precursor for a monoester formation is reacted directly or first obtained from a paraffin by hydroperoxidation and then reacted with an acid or its anhydride to obtain said monoester and the monoester pyrolyzed to obtain a desired diolefin. In the pyrolysis step the acid is obtained as a recycleable starting material. The process is characterized by improved yields of the diolefin and minimized amounts of carbonyl compounds.

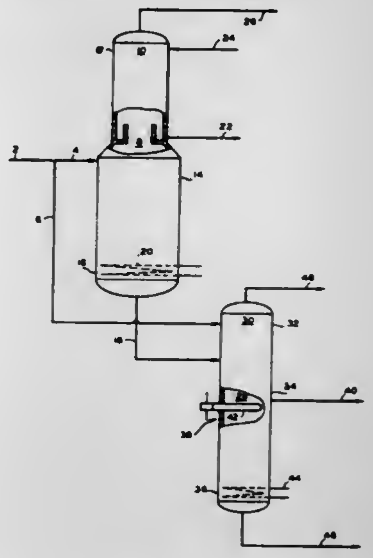
3,647,904
PROCESS FOR THE PREPARATION OF UNSATURATED POLYESTER RESIN

Masaya Imai, Suita-shi, Masuji Izubayashi, Osaka, Keiichi Takiyama and Mitsuo Hirai, Suita-shi, and Masao Nikki, Ibaraki-shi, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan
No Drawing. Filed Sept. 4, 1969, Ser. No. 885,415
Claims priority, application Japan, Sept. 9, 1968, 43/64,488; Jan. 22, 1969, 44/4,090
Int. Cl. C08g *17/007, 17/12, 39/06*
U.S. Cl. 260—861 **4 Claims**

A process for the preparation of an unsaturated polyester resin, which comprises adding hydrogen peroxide to a mixture of an unsaturated organic compound containing an unsaturated radical which can be epoxidated with an organic peracid, with a polycarboxylic anhydride, at temperatures ranging from 10 to 120° C., to perform the epoxidation reaction, said unsaturated organic compound being selected from the group consisting of hydrocarbons, halogenated hydrocarbons, carboxylic acids, carboxylates and alkyl ethers containing the unsaturated radical; heating the reaction mixture to 150–250° C. in an inert gaseous current to effect the polyesterification thereof; and thereafter mixing the resulting unsaturated polyester with a monomer which is copolymerizable with the polyester.

3,647,905
ISOSTRIPPER WITH NORMAL BUTANE REMOVAL IN AN ALKYLATION SYSTEM

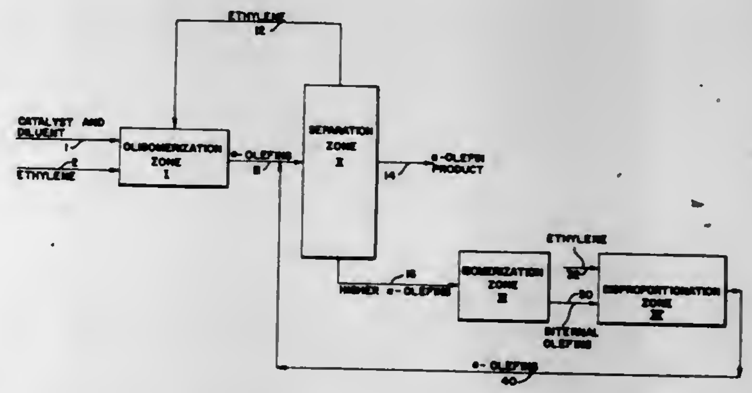
Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Jan. 29, 1970, Ser. No. 6,658
Int. Cl. B01d *3/00;* **C07c** *3/50;* **C10g** *7/00*
U.S. Cl. 260—683.4 **2 Claims**



An isostripper is provided in an alkylation fractionation system in which a portion of the isobutane is initially discharged from a depropanizer, and a portion of the alkylation hydrocarbon feedstream is passed to the isostripper at a location above the entry of the depropanized stream. A normal butane vapor stream is removed from the middle portion of the isostripper adjacent a heating zone therein. The isostripper requirement is thus lower and it also operates in a more uniform and constant manner.

3,647,906
ALPHA-OLEFIN PRODUCTION

Francis F. Farley, Oakland, Calif., assignor to Shell Oil Company, New York, N.Y.
Filed May 11, 1970, Ser. No. 36,241
Int. Cl. C07c *3/62, 3/10*
U.S. Cl. 260—683 D **5 Claims**



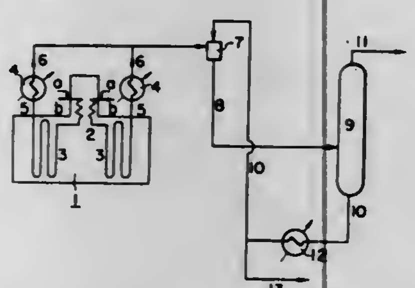
Ethylene is converted to linear α-olefins of a selected range of carbon atoms by (1) oligomerizing ethylene to linear α-olefins, (2) separating the linear α-olefins into a lower α-olefin fraction of the selected range of carbon atoms and a higher α-olefin fraction, (3) recovering the lower α-olefin fraction as product, (4) isomerizing the higher α-olefin fraction to internal olefins, (5) disproportionating the internal olefins with excess ethylene to produce additional lower α-olefins which are recycled to step 2 for separation. By a preferred modification of the process ethylene is converted to an α-olefin product mixture of a controlled molecular weight range and free of lower oligomers, e.g., dimers, trimers, etc.

3,647,907

PROCESS FOR QUENCHING A GAS OBTAINED BY THERMAL CRACKING OF HYDROCARBONS

Takehiko Sato and Hiroyuki Sagami, Yokkaichi-shi, Japan, assignors to Mitsubishi Petrochemical Co. Ltd., Chiyoda-ku, Tokyo, Japan

Filed Aug. 22, 1969, Ser. No. 852,275
Claims priority, application Japan, Sept. 6, 1968, 43/64,196
Int. Cl. C10g *9/12;* **C07c** *3/00*
U.S. Cl. 260—683 **4 Claims**



Process for quenching a gas obtained by thermal cracking of heavier hydrocarbons than kerosene which comprises quenching indirectly the high temperature cracked gas in a quenching heat exchanger to a temperature (T) represented by the following equation:

$$T=0.56\times t+\alpha$$

wherein t is a volumetric average boiling point of the feed hydrocarbons and

$$t=\frac{t_{10}+t_{30}+t_{50}+t_{70}+t_{90}}{5}$$

in which t_{10}, t_{30}, t_{50}, t_{70} and t_{90} is a temperature of (° C.) at which 10 volume percent, 30 volume percent, 50 volume percent, 70 volume percent and 90 volume percent of feed hydrocarbons is distilled in ASTM distillation, respectively, and α is a temperature in the range of 340–420° C., and T is a temperature above 450° C. but not exceeding 600° C., said temperature (T) being a temperature of the cracked gas at an outlet of the quenching heat exchanger, and further quenching directly the cracked gas to a temperature of 150–250° C. by spraying heavier oil.

3,647,908

OLEFIN DISPROPORTIONATION

Dirk Medema, Willy Brunmayer-Schilt, and Robert van Helden, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Dec. 15, 1969, Ser. No. 885,264
Claims priority, application Great Britain, Jan. 27, 1969, 4,477/69
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D **7 Claims**

Olefins are disproportionated with a catalyst produced by contacting (a) a molybdenum or tungsten salt (b) an alkyl aluminum halide and (c) oxygen, an alkanoic acid or a mixture thereof.

3,647,909

REGENERATION OF CHROMIA-ALUMINA DEHYDROGENATION CATALYST

Glenn O. Michaels, South Holland, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Feb. 10, 1970, Ser. No. 9,992
Int. Cl. B01j *11/04;* **C07c** *5/18*
U.S. Cl. 260—683.3 **7 Claims**

An improved method for the dehydrogenation of paraffins and monoolefins, to produce olefin components containing a greater ratio of carbon to hydrogen, in the presence of a chromia-alumina dehydrogenation catalyst is disclosed. The activity and selectivity of the catalyst are maintained by periodically regenerating the catalyst at a temperature above about 1150° or 1200° F., preferably from about 1300° to 1500° F., and at least about 75° F., preferably at least about 100° F., above the average temperature of dehydrogenation. The higher temperatures are achieved by burning of carbonaceous deposits on the catalyst. Coke-formers can be added to the regeneration gas, to increase the regeneration temperature.

3,647,910

DEHYDROGENATION OF HYDROCARBONS EMPLOYING A CATALYST OF IRON OXIDE-CONTAINING ACTIVATED CARBON

Arthur L. Jones, Solon, and Roger M. Benslay, Northfield, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

No Drawing. Filed Mar. 20, 1970, Ser. No. 21,540
Int. Cl. C07c *11/12*
U.S. Cl. 260—683.3 R **9 Claims**

Olefins, such as propylene, are produced by contacting a mixture of an alkane, such as propane, air, steam, and optionally hydrogen sulfide or sulfur dioxide with an iron oxide-containing activated carbon at an elevated temperature and recovering the product.

3,647,911

DEHYDROGENATION OF SATURATED HYDROCARBONS

Kenneth D. Vesely, Arlington Heights, and Harold D. Gass, Jr., Cicero, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed June 17, 1969, Ser. No. 834,165
Int. Cl. B01j *11/74;* **C07c** *5/18*
U.S. Cl. 260—683.3 **8 Claims**

Saturated hydrocarbons are dehydrogenated in contact with a catalyst comprising arsenic in from about a 0.15 to about a 0.45 atomic ratio with platinum, and from about 0.01 to about 1.5 wt. percent lithium composited with alumina. Improved activity and selectivity results from the method of reducing and sulfiding the catalyst prior to use.

3,647,912

PREPARATION OF LINEAR OLEFIN PRODUCTS

Arthur W. Langer, Jr., Watchung, Plainfield, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 581,433, Sept. 23, 1966, which is a continuation-in-part of application Ser. No. 562,088, July 1, 1966. This application Mar. 4, 1969, Ser. No. 805,116
The portion of the term of the patent subsequent to Apr. 29, 1986, has been disclaimed
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **10 Claims**

A linear alpha olefin product comprising at least 90 mole percent linear alpha olefins is prepared by polymerizing ethylene in the presence of a catalyst containing the reaction product of a transition metal halide and an aluminum alkyl, the reaction being effected in a diluent at ethylene pressures in excess of about 50 p.s.i.a. and with a mole ratio of ethylene to product olefin of at least about 0.8.

3,647,913

PURIFICATION OF OLEFINS

Evalds Lasis, Sarnia, Ontario, Canada, assignor to Polymer Corporation Limited, Sarnia, Ontario, Canada

No Drawing. Filed July 27, 1970, Ser. No. 58,669
Claims priority, application Canada, Sept. 8, 1969, 61,363
Int. Cl. C07c *7/02*
U.S. Cl. 260—681.5 **11 Claims**

Impure olefin streams of, e.g., butadiene, intended for polymerization, are purified to remove impurities harmful in subsequent polymerization, such as acetylenes and cumulative diolefins, by treating them with catalysts which selectively polymerize the impurities to solid, readily removable products, whilst leaving the olefin unaffected. An example of a suitable catalyst is a mixture of ferrous octoate and aluminum triethyl.

3,647,914

ETHYLENE OLIGOMERIZATION

Peter W. Glockner, Alameda, Wilhelm Keim, Berkeley, and Ronald F. Mason, Mill Valley, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Nov. 4, 1969, Ser. No. 874,058
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **12 Claims**

Ethylene is oligomerized to a mixture of olefinic products of high linearity in the presence of a nickel chelate of a bidentate ligand having a tertiary organophosphorus moiety and a functional group selected from hydroxymethyl, mercaptomethyl, hydrocarboyl and hydrocarbyloxycarbonyl substituted on a carbon atom attached directly to the phosphorus atom of the organophosphorus moiety.

3,647,915

ETHYLENE OLIGOMERIZATION

Ronald S. Bauer, Orinda, Peter W. Glockner, Alameda, Wilhelm Keim, Berkeley, and Ronald F. Mason, Mill Valley, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Nov. 4, 1969, Ser. No. 874,059
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **10 Claims**

Ethylene is oligomerized to an oligomeric product mixture of high linearity in the presence of a nickel chelate of a bidentate ligand having a tertiary organophosphine moiety and a carbamyl or aryl-substituted carbamyl group substituted on a carbon atom attached directly to the phosphorous atom of the organophosphine moiety.

3,647,916

ISOPARAFFIN-OLEFIN ALKYLATION WITH CRYSTALLINE ZEOLITE CATALYSTS AT LOW ISOPARAFFIN TO OLEFIN RATIOS

Philip D. Caesar, Princeton, and Werner O. Haag, Trenton, N.J., and John J. Wise, Philadelphia, Pa., assignors to Mobil Oil Corporation

No Drawing. Filed Oct. 8, 1969, Ser. No. 864,862
Int. Cl. C07c *3/52;* **B01j** *11/02*
U.S. Cl. 260—683.43 **10 Claims**

A continuous process for alkylation of a branched chain hydrocarbon with an olefin in the presence of a crystalline aluminosilicate zeolite catalyst employing a reaction mixture in which the molar ratio of isoparaffin to olefin is extremely low compared to conventional alkylation, i.e. generally below 3 to 1 followed by regeneration and reuse of the catalyst so employed.

3,647,917

ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER WITH UNPRIMED ADHESION

Jay R. Schulz, Bay City, and William H. Clark, Mount Pleasant, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,067
Int. Cl. C08g *47/06*
U.S. Cl. 260—825 **35 Claims**

A mixture of a polydiorganosiloxane having hydroxy, acetoxy or alkoxy functionality and a mixture containing at least 10 weight percent of an alkoxyacetoxysiloxane plus alkoxy and acetoxy silanes vulcanizes at room temperature to provide a silicone rubber with improved unprimed adhesion to substrates such as metals.

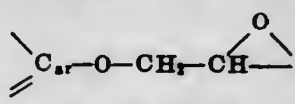
3,647,918

EPOXY RESIN AND DIGLYCIDYLISOALKYLAMINE COMPOSITION

Johannes Wöllner, Kapellen Kreis, Moers, Martin Karl Cherubim, Rheinkamp-Eick, and Friedrich Gerhard Henn, Homberg (Lower Rhine), Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

No Drawing. Filed Aug. 25, 1969, Ser. No. 852,919
Claims priority, application Germany, Aug. 27, 1968, P 17 95 238.4
Int. Cl. C08g *45/06*
U.S. Cl. 260—830 TW **7 Claims**

An epoxy resin composition comprising the reaction product of an amino compound containing at least two amino groups per molecule and an epoxide mixture of (a) from 30–90% by weight of a liquid diglycidyl ether of an aromatic compounud having at least two



$$\geqslant C_{ar}-O-CH_2-\overset{O}{CH-CH_2}$$

groups per molecule wherein $\geqslant C_{ar}$ is a carbon atom belonging to an aromatic system, and (b) from 70–10% by weight of a liquid nitrogen linked glycidyl containing compound having at least two glycidyl groups per molecule. The process comprises reacting at about ambient temperatures the above reaction components and permitting the reaction product to cure.

3,647,919

FLEXIBLE PHENOLIC RESINS

Sung Ki Lee, Niagara Falls, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 569,043, Aug. 1, 1966. This application Dec. 29, 1969, Ser. No. 888,838
Int. Cl. C08g *37/16*
U.S. Cl. 260—842 **17 Claims**

Flexible phenolic resins useful for interior can coatings, drum and pail linings, wire coatings, laminating resins, baking primers, adhesives, pipe coatings, phenolic molding resins, foundry resins and the like are produced by the method comprising the steps of:

(1) reacting a polymer containing alpha beta carbon-to-carbon unsaturated carbonyl function with a nucleophilic compound having at least two active hydrogens to form a polymer containing an active pendent nucleophilic group containing at least 1 active hydrogen,
(2) reacting the resultant nucleophilic group containing active hydrogen on the said polymer with an aldehyde to form a polymer containing an active pendent methylol derivative group,
(3) reacting said pendent methylol group with an aromatic compound containing an ortho-para activating group to form a modified polymer containing a pendent arylalkylene group containing at least one nuclear hydrogen capable of further condensation with an aldehyde,
(4) recovering the polymer so produced.

3,647,920

POLYETHYLENE AS A LUBRICANT FOR POLYIMIDES OF 3,4-DICARBOXY - 1,2,3,4-TETRAHYDRO - 1 - NAPTHALENE SUCCINIC DIANHYDRIDE AND A DIAMINE

Roland Ralph Di Leone, Rowayton, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Oct. 27, 1970, Ser. No. 84,455
Int. Cl. C08g *41/04*
U.S. Cl. 260—851 PI **10 Claims**

A composition of matter comprising a thermoplastic polyimide of 3,4-dicarboxy-1,2,3,4-tetrahydro-1-naphthalene succinic dianhydride and a diprimary diamine containing small quantities of thermoplastic polyethylenes.

3,647,921
AROMATIC SUPERPOLYESTER-STYRENE POLYMER MELT STABILIZED COMPOSITION

Alvin F. Berry, Center Berlin, N.Y., assignor to General Electric Company

No Drawing. Filed Mar. 18, 1970, Ser. No. 20,826
Int. Cl. C08g *39/10, 51/28*
U.S. Cl. 260—873 **10 Claims**

The invention relates to an aromatic, substantially linear superpolyester possessing substantially improved melt stability properties. The polyesters contemplated by the invention are of an aromatic dicarboxylic acid and a dihydric phenol, and preferably polyesters having p-phenylene isophthalate units alone or interspersed with p-phenylene terephthalate units. Such polyesters are stabilized in accordance with the invention by addition of a styrene polymer in an amount sufficient to provide preferably from about 1 to 10% by weight styrene in the polyester composition.

3,647,922
MIXTURES OF POLYOLEFINS OF HIGH IMPACT STRENGTH HAVING AN IMPROVED TRANSPARENCY

Hans-Joachim Leugering, Frankfurt am Main, and Helmut Schaum, Bad Soden, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Filed June 13, 1969, Ser. No. 833,196
Int. Cl. C08f *29/12*
U.S. Cl. 260—876 B **4 Claims**

The present invention relates to thermoplastic moulding compositions, consisting of two components in a determined mixing ratio, one component being polyethylene having a melt index i_2 (at 190° C.) within the range of from 0.4 to 80 and the other component being a sequenced copolymer of propylene and ethylene having a melt index i_{10} (at 190° C.) within the range of from 0.5 to 60. Furthermore, the present invention provides a process for the manufacture of these moulding compositions.

The mixtures in accordance with the invention can be processed to shaped articles which are distinguished by an improved impact strength at low temperatures and an improve transparency, while having substantially the same hardness.

3,647,923
RESIN COMPOSITIONS CONTAINING HINDERED PHENOLS

Stanley M. Hazen, Cheswick, and William J. Heilman, Allison Park, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed July 15, 1968, Ser. No. 744,669
Int. Cl. C08f *3/02, 15/02, 15/04*
U.S. Cl. 260—878 **9 Claims**

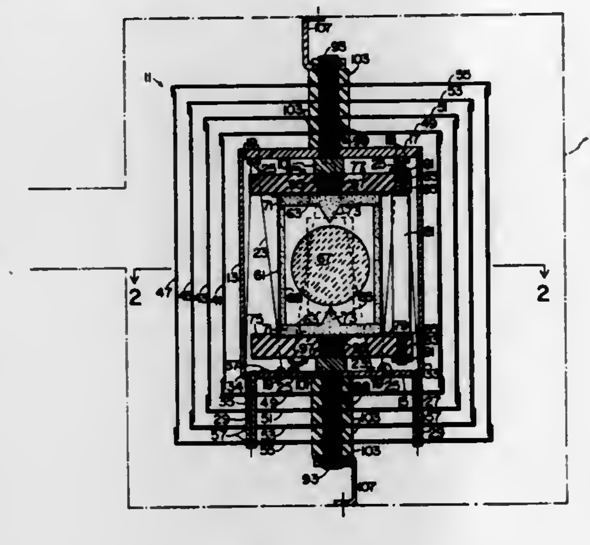
The shelf life of a liquid curable resin system is increased by the addition of a hindered phenol, such as 2,6-ditertiarybuylphenol or 2,6-ditertiarybutyl-p-cresol. The liquid curable resin system comprises a copolymer of maleic anhydride and an alpha-olefin such as hexene-1; a liquid unsaturated monoepoxide such as glycidyl acrylate or glycidyl methacrylate; and styrene. The system preferably contains less than 10 p.p.m. of water.

ELECTRICAL

3,647,924
HIGH-TEMPERATURE FURNACE FOR MELTING MATERIALS IN SPACE

John R. Rasquin, Madison, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Feb. 12, 1971, Ser. No. 114,848
Int. Cl. F27b *5/08;* **H05b** *3/00*
U.S. Cl. 13—20 **8 Claims**

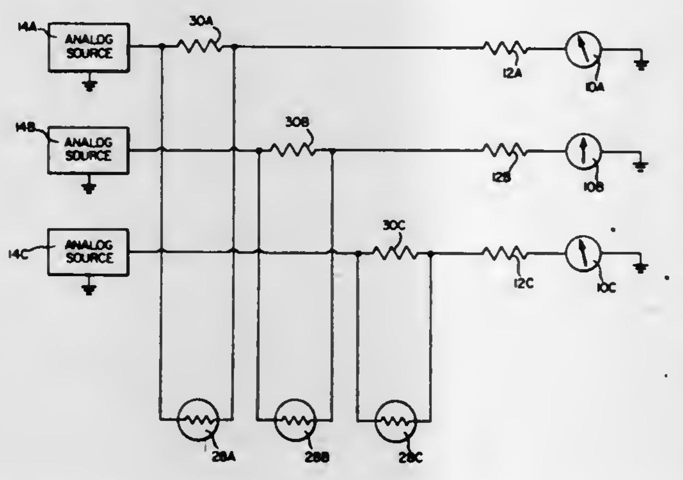


An electrically powered furnace for melting high-melting point materials in the vacuum and zero gravity environment of space comprising an alumina crucible, cylindrical in shape, and enclosing a cylindrical tantalum sample holder that contains the sample to be melted. The crucible is surrounded by concentric cylindrical enclosures made of polished sheet molybdenum. The sample holder is clamped between a pair of round plates and a pair of alignment bolts are joined to the circular plates and extend along the longitudinal axis of the furnace through the end covers of the crucible and surrounding concentric enclosures.

3,647,925
VARIABLE IMPEDANCE GENERATOR

Arthur G. Schilling, South Dayton, Fla., assignor to General **Electric Company**

Filed May 22, 1969, Ser. No. 826,983
Int. Cl. G09b *9/00*
U.S. Cl. 35—13 **2 Claims**

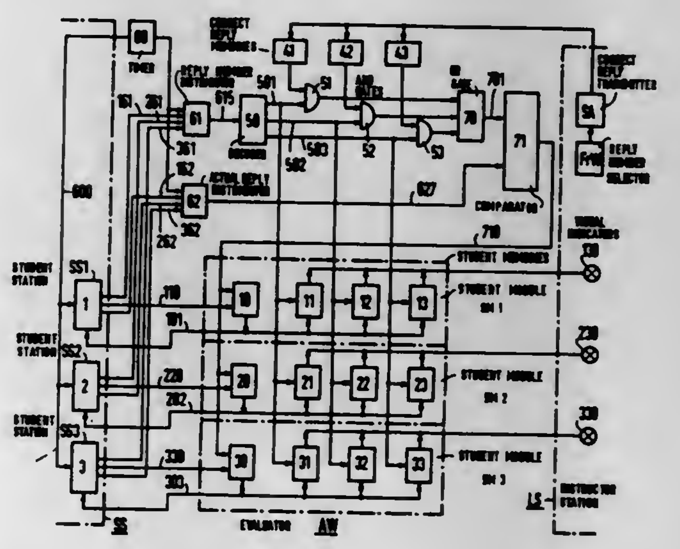


A photoconductive device is positioned adjacent to a light source with a radiation barrier between them. The radiation barrier has slots, and is rotated, causing light to alternately impinge upon the photoconductive device and to be blocked resulting in alternating decreases and increases in the impedance of the device. By using slots of random width and random spacing, the impedance variation introduced into a circuit simulates noise.

3,647,926
TEACHING SYSTEM FOR PROGRAMMED CLASS AND INDIVIDUAL TEACHING

Ebbe Rohloff, and Richard Lorenz, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 6, 1970, Ser. No. 61,736
Claims priority, application Germany, Aug. 7, 1969, P 19 40 127.5
Int. Cl. G09b *7/02*
U.S. Cl. 35—48 R **30 Claims**



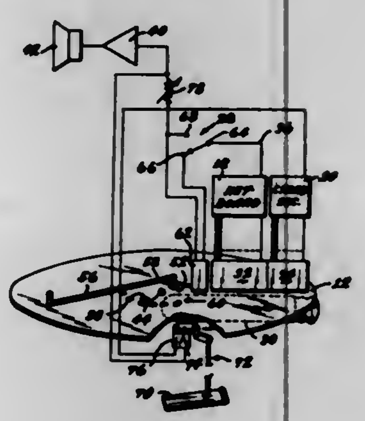
An instructor station for questioning a number of students with questions each of which is answerable by each of the students by a selected one of at least two possible answers provided for each student. The instructor station has a correct reply transmitter for providing the correct reply to each question, a number of signal indicators corresponding to the number of students each corresponding to a specific one of the students, and a reply number selector. Each of a plurality of similar student stations is electrically connected to the instructor station and has an actual reply selector and reply transfer key, signal indicators for evaluating the selected answer and for conveying instructions from the instructor station and a reply number selector for indicating the number of a question answered. And an evaluator is connected between the instructor station and each of the student stations for evaluating the replies selected by the students. The evaluator comprises a plurality of actual reply memories of the same number as the number of student stations connected to the instructor station for recording the correct replies to the questions supplied from the instructor station, a reply number distributor connected to each of the student stations, an actual reply distributor connected to each of the student stations, a timer connected between each of the student stations and each of the distributors for scanning the student stations and controlling the distributors accordingly, a comparator for comparing the replies selected by the students with the correct replies to the questions and providing a comparison result, a decoder and gates coupling the reply number distributor to the actual reply memories and to an input of the comparator, the actual reply distributor being connected to the other input of the comparator, a plurality of student memories connected to the output of the comparator, the student memories comprising a number of groups of memories equal to the number of student stations, each group of memories including a number of memories equal in number to the number of questions, and connectors connecting the student memories to the signal indicators of the instructor station and to the signal indicators of each of the student stations.

3,647,927
ELECTRONIC ORGAN WHEREIN MUSICAL SOUNDS AND A TREMOLO EFFECT ARE PROVIDED BY ELECTRO-OPTICAL APPARATUS

Richard S. Chang, Rolling Hills Estates; Stanley Cutler, Van Nuys; Harvey W. La Branche, Palos Verdes Peninsula; Marshall B. Pearlman; John W. Ryan, and M. Raymond Toy, Los Angeles, all of Calif., assignors to Mattel Inc., **Hawthorne, Calif.**

Filed Dec. 11, 1970, Ser. No. 97,214
Int. Cl. G10h *1/02, 3/06*

U.S. Cl. 84—1.18 **8 Claims**



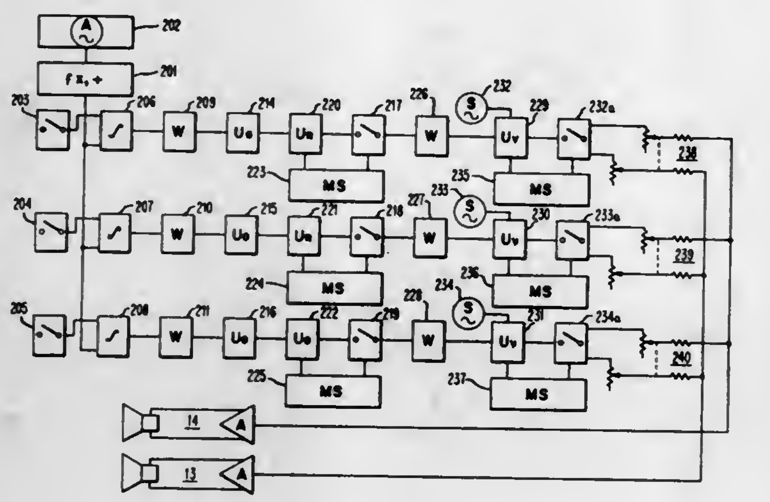
An organ of the type which utilizes an optical disc record with tracks that control the passage of light from a light source to photocells to create musical sounds, wherein the disc also has a synchronizing track to indicate the beginning of musical measures on certain music tracks and a tremolo track for creating a tremolo effect. A light-transmitting conduit has one end positioned to pick up light passing through the synchronizing track and an opposite end facing a musician seated at the organ keyboard, to provide a flash of light which can be seen by the musician at the beginning of each measure of certain musical tracks. A resistance photocell is positioned opposite the tremolo track and is connected between the photocells of the music track and the organ speaker, to provide a rapid variation in the volume of music.

3,647,928
ELECTRICAL MUSICAL INSTRUMENT WITH ENSEMBLE AND CHIEF EFFECTS AND UNEQUAL STEREOPHONIC OUTPUTS

William D. Turner, 108 Manchester Avenue, Moylan, Pa.
Continuation-in-part of application Ser. No. 713,594, Mar. 18, 1968, now abandoned. This application Mar. 16, 1970, Ser. No. 19,641
Int. Cl. G10h *1/02, 1/04*

U.S. Cl. 84—1.24 **21 Claims**

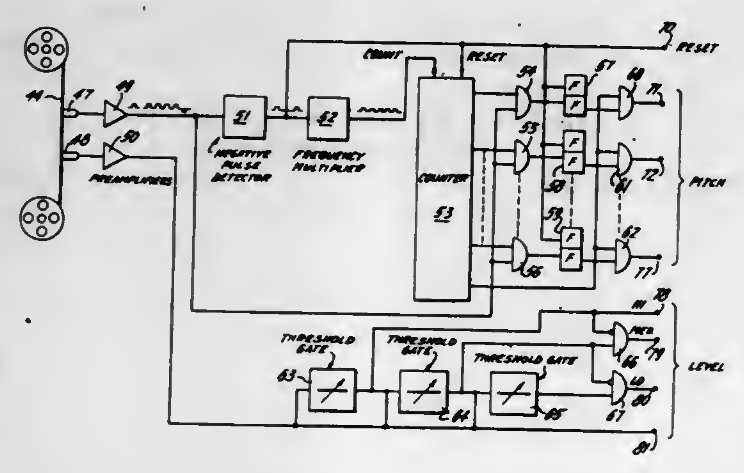
An electrical musical instrument for simulating pipe organs, and having a natural ensemble effect, spatial tone-distribution effect, air turbulence effect, wind-pressure-change effect, tracker-keying effect, piano voice keying effect, and exact differently modulated harmonic pitch registers for mutation and compound stops and chiff. These effects are achieved by modulator units coupled between harmonic filtered, tone frequency current sources and a stereophonic amplifier-speaker system which produces outputs having levels of amplitudes which vary differently with respect to each other. The outputs connected to the two speakers have inequalities in amplitudes so that each tone has its own distinctive spatial location. The modulator units comprise insulated gate field-effect transistors which are utilized to modulate the tone frequency currents with different patterns of subsonic frequencies including those producing the simulation of natural air turbulence and wind pressure change. Insulated gate field-effect transistors are also used for switching tone and chiff frequency currents so that the change in amplitude is sigmoid during turn-on and turnoff. RC circuitry in combination with the switching insulated gate field-effect transistors permit tracker keying and piano voice keying.



3,647,929
APPARATUS FOR REPRODUCING MUSICAL NOTES FROM AN ENCODED RECORD

Karl F. Milde, Jr., 198 Baltic Street, Brooklyn, N.Y.
Continuation-in-part of application Ser. No. 756,857, Sept. 3, 1968. This application Oct. 8, 1970, Ser. No. 79,045
Int. Cl. G10h *1/00*

U.S. Cl. 84—1.01 **2 Claims**



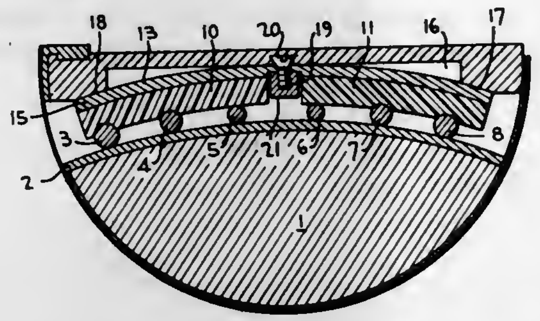
Apparatus for reproducing music, either by playing or by printing a musical score. The music is recorded on a record medium, such as magnetic tape, which has at least one and no more than eight recording channels or tracks. Representations of the fundamentals of the individual notes of the music are recorded on the record medium without inclusion of representations of the harmonics of these notes. The reproducing apparatus, according to the invention, includes the combination of means for reading the representations of the fundamentals, means for decoding these representations and means for receiving the decoded representations and reproducing the musical notes.

3,647,930
TUNING DEVICE

August Hermann Wowries, Oskar-Hoffmann Str. 162, 463 Bochum, Germany

Filed July 7, 1969, Ser. No. 839,441
Claims priority, application Germany, July 8, 1968, P 17 72 817.5
Int. Cl. G10d *3/00*

U.S. Cl. 84—318 **3 Claims**



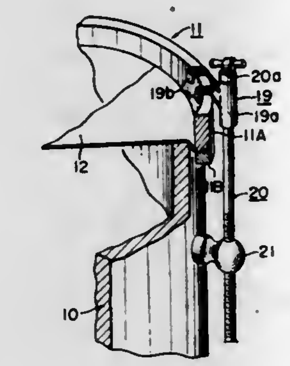
A tuning device of the capo-tasto-type for stringed instruments, wherein a supporting crossbeam carries a plurality of resilient pressure pieces, each contacting some of the strings of the instrument. In a preferred embodiment, the pressure pieces are spaced from the crossbeam and supported by individual supporting bridges above each string.

3,647,931
DRUMHEAD

Yoshiyuki Koishikawa, 2365 Kawarada-cho, Mil Prefecturo, Yokkaichi, Japan

Filed Nov. 16, 1970, Ser. No. 89,975
Int. Cl. G10d *13/02*

U.S. Cl. 84—411 **4 Claims**



A drumhead comprising an upper ring member and a lower ring member which are provided on the confronting surfaces thereof with a plurality of projections and a plurality of recesses respectively at a predetermined interval for interlocking engagement with each other, and a drum sheet having a plurality of through-holes formed in the peripheral edge portion at a predetermined interval at locations corresponding to said projections respectively, said drum sheet being clamped between said upper and lower ring members with said projections extending through said through-holes and secured thereto by means of an adhesive.

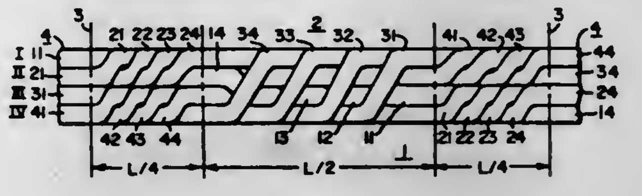
3,647,932
TRANSPOSED CONDUCTOR FOR DYNAMOELECTRIC MACHINES

Paul R. Heller, Murrysville; William C. Brenner, and Harold M. Philossky, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 11, 1970, Ser. No. 97,278
Int. Cl. H01b *7/30*

U.S. Cl. 174—34 **12 Claims**

A transposed stranded conductor for dynamoelectric machines having four stacks of strands transposed in the slot portion of the conductor in such a manner that each stack moves to different transverse positions in successive longitudinal sections of the bar such that the stacks are reversed in transverse position at opposite ends of the bar. Preferably, the strands are also transposed in a manner to cause inversion of the relative strand positions at opposite ends of the slot so that the conductor is fully transposed with inversion of strand position both transversely of the slot and depthwise of the slot.

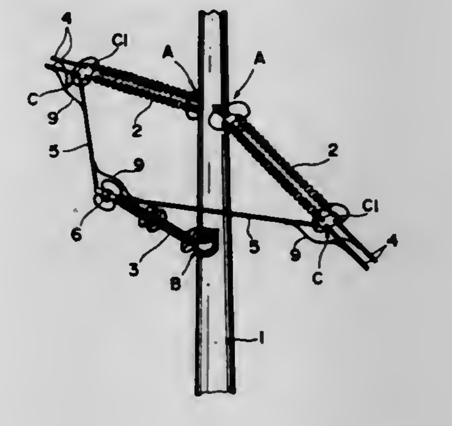


3,647,933
JUMPER ASSEMBLY CONNECTING TOGETHER TWO POWERLINE CONDUCTOR SECTIONS

Toru Okada, and Toshimitsu Takatori, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Sept. 15, 1970, Ser. No. 72,260
Claims priority, application Japan, Sept. 19, 1969, 44/74218; Mar. 17, 1970, 45/22106

U.S. Cl. 174—43 **13 Claims**



A pair of powerline conductors are connected together by a jumper assembly comprising a tower structure, tension insulator strings connecting the line conductors to the tower, a jumper conductor electrically connecting the line conductors, which jumper conductor consists of rigid and/or flexible conductor members, and one or more support insulator beams secured to the tower in a manner swayable both in the horizontal and vertical directions for holding the jumper conductor from slantwise lower direction.

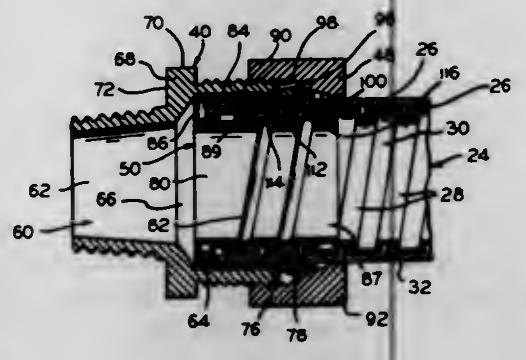
3,647,934
LIQUIDTIGHT CONNECTOR

Terry J. Hurtt, Aurora, Ill., assignor to All-Steel Equipment Inc.

Filed Mar. 5, 1970, Ser. No. 16,696
Int. Cl. H02g *3/06*

U.S. Cl. 174—65 R **4 Claims**

A liquidtight connector for connecting sheathed flexible conduit to switch or outlet boxes and the like in which the cutoff end of the conduit has applied thereto a ferrule that has a threaded connection with the conduit and defines an outer portion which is received over the conduit sheathing and terminates in an outwardly flared lip. The ferrule covered end of the conduit is received within one end of the connector body, with the ferrule being proportioned such that its lip seats against the terminal portion of the said connector one end. A contractable gland received over the conduit is clamped by a seal nut against the lip of the ferrule to contract same into liquidtight relation with the conduit. The other end of the connector body is secured to the box by a conventional lock nut in the case of knockout openings with



an O-ring seal and retainer therefore being employed between the box wall and the connector body, and in the case of hub-type openings, the other end of the connector body is applied directly thereto.

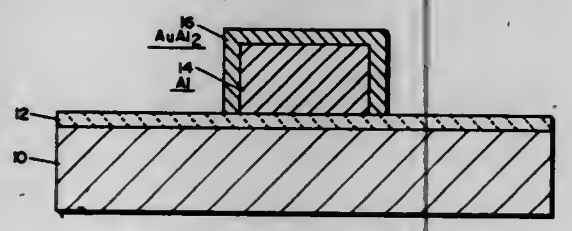
3,647,935
INTERMETALLIC PASSIVATION OF ALUMINUM METALLIZATION

Elliott M. Philofsky, and Kim Ritchie, both of Phoenix, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 15, 1969, Ser. No. 885,181

Int. Cl. H01l *1/14*

U.S. Cl. 174—68.5 **5 Claims**



An electrically conductive intermetallic coating which is resistant to corrosion serves as a passivating layer on an aluminum metallization. The preferred intermetallic is $AuAl_2$. The intermetallic passivating layer protects the aluminum metallization from chemical attack thereby increasing device lifetime and stability.

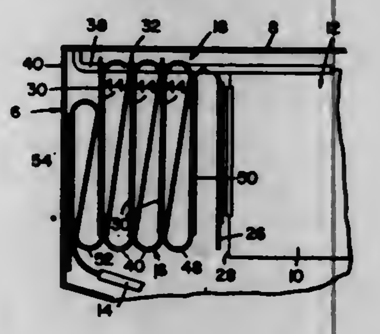
3,647,936
SELF-FOLDING CABLE CARRIER

Charles J. Dryg, Los Gatos, Calif., assignor to Iomec, Incorporated, Santa Clara, Calif.

Filed Apr. 6, 1970, Ser. No. 25,773

Int. Cl. H01b *7/06*

U.S. Cl. 174—69 **9 Claims**



An apparatus for folding a length of cable interconnecting electrical components mounted to a chassis and to a drawer movably supported by the chassis. When the drawer is retracted the cables are arranged in closely adjacent loops with movable support cards carrying halves of the loops. Withdrawal of the drawer pulls the loops apart in the direction of movement of the drawer and pivots the cards towards their mutual alignment to thereby increase the effective length of the cable loop according to the spacing between the drawer and the chassis.

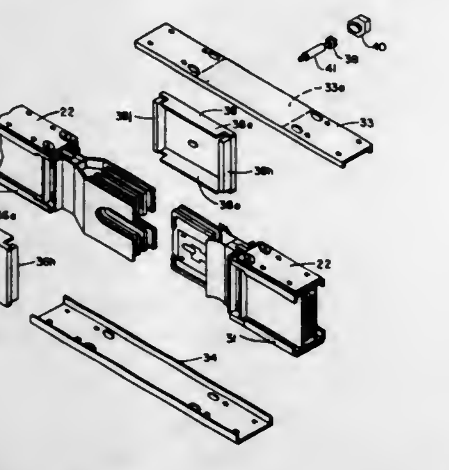
3,647,937
WEATHERPROOF BUS DUCT JOINT STRUCTURE HAVING SELECTIVELY REMOVABLE PARTS

George N. Jorgensen, Oxford, Ohio, assignor to Square D Company, Park Ridge, Ill.

Filed Oct. 2, 1970, Ser. No. 77,671

Int. Cl. H02g *3/28*

U.S. Cl. 174—88 B **3 Claims**



The joint structure includes a pair of joint tie channels with gaskets and a pair of joint covers with gaskets, one of the joint covers having a captive nut and the other of the joint covers having a removable closing cap for providing access to a joint bolt threaded into the captive nut. For horizontal edgewise mounting of a pair of bus duct sections, the gasket material is removed from the bottom tie channel. For horizontal flatwise mounting, the closing cap is removed from its joint cover, which is disposed at the bottom of the joint. For vertical mounting, the gasket material is removed from the lower edges of both joint covers.

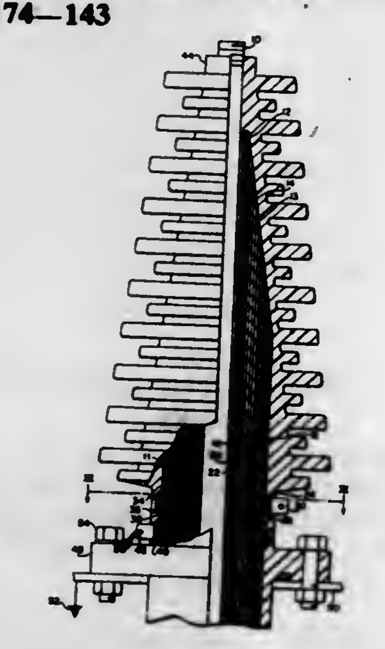
3,647,938
CONDENSER BUSHING WITH FLEXIBLE CONDUCTOR CONNECTIONS ATTACHED TO THE CONDENSER ELEMENTS

Elmer J. Grimmer, Sharpsville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 24, 1971, Ser. No. 127,653

Int. Cl. H01b *17/28*

U.S. Cl. 174—143 **3 Claims**



A condenser bushing comprising layers of insulation material wound about a central conductor. Conductive condenser elements or foils are placed between layers of the insulation at properly determined radially spaced intervals throughout the buildup of layers of electrical insulating material. A conductor is attached to the conductor foils or condenser elements when they are placed in position between the layers of electrical insulation. The conductor is wound between the layers of insulation and played along with the insulation at a slight displacement of each turn of the conductor and fed out beyond the last turn of the electrical insulation where the conductor may be connected to an appropriate terminal, such as a ground terminal or potential tap, or to another conductive layer.

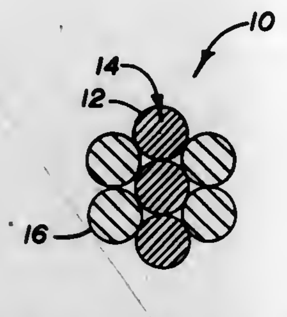
3,647,939
REINFORCED COMPOSITE ALUMINUM ALLOY CONDUCTOR CABLE

Roger J. Schoerner, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Continuation-in-part of application Ser. No. 814,198, Apr. 7, 1969, now Patent No. 3,513,251, dated May 19, 1970, which is a continuation-in-part of application Ser. No. 779,376, Nov. 27, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 730,933, May 21, 1968, now abandoned. This application May 15, 1970, Ser. No. 37,726

Int. Cl. H01b *5/08*

U.S. Cl. 174—128 **18 Claims**



A multistrand cable for transmission of electrical power including aluminum alloy strands having a minimum electrical conductivity of 61 percent IACS and at least one strand of high-strength material with a maximum conductivity of less than 61 percent IACS.

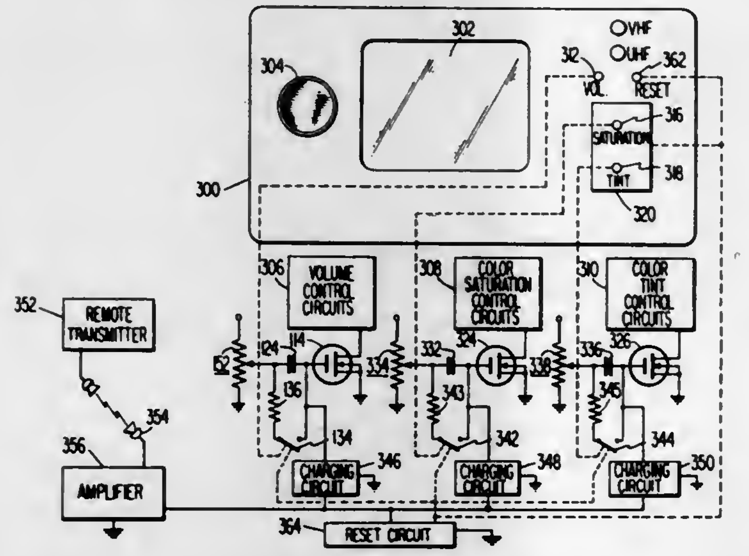
3,647,940
CONTROL SYSTEM

Leopold A. Harwood, 800 Summit Ridge Drive, Somerville, N.J.

Continuation-in-part of application Ser. No. 733,640, May 31, 1968. This application Dec. 1, 1970, Ser. No. 93,992

Int. Cl. H03k *25/02*

U.S. Cl. 178—5.4 R **21 Claims**



A semiconductor device has a first and a second electrode interconnected with circuit means to form an electric circuit operable to control functions in an electric apparatus by changes in the conductivity of the first-second electrode current path. The device control electrode, which exhibits a high-input impedance, is coupled by a capacitor to a source cause potential. The capacitor is additionally connected to a source of control voltage adapted to change the charge state of the capacitor. A discharge path is provided for the capacitor and includes a switch to reset the voltage at the control electrode of the device to control the device first-second electrode current path conductivity such that the controlled function is adjusted to a predetermined condition.

A plurality of circuits may be provided to control a plurality of functions in an apparatus. In such case, means are included for simultaneously actuating the switch means associated with each of the plurality of circuits so that the conductivity of the first-second electrode current path of the devices are simultaneously brought to reference levels which case the controlled functions to be simultaneously adjusted to predetermined conditions.

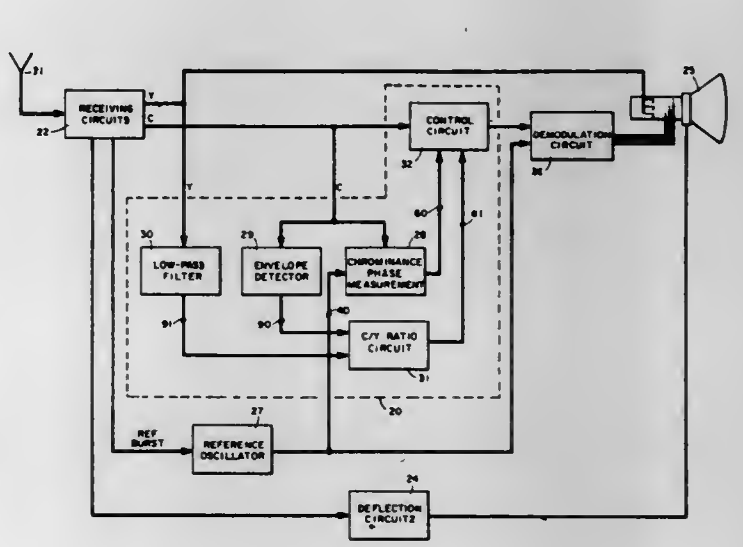
3,647,941
COLOR MODIFICATION APPARATUS FOR A COLOR TELEVISION SYSTEM

Philip Andrade, Long Island City, and Thaddeus V. Rychlewski, Seneca Falls, both of N.Y., assignors to Sylvania Electric Products Inc.

Filed Nov. 5, 1969, Ser. No. 874,271

Int. Cl. H04n *9/02*

U.S. Cl. 178—5.4 HE **14 Claims**



An apparatus for modifying the displayed appearance of preselected colors presented on a color television screen without changing the appearance of other colors in the same picture. The apparatus detects and modifies chrominance signals which correspond to these preselected colors. In one embodiment of the invention the saturation level of all colors except flesh tones is boosted.

3,647,942
VIDEO COLOR SYNTHESIZER

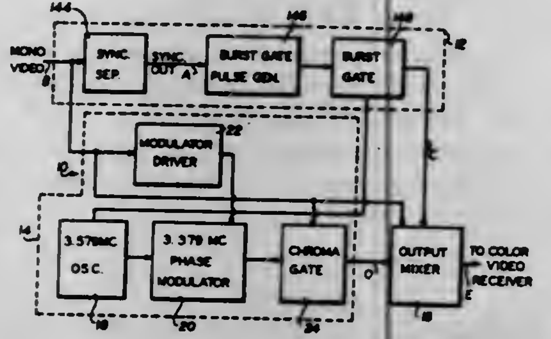
Eric J. Siegel, c/o Tom Tadlock 2143 Pine Street, San Francisco, Calif.

Filed Apr. 23, 1970, Ser. No. 31,090

Int. Cl. H04n *9/02*

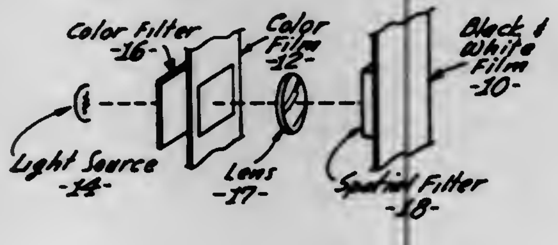
U.S. Cl. 178—5.4 **15 Claims**

An apparatus for synthesizing pseudocolor video signals from composite monochromatic video signals. Means are provided for producing a color burst signal on the back porch of the pseudocolor video signal from a monochromatic horizontal sync pulse. Such means includes a color subcarrier oscillator, a pulse generator which stretches the horizontal sync pulse to accommodate the proper period of the subcarrier frequency and slightly delay its occurrence, and a burst gate which produces the burst frequency from the subcarrier and stretched pulses. A pseudochrominance portion of the color video signal is produced by means which phase modulate the color subcarrier with the monochromatic video signal to produce a pseudohue signal and mix this hue signal with the video information portion of the monochromatic signal. An output mixer is also provided for mixing this pseudochrominance signal with the color burst and the monochromatic video signal to provide the pseudocolor video signal. Upon reception by a color video receiver, the monochromatic picture is reproduced in subjective color, the hues therein varying in accordance with the changes in the gray level of the monochromatic video information.



3,647,943
TRANSDUCER SYSTEM AND METHOD

Daniel J. Marshall, Torrance, Calif., assignor to The Magnavox Company, Torrance, Calif.
Filed June 6, 1969, Ser. No. 831,029
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.4 ST **18 Claims**

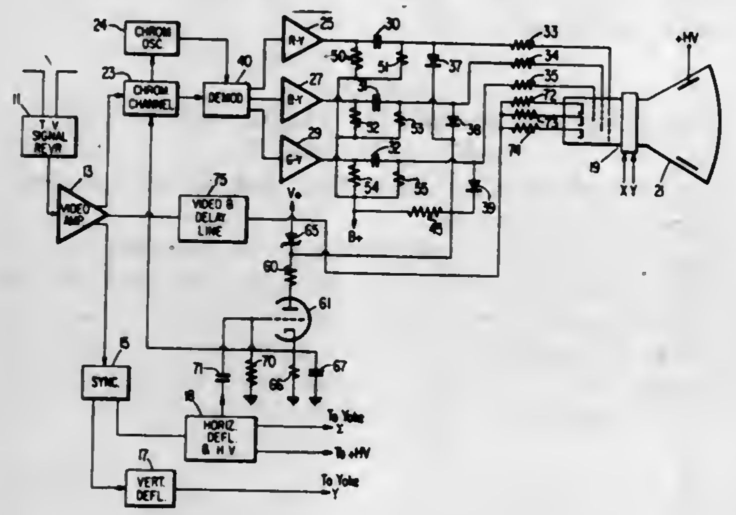


This invention relates to a system for, and method of, reproducing a color image from a composite black-and-white image. The composite black-and-white image is formed either on an exposure or is formed from a live image. In either case, modulations are provided in a first particular line pattern to obtain a representation of a first particular color. Modulations are also provided in a second particular line pattern different from the first particular line pattern to obtain a representation of a second particular color. The third color may be unmodulated. The three colors add optically to form the image luminance.

To reproduce the color image, signals are provided by scanning the composite image. Means are provided for operating upon such signals in accordance with the modulations in the first particular line pattern to produce signals representing the first particular color. Means are also provided for operating upon the signals representing the composite image in accordance with the modulations in the second particular line pattern to produce signals representing the second particular color. The signals representing the first and second particular colors are then used in conjunction with the luminance to reproduce the color image.

3,647,944
KINESCOPE BIAS ARRANGEMENT TO PROVIDE BOTH CONSTANT AMPLITUDE DC RESTORATION PULSES AND ARC DISCHARGE PROTECTION

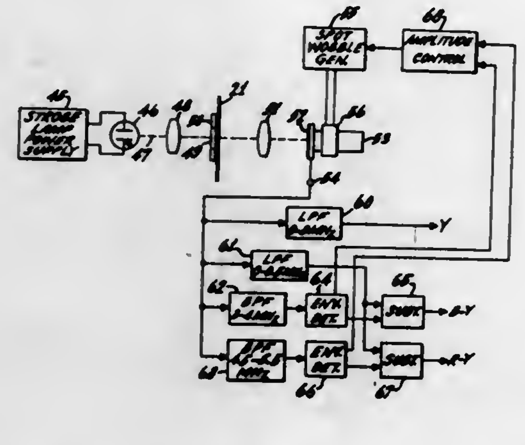
George Edward Anderson, Indianapolis, Ind., assignor to RCA Corporation
Filed Aug. 25, 1969, Ser. No. 852,639
Int. Cl. H04n *5/18*
U.S. Cl. 178—5.4 R **8 Claims**



A pulse applied to DC restoring networks associated with the grid electrodes of a color kinescope for biasing the same is maintained at a relatively constant amplitude. The constant amplitude is provided for by means of a unidirectional current-conducting device coupled to the output electrode of a blanking amplifier, and used to control the pulse amplitude at the output electrode as further applied to the DC restorers. The unidirectional device limits the voltage excursions of the pulse when the device is caused to conduct, due to the bias impressed thereon. The action serves to regulate the bias voltage applied to the kinescope grids via the DC restoring networks independent of amplitude variations in the pulse as applied to the input electrode of the blanking amplifier and amplitude variations due to tolerances and aging of the blanking amplifier associated components.

3,647,945
COLOR ENCODING SYSTEM UTILIZING TWO FILTERS ALTERNATELY FOR MINIMIZING EFFECTS OF IMAGE MISREGISTRATION AND IMAGE PICKUP DEVICE LAG

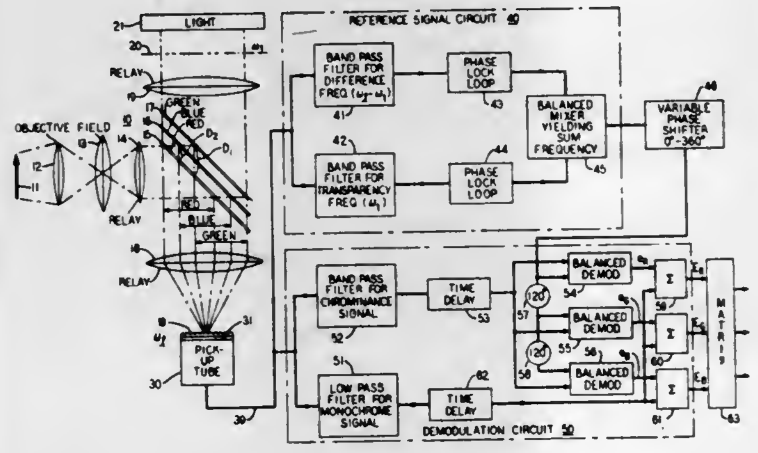
William James Hannan, Pennington, N.J., assignor to RCA Corporation
Filed Sept. 30, 1969, Ser. No. 862,224
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.4 ST **10 Claims**



Apparatus is provided for enabling color images to be recorded on black and white motion picture film and subsequently displayed in full color on a television monitor. Different color-encoding filters yielding the same frequency color carrier waves having different phase relationships are moved into the optical path on alternate frames for producing color representative signals, which, when averaged over several horizontal scanning lines, reduce the undesirable effects of vidicon lag and frame-to-frame misregistration.

3,647,946
SINGLE-TUBE COLOR TV CAMERA USING 120° PHASE SEPARATION

Louis H. Enloe, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 10, 1969, Ser. No. 883,899
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.4 ST **3 Claims**

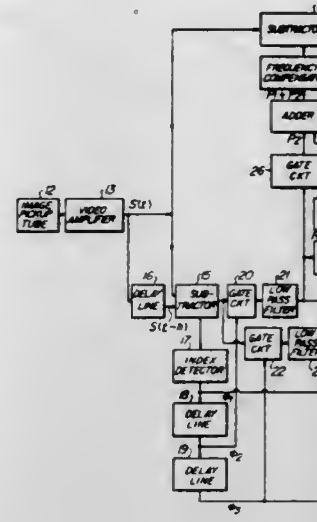

LIGHT
REFERENCE SIGNAL CIRCUIT 40
RELAY
OBJECTIVE FIELD
GREEN
BLUE
RED
PICK-UP TUBE
BAND PASS FILTER FOR DIFFERENCE FREQ.
BAND PASS FILTER FOR TRANSPARENCY FREQ.
PHASE LOCK LOOP
BALANCED MIXER YIELDING SUM FREQUENCY
VARIABLE PHASE SHIFTER 0°-360°
BAND PASS FILTER FOR CHROMINANCE SIGNAL
LOW PASS FILTER FOR MONOCHROME SIGNAL
TIME DELAY
BALANCED DEMOD
MATRIX
DEMODULATION CIRCUIT 50
21
30
61
63

An optical system spatially modulates three individual primary-color images onto a common spatial carrier frequency with 120° phase separation. Electron beam scanning of a single tube converts the spatially modulated image to an electrical output signal composed of an average value and a chrominance signal consisting of three modulated waves at a single electrical color carrier frequency separated in phase by 120°. Since the scan velocity varies, the frequency of the electrical color carrier is modulated by the velocity. A signal having the same modulation is used as a reference for phase demodulation of the chrominance signal to produce three individual components. The average value of the output signal, which represents the monochrome, is combined with each of the individual components to form three independent signals, each representative of one of the primary images. The phase demodulation technique requires substantially lower spatial resolution than time sequential or frequency separation schemes, and the specific 120° spatial phase separation of the image components insures against hue shift due to variations in the tube's aperture response.

3,647,947
CHROMINANCE SIGNAL GENERATOR HAVING A PATTERNED FILTER

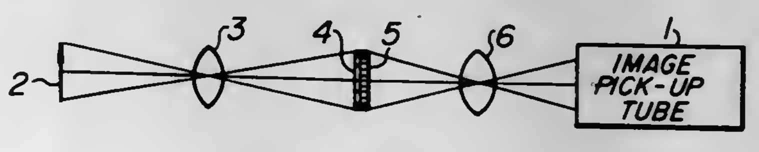
Yoshizumi Eto, Hachioji, and Masao Hibi, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 3, 1970, Ser. No. 25,315
Claims priority, application Japan, Apr. 11, 1969, 44/27655; 44/27656
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.4 ST **11 Claims**

A chrominance signal generator used for a color television system, color facsimile system or the like, said signal generator including a striped or latticed special color filter placed in front of an image pickup tube to generate a composite chrominance signal and a signal processing system for separating three component primary color signals from the said composite signal, the said signal processing system being designed on the basis of the hypothesis of the close correlation between consecutive horizontal scanning lines of an image.



3,647,948
CHROMINANCE SIGNAL GENERATOR HAVING STRIPED FILTER

Yoshizumi Eto, Hachioji, and Masao Hibi, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 2, 1970, Ser. No. 25,207
Claims priority, application Japan, Apr. 4, 1969, 44/25544; 44/25545
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.4 ST **13 Claims**



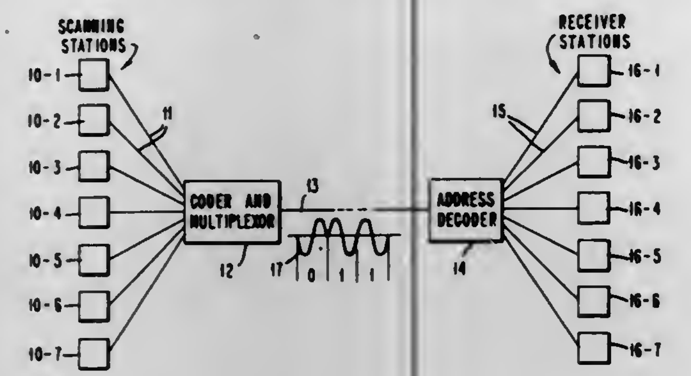
A chrominance signal generator comprising two striped filter elements for generating three primary color signals, red and blue signals of which have different frequency, delay circuit means for delaying a part of the composite electric signal derived from said filter elements for one horizontal scanning period, signal processing circuit means including an adder and a subtractor for processing the output signal of said delay circuit and said composite electric signal to obtain the three primary color signals, utilizing the vertical correlation of an image.

3,647,949
VIDEO MULTIPLEXING SYSTEM

Felix H. Closs, Adliswill, Zurich; Dieter Seitzer, Gattikon, Zurich, and Peter Stucki, Adliswil, Zurich. all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 23, 1969, Ser. No. 835,437
Claims priority, application Switzerland, July 12, 1968, 10498/68
Int. Cl. H04n 7/*68*
U.S. Cl. 178—5.6 **17 Claims**

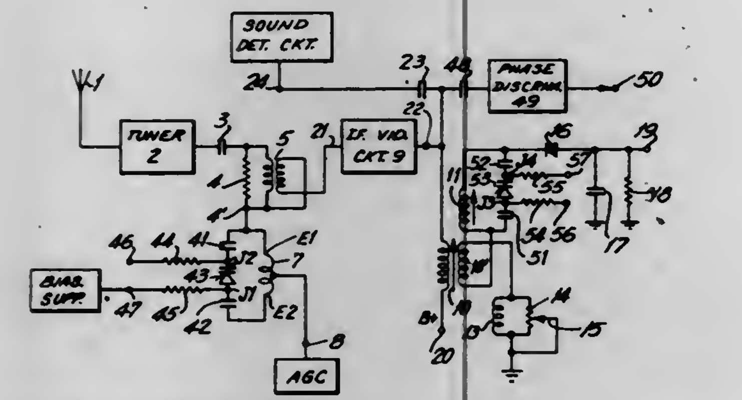
A system is provided for the simultaneous transmission of pictures between a plurality of scanning stations and a plurality of corresponding receiver stations. The pictures to be transmitted comprise two levels of brightness such as, for example, a document having black print on a white background. Each of the scanning stations scans, in a pseudorandom fashion, its respective picture to provide an output signal indicative of the information on one of the levels of brightness, as for example, the black print information on the document. This information output signal is then multiplexed.

A coder and multiplexer upon receiving an information signal, during a given time interval, from one of the scanning stations generate an address signal corresponding to the address of the station providing the information signal whereupon the address signal is transmitted to a decoder at the receiving end for decoding and providing an information signal to the appropriate receiver. When the coder and multiplexer simultaneously receive information signals from two scanning stations within a given time interval a priority control circuit selects one of the signals.



3,647,950
VARIABLE TRAP DEVICE FOR TELEVISION RECEIVERS AND THE LIKE

Sadayoshi Yoshikawa, Osaka, Japan, assignor to New Nippon Electric Co., Ltd., Osaka, Japan
Filed Feb. 27, 1969, Ser. No. 802,804
Claims priority, application Japan, June 26, 1968, 43/43857
Int. Cl. H04n *5/44*
U.S. Cl. 178—5.8 A **7 Claims**

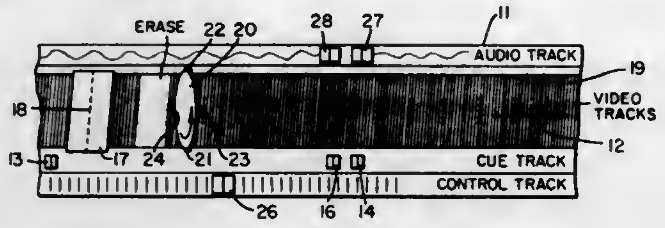


An intermediate-frequency video amplifier circuit in which trap circuits are provided to attenuate sound components in intermediate-frequency video signals. Frequency variations in the intermediate-frequency video signals are detected and converted into control signals which control the tuning of the trap circuits which are thereby adjusted to attenuate the sound components despite variations in the frequency thereof.

3,647,951
EDIT CONTROL CIRCUIT FOR VIDEO TAPE RECORD SYSTEM

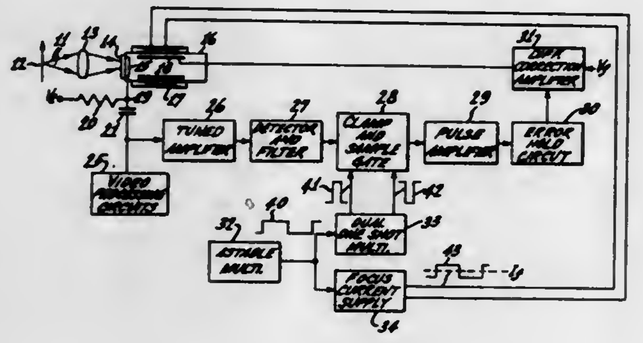
Marshall G. Rose, Jr., Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Nov. 9, 1970, Ser. No. 87,905
Int. Cl. G11b *5/02, 27/08;* **H04n** *5/78*
U.S. Cl. 178—6.6 A **4 Claims**

In order to allow for an unlimited number of short duration edits on a video tape recorder of the type having physically separated video record/reproduce and erase heads, a multistage electronic shift register clocked at the video signal frame rate is employed to develop the necessary timing signals for operating the various head assemblies at the proper times in response to a common edit command signal. The input to the shift register receives an edit pulse signal of desired duration and in response thereto develops at its various output stages a number of corresponding timing signals each having a precisely phased delay corresponding to a multiple number of video frame periods with each such signal being connected to control operation of one or more of the transducing heads.



3,647,952
AUTOMATIC BEAM-FOCUSING SYSTEM

Henry Ball, Princeton, N.J., and Harold LeRoy Peterson, Los Angeles, Calif., assignors to RCA Corporation
Filed Apr. 15, 1970, Ser. No. 28,647
Int. Cl. H04n *5/34*
U.S. Cl. 178—7.2 **7 Claims**



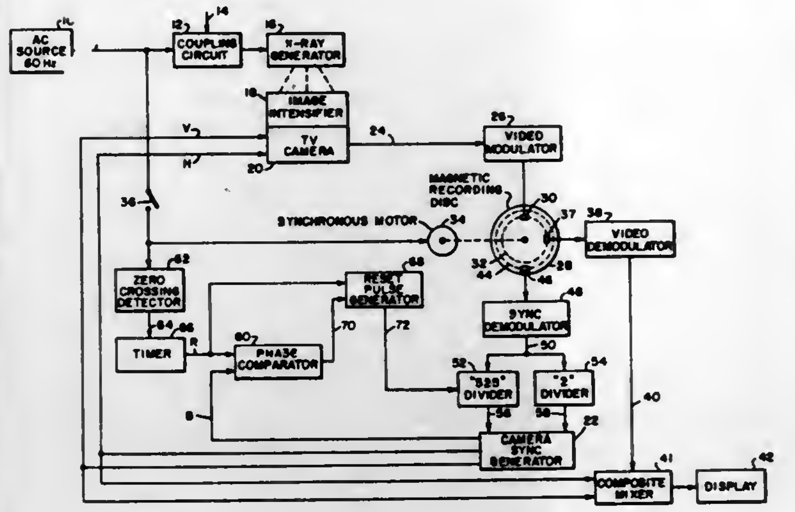
A modulating component is added to a beam-focusing parameter such as a focusing electrode potential or a focusing parameter such as a focusing electrode potential or a focusing coil current utilized in conjunction with an image pickup device. A modulation component derived from a video output terminal of the image pickup device is detected and utilized for providing a beam-focusing error correction signal which controls the beam-focusing parameter.

3,647,953
SYSTEM FOR PHASING RECORDED INFORMATION WITH INPUT SIGNALS

Clyde A. Booker, Jr., Pittsburgh, and Francis T. Thompson, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 6, 1969, Ser. No. 863,830
Int. Cl. H04n *5/04, 5/32, 5/78*
U.S. Cl. 178—6.6 A **5 Claims**

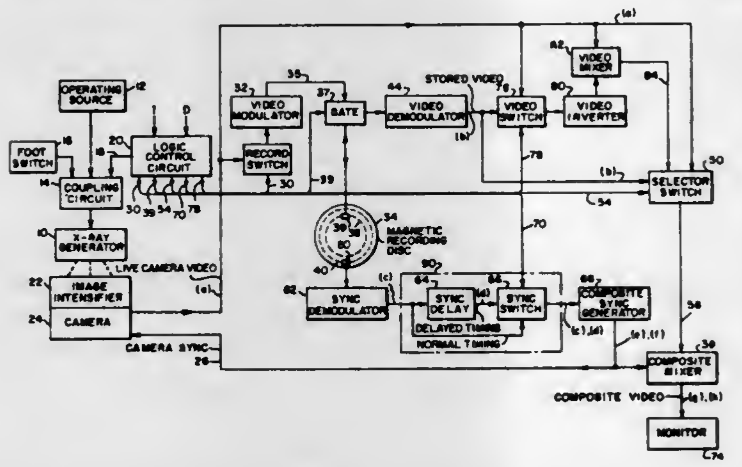
A system for correlating recorded synchronizing signals, recorded on a magnetic recording disc, for example, with alternating input signals, utilized for driving the disc for example, wherein timing signals, such as vertical blanking signals provided in response to the recorded synchronizing information, are compared with reference signals, generated, for example, in response to a predetermined characteristic of the

input signals, to provide an output when an undesired relationship exists therebetween which is utilized to establish a desired relationship between the recorded synchronizing information and the input signals.



3,647,954
CONTINUOUS DISPLAY ON INTERMITTENT VIDEO SIGNALS

Clyde A. Booker, Jr., Pittsburgh, and Francis T. Thompson, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 6, 1969, Ser. No. 863,974
Int. Cl. H04n *5/78*
U.S. Cl. 178—6.6 A **6 Claims**

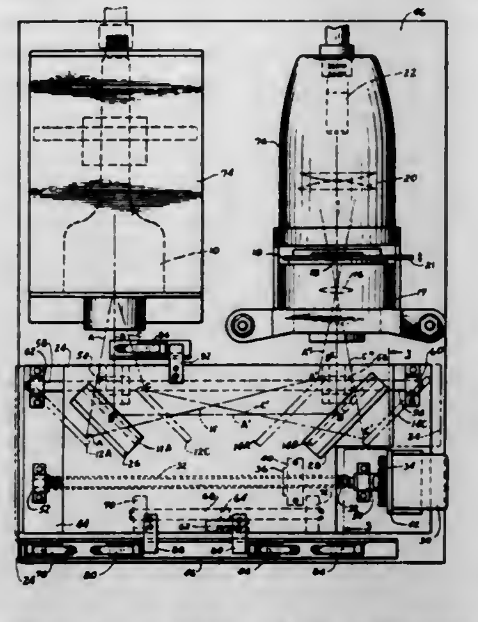


A system for the continuous display of live video information, for example, from a television camera scanning an X-ray image, and stored video information, which may comprise selected of the live video signals which are recorded in a recording media, wherein the synchronizing signals utilized for controlling the generation of the live video information and recording the stored information is controlled in time so as to correlate properly the live and stored video information to permit the comparison and continuous display thereof.

3,647,955
IMAGE TRANSMITTER USING MICROFILM POSITIVES OR NEGATIVES AS SOURCE

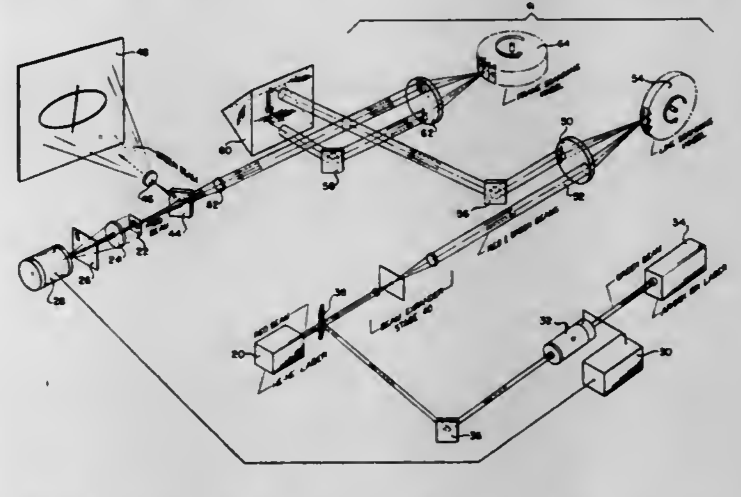
Malcolm Reader, New Hyde Park, L. I., N.Y.; John L. Tregay, Weston, Conn., and Charles Stern, Brooklyn, N.Y., assignors to Comfax Communications Industries, Inc., New York, N.Y.
Filed May 4, 1970, Ser. No. 34,334
Int. Cl. H04n *3/08*
U.S. Cl. 178—7.6 **7 Claims**

An image transmission system is disclosed in which the image is obtained from a reduced size medium such as microfilm. A scanning beam is incident upon a first reflector which causes the beam to be redirected onto a second reflector fixedly spaced therefrom. The second reflector in turn redirects the scanning beam onto the film. By moving the two reflectors with respect to the source of the scanning beam by a relatively large distance, the scanning beam is moved by a much smaller distance over the plane of the film, to permit scanning over a new line on the film.



3,647,956
LASER BEAM FLYING SPOT SCANNER

Willard E. Buck, Lake Havasu City, Ariz., and Thomas E. Holland, Sunnyvale, Calif., assignors to Technical Operations, Incorporated, Burlington, Mass.
Filed Mar. 10, 1969, Ser. No. 805,754
Int. Cl. H04n *1/04, 3/08*
U.S. Cl. 178—7.6 **11 Claims**

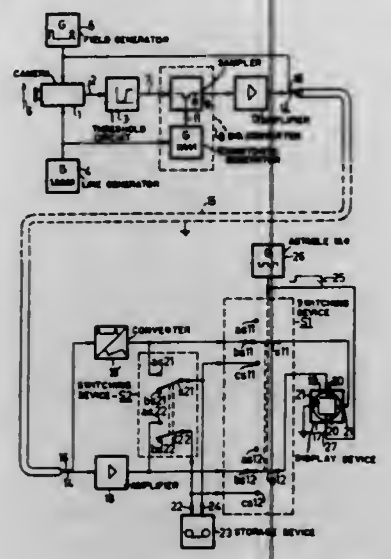


This disclosure depicts laser beam flying spot flat field raster scanning systems employing orthogonally moved corner mirror trains to produce two dimensional spot motion. Imaging and relaying systems for use with such corner mirror trains are stressed.

3,647,957
TRANSMISSION SYSTEM FOR THE TRANSMISSION OF CHARACTERS

Adrianus Johannes Wilhelmus Marie Van Overbeek, and Leendert Gerardus Kral, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 15, 1969, Ser. No. 885,114
Claims priority, application Netherlands, Dec. 24, 1968, 6818585
Int. Cl. H04n *7/12*
U.S. Cl. 178—6.8 **10 Claims**

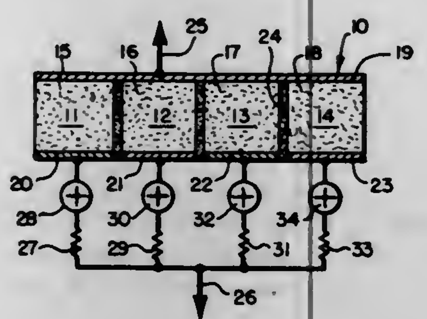
A transmission system for transmitting characters which are picked up by a television camera. The video signal produced is converted into a pulsatory signal each pulse of which determines a black-to-white transition which signal is subsequently applied to a digital-to-analog converter which provides a signal varying in amplitude and comprising several samples which signal is transmitted together with field synchronizing signals through a transmission path to the receiver circuit. In the receiver circuit the signal varying in amplitude, together with the field synchronizing signals is applied directly or through a memory to a display device including a cathode-ray tube having two pairs of deflection means for deflecting an electron beam generated in the tube into two directions which are transverse to each other, a sawtooth signal of field frequency generated under the control of said field signals being applied as a time base to a first pair of deflection means and the signal varying in amplitude being applied to the second pair of deflection means.



3,647,958
FLAT-PANEL IMAGE DISPLAY WITH PLURAL DISPLAY DEVICES AT EACH IMAGE POINT

Alan Sobel, Evanston, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 31, 1970, Ser. No. 68,086
Int. Cl. H04n *5/70*
U.S. Cl. 178—7.3 D **11 Claims**



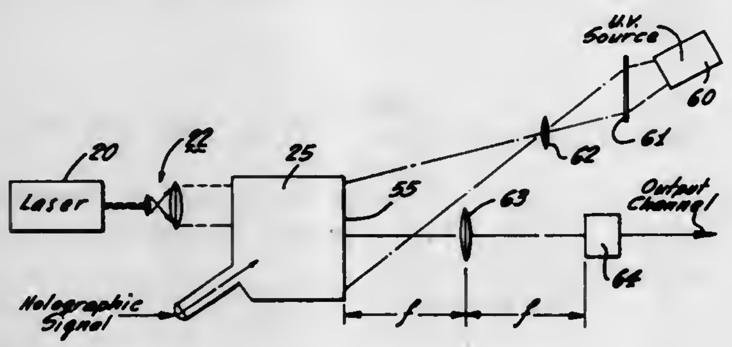
An image-display panel is formed to present picture elements distributed over the panel in a matrix of rows and columns. At the position of each picture element is a light-display device capable of displaying light in an amount proportional to its level of energization. Associated with each device are a plurality of energizing systems each of which is responsive to a different input signal amplitude. Each system energizes its associated light-display device at a particular level. By varying the input signal amplitude, different numbers of the energizing systems are activated and the level of energization of the light-display device, and hence its output, is varied. The light-display devices are either light producers such as electroluminescent cells or light modulators such as liquid crystals.

Enabling signals are selectively addressed to different rows of the energizing systems in response to row-selection signals. At the time that one row is selected, each column of the energizing system is selectively addressed with an individual input signal pulse that is proportional in amplitude to the picture information level of that element of the picture which is to appear at the intersection of the selected row and column. The addressing of any one of the rows simultaneously with a column effects selection of the picture element at the intersection of that row and column, and the amplitude of the voltage above a basic selection level determines the level of energization of the corresponding light-display element.

3,647,959
SYSTEM FOR GENERATING A HOLOGRAM

Robert J. Schlesinger, 5108 Melvin Avenue, Tarzana, Calif., and George A. Raabe, Santa Barbara, Calif., assignors to Robert J. Schlesinger, Tarzana, Calif.

Filed June 24, 1968, Ser. No. 739,424
Int. Cl. H04n *5/74;* **H01j** *29/14*
U.S. Cl. 178—7.87 **1 Claim**

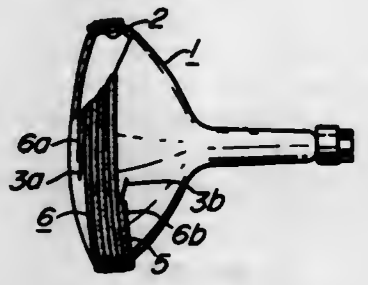


A hologram is generated by first providing a holographic signal representing scanning of a standing wave interference pattern. The signal controls generation of local perturbations in a target usable as modifier for monochromatic coherent radiation to cause reconstruction of an image.

3,647,960
IMPLOSION-PROOF CATHODE-RAY TUBE AND METHOD OF MAKING SAME

Takeo Takemoto; Yoshihiko Miyata, and Takao Kawamura, all of Mobara-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 2, 1970, Ser. No. 363
Claims priority, application Japan, Jan. 6, 1969, 44/48
Int. Cl. H04n *5/64*
U.S. Cl. 178—7.82 **5 Claims**

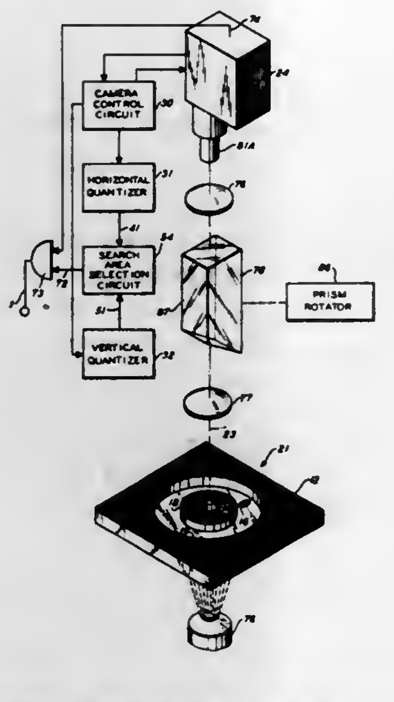


An implosion proofing means including a conductor in the form of a metal wire or strip and a binder covering the conductor is disposed on a suitable portion of the outer peripheral face of the sidewall or the peripheral edge of the faceplate of the bulb of a cathode-ray tube and then current is supplied to the conductor to fuse the binder so that the implosion proofing means including the conductor core can be securely fixed to that portion of the bulb to provide an implosion-proof cathode-ray tube.

3,647,961
T.V. -AIDED FLAW DETECTION USING ROTATING IMAGE TECHNIQUES

Frank H. Blitchington, Jr., Greensboro, and Richard A. Harris, High Point, both of N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Apr. 9, 1970, Ser. No. 27,074
Int. Cl. H01j *29/89*
U.S. Cl. 178—7.85 **8 Claims**

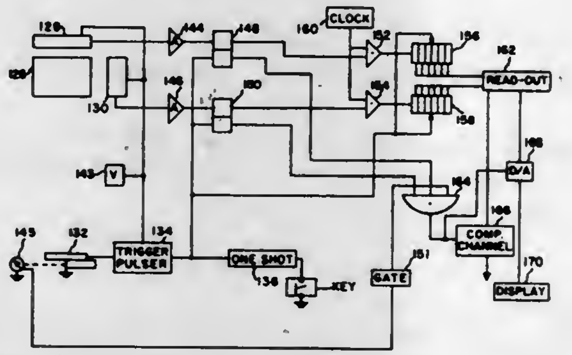


Rapid and automatic inspection of a light transparent, circumferentially bounded region of a workpiece to detect opaque flaws located in the region is accomplished by aligning the center of curvature of the region with the center of the field of view of a video camera and rotating the image of the region in the field of view by means of a dove prism or the like. Circuitry synchronized with the horizontal sweep and vertical scan of the camera establishes a reference pulse when a predetermined search area of the field of view located in the path of rotation of the annular region image is scanned by the camera. Upon rotation of the image of an opaque flaw in the region through the predetermined search area, the video pulse output of the camera coincidence gate generates an output indication representative of the presence of the flaw.

3,647,962
KEYBOARD ENCODING

Albert L. Whetstone, Southport, Conn., assignor to Science Accessories Corporation, Southport, Conn.

Filed July 30, 1970, Ser. No. 59,449
Int. Cl. H04l *17/12*
U.S. Cl. 178—17 C **8 Claims**

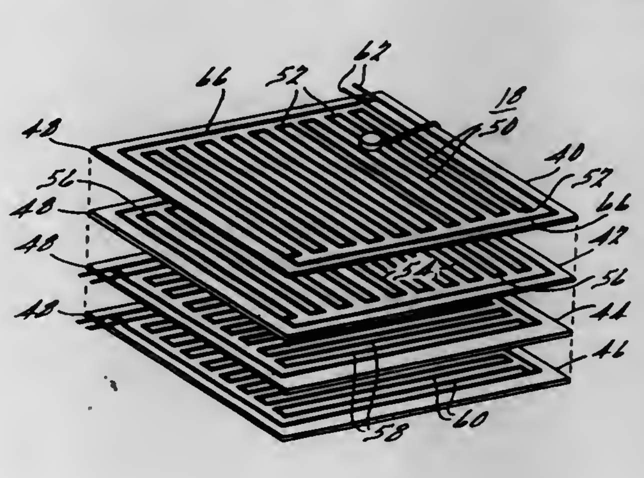


This invention relates to a keyboard encoding device for converting the data represented by a key in a keyboard to a digital representation. The device employs a plurality of keys each individually operable to provide an acoustic shock wave in the form of a spark. Receptors arranged about the perimeter of the keyboard respond to the leading edge of the shock wave. The time period between generation of the spark and reception thereof by the shock wave receptor is digitized by means of a counting device responsive to the initiation of the spark and to the receipt of the shock wave by the receptor. Since each key is uniquely locatable with respect to the receptor, each key will produce a spark at a location which will take differing amounts of time to reach their receptor. The various digitization of these times are indicative or representative of the information attributed to each key respectively.

3,647,963
AUTOMATIC COORDINATE DETERMINING DEVICE

Knight V. Bailey, Ferndale, Mich., assignor to The Bendix Corporation

Filed Mar. 10, 1969, Ser. No. 805,559
Int. Cl. G08c *21/00*
U.S. Cl. 178—19 **36 Claims**



A device for determining position coordinates of points on a surface which includes a conducting grid structure having at least two grid elements to be placed over or under a surface and a cursor structure having a circular conducting loop element to be moved across the surface of the grid structure. An alternating electric signal is supplied to either the cursor conducting loop or to each of the conducting grid elements. This signal induces a signal in each element of the unexcited conducting structure. Position coordinates are determined by apparatus which measures the induced signal or signals and records the signal change produced when the cursor is moved across the grid surface. Several embodiments of measuring devices which determine the distance between arbitrary points on a surface such as a map, graph or photograph are illustrated. Automatic plotting embodiments are also shown and described in which the plotting motion is determined by comparing signals representing the measured loop position on the grid with a preselected set of command signals.

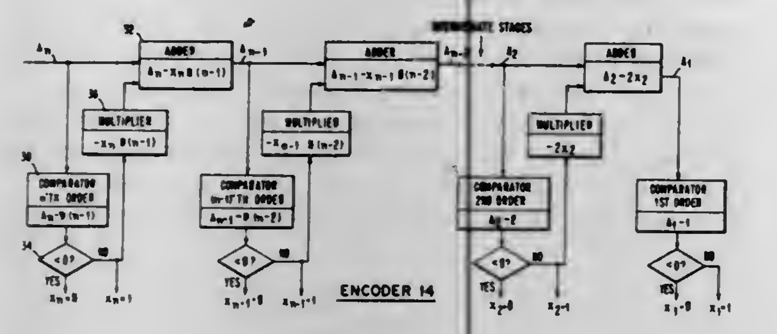
3,647,964
RUN-LENGTH-LIMITED CODING FOR MODIFIED RAISED-COSINE EQUALIZATION CHANNEL

Donald T. Tang, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,418
Int. Cl. H04l *25/08*
U.S. Cl. 178—68 **5 Claims**

To increase the rate at which data can be passed without intersymbol interference through an equalized low-pass channel of the raised-cosine-type each input digit sequence undergoes a preliminary encoding process that converts it into a corresponding run-length-limited sequence in which every

"1" digit is separated from every other "1" digit in the sequence by at least one intervening "0" digit. The digits of such a run-length-limited sequence can pass through a

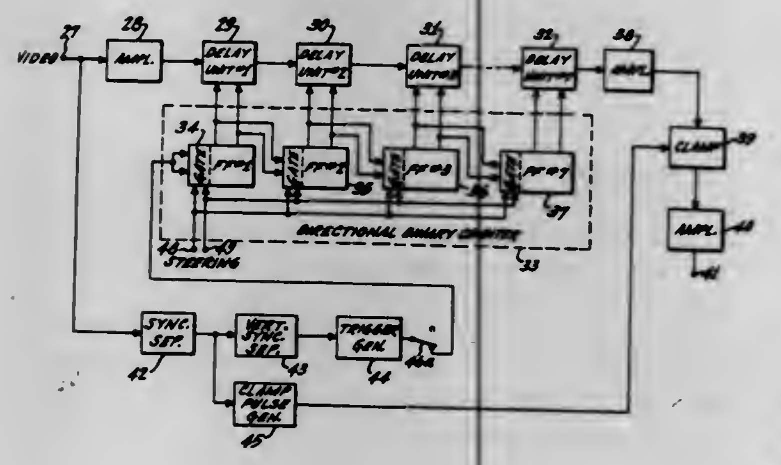


modified raised-cosine channel without intersymbol interference at a rate that is twice the maximum rate at which this channel can reliably pass the digits of sequences containing 1's in immediately adjacent positions.

3,647,965
COLOR PHASER FOR TELEVISION VIDEO SIGNALS

Robert John Butler, Syosset, N.Y., assignor to RCA Corporation

Filed Apr. 1, 1969, Ser. No. 811,921
Int. Cl. H04n *9/46*
U.S. Cl. 178—69.5 CB **10 Claims**



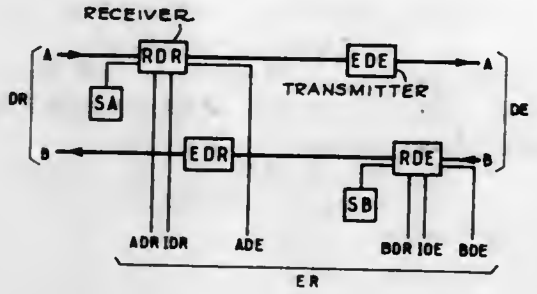
Color video signals are applied to a delaying channel, the output of which is maintained in phase with a reference color signal by means which compares the phase of the color burst of the delayed signal with the phase of the color burst of the reference signal and changes the amount of delay of the delaying channel until there is substantially no color phase error between the compared signals.

3,647,966
APPARATUS FOR CONNECTING TRANSMISSION CHANNELS

Roger Teurnier, Rueil-Malmaison, France, assignor to C.I.T.-Compagnie Industrielle Des Telecommunication, Paris, France

Filed Jan. 19, 1970, Ser. No. 3,823
Claims priority, application France, Jan. 17, 1969, 6900829
Int. Cl. H04l *25/52*
U.S. Cl. 178—70 R **7 Claims**

Apparatus for connecting telegraph channels by control from a central control member having access to respective sections to be connected, including a transmitter and a receiver connected in series between the two sections of the

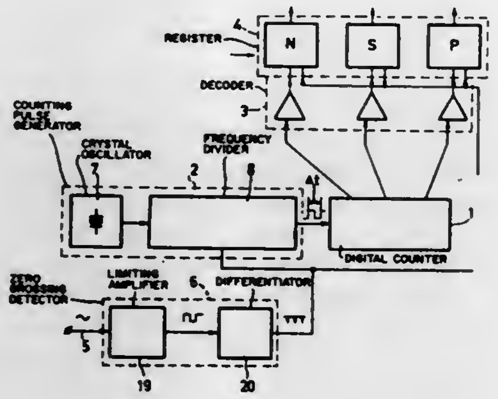


channel and the central control member being connected to the receiver to selectively inhibit the output thereof.

3,647,967
TELEGRAPHY RECEIVER FOR HARMONIC TELEGRAPHY

Michel Guy Pierre Stein, Bazoches sur Guyonne, France, assignor to Societe Anonyme Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Feb. 25, 1970, Ser. No. 14,042
Claims priority, application France, Feb. 26, 1969, 6923464
Int. Cl. H04b *1/16;* **H03k** *9/06*
U.S. Cl. 178—88 **4 Claims**



A multichannel telegraphy receiver for harmonic telegraphy where for each channel different levels of an input signal are characterized by different frequencies of the carrier. The receiver comprises for each receiver channel a discriminator including a digital counter, a continuously active counting pulse generator coupled to the input of the counter and a decoder connected to the counter and having an output circuit formed by a register. The register has a separate output for each of the different levels of the input signal. A zero-crossing detector in the input circuit of the receiver channel provides reset pulses to the counter and input pulses for the register.

3,647,968
AUDIOMETER EMPLOYING NARROW-BAND NOISE MASKING

Lawrence B. Arguimbau, Lancaster, and Rufus L. Grason, Lincoln, both of Mass., assignors to Grason-Stadler Company, Inc., West Concord, Mass.

Filed Mar. 24, 1970, Ser. No. 22,356
Int. Cl. A61b *5/12*
U.S. Cl. 179—1 N **13 Claims**

In the audiometer disclosed herein, a noise signal is employed for masking or preventing reception of a test tone in the ear opposite that which is being tested. The masking noise signal comprises a pair of noise sidebands centered on the test tone frequency with the test tone frequency itself being substantially suppressed. Further, the bandwidth of the noise signal is controlled as a function of the frequency of the

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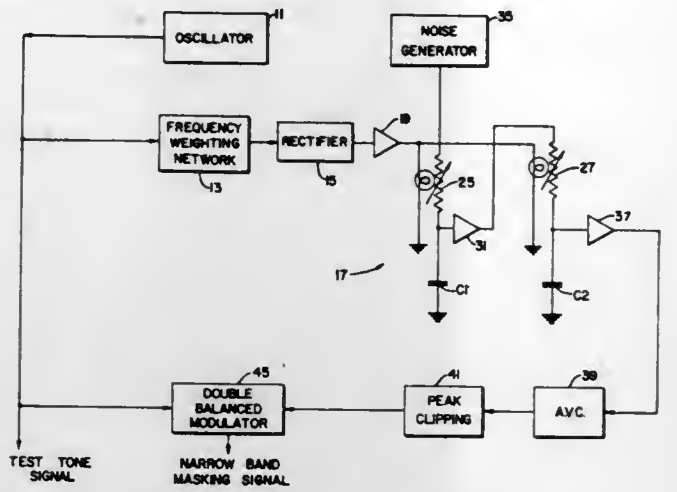
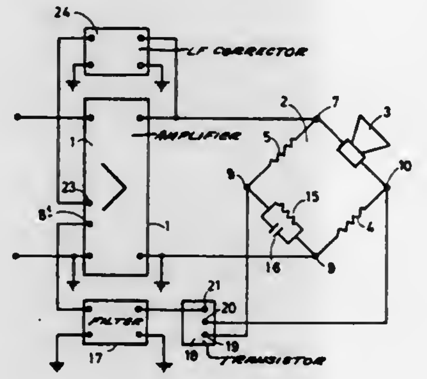

OSCILLATOR
NOISE GENERATOR
FREQUENCY WEIGHTING NETWORK
RECTIFIER
DOUBLE BALANCED MODULATOR
PEAK CLIPPING
A.V.C.
TEST TONE SIGNAL
NARROW BAND MASKING SIGNAL
C1
C2

test tone so as to substantially correspond with the critical range of masking frequencies.

3,647,969
MOTIONAL FEEDBACK AMPLIFIER

Tadeusz Korn, 58 rue Mercelis, Brussels, Belgium

Filed Aug. 28, 1969, Ser. No. 853,665
Claims priority, application Belgium, Aug. 29, 1968, 720-115
Int. Cl. H04r *3/00*
U.S. Cl. 179—1 F **2 Claims**



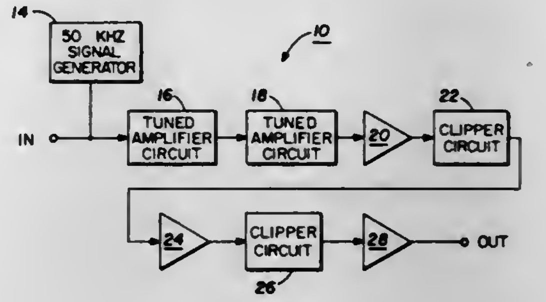
A motional feedback amplifier, having an impedance bridge, one arm of which comprises a loudspeaker and which is balanced at the frequency of the loudspeaker with the diaphragm blocked, comprising a low-pass filter in the feedback loop between the reading terminals of the bridge and the input terminal for the feedback voltage to the amplifier and the characteristic of which is adjusted so as substantially to suppress the feedback voltage in the frequency zone in which the false readings appear and above that zone, a low-frequency corrector in the conventional negative feedback loop, the said filter being preceded by a transistor, two control electrodes of which, are fed with a signal from the reading terminals of the bridge and the output electrode of which delivers the motional feedback signal to the amplifier.

3,647,970
METHOD AND SYSTEM FOR SIMPLIFYING SPEECH WAVEFORMS

Gillis P. Flanagan, 5207 Mimosa, Bellaire, Tex.

Filed Aug. 29, 1968, Ser. No. 756,124
Int. Cl. H04k *1/00*
U.S. Cl. 179—1.5 **19 Claims**

A speech waveform is converted to a constant amplitude square wave in which the transitions between the amplitude extremes are spaced so as to carry the speech information. The system includes a pair of tuned amplifier circuits which act as high-pass filters having a 6 decibel per octave slope from 0 to 15,000 cycles followed by two stages, each comprised of an amplifier and clipper circuit, for converting the filtered waveform to a square wave. A radio transmitter and

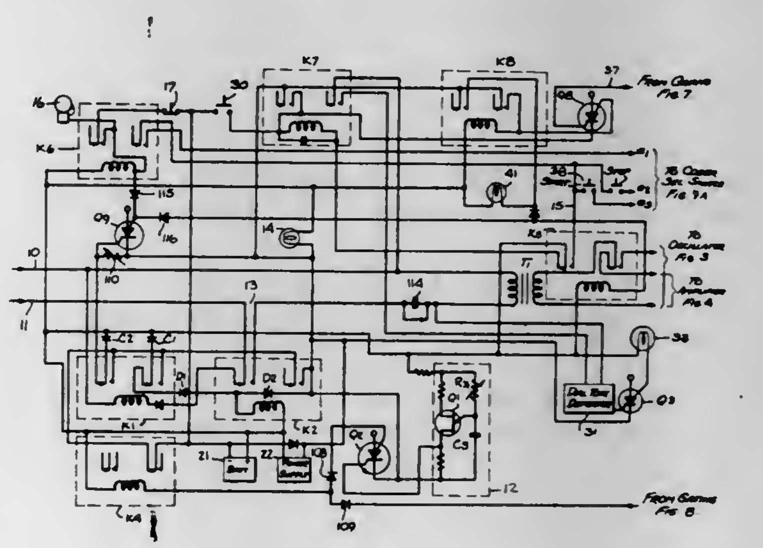


receiver having a plurality of separate channels within a conventional single side band transmitter bandwidth and a system for transmitting secure speech information are also disclosed.

3,647,971
AUTOMATIC REPORTING MONITORING AND CONTROL SYSTEM

Edward J. Cushman, Irvington, N.Y., and Jasper Clark, East Lynn, W. Va., assignors to Watch-Tel 24, Inc., Flushing, N.Y.

Filed Mar. 20, 1970, Ser. No. 21,335
Int. Cl. H04m *11/00*
U.S. Cl. 179—2 A **14 Claims**

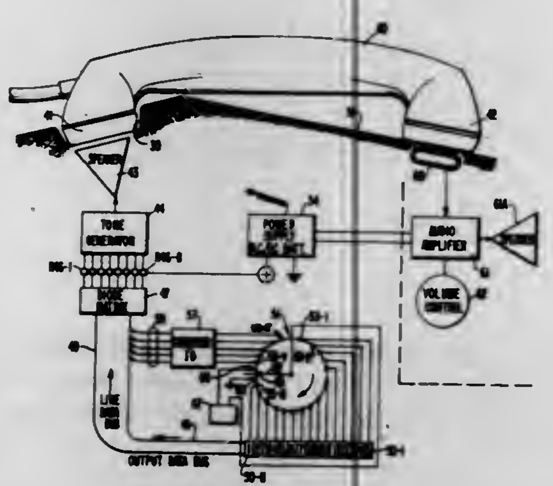


Machinery or other apparatus at a remote location is monitored and/or controlled by means of coded tone signals in the audio range transmitted between a master control station and one or more remote stations through the medium of conventional telephone lines. Both the master and the remote stations have transmitting equipment including an encoder and receiving equipment including a decoder which are operated in a sequence depending upon whether a control, monitoring or automatic reporting operation is taking place. The code employed is a four out of 16 tone system which gives 256 possible tone combinations and hence, 256 discrete pieces of information which can be conveyed between the master and control stations. For example, one such tone combination might be used to identify the remote station, while other tone combinations could be used to convey control commands from the master to a remote station and to report on the conditions of the monitored apparatus at the remote station to the master station.

3,647,972
LOW-COST PORTABLE TERMINAL DEVICE FOR ELECTRONIC DATA PROCESSING

William T. Glover, and Eugene W. Kelly, both of Atlanta, Ga., assignors to Squaires-Sanders, Inc.

Filed Aug. 16, 1968, Ser. No. 753,130
Int. Cl. H04m *11/06*
U.S. Cl. 179—2 DP **16 Claims**

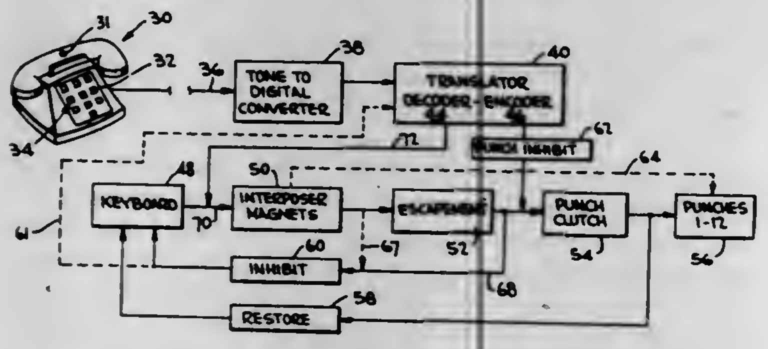


Low-cost portable terminal equipment for electronic data processing incorporating an array of manually positionable switches as a data selection and storage mechanism controlling a tone generator by way of a manually initiated scanner. Once it is manually initiated the scanner automatically interrogates the manually positioned data mechanism to control the emission of selected tones constituting code data via a transmitting audio couple over common carrier or private communication circuits to a utilization device such as a conventional computer facility, data recorder (card punch either local or remote, etc.). The terminal is particularly well adapted for use with a computer equipped with an audio response facility and for this purpose, an induction coupling permits reproduction of the computer response. The device is portable and may be used to communicate with a computer, data recorder, etc., from a pay telephone, for example. Consult the specification for other features and details.

3,647,973
COMPUTER SYSTEM UTILIZING A TELEPHONE AS AN INPUT DEVICE

Peter James; Martin J. Brennan, both of Washington, D.C., and Ben E. Kappes, Lanham, Md., assignors to said James, by said Brennan and Kappes

Filed Dec. 4, 1967, Ser. No. 687,802
Int. Cl. H04m *41/06*
U.S. Cl. 179—2 DP **34 Claims**

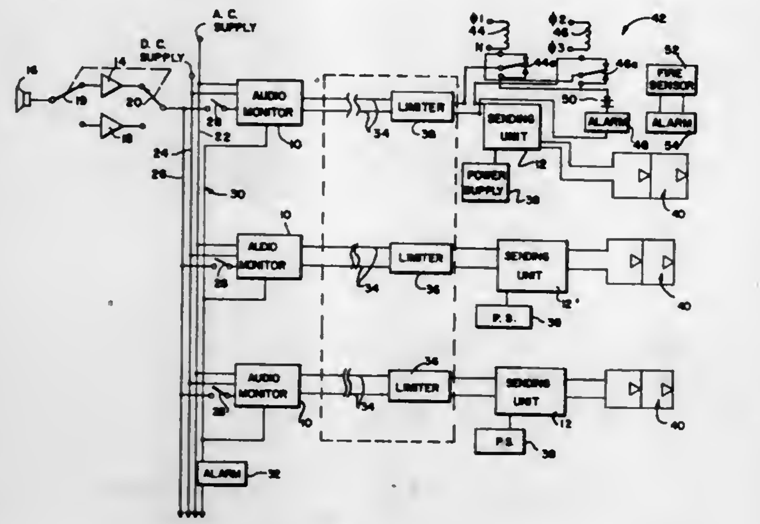


A system effecting automatic remote control of a computer or computer device through existing telephones. A telephone technique is disclosed providing a selective generation of a plurality of output signals. These output signals are decoded and then encoded by a programmed translator device in a manner so as to effect operation of any desired computer mechanism.

3,647,974
SOUND-TYPE DETECTION SYSTEM

Raymond E. Geisler, RFD 02 Araby Road, Frederick, Md.; Leroy E. Hull, 2701 Weissman Road, Silver Spring, Md., and Michael E. Kirschbaum, 4419 Brookfield Drive, Kensington, Md.

Filed Oct. 21, 1969, Ser. No. 868,086
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 R **4 Claims**

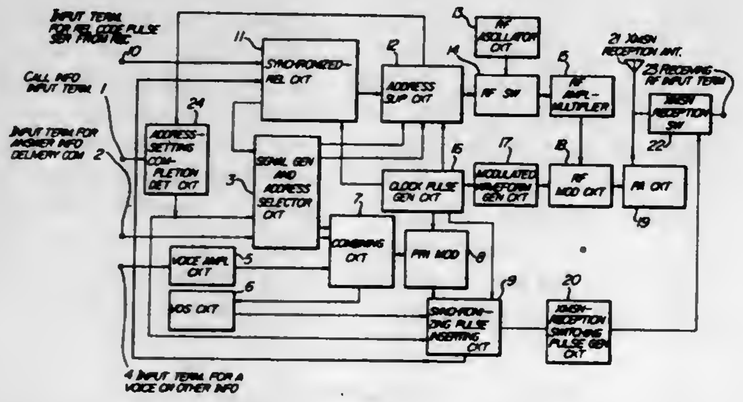


A sound-type intrusion and mechanical disturbance detection system includes a plurality of monitors located at a control station and individually connected detector-transducer units located in the various areas to be protected. A common AC and DC supply is used for the monitors as well as a common speaker and amplifier. Multiple mechanical disturbance detectors may be used, each producing a characteristic output sound so as that the attendant may determine the appropriate action to be taken.

3,647,975
RANDOM ACCESS DISCRETE ADDRESS SYSTEM

Kimio Goto, Fujisawa, and Hiroyasu Nakamura, Yokohama, both of Japan, assignors to Hitachi, Ltd., Chiyoda-ku, Tokyo, Japan

Filed Aug. 31, 1970, Ser. No. 68,105
Claims priority, application Japan, Feb. 27, 1970, 45/16205
Int. Cl. H04j *3/04*
U.S. Cl. 179—15 BA **6 Claims**

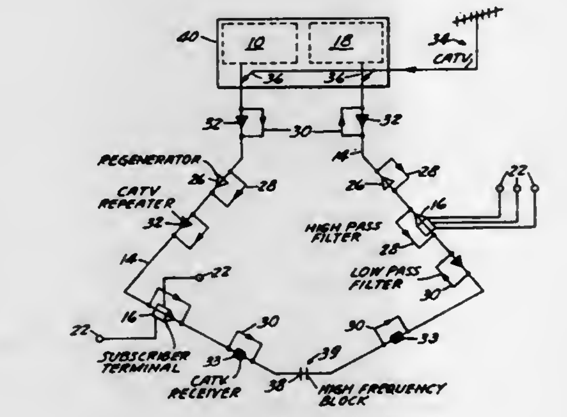

INPUT TERM. FOR RE. CODE PULSE SEN. FROM REC.
CALL INFO INPUT TERM.
INPUT TERM FOR ANSWER INFO DELIVERY COM.
SYNCHRONIZED-REL CKT
ADDRESS SUP CKT
RF OSCILLATOR CKT
21 XMSN RECEPTION ANT.
23 RECEIVING RF INPUT TERM
ADDRESS-SETTING COMPLETION DET CKT
SIGNAL GEN AND ADDRESS SELECTOR CKT
CLOCK PULSE GEN CKT
MODULATED GEN CKT
RF MOD CKT
RF AMPL MULTIPLIER
AM CKT
VOICE AMPL CKT
IOS CKT
COMBINING CKT
PM MOD
SYNCHRONIZING PULSE INSERTING CKT
SWITCHING PULSE GEN CKT
4 INPUT TERM. FOR A VOICE OR OTHER INFO

A random access discrete address system comprising all or a part of: a means for generating, through call information, a call signal which connects the line for a certain period of time and also a variable address selection command which connects the line until the completion of a conversation, and for generating, through call signal receipt information, a ringback signal and an intrinsic address selection command which connects the line until the completion of a conversation and further, for generating in some cases a busy signal and an intrinsic address selection command and a variable address prohibition command which connect the line only for a certain period of time; a means for switching each time slot of an F–T matrix address and reading out for each time slot an address memory recorded by a method of setting a subscriber's number including a dial or touch tone, thereby to determine the path to the frequency slot of said F–T matrix address to be switched to; a means for intercepting an RF input of receiver by means of a pulse which is continued over a sampling interval upon each generation of an output code pulse of a primary modulator; a means for detecting an output code pulse of a primary modulator each time upon the start of a voice or signal and for delivering a synchronizing pulse for a receiver of a called party; and a means for temporarily storing output code pulses of receiver, reading the code pulses through a synchronizing pulse of a transmitter at the same station as one comprising said receiver, and transferring to another synchronizing pulse train by detecting a stepout each time of the occurrence of said stepout, thereby to accomplish a synchronized relay.

3,647,976
TIME-SHARING SUBSCRIBER COMMUNICATIONS SYSTEM

Donald W. Moses, Robbinsdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 9, 1970, Ser. No. 17,367
Int. Cl. H04j *7/00*
U.S. Cl. 179—15 AL / **27 Claims**

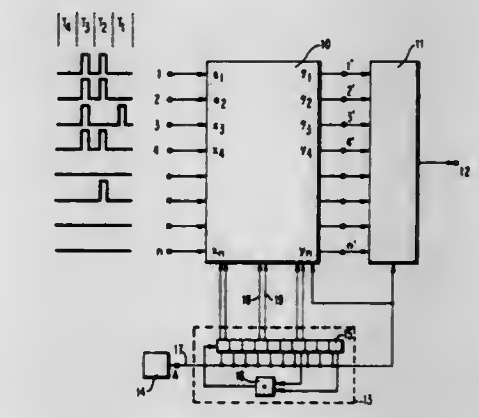


A time-sharing subscriber communications system wherein a time-division multiplexed signal having a series of frames and a predetermined number of time slots in each frame is transmitted in a given frequency band over a single wideband circuit to a plurality of subscriber terminals. Various time slots contain information from various input channels which are respectively related to various ones of the subscriber terminals. The transmitted signal is modulated by a zero axis crossing modulation scheme wherein each time slot is defined by the interval between successive zero axis crossings and the information contained in each time slot is defined by the duration of the time slot. At each subscriber terminal the information related to that channel is tapped off from the signal received from the transmitter terminal, a portion of the received signal is retransmitted over the wideband circuit and new information related to the subscriber terminal is newly transmitted in one or more time slots of each frame of the time-division multiplexed signal. A receiver terminal, interfaced to the opposite end of the wideband circuit from the transmitter terminal, demodulates the newly transmitted information from the subscriber terminal and provides output signals to various output channels respectively related to various ones of the subscriber terminals.

3,647,977
MULTIPLEXER

Felix H. Closs, Adliswil Zurich, Switzerland, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 7, 1970, Ser. No. 35,413
Claims priority, application Switzerland, May 14, 1969, 7445/69
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 BA **12 Claims**

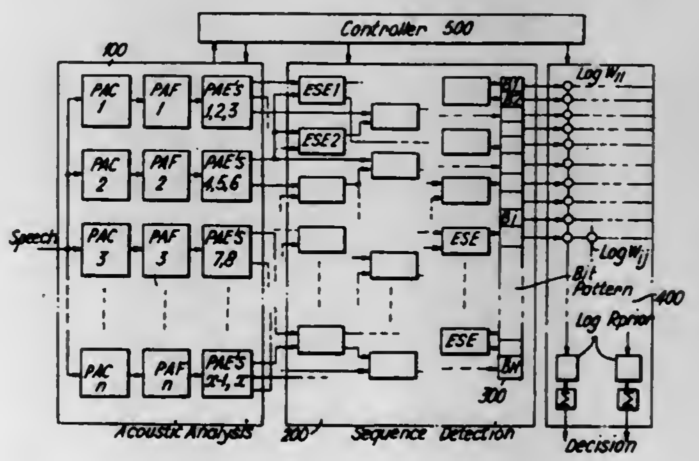


A multiplexer for use in a transmission system is provided with a priority switch with *n* inputs and *n* outputs. When a signal is present on only one of the inputs, the switch acts to connect the signal to its associated output. When a signal is present on more than one input at a given time, the priority switch acts to select for connection only one of the signals to its associated output, the selection process being achieved in a pseudorandom manner.

3,647,978
SPEECH RECOGNITION APPARATUS

David Roderic Hill, Alberta, Canada, assignor to International Standard Electric Corporation

Filed Feb. 18, 1970, Ser. No. 12,408
Claims priority, application Canada, Apr. 30, 1969, 21952/69
Int. Cl. G10l *1/02*
U.S. Cl. 179—1 5A **18 Claims**

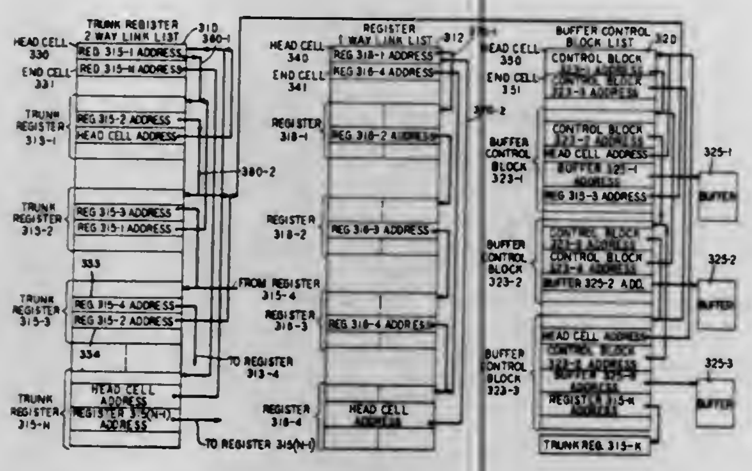


Speech recognition apparatus is provided which is responsive to selected acoustic characteristics for decomposing a signal representing an acoustic input into analogue signals on parallel channels. The analogue signals are transformed into binary signals on parallel channels which constitute time ordered event markers. The apparatus includes means for marking the occurrence of sequential events representing sequential properties of the binary signals and means for storing as a nonordered array pattern information representing both content and order information relating to the acoustic input.

3,647,979
PROGRAM STORE ERROR DETECTION ARRANGEMENTS FOR SWITCHING SYSTEMS

Harvey Rubin, New York, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 13, 1970, Ser. No. 2,542
Int. Cl. H04q *3/54*
U.S. Cl. 179—18 ES **11 Claims**

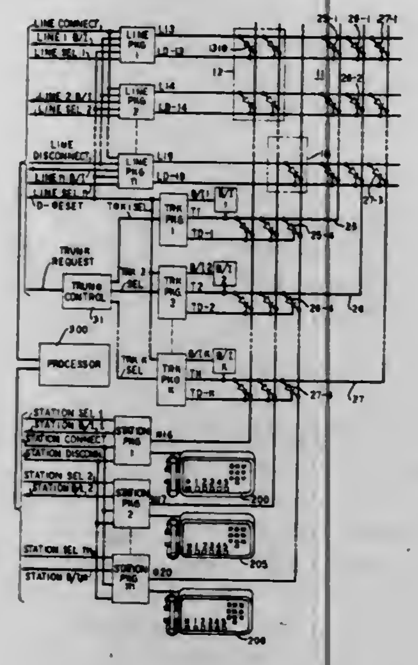


A switching system includes a common control store having a plurality of circuit control registers which registers are arranged on a plurality of linked lists. Registers on different lists are linked together to control the operation of related circuits. Upon the detection of a linked register error, the detected register is removed from the lists and the codes contained therein are altered to ignore references thereto. The detected register is placed on an isolation list for a predetermined time during which time processing and store references to the detected register are deleted from the store. After the predetermined time the codes of the detected register are then altered to correspond to an idle state.

3,647,980
SWITCHING NETWORK CONTROL WITHOUT NETWORK MAP

Lucian Philip Fabiano, Jr., Denver, Colo.; John Paul Grandmaison, Sudbury, Mass.; William Wallace Greason, III, Longmount, and Ted R. King, Jr., Broomfield, both of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 7, 1970, Ser. No. 35,434
Int. Cl. H04q *3/54*
U.S. Cl. 179—18 ES **14 Claims**

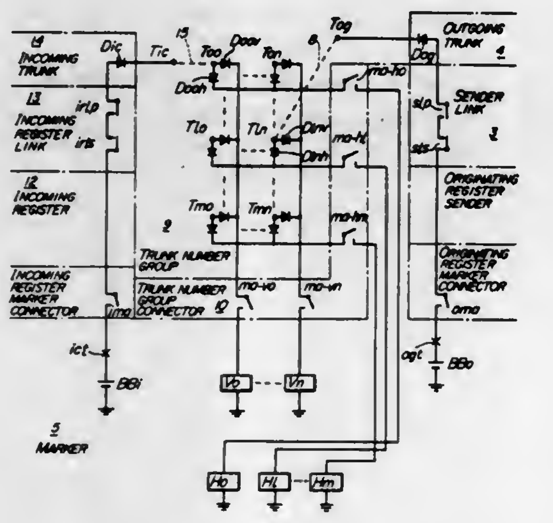


A key telephone system is disclosed in which switching functions are carried out in a central switching network instead of at the telephone set to reduce the amount of cabling in the system. The network is controlled by a central processor without requiring a network map in memory. The network contains fewer cross-points than the product of the number of stations and lines and means are provided to select a special trunk when an attempt is made to operate a nonexistent cross-point at the "intersection" of the desired station and line.

3,647,981
SWITCHING SYSTEM HAVING MEANS FOR IDENTIFYING LOCATIONS OF BOTH INCOMING AND OUTGOING TRUNK CIRCUITS

Eiroku Kondo; Hirotaka Usuda; Hidemasa Suzuki, and Tuneo Furuya, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of application Ser. No. 667,907, Sept. 15, 1967, now abandoned. This application Jan. 13, 1970, Ser. No. 2,520
Claims priority, application Japan, Sept. 17, 1966, 41/87509
Int. Cl. H04m *7/00*
U.S. Cl. 179—18 AH **3 Claims**

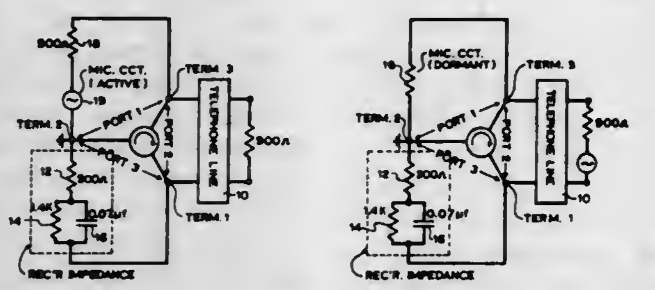


An improved circuit arrangement in a crossbar switching system, for identifying the location in switch frame of an outgoing trunk, according to which arrangement said identification of the location of an outgoing trunk is achieved by using a trunk number group and an incoming trunk, thus a number of circuit components are economized.

3,647,982
TELEPHONE ANTISIDETONE CIRCUIT

Patrick David van der Puije, Ottawa, Ontario, Canada, assignor to Northern Electric Company Limited, Quebec, Canada

Filed Aug. 13, 1970, Ser. No. 63,458
Int. Cl. H04m *1/58*
U.S. Cl. 179—81 A **3 Claims**

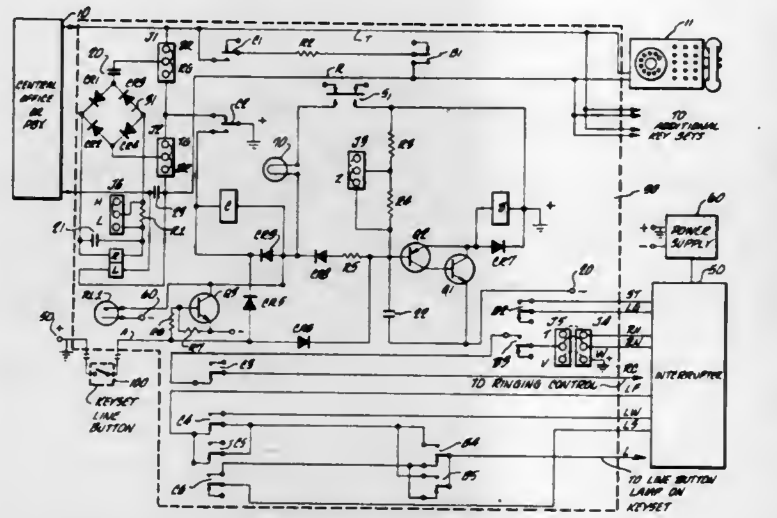


A transistorized wired circulator transfers power from microphone to telephone line (minimizing sidetone) and transfers power from telephone line to earphone, with microphone, telephone line, and earphone delta connected to the circulator.

3,647,983
KEY SYSTEM LINE CARD CIRCUIT

Alan R. Fitzsimons, Laguna Beach, and Robert J. Phelps, Anaheim, both of Calif., assignors to San/Bar Electronics Corporation, Long Beach, Calif.

Filed Aug. 25, 1969, Ser. No. 852,585
Int. Cl. H04m *1/00*
U.S. Cl. 179—99 **31 Claims**

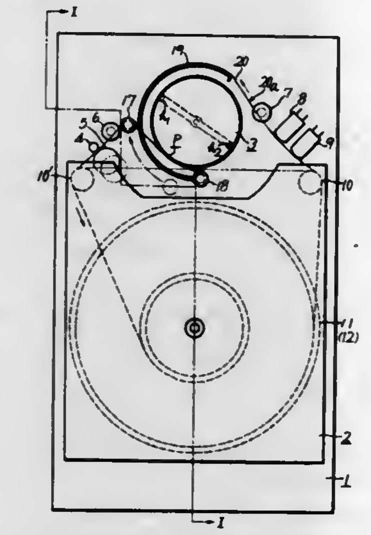


A line card circuit for a key telephone system which system includes a subscriber line comprising a pair of line conductors interconnecting a central office with a subscriber station set. The line card circuit has sensing means which are responsive to ringing signals in the line conductors to initiate local signaling indicative of the presence of an incoming call. Means are provided to assure that the sensing means is nonresponsive to noise transients. Means are further provided responsive to the operation of the sensing means to maintain said local signaling for a predetermined period. Additional means are provided to rapidly switch the associated line into a "hold" condition when required which rapid switching assures that associated PBX or central office equipment will not receive a premature line release indication. Means are further provided to perform all the necessary switching and supervisory functions required by the associated line.

3,647,984
MAGNETIC RECORDING AND/OR REPRODUCING DEVICE WITH TAPE ENGAGEMENT MEANS WHICH MOVES IN A CONCENTRIC PATH WITH THE HEAD

Yoshimi Watanabe, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed July 1, 1969, Ser. No. 838,072
Claims priority, application Japan, July 4, 1968, 43/46916
Int. Cl. G11b *15/66, 23/04*
U.S. Cl. 179—100.2 Z **10 Claims**

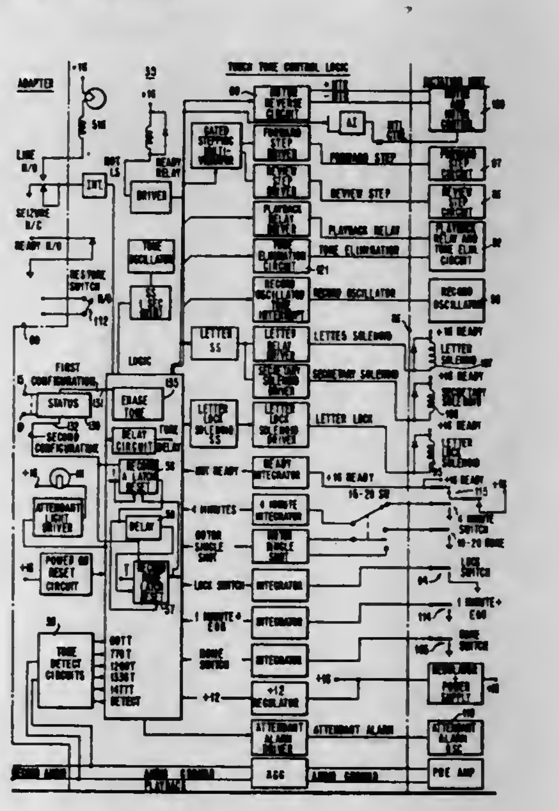


A magnetic recording and/or reproducing apparatus having a guide drum and at least one rotary magnetic head associated therewith is provided with a device for automatically drawing a magnetic tape from a cassette and wrapping the tape about the guide drum for scanning by the rotary head. Such device includes at least one tape engaging means for engaging the tape in the cassette or cartridge when the apparatus is in an inactive condition and being moved in an arcuate and substantially concentric path about at least a portion of the periphery of the guide drum for wrapping the tape on the latter.

3,647,985
TONE-ACTUATED DICTATION SYSTEMS WITH VOICE BUFFER OPTION

Matthew P. Langendorf, and Charles L. Ridings, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 737,642, June 17, 1968, now Patent No. 3,549,821. This application June 22, 1970, Ser. No. 48,245
Int. Cl. G11b *21/12;* **H04m** *1/64*
U.S. Cl. 179—100.1DR **1 Claim**



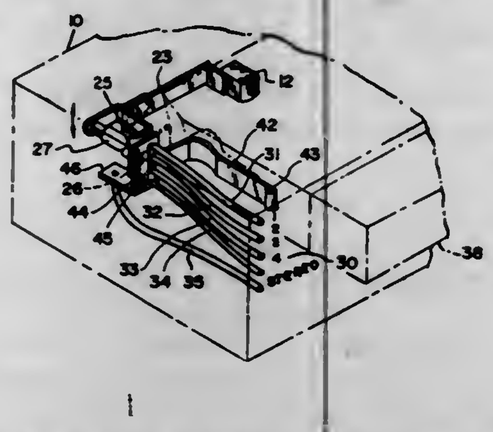
The invention concerns dictation systems having facilities for selectively connecting remote stations to a central recording unit, and recognizing control tones generated at a connected remote station to effect all operations required including recording and playback of audio (voice) signals. The systems include, in several versions, circuits responsive to presence or absence of voice signals to start and stop the recording unit (respectively), an intermediate voice buffer to prevent loss of voice signals during startup time and features circuitry to insure that control tones are recognized properly, but not recorded on the media in the central recording unit.

3,647,986
TRACK INDICATOR FOR A TAPE PLAYER

Melvin A. Lace, Prospects Hts., and Laszlo N. Repay, Chicago, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 29, 1969, Ser. No. 888,396
Int. Cl. G11b *27/34, 21/08, 5/36*
U.S. Cl. 179—100.2MD **10 Claims**

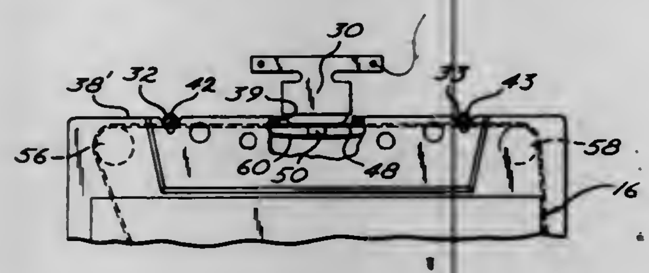
A track-indicating device for a cartridge tape player uses a single indicating lamp and a control lever which is moved to different positions with the positioning of the tape head to cause light from the lamp to be channeled to a particular one of a number of windows in an indicating panel corresponding to the track to be played at each position to which the head may be located to illuminate only that window of the indicating panel. In addition, a second control lever controls the



channeling of light from the lamp to a stereo indicating window when a cartridge is removed from the player.

3,647,987
CASSETTE RECORDING SYSTEM USING NOTCHED CASSETTES

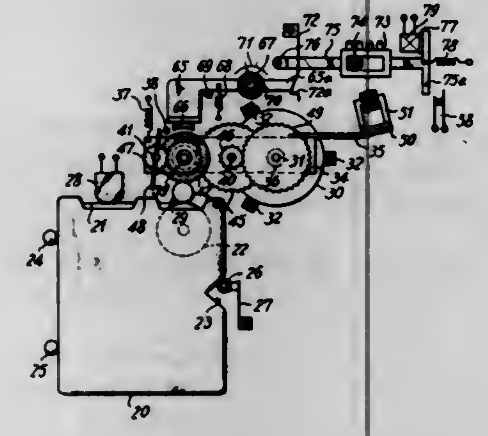
James R. Trammell, Parma Heights, Ohio, assignor to Scanfax Systems Corporation, New York, N.Y.
Filed Jan. 5, 1970, Ser. No. 698
Int. Cl. G11b *15/04, 23/08*
U.S. Cl. 179—100.2 Z **1 Claim**



In a magnetic tape recording system, recording apparatus is described as including a cassette only with notches arranged to mate with locating pins disposed on both sides of a recording head in a cassette-receiving module for the system.

3,647,988
MAGNETIC TAPE AUTOMATIC RECORDING APPARATUS HAVING AUTOMATIC FADE-IN AND FADEOUT

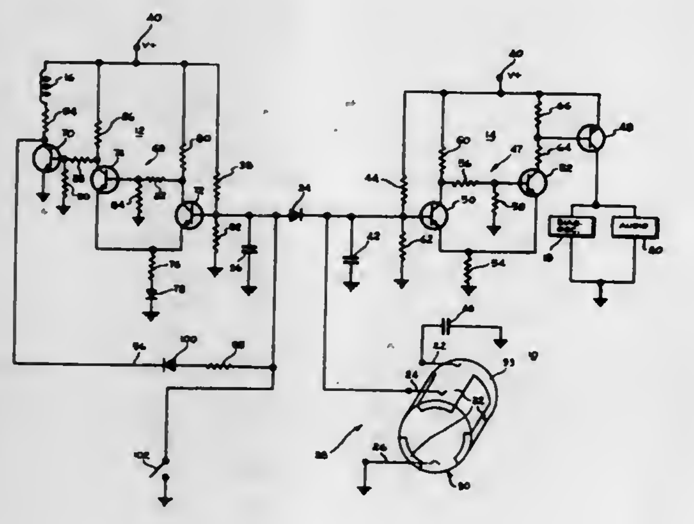
Itsuki Ban, 829 Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan
Filed Sept. 2, 1969, Ser. No. 854,679
Claims priority, application Japan, Sept. 2, 1968, 43/62338
Int. Cl. G11b *5/00, 23/04*
U.S. Cl. 179—100.2 R **8 Claims**



A magnetic tape automatic recording apparatus wherein a variable resistor is provided in the recording circuit for regulating the recording level, an operating shaft is rotated by a first driving device in the direction increasing the recording level in response to the initiation of the recording, rotation of the operating shaft is prevented in response to the output of a detecting circuit detecting that the recording level has reached a predetermined value, and is effected by a second driving device in the direction decreasing the recording level in response to the termination of the recording.

3,647,989
CONTROL CIRCUIT FOR A BIDIRECTIONAL RECORDER

Charles B. Mattas, Chicago, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed Nov. 10, 1969, Ser. No. 875,209
Int. Cl. G11b *15/12, 15/44*
U.S. Cl. 179—100.2MD **5 Claims**

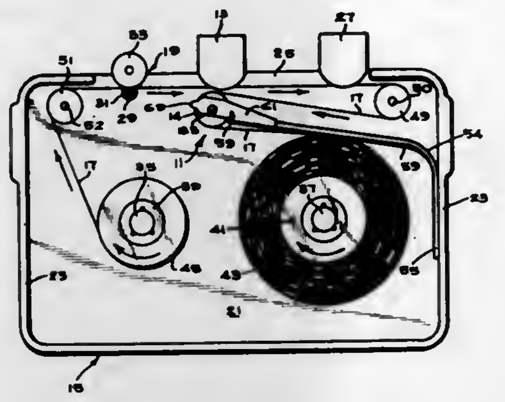


The control circuit includes means for sensing the motion of a tape in a bidirectional recorder. When the tape motion decreases below a predetermined minimum, the motion sensing means causes two switching circuits to change states, the first of which activates a solenoid which reverses tape motion or begins the ejection cycle, depending on the recorder operating mode. The second switching circuit deactivates a recording bias circuit and an audio circuit of the tape recorder. The first switching circuit is provided with a delay with respect to the second switching circuit so as to delay the activation of the solenoid until the bias circuit and the audio circuit are deactivated, thereby preventing magnetization of a record head or heads and muting the audio.

3,647,990
DEMAGNETIZER/CLEANER

Edward A. Eul, Jr., Northbrook, and Ronald B. Richter, Rolling Meadows, both of Ill., assignors to Ampex Corporation, Redwood City, Calif.
Filed Jan. 30, 1970, Ser. No. 6,984
Int. Cl. G11b *5/46*
U.S. Cl. 179—100.2 Z **13 Claims**

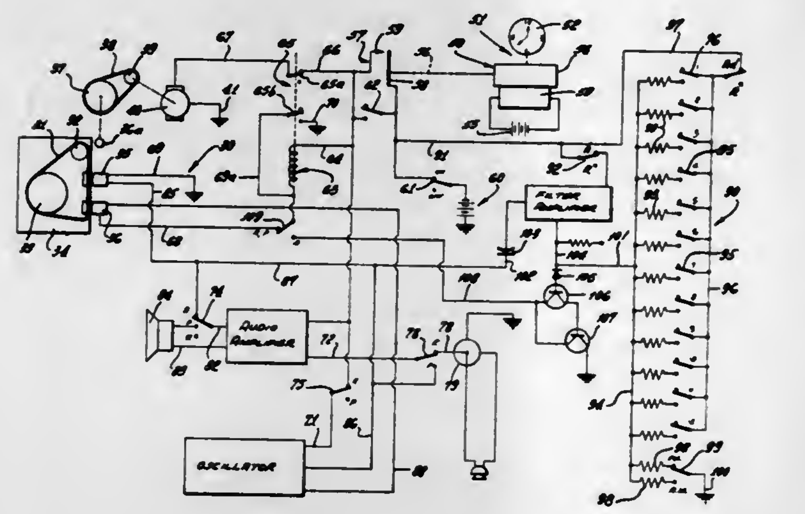
Transducer heads of a magnetic tape recording or playback apparatus may be demagnetized by placing a multipolar, permanent magnet adjacent to the transducer head, rotating the magnet to create a reversing flux field and moving the magnet away from the transducer head to diminish gradually the intensity of the field. A simultaneous demagnetizing and cleaning of the transducer head in a cartridge-receiving or cassette-receiving playback or recording apparatus is achieved by having both the magnet and a cleaning tape mounted in a cartridge or cassette and by using the tape



drive to cause the magnet to rotate and to move away from the transducer head.

3,647,991
PROGRAMMED TIME-RESPONSIVE AUDIO MESSAGE AND REMINDER DEVICE

Bernard Gaon, Santa Ana; Stuart Goldfarb, and Adrienne R. Goldfarb, both of Los Angeles, all of Calif., assignors to said Stuart J. Goldfarb, by said Gaon
Filed June 23, 1969, Ser. No. 835,561
Int. Cl. G11b *15/06*
U.S. Cl. 179—100.2 S **5 Claims**

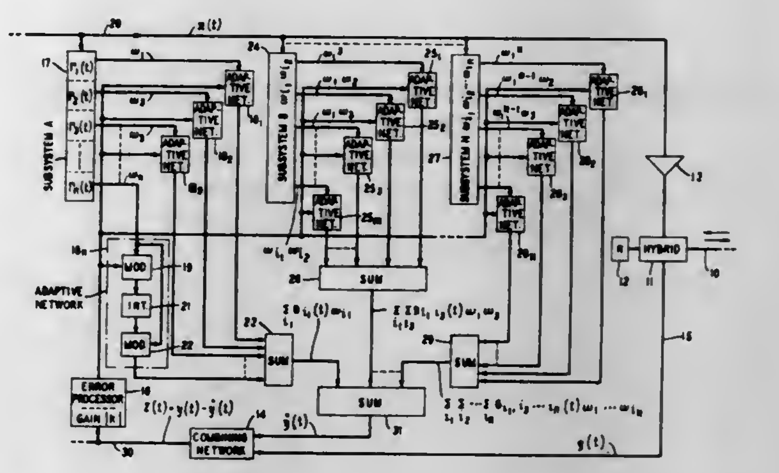


A time-responsive audio programmed message and/or reminder device which includes a tape recording and playback apparatus, a timing device for selective periodic operation of the tape recording and playback device and a recording time selection apparatus enabling the tape to be selectively programmed to deliver an audio message at a predetermined time.

3,647,992
ADAPTIVE ECHO CANCELLER FOR NONLINEAR SYSTEMS

Edmond Joseph Thomas, Matawan, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Mar. 5, 1970, Ser. No. 16,745
Int. Cl. H04b *3/20;* **H04m** *9/08*
U.S. Cl. 179—170.2 **12 Claims**

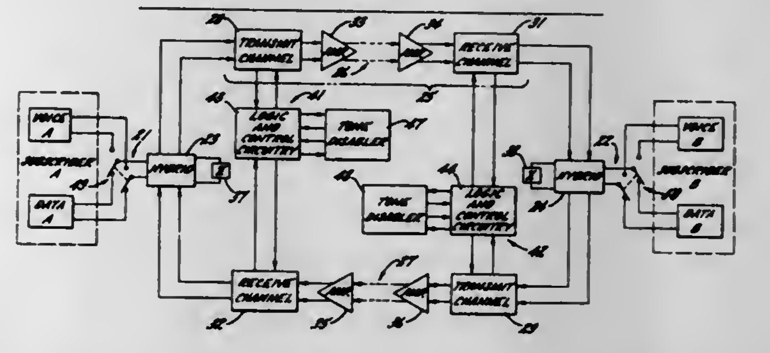
Operation of a closed-loop echo cancellation system for use in a two-way communication circuit is improved by employing a multidimensional network capable of approximating a large class of nonlinear transfer functions, and a control circuit arrangement for automatically adjusting parameters of the network. Signals incoming to a four-wire to two-wire junction are supplied to the network which, supplied with an



error signal derived from signals in the outgoing path, develops a replica of an undesired echo. The replica signal is subtracted from outgoing signals and the differential is used for the derivation of a new error signal.

3,647,993
TONE DISABLER

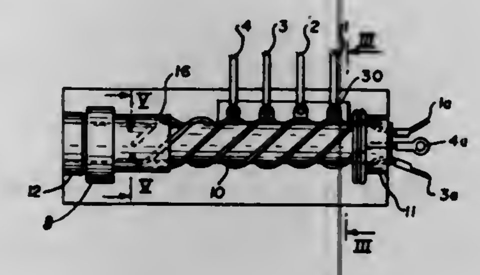
John D. Foulkes, Lexington, and Warren G. Bender, Wellesley, both of Mass., assignors to Wescom, Inc., Downers Grove, Ill.
Filed May 18, 1970, Ser. No. 38,446
Int. Cl. H04b *3/20*
U.S. Cl. 179—170.2 **12 Claims**



For use in a long-distance telephone link alternately employed for voice communications and data transmission, a tone disabler for inhibiting an associated echo suppressor in response to a tone signal, such as is transmitted under existing practices prior to the transmission of data to insure that all echo suppressor controlled attenuation is removed from the telephone link during data transmission. Series and parallel resonant filters tuned to the tone frequency and a comparator circuit are used to compare the level of the tone frequency energy in the tone disabler's input signals against the level of all other voice frequency or so-called guard band energy, so that a tone signal confirming timing sequence is initiated only when the tone signal energy predominates. Once a tone signal is confirmed, the inputs to the comparator circuit are switched from the filters to a broad band load impedance, so that the tone disabler is transferred from a tone detecting to a holding mode in which the comparator circuit and a simple RC delay circuit maintain the associated echo suppressor in an inhibited condition throughout the data transmission and for a predetermined time after the tone disabler's input signal level drops below a predetermined threshold characteristic of the completion of the data transmission. Solid state switching devices are used for inhibiting and releasing the associated echo suppressor and for transferring the tone disabler between its tone detecting and holding modes to eliminate switching transients and other potential sources of noise such as might interfere with or degrade the performance of the tone disabler, associated echo suppressor, or other equipment located nearby.

3,647,994
ROTARY SWITCH WITH IMPROVED SPIRAL CONTACT STRUCTURE

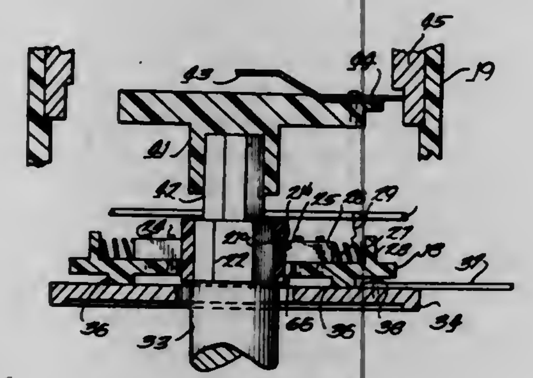
Theodore M. Vozenilek, Pittsburgh, Pa., assignor to Spencer E. Reynolds, Murrysville, Pa., a part interest
Filed July 17, 1970, Ser. No. 55,775
Int. Cl. H01h *9/00*
U.S. Cl. 200—4 **4 Claims**



This invention relates to a rotary switch having multiple positions and multiple poles for preselecting a sequence of operations for the multiple poles with a set input sequence based on the rotary selector position. The switch embodies a plurality of spirally wound switch elements mounted on a rotary selector for the various switch position inputs with the pole contacts being stationary and in line. By such unique multiple spiral contacts, no internal switch wiring is required and the construction is made extremely simple and the cost is greatly reduced.

3,647,995
ROTARY MULTIPLE CONTACT PERIODIC SWITCH FOR INTERNAL COMBUSTION ENGINE WITH IMPROVED DISTRIBUTOR SHAFT CONTACT COLLAR

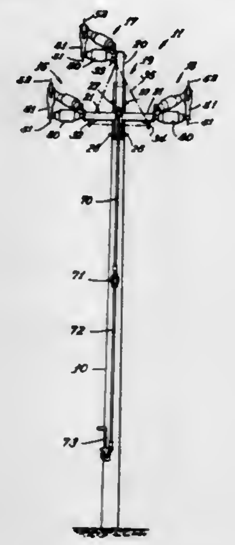
Kenneth Wisely, Mattoon, Ill., assignor to John J. Yelvington, Mattoon, Ill., a part interest
Continuation of application Ser. No. 16,273, Mar. 4, 1970, now abandoned. This application Dec. 10, 1970, Ser. No. 96,982
Int. Cl. H01h *39/00, 19/00, 1/00*
U.S. Cl. 200—24 **12 Claims**



An ignition system for an internal combustion engine has circularly arranged stationary brushes and one or more insulated contacts rotating with the distributor shaft which replace the make-and-break contacts of an ordinary engine ignition system. The brushes and rotating contacts are adaptable to be mounted in the ordinary distributor housing. A single contact on the distributor shaft provides one ignition spark in each power stroke of a piston and more than one contact provides a corresponding number of sparks in each power stroke.

3,647,996
POLYPHASE DISCONNECTING SWITCH FOR HIGH-VOLTAGE CIRCUIT HAVING A CONDUCTOR AT EACH APEX OF A TRIANGLE

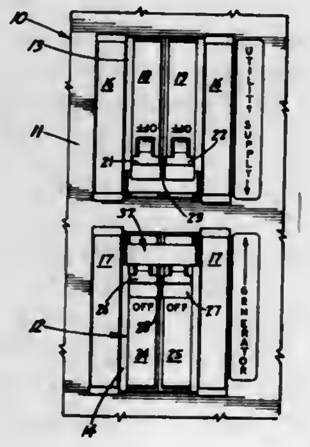
Joseph Bernatt, Arlington Heights, and John T. Gutmann, Prospect Heights, both of Ill., assignors to S & C Electric Company, Chicago, Ill.
Filed Jan. 7, 1971, Ser. No. 104,549
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 **16 Claims**



Disconnecting switch assemblies are located in a triangular configuration on an inverted cross-shaped frame adapted to be secured to the top of a power line pole. Each switch assembly includes a pivotally mounted insulator carrying a switch blade for engaging a stationary contact carried by a stationary insulator. The pivoted insulators at the ends of the transverse piece are interconnected by a shaft which is connected by a link to the pivoted insulator at the top of the upright piece to effect conjoint switch operation. The transverse and vertical pieces are tubular and the shaft and link are enclosed thereby. Dead end connections adjacent the switch assemblies permit dead ending the respective conductor thereto. Each switch blade and the respective switch contact are so positioned that the switch blade cannot gravitate to the open position when closed and vice versa. Each switch contact is carried by an insulator that is mounted at the distal end of a support bracket in angular relation to the respective pivoted insulator.

3,647,997
LOAD TRANSFER SWITCH ASSEMBLY

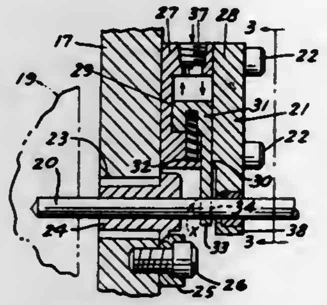
Marvin E. Nerem, 136 East M. Street, Forest City, Iowa
Filed Nov. 16, 1970, Ser. No. 89,957
Int. Cl. H01h *9/24*
U.S. Cl. 200—50 C **9 Claims**



An electric circuit load center for recreational vehicles equipped with a load transfer switch assembly operable to connect a utility power supply to a load and separately operable to connect a generator power supply to the load. The load transfer switch assembly has a control member operable in response to movement of separate switch handles to insure that only one power supply is connected to the load at any one time.

3,647,998
BROKEN TOOL DETECTOR

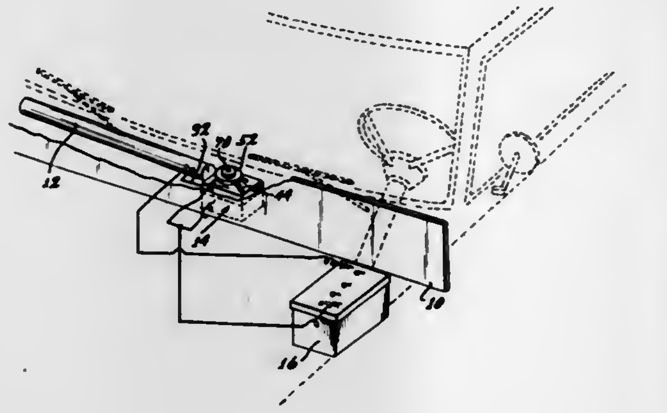
Harry E. Rohraff, Sr., 16104 Pierson Avenue, Detroit, Mich.
Filed Sept. 14, 1970, Ser. No. 71,757
Int. Cl. H01h *35/02*
U.S. Cl. 200—61.42 **20 Claims**



Accessory apparatus for a machine tool, to detect breakage of a tool bit and stop the machine, consists of a combined valve body, valve-actuating feeler and antideflection member mounted on the bushing plate of the machine, and a pneumatic system responsive to actuation of the valve by the feeler for stopping the machine and for resetting the feeler.

3,647,999
DECELERATION-RESPONSIVE SENSORS

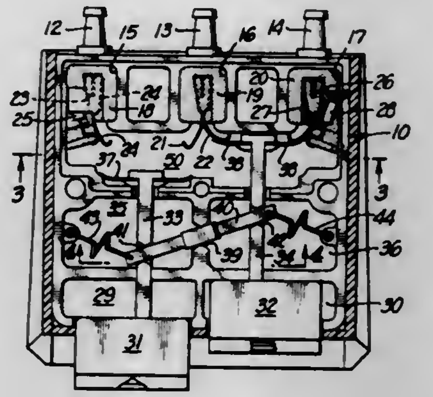
Bernard Mazelsky, West Covina, Calif., assignor to Ara, Inc., West Covina, Calif.
Filed July 23, 1970, Ser. No. 57,525
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.45 R **14 Claims**



The invention is a deceleration-responsive sensor particularly adaptable for use with vehicle safety devices of the type comprising an inflatable air bag which inflates at the moment of impact to protect passengers. The sensor comprises a movable inertia mass responsive to deceleration forces acting over a wide range of direction. The inertia mass is biased to an initial position to avoid undesired continued small motion activation. The inertia mass and its mounting is constructed to have a natural frequency such that an activating deceleration force of predetermined magnitude and duration is required for the device to respond and trigger the safety mechanism.

3,648,000
COAXIAL SWITCH

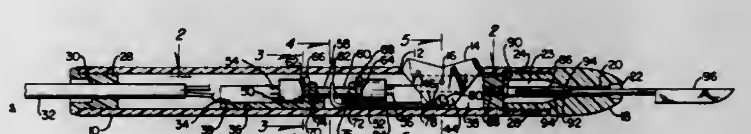
John R. Thompson, 7355 Fulton Avenue, North Hollywood, Calif., assignor to Electronic Industrial Engineering, Inc., North Hollywood, Calif.
Filed Aug. 26, 1970, Ser. No. 66,994
Int. Cl. H01p *1/10*
U.S. Cl. 200—153 S **8 Claims**



A switch adapted for as an A–B coaxial cable switch for CATV systems. The switch includes a pair of depressible pushbuttons, one for each cable. The buttons always move oppositely to each other. The crossbar extends diagonally within the switch and pivots at its center on a stationary slot in the switch housing. The ends of the crossbar pivot on slots in longitudinally reciprocable bars connected to the pushbuttons. A pair of coil springs are connected between the ends of the crossbar and the housing. Movable contact members carried by the bars make or break brushing contact with stationary spring contacts each time the pushbuttons are switched. When either button is depressed to move the crossbar past center or lateral position, the coil springs urge the crossbar toward the reverse position.

3,648,001
COMPACT HAND HELD SWITCHING DEVICE WITH INSERTABLE SWITCHING MEANS

Robert K. Anderson, 295 Kiowa Place, Boulder, Colo., and Karl D. Mills, 850 Circle Drive, Boulder, Colo.
Filed Dec. 11, 1969, Ser. No. 884,289
Int. Cl. H01h *9/06, 23/28*
U.S. Cl. 200—157 **5 Claims**



A surgical tool of the type in which cutting or cauterizing current is selectively introduced to a blade by means of a finger-operated switch actuating member, the tool comprised of an outer case and a correspondingly structured removable insert carrying the switching mechanism, the switch actuating arm between the switch actuating member and the switch mounted to reciprocate in a plane normal to the axis about which the switch actuating member oscillates to provide a compact pencil-type device, the combination case and insert being adaptable to provide switching means for applications other than surgical tools. The switches have threaded extensions which are inserted through trunnions in the casing and held there by clamping units.

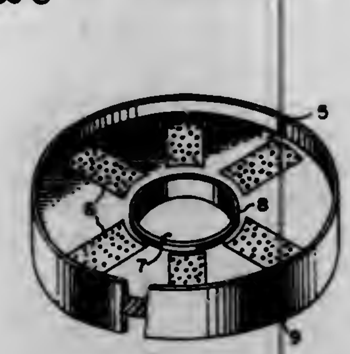
3,648,002
CURRENT CONTROL APPARATUS AND METHODS OF MANUFACTURE

Gideon A. Du Rocher, Mount Clemens, Mich., assignor to Essex International, Inc., Fort Wayne, Ind.

Filed May 4, 1970, Ser. No. 34,320

Int. Cl. H01h *3/00*

U.S. Cl. 200—166 C **31 Claims**



Current control apparatus operable to function selectively as a conductor, a circuit breaker, or a thermostat comprises a body formed of electrically insulating, compressible, inorganic, preferably elastomeric material having one or more portions thereof provided with discrete, electrically conductive particles which move relatively to one another into and out of engagement in response to changes in the state of compression to which the body is subjected or in response to variations in temperature of the body. The conductive portion or portions of the body extend through the latter from one side to the other, but are electrically isolated from one another by the nonconductive body portions. The body may include upstanding ribs or flanges on either or both of its opposite surfaces for the purpose of providing seals to prevent the entry of moisture or other foreign matter to the area bounded by the flanges.

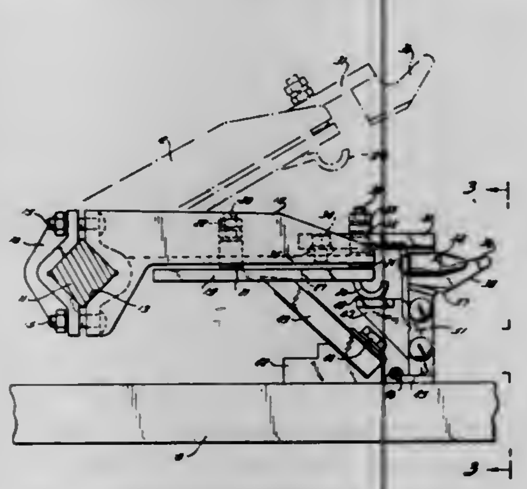
3,648,003
ELECTRICAL SWITCH HAVING CONTACTS PROVIDED WITH ROLLERS

Dominik M. Wiktor, Cranford, N.J., assignor to Automatic Switch Company

Filed Jan. 29, 1971, Ser. No. 111,064

Int. Cl. H01h *1/16*

U.S. Cl. 200—166 BB **7 Claims**



A knife-type electrical switch including a blade contact and a pair of roller contacts between which the blade contact moves when the switch closes. The rollers are rotatable about axes substantially perpendicular to the direction of blade movement between them. The rollers have tapered ends, and the blade edge facing the rollers diverges from the rollers. Each roller is carried by an arm mounted to pivot about a point spaced from the rollers, and spring means constantly urge the arms and hence the rollers toward each other.

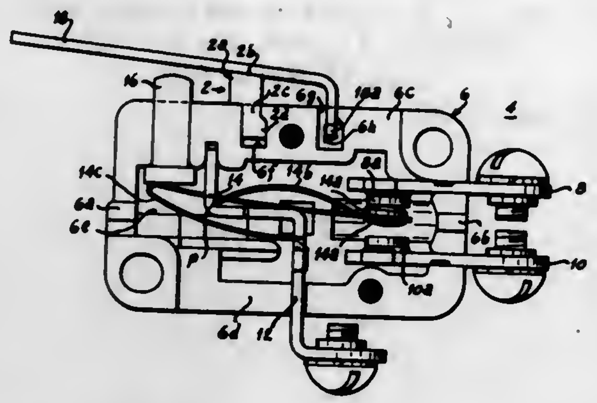
3,648,004
AUXILIARY SUPPORT MEANS FOR ELECTRICAL SWITCH ACTUATOR

Robert C. Williams, III, Smithfield, N.C., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Feb. 25, 1971, Ser. No. 118,819

Int. Cl. H01h *3/04, 1/50*

U.S. Cl. 200—166 H **2 Claims**



A miniature precision snap action switch having a one-piece stressed blade contactor biased to a first position and operable to a second position by depression of an operator plunger, is provided with a lever actuator pivotally mounted in one of two recesses provided therefore in the housing to extend across the unused recess and the plunger to normally rest on the plunger. A resilient pad is positioned on the housing between the plunger and the pivoted end of the lever to support the lever in a position raised off the plunger whereby the pad must be initially compressed before the lever may engage the plunger. The pad is retained on the housing by a portion depending into the unused recess and shaped for retentive engagement therewith.

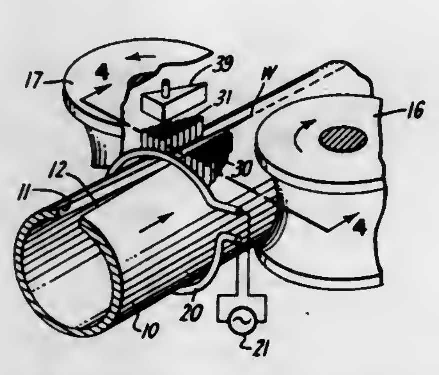
3,648,005
INDUCTION TUBE WELDING WITH IMPROVED CURRENT PATH

Wallace C. Rudd, Larchmont, N.Y., assignor to AMF Incorporated

Filed Aug. 28, 1970, Ser. No. 67,841

Int. Cl. H05b *5/00*

U.S. Cl. 219—8.5 **7 Claims**



Welding current path is restricted to immediate regions of edges of open tube by use of bodies of magnetic material placed on respective sides of V-shaped gap in region between weld point and induction coil. Each body has an edge closely adjacent, but spaced from, edge of tube, and a second edge closely adjacent induction coil. Magnetic bodies are fabricated from short rods of ferrite material secured together in bundles in a manner to leave a plurality of substantially uniformly distributed void spaces extending through the bodies in direction transverse to tube. Fluid coolant is passed through void spaces to keep temperature of ferrite material below its Curie temperature. Magnetic bodies could be molded as unitary blocks with cooling passages molded therein.

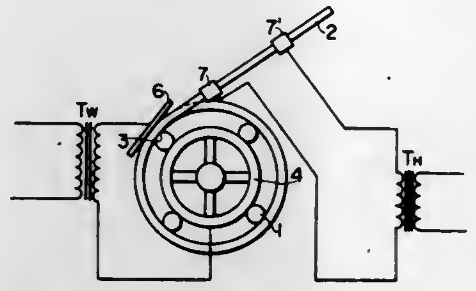
3,648,006
METHOD OF PRESERVING MECHANICAL PROPERTIES OF STEEL WIRE DURING SPOT WELDING

Tatuo Amakasu, Tokyo, and Takao Yamazaki, Fujisawa, both of Japan, assignors to Koushuha-Netsuren Kabushiki Kaisha, Tokyo, Japan

Original application Dec. 4, 1968, Ser. No. 781,174, now Patent No. 3,573,418. Divided and this application Aug. 3, 1970, Ser. No. 60,686

Int. Cl. B23k *11/00*

U.S. Cl. 219—58 **1 Claim**



A method for preserving the mechanical properties of steel wire or rod during spot welding of such steel wire or rod to form cages for use in prestressed concrete. The hoop reinforcing wire is, during the winding operation, preheated between a pair of feeders by direct passage of current therethrough to a temperature of from 300°–1000° C. Thereafter the thus heated wire is successively welded to reinforcing rods.

3,648,007
DEVICE FOR THE CONTINUOUS LONGITUDINAL SEAM WELDING OF TUBES

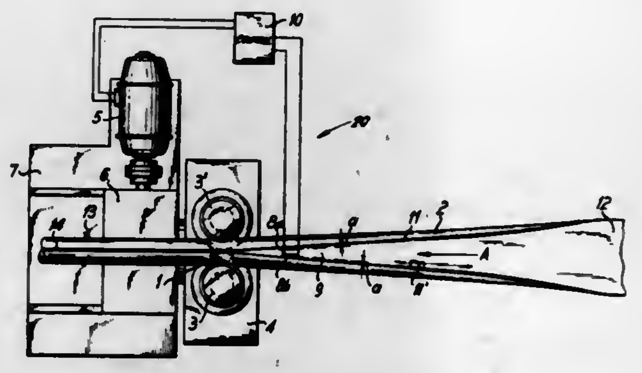
Willi Oppermann, Duisburg; Egon Schonitz, Rheinhausen, and Werner Wagner, Homberg, all of Germany, assignors to DEMAG Aktiengesellschaft, Duisburg, Germany

Filed May 7, 1970, Ser. No. 35,386

Claims priority, application Germany, May 7, 1969, P 19 23 241.8; Mar. 13, 1870, P 20 11 927.1

Int. Cl. B23k *31/06*

U.S. Cl. 219—59 **7 Claims**



A device for the continuous longitudinal seam welding of tubes particularly by electron beam welding, includes a pair of opposed rollers arranged with their mating groove portions in opposition on a bracket which may be rotated so as to shift the rollers in transverse directions. The arrangement includes means for scanning the strip edges of a sheet material which is fed and formed into the form of a slotted tube and adjusting the edges so that the tube is fed between the rollers with the longitudinal groove or slot centered therebetween. The scanning elements are arranged along the strip edges to be welded and actuate a control for a motor which is employed for shifting the grooved rollers with the tube in order to control the position of the weld seam for the purpose of centering the seam in respect to the electron beam. In a preferred arrangement the workpiece is guided by pressure rolls arranged on respective opposite sides of the workpiece which are advantageously carried on a rocker arm so that they may be jointly pivoted about the axis of the workpiece. A second pressure roll pair for guiding the workpiece is advantageously arranged on the rocker arm at a location between the contactless scanning device and the welding pressure roll pair. The second pressure roll pair forces the two band edges of the sheet to be formed firmly together and firmly grips the workpiece running therebetween in the same manner as the welding pressure roll pair.

3,648,008
METHOD OF MAKING TAPERED POLES

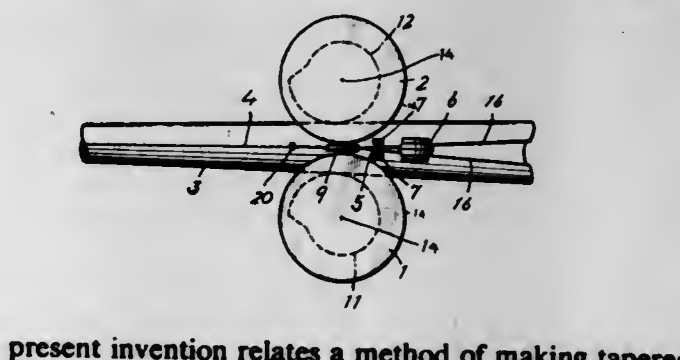
Tomoyoshi Kawato, Tokyo; Takashi Kusakabe, Yokohama-shi, and Toshiyuki Ono, Tokyo, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1969, Ser. No. 883,508

Claims priority, application Japan, Dec. 11, 1968, 43/90194

Int. Cl. B23k *31/06*

U.S. Cl. 219—67 **18 Claims**



The present invention relates a method of making tapered poles or tapered tubes, e.g., illuminating poles, or tapered tubes having diminishing cross sections for various kind of structural materials. A preformed tapered tube is inserted between miniaturized forming rollers having cam faces with a circumference of 1/*n* of the length of a tapered tube to be made, where *n* is between 2 and 10, and as said tube is drawn at the speed as high as *n* times the peripheral speed of the forming rollers the welding is performed on a longitudinal aligned edges of the tube so as to make desired products by means of the comparatively small high-frequency welding apparatus.

3,648,009
METHOD AND DEVICE FOR INSPECTING AND/OR CONTROLLING THERMALLY PRODUCED MECHANICAL JOINTS

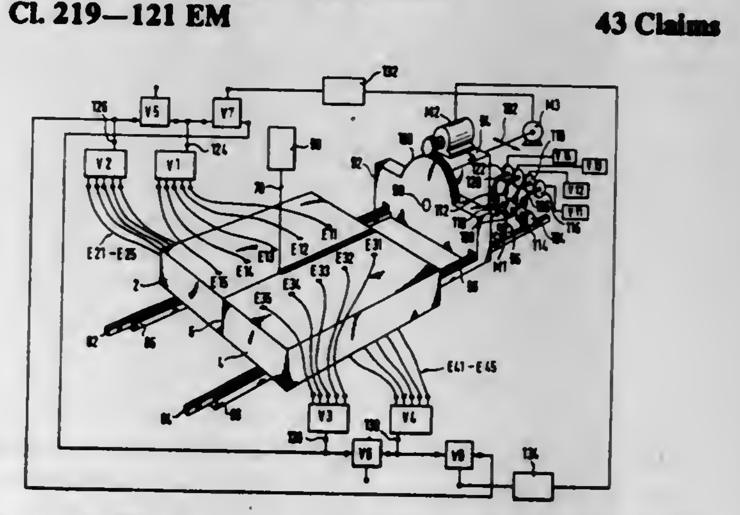
Karl Heinz Steigerwald, 55 Haderunstr. 1a, Munich, Germany

Filed May 5, 1970, Ser. No. 34,775

Claims priority, application Germany, May 6, 1969, P 19 23 132.4

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 EM **43 Claims**



The invention is concerned with a method and apparatus for effecting a thermal joint between two materials while sensing the condition of the joint during the joining process. The described example utilizes an electron beam as the heating means, there being sensing elements located in the region of the joint being made. The elements are sensitive to temperature or sonic or electric signals, and their outputs are processed to show the state of the joint, or to control the means making the joint. The sensing elements may be fixed to the workpieces or move with the electron beam along the path of the joint.

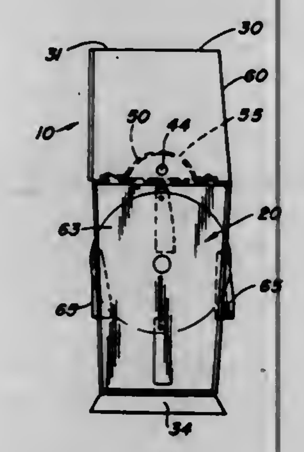
3,648,010
COMBINATION OVEN AND ILLUMINATED DISPLAY ASSEMBLY

Jacques Schier, Deerfield, Ill., assignor to Martin-Brower Corporation, Chicago, Ill.

Continuation-in-part of application Ser. No. 881,659, Dec. 3, 1969, now Patent No. 3,586,823. This application Mar. 5, 1971, Ser. No. 121,488

Int. Cl. H05b *1/00*

U.S. Cl. 219—214 **9 Claims**



A combination oven and illuminated graphic display apparatus using a single radiant energy source for both heating and lighting purposes in which items are placed on trays carried by a removable, motor driven rotary assembly. The graphic display contains decorative or advertising material promoting the sale of items held by the rotary assembly.

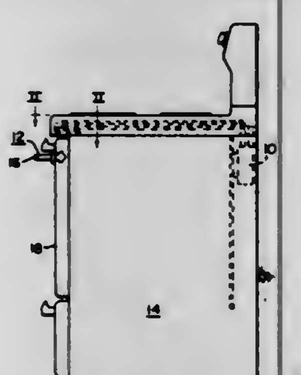
3,648,011
OVEN LATCH OPERATED FEATURE SWITCH

Calvin J. Holtkamp, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 9, 1970, Ser. No. 45,097

Int. Cl. F27d *11/02*

U.S. Cl. 219—413 **6 Claims**



A switch means which may be added to the latch arrangement of an oven having a cleaning mode where the oven latch is moved to an engaged and locked position in such a mode. The switch means is physically actuated by this movement and can be utilized, advantageously, either as an engagement or a disengagement means for some portion of the oven control system thereby eliminating the use of a selector switch requiring several additional terminals and the resulting cost of an additional terminal selector switch.

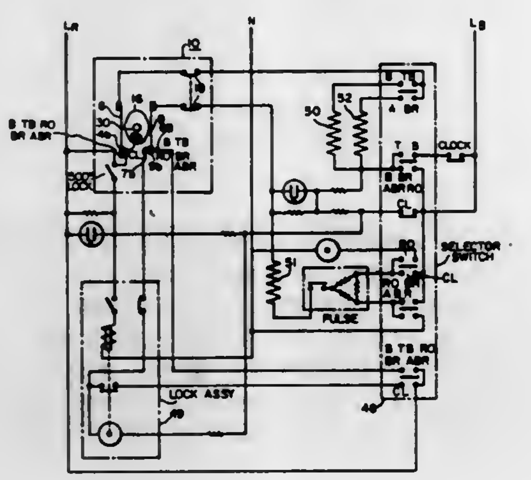
3,648,012
OVEN CONTROL SYSTEM INCLUDING SINGLE-DIAL CONTROL

Calvin J. Holtkamp, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1970, Ser. No. 103,098

Int. Cl. F27d *11/02*

U.S. Cl. 219—413 **7 Claims**



A single-dial oven control is provided for a heat-cleaning oven in which rotation of the dial throughout the greater portion of its rotatable range covers the normal cooking temperature range, with rotation to a point in the remaining part of the rotatable range setting the control for a heat-cleaning operation in the oven. The control includes switch means connected directly in series with the electrical heating means in the oven and incorporates an arrangement for converting linear rotational motion of the user-operated shaft into nonlinear axial motion of means for changing the temperature setting.

3,648,013
ELECTRICAL DISCHARGE MACHINING PROCESS AND DIELECTRIC FLUID USEFUL THEREIN

Robert A. Stayner, Palos Verdes Estates, and George B. DeMay, El Segundo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Nov. 23, 1970, Ser. No. 92,183

Int. Cl. B23k *9/00;* **H01b** *3/22*

U.S. Cl. 219—69 D **18 Claims**

An electrical discharge machining process using as a dielectric fluid a composition comprising a base oil and a minor amount of a conductivity additive containing a chromium salt of an alkyl salicylic acid and an alkaline earth metal salt of a dialkyl sulfosuccinate.

3,648,014
METHOD OF JOINING COPPER BRAID TO ALUMINUM AND THE JOINT FORMED THEREBY

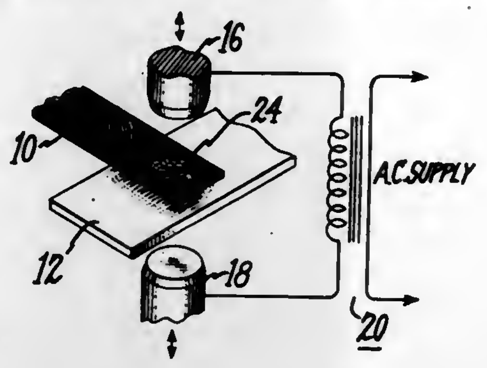
Moreland P. Bennett, Pittsfield, Mass., assignor to General Electric Company

Filed July 15, 1969, Ser. No. 841,947

Int. Cl. B23k *9/00, 11/16*

U.S. Cl. 219—118 **2 Claims**

A copper braid is joined to an aluminum member by first tin-plating the copper braid and then clamping the copper braid and the aluminum member between resistance-welding electrodes. Heat and pressure are then applied to bond the small copper wires of the braid to the aluminum and to extrude the aluminum between the strands of the copper braid.



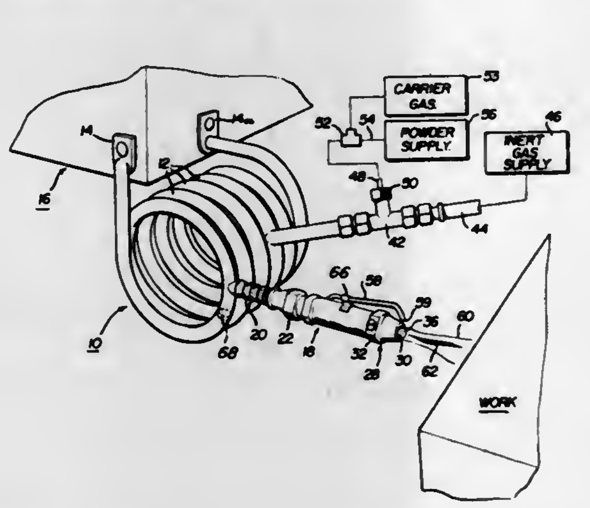
3,648,015
RADIO FREQUENCY GENERATED ELECTRON BEAM TORCH

Thomas E. Fairbairn, The Belvedere Bldg., Galion, Ohio

Filed July 20, 1970, Ser. No. 56,411

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 P **4 Claims**



An electron beam torch whose flame is generated by high-power radio frequency provided by a modified radio frequency transmitter. The mechanical structure of the torch is comprised of an electrode held within a metal nozzle, which is attached by means of a metal tube to a high-voltage low-current point of the final output tank coil of a modified output circuit or amplifier. An amount of inert or other gaseous media is utilized to enclose the electron beam torch flame immediately adjacent to the torch nozzle orifice, to (1) provide a shield and focus the flame on the workpiece, (2) to cool the torch nozzle and prevent the electrode from melting and oxidizing and (3) to vary the temperature of the workpiece. Additionally, the gas shield may carry an amount of powdered ceramic or aggregate material to be introduced around the electron beam torch flame for flame spray coating of articles. The inert gas, or similar gaseous media together with the powdered ceramic or aggregate material are introduced into the final output tank coil of the modified high-frequency output circuit at a high-current low-voltage point to prevent ionization heating of the torch nozzle and carrier supply tubes.

3,648,016
ARC WELDING ELECTRODE HOLDER

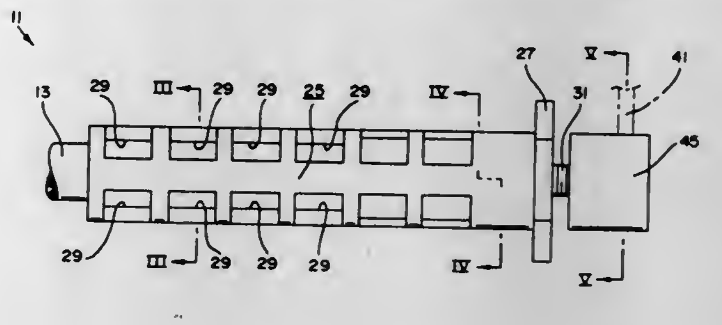
Charles G. Matthews, 1647 Semmes St., Memphis, Tenn.

Filed Mar. 24, 1971, Ser. No. 127,679

Int. Cl. B23k *9/28*

U.S. Cl. 219—142 **3 Claims**

An arc welding electrode holder having a conductive base member which is covered by an insulating material defining a handle. The distal end of the handle includes a disklike splatter shield for protecting the hand of the user and reducing muscle fatigue while grippingly supporting the holder and the heavy electrical cable attached thereto. The electrode is clampingly held by one end thereof extending inwardly through a transverse aperture in an amazingly durable insulated cuplike member defining the outermost end of the holder. The open end of the cuplike member, being directed



rearwardly, circumferentially engages a nutlike member which is threadedly received on a bolt that extends longitudinally forward from a threaded socket in the base member. The bolt is fixedly secured to the base member so that manual rotation of the cuplike member tends to seat the head of the bolt against the interior bottom of the cuplike member, causing the electrode received in the aperture to be clamped between the flat surfaces of the head of the bolt and the interior bottom of the cuplike member.

3,648,017
DEVICE FOR DEICING RAILS

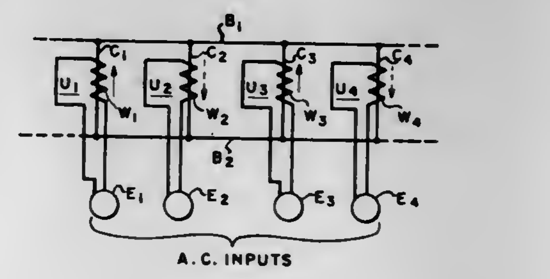
Yoshiyuki Obata, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1970, Ser. No. 41,330

Claims priority, application Japan, June 6, 1969, 44/44468

Int. Cl. H05b *5/08*

U.S. Cl. 219—213 **15 Claims**



Two parallel rails of a track are magnetically interconnected to cause an alternating current magnetic flux to flow through them. The rails are self-heated with the iron loss caused in them due to the flow of magnetic flux to be deiced.

3,648,018
TRANSFER DEVICE FOR CRYOGENIC FLUIDS

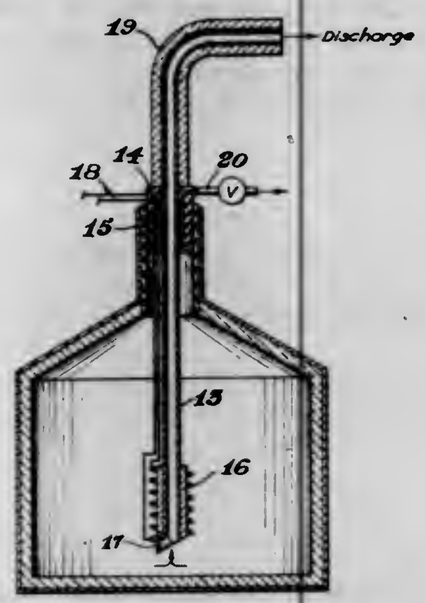
Chin Huan Cheng, Midland, and Donald E. Leonard, Shepherd, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 5, 1970, Ser. No. 9,004

Int. Cl. F22b *1/28*

U.S. Cl. 219—271 **4 Claims**

Disclosed is a device for transferring a cryogenic fluid from its storage vessel to cryostat or other vessel. The device is an open ended tube of sufficient length to permit its lower extremity to project below the surface of the fluid when it is inserted into an opening in the vessel. The tube is fitted with a collar which forms a substantially airtight seal between the tube and the opening. A heater capable of producing sufficient heat to vaporize part of the fluid is attached to the tube. The vaporization creates an internal pressure which forces the fluid up through the tube. By insulating the heater from the tube so that the fluid forced into the tube is not vaporized, a steady flow of cryogenic fluid is delivered to a desired location, e.g., a cryostat.



3,648,019

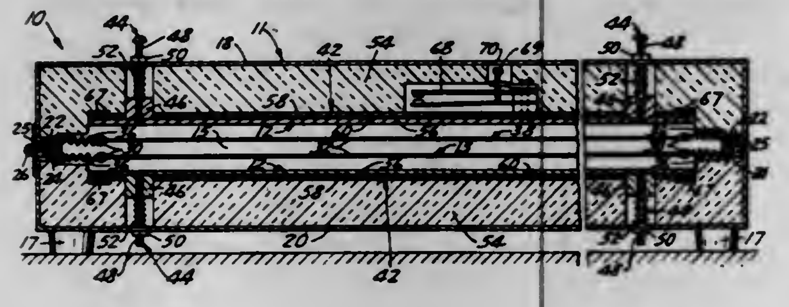
DEVELOPER

Frederick G. Brewitz, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 4, 1971, Ser. No. 103,654

Int. Cl. F24c *7/10*

U.S. Cl. 219—386 **6 Claims**



A simple and portable developer for a sheet of heat developable paper or film. The developer includes a pair of heaters mounted in parallel opposed relationship to define a heated zone and to provide a generally uniform temperature gradient within the heated zone. A support member is mounted for supporting a sheet at an essentially constant temperature level within the heated zone to develop the sheet in a predetermined time. Two halves of the developer are separable to afford insertion and removal of the sheet.

3,648,020

AUTOMATIC DEPOSIT-RECEIVING AND CASH-DISPENSING SYSTEM

Kazuma Tateisi; Yukio Mizuta, and Shizuya Ano, all of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

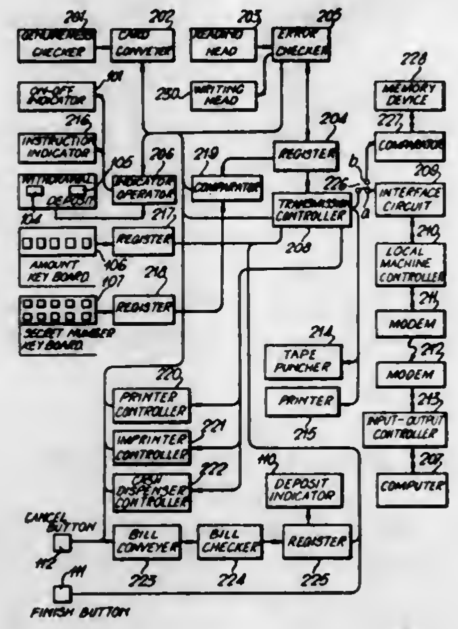
Filed Apr. 15, 1970, Ser. No. 28,635

Claims priority, application Japan, Apr. 26, 1969, 44/32572

Int. Cl. G06k *7/01*

U.S. Cl. 235—61.7 B **4 Claims**

An automatic deposit-receiving and cash-dispensing system for use in banks and the like, which contemplates the use of a customer's identification card issued by the bank to each of its customers, and comprises an automatic deposit-receiving and cash-dispensing machine, a data-transmitting system and an electronic computer which stores data concerning the balances of the accounts of the customers. When a customer uses his card in the machine for making a deposit or withdrawal, the validity of the card is checked and the account number, the amount of money to be deposited or withdrawn and other data are sent to the computer. On the basis of these data the computer rewrites the balance of the customer's account and sends necessary data back to the machine, which operates to accept the deposit from, or dispense the required amount of cash to, the customer.



3,648,021

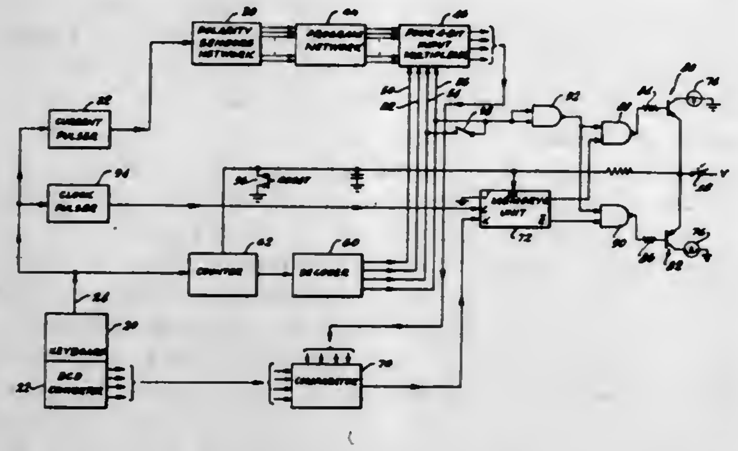
ELECTRONIC VALIDATOR SYSTEM FOR MAGNETIC CREDIT CARDS AND THE LIKE

Waldo I. Rogers, Arcadia, Calif., assignor to Rusco Industries, Inc., Los Angeles, Calif.

Filed Mar. 17, 1970, Ser. No. 20,193

Int. Cl. G06k *7/00*

U.S. Cl. 235—61.7 B **5 Claims**



A plurality of resistive elements, each adapted to exhibit the Hall effect, are arranged in a plane. A magnetic card with a plurality of portions magnetized along lines perpendicular to the card faces is adapted to be placed adjacent such plane with each magnetized portion aligned with a respective element. From each element a voltage is developed which represents the polarity of the adjacent end of the magnetized card portion aligned therewith, and via a program network such voltages are applied to a multiplexer. A keyboard is provided with keys or pushbuttons to be operated by a customer in a predetermined sequence. Via a counter and decoder, successive key operations enable different portions of the multiplexer to provide successive BCD outputs therefrom, and simultaneously a converter establishes a BCD output corresponding to the number or location of each key that is operated. The pairs of BCD signals are applied to a comparator which is connected to a memory unit. A clock pulse established upon each key operation is also applied to the memory unit, and an output for the memory unit is established coincidentally with the occurrence of the clock pulse generated upon operation of the last key in the predetermined sequence. The output of the memory unit is true if the successive comparisons matched, whereupon a lamp is operated to signify that the card is good. The memory unit output is false if all comparisons did not match, whereupon a lamp is operated that signifies the card is bad.

3,648,022

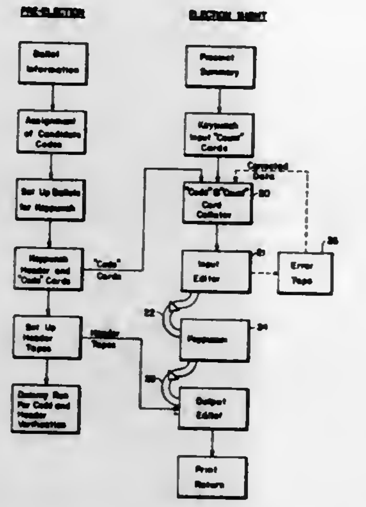
METHOD FOR TABULATING ELECTION RETURNS

Arnold G. Cook, River Forest, Ill., assignor to Automatic Voting Machine Corporation, Jamestown, N.Y.

Continuation of application Ser. No. 509,911, Nov. 26, 1965, now abandoned. This application Oct. 20, 1969, Ser. No. 867,963

Int. Cl. B41j *5/36;* **G06k** *1/12, 3/00;* **G07c** *13/00*

U.S. Cl. 235—61.9 R **12 Claims**



A novel election ballot counting method and system utilizing data processing equipment and capable of providing an itemized total of the votes cast for each vote choice in an election accommodating ballot format variation including candidate rotation.

3,648,023

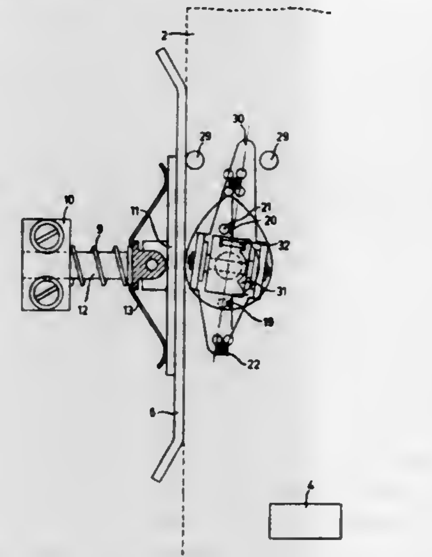
READING AND/OR WRITING DEVICE FOR RECORD CARRIERS IN CARD FORM

Horst Werner Bach, Kirburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 25, 1970, Ser. No. 13,898

Int. Cl. G06k *9/04*

U.S. Cl. 235—61.11 D **4 Claims**



A card reader for magnetic and punched cards wherein after insertion of a card into a funnel a fence, rotatably journaled on a shaft and having a card reading head mounted thereon is pressed against the edge of the card. The reading head is therefore aligned with the card regardless of the cards alignment with respect to the funnel.

3,648,024

SENSING DEVICE

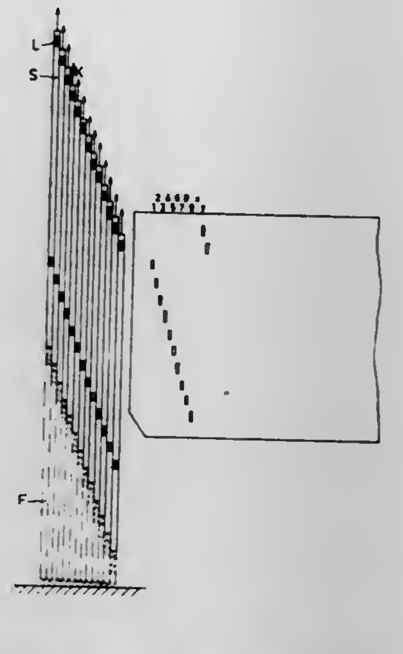
Jurgen Schroder, Hamburg; Onno Wichmann, and Werner Zuchner, both of Bremen, all of Germany, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Apr. 28, 1970, Ser. No. 32,559

Claims priority, application Germany, May 20, 1969, P 19 25 488.7

Int. Cl. G06k *7/14, 1/20, 19/08;* **B44b** *5/02*

U.S. Cl. 235—61.11 E **2 Claims**



A memory device for simulating the perforations of a punched card using a group of elongated parallel plates each having at least one perforation mutually slideably mounted and a device for moving the slideable plates using a magnetically operated mechanical lever system for sequentially sliding each plate a predetermined distance.

3,648,025

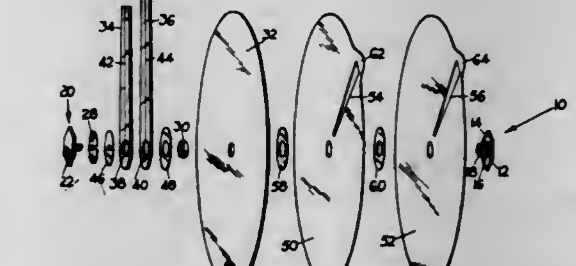
CIRCULAR SLIDE RULE

Robert P. Adams, Albany, Oreg., assignor to Albany Enterprises, Inc., Albany, Oreg.

Filed Apr. 7, 1970, Ser. No. 26,323

Int. Cl. G06c *27/00*

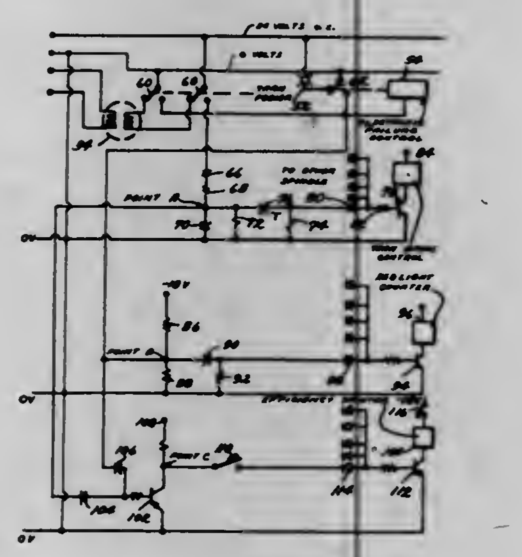
U.S. Cl. 235—83 **3 Claims**



A circular slide rule comprises a central shaft having one or more information-bearing reference discs mounted thereon. A pair of overlapped cursor arms are mounted rotatably on the shaft in frictional engagement with each other, concentrically with the discs and overlying the outer face of one of them. The degree of frictional contact between the cursor arms is predetermined to cause the arms to rotate in unison about the shaft when a displacing force is applied to one arm only, but to permit the arms to rotate relative to each other when a restraining force is applied to one while a displacing force is applied to the other. In addition, the discs are arranged for free rotation relative to each other and provided with windows arranged to permit inspection of selected areas of underlying discs.

3,648,026
DATA MONITORING SYSTEM

Fujio Abe, Wake Forest, and Clifford R. Crawford, St. Pauls, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.
Filed Nov. 18, 1969, Ser. No. 877,674
Int. Cl. G06m *3/12*; B65h *69/04*
U.S. Cl. 235—92 PD 23 Claims

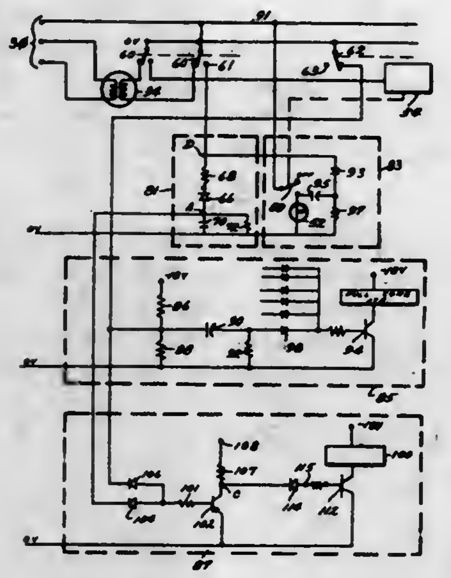


A data monitoring system for use with yarn winders and the like including a yarn-break accumulator which measures and accumulates the number of yarn-breaks which occur for each bobbin-cone combination of the winder. An indicator or red-light accumulator is provided for measuring and accumulating the number of red lights which occur as a result of the failure of the winder to successfully tie together broken strands of yarn. An efficiency monitor is provided in combination with the yarn-break accumulator and the red-light accumulator and a slub accumulator is also provided. A rejected bobbin accumulator system is provided to detect and count the number of bobbins which are rejected having residue yarn thereon. A bad knot accumulator provides an accumulated count of the number of bad knots which occur for each individual bobbin-cone combination and a scanning system is provided in conjunction with the efficiency monitor whereby a plurality of bobbin-cone combinations or spindles can be scanned over a predetermined time period whereby the efficiency of these bobbin-cone combinations in operation can be determined.

3,648,027
DATA MONITORING SYSTEM

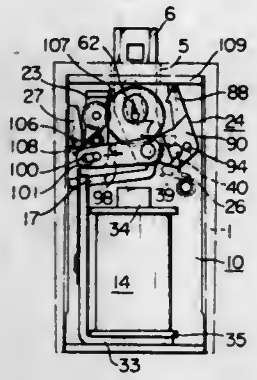
William L. Ganong, Jr.; Furnie S. Bryant; Henry R. Neill, all of Clarksville, and Robert G. Davies, Boydton, all of Va., assignors to Burlington Industries, Inc., Greensboro, N.C.
Filed Nov. 18, 1969, Ser. No. 877,675
Int. Cl. G06m *3/02*
U.S. Cl. 235—92 QC 9 Claims

A data monitoring system for use with yarn winders and the like including a yarn-break sensor network which senses the existence of a yarn break for each bobbin-cone or spindle combination of the winder. An indicator network or red-light network is provided for determining when a red light occurs as a result of the failure of the winder to successfully tie together broken strands of yarn. A full-cone sensor and accumulator network is provided in circuit with the yarn-break sensor network and the indicator network and an efficiency determining network is connected in circuit with the yarn-break sensor network, the indicator network and the full-cone sensor and accumulator network for determining and indicating the efficiency of operation of the winder. A slub count accumulator system is also provided.



3,648,028
ELECTROMAGNETIC COUNTER

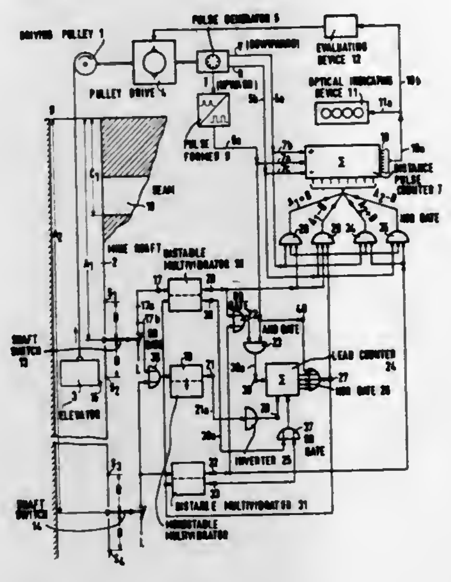
Kazuhiko Hara, and Hirozo Imai, both of Kadoma, Osaka, Japan, assignors to Matsushita Denko Kabushiki Kaisha, Osaka, Japan
Filed Nov. 24, 1969, Ser. No. 879,140
Claims priority, application Japan, Nov. 30, 1968, 43/87750; Dec. 24, 1968, 43/94775; 43/112827
Int. Cl. G06m *1/30*
U.S. Cl. 235—92 C 4 Claims



An electromagnetic counter for digitally counting applied signal pulse numbers, including resetting mechanism for simultaneously resetting a series of digit wheels to their zero position. Actuating force for the resetting mechanism is applied to a rockable first lever, which has the same number of resetting arms as that of the digit wheels for rotating them to zero position and a lever arm for rotating a rotatable frame supporting a series of pinions engaged between each of the digit wheels into pinions' disengaging position. There is provided between the lever arm of the first lever and the rotatable frame a second lever pivoted at its respective ends to them for transmitting the actuating force. The pivoting point of the first lever, respective pivoting points between the first and second levers and the second lever and rotatable pinion frame are substantially aligned on a straight line so as to make repulsing torque given to the pinions from the digit wheels to be small.

3,648,029
APPARATUS AND METHOD FOR SYNCHRONIZING DIGITAL DISTANCE PULSE COUNTERS

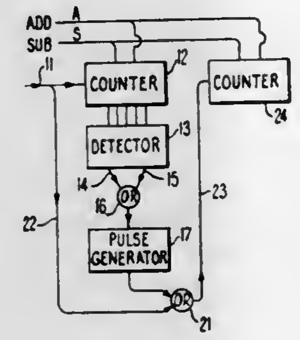
Friedrich Ungnadner, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Mar. 9, 1970, Ser. No. 17,564
Claims priority, application Germany, Mar. 13, 1969, P 19 12 663.7
Int. Cl. G06m *1/28*
U.S. Cl. 235—92 DN 9 Claims



A stationary switch having a defined response time is positioned along the travel path of a moving object and provides a signal for multiplying the distance pulses corresponding to the travel position of the moving object during the response period. A lead counter is connected to a pulse generator coupled to the moving object, which produces the distance pulses, and to the switch, and stores the distance pulses and the signal provided by the switch. A distance pulse counter is coupled to the pulse generator and to the lead counter in a manner whereby the distance pulse counter is reset in accordance with the count position of the lead counter.

3,648,030
SCALE CONVERSION APPARATUS

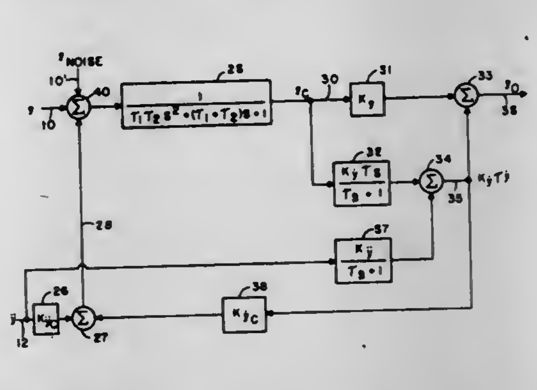
Alexander Turnbull Shepherd, Craigleith Crescent; Laurence Philip Smith, Penicuik, and Lockhart Taylor, Hailes Gardens, all of Scotland, assignors to Ferranti, Limited, Hollinwood, Lancashire, England
Filed Sept. 16, 1969, Ser. No. 858,274
Claims priority, application Great Britain, Sept. 19, 1968, 44,476/68
Int. Cl. G06m *3/14*; H03k *21/36*
U.S. Cl. 235—92 PL 5 Claims



A linear scale converter for converting an input train of electrical pulses each of which represents a required elemental movement (e.g., of a machine tool) of fixed length expressed in a particular scale, such as the Imperial scale, to an output train of pulses each of which represents such movement but expressed in another scale, such as the Metric scale, where the output/input scale ratio is D/N, includes apparatus for defining each input group of N pulses and adding algebraically to it (D-N) pulses at locations spaced approximately evenly over the group, thereby providing an output group of D pulses.

3,648,031
CONTROL SYSTEM FILTERING TECHNIQUE

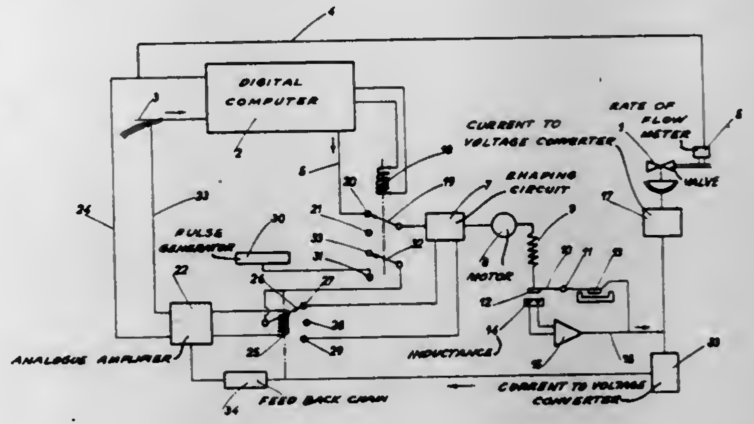
Gordon L. Neal, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa
Filed Oct. 30, 1970, Ser. No. 85,591
Int. Cl. G05b *6/02*
U.S. Cl. 235—150.1 4 Claims



A control system filtering technique permits heavy noise filtering of a position input signal without introduction of system instabilities. A rate of change of the filtered position signal is derived and utilized in a feedback loop to complement the signal from which the rate signal was derived, permitting heavy position signal filtering without position loop phase lag and thus effectively separating the problem of generating a tight control from the sensor noise problem.

3,648,032
CONTROL INSTALLATION PROVIDING FOR SMOOTH TRANSFER BETWEEN DIGITAL AND ANALOG CONTROLS

Robert Maurice Gineste, Dravell, France, assignor to Appareils De Precision et De Controle"APC", Paris, France
Continuation of application Ser. No. 667,162, Sept. 12, 1967, now abandoned. This application May 28, 1970, Ser. No. 41,723
Int. Cl. G06j *3/00*
U.S. Cl. 235—150.5 2 Claims



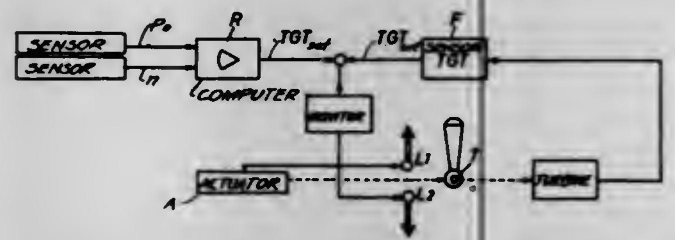
A control installation comprising a digital computer receiving data on a set value and an actual value and giving indications to a decoder controlling this element and adapted to control any element, such as a valve. The installation comprises an analogue controller which is connected in parallel with the computer on the circuit receiving data on the set value and actual value, and a changeover device which is disposed before the decoder and which can provide a changeover from control by the computer to control by the analogue controller.

3,648,033

DEVICE FOR CONTROLLING THE FUEL SUPPLY WITH PROPELLER TURBOJET ENGINES FOR AIRCRAFT BY MEANS OF A THROTTLE LEVER AND A TRIMMING LEVER

Gottfried Bader, Uberlingen, Bodensee, Germany, assignor to Bodenseewerk Geratetechnik GmbH, Uberlingen, Bodensee, Germany

Filed Apr. 17, 1970, Ser. No. 29,489
Claims priority, application Germany, Apr. 19, 1969, P 19 20 002.3
Int. Cl. F02c *9/04*
U.S. Cl. 235—150.21 **14 Claims**



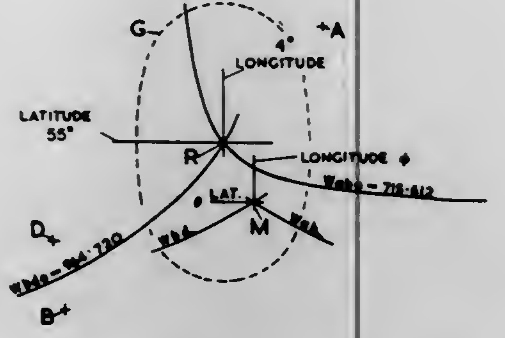
A plurality of input signals are fed to a computer which determines a "set" signal indicative of a desirable turbine gàs temperature of the turbojet engine. The input signals include information as to the engine speed and the air pressure at the altitude at which the engine is operating. An "actual" signal is derived indicative of the existing turbine gas temperature and is compared with the "set" signal to produce an error signal. From the error signal indications are given to the pilot as to the movement required of the trimming lever to achieve the desirable turbine gas temperature for the conditions under which the engine is operating. The error signal can be used for automatic correction of the setting of the trimming lever.

3,648,034

NAVIGATIONAL APPARATUS

Graham John Lawson, Aldershot, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Nor thern Ireland

Filed Nov. 21, 1969, Ser. No. 878,848
Int. Cl. G06f *15/50*
U.S. Cl. 235—150.26 **10 Claims**



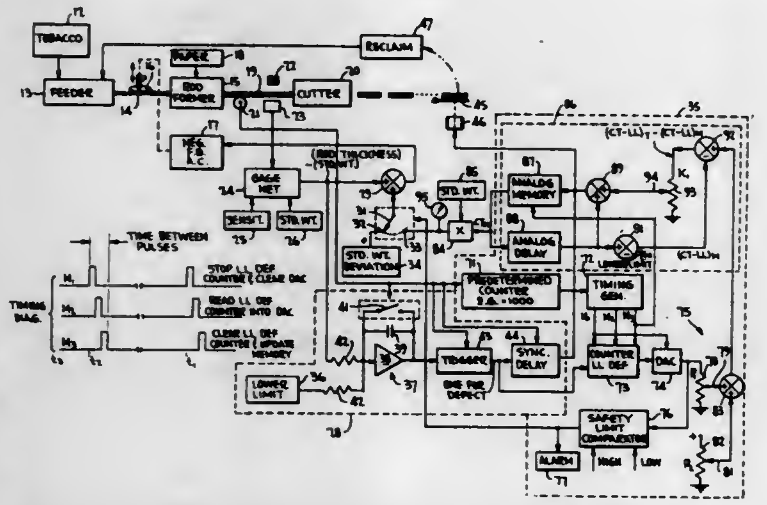
Navigational apparatus for use in a mobile craft comprises measuring means for providing electrical representations of two coordinates of the two position of the mobile craft relative to a hyperbolic navigation system, a data store for holding representations of sets of constants, selection means for selecting one of the sets, and a computer for calculating given functions of the measured coordinates and the selected constants to produce useful approximate indications of the latitude and longitude of the mobile craft. The functions may be a pair of polynomials of the second degree, each having five constants, so that there will be 10 constants in each set.

3,648,035

SYSTEM AND METHOD FOR OPTIMIZING PROCESSOR OR EQUIPMENT PROFIT

Dwight L. Hart, Worthington; Henry T. Jaggers, and Charles S. Walker, both of Columbus, all of Ohio, assignors to Industrial Nucleonics Corporation

Filed June 2, 1969, Ser. No. 829,283
Int. Cl. G06g *7/66;* **G05b** *13/02*
U.S. Cl. 235—151.1 **41 Claims**



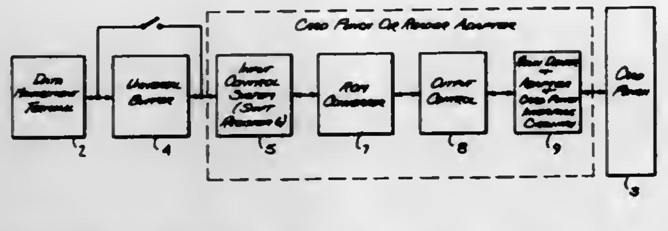
In the embodiment specifically described and illustrated, there is disclosed a system and method for maximizing the profit of a tobacco manufacturing process by computing a measure of the process spread, which can be calculated either in response to standard deviation or fraction defective. In response to the calculation of process spread, the average weight of cigarettes manufactured is controlled to maximize profit so that average weight is minimized and variable percentage of the cigarettes weigh less than a limit value. Those cigarettes weighing less than the limit value are identified and the tobacco therein is reused.

3,648,036

CARD PUNCH READER ADAPTER

Raymond Walter Limbert, Bedford, Mass., assignor to Viatron Computer Systems Corporation

Filed Oct. 22, 1969, Ser. No. 868,469
Int. Cl. G06f *3/00*
U.S. Cl. 235—154 **4 Claims**



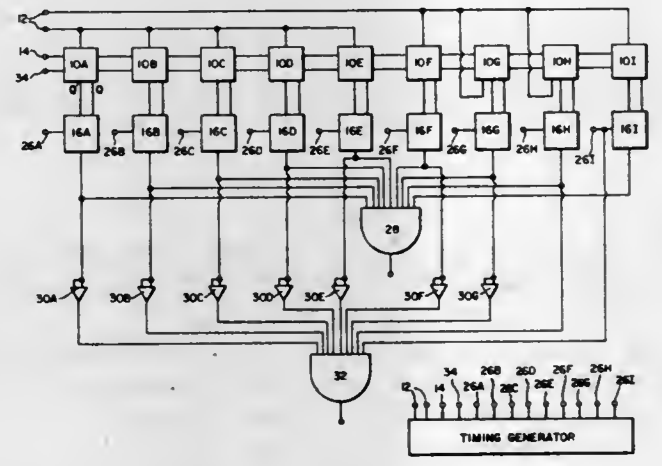
A translator system for converting electrically or magnetically encoded signals from tape or other storage mediums to a punched card or vice versa. The apparatus may include a buffer circuit for periodically releasing the terminal equipment during the card punching operation or the reverse operation of translating prepunched cards to tape or other recording means. In addition, the translator circuit includes means to convert one punch card code such as the Hollerith code to a second code such as the ASCII code widely used for data transmission and the change data in a serial mode to a parallel mode and vice versa. These circuits are combined with a control system which permits the translating circuit to be used to prepare or write punch cards or alternatively to translate or read already punched cards and to record the punch card data on tapes or other data storage means.

3,648,037

SYMMETRICAL FUNCTION GENERATOR

Walter Hosey Tew, Jr., Deland, Fla., assignor to General Electric Company

Filed Dec. 31, 1970, Ser. No. 103,034
Int. Cl. G06f *15/34*
U.S. Cl. 235—197 **2 Claims**



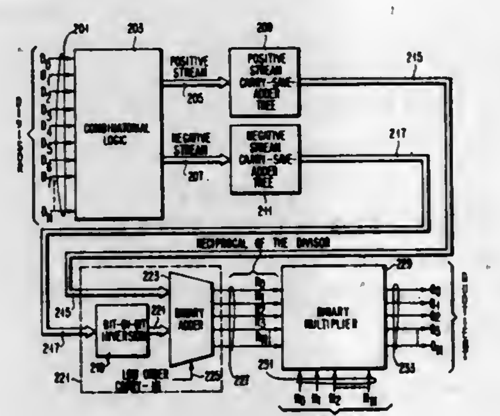
A mathematical function having horizontal symmetry is generated progressively for each vertical coordinate. A binary counter is set with the number of one horizontal coordinate for a particular vertical coordinate. Gate stages associated with each stage of the counter receive signals which set them sequentially with the numbers of all horizontal coordinates. When the gate stage number matches that contained in the counter an output signal is produced by every gate stage enabling a first AND gate. The outputs from the gate stages are also inverted to the complementary binary number and enable a second AND gate. The AND gate signals identify the two symmetrical horizontal coordinates associated with the vertical coordinate.

3,648,038

APPARATUS AND METHOD FOR OBTAINING THE RECIPROCAL OF A NUMBER AND THE QUOTIENT OF TWO NUMBERS

Hugh M. Sierra, Los Altos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 25, 1969, Ser. No. 819,331
Int. Cl. G06f *7/39, 7/38*
U.S. Cl. 235—164 **7 Claims**



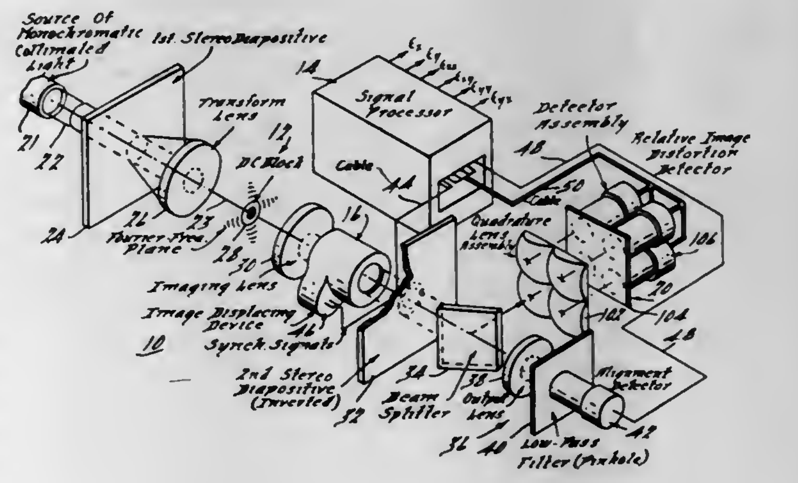
Apparatus and method for obtaining the reciprocal of a number and the quotient of two numbers is disclosed. The dividend and divisor, after left justification of the most significant "one" of each, are supplied to an array of combinatorial logic, the output of which is a group of polynomials having positive and negative terms. Arithmetic means are provided for subtracting the negative terms of the polynomials from the positive terms thereof to obtain the reciprocal of the divisor. This reciprocal may thereafter be multiplied by the dividend by well-known multiplication means to form the desired quotient. The apparatus and method perform the described arithmetic functions according to a flow-through scheme, where a flow-through scheme is defined as a scheme not requiring iterative techniques.

3,648,039

OPTICAL CORRELATOR FOR AUTOMATIC STEREOPLOTTING APPARATUS

Daniel C. Kowalski, Southgate, Mich., assignor to The Bendix Corporation

Filed July 11, 1969, Ser. No. 841,085
Int. Cl. G06g *7/19, 9/00*
U.S. Cl. 235—181 **16 Claims**



A coherent optical correlator having a canted optical flat for optically displacing the imagery on one transparency of a stereo pair with respect to the imagery on the other transparency. The canted optical flat is rotatable such that the image is displaced in a circular path. Image misalignment is computed by multiplying the output signal of the correlator by sine and cosine functions which are in synchronism with the rotating optical flat. The optical correlator is also provided with a multiaperture output section which detects relative image distortions through independent correlation of the imagery received by each aperture.

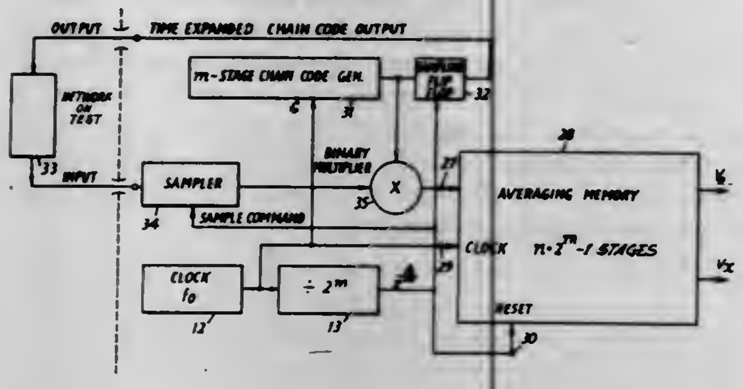
3,648,040

CHAIN-CODE CORRELATOR

Ivar Wold, Farnborough, Hampshire, England, assignor to The Solartron Electronic Group Limited, Farnborough, Hampshire, England

Filed May 26, 1970, Ser. No. 40,638
Claims priority, application Great Britain, May 28, 1969, 27,045/69
Int. Cl. H03k *5/18;* **G01r** *31/28*
U.S. Cl. 235—181 **5 Claims**

A chain-code correlator for determining the response of apparatus such as servomechanisms to command signals has a chain-code generator of *m* stages and clock-frequency f_c connected through a first sampler to an output circuit connected to apparatus to be tested. The sampler provides samples of the code at a recurrence frequency $f_c/2^m$. An input from the apparatus under test is connected through a synchronized second sampler to a multiplier where it is multiplied by the chain code. The output of the multiplier is applied to an averaging memory of 2^m-1 stages giving the correlation function for (2^m-1) time delays at increments of $1/f_o$. Only *m* shift registers are required for (2^m-1) time delays.



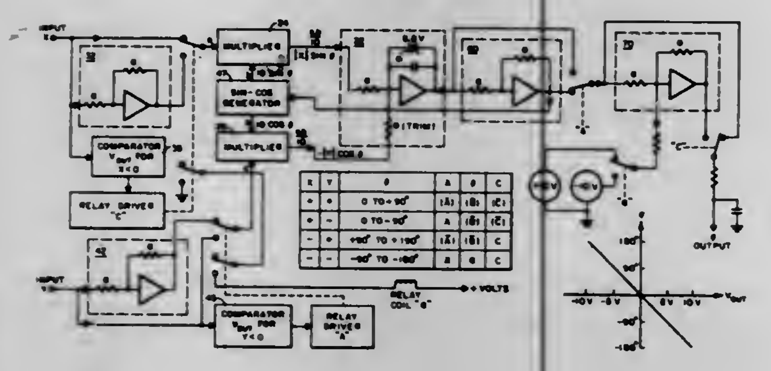
3,648,041
ELECTRONIC ANGLE GENERATOR

Finton J. Beatrice, Vernon, Conn., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 11, 1970, Ser. No. 45,521

Int. Cl. G06g *7/22*

U.S. Cl. 235—186 **2 Claims**



An electronic angle generator for generating an output voltage proportional to an angle, the tangent of which is a ratio of the two input voltages to the generator, comprising multipliers and function generators utilized for solving the equation $X \sin \theta = Y \cos \theta$ by closed loop action (implicit computation).

3,648,042
APPARATUS FOR SIGNALLING ANGULAR DISPLACEMENT

Brian Raymond Perrett, Radstock, England, assignor to British Aircraft Corporation Limited, London, England

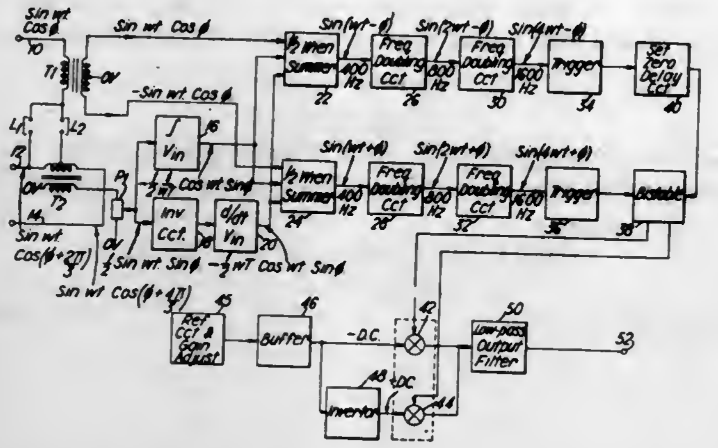
Filed Mar. 31, 1970, Ser. No. 24,147

Claims priority, application Great Britain, Apr. 16, 1969, 19,435/69

Int. Cl. G06g *7/22*

U.S. Cl. 235—189 **8 Claims**

To signal the angle displacement of the synchro transmitter or resolver rotor, signals representing products of trigonometrical functions of the supply voltage angle ωt and the rotor angle ϕ are processed until they can be combined to give a resultant $\sin(\omega t \pm \phi)$ or $\cos(\omega t \pm \phi)$ and the resultant is then compared with $\sin \omega t$ or $\cos \omega t$ to obtain the rotor angle ϕ. Parallel integrator and differentiator circuits in the processing unit prevent substantial amplitude change with frequency drift. Frequency doubling circuits are used in such a manner that flyback occurs at a selected submultiple of 180°.



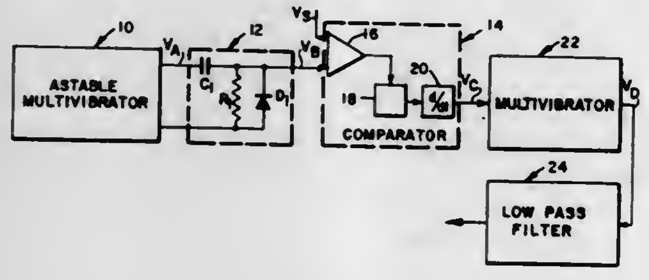
3,648,043
LOGARITHMIC FUNCTION GENERATOR UTILIZING AN EXPONENTIALLY VARYING SIGNAL IN AN INVERSE MANNER

Paul R. Caron, Norwood, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed May 28, 1970, Ser. No. 41,348

Int. Cl. G06g *7/26, 7/24*

U.S. Cl. 235—197 **11 Claims**



A technique which utilizes an exponentially varying electrical signal in an inverse manner to derive the logarithm of an input signal is disclosed. In a preferred embodiment of apparatus utilizing the technique, a voltage commensurate with an input signal is compared with an exponentially decaying voltage to provide an output proportional to the time required for the exponential voltage to fall from a preset reference level to the level of the voltage commensurate with the input. This output is employed to control a pulse generator and the output of the pulse generator is averaged to provide a DC voltage which is the logarithm of the input signal.

3,648,044
HOLDER FOR A CAPLESS LIGHT BULB

Dominic Paul Edward Barnard, and Brian L. H. Bishop, both of Witney, England, assignors to Smiths Industries Limited, London, England

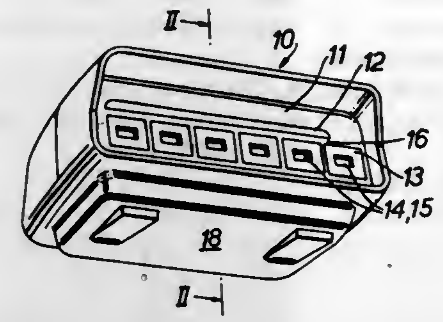
Filed Dec. 15, 1969, Ser. No. 884,967

Claims priority, application Great Britain, Dec. 13, 1968, 59,407/68

Int. Cl. B60q *3/04*

U.S. Cl. 240—8.16 **9 Claims**

A holder for a capless light bulb constructed so as to permit light from a capless light bulb held by the holder to emanate from both the bulbous portion and the pinched portion of the capless light bulb. Indicator apparatus incorporating such a holder is also described.



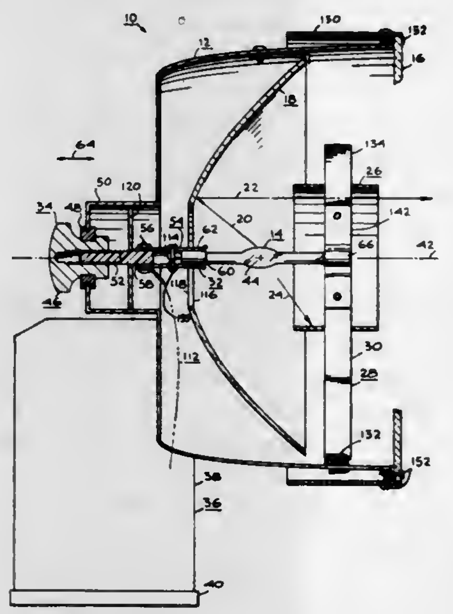
3,648,045
AXIALLY AND RADIALLY ADJUSTABLE LANTERN

Allan D. Le Vantine, 18225 Rancho St., and Glen D. Benskin, 18233 Rancho St., both of Tarzana, Calif.

Filed Apr. 23, 1969, Ser. No. 818,654

Int. Cl. F21l *11/00*

U.S. Cl. 240—44.2 **9 Claims**



A portable handheld searchlight for providing a high-intensity beam of electromagnetic radiation for comparatively long periods of time from a self-contained, easily portable power source. A Xenon gas discharge lamp is utilized as the source of electromagnetic radiation in the searchlight and it is reflected therefrom by a conventional parabolic reflector. Mechanical adjustments are provided for moving the Xenon lamp along the axis of the parabolic reflector to points closer thereto and further therefrom than a focal point of the parabolic reflector to vary the dispersion or divergence of the reflected beam. A radial adjustment for positioning the Xenon lamp along the axis, which adjustment is generally only made once at the time of manufacture, may also be provided. A light shield comprising a cylindrical tubing around the Xenon lamp is also incorporated as part of the structure to intercept the electromagnetic radiation emitted from the lamp that has not been reflected from the reflector and allows transmission thereof only in directions substantially parallel to the axis of the reflector. A complete electrical power supply system including a battery for providing electrical energy, and circuitry for providing the functions of comparatively high voltage for starting or igniting the gas discharge lamp and intermediate parallels of electrical energy to the lamp after ignition but prior to steady state operation, and also electrical energy of a comparatively low voltage for sustained steady state operation.

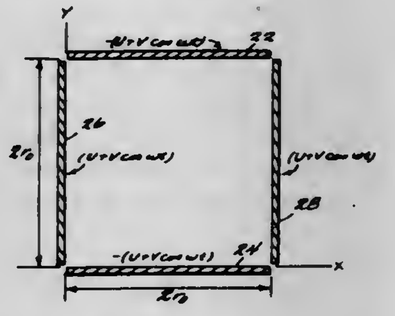
3,648,046
QUADRUPOLE GAS ANALYZER COMPRISING FOUR FLAT PLATE ELECTRODES

Dean R. Denison, and Charles F. Morrison, Jr., both of Boulder, Colo., assignors to Granville-Phillips Company, Boulder, Colo.

Filed May 18, 1970, Ser. No. 38,076

Int. Cl. B01d *59/44*

U.S. Cl. 250—41.9 DS **15 Claims**



A quadrupole analyzer wherein the trajectory stability of the charged particles is determined by two parameters *a* and *q* where

$$a = \frac{eU}{Kmw^2r_0^2}$$

and

$$q = \frac{eV}{2Kmw^2r_0^2}$$

where

$$K = \text{any value except } 0.125 \leq K \leq 0.126.$$

A further aspect of the invention relates to performance optimization of a quadrupole analyzer in the presence of relatively large amplitude, nonquadrupole field components.

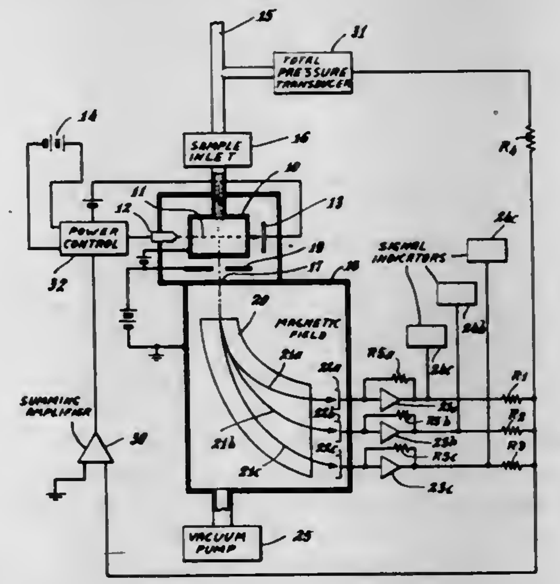
3,648,047
SENSITIVITY CONTROL FOR MASS SPECTROMETER

Bliss M. Bushman, Claremont, and Wayne J. Whistler, Glendora, both of Calif., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed July 13, 1970, Ser. No. 54,095

Int. Cl. H01j *39/34*

U.S. Cl. 250—41.9 G **7 Claims**



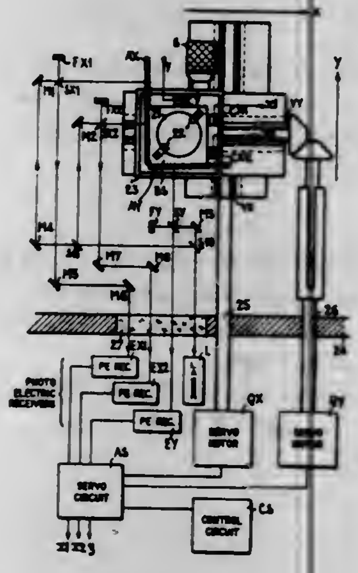
In a mass spectrometer wherein gases of a mixture are ionized and respective ion beams are directed to collector plates or cups to generate proportional signals for determining the relative amounts of the several gases in the mixture, the sensitivity of the collector cup signals is maintained by adjusting the ionizing power supply as required to maintain the total of the signals from the collector plates or cups substantially equal to a reference signal. The total of the collector signals are compared with the reference signal by a summing amplifier. When the compared signals differ from a predetermined relation (e.g., equality) a proportional output signal is generated and applied to power control means to vary the level of power applied to ionize the mixture, and hence the levels of the collector signals, until the total of the collector signals is in said predetermined relation to the reference signal. Resistors associated with the collector plates or cups and with the reference signal source are selected so that the total of the collector signals and the reference signal are in said predetermined relation when the ion species collected are related to the gas species of interest.

3,648,048

SYSTEM AND METHOD FOR POSITIONING A WAFER COATED WITH PHOTORESIST AND FOR CONTROLLING THE DISPLACEMENTS OF SAID WAFER IN A SCANNING ELECTRON APPARATUS

Olivier Cahan, Gif-sur-Yvette; Jean-Edgar Picquendar, Saint-Remy-Les Chevreuse, and Georges Pircher, Gif-sur-Yvette, all of France, assignors to Compagnie Francaise Thomson Houston-Hotchkiss Brandt, Paris, France

Filed Oct. 15, 1969, Ser. No. 866,506
Int. Cl. H01j *37/20*
U.S. Cl. 250—49.5 A **6 Claims**



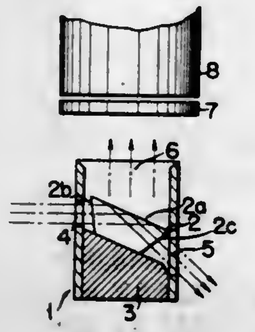
System and method for positioning a wafer coated with photoresist and for controlling the displacements of this wafer in a scanning electron beam apparatus such as a scanning electron microscope. In this system, the sample holder of the scanning electron microscope comprises, in addition to the conventional micrometer mechanisms, three piezoelectric actuators as fine adjustment means for positioning the wafer in two orthogonal directions and in rotation. The sample holder is further coupled to three interferometers which are located within the evacuated enclosure of the microscope and are monitored by a set of fringe counting units located outside the enclosure. The provision of a programmer and of a servocontrol system allow the displacements of the wafer to be automatically controlled and measured.

3,648,049

DOSIMETER USING A FLUORESCENT GLASS ELEMENT

Ryosuke Yokota, and Yuhei Muto, both of Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed June 16, 1969, Ser. No. 833,621
Claims priority, application Japan, June 20, 1968, 43/42381
Int. Cl. G01t *1/06*
U.S. Cl. 250—71.5 R **3 Claims**



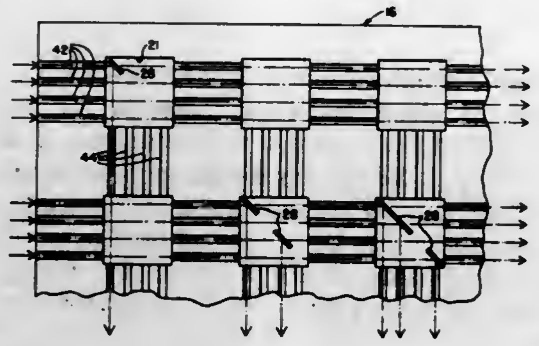
This dosimeter comprises a vessel having an inlet slit and outlet slit for ultraviolet rays and a slit for releasing fluorescent light beams which is opened in a direction almost perpendicularly intersecting the direction in which the ultraviolet rays are introduced. In said vessel is housed a trapezoidal fluorescent glass element whose operating plane is exposed to radiation in advance and so positioned as to face the ultraviolet-ray inlet slit and fluorescent light beam release slit and also to be inclined at an angle allowing for the total reflection of ultraviolet rays with respect to the direction in which they are brought in.

3,648,050

OPTOELECTRONIC DATA ENTRY MEANS HAVING PLURALITY OF CONTROL MEANS TO DIRECT PART OF RADIATION IN CHANNEL FROM RADIATION SOURCE TO OUTPUT CHANNEL

Tuh-Kai Koo, 1039 E. Rahn Road, Dayton, Ohio

Filed Aug. 6, 1970, Ser. No. 61,646
Int. Cl. H01j *39/12*
U.S. Cl. 250—208 **11 Claims**



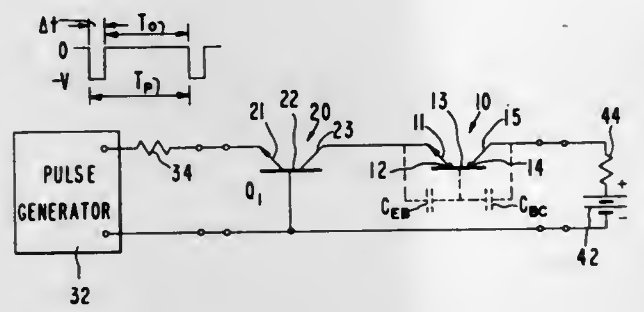
An optoelectronic data entry means which employs radiation and radiation-responsive elements as a means of converting information from manually entered form to electrical signal form. A plurality of data entry elements are mounted in chambers in a housing in row-and-column arrangement. A plurality of communication channels and output channels are disposed in a generally planar orientation in the housing. The communication channels provide access from a source of radiation to the chambers in which the data entry elements are disposed, and the output channels provide radiation paths from said chambers to a plurality of detectors capable of converting the radiation to electrical signals. Beam splitting devices mounted on the inner ends of the data entry elements are effective, upon selective operation of the data entry elements, to deflect a portion of the radiation admitted to the chambers through the communication channels into the output channels for detection by the corresponding detectors, while permitting another portion of said radiation to pass through said beam splitters for possible interception by the beam splitter of another data entry element associated with the same communication channel. Two arrangements are disclosed, one of which includes mechanical encoding of the input information.

3,648,051

PHOTOSENSOR CIRCUIT WITH INTEGRATED CURRENT DRIVE

Gene P. Weckler, Campbell, Calif., assignor to Fairchild Camera and Instrument Corporation, Mount View, Calif.

Filed Mar. 3, 1970, Ser. No. 16,173
Int. Cl. H01j *39/12*
U.S. Cl. 250—211 J **6 Claims**



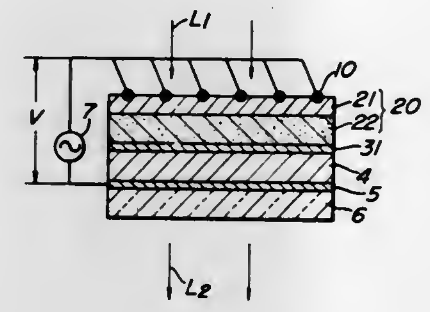
The collector of a common-base transistor is coupled to the emitter of a phototransistor, so that upon the application of suitable pulses to the emitter of the common-base transistor and a source of constant voltage to the collector of the phototransistor, output pulses are generated by the phototransistor whose width is a function of photon flux incident to the unconnected base of the phototransistor.

3,648,052

SOLID-STATE IMAGE-CONVERTING DEVICE

Tadao Nakamura; Shigeaki Nakamura, both of Kawasaki-shi, and Tadao Kohashi, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Jan. 22, 1969, Ser. No. 793,048
Int. Cl. H01j *31/50*
U.S. Cl. 250—213 R **6 Claims**



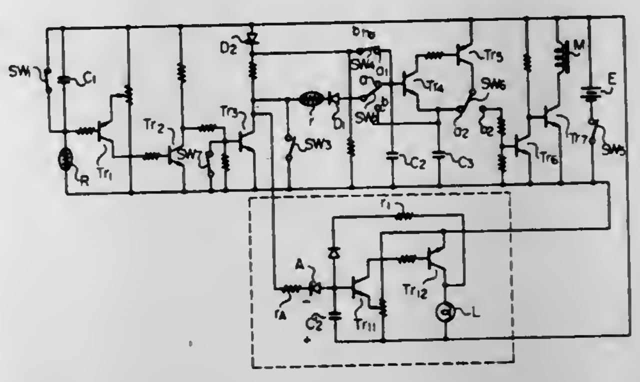
A solid-state image-converting device comprising an energy-sensitive layer and a luminescent element whose luminescence is controlled in response to the variation of the impedance of said energy-sensitive layer, in which said energy-sensitive layer is a composite layer consisting of a layer for sensing the incident energy and a photoconductive layer responding to the light fed back from said luminescent element, thereby to improve the sensitivity of the device greatly.

3,648,053

WARNING CIRCUIT FOR USE IN A TTL-TYPE ELECTRONIC SHUTTER

Takayoshi Sato, Tokyo, Japan, assignor to Kabushikikaisha Copal, Tokyo, Japan

Filed Nov. 6, 1970, Ser. No. 87,411
Claims priority, application Japan, Nov. 14, 1969, 44/91710
Int. Cl. G01j *1/00, 1/52;* **Holl** *39/12*
U.S. Cl. 250—214 P **10 Claims**



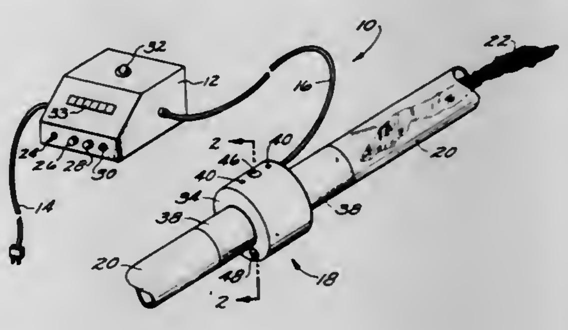
Warning circuit for use in a TTL-type electronic shutter having an integrating circuit, a memory circuit, an exposure control circuit and a switching circuit for actuating shutter blades for the proper exposure in accordance with the intensity of light received by a photoelectric element of the integrating circuit adapted to receive the light from the object through the objective of a camera. The memory circuit provides a reference voltage in accordance with the reference time set in the integrating circuit in response to the intensity of light. The warning circuit comprises a series circuit of a resistor and a capacitor and a transistor connected to the series circuit and adapted to energize pilot means when triggered. The series circuit is connected to the memory circuit so as to be actuated during the reference time while the transistor is triggered when the voltage of the capacitor reaches the triggering voltage of the transistor. The emitter bias of the transistor is set to either of the upper limit or the lower limit of the shutter speed, so that the improper condition of the scene brightness for the proper exposure is detected by inspecting whether or not the pilot means is energized.

3,648,054

ARTICLE DETECTING AND COUNTING APPARATUS

Robert L. Nance, Burlington, N.C., assignor to AMF Incorporated, New York, N.Y.

Filed June 12, 1970, Ser. No. 45,704
Int. Cl. G06m *7/00*
U.S. Cl. 250—223 R **6 Claims**



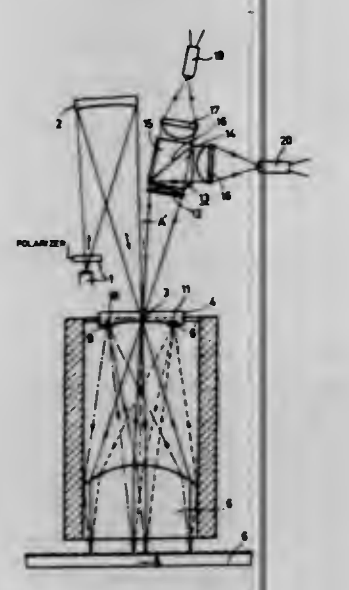
Pneumatically conveyed knitted articles are accurately counted by inexpensive apparatus including protectively mounted photoelectric components and controls for adjusting the magnitude and maximum frequency of signals transmitted therefrom to a counting device.

3,648,055

APPARATUS FOR DETERMINING THE RELATIVE MOVEMENT OF AN OBJECT WITH THE USE OF AN OPTICAL GRATING RIGIDLY SECURED TO THE OBJECT

Hendrik De Lang, Delft, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 4, 1969, Ser. No. 796,508
Claims priority, application Netherlands, Feb. 6, 1968, 6801683
Int. Cl. G01d *5/34*
U.S. Cl. 250—231 R **3 Claims**



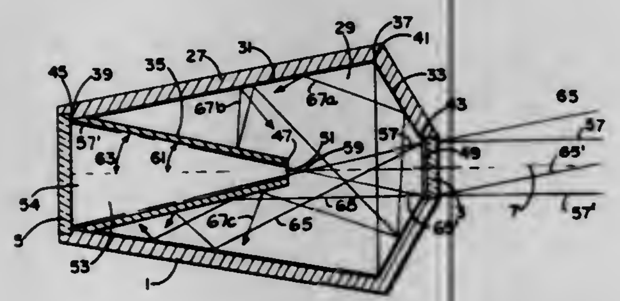
The invention relates to an apparatus for determining the relative movement of an object with the use of an optical grating rigidly secured to the object, in which energy emanating from a source of energy interacts with the grating and then is supplied to a system which is sensitive to this energy and converts it into an electric signal which is a periodic function of the movement of the objects characterized in that a second optical grating the periodic direction of which is at right angles to that of the first grating covers this first grating and is substantially coplanar with it.

3,648,056

OPTICAL DETECTOR WITH RADIANT ENERGY ABSORBING CHAMBER

Thomas B. Buttweiler, Albertville, and Joseph S. Titus, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 12, 1970, Ser. No. 2,138
Int. Cl. H01j *15/00*
U.S. Cl. 250—239 **4 Claims**



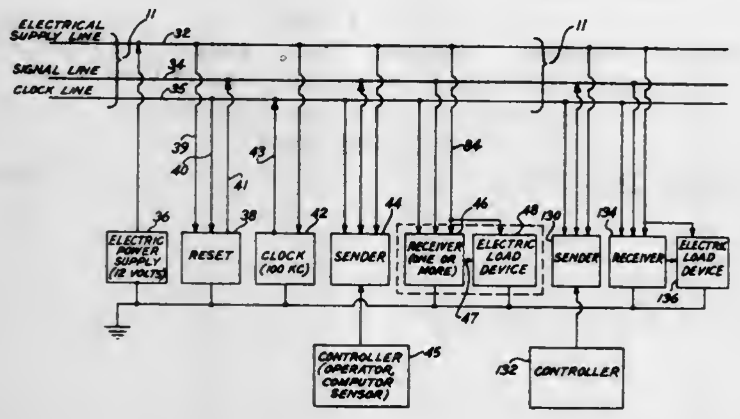
Apparatus for protecting an electro-optical detector from sources of radiant energy located off the primary optical axis is provided so as to take advantage of the focusing characteristics of the primary optical components to direct desired radiation in a cavity designed and located to receive the focused off-axis radiant energy and cause it to dissipate by absorption during a number of reflections.

3,648,057

VEHICULAR PLEX-PATH CIRCUMFERENTIAL CONTROL AND DISTRIBUTION SYSTEM

Peter W. Sognefest, Glenshaw, and Bay E. Estes, III, Murrysville, both of Pa., assignors to Essex-International Inc.

Filed Aug. 17, 1970, Ser. No. 64,282
Int. Cl. H02j *1/08*
U.S. Cl. 307—10 R **3 Claims**



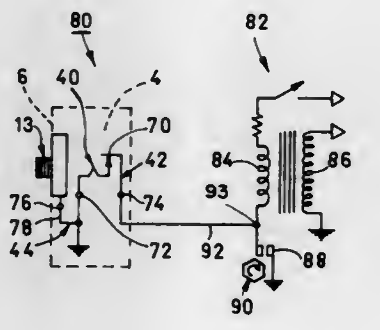
The disclosure describes an electrical control system for controlling essentially every function of a vehicle. In a preferred embodiment, the invention comprises a single harness formed of an electrical signal transmission path and an electrical power transmission path connected to a source of electrical power, control means for applying coded control signals to the electrical signal transmission path, and receiving means connected to the electrical signal and power transmission paths for receiving said coded electrical signals to selectively activate electrical switching means to operate desired load devices for performing selected vehicle functions.

3,648,058

PROTECTIVE SWITCH DEVICE

Fred R. Schraff, 16526 St. Anthony, Cleveland, Ohio

Filed Nov. 6, 1969, Ser. No. 874,633
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 AT **1 Claim**



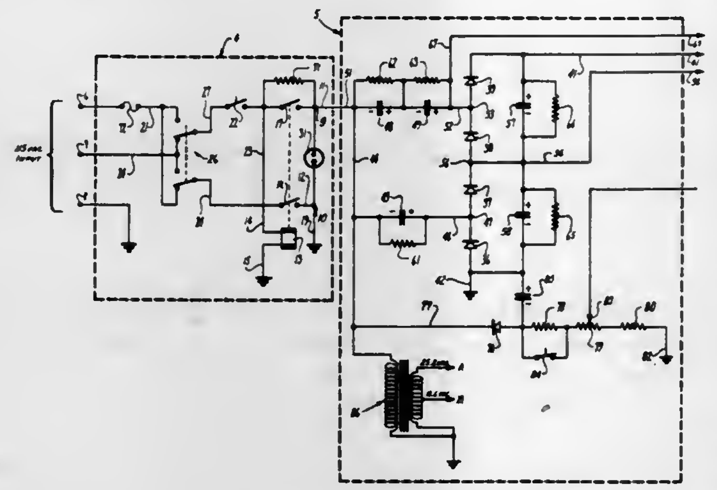
A switching device adapted for use in the ignition system of a motor vehicle including a socketlike mounting member adapted to be mounted in grounded relation on the motor vehicle. A pluglike switching member including a studlike portion adapted for insertion into said socketlike member, and contact means operably associated with said socketlike member and said pluglike member to effectively ground the ignition system in the noninstalled position of said pluglike member in said socketlike member.

3,648,059

POLARITY CONTROL ELECTRIC POWER SUPPLY CIRCUIT

Harvey James Beaudry, Fremont, and Robert M. Waldtlow, Oakland, both of Calif., assignors to International Plasma Corporation

Filed June 3, 1970, Ser. No. 43,136
Int. Cl. H02j *1/00*
U.S. Cl. 307—127 **4 Claims**



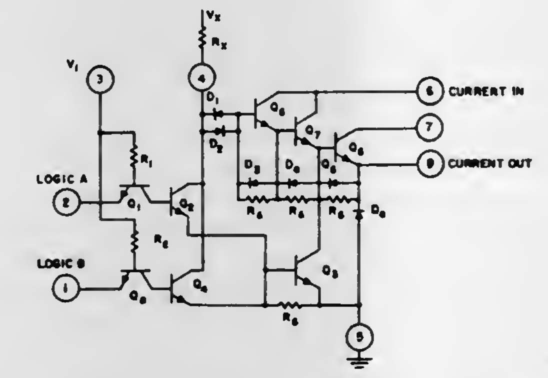
A transformerless direct-coupled power supply circuit having built-in protection against faulty potential and ground side connections to the power supply mains and including a protective normally open relay which is closed to supply power only when proper potential and ground connections are made to the power supply mains.

3,648,060

TRANSISTORIZED CURRENT SWITCH FOR MEMORY SYSTEMS

Thomas E. Hagen, Saugerties, N.Y., assignor to Ferroxcube Corporation, Saugerties, N.Y.

Filed Aug. 21, 1970, Ser. No. 66,016
Int. Cl. H03k *17/00, 19/36*
U.S. Cl. 307—215 **4 Claims**



A transistorized current-switching device energizable by means of two logic inputs coupled to first and second stage transistors which are in turn coupled to a three-stage direct-coupled transistor switch provided with diode interstage coupling.

3,648,061

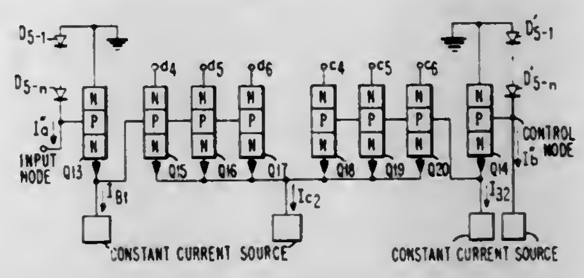
ALL TRANSISTOR LOGIC EMPLOYING TRANSISTORS OF A SINGLE-CONDUCTIVITY-TYPE

John C. Black, Endwell, and Frederick Buckley, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 19, 1970, Ser. No. 38,742
Int. Cl. H03k *19/22*
U.S. Cl. 307—218 **9 Claims**

A logic element fabricated entirely of transistors of a single-conductivity-type and having logic states represented by two ranges of current levels. The transistors are operated in their linear regions and have reference currents passing therethrough for establishing the operating current levels of the logic element.

A logic element has one or more current inputs as well as one or more current outputs. Each of the input currents is at or below a predetermined level. The adjustment of the reference currents in the system make it possible for the logic element to perform several Boolean functions depending upon the operating level. The logic elements can be operated with a reference current such that the logic element will perform the logic "OR" function. In addition, the reference current may be adjusted such that either a majority logic function or an "AND" function may also be performed.

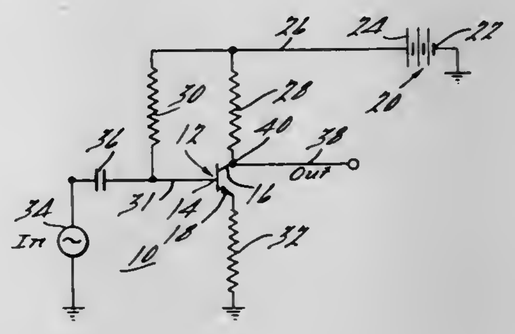


3,648,062

WIDE-BAND NONINDUCTIVE FREQUENCY DOUBLER

Michael Bozoian, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 16, 1970, Ser. No. 89,974
Int. Cl. H03b *19/14*
U.S. Cl. 307—220 **11 Claims**



A wide-band noninductive electronic frequency double including a single transistor connected in emitter-follower configuration. Resistor means are connected to the base electrode of the transistor and a source of electrical energy for applying a heavy forward bias to the base. The output terminal for the frequency doubler is positioned intermediate the collector electrode of the transistor and a resistor that connects the collector to the source of electrical energy. Frequency-doubling occurs as a result of the cumulative effect of the heavy forward bias and the emitter-follower action of the transistor.

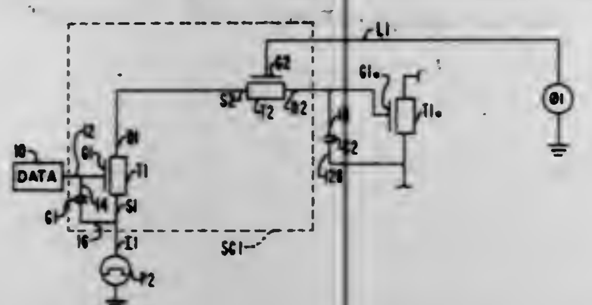
3,648,063

MODIFIED STORAGE CIRCUIT FOR SHIFT REGISTER

William K. Hoffman, Shelburne, and John W. Sumilas, Williston, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1970, Ser. No. 6,497
Int. Cl. G11c *19/00*
U.S. Cl. 307—221 C **10 Claims**

A field effect transistor (FET) shift register storage circuit has a first and second FET series connected from the drain of the first FET to the source of the second FET. A storage capacitor is connected between the gate and source of the first FET. A pulse source is connected to the source of the first FET, and data stored on the capacitor is supplied to the gate of the first FET. A clocking pulse source is connected to the gate of the second FET and is adapted to provide a clocking pulse to the second FET in overlapping relationship to a pulse from the pulse source supplied through the first FET for a storage capacitor of a subsequent storage circuit. In this arrangement, both data input to the storage cell and a pulse for the storage capacitor of a subsequent storage circuit are to the first FET. This storage circuit is both very compact and of simplified structure in integrated form.



3,648,064
MULTIPLE SIGNAL LEVEL HIGH-SPEED LOGIC CIRCUIT DEVICE

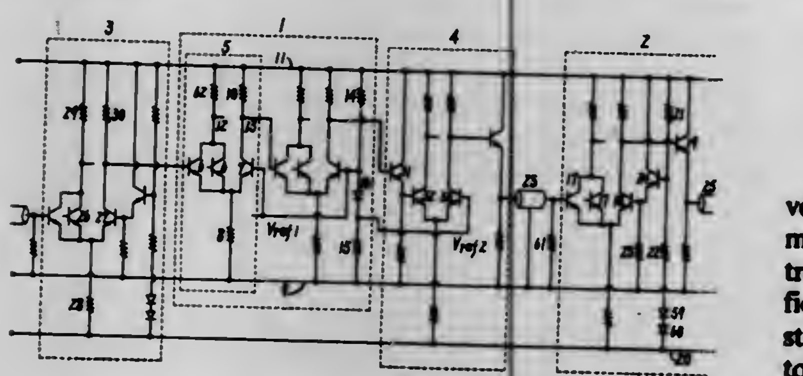
Hisakazu Mukai; Hideaki Kindo; Yoshimasa Sugahara, and Akinori Yamagata, all of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed June 30, 1969, Ser. No. 837,620

Claims priority, application Japan, July 1, 1968, 43/45101; July 5, 1968, 43/46469; Sept. 21, 1968, 43/68124

Int. Cl. H03k *19/08*, *19/34*, *19/22*

U.S. Cl. 307—213 **5 Claims**



A multiple signal level high-speed logic circuit device wherein the logic gates within a block operate under both small- and high-logic signal swings through a direct coupling configuration. The small logic signal swing is supplied from a low-voltage electric source, and the interconnections between the respective blocks are made through voltage-level converting circuits which use PN-junction level shifts.

3,648,065
STORAGE CIRCUIT FOR SHIFT REGISTER

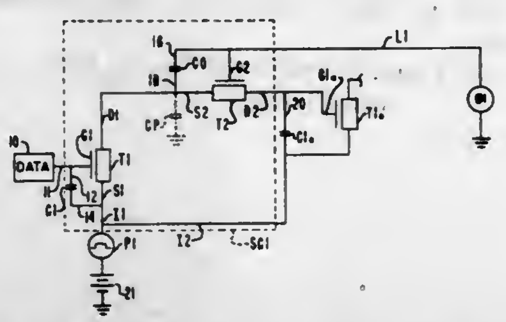
William K. Hoffman, Shelburne, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1970, Ser. No. 6,496

Int. Cl. G11c *19/00*

U.S. Cl. 307—221 C **18 Claims**

A shift register storage circuit is provided with first storage means connected to the gate of a first field effect transistor (FET) in which a pulse for another storage means of a subsequent storage circuit is supplied through the same FET independent of the state of the first storage means. In an embodiment, this is accomplished by connecting a source of the pulses to a current flow electrode of the first FET, and connecting this current flow electrode through a capacitor to the gate electrode of the first FET. A second FET serves as an isolating switch between the first FET and the storage means of a subsequent storage circuit. In this arrangement, the pulses may be applied through the first FET independently of the state of the data input at the gate of the FET and without altering the data input.



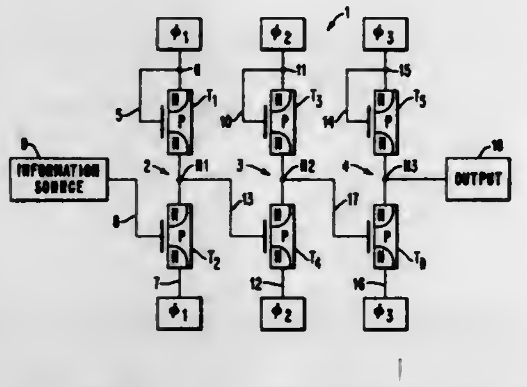
3,648,066
THREE-PHASE DYNAMIC SHIFT REGISTER

Lewis Madison Terman, South Salem, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1969, Ser. No. 837,739

Int. Cl. G11c *19/00*

U.S. Cl. 307—221 C **20 Claims**



A three-phase shift register comprising three-pulsed inverter stages is disclosed. More specifically, in a first embodiment, each inverter stage comprises a first field effect transistor connected through an internal node to a second field effect transistor. In a second embodiment, each inverter stage comprises a diode connected through an internal node to a field effect transistor. The node of each inverter is connected to the gate electrode of the second field effect transistor of the next inverter. When the clock of an inverter stage is pulsed, the internal node is charged through the diode or first FET and is discharged through the second FET when the clock pulse terminates, if the input on the gate electrode of the second FET causes it to conduct. If the second FET is held in a nonconducting condition, the internal node remains charged. Unconditional charging of the internal node of an inverter occurs during the application of a clock pulse and conditional discharging of the node occurs during the interval between the application of clock pulses to the different phases. Clock pulses are applied to inverters in sequence to advance an information bit through the register stage. The transistor devices shown may be PNP- or NPN-enhancement mode field effect transistors.

3,648,067
GATED VARIABLE POLARITY REVERSING RAMP GENERATOR

Wayne A. Sullivan, and Donald A. Scolaro, both of Fort Lauderdale, Fla., assignors to The Bendix Corporation

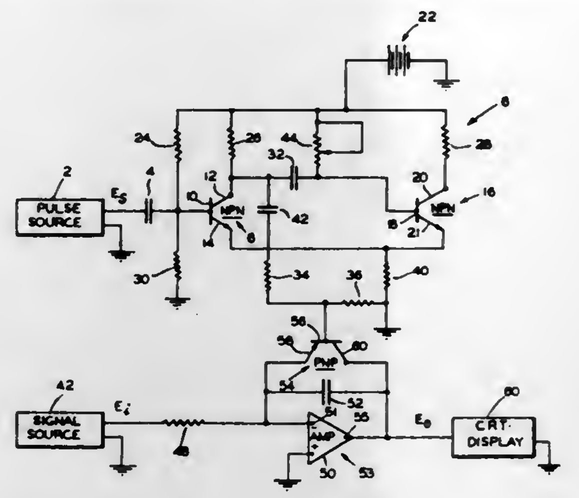
Filed July 30, 1970, Ser. No. 62,221

Int. Cl. H03k *4/08*

U.S. Cl. 307—228 **1 Claim**

A gated, variable polarity, reversing ramp generator circuit wherein a positive and negative sweep such as used in a cathode-ray tube display of aircraft navigational data is con-

trolled by positive and negative input voltage excursions about zero. A feature of the circuit is that there are no



discontinuities about zero from either positive or negative input voltage levels.

3,648,068
COMPARISON AMPLIFIER

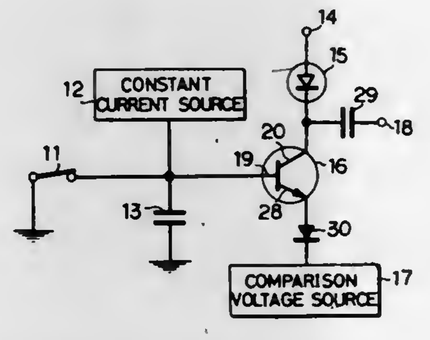
Naohisa Nakaya, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed May 8, 1969, Ser. No. 823,078

Claims priority, application Japan, May 28, 1968, 43/36163

Int. Cl. H03k *4/50*, *4/78*, *5/153*

U.S. Cl. 307—228 **8 Claims**



A comparison amplifier includes a transistor whose emitter and base are fed with a comparison voltage and an input signal respectively and whose collector is connected to an output terminal. The emitter of the transistor is connected to signal ground through a diode whose capacitance is smaller than the base-emitter capacitance of the transistor.

3,648,069
DIFFERENTIAL TRIGGER CIRCUIT

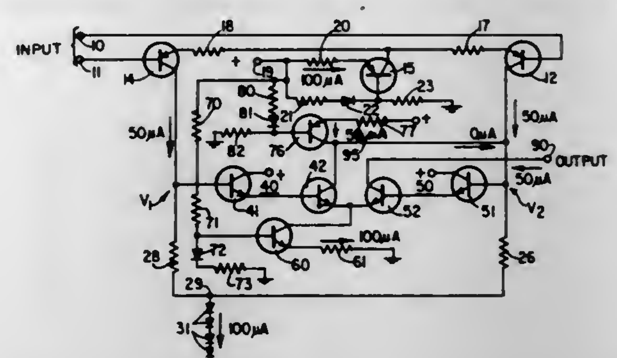
Thomas M. Frederiksen, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 13, 1970, Ser. No. 80,272

Int. Cl. H03k *5/20*

U.S. Cl. 307—235 **13 Claims**

An integrated, differential, symmetrical-hysteresis trigger circuit includes an input differential amplifier using lateral PNP-transistors, driving an output differential switch using cascaded NPN-transistors. A first current source supplies operating current to the input differential amplifier and a second current source provides operating current for the emitters of the transistors in the output differential amplifier. The collector of one of the output differential amplifier transistors is connected to a third current source, providing current which is less than that provided by the first and second current sources; and a feedback circuit provides snap-action switching of the output differential amplifier. The hysteresis of operation of the circuit is controlled by the



magnitude of the emitter resistors in the input differential stage.

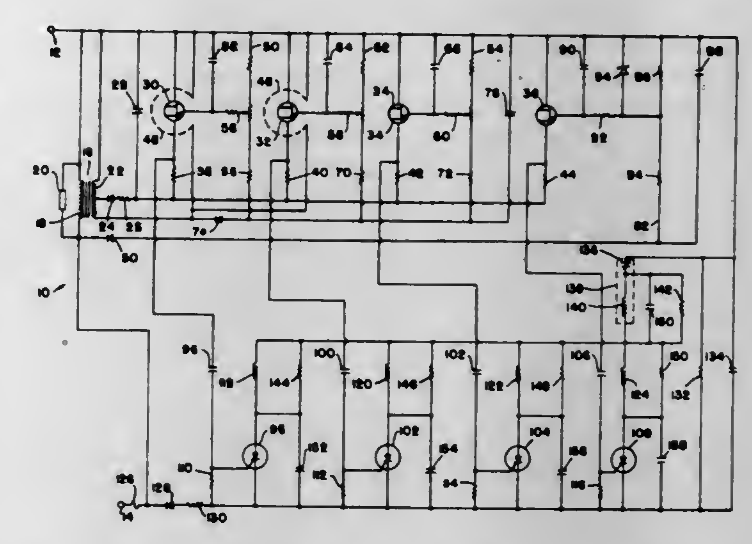
3,648,070
STRUCTURE FOR AND METHOD OF VOLTAGE DIP COUNTING

Dennis R. Eicher, Muscatine, Iowa, assignor to The Detroit Edison Company, Detroit, Mich.

Filed Nov. 20, 1969, Ser. No. 878,361

Int. Cl. H03k *5/20*

U.S. Cl. 307—235 **7 Claims**



The number of voltage dips of an alternating source of electrical energy of a plurality of separate magnitude are counted in accordance with the method of the invention with the structure of the invention. A reference voltage is produced from the source of electrical energy of substantially the root means square voltage of the source of electrical energy and the reference voltage is compared with each single cycle voltage in separate comparison circuits for each of a number of selected voltage dip magnitudes to provide output signals each time the single cycle voltage dips below the selected magnitudes of the separate comparison circuits and the output signals of each comparison circuit is counted separately. The comparison is accomplished in unijunction transistors which may be compensated for temperature change while the counting is accomplished by counters energized through silicon-controlled rectifiers in series with the counters.

3,648,071
HIGH-SPEED MOS SENSE AMPLIFIER

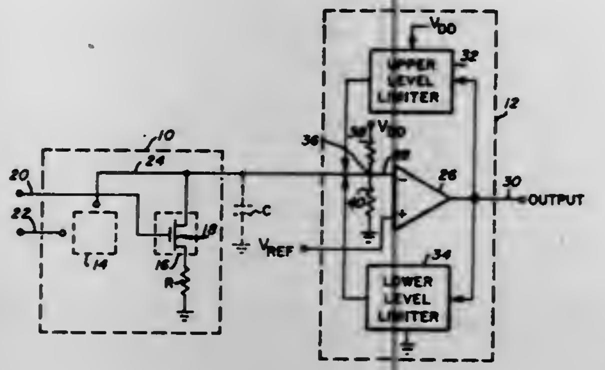
Dale A. Mrazek, Los Altos Hills, Calif., assignor to National Semiconductor Corp., Santa Clara, Calif.

Filed Feb. 4, 1970, Ser. No. 8,474

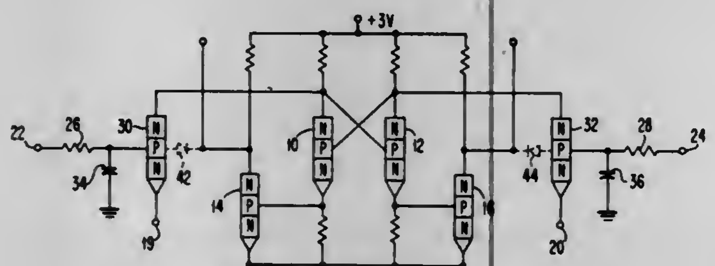
Int. Cl. H03k *5/08*

U.S. Cl. 307—237 **6 Claims**

An improved sense amplifier comprised of an all FET amplifying circuit having means for limiting the voltage swing of the read potential applied thereby to an integrated circuit memory array in sensing the stored "1" and "0" memory states. The amplifier includes upper and lower output level-limiting circuits which detect predetermined signal levels in the output signal of the amplifier and cause the impedances at the input of the amplifier to be adjusted to limit the output signal swing of the amplifier to within the predetermined signal leads. In so doing, the memory read potential is also constrained to swing within certain predetermined limits.



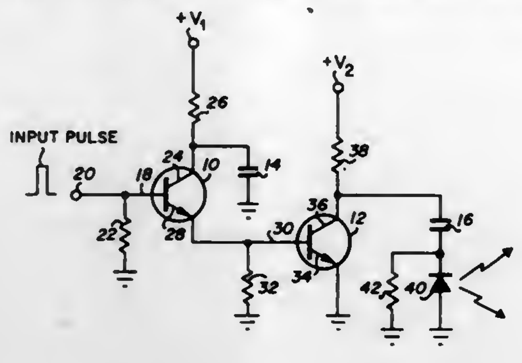
3,648,072
HIGH-SPEED GATING CIRCUIT
Leonard Roy Harper, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of application Ser. No. 465,592, June 21, 1965, now abandoned. This application Feb. 19, 1969, Ser. No. 804,355
Int. Cl. H03k *17/00, 3/12*
U.S. Cl. 307—247 **3 Claims**



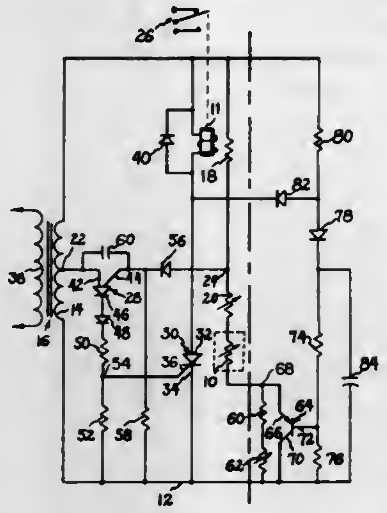
A gating circuit suitable for operating a circuit such as a bistable multivibrator at high speed wherein a gating transistor has a small capacitor coupled between the base of the transistor and ground. A gating pulse is coupled through a resistor to the base of the gating transistor to temporarily store a charge in the capacitor. A set pulse signal applied in the next instant of time to the emitter of the gating transistor causes the gating transistor to be turned on to produce at the collector of the gating transistor, a current pulse that is sufficient to control the bistable multivibrator circuit.

3,648,073
PULSE DRIVER CIRCUIT APPARATUS
Gerald R. Sams, Atherton, and Robert H. Watson, San Jose, both of Calif., assignors to Gerald R. Sams, Atherton, Calif.
Filed Sept. 17, 1968, Ser. No. 760,270
Int. Cl. H03k *17/60*
U.S. Cl. 307—246 **2 Claims**

Pulse driver circuit apparatus of the type suited for use as a means to energize GaAs laser diodes and the like wherein a first transistor operated in the avalanche mode is used to rapidly inject a stored quantity of charge into the base of a power transistor which serves as a gate for discharging a second capacitor into the low-impedance laser diode or other output apparatus.



3,648,074
ON-OFF CONTROLLER WITH SOLID-STATE DIFFERENTIAL CIRCUIT
Richard K. Nurnberg, Norristown, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Filed May 4, 1970, Ser. No. 34,128
Int. Cl. H03k *17/00;* **H05b** *1/02;* **G05d** *23/00*
U.S. Cl. 307—252 N **9 Claims**

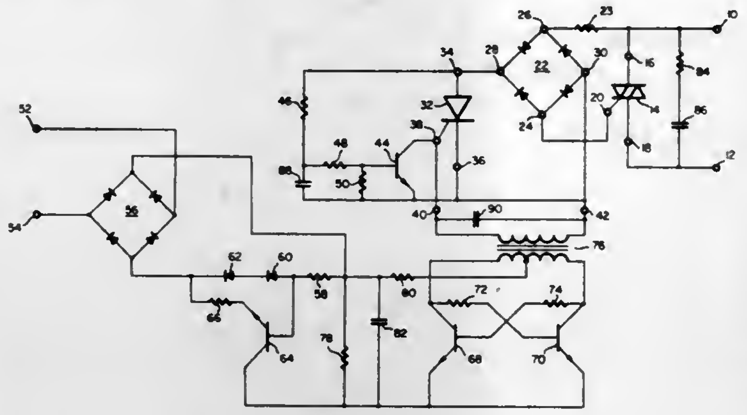


An on-off controller energized from an alternating current source with differential operation. The differential operation is obtained by using a solid-state circuit which introduces a resistance change in the circuitry in response to the on and off mode of the controller. The solid-state circuitry when conducting shunts the resistance used to provide the desired differential action. The shunt is removed when the solid-state circuitry is not conducting. Termination of the conducting state of the solid-state circuitry is delayed for two cycles of the alternating current. This eliminates the possibility of such termination being initiated by change in the on-off mode of the controller due to a spurious signal and prevents termination during the nonconducting portion of the alternating current cycle which is present when the controller is in the on mode.

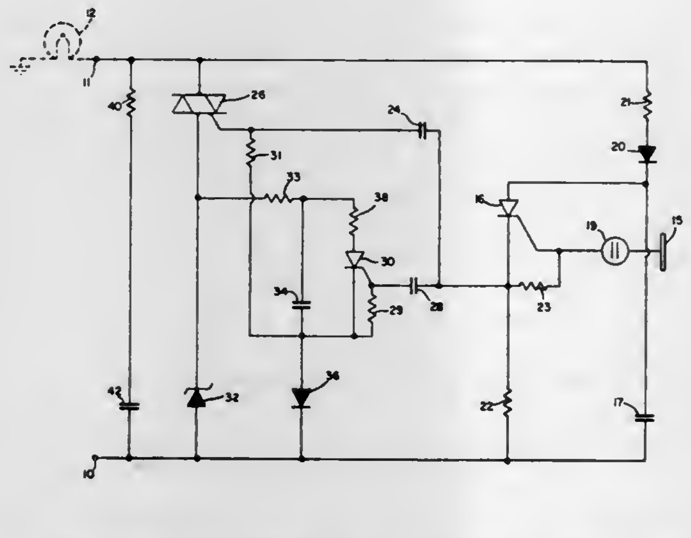
3,648,075
ZERO VOLTAGE SWITCHING AC RELAY CIRCUIT
Roy J. Mankovitz, Tarzana, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.
Filed June 1, 1970, Ser. No. 42,383
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 B **10 Claims**

An AC relay circuit is disclosed which includes a triac as its active switch element. A full wave rectifier is connected between one of the primary terminals and the gate terminal of the triac. A control switch is provided between the load

terminals of the rectifier. First control means are provided which are responsive to an input control signal for closing the control switch, thereby triggering the triac into conduction. Second control means are provided for rendering the control switch nonresponsive to the first control means whenever the magnitude of the AC voltage to be controlled exceeds a predetermined value.



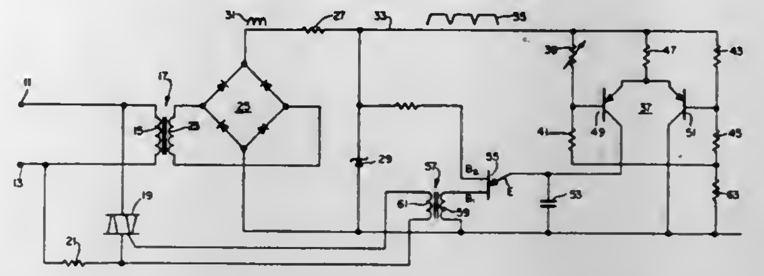
3,648,076
CAPACITANCE-RESPONSIVE CONTROL SYSTEM
John M. Lester, 208 Roxbury Road, Garden City, N.Y.
Continuation-in-part of application Ser. No. 807,243, Mar. 14, 1969, now abandoned. This application June 4, 1970, Ser. No. 43,434
Int. Cl. H03k *17/00, 17/56*
U.S. Cl. 307—252 B **11 Claims**



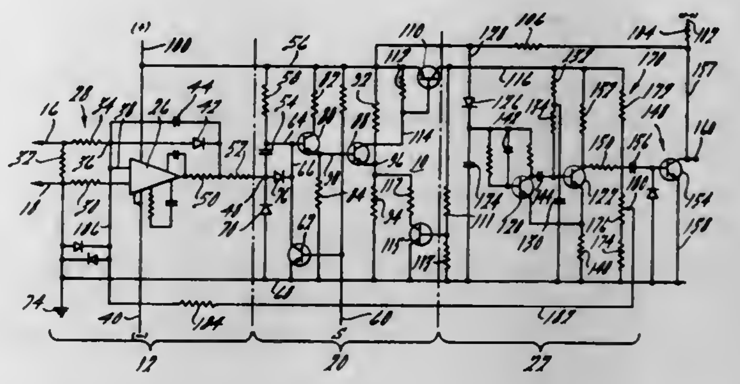
A capacitance-responsive control system embodying a pulse generator, an electronic switch, an electronic latching circuit and a shorting circuit is disclosed.

3,648,077
CIRCUIT FOR CONTROLLING A HEAT-GENERATING DEVICE
Egils Evalds, 124 Linwood Avenue, Ardmore, Pa.
Filed Dec. 3, 1969, Ser. No. 881,707
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 B **1 Claim**

The present circuit employs the combination of a balanced bridge and a balanced differential amplifier to effect a continuous control of energy being supplied to a heat-generating device. The present circuit, in effecting said continuous control, has the capability of rapidly turning on said heat generating device and rapidly turning off said heat-generating device as well as effecting controls at all of the levels in between. A first electronic switch is coupled to the combination of a balanced bridge and a balanced differential amplifier and is responsive to the output therefrom to in turn trigger a second electronic switch which actually operates to permit energy to be transferred to the heating device. In addition, the present circuit employs a means to generate a substantially square wave input which serves to effect better regulation of the system. Further, the present circuit is designed to electrically isolate the load circuit from the control circuit.



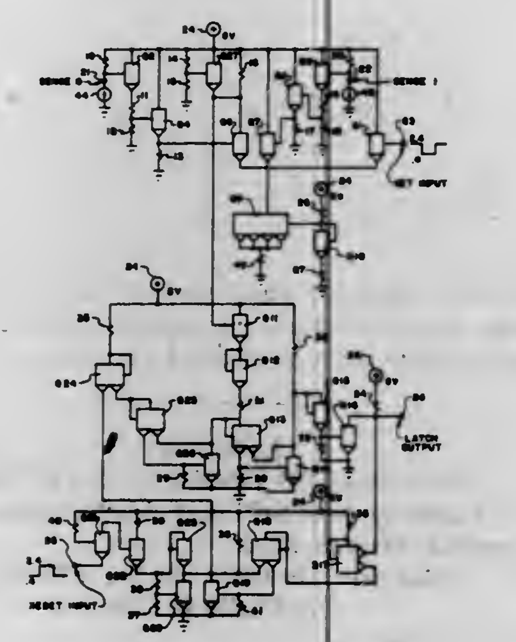
3,648,078
CONTROLLED TIME-RATIO SYSTEM
James H. Galloway, New Baltimore, Mich., assignor to Udylite Corporation, Warren, Mich.
Filed Nov. 20, 1969, Ser. No. 878,487
Int. Cl. H03k *5/00*
U.S. Cl. 307—260 **14 Claims**



A trigger circuit for use in firing either one or a series of silicon controlled rectifiers or other similar devices by means of a plurality of output pulses, the first pulse being generated at the end of the timed firing angle, the system including an input operational amplifier which receives a first direct current input, the input either being preset or derived from an input control amplifier, this direct current level being utilized by the operational amplifier to produce a preselected DC voltage. The output of the operational amplifier is fed to a timing circuit, the output voltage level of the operational amplifier setting the starting point or starting voltage for the timing circuit. When the timing circuit times out, a free-running multivibrator is caused to operate to produce a series of output pulses, which pulses continue until the end of the half-cycle. Also, a signal which has a characteristic dependent on the firing angle at which the circuit operated, is fed back to the input of the operational amplifier such that the amplifier is adjusted in its operation to cause the timing circuit to time out and set the firing angle in accordance with the input signal being fed to the input circuit of the amplifier.

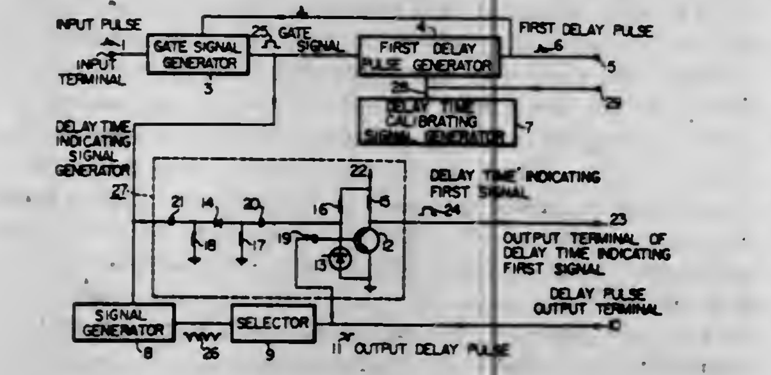
3,648,079
HIGH-SPEED SENSE LATCH CIRCUIT
Richard W. Bryant, Poughkeepsie, and George K. Tu, Wappingers Falls, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.
Filed July 10, 1970, Ser. No. 53,780
Int. Cl. H03k *5/20, 3/286*
U.S. Cl. 307—289 **12 Claims**

A sense latch circuit having a short access time. The latch output switches state rapidly due to the incorporation of a minimum number of logic stages between the sense inputs and the output drive stage, thereby introducing a minimum number of delays. Nonsaturable logic circuits are utilized to allow fast switching. At the inputs of the sense latch circuit, the high DC levels of the sense signals are reduced in magnitude for application to an ECL circuit switch with the use of diodes and resistor dividers. This arrangement allows for large temperature variations without saturating any of the logic stages.



3,648,080
CIRCUIT FOR INDICATING A DELAY TIME OF A DELAYED PULSE

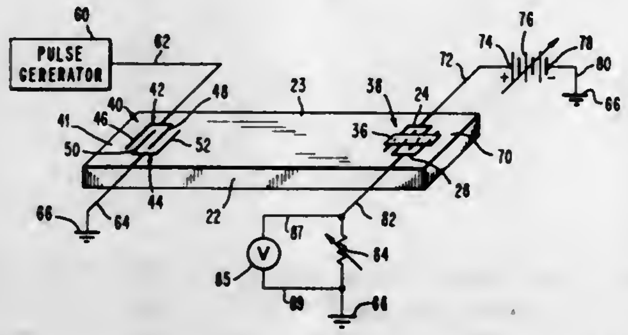
Naohisa Nakaya, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Aug. 27, 1970, Ser. No. 67,368
Claims priority, application Japan, Aug. 27, 1969, 44/67307
Int. Cl. H03k *17/28*
U.S. Cl. 307—293 **7 Claims**


INPUT PULSE
INPUT TERMINAL
GATE SIGNAL GENERATOR
25 GATE SIGNAL
FIRST DELAY PULSE GENERATOR
FIRST DELAY PULSE
DELAY TIME CALIBRATING SIGNAL GENERATOR
DELAY TIME INDICATING SIGNAL GENERATOR
DELAY TIME INDICATING FIRST SIGNAL
OUTPUT TERMINAL OF DELAY TIME INDICATING FIRST SIGNAL
DELAY PULSE OUTPUT TERMINAL
SIGNAL GENERATOR
SELECTOR
OUTPUT DELAY PULSE

A delay time indicating circuit utilizes a very stable signal generator, for example, a variable frequency crystal controlled oscillator. The above-mentioned signal generator is driven synchronized with an input pulse. The first or an n'th output signal of the above-mentioned signal generator is arbitrarily extracted, thereby a pulse having a predetermined delay time can be obtained. The delay time of the obtained delayed pulse with regard to the input pulse is measured by using a delay time indicating signal generator including one or two flip-flop circuits.

3,648,081
PIEZOELECTRIC ACOUSTIC SURFACE WAVE DEVICE UTILIZING AN AMORPHOUS SEMICONDUCTIVE SENSING MATERIAL

Eric G. Lean, Mahopac; Varadachari Sadagopan, and Samuel C.-C. Tseng, both of Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1970, Ser. No. 51,187
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.1 **16 Claims**



An integrated acoustic surface wave device is provided by this disclosure wherein a piezoelectric field associated with an acoustic surface wave causes a material adjacent to the surface to transform from one physical state to another physical state. The changes in state due to the presence of the piezoelectric wave are utilized to detect, amplify and store information. The presence of the piezoelectric wave controls external physical quantities, e.g., voltage and current, for information processing and storage. In particular, an amorphous semiconducting material is deposited on the surface of a piezoelectric surface wave acoustic delay line at a location where the presence of the traversing piezoelectric wave is to be detected. Contact electrodes are provided on the amorphous material and are connected to an external electrical circuit wherein there is a voltage source and a load means. The voltage source provides an electric field in the amorphous material of a value below that necessary to achieve the threshold value for switching the material from a high-voltage and low-current state to a high-current and low-voltage state. In this manner, the piezoelectric field of the acoustic surface wave which transiently appears at the amorphous material when added to the externally applied electric field causes it to switch states and thereby gives rise to a pulse indication in the external electrical circuit.

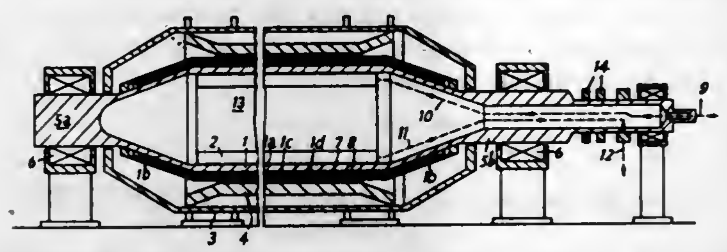
Accordingly, an integrated apparatus in accordance with this disclosure includes a piezoelectric surface wave delay line and an amorphous semiconductor film. A transducer on the surface of the piezoelectric crystal generates piezoelectric surface waves therein, and a local receiving transducer which serves as the electrodes for the amorphous semiconductor film intercepts the piezoelectric surface wave. The electric field associated with the surface wave supplements a bias electric field at the amorphous semiconductor film and causes the states thereof to switch and provides an indication of the presence of the piezoelectric wave in the external electric circuit connected to the amorphous film.

3,648,082
ROTARY ELECTRICAL MACHINES

Robert Beattie MacNab; John Sterry Hawley Ross, and Michael Burke Wood, all of Newcastle upon Tyne, England, assignors to International Research & Development Company Limited, Fossway, Newcastle upon Tyne, England
Filed June 5, 1970, Ser. No. 43,693
Claims priority, application Great Britain, June 10, 1969, 29,436/69
Int. Cl. H02k *9/19*
U.S. Cl. 310—10 **15 Claims**

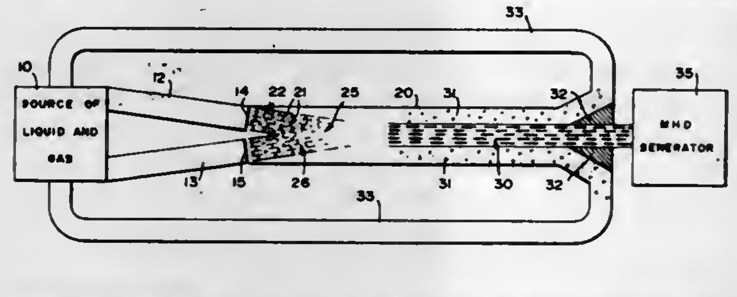
A synchronous alternating current machine having a superconducting field winding on a hollow cylindrical portion of a

rotor which is joined by hollow frustoconical transition members to supporting stub shafts. The field winding is cooled by cryogenic fluid from a refrigerator, which may be wholly or partly within the rotor, and heat leak into the winding is minimized by the hollow transition members, which are themselves cooled, and a radiation shield mounted on the outside of the rotor.



3,648,083
TWO-PHASE FLOW SYSTEM WITH DISCRETE IMPINGING TWO-PHASE JETS

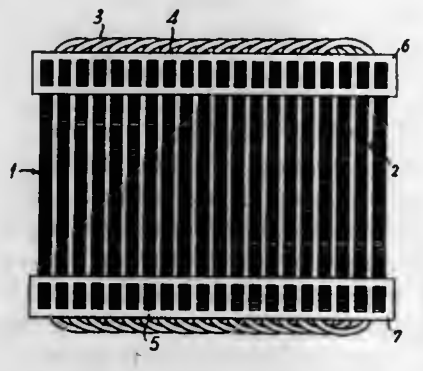
George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of; David G. Elliott, 5208 North Point Road, La Canada, and Lance G. Hays, 4328 Canyon Crest, Altadena, both of Calif.
Filed Oct. 21, 1970, Ser. No. 82,648
Int. Cl. H02m *4/02*
U.S. Cl. 310—11 **2 Claims**



A flow system with discrete two-phase nozzles is disclosed. The two-phase jets produced in the nozzles are caused to impinge one another in a mixing channel, resulting in significant coalescence of the liquid into a stream in the center of the channel, with the gas in the jet being forced to the periphery of the liquid stream.

3,648,084
LINEAR INDUCTION MOTORS

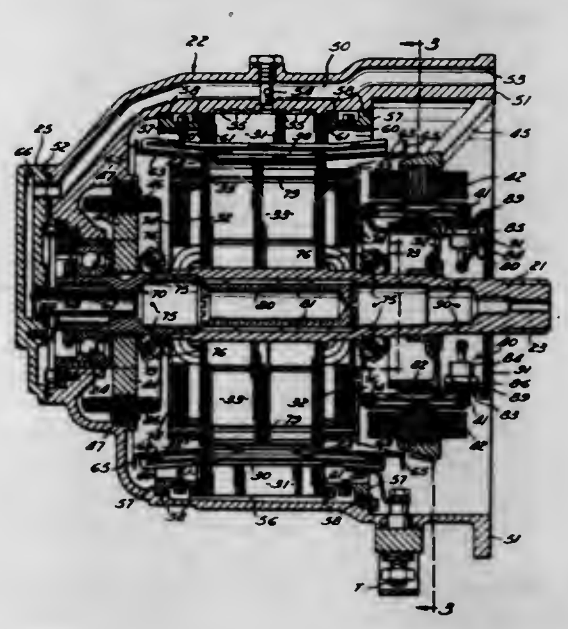
Eric Roberts Laithwaite, Surbiton, and Hugh Robert Bolton, London, both of England, assignors to National Research Development Corporation, London, England
Continuation-in-part of application Ser. No. 753,506, Aug. 19, 1968, now abandoned. This application June 16, 1970, Ser. No. 46,626
Claims priority, application Great Britain, Aug. 31, 1967, 39,933/67
Int. Cl. H02k *41/02*
U.S. Cl. 310—13 **9 Claims**



The magnetic field of a linear motor is evenly distributed over the airgap between the primary and secondary members by providing a ladderlike grid structure of conductors at each side, by interleaving the laminations with conductive stampings near the sides, by strips of conductive material on or near the surface of the stator, or by chamfering the edges.

3,648,085
LIQUID COOLING ARRANGEMENT FOR DYNAMOELECTRIC MACHINE

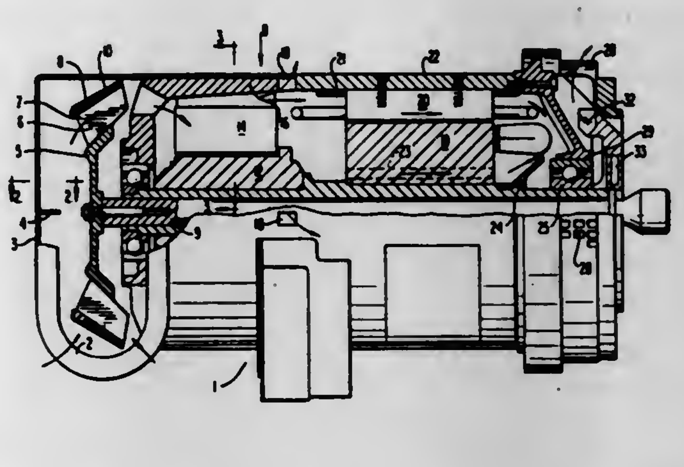
Robert L. Fujii, Cleveland, Ohio, assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Mar. 26, 1970, Ser. No. 22,752
Int. Cl. H02k *9/20*
U.S. Cl. 310—54 **12 Claims**



A method of and apparatus for cooling the heat-producing electrical windings of a dynamoelectric machine by spraying them directly with atomized coolant to deposit a coating of liquid coolant which flows over and away from them to carry away heat picked up from them by conduction. Hydraulically atomized particles are projected at low velocity to thoroughly wet or coat the structures to be cooled and to increase the heat transfer to the coolant. The spray nozzles are arranged and their outputs shielded to minimize any insulation erosion that might result from centrifugal motion of coolant and from the low velocity sprays.

3,648,086
STARTER GENERATOR CONSTRUCTION

Charles F. Renner, Erie, Pa., and Norman J. Lipstein, Schenectady, N.Y., assignors to General Electric Company
Filed Aug. 7, 1968, Ser. No. 750,909
Int. Cl. H07k *9/06*
U.S. Cl. 310—63 **6 Claims**



A dynamoelectric machine which is comprised of a stator, a rotor which includes an armature and a commutator, a brush rigging associated with said commutator, and a pair of fans for directing cooling air through the stator, rotor, and brush rigging. Radial baffles are provided to more effectively cool the commutator area; a combined bearing support and air baffle aids cooling of a bearing which rotatably supports the rotor; and a foam-filled shroud surrounds the tips of the fan blades to increase the effectiveness thereof.

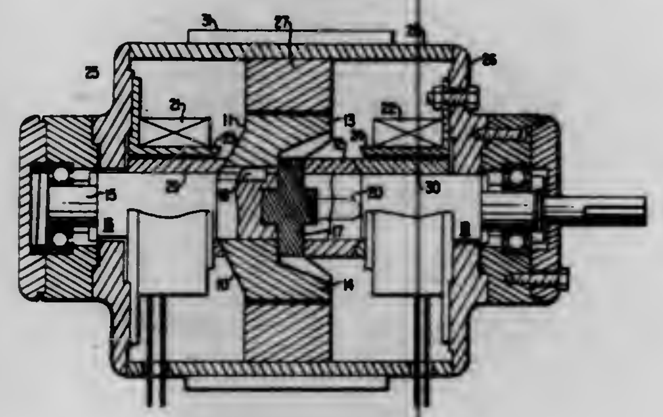
3,648,087
ELECTROMAGNETIC BRAKING DEVICE

Hiroyuki Kitamura, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed July 22, 1970, Ser. No. 57,174

Int. Cl. H02k *49/04*

U.S. Cl. 310—93 **6 Claims**



An electromagnetic braking device for absorbing the running energy of a vehicle and thereby reducing the speed thereof featuring a stator core secured to a stationary portion of the vehicle body, a rotary shaft extending through said stator core and being drivingly connected with the drive shaft of the vehicle, a comb-shaped poled rotor mounted on the rotary shaft for unitary rotation therewith within a bore of the stator core, and exciting coils for generating magnetic fluxes through the pole surfaces of the rotor and the inner surface of the stator core to cause eddy currents to flow on the inner surface of the stator core, whereby the speed of the rotor is retarded.

3,648,088
CURRENT TRANSFER DEVICES FOR ELECTRICAL MACHINES

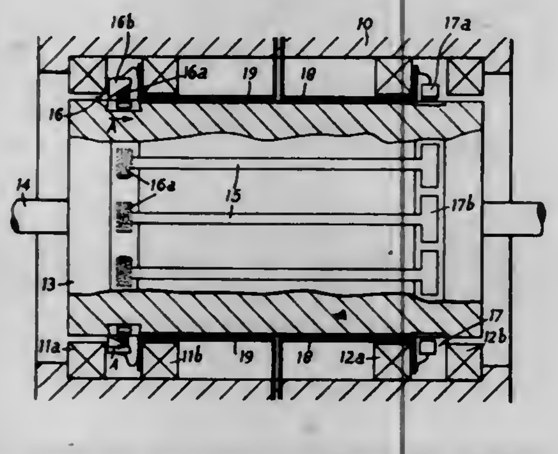
Geoffrey Alan Wilkin; Ian Roderick McNab, and Anthony Derek Appleton, all of Newcastle, England, assignors to International Research & Development Company Limited, Fossway, Newcastle upon Tyne, England

Filed Feb. 5, 1971, Ser. No. 112,876

Claims priority, application Great Britain, Feb. 5, 1970, 5,643/70

Int. Cl. H02k *31/02*

U.S. Cl. 310—178 **6 Claims**



Current transfer system for homopolar machines and other electrical machines having a direct current circuit passing from the stator to the rotor by way of a first brush and contact ring set and back from the rotor to the stator by way of a second brush and contact ring set, in which the brushes are on the stator in one set and on the rotor in the other set so that current flow between brushes and contact rings is in the same direction for both sets, preferably from the contact ring to the brush, thereby reducing brush wear.

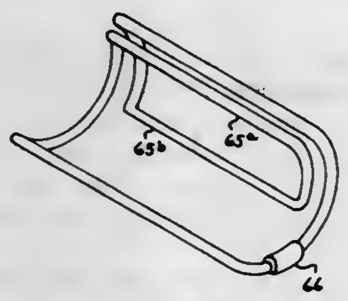
3,648,089
COMMUTATING FLUX FIDELITY IMPROVEMENT WINDING

Frank T. DeWolf, Erie, Pa., assignor to General Electric Company

Filed Apr. 7, 1970, Ser. No. 26,294

Int. Cl. H02k *3/20*

U.S. Cl. 310—186 **1 Claim**



In a DC dynamoelectric machine employing one or more commutating poles, machine performance and commutating ability with transient load conditions, cyclic pulsations in its power supply, or both, are enhanced by a commutating flux fidelity improvement winding. The winding comprises a quantity of low-resistance closed circuits equal to the quantity of commutating poles in the dynamoelectric machine. Each circuit encircles a commutating pole in its entirety and the proximate half of an adjacent main pole. A segment of each circuit is recessed in a face of one of the main poles adjacent a gap between the pole face and parallel to the axis of an armature rotatably supported in the machine. In response to load current changes in coils in the armature, distributed magnetic flux density changes occur at the gap. These flux density changes induce a voltage in the recessed segment, resulting in a current in the circuit. An additive flux is fostered in the commutating pole by this current in the circuit. The additive flux develops earlier than the normal commutating pole transient responsive flux. Since this additive flux occurs in advance of the normal commutating pole transient responsive flux, it is more nearly coincident with the causative transient condition and yields improved commutation in a dynamoelectric machine incorporating the flux fidelity improvement winding of this invention.

3,648,090
DYNAMO-ELECTRIC MACHINE

Robert Voin, 1 rue Charcot, Saint Priest en Jarot, France

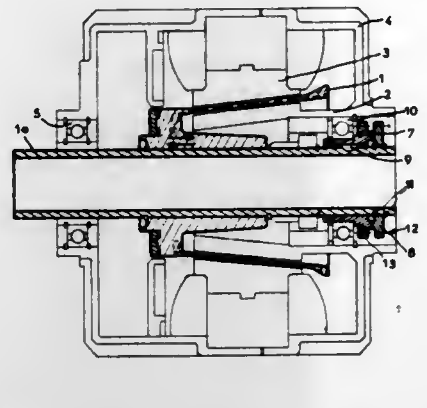
Filed Dec. 24, 1969, Ser. No. 888,011

Claims priority, application France, Dec. 26, 1968, 266

Int. Cl. H02k *3/00*

U.S. Cl. 310—191 **23 Claims**

A dynamo-electric machine or motor having rotor windings and commutator blades embedded in insulating material rotatable in an airgap defined between external and internal magnetic circuit portions, the rotor position being adjustable through the use of surface cams or shims and the airgap width being adjustable by shims, the rotor being internally cooled by way of apertures in said rotor and channels in the internal magnetic circuit portion, the rotor being reinforced by filaments binding the rotor conductors and a central, radially deformable, bush, commutator brushes being carried by holders radially slidably mounted on an angularly adjustable support and accessible externally of the motor, and magnetic field producing elements being at the internal portion of the circuit and/or being provided by a permanent or electromagnetic tubular member with L-shaped pole pieces.



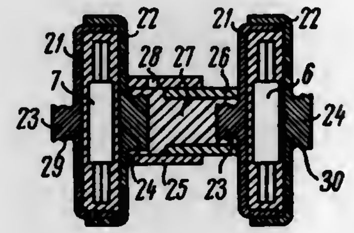
3,648,091
STATOR BAR WINDING OF ELECTRIC MACHINE

Konstantin Fedorovich Kostin, prospekt Lenina 48, kv. 101; Georgy Konstantinovich Sapunov, ulitsa Stachek 25, kv. 95; Alvian Afanasievich Svirin, ulitsa Pervomaiskaya 44, kv. 5; Valery Ivanovich Strakhov, prospekt Lenina 48, kv. 40, and Grigory Iosifovich Shur, ulitsa Krosnoflottser 7, kv. II, all of Sverdlovsk, U.S.S.R.

Filed June 11, 1970, Ser. No. 45,351

Int. Cl. H02k *3/46*

U.S. Cl. 310—260 **8 Claims**



A stator bar winding for an electric machine in which the heads of end connections of the winding are insulated by means of cups and cavities between the heads and the cups are filled with an insulating compound. Between adjacent cups, there are provided spacers secured against displacements at least on one side, by supports on the lateral surface of said cups. The spacers may be made in the form of wedges and inserts.

3,648,092
ARSENIC-ANTIMONY-BISMUTH HOLLOW CATHODE LAMP

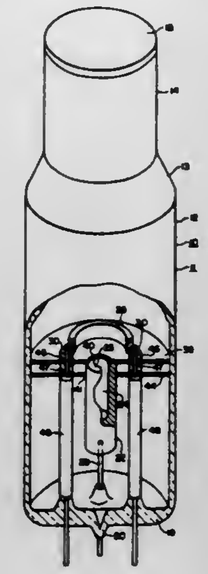
James E. Wooldridge, Elmira Heights, and George K. Yamasaki, Horseheads, both of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 13, 1970, Ser. No. 27,697

Int. Cl. H01j *61/04*

U.S. Cl. 313—209 **4 Claims**

A radiation source of the hollow cathode variety capable of emission of spectral radiation characteristic of the elements arsenic, antimony and bismuth.



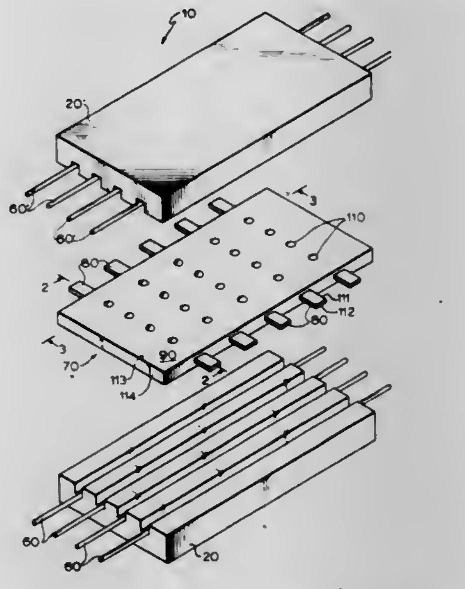
3,648,093
DISPLAY PANEL WITH NOVEL CATHODE ASSEMBLY

George A. Kupsky, Milford, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 11, 1969, Ser. No. 884,185

Int. Cl. H01j *61/06, 61/30*

U.S. Cl. 313—217 **8 Claims**



The display panel comprises first and second layers of communicating gas-filled cells having a common electrode system between them which comprises first electrodes supported in an insulating matrix. Second electrodes are disposed above the first electrodes and insulated therefrom, and third electrodes are disposed below the first electrodes and insulated therefrom.

3,648,094
LAMP COMBINATION COMPRISING AN IMPROVED ENVELOPE FOR TUNGSTEN-HALOGEN INCANDESCIBLE PROJECTION LAMP

Aristide R. DeCaro, Edison, and Nicholas J. Rainone, Clifton, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

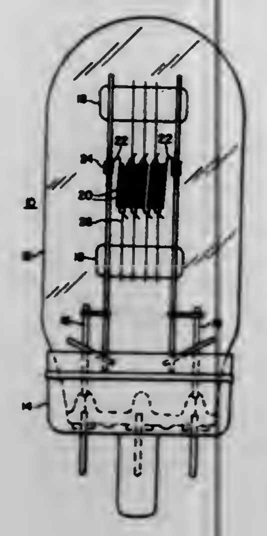
Filed Apr. 15, 1970, Ser. No. 28,663

Int. Cl. H01k *1/50*

U.S. Cl. 313—221 **8 Claims**

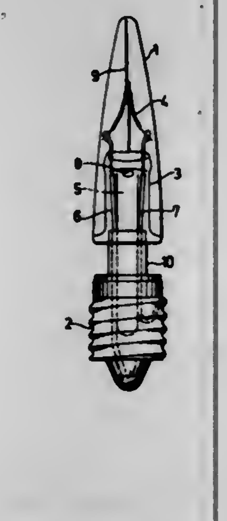
An incandescible projection lamp combination which utilizes a vitreous borosilicate glass, light transmitting envelope.

The lamp utilizes a tungsten filament and a bromine containing atmosphere. The power loading is about 13.6 to 16.4 watts per cubic centimeter of lamp volume, whereby light output is essentially constant throughout life.



3,648,095
ELECTRIC INCANDESCENT LAMP SIMULATING A CANDLE FLAME

Bengt Erling Beckman, Alstenagatan 90, Bromma, Sweden
Filed Dec. 1, 1969, Ser. No. 881,132
Claims priority, application Sweden, Dec. 3, 1968, 16521/68
Int. Cl. H01j *5/00*
U.S. Cl. 313—317 **6 Claims**

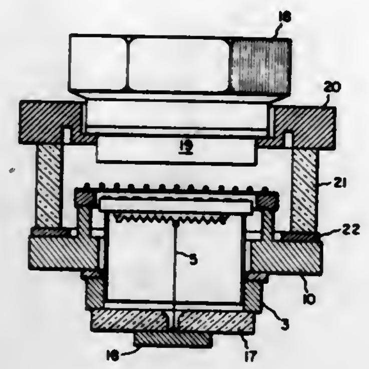


An electric incandescent lamp having a filament, a glass flare, a bulb, a base, a pumping stem for evacuating the bulb during manufacture and electrical conductors connecting the base and the filament. The base is connected to the pumping stem, which thus connects the base with the bulb which is located at a distance therefrom.

3,648,096
ELECTRON BEAM FOCUSING BIPOTENTIAL CATHODE

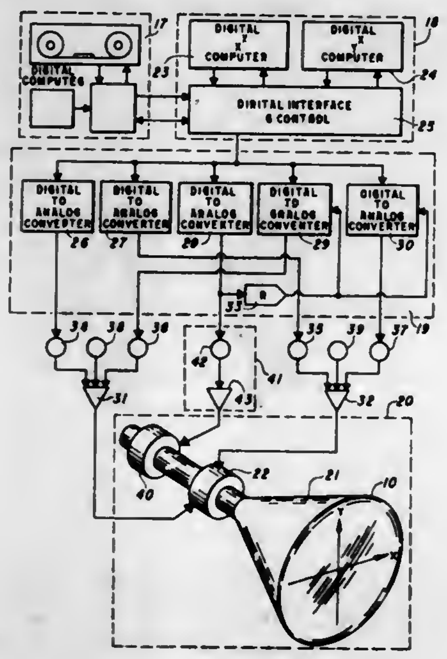
James E. Beggs, Schenectady, N.Y., assignor to General Electric Company
Filed Sept. 26, 1968, Ser. No. 762,797
Int. Cl. H01j *1/20, 1/46, 1/52*
U.S. Cl. 313—346 R **5 Claims**

To increase selectively the electron emission from a cathode, a control grid is placed above the cathode and osmium or iridium is evaporated through the openings of the grid onto the cathode. On the resulting cathode the coated regions provide a value of work function which is lower than that of the uncoated regions.



3,648,097
DIGITAL CATHODE-RAY TUBE LINEARITY CORRECTOR

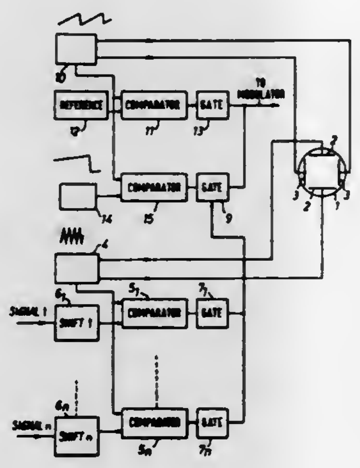
Jerry Dale Merryman, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 1, 1969, Ser. No. 881,251
Int. Cl. H01j *29/46*
U.S. Cl. 315—24 **10 Claims**


DIGITAL COMPUTER
DIGITAL X COMPUTER
DIGITAL Y COMPUTER
DIGITAL INTERFACE & CONTROL
DIGITAL TO ANALOG CONVERTER
DIGITAL TO ANALOG CONVERTER
DIGITAL TO ANALOG CONVERTER
DIGITAL TO ANALOG CONVERTER
DIGITAL TO ANALOG CONVERTER

A system for correcting the signals transmitted to the deflection yokes of a cathode-ray tube employs digital means to produce an undistorted linear display while requiring a minimum of adjustments. Basically, the system utilizes digital circuitry to produce a correction factor from digital X- and Y-coordinate data supplied by a digital computer. This correction factor, which is equivalent to the sum of the squares of the X- and Y-coordinate data, is converted into an analog signal, along with the coordinate data, by digital to analog converters. The analog correction signal is multiplied by and then added to the analog coordinate signals, thereby producing the corrected deflection signals for an undistorted linear display on the essentially flat face of the tube. An analog correction signal may also be utilized to correct the focus of the electron beam on the tube face.

3,648,098
OSCILLOSCOPES UTILIZING VIDEO SIGNALS TO MODULATE THE BEAM WITH VARYING DEFLECTION PERIODS

David Godwin Talbert, London, England, assignor to S.E. Laboratories (Holdings) Limited, Feltham, Middlesex, England
Filed Oct. 10, 1969, Ser. No. 865,252
Claims priority, application Great Britain, Oct. 11, 1968, 48,373/68
Int. Cl. H01j *29/70*
U.S. Cl. 315—26 **6 Claims**

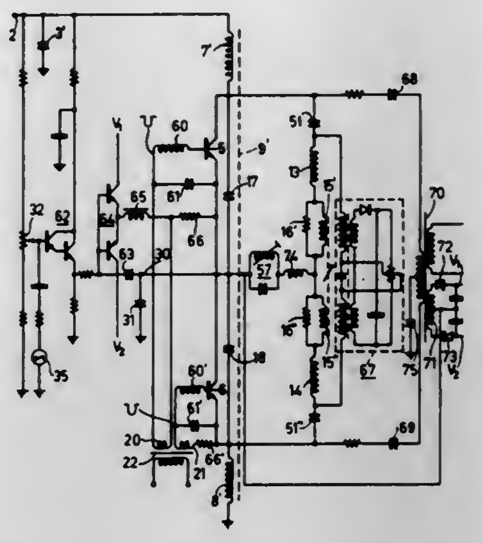


An oscilloscope is disclosed which includes means for producing deflection of the beam of a cathode-ray tube in one direction at a relatively high frequency and deflection in another direction at a lower frequency, means for gating video signals to modulate said beam during a short interval in each of a series of lower frequency deflection periods, the timing of said short intervals being changed in successive periods so that the waveform of said video signals is displayed. There is also disclosed as a further feature means for gating signals to form one or more markers on the display during respective selected high-frequency deflection periods in each lower frequency deflection period.

3,648,099
CIRCUIT ARRANGEMENT IN A DISPLAY DEVICE FOR PRODUCING A LINE-FREQUENCY SAWTOOTH CURRENT HAVING AN AMPLITUDE WHICH VARIES AT THE FRAME FREQUENCY

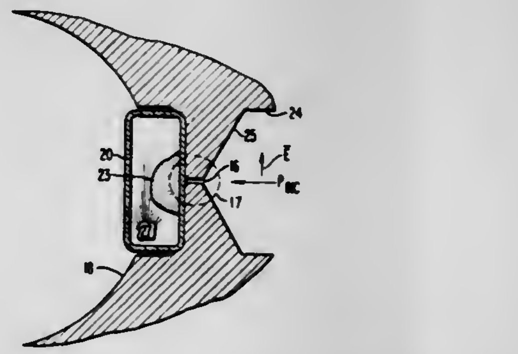
Walter Otten, Hamburg, Germany; Gosse Jan Postma; Jan Joost Rietveld, both of Emmasingel, Eindhoven, Netherlands, and Jorg Wolber, Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 5, 1969, Ser. No. 855,685
Claims priority, application Germany, July 8, 1969, P 19 34 568.7
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 GD **13 Claims**

A color TV display system with a circuit for generating in the line deflection coil halves a line-frequency sawtooth correction current whose amplitude varies at the frame frequency. The line deflection current in the line deflection coil halves is supplied by two line generators which are connected in series for direct current across the terminals of a supply source of DC voltage. The junction point of the generators is decoupled for line-frequency signals. A direct voltage which is substantially one-half of the supply voltage and a sawtooth modulation voltage at the frame frequency are both applied to the junction point.



3,648,100
ELECTRODELESS PULSED ILLUMINATOR

Harry Goldie, Randallstown; Michael A. Goldman, Pikesville, both of Md., and Gerald I. Klein, Westbury, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 24, 1969, Ser. No. 809,671
Int. Cl. H01j *7/46, 19/80*
U.S. Cl. 315—39 **3 Claims**

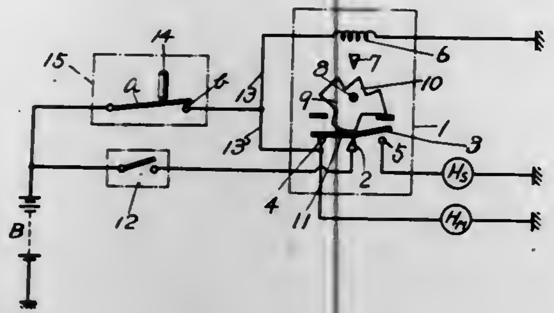


A gaseous pulsed illuminator utilizing a halogen gas. No electrodes are required to strike the discharge and accordingly highly reactive gases having short luminous decay times may be employed. The excitation power is a radiofrequency source coupled through a waveguide or other RF transmission line.

3,648,101
PASSING SIGNALS FOR AUTOMOBILES

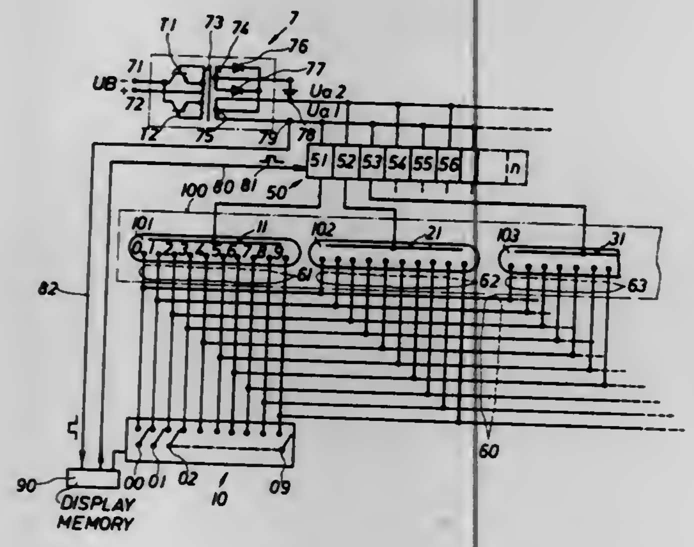
Masaru Suzuki, Aichi-ken, Japan, assignor to Kabushiki-Kaisha Tokai Denki Seisakushe, Aichi-ken, Japan
Filed Jan. 12, 1970, Ser. No. 2,003
Claims priority, application Japan, Jan. 24, 1969, 44/6229; Jan. 25, 1969, 44/6540
Int. Cl. B60g *1/46*
U.S. Cl. 315—82 **6 Claims**

The usual high-beam and low-beam headlights of an automotive vehicle are wired in circuit to be controlled by a pulsing rod to effect flash signals. At night a main switch is closed to illuminate both high-beam and low-beam headlights and to incorporate them in a pulsing circuit controlled by the reciprocable pulsing rod and a rocker member to flash the lights off and on by reciprocation of the rod. During the day the main switch is opened but through a branch circuit, reciprocation of the pulsing rod causes rocking of the rocker member to flash the high-beam headlight only.



3,648,102
NUMERICAL DISPLAY TUBES CONTROLLED BY PULSES PRODUCED BY VOLTAGE INVERTER AND DIRECTED BY SWITCH DEVICE TO EACH TUBE IN SUCCESSION

Hubertus Bettin, Braunschweig, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany
Filed Aug. 19, 1970, Ser. No. 64,944
Claims priority, application Germany, Aug. 19, 1969, P 19 42 060.1
Int. Cl. H05b *41/30*
U.S. Cl. 315—133 **7 Claims**

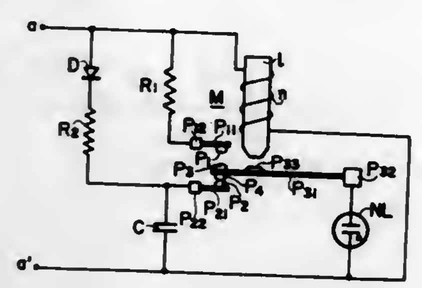


A circuit arrangement for controlling the operation of numerical display glow tubes and including means for producing a train of pulses of sufficient voltage to operate such tubes and switching means connected between the voltage pulse producing means and the tubes for applying the pulses directly to each tube in succession and also causing the pulses to directly control the switching operations of the switching means.

3,648,103
DEVICE FOR INDICATING INTERRUPTION OF ELECTRICAL SERVICE

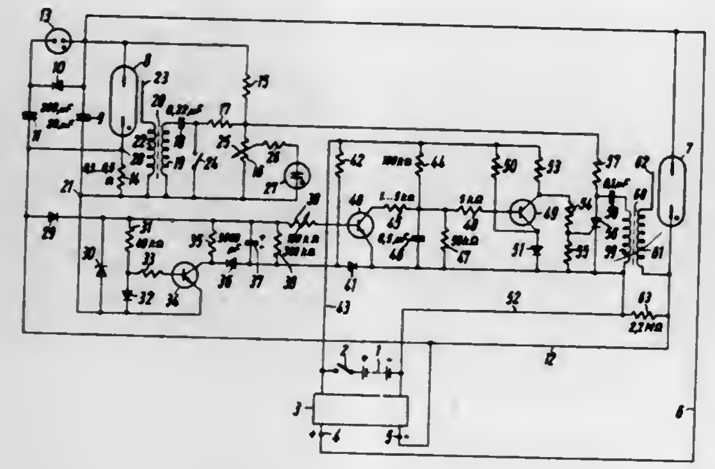
Takaaki Okada, Ageo, Japan, assignor to Kabushiki Kaisha Koparu
Filed Apr. 6, 1970, Ser. No. 25,626
Int. Cl. G08b *21/00*
U.S. Cl. 315—136 **6 Claims**

A diode, a resistor, and a capacitor are connected in series between power input terminals, and a neon lamp is connected in parallel with said capacitor through contact points controlled by an electromagnetic relay. Using such an arrangement, upon the resumption of electrical service after its interruption, the neon lamp automatically flickers at a predetermined cycle rate.



3,648,104
ELECTRONIC FLASH UNIT WITH PRELIMINARY FLASH FOR AUTOMATIC TIMING

Karl Ackermann, Berlin, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart-Untertuerkheim, Germany
Filed May 5, 1970, Ser. No. 34,685
Claims priority, application Germany, Oct. 3, 1969, P 19 49 967.3
Int. Cl. H05b *31/04*
U.S. Cl. 315—151 **21 Claims**

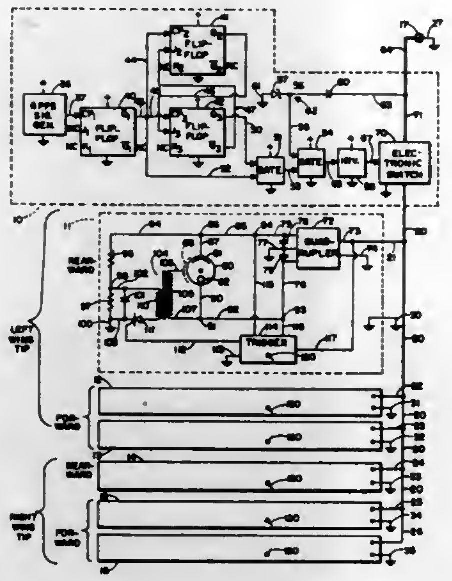


The main flash of the flash unit is initiated immediately after a preliminary flash. A photoelectric element receives the light reflected from the subject during the preliminary flash. The electrical signal corresponding to the light received is integrated and the main flash terminated after a delay depending upon the integrated signal.

3,648,105
SINGLE-CONDUCTOR ARRANGEMENT FOR POWERING AND TRIGGERING FLASHLAMPS

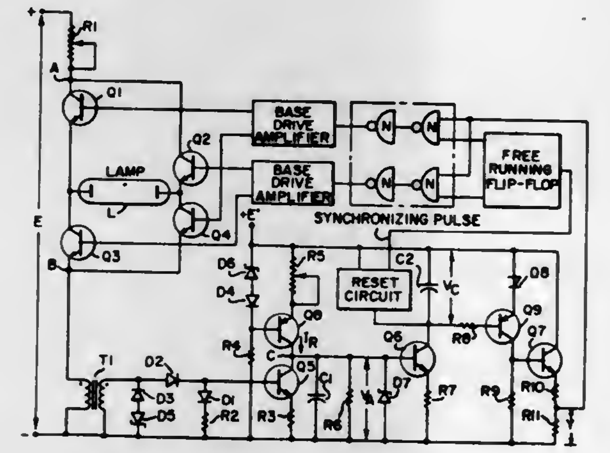
Douglas C. Sanford, Princeton Township, Mille Lacs, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Sept. 9, 1969, Ser. No. 856,435
Int. Cl. H05b *41/34*
U.S. Cl. 315—237 **9 Claims**

A circuit for energizing all the flashing lights of an aircraft recognition light system on a single wire from a central controller even though the lights do not all flash at the same time: at the central controller the AC for the lights is broken up into blocks or bursts spaced by one-fifth their own duration, all the blocks being transmitted on the single wire to all the light units, and the lights being flashed selectively at the beginnings or the endings of the blocks.



3,648,106
DYNAMIC REACTORLESS HIGH-FREQUENCY VAPOR LAMP BALLAST

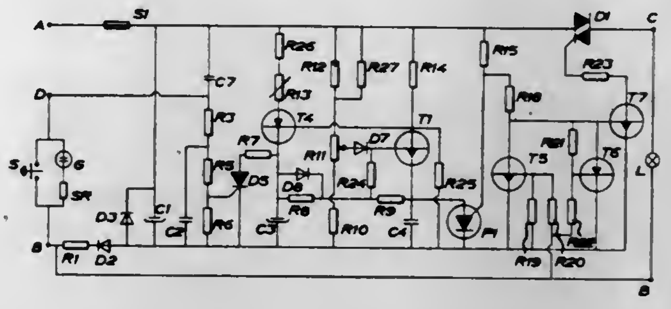
Joseph C. Engel, and Robert T. Elms, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 24, 1970, Ser. No. 13,661
Int. Cl. H05b *37/02, 41/30*
U.S. Cl. 315—291 **15 Claims**



A control device and method of operation for a discharge lamp which would under normal operation display a runaway discharge characteristic. The control device constitutes a part of a low-impedance power supply which is without any effective current limiting impedance, and is thus a high-efficiency device. A high-frequency discharge sustaining potential is applied across the discharge lamp at a repetition rate of at least about 500 times per second. A feedback control signal is generated based on a predetermined lamp operating condition, and this feedback signal is used to control the duty cycle of operation, with each period of potential application not exceeding about 1.8 milliseconds, and with the duty cycle always being less than unity. The repetition rate of potential application may be simultaneously varied with the duty cycle of a feedback signal so that a particular discharge lamp operates at an optimum repetition rate.

3,648,107
CIRCUITRY FOR CONNECTING AND DISCONNECTING A LOAD

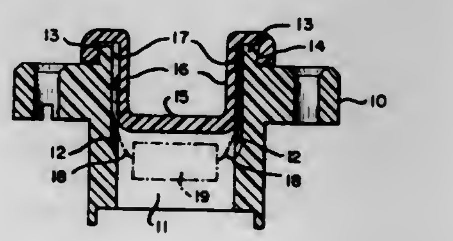
Sten-Ake Olaus Rydborn, Kvarngatan 7, 34300 Almhult, Sweden
Filed Feb. 10, 1970, Ser. No. 10,186
Claims priority, application Switzerland, Feb. 18, 1969, 2208/69
Int. Cl. H05b *37/02*
U.S. Cl. 315—360 **4 Claims**



Electronic circuitry for a so-called automatic staircase time switch for lighting and extinguishing several parallel-connected incandescent lamps, wherein a blocking circuit responding to a predetermined ambient light intensity is blocking actuation of a switch circuit by a manually operable lighting circuit and an extinguishing circuit automatically disconnects the lamps from their current source after a predetermined connecting period.

3,648,108
MOLDED SHUNTS FOR INTEGRATED CIRCUITS

Richard J. Bailey, Tonawanda, N.Y., assignor to GTI Corporation
Filed Jan. 27, 1971, Ser. No. 110,143
Int. Cl. H05f *3/00*
U.S. Cl. 317—2 R **5 Claims**

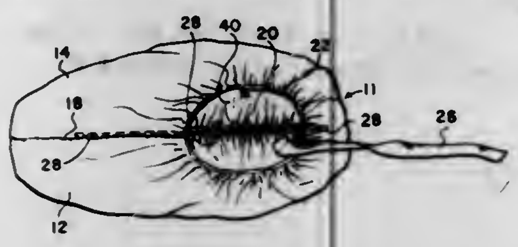


A carrier and conductive shunt structure for preventing static discharge from external sources which would cause damage to the integrated circuit package in the form of a nonconductive carrier having a well adapted to receive an integrated circuit with grooves in the sidewall of the well corresponding to the leads of the integrated circuit and a flange surrounding the well opening, a shunt of conductive plastic having a base generally in the shape of the integrated circuit with upstanding sidewalls having ridges corresponding to the grooves of the well of the carrier and resiliently fitting therein and bearing on the leads of the integrated circuit and channel means on the top of the shunt sidewalls engaging the flange of the carrier in locking arrangement.

3,648,109
SANITARY SHOE COVER

Jerry L. Tims, and Vance M. Hubbard, both of Euless, Tex., assignors to Precept, Incorporated, Euless, Tarrant County, Tex.
Filed Feb. 10, 1971, Ser. No. 114,260
Int. Cl. A61n *1/14*
U.S. Cl. 317—2 B **3 Claims**

A sanitary and protective covering for shoes constructed from foldable material with its edges attached together to form a covering. An opening is provided in the covering for the leg of the wearer and an elastic band is attached around the periphery of the opening to close the opening around the leg. A second elastic band is attached to the seam in the sole of the covering to conform the covering to the foot and retain the covering resiliently on the foot. A conducting tape is attached to the sole of the covering and extends a sufficient distance from the covering to allow its insertion into the sock of the wearer.



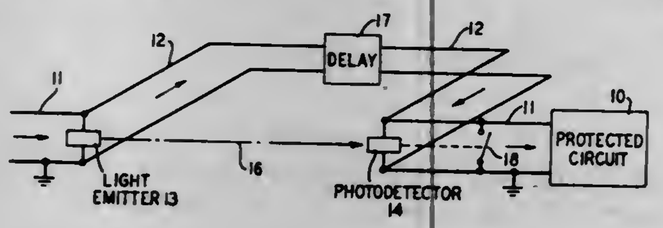
3,648,110

CIRCUIT PROTECTION APPARATUS UTILIZING OPTICAL TRANSMISSION PATH

Stephen Knight, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 20, 1970, Ser. No. 65,579
Int. Cl. H02h *3/22*

U.S. Cl. 317—16 **5 Claims**



High-speed circuit protection from high-current pulses is obtained by providing a transmission line loop that includes a light emitter and photodetector at opposite ends of the loop. The optical link between the emitter and photodetector is much shorter than the electrical path of the loop. A spurious high-current pulse excites the emitter, causing the photodetector to arm a dissipating or shunting element before the pulse traverses the loop. Thus, circuit protection from very high-rise time pulses can be provided by relatively low-response time elements. Other embodiments are also described.

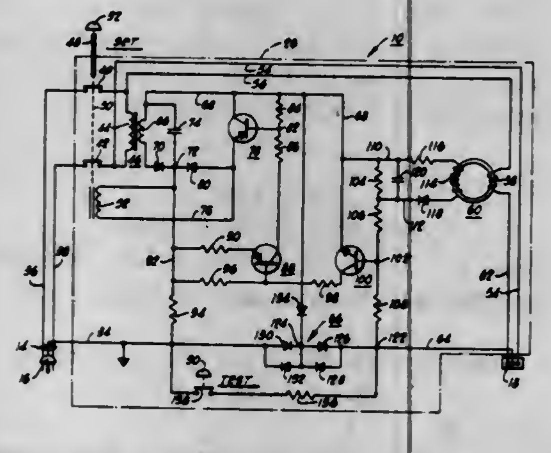
3,648,111

DEVICE FOR SENSING OVERCURRENT AND GROUND LEAKAGE CURRENT

Guy E. Howe, 200 North Main, Tonkawa, Okla.

Filed Dec. 17, 1970, Ser. No. 99,037
Int. Cl. H02h *3/14, 3/08*

U.S. Cl. 317—18 A **7 Claims**



Apparatus for connection in series with power equipment and a grounded AC power source which enables sensing of ground lead leakage current and excess power consumption to open the power application circuit and avoid damaging conditions and effects to the power equipment and/or operator. The apparatus consists of a momentary pushbutton switch and holding relay connected in series with the AC powerline to enable application of electric power to the power equipment. Both an excess power-sensing circuit and a ground current leakage-sensing circuit provide input to a normally nonconductive reactance stage which, in the event of sense input, is biased to the conductive state thereby to effect deenergization of the holding relay to release the pushbutton switch contacts.

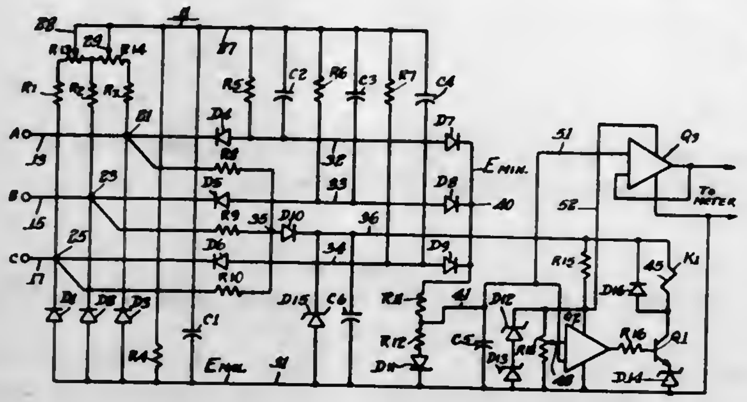
3,648,112

VOLTAGE BALANCE RELAY CIRCUIT

Robert W. Beckwith, 1002 Greenfield Lane, Mount Prospect, Ill.

Filed Aug. 24, 1970, Ser. No. 66,486
Int. Cl. H02h *3/26*

U.S. Cl. 317—27 R **4 Claims**



A protective circuit for an electric polyphase system for indicating conditions of voltage unbalance between the phases, and for actuating a relay in response thereto.

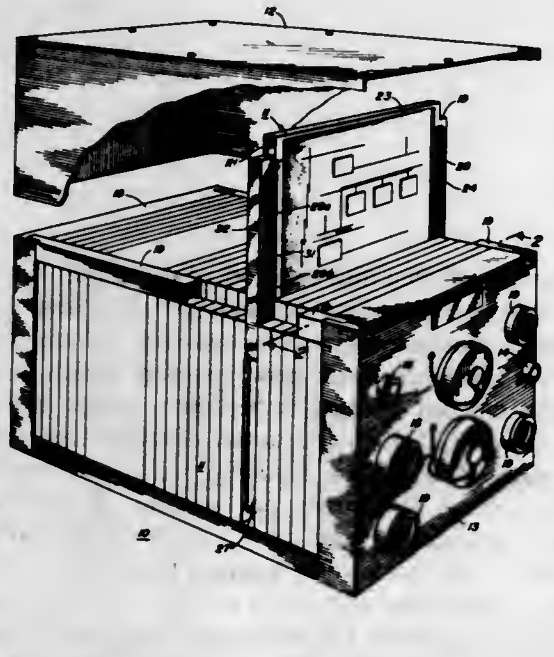
3,648,113

ELECTRONIC ASSEMBLY HAVING COOLING MEANS FOR STACKED MODULES

J. Fred Rathjen, Franklin Lakes, and Lothar Laermer, Paramus, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Oct. 22, 1970, Ser. No. 82,873
Int. Cl. H05k *7/20*

U.S. Cl. 317—100 **7 Claims**



A modular electronic system includes a plurality of stacked electronic units. The stacked units have a first cavity therethrough along one edge thereof, and a second cavity therethrough along an opposite edge thereof. Each of the units has a spacing joining the two cavities. A first mounting plate has an orifice therethrough for communicating with the first cavity, and a second mounting plate has an orifice therethrough for communicating with the second cavity. Means are provided for clamping the fist mounting plate, the stacked units, and the second mounting plate together, so that cooling fluid can be passed from an exterior source through the first mounting plate orifice, through the first cavity, through in parallel all of the spacings, through the second cavity, and exiting through the second mounting plate orifice.

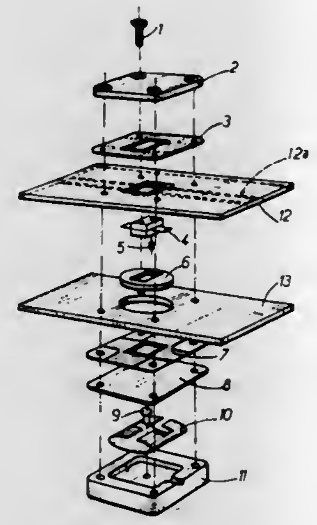
3,648,114

STRUCTURAL ASSEMBLY FOR A THREE-PLATE CIRCUIT OR THE LIKE WHICH INCLUDES AT LEAST ONE DIODE OR OTHER ELECTRONIC COMPONENT

Bertrand Claude Marcel Jean Manuali, Villiers-sur-Orge; Robert Doullet, Paris, and Denis Jacques Laedlein, Villennes-sur-Seine, all of France, assignors to Centre National D'Etudes Spatiales, Paris, France

Filed Dec. 29, 1970, Ser. No. 102,291
Claims priority, application France, Jan. 15, 1970, 7001438
Int. Cl. H05k *1/04*

U.S. Cl. 317—101 CP **5 Claims**



A structure for a three-plate circuit which includes a diode which must be connected to ground by a capacitor, the latter being formed of two capacities each constituted by the metallization of a supporting plate, a small plate made of Mylar and a metal plate.

Application to structure in which the diodes are easily removable.

3,648,115

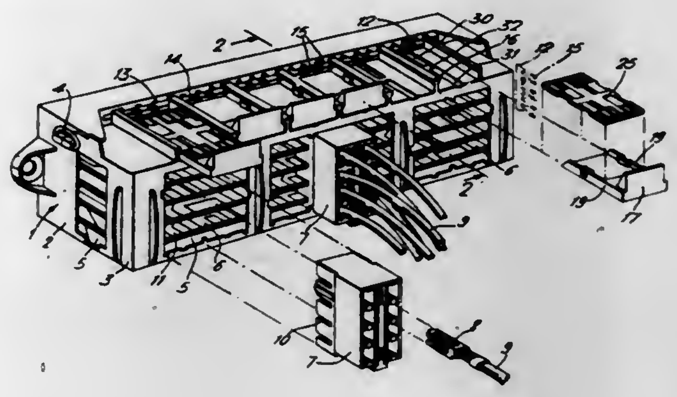
FUSE UNIT HAVING SLIDABLE FUSE-RECEIVING DRAWER

Wladimiro Teagno, Turin, Italy, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 4, 1970, Ser. No. 69,697
Claims priority, application Italy, Oct. 17, 1969, 23520 A/69
Int. Cl. H05k *5/02, 5/04*

U.S. Cl. 317—101 DH **6 Claims**

A wiring junction block comprising a stack of printed circuit boards mounted in generally parallel spaced relationship in a frame, edge portions of the boards being exposed at an aperture in the frame for receiving a connector having a plurality of individual edge contacts for engaging respective conductive strips of the different circuit boards at the exposed edges. Conductors are arranged transversely of the circuit boards interconnecting selected conductive strips of different boards.



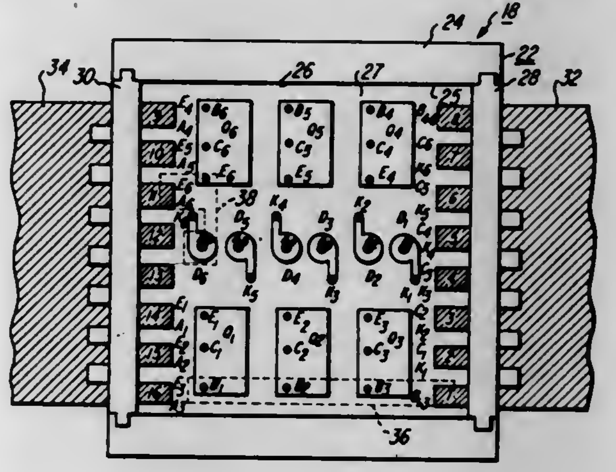
3,648,116

MULTICIRCUIT HYBRID MODULE AND METHOD FOR MAKING

Dale Milton Baugher, Flemington, and Earl Thomas Hausman, Somerset, both of N.J., assignors to RCA Corporation

Filed Sept. 17, 1970, Ser. No. 72,943
Int. Cl. H02b *1/04, 9/00*

U.S. Cl. 317—101 A **5 Claims**



Disclosed is a hybrid circuit module in a package having a mounting surface. A plurality of circuit elements capable of a number of circuit configurations are disposed on the mounting surface. External termination is provided by a flat metal plate having terminal fingers extending through the package. Connecting means within the package are connected between the circuit elements and the fingers; the connecting means are common to all of the different circuit configurations. The flat plate is sheared to isolate some of the fingers and define only one of the circuit configurations.

3,648,117

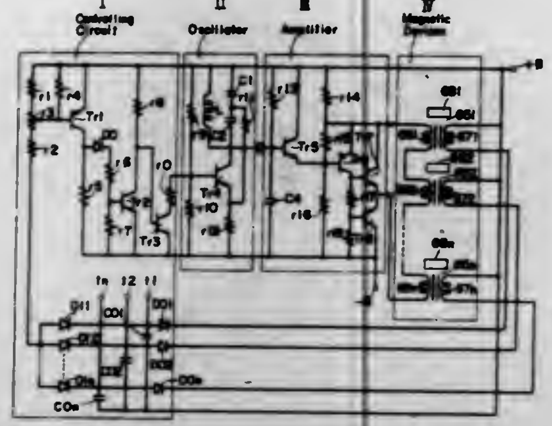
MAGNETIC DEVICE

Mititake Yamamoto, Kyoto; Genzo Uekusa, Takatsuki; Shigeru Tanimura, Kyoto, and Norio Maejima, Kameoka, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 5, 1970, Ser. No. 16,752
Int. Cl. H01h *47/22*

U.S. Cl. 317—156 **16 Claims**

Transmission of electric signals from a primary coil to a secondary coil can be effectively controlled by moving a magnet to and from a magnetic core of ferromagnetic substance, such as iron, or a ferrimagnetic substance, such as ferrite. Similar control is obtainable by changing the DC control current in a third coil wound on the magnetic core. By utilizing the above-mentioned controls, various electric devices, for instance, a keyboard switch without contacts suitable for an electronic calculator, a variable inductor, a vibration-free AC relay, etc. can be made.



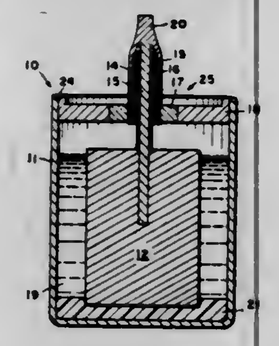
3,648,118
ELECTROLYTIC CAPACITOR HAVING A SEAL INCLUDING A HOLLOW PROJECTING TERMINAL

Paul J. Christiansen, and Robert F. Wallace, both of Indianapolis, Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation of application Ser. No. 469,109, July 2, 1965, **now abandoned. This application Dec. 9, 1968, Ser. No. 785,022**

Int. Cl. H01g *9/06*

U.S. Cl. 317—230 **10 Claims**



In an electrolytic capacitor, an electrolyte substantially covering a porous film-forming metal anode, a film-forming metal anode riser connected to the anode, a dielectric oxide film formed on the anode and on the anode riser and a sealing means. The sealing means includes an apertured metal body, means substantially closing the aperture, a tube of film-forming metal projecting through the means closing the aperture and a dielectric oxide film formed on at least the inner surface of the tube. The anode riser projects into the tube and the tube is closed so that a selected portion of the inner wall of the tube engages with the anode riser. The remaining inner portion of the wall of the tube is spaced from the anode riser.

3,648,119
SOLID-STATE DEVICES FOR PERFORMING SWITCHING FUNCTIONS AND INCLUDING SUCH DEVICES HAVING BISTABLE CHARACTERISTICS

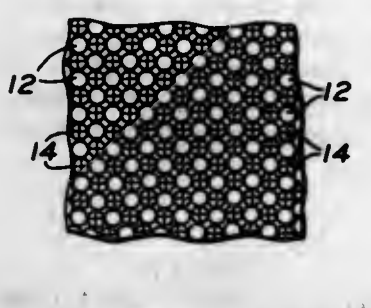
Philippe F. Van Eeck, 11827 Kearsarge Street, Los Angeles, Calif.

Continuation-in-part of application Ser. No. 657,304, July 31, 1967, which is a continuation-in-part of application Ser. No. 453,089, May 4, 1965. This application Sept. 22, 1969, Ser. No. 859,618

Int. Cl. H01g *9/00*

U.S. Cl. 317—232 **16 Claims**

A family of solid-state current limiters and other solid-state devices comprising a plurality of oriented unbalanced dipoles taken from two groups of conductive particles and encapsulated within a hardened dielectric matrix. One group of conductive particles is selected from the group of elements having an even number of electrons in its outer shell and having a magnetic moment. The other group of conductive particles is selected from the group of elements having an odd number of electrons in its outer shell and includes those oxides and sulfides of those metals having an odd number of outer shell electrons in their molecular combination.



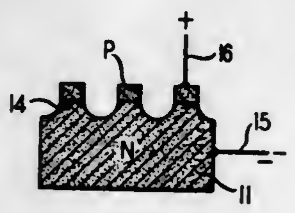
3,648,120
INDIUM ALUMINUM PHOSPHIDE AND ELECTROLUMINESCENT DEVICE USING SAME

Basil W. Hakki, Summit, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Jan. 16, 1969, Ser. No. 791,575

Int. Cl. H01l *15/00*

U.S. Cl. 317—235 N **3 Claims**



$(\mathrm{In}_{(1-x)}\mathrm{Al}_x)\mathrm{P}$ compositions wherein x ranges from 0.2 to 0.5 have been found to be amphoteric and manifest electroluminescent properties in the visible portion of the spectrum.

3,648,121
LAMINATED SEMICONDUCTOR STRUCTURE

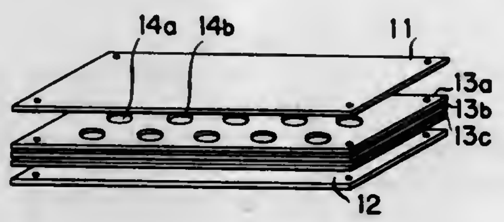
Masanobu Suenaga; Tetsuo Machii, both of Yokohama-shi; Takahiro Sawano, Tokyo; Takehiko Kobayashi, Kawasaki-shi; Tadao Dengo, Yokohama-shi, and Tetsuzo Nakai, Kawaguchi-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 3, 1968, Ser. No. 742,292

Claims priority, application Japan, Sept. 6, 1967, 42/56768; Sept. 27, 1967, 42/61666; Feb. 14, 1968, 43/8836

Int. Cl. H01l *1/02*

U.S. Cl. 317—234 E **10 Claims**



A semiconductor apparatus comprising a first and a second electrode substrate arranged substantially in parallel to each other, a semiconductor element containing a plurality of electrode members located between and opposite to the first and second electrode substrates, a layer of organic adhesive material inserted between the first and second electrode substrates for their integral bonding, and a means for connecting

the first and second electrode substrates with the aforesaid plurality of electrode members mechanically as well as electrically.

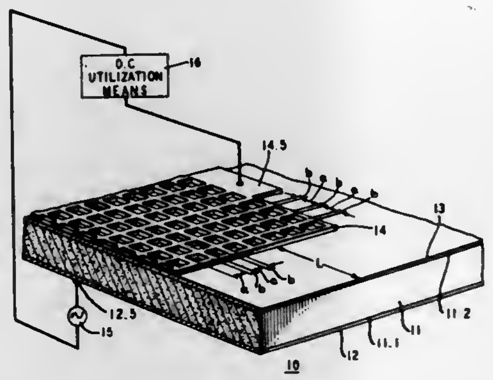
3,648,122
METAL-INSULATOR-METAL SOLID-STATE RECTIFIER

Carl Neil Berglund, Plainfield, and Edward Haig Nicollian, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 19, 1970, Ser. No. 47,739

Int. Cl. H01l *19/00*

U.S. Cl. 317—234 **7 Claims**



A metal-insulator-metal layered structure is disclosed which is useful as a rectifier of AC voltage. One of the metal layers is advantageously in the form of a crossgrid-type geometry, in order to afford a large perimeter of contact with the insulator layer. Electrons are injected at the edges of the metal grid through the insulator when the grid goes electrically negative, but not when it goes positive; thereby, rectifying properties are afforded by this metal-insulator-metal structure.

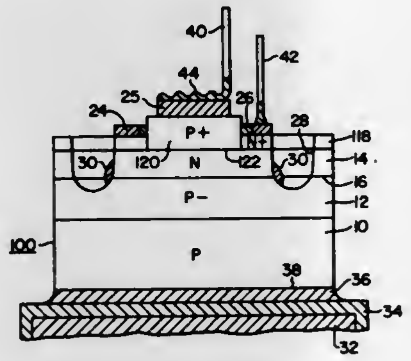
3,648,123
EPITAXIAL BASE HIGH-SPEED PNP POWER TRANSISTOR

Frederick G. Ernick, Box 288 R.D. 2, Latrobe, Pa.; Thorndike C. T. New, 11020 North 74th Street, Scottsdale, Ariz., and Donald A. Walczak, Box 191 R.D. 2, New Alexandria, Pa.

Filed Feb. 19, 1970, Ser. No. 12,712

Int. Cl. H01l *9/12, 11/06*

U.S. Cl. 317—235 R **5 Claims**



An improved high-speed PNP power transistor, either planar or mesa, comprises at least two epitaxial layers, on a low-resistivity P-type substrate, a first epitaxial layer on the substrate being P-, to provide a collector, and a second epitaxial layer is N-type to provide a base and has an N+ surface layer not exceeding about 1 micron in thickness and of a resistance of about 0.01 ohm-cm., to provide for low saturation, and a P-type emitter laterally contacting or abutting the low-saturation layer, the P-type emitter being either an epitaxially deposited layer to provide a mesa configuration or produced by diffusion through the second epitaxial layer entirely through the saturation surface, in either case to provide a base width of between 1.2 to 4.5 microns.

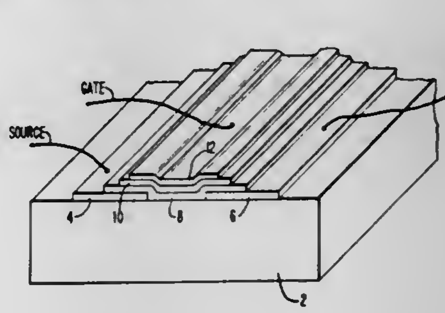
3,648,124
GATED METAL-SEMICONDUCTOR TRANSITION DEVICE

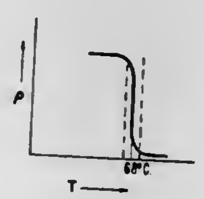
Webster E. Howard, Jr., Yorktown Heights; Rudolf Ludeke, South Salem, and Phillip J. Stiles, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 10, 1970, Ser. No. 45,143

Int. Cl. H01l *11/14*

U.S. Cl. 317—235 R **7 Claims**





A semiconductor switch, using transition metal oxides, is provided that can be made to undergo a very sudden metal-to-semiconductor transition as a function of an electric field instead of as a function of temperature. Certain transition metal oxides act like semiconductors having valence and conduction bands. When enough mobile charge carriers move into the conduction band, the gap between the conduction and valence band disappears and the metal oxide acts like a metal. The metal oxide, which is being held at a temperature very close to its transition threshold, is employed with an insulated electrode (serving as a gate) capable of supplying mobile carriers to the metal oxide. When a proper bias is applied to the gate electrode, the metal oxide is switched into its high-conduction (metal) state, allowing the flow of current therethrough.

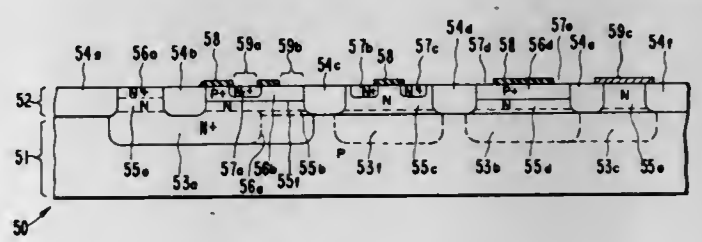
3,648,125
METHOD OF FABRICATING INTEGRATED CIRCUITS WITH OXIDIZED ISOLATION AND THE RESULTING STRUCTURE

Douglas L. Peltzer, Cupertino, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Feb. 2, 1971, Ser. No. 111,956

Int. Cl. H01l *19/00*

U.S. Cl. 317—235 **24 Claims**

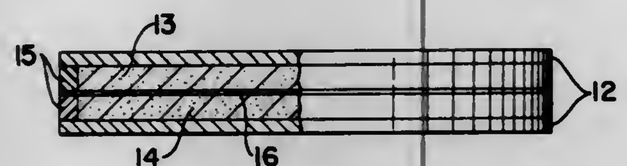


A thin silicon epitaxial layer, formed on a silicon substrate, is subdivided into electrically isolated pockets by a grid of oxidized regions of epitaxial silicon material which extend through the epitaxial layer to a laterally extending PN junction.

3,648,126
ELECTRICAL CAPACITOR EMPLOYING PASTE ELECTRODES

Donald L. Boos, Garfield Heights, and Joseph E. Metcalfe, III, Bedford, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 28, 1970, Ser. No. 101,834
Int. Cl. H01g *9/04*
U.S. Cl. 317—230 **10 Claims**

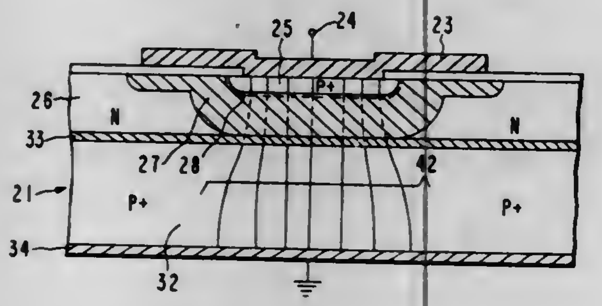


A high capacitance low voltage electrolytic capacitor consists essentially of a pair of paste electrodes and a separator saturated with electrolyte which functions as an electronic insulator and an ionic conductor. One of said paste electrodes is composed of active carbon and the opposing paste electrode is composed of a powdered metal selected from the group consisting of copper, nickel, cadmium, zinc, iron, manganese, lead, magnesium, titanium, silver, cobalt, indium, selenium and tellurium, said electrodes being prepared by mixing finely divided particulate material of the above electrode materials with electrolyte to form a viscous paste and compressing the paste to form the electrodes.

3,648,127
REACH THROUGH OR PUNCH—THROUGH BREAKDOWN FOR GATE PROTECTION IN MOS DEVICES

Martin Lenzlinger, Palo Alto, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Sept. 28, 1970, Ser. No. 76,057
Int. Cl. H01l *11/06*
U.S. Cl. 317—235 **5 Claims**



The gate dielectric of an MOS device is protected from voltage surges by forming a PN-junction in parallel with the gate between the voltage source and ground, and directly above a region of highly conductive semiconductor material.

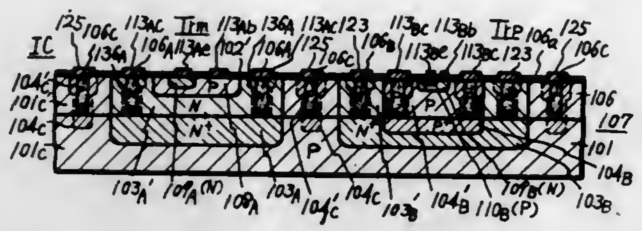
3,648,128
AN INTEGRATED COMPLEMENTARY TRANSISTOR CIRCUIT CHIP WITH POLYCRYSTALLINE CONTACT TO BURIED COLLECTOR REGIONS

Isamu Kobayashi, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of application Ser. No. 774,702, Nov. 12, 1968, Continuation-in-part of application Ser. No. 774,703, Nov. 12, 1968. This application May 21, 1969, Ser. No. 826,437

Claims priority, application Japan, May 25, 1968, 43/35385

Int. Cl. H01l *19/00, 11/00*
U.S. Cl. 317—235 R **3 Claims**

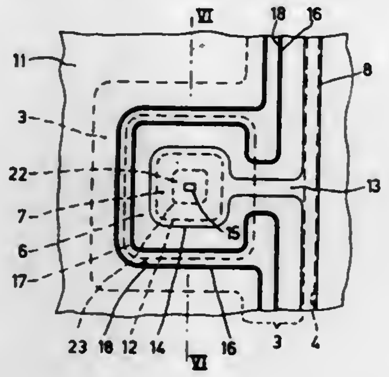


An integrated semiconductor device having a monocrystalline semiconductor substrate of one conductivity type, a diffused layer in the substrate of the opposite conductivity type, a vapor deposited layer formed on the substrate, the vapor deposited layer including a monocrystalline region, and a polycrystalline region of high-impurity concentration surrounding the monocrystalline region and extending from the diffused layer to the surface of the vapor deposited layer, a second monocrystalline region surrounding the polycrystalline region, and monocrystalline regions of high-impurity concentration contiguous to both sides of the polycrystalline region, the monocrystalline regions of high-impurity concentration having the same conductivity type as that of the polycrystalline region and forming a PN junction with the adjoining monocrystalline region.

3,648,129
INSULATED GATE FIELD EFFECT TRANSISTOR WITH INTEGRATED SAFETY DIODE

Rijkent Jan Nienhuis, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 23, 1969, Ser. No. 818,664
Claims priority, application Netherlands, Mar. 1, 1969, 6903231
Int. Cl. H01l *11/14, 5/06*
U.S. Cl. 317—235 R **4 Claims**

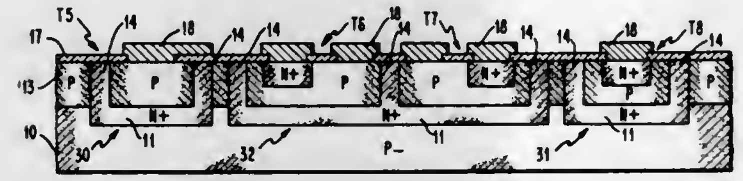


An insulated gate field effect transistor with an integrated safety diode is described. The safety diode comprises opposite-type conductivity diode zones forming a low breakdown voltage PN-junction by reason of high dopant concentrations in the diode zones. The diode zone which is of the same type conductivity as the substrate completely surrounds the other diode zone and can thus serve as a channel interrupter preventing parasitic transistor action between the safety diode and the active zones of the field effect transistor. Other features include location of the diode zone of the same type conductivity as the substrate contiguous with the source electrode, and a metal layer on the surface short circuiting the PN-junction therebetween to directly connect the source to one of the zones of the safety diode.

3,648,130
COMMON EMITTER TRANSISTOR INTEGRATED CIRCUIT STRUCTURE

Paul P. Castrucci, Poughkeepsie; Edward G. Grochowski, Wappingers Falls; William D. North, Poughkeepsie, and Thomas L. Palfi, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 16, 1969, Ser. No. 842,195
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R **4 Claims**

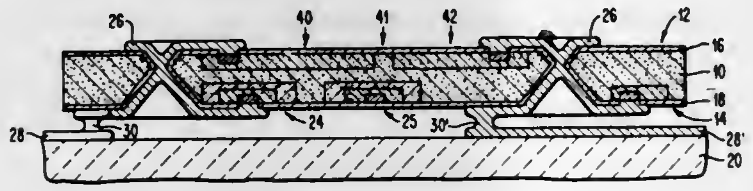


A planar integrated semiconductor circuit having common emitter transistor elements isolated from each other and from other transistors by the emitter regions which form a PN- or rectifying junction with the body of the semiconductor member in which the integrated circuit is formed. In a semiconductor member or body of one type conductivity, a plurality of emitter regions of opposite type conductivity extend from one planar surface of the body. One or more of the emitter regions each have a plurality of discrete base regions of the one type conductivity extending from said planar surface fully enclosed within the emitter region. Each of the base regions in turn has at least one collector region enclosed within it at the planar surface. The emitter region has a higher majority carrier concentration than the majority carrier concentration within its enclosed base regions. The rectifying junction formed by the opposite conductivity emitter region with the one type conductivity semiconductor body serves to isolate the emitter regions from each other.

3,648,131
HOURGLASS-SHAPED CONDUCTIVE CONNECTION THROUGH SEMICONDUCTOR STRUCTURES

Kenneth P. Stuby, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 7, 1969, Ser. No. 874,729
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R **7 Claims**

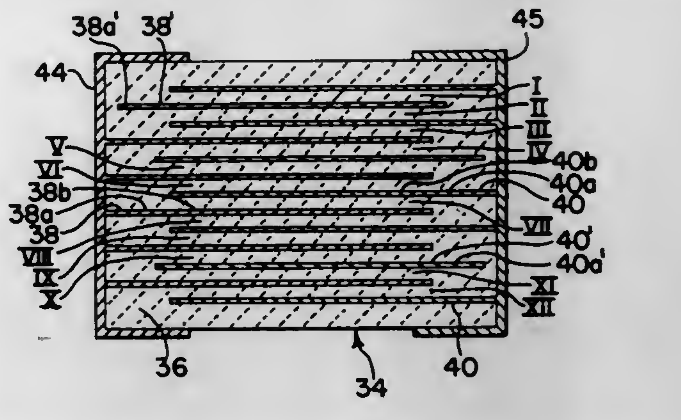


An integrated semiconductor structure including the fabrication thereof, and more particularly, an improved means for interconnecting the two planar surfaces of a semiconductor wafer. To provide the electrically conductive interconnections through the wafer, a hole is etched, insulated, and metallized. Active or passive devices may be formed on either or both sides of the wafer and connected to a substrate by solder pads without the use of beam leads or flying lead bonding.

3,648,132
MULTILAYER CAPACITOR AND PROCESS FOR ADJUSTING THE VALUE THEREOF

Charles C. Rayburn, Falls Church, Va., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Apr. 20, 1970, Ser. No. 29,944
Int. Cl. H01g *3/07, 3/26*
U.S. Cl. 317—261 **14 Claims**

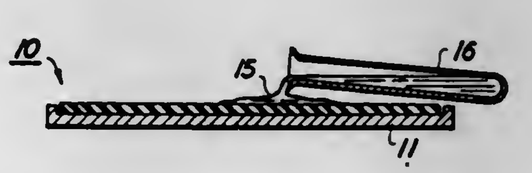


Multilayer capacitor is formed so that certain of its alternating layers of electrodes have marginal portions which terminate at an edge of the capacitor while others are located entirely internally of the capacitor so that their marginal portions are positioned short of the edge. By removing some of the dielectric material which separates the concealed electrode margins from the edge, the concealed electrodes can be electrically connected to the electrodes terminating at the edge to increase the capacitance of the capacitor. The process permits a production batch of capacitors which normally includes a great percentage of capacitors differing from a desired value by more than acceptable tolerance levels to be simply and quickly adjusted so that all, or substantially all, of the capacitors in the batch will fall within the accepted tolerance level. The adjusting is done without altering the dimensions of the capacitors or disturbing the electric field region in any manner. In one embodiment of the invention, a plurality of different sized electrode areas are formed in one plane. By removing material from the several edges of the capacitors to expose various combinations of these areas, the value of the capacitor can be varied over a large range. For example, by providing three different size electrode areas, it is possible to achieve a capacitor having capacitance values in whole number multiples of each other in a range of from one to nine capacitance units. In another modification, a conductive terminal coating connecting all electrode areas of like polarity can be removed from certain edges of the capacitor to provide selective downward adjustment of the capacitor value.

3,648,133
UNIFORM ELECTROSTATIC CHARGING OF A PHOTOCONDUCTIVE INSULATING SURFACE

Algird G. Leiga, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

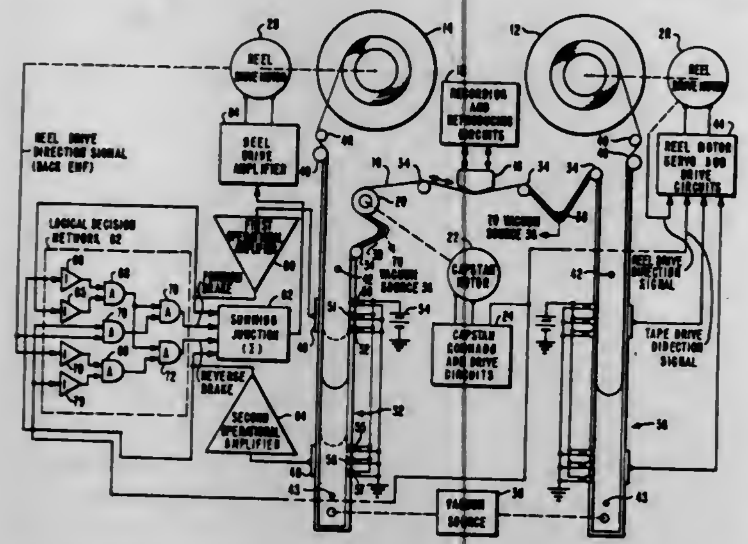
Filed Mar. 31, 1970, Ser. No. 24,288
Int. Cl. G03g *13/00*
U.S. Cl. 317—262 A **15 Claims**



Method for uniformly charging a photoconductive insulating surface. A nonuniform charge density is formed on the photoconductive insulating surface and is thereafter contacted with an insulating material causing the charged surface to attain a uniform charge density in contacted areas.

3,648,134
REEL SERVOSYSTEM

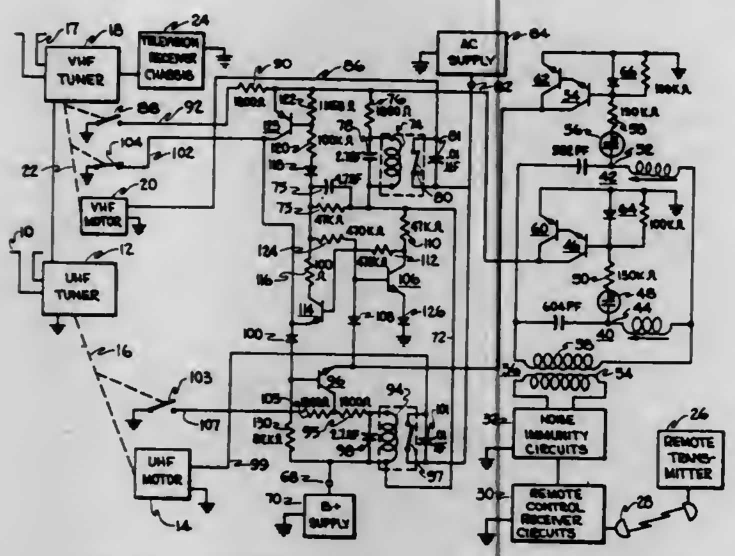
Azmi S. Audeh, Camarillo; Anil N. Deodhar, West Los Angeles, and Henry G. Glattfelder, Los Angeles, all of Calif., assignors to Ampex Corporation, Redwood City, Calif.
Filed Nov. 17, 1969, Ser. No. 877,278
Int. Cl. B65h *59/38*
U.S. Cl. 318—6 **15 Claims**


REEL DRIVE MOTOR
REEL DRIVE DIRECTION SIGNAL (BACK EMF)
REEL DRIVE AMPLIFIER
RECORDING AND REPRODUCING CIRCUITS
REEL MOTOR SERVO AND DRIVE CIRCUITS
LOGICAL DECISION NETWORK
SUMMING JUNCTION
REVERSE BRAKE
SECOND OPERATIONAL AMPLIFIER
CAPSTAN MOTOR
CAPSTAN COMMAND AND DRIVE CIRCUITS
TAPE DRIVE DIRECTION SIGNAL
VACUUM SOURCE

A reel servosystem for a digital magnetic tape transport responds to tape loop length signals from two spaced-apart linear sensors in a vacuum chamber and digital signals representing tape direction on either side of the tape loop formed by the chamber to control a reel motor independent of a capstan motor. The digital signals and sensor signals are combined in a logic network to introduce selective reel drive braking when the tape loop is somewhere between the sensors and the reel drive is moving opposite the capstan drive. The linear sensors otherwise generate analog signals to control loop length in proportional fashion, to maintain the loop at selected reference positions within the vacuum chamber dependent on direction.

3,648,135
REMOTE-CONTROLLED TELEVISION TUNER MOTOR SWITCHING CIRCUIT

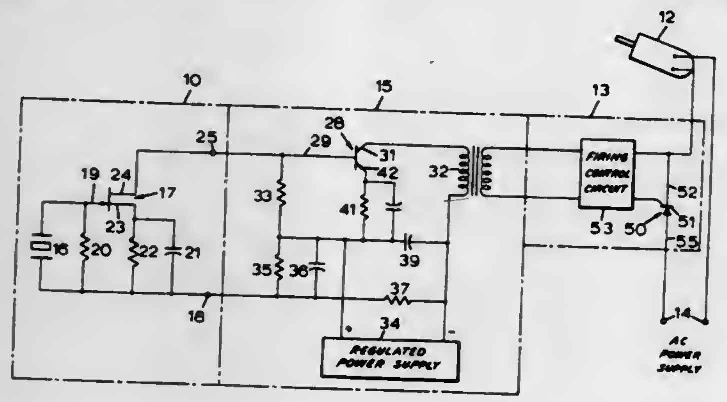
Lyle Bruce Juroff, and Lawrence Mark Lunn, both of Indianapolis, Ind., assignors to RCA Corporation
Filed May 11, 1970, Ser. No. 36,149
Int. Cl. H02p *1/54*
U.S. Cl. 318—101 **3 Claims**



A remote-controlled television receiver includes a VHF and a UHF tuner each having tunable resonant circuits which are adjusted by the gear train of a remotely controlled motor. The tuners are connected so that during UHF operation the VHF tuner provides amplification of the UHF tuner IF signal output. A relay switch is operatively connected to the VHF motor to control the motor energization. Switch means are coupled to the VHF tuner motor gear train and provide an indication when the VHF tuner is adjusted for amplification of the UHF tuner IF signal output. A bistable multivibrator is coupled to the switch means in a manner so that the multivibrator changes states in response to the switch indication. A relay winding current control means responds to the change in state to prevent current from flowing into the relay winding. This causes the relay switch to open and deenergizes the VHF motor. A second relay switch is operatively connected to the UHF motor to control the motor energization. A second relay current control means is connected to permit a flow of current through the second relay winding only when the switch indication is present.

3,648,136
TRANSDUCTION, CONTROL AND MEASUREMENT OF VIBRATION IN VIBRATORY APPARATUS

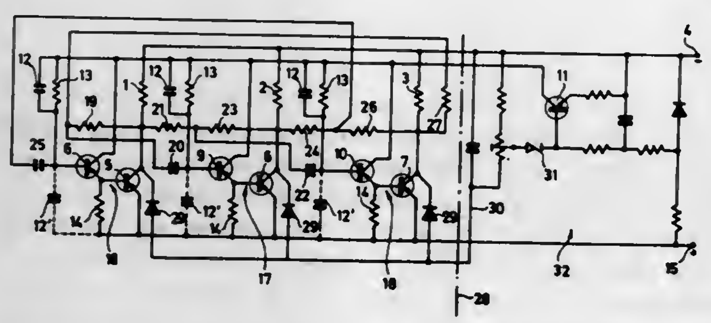
Werner Krajewski, Stoney Creek, and John Nahirny, Hamilton, Ontario, both of Canada, assignors to Syntron (Canada) Limited, Stoney Creek, Ontario, Canada
Filed Oct. 27, 1969, Ser. No. 869,541
Claims priority, application Canada, Nov. 4, 1968, 034253
Int. Cl. H02k *33/00*
U.S. Cl. 318—128 **3 Claims**



A method and apparatus for transducing the amplitude of vibration of a mechanical vibratory device into electrical energy, using a field effect transistor. Preferably an accelerometer is mounted on the device and oriented for relative oscillation in the direction of vibration.

3,648,137
BRUSHLESS DIRECT CURRENT MOTOR

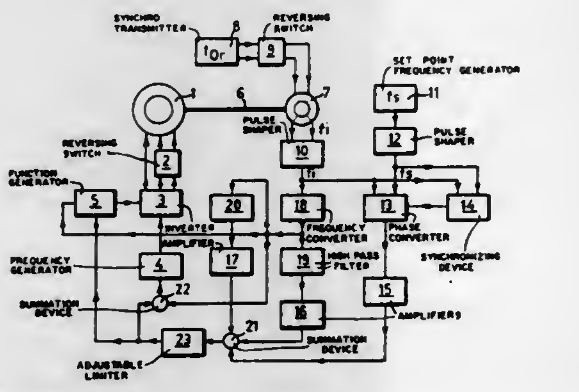
Winfried Mieslinger, Nurnberg, Germany, assignor to Gebr. Buhler Nachfolger GmbH, Nurnberg, Germany
Filed Mar. 30, 1970, Ser. No. 23,794
Claims priority, application Germany, Mar. 29, 1969, P 19 16 229.9
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 **4 Claims**



In a transistor control circuit which comprises a number of control stages corresponding to the number of windings of a multipole stator, the control stages are joined together to form a closed chain, each control stage being connected to the following control stage by means of a first RC network, and being connected to the preceding control stage by means of a second RC network. The said first RC networks are all of uniform rating and the said second RC networks are also all of uniform rating but of a rating which differs from that of the first RC networks, and the first and second RC networks connected to the input of each control stage have a common resistance or capacity component.

3,648,138
ARRANGEMENT FOR FREQUENCY-ANALOGOUS SPEED CONTROL OF AN INDUCTION MACHINE FED THROUGH AN INVERTER

Horst Kalis, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 5, 1970, Ser. No. 1,075
Claims priority, application Germany, Jan. 4, 1969, P 19 00 347.5
Int. Cl. H02p *7/42*
U.S. Cl. 318—231 **9 Claims**

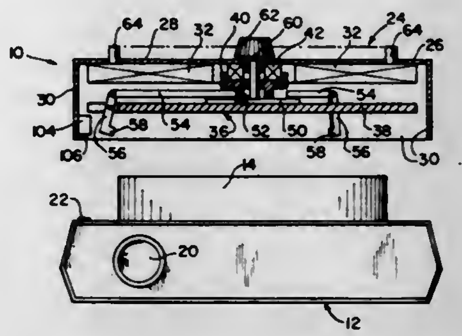


A speed control system for an induction motor includes an inverter coupled to the motor stator winding and a second induction machine with its rotor coupled to the motor shaft. The stator of the second machine is energized with a constant-frequency voltage. The frequency of the rotor voltage of the second machine is determined by the stator voltage frequency and the shaft speed. The signal from a reference frequency generator and the rotor frequency are applied to a phase comparator and a synchronizing device, the output signal thereof being applied to a limiter. The rotor frequency is also applied to a frequency detector, the output signal of which is applied to a filter, a differential stage, a device for regulating the inverter voltage or current and a frequency generator that controls the inverter frequency. The filter passes the AC component to the limiter. The output of the differential stage also is applied to the limiter. The limiter output is applied to the frequency generator and to the regulating device to control the motor speed and to maintain the motor flux constant.

3,648,139
APPARATUS FOR MOVING A MEMBER TO A SELECTED POSITION

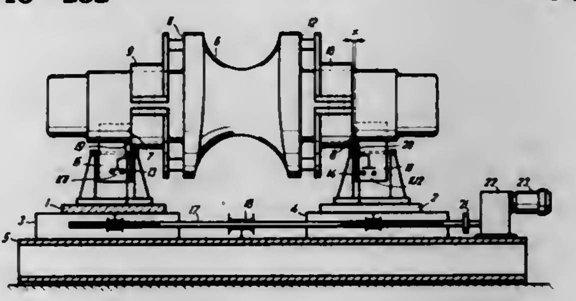
Robert Friedman, 18 Raymond Avenue, Spring Valley, N.Y.
Filed July 8, 1970, Ser. No. 53,136
Int. Cl. G05b *11/16*
U.S. Cl. 318—265 **14 Claims**

The apparatus is adapted to be used in conjunction with a rotatable member having a plurality of elements therein and is operable to rotate the member to position a selected one of the elements at a station. The apparatus includes a driving means connectable with the member and a plurality of switches each positioned to correspond to a different element for connecting a source of energy with the driving means when moved from an open to a closed state to energize the driving means. Disconnect means is movable with the driving means for engaging and moving said switches back to said open state.



3,648,140
ARRANGEMENT FOR ADJUSTMENT OF THE POSITION OF THE SUPPORTING POSTS FOR A CYLINDRICAL BODY UPON WHICH A LAYER OF WELD METAL IS BEING DEPOSITED

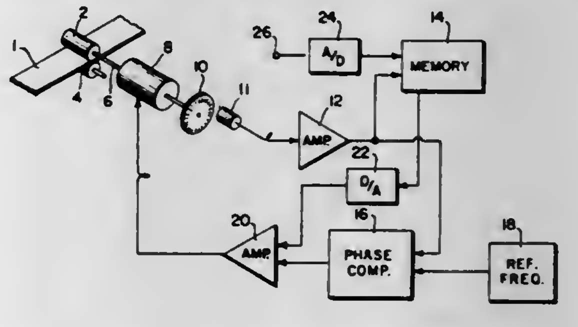
Vladimir Majek; Anton Krajmer, and Zdenek Smitmajer, all of Bratislava, Czechoslovakia, assignors to Vyskumong ustav zvaracsky, Bratislava, Czechoslovakia
Filed June 22, 1970, Ser. No. 47,942
Claims priority, application Czechoslovakia, Aug. 1, 1969, 5354/69
Int. Cl. G05d *3/04*
U.S. Cl. 318—282 **4 Claims**



An arrangement for adjustment of the position of supporting posts of a cylindrical body in order to compensate for thermal expansion in its longitudinal direction. In the course of depositing a metallic layer on the circumference of the body by welding on, a minimum clearance is maintained between the faces of the cylindrical body and both supporting posts, so as to maintain the position of the longitudinal center of the cylindrical body in the center of the distance between the supporting posts.

3,648,141
TAPE DRIVE ERROR-CANCELLING SYSTEM

David W. Scheer, Littleton, Colo., assignor to Honeywell, Inc., Minneapolis, Minn.
Filed Mar. 11, 1971, Ser. No. 123,339
Int. Cl. H02p *5/16*
U.S. Cl. 318—314 **4 Claims**

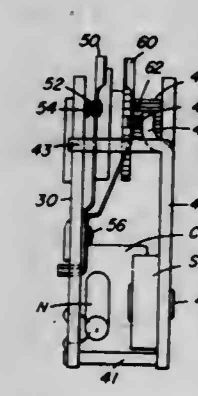


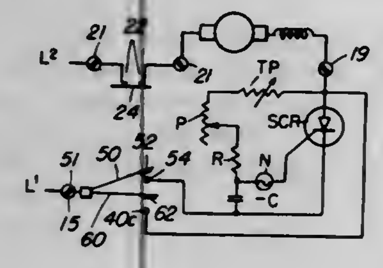
A tape drive system has a capstan speed control circuit using a comparator means for comparing a capstan speed responsive variable frequency signal with a reference frequency proportional to a desired capstan speed. A data storage memory is arranged to store a separate predetermined capstan speed correction signal for each of a plurality of capstan angular positions. The memory information is sequentially read concurrently with a sensing of each corresponding capstan angular position and applied in combination with an output signal from the comparator means to a capstan motor energizing means to control the capstan rotational speed.

3,648,142
INFINITE SPEED CONTROL SWITCHING DEVICE FOR USE WITH ELECTRIC MOTORS IN PORTABLE TOOLS

Lawrence G. Corey, Rockville, and David W. Johnson, Newington, both of Conn., assignors to Arrow-Hart, Inc.

Filed Nov. 21, 1969, Ser. No. 878,613
Int. Cl. H02p *7/28*; H02k *7/14*
U.S. Cl. 318—345 **8 Claims**



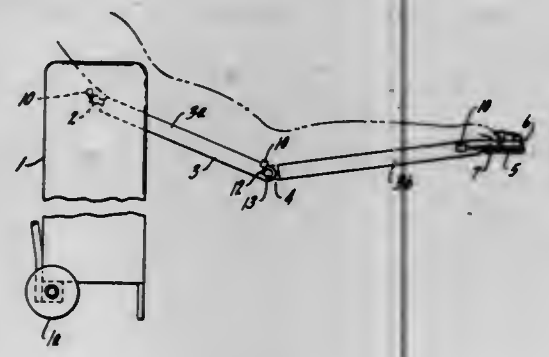


A trigger-operated power control switch for electric motors in portable tools, wherein control circuitry including a condenser, a fixed resistor, a silicon-controlled rectifier, a neon tube, and a potentiometer or variable resistance with which is combined switching means for isolating these parts from the source of power by opening the circuit in both powerline conductors in "off" position and for bypassing said control circuitry in full "on" position. The trigger operates the potentiometer and also controls the switching operations.

3,648,143
AUTOMATIC WORK-REPEATING MECHANISM

Kenneth B. Harper, Winnetka, and Hubert J. Tremblay, Roselle, both of Ill., assignors to Harper Associates, Inc., Winnetka, Ill.

Filed Aug. 25, 1969, Ser. No. 852,538
Int. Cl. G05b *19/42*
U.S. Cl. 318—568 **22 Claims**

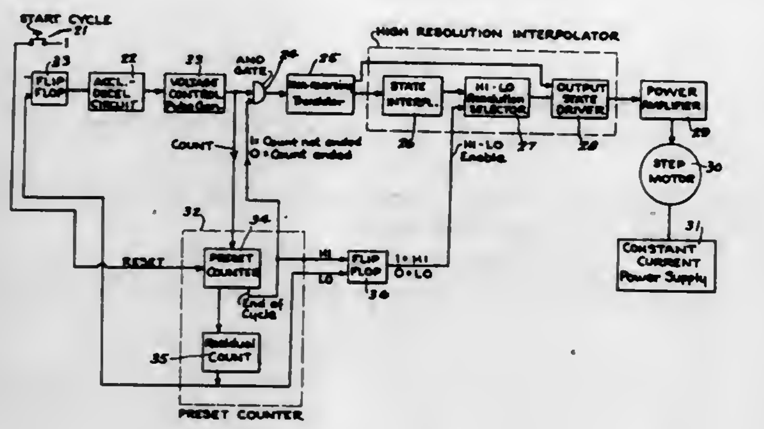


An electric motor-controlled device having elements corresponding to human appendages, the elements being manually movable to perform a function recorded on tape, the elements thereafter repeating the function in response to repeated playbacks of the tape.

3,648,144
STEPPING MOTOR CONTROL SYSTEM

Philip J. Rosen, Oak Park, Mich., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,648
Int. Cl. H02k *37/00*
U.S. Cl. 318—696 **2 Claims**

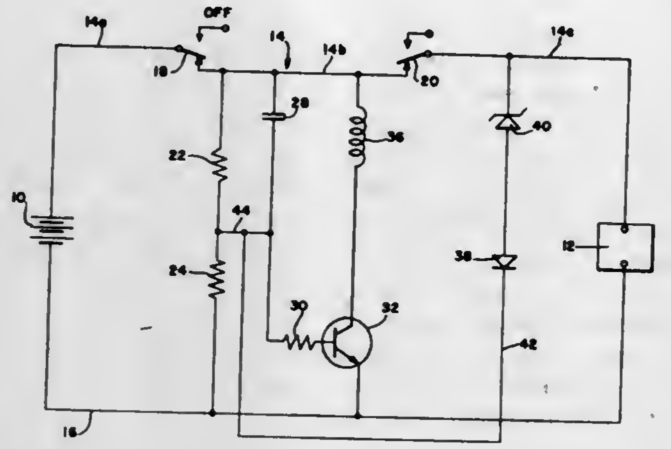


A stepping motor control system for motors having at least two poles with each pole having a bifilar winding with two input points wherein power is selectively applied to the two input points in accordance with a predetermined sequence.

3,648,145
UNDERVOLTAGE PROTECTION DEVICE

Bennett A. Meyer, Port Chester, N.Y., and Kenyon E. B. McGuire, Demarest, N.J., assignors to The Singer Company, New York, N.Y.

Filed May 8, 1970, Ser. No. 35,701
Int. Cl. H02j *7/00*
U.S. Cl. 320—13 **1 Claim**

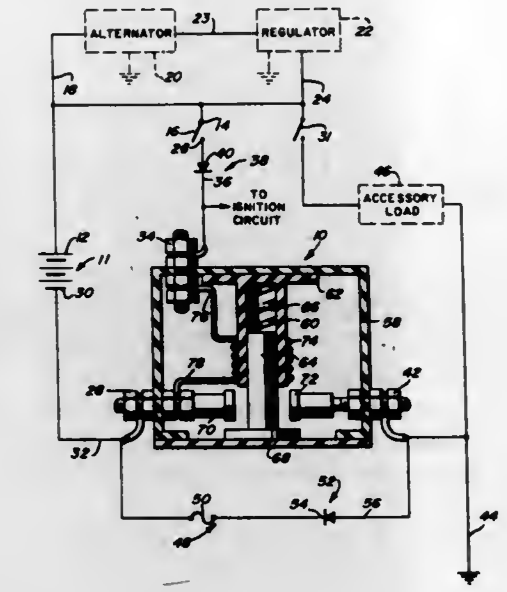


An undervoltage protection device for a voltage source and a load wherein a first and second switch are connected in a current path established between the voltage source and the load, with each of the switches being adapted to provide an open circuit in the current path. A first circuit is provided for closing the second switch in response to the first switch being closed, the circuit being operable, unless disabled, to open the second switch a predetermined time interval after the first switch closes. An additional circuit disables the first circuit in response to a predetermined minimum output from the voltage source.

3,648,146
ALTERNATOR CIRCUIT PROTECTOR

Wayne N. Rollen; Larry J. Strong, and Hurschel H. Rolen, all of 801 East Baker Street, Plant City, Fla.

Filed Mar. 20, 1970, Ser. No. 21,233
Int. Cl. H02j *7/00*
U.S. Cl. 320—25 **8 Claims**

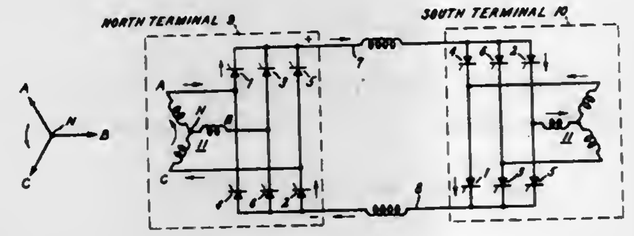


A relay assembly having a coil connected between the terminals of a vehicle battery. The switch contacts of the relay assembly complete a connection between one of the battery terminals and ground when the coil is energized in response to the closing of an ignition switch. A diode is connected in the coil circuit to prevent the connection of the battery to ground if the battery is connected with the wrong polarity.

3,648,147
STARTING CONTROL SCHEME FOR RECTIFIER-INVERTER SYSTEMS

Bernard D. Leete, Newtown Square, Pa., assignor to General Electric Company

Continuation-in-part of application Ser. No. 754,921, Aug. 23, 1968. This application Nov. 12, 1970, Ser. No. 88,668
Int. Cl. H02m *5/40*
U.S. Cl. 321—2 **27 Claims**

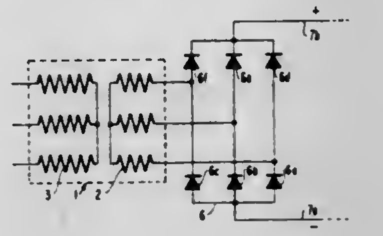


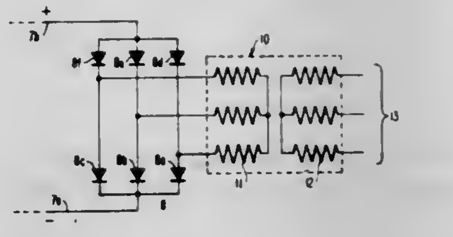
A high-voltage electric power converter comprises a plurality of electric valves interconnected in a bridge configuration. In operation the valves are cyclically fired in a predetermined normal sequence by a series of relatively short gate pulses respectively applied thereto. For successful starting, the controls are arranged (1) to idle until the concurrence of a starting command and a proper instant of time for firing any one of said valves, and then (2) to apply simultaneously a gate pulse to that one valve and a gate pulse to the immediately preceding valve in said normal sequence. The controls are preconditioned so that the initial firing angle is within certain limits that ensure continuous conduction by the preceding valve at least from the starting instant to the time at which the succeeding valve is fired.

3,648,148
CONTROL MEANS FOR AN AC-DC OR DC-AC ENERGY CONVERTER FOR CARRYING DIRECT CURRENT ENERGY

Louis Bechet, Decines, and Claude Bertholon, Saint-Etienne, both of France, assignors to Compagnie Generale D'Electricite, Paris, France

Continuation-in-part of application Ser. No. 791,616, Jan. 16, 1969. This application June 10, 1970, Ser. No. 44,957
Int. Cl. H02m *1/02*, *1/18*, *7/12*
U.S. Cl. 321—5 **9 Claims**





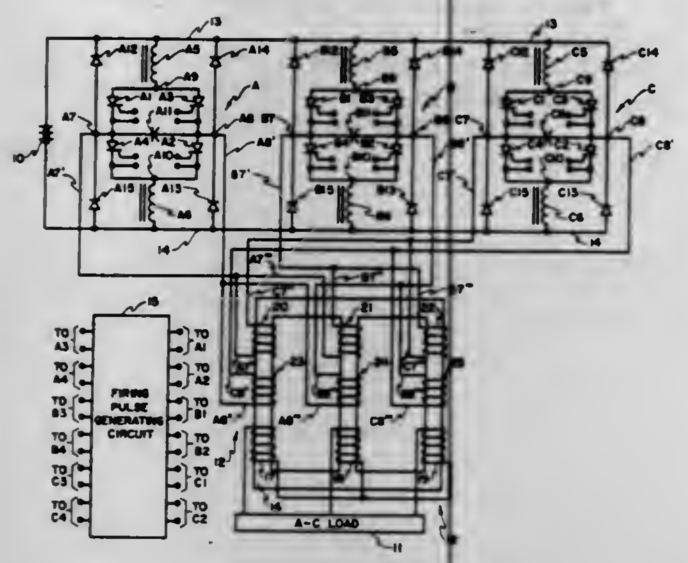
Disclosed herein is a high-voltage direct current converter control device for a direct current energy transmission line comprising an angle computer controlling a pulse generator. The direct current powerline is equipped at each of its ends with a bridge having control rectifier cells. The optimum cell ignition times are calculated considering the requirements of a power transmission program to be carried out and impulses are fed to the cells at instances calculated according to the techniques of the present invention. In accordance with this technique, from a first pulse train corresponding to the successive zero passage of voltage at the terminals of one of the cells of the converter is derived a second pulse train comprising six times as many pulses as the first pulse train, the pulses in the second pulse train being equally spaced over a time T defined as the time between the successive pulses in the first pulse train. The pulses in the second pulse train correspond to the theoretical times for the zero passages of the voltage at the terminals of the six cells of the converter bridge. The actual zero passage times are measured and numbers ϵ proportional to the interval of time separating the passage of theoretical zeros and the actual zeros at each of the cells are measured and the maximum value of ϵ is determined. Further, two numbers termed the rectifier stop and the inverter stop are determined on the basis of the maximum value of ϵ, the bridge regulation angle r, the maximum trespass angle of the cells u and the angle of the extinction of the cells γ. On the basis of the rectifier stop, the inverter stop and the second pulse train, ignition impulses for the cells are developed.

3,648,149
POLYPHASE INVERTER CIRCUIT

Harold J. Brown, Lorain, and Joseph L. Winpisinger, Fairview Park, both of Ohio, assignors to Lorain Products Corporation

Filed Mar. 11, 1971, Ser. No. 123,349
Int. Cl. H02m *7/00*
U.S. Cl. 321—5 **10 Claims**

A polyphase inverter circuit including a plurality of bridge-commutated inverter networks for providing first and second sets of polyphase voltages. These voltages are applied in power-aiding relationship to respective electrically isolated sets of primary windings on a polyphase output transformer. The instantaneous current through each primary winding is controlled by the algebraic combination of voltages from the inverter networks supplying voltage thereto at that instant.

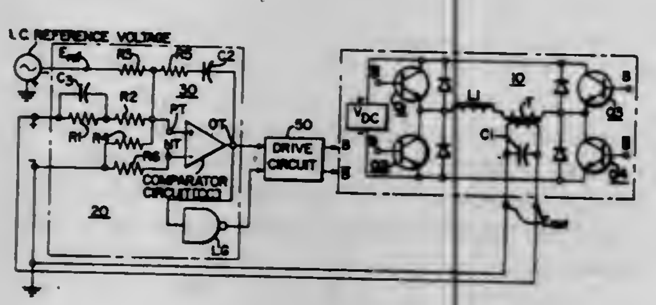


This control results in the cancellation of the third harmonic components of the polyphase voltages supplied to a load.

3,648,150
APPARATUS FOR PRODUCING A LOW-DISTORTION PULSE WIDTH MODULATED INVERTER OUTPUT

Andreas Kernick; Manvel A. Geyer, both of Lima, and Glenn W. Ernsberger, Worthington, all of Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 26, 1970, Ser. No. 14,314
Int. Cl. H02m *1/12, 7/52;* **H03c** *1/00*
U.S. Cl. 321—9 A **11 Claims**



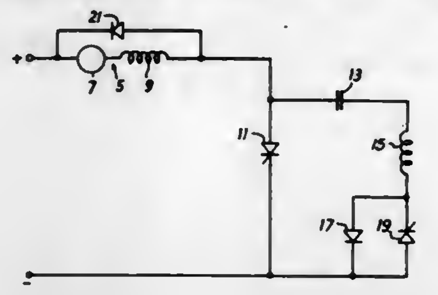
The invention comprises apparatus for comparing the filtered output of a pulse width modulated inverter circuit with an AC reference voltage waveform and generating output voltage signals to control the inverter drive circuit to the extent necessary to produce an inverter output waveform substantially duplicating the reference voltage waveform and substantially void of low-order harmonics.

3,648,151
CHOPPER CIRCUIT

David Gurwicz, Gateshead, England, assignor to Sevcon Engineering Limited, Gateshead, Co. Durham, England

Filed Aug. 7, 1969, Ser. No. 848,298
Claims priority, application Great Britain, Aug. 8, 1968, 38,015/68
Int. Cl. H02m *7/44*
U.S. Cl. 321—43 **2 Claims**

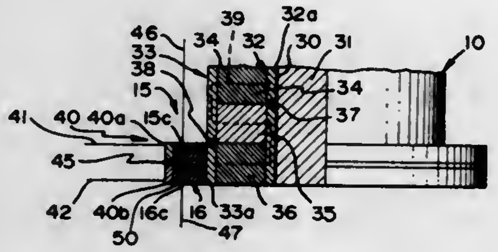
A variable mark-space ratio pulse controller in which a main thyristor for controlling the supply of direct current to a load is commutated by discharge of a capacitor occuring immediately on reversal of the charge thereon so that the use ot a separate thyristor which is turned on to pass discharge current from the commutating capacitor to commutate the main thyristor is avoided.



3,648,152
THERMAL TO ELECTRICAL POWER CONVERSION SYSTEM WITH SOLID-STATE SWITCHES WITH SEEBECK EFFECT COMPENSATION

George M. Low, (Acting Administrator of the National Aeronautics and Space Administration with Respect to an Invention of Katsunori Shimada), 3840 Edgeview Drive, Padadena, Calif.

Filed Feb. 26, 1971, Ser. No. 119,282
Int. Cl. H02n *5/00*
U.S. Cl. 322—2 **11 Claims**

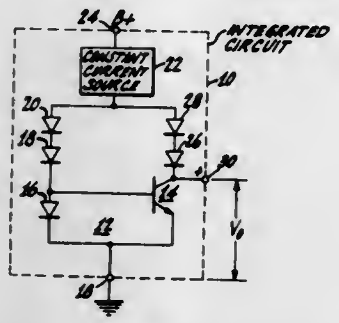


A thermal to electrical power conversion system is disclosed in which switching of electrical currents to a load is performed by solid-state switches in which their Seebeck effect reduces the losses due to the ohmic voltage drops thereacross. In a system with a thermoelectric generator as the power source, the switches are designed with their source electrodes formed by the generator's cold shoe at a temperature higher than a remotely located heat sink which forms the switches' drain electrodes. The gate electrodes of the switches are connected to an electronic switch controller, which controls their conduction and cutoff states.

3,648,153
REFERENCE VOLTAGE SOURCE

Stefano Arturo Graf, Somerville, N.J., assignor to RCA Corporation

Filed Nov. 4, 1970, Ser. No. 86,872
Int. Cl. G05f *1/60*
U.S. Cl. 323—1 **10 Claims**



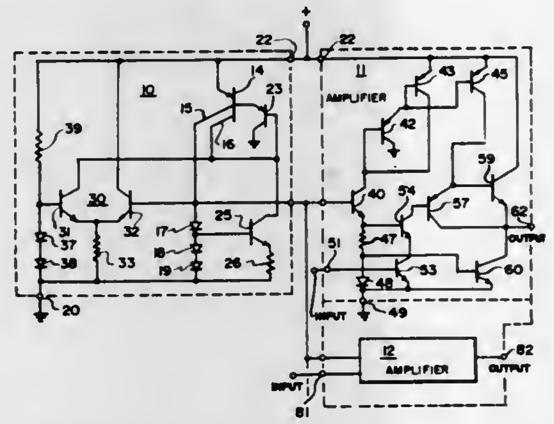
A temperature compensated reference voltage source is provided which is suitable for fabrication using integrated circuit techniques. A constant current source is coupled via first and second current paths to a reference terminal. Each

of the first and second current paths includes one or more diodes. A current repeater circuit, which includes a further diode and a transistor having proportionally related conduction characteristics, is coupled between the two current paths and the reference terminal to provide substantially constant currents in each of the first and second paths. The currents are selected so that a difference voltage, produced across the emitter-collector electrodes of the transistor of the repeater circuit, is substantially constant as a function of temperature.

3,648,154
POWER SUPPLY START CIRCUIT AND AMPLIFIER CIRCUIT

Thomas M. Frederiksen, Scottsdale, and Ronald W. Russell, Mesa, both of Ariz., assignors to Motorola, Inc., Fanklin Park, Ill.

Filed Dec. 10, 1970, Ser. No. 96,904
Int. Cl. G05f *1/48*
U.S. Cl. 323—22 T **15 Claims**

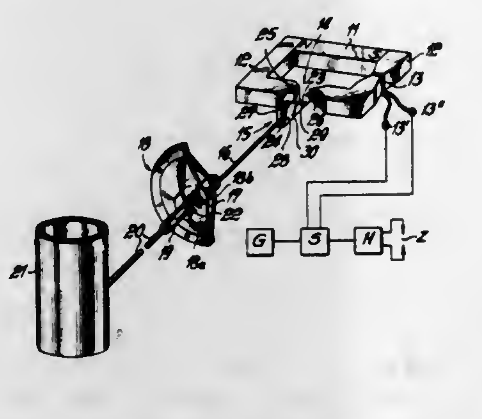


An operational amplifier capable of operating over a relatively wide variation of power supply voltages and temperature employs a high-beta lateral PNP buffer stage single input or dual input versions. Reference biasing voltage for operating the amplifier circuit is obtained from a current source supplying current through a string of series connected diodes, and a differential amplifier start circuit is provided in order to assure that current commences flowing through the diode string since the current source driving the string is biased from the same diode string.

3,648,155
ELECTROMECHANICAL TRANSDUCER ASSEMBLY

Gerhard Soehner, Geradstetten, and Gerd Hoehne, Ludwigsburg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 26, 1968, Ser. No. 787,034
Claims priority, application Germany, Dec. 23, 1968, P 16 73 938.1
Int. Cl. H01c *7/16*
U.S. Cl. 323—94 H **11 Claims**

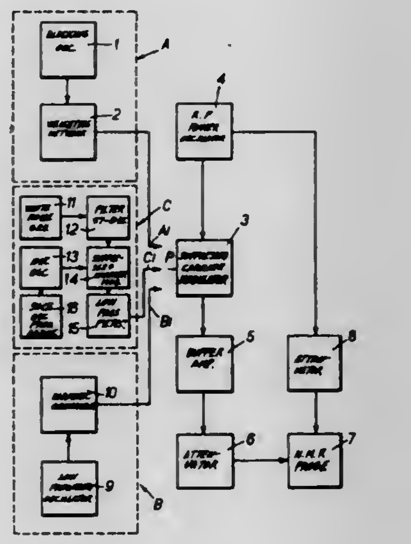


An electromechanical transducer assembly wherein the magnitude of electric output signals produced by a magnetically controllable semiconductor is a function of the position of a magnetically conductive wedge or sickle with reference to an airgap in the yoke of a permanent magnet system. The semiconductor is installed in the yoke and the wedge or sickle is reciprocated or pivoted by an adjustable element of an internal combustion engine.

3,648,156
QUIET SLOT SCANNING

Leslie Kearton Parker, High Wycombe, England, assignor to Perkin-Elmer Limited, Beaconsfield, Buckinghamshire, England

Continuation of application Ser. No. 732,697, May 28, 1968, now abandoned. This application May 26, 1970, Ser. No. 41,695
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R **6 Claims**



Decoupling of multiple resonances in a nuclear magnetic resonance analysis is provided by subjecting the sample to radio frequency decoupling energy centered about an RF sample irradiating frequency f_1. The radio frequency decoupling energy defines a quite slot characterized by the absence of decoupling energy and which is symmetrical about the frequency f_1. As sample scanning occurs, the slot progresses through the spectrum thereof enabling observance of an N.M.R. resonance substantially free from spin-coupling.

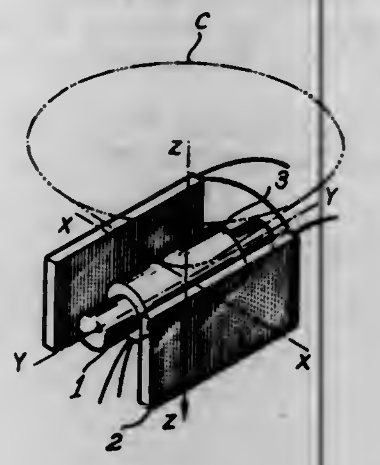
3,648,157
METHODS AND APPARATUS FOR MEASURING MAGNETIC FIELDS BY GYROMAGNETIC RESONANCE

Andre Maxime Philippe Denis, Herblay, and Guy Marie Camille Ripart, Plessis-Robinson, both of France, assignors to Sud-Aviation Societe Nationale de Constructions Aeronautiques, Paris, France

Filed Dec. 11, 1963, Ser. No. 329,920
Claims priority, application France, Dec. 11, 1962, 918217
Int. Cl. G01r *33/08*
U.S. Cl. 324—.5 **9 Claims**

1. In an apparatus for measuring magnetic fields by gyromagnetic resonance, of the kind having a single container with a gyromagnetic substance and a detecting coil wound around said container, said gyromagnetic substance being subjected to the magnetic field to be measured and excitation at a suitable frequency thereby to change the electron energy level of the substance; the improvement comprising, in combination, two pairs of excitation coils respectively aligned along two mutually perpendicular axes and disposed around the detecting coil in a plane perpendicular to said detecting coil, the excitation coils aligned along the same axis being interconnected, a variometer having stationary windings respectively connected to the pairs of aligned excitation coils and a rotatable field winding, an amplifier the

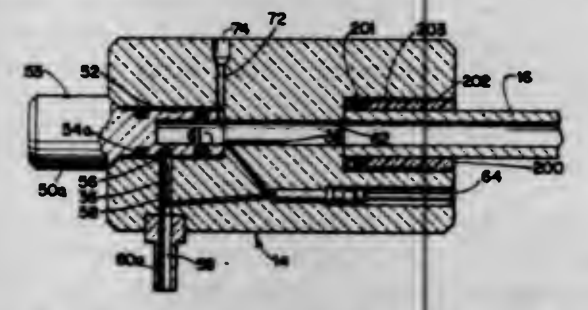
input of which is connected to the detecting coil while its output is connected to said rotatable field winding, an auxiliary oscillator generating signals at very low frequency under voltages of low amplitude, a resistor and a capacitor which are connected with said oscillator and respectively to the two pairs of aligned excitation coils, an analogue frequency-meter connected to the output of the amplifier, a filter-amplifier connected to the output of said frequency-meter in order to extract the signal at very low frequency delivered by the oscillator, a rotatable phase-shifter connected to the output of the auxiliary oscillator, a phase comparison device connected, on the one hand, to the filter-amplifier and, on the other hand, to said rotatable phase-shifter, and a motor mechanically coupled to said rotatable phase-shifter and to the rotatable field winding and fed by the output voltage of said phase comparison device.



3,648,158
CONDUCTIVITY CELL FOR PARTICLE COUNTING SYSTEM

Bernard Parker, Westport, Conn., assignor to Contraves AG, Zurich, Switzerland

Filed June 1, 1970, Ser. No. 41,982
Int. Cl. G01n *27/42*
U.S. Cl. 324—30 B **3 Claims**



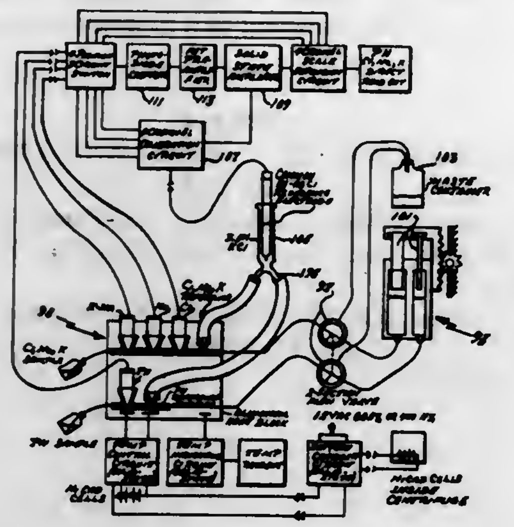
For use in systems for counting particles suspended in a liquid by detection of changes in the impedance of a fluid path caused by passage of particles through an aperture, a conductivity cell having a pair of electrodes with an easily removable aperture disposed therebetween and a vent disposed with respect to the electrodes to permit purging of the cell after an analytical run.

3,648,159
PORTABLE, SELF-CONTAINED SYSTEM FOR ANALYZING BIOLOGICAL FLUIDS OR THE LIKE

Marion J. Stansell, and Shelby J. Stansell, both of USAF Academy, Colo., assignors to The United States of America as represented by the Secretary of the Air Force, by said Marion J. Stansell

Filed Mar. 11, 1970, Ser. No. 18,574
Int. Cl. G01n *27/42*
U.S. Cl. 324—30 R **4 Claims**

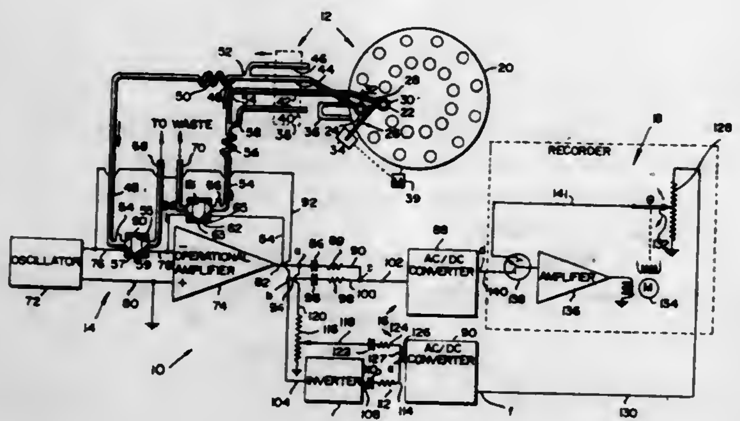
A completely portable, self-powered system for rapidly and accurately measuring whole blood hematocrit and pH and levels of sodium, potassium, chloride and the other ions in blood and other fluids. The system includes a compact carrying case which contains an aluminum heat block with a glass electrode chamber therein. Individual selective ion electrodes are fitted in the electrode chamber. A reference electrode, a high-impedance electrode switch, a high-impedance solid-state electrometer, a direct readout scale calibrated in pH units and in milliequivalents per liter, and an integral rechargeable power supply are all contained in the carrying case. A heat control unit and a miniature centrifuge along with blood collecting accessories are included in the self-contained system for analyzing biological fluids.



3,648,160
METHOD AND APPARATUS FOR THE HIGHLY ACCURATE, AUTOMATIC DETERMINATION OF THE HEMATOCRIT OF WHOLE BLOOD SAMPLES

Murray W. Beaver, Yonkers, N.Y., assignor to Technicon Corporation, Tarrytown, N.Y.

Filed Dec. 1, 1969, Ser. No. 881,212
Int. Cl. G01n *27/42*
U.S. Cl. 324—30 B **28 Claims**

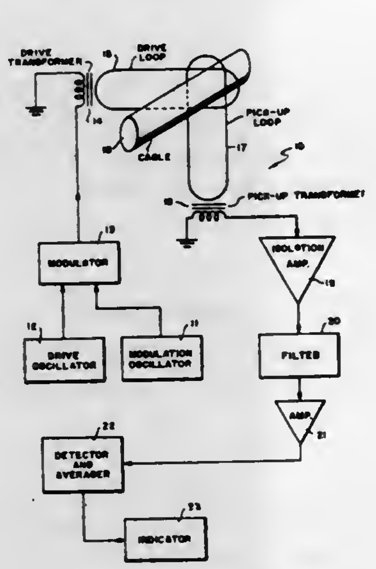


New and improved method and apparatus for determining the percentage volume of cells in a conductive liquid are provided and comprise means to provide a reference signal, detector means operable in response to said reference signal to detect the conductance of said liquid and provide a conductance signal, means to modify said conductance signal in accordance with the conductance of a portion of said liquid from which said cells have been removed, means to further modify said conductance signal in accordance with a cell shape factor, and means to respectively sum, convert and divide said signals to provide indicia of said percentage cell volume. In a second embodiment, temperature responsive means are substituted for said first-mentioned conductance signal modifying means and are operative to modify said conductance signal in accordance with changes in ambient temperature.

3,648,161
MAGNETIC LINEARITY TENSIDUCTOR FOR MEASURING TENSION IN A RUNNING LINE

Herman A. Soulant, Jr., Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 29, 1969, Ser. No. 872,266
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 **7 Claims**

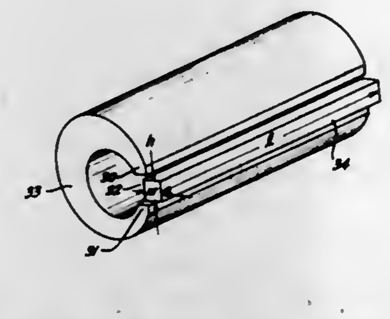


A system for measuring stress, especially a high degree of stress, in a magnetically conductive member which provides for the generation of a magnetic field about the member and a pickup mechanism which is magnetically coupled to the member. The output of the pickup mechanism is passed through a filter rejecting all but the third harmonic of the field-generating drive signal frequency. The third harmonic is related to the stress in the member since a varying stress in the member similarly varies the nonlinearity of the B–H curve of the member. This in turn varies the amount of the third harmonic signal present at the filter output.

3,648,162
PARAMAGNETIC GAS PARTIAL PRESSURE MEASURER

Carl N. Cederstrand, Brea, and Michael Dodson, Fullerton, both of Calif., assignors to Beckman Instruments, Inc.

Filed Oct. 24, 1969, Ser. No. 869,236
Int. Cl. G01r *33/12*
U.S. Cl. 324—36 **20 Claims**



Apparatus for determining the partial pressure of a paramagnetic gas in a gas mixture, comprising: an elongated C-shaped magnet for generating a plane of high-magnetic flux density over a relatively large rectangular area, and a region of low-flux density at short distances from such plane; and a test body in the shape of a rectangular parallelepiped having dimensions approximately equal to the size of the rectangular area and the distance between the plane of high-flux density and the region of low-flux density. Means are provided for pivotally mounting the test body with one surface thereof aligned with the rectangular area and an opposite surface aligned with the region of low-flux density, the test body being mounted for movement in a direction perpendicular to the plane of high-magnetic flux density.

3,648,163
ELECTRICAL GROUND APPARATUS FOR TESTING THE QUALITY OF CONDUCTORS

Champ D. Pinner; Cecil E. Sligh; James L. Diehl, and Wade H. Garland, Jr., all of Hartsville, S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Filed Dec. 2, 1969, Ser. No. 881,523
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **11 Claims**

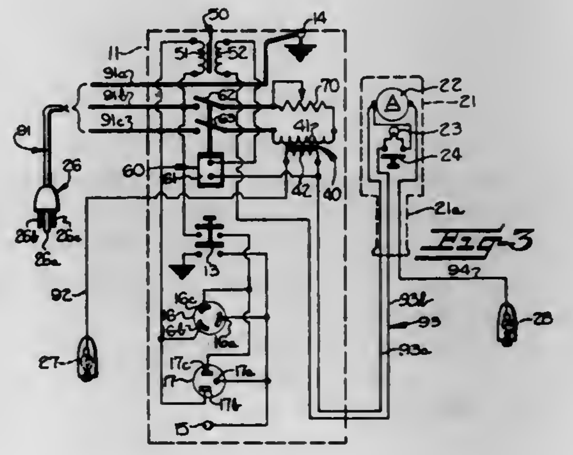


Fig-3

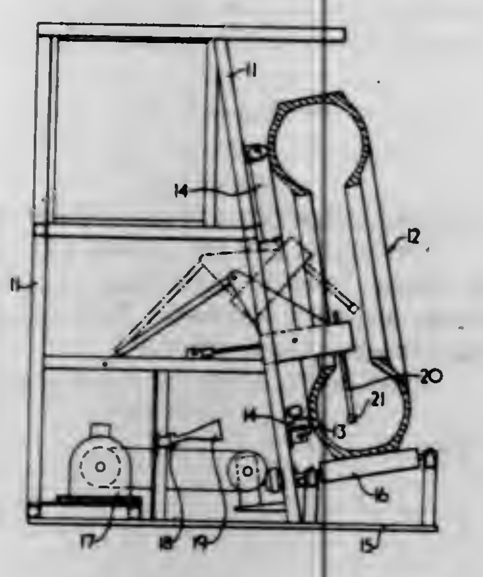
Apparatus for testing the quality of an electrical ground conductor by completing a high-current low-voltage series circuit between the electrical ground conductor being tested and ground, and observing indicating means disposed in series therewith. Circuitry is provided for inducing this high-current low-voltage into the series circuit only when a normally open manually operable switch means is closed and only then, if there is continuity of the electrical ground conductor with ground.

3,648,164
A METHOD AND APPARATUS FOR DETECTING REINFORCEMENT SPACING VARIATION BY MICROWAVE DIFFRACTION

Eric H. Searle, and Eric G. Gould, both of Sutton Coldfield, England, assignors to Dunlop Holdings Limited, London, England

Filed Apr. 28, 1970, Ser. No. 32,599
Claims priority, application Great Britain, May 9, 1969, 23,637/69
Int. Cl. G01n *27/04*
U.S. Cl. 324—58.5 A **12 Claims**

A method and apparatus for detecting variation in the spacing of an array of conducting strands embedded within a rubber or plastics medium. A transmitter of microwave radiation is placed on one side of the array and a detector on the opposite side, the frequency of the radiation being chosen so that the transmission of the signal through the array is affected by the spacing of the conducting strands. The array is moved past the transmitter and the detector, any variation in strand spacing being shown by a variation in the signal



received by the detector, of which the following is a specification.

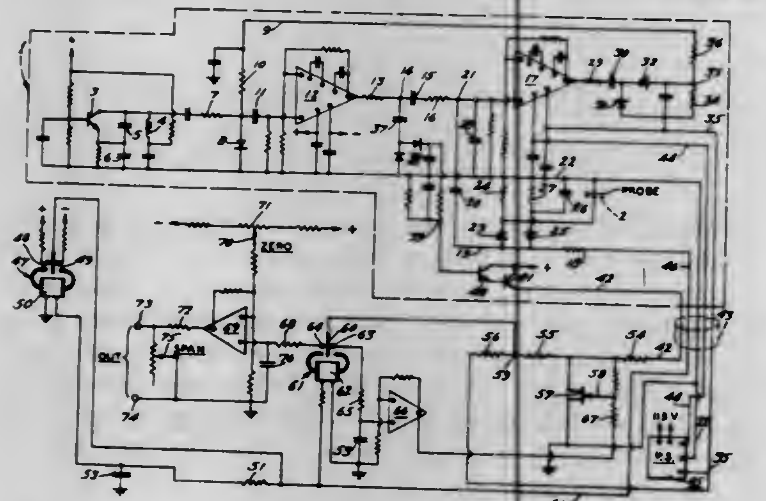
3,648,165
CAPACITANCE-MEASURING APPARATUS INCLUDING MEANS MAINTAINING THE VOLTAGE ACROSS THE UNKNOWN CAPACITANCE CONSTANT

Elbert N. Shawhan, West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Sept. 24, 1970, Ser. No. 75,077

Int. Cl. G01r *11/52*

U.S. Cl. 324—60 R **15 Claims**



The total voltage across a series resistance-capacitance circuit (wherein the capacitance is that of a measuring probe) supplied by an alternating current source is controlled so as to maintain the voltage across the capacitance constant as the measured capacitance varies. This provides a linear total voltage-capacitance characteristic over a wide capacitance range. The effects of temperature and aging on component values are eliminated by continuously correcting the slope of the voltage-capacitance characteristic.

3,648,166
ELECTRICAL DEVICE HAVING CURRENT LIMITER AND SPARK GAP

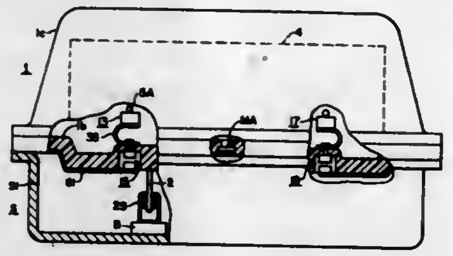
Henry W. Redecker, Raleigh, and William J. Zisa, Cary, both of N.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 28, 1968, Ser. No. 708,854

Int. Cl. G01r *1/00, 1/04*

U.S. Cl. 324—110 **4 Claims**

An electrical device such as a watthour meter has a movement located within an enclosure. Terminals pass through the enclosure for the purpose of establishing connections between the device and an external circuit. A spark gap is secured to the enclosure and is positioned externally of the enclosure for the purpose of establishing a shunt path to ground for surges appearing on the external circuit. A silicon carbide block is located internally of the enclosure and is connected in series with the spark gap for the purpose of limiting the current flowing through the spark gap after breakover of the gap takes place.



ERRATUM

For Class 324—115 see:
Patent No. 3,648,175

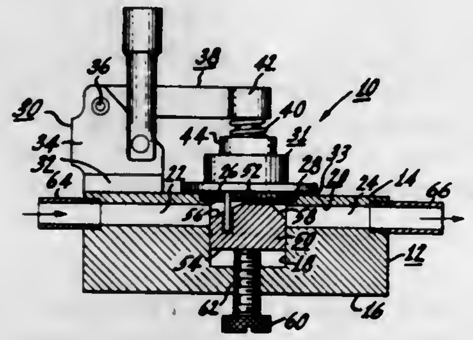
3,648,167
FLUID-COOLED APPARATUS FOR TESTING POWER SEMICONDUCTOR DEVICES

Don Ryall Purdy, Florham Park, and William Edward Donnelly, Edison, both of N.J., assignors to RCA Corporation

Filed June 1, 1970, Ser. No. 41,843

Int. Cl. G01r *1/04*

U.S. Cl. 324—158 T **7 Claims**



The apparatus includes a base member having an upper surface and a cavity therein, with a channel in the interior which communicates with the cavity. The surface has an aperture communicating with the cavity. A power semiconductor device is held in the aperture with an outer heat transfer surface of the device exposed in the cavity, and a fluid is circulated through the channel and cavity and across the heat transfer surface. A tunable weir in the cavity provides means for controlling the fluid, to minimize the thermal resistance between the heat transfer surface and the fluid.

3,648,168
APPARATUS FOR MEASURING REVERSE RECOVERY CHARACTERISTICS OF DIODES

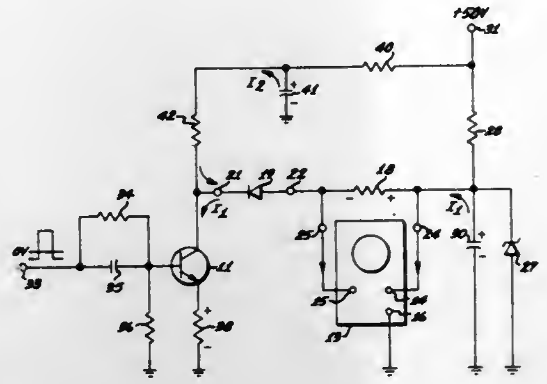
Roland E. Ripplinger, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 16, 1970, Ser. No. 98,575

Int. Cl. G01r *31/22*

U.S. Cl. 324—158 D **7 Claims**

The apparatus uses a solid-state circuit in measuring reverse recovery time of diodes used in high-frequency power supplies. The circuit disclosed eliminates the oscillations and other spurious signals, which are often developed by prior art testing apparatus, and requires a single power supply. The duration and amplitude of forward current in the diode being tested can be accurately controlled by a transistor connected in series with the diode.



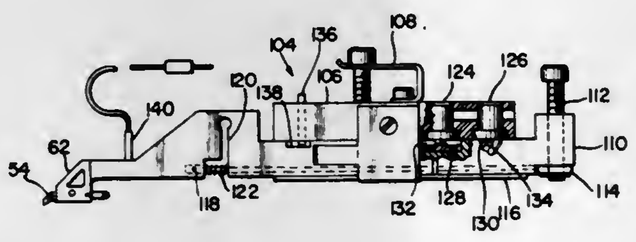
3,648,169
PROBE AND HEAD ASSEMBLY

Mordechai Wiesler, Lexington, Mass., assignor to Teledyne, Inc., Hawthorne, Calif.

Filed May 26, 1969, Ser. No. 827,518

Int. Cl. G01r *31/22*

U.S. Cl. 324—158 F **4 Claims**



A probe and head assembly is provided for use particularly in testing electronically microelectronic devices such as integrated circuit wafers and the like. A very thin probe tip of one piece construction is formed with an integral parallel beam construction and plugs into the head assembly which is adjustable in different coordinate directions.

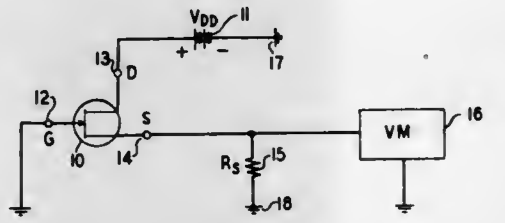
3,648,170
MEASUREMENT OF FIELD EFFECT TRANSISTOR PINCH-OFF VOLTAGE

Milton L. Embree, Laureldale, and William R. Huber, III, Reading, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 8, 1969, Ser. No. 848,444

Int. Cl. G01r *31/22*

U.S. Cl. 324—158 T **8 Claims**



A test circuit for determining the pinch-off voltage of a field effect transistor comprises, in series, a source of unidirectional voltage of a magnitude greater than the expected pinch-off voltage and less than the breakdown voltage, the source and drain electrodes respectively of the field effect transistor under test, and a resistance element of relatively large magnitude, typically, at least one megohm. The gate electrode is grounded and observation of the voltage drop across the resistance element gives a reading differing from theoretical pinch-off voltage by only a small percentage.

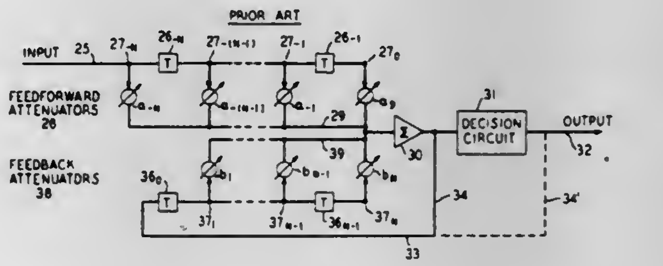
3,648,171
ADAPTIVE EQUALIZER FOR DIGITAL DATA SYSTEMS

Donald Hirsch, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 4, 1970, Ser. No. 34,346

Int. Cl. H03h *7/36*

U.S. Cl. 325—42 **5 Claims**



The automatic time-domain equalizer is modified to improve its signal-to-noise and impulse-response dispersal performance by supplementing the basic prior art equalizer with a final equalizer whose tap attenuators are controlled by correlations of the output of the basic equalizer with a distortion error signal. The reference input to the final equalizer is the appropriately delayed signal to be equalized. Two cascade equalization sections substantially eliminate from the final output the noise and echo components that are normally generated in the basic equalizer when used alone.

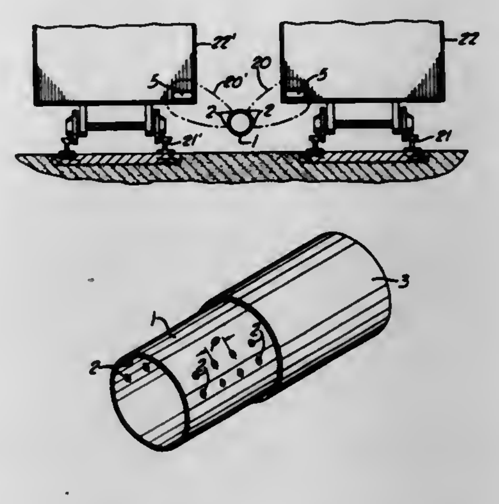
3,648,172
CIRCULAR LEAKY WAVEGUIDE TRAIN COMMUNICATION SYSTEM

Tsuneo Nakahara, Nishinomiya; Noritaka Kurauchi, Suita Osaka, and Hiroshi Kitani, Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 2, 1968, Ser. No. 848,125

Int. Cl. H01q *13/10*

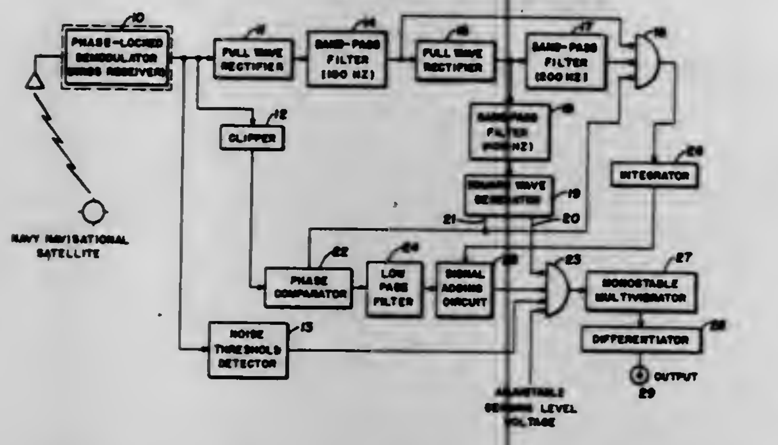
U.S. Cl. 324—51 **3 Claims**



A circular leaky waveguide comprising a metal tube or of a helix waveguide which is provided with a row or a plurality of rows of leakage apertures, each aperture having maximum diameter smaller than a half wavelength of the transmission wave, and spaced at intervals $P<\lambda o \lambda g/\lambda o+\lambda g$, where λ is free the space wavelength, and λg the waveguide wavelength.

3,648,173
TIME RECOVERY SYSTEM FROM A PULSE-MODULATED RADIO WAVE

Henry H. Elliott, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Aug. 7, 1970, Ser. No. 61,892
Int. Cl. H04b *7/00*; **G04c** *13/02*
U.S. Cl. 325—58 **10 Claims**

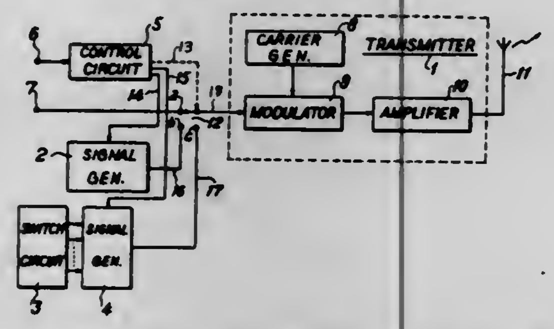


Satellites of the Navy Navigation Satellite System continuously transmit a carrier frequency which is phase modulated with a precisely timed, recurrent phase modulation pattern synchronized to Naval Observatory time. The recurrent phase modulation pattern is a continuous stream of binary bits and comprises a message portion which occurs at a predetermined bit rate and a marker word which occurs at a fixed position in each recurrent modulation pattern and is composed of a signal having a frequency which is a known multiple of the message portion bit rate. Accurate time recovery of the satellite-transmitted signal is accomplished by multiplication of the message portion bit rate to the frequency of the time marker word or signal and subsequently phase comparing the bit rate-derived signal with the incoming satellite signal and producing a pulse when phase coincidence occurs which, in turn, allows examination of a particular multiplied message cycle segment. When this segment is detected a fiducial time mark pulse is produced.

3,648,174
BROADCAST SYSTEM FOR TRANSMITTING A PLURALITY OF CONTROL SIGNALS UNDER PROTECTION AGAINST A FALSE SIGNAL

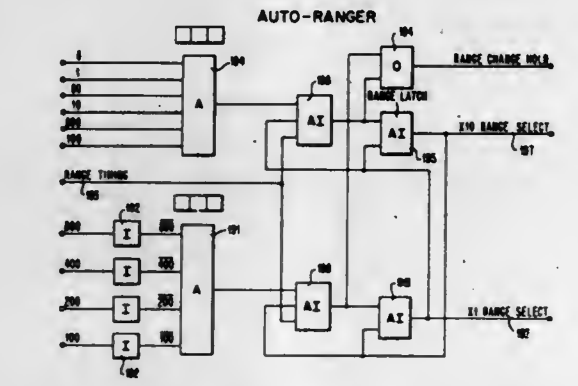
Masayuki Fukata, 94 Shimorenjaku, Mitaka-shi, Tokyo, Japan
Filed Dec. 4, 1969, Ser. No. 882,085
Claims priority, application Japan, Dec. 10, 1968, 43/89974
Int. Cl. H04b *3/04*
U.S. Cl. 325—64 **7 Claims**

A broadcast system for transmitting a plurality of control signals to control any kind of switches of devices provided at the receiving side by the use of a control signal formed by at least one signal of a predetermined frequency included in the frequency band of broadcast program signal; in which the control signal comprises a control-start signal common to all control operations to be performed and a plurality of particular control signals predetermined so as to respectively correspond to control operations to be performed and transmitted after the control-start signal. This system has means for eliminating a false signal similar to the control-start signal from the broadcast signal before the devices of the receiving side is erroneously triggered by the false signal to perform reliably desired control operations without disturbance in the transmission medium.



3,648,175
COMPUTER-ORIENTATED TEST SYSTEM HAVING DIGITAL MEASURING MEANS WITH AUTOMATIC RANGE-CHANGING FEATURE

John D. Barnard, Wappingers Falls; Carl C. Gaito, Hopewell Junction; Gary R. Giedd, Wappingers Falls; Thomas G. Greene, Lagrangeville; James W. Lind, Hyde Park; Merlyn H. Perkins, Hopewell Junction, all of N.Y., and Charles M. Pross, Arlington, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.
Original application Jan. 15, 1968, Ser. No. 697,676, now Patent No. 3,546,582, dated Dec. 18, 1970. Divided and this application Nov. 20, 1969, Ser. No. 877,552
Int. Cl. G01r *17/06*, *15/08*
U.S. Cl. 324—115 **18 Claims**



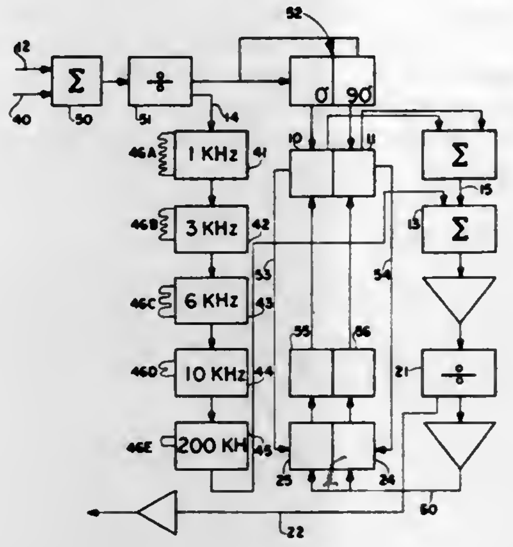
A test system is provided for performing functional tests on combinatorial and sequential monolithic devices with the testing automatically programmed under control of a computer processing unit. The test results can be printed out on a printer, logged on tape and/or punched on cards.

Tests are performed by the system under the control of an operational test program comprised of a plurality of interrelated subprograms. The operational test program is run by a computer processing unit which processes the programmed instructions through an input-output logic control section which sets up the test circuit configurations in and commands to an analog section. The analog section provides the required bias, pin resistor loads and signal levels to a device under test. The test parameter data is sensed by a digital voltmeter for conversion from analog-to-digital data form, and for optional visual display if desired. The digital test parameter data is inserted in a comparator for pass/fail logic comparison. High, Low and/or No-Fail information is added by the comparator and sent with the converted digital information to the input-output logic control section where the data is serialized and fed to the computer processing unit for logging or analysis.

3,648,176
ADJACENT CHANNEL MEASUREMENT TEST SYSTEM

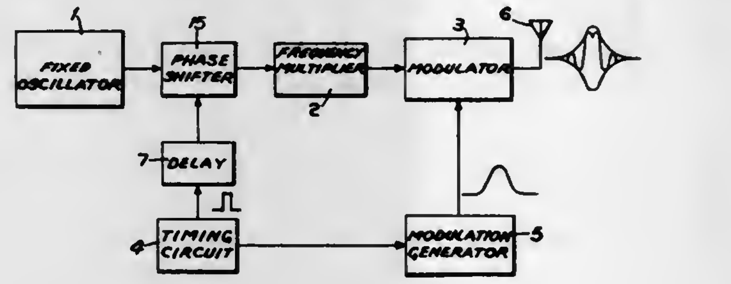
David R. Martin, Agoura, and Walter A. Sauter, Malibu, both of Calif., assignors to American Nucleonics Corporation, Woodland Hills, Calif.
Filed Aug. 20, 1970, Ser. No. 65,561
Int. Cl. H04b *1/04*
U.S. Cl. 325—133 **13 Claims**

A system for cancelling or suppressing the amplitude of the carrier and sideband signals of a radio transmitter to facilitate analysis of spurious and noise outputs from the transmitter is disclosed. The system includes means for deriving a carrier cancelling signal from an actual sample of the transmitter output, signal processing circuitry and summing means. Also, an electromechanical signal controller is disclosed capable of continuously correcting the amplitude of the cancellation signal by a selected ratio with respect to the transmitter test signal.



3,648,177
TRANSMITTER FOR DISTANCE-MEASURING SYSTEM

Leon Himmel, Upper Montclair, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed May 26, 1969, Ser. No. 827,751
Int. Cl. G01s *7/28*
U.S. Cl. 325—141 **1 Claim**

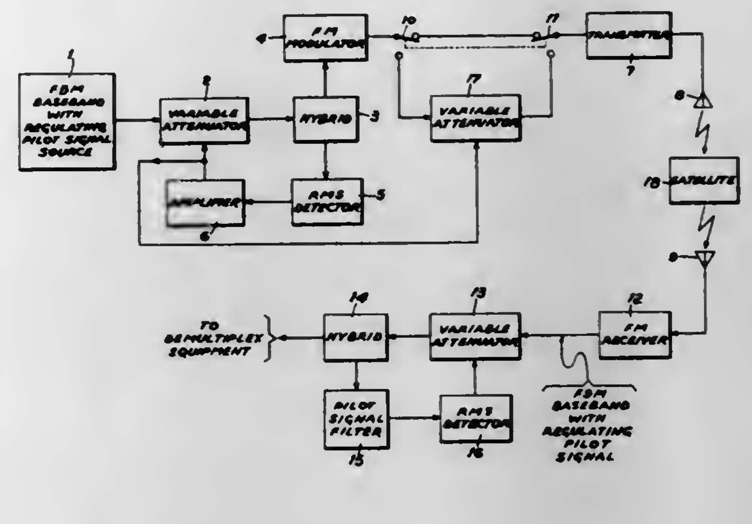


In a distance-measuring system, the transmitter transmits a gaussian-pulse modulated signal wherein the phase of the carrier frequency is shifted for a predetermined interval of time within the transmitted gaussian pulses.

3,648,178
MULTIPLEX FM TRANSMITTER

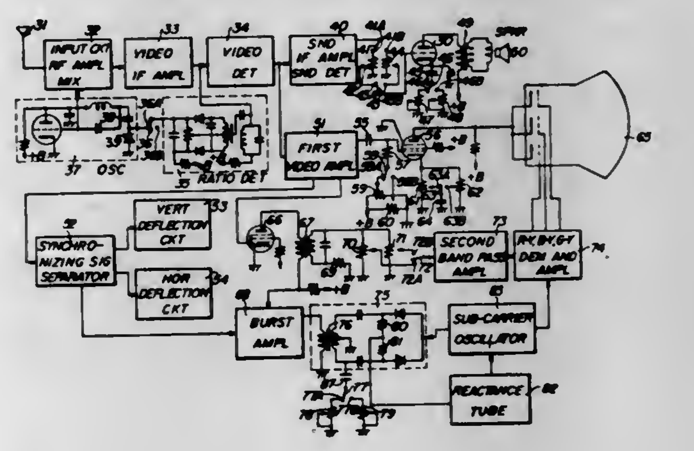
David E. Hershberg, Ridgewood, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Sept. 4, 1969, Ser. No. 855,111
Int. Cl. H04j *1/14*, *1/20*; **H04b** *1/02*
U.S. Cl. 325—145 **5 Claims**

A first variable attenuator is coupled between the FDM baseband source and the FM modulator. The output signal of the first attenuator is RMS detected to provide a control signal for this attenuator to adjust the amplitude of the baseband signal applied to the FM modulator and, hence, the frequency deviation thereof. An increase in frequency deviation enables a reduction in the EIRP (effective isotropic radiated power) for the same S/N, or an increase in S/N for the same EIRP. A second variable attenuator controlled by the same control signal operates in an inverse fashion, as compared to the first variable attenuator, on the carrier amplitude to maintain a constant S/N ratio.



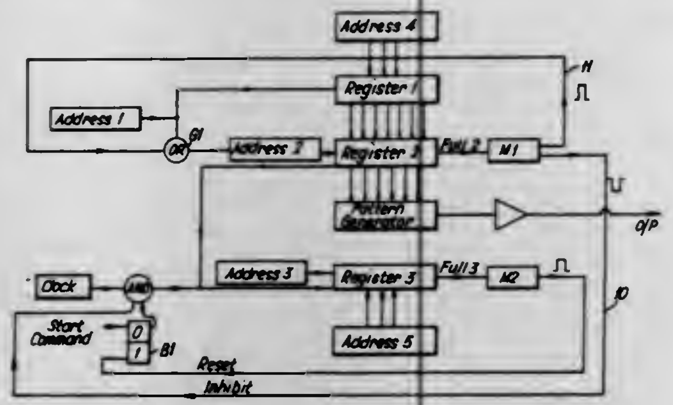
3,648,179
CONTROL DEVICE WITH A PLURALITY OF CONTROLLING UNITS WHICH ARE SIMPLY ADJUSTABLE BATH INDIVIDUALLY AND SIMULTANEOUSLY TO DESIRABLE CONDITIONS

Kazutoshi Ikegami; Hideo Ikeda, both of Kokubunji-shi; Kazumi Takeuchi; Kosuke Kitamura, and Susumu Takahashi, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed June 4, 1969, Ser. No. 830,392
Claims priority, application Japan, June 7, 1968, 43/47265
Int. Cl. H04b *1/16*
U.S. Cl. 325—399 **4 Claims**



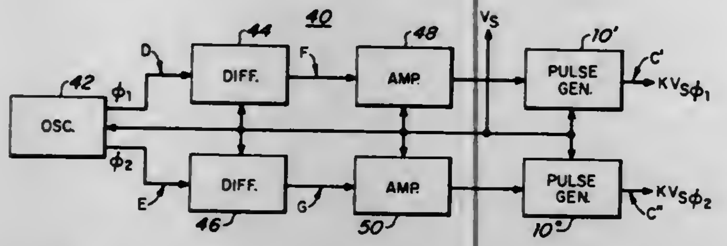
A control device comprises at least two signal transmission channels, each of the signal transmission channels having a first controlling means which is adjustable over a desired wide range and a second controlling means which is preadjusted to a desired condition, one pair of said first and said second controlling means having at least one switch for connecting either one of said first and the second controlling means to its associated signal transmission channel, the switches of the respective signal transmission channels being interlocked with each other for controlling simultaneously the respective signal transmission channels to predetermined desirable conditions.

3,648,180
PULSE GENERATORS
Terence Keith Woodcock, Barton-le-Clay, England, assignor to British Aircraft Corporation Limited, London, England
Filed Oct. 6, 1970, Ser. No. 78,410
Int. Cl. H03k *1/00*
U.S. Cl. 328—59 **3 Claims**



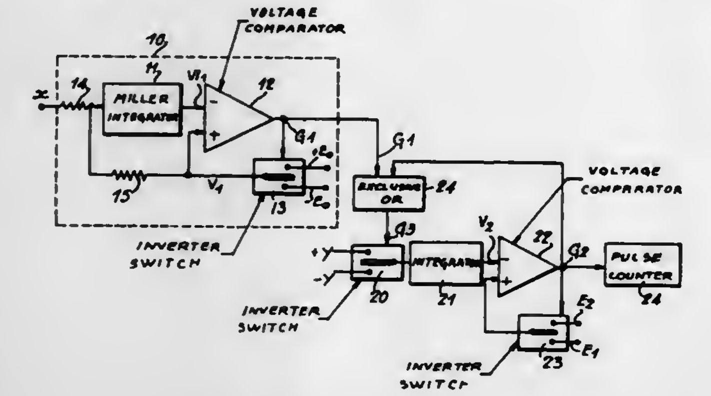
The pulse generator is described in which a pair of storage registers are connected in parallel with one another and initially loaded such that a first of the registers has a substantially smaller unfilled capacity than the second register. A clock generator then feeds pulses equally to the two registers to progressively reduce the unfilled capacity of each register and when the first register has been filled a 'full' signal is generated which causes immediate reloading of the first register to the same initial capacity. A logic circuit connected to selected bit outputs of the first register generates a pulse, or a pulse pattern, during the time taken to fill the first register and when the second register has been filled a second 'full' signal inhibits the feeding of further clock pulses to the register. The total number of pulse cycles is therefore the ratio of the initially unfilled capacity of the second register to the unfilled capacity of the first register.

3,648,181
PULSE GENERATING CIRCUIT FOR PRODUCING PULSES OF AMPLITUDE WHICH IS A MULTIPLE OF THE AMPLITUDE OF THE SOURCE VOLTAGE
Anthony N. Fiore, Brighton, and John D. McCarron, Dunstable, both of Mass., assignor to Spacetac Incorporated, Bedford, Mass.
Filed Oct. 22, 1970, Ser. No. 82,977
Int. Cl. H03k *1/00, 3/02*
U.S. Cl. 328—59 **2 Claims**



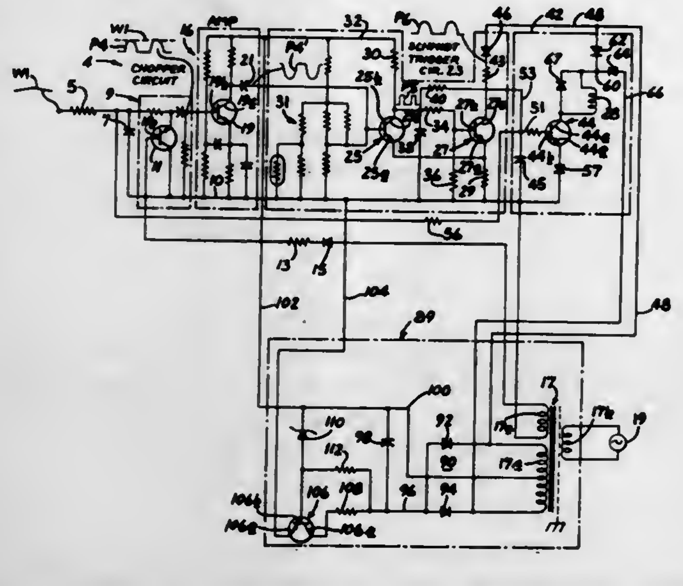
A pulse generating circuit including charge storing means, unidirectional current flow means in series between a first terminal of the charge storing means and a common point; means, adapted for connection with a source of input voltage of predetermined voltage level in relation to the common point, for charging the charge storing means, first means for selectively connecting a second terminal of the charge storing means with the common point to drive the first terminal to a second predetermined voltage level equal to the first predetermined voltage level but opposite in polarity relative to the common point, output means, and second means for connecting to the output means the first predetermined voltage level when the first means for selectively connecting is opened and the second predetermined voltage level when the first means for selectively connecting is closed.

3,648,182
DEVICE FOR CONVERTING TWO MAGNITUDES INTO A NUMBER OF PULSES PROPORTIONAL TO THE INTEGRAL OF THEIR PRODUCT
Alain Carnel, Paris, France, assignor to Compagnie des Compteurs, Montrouge, France
Filed Sept. 28, 1970, Ser. No. 75,849
Claims priority, application France, Oct. 22, 1969, 6936173
Int. Cl. G06g *7/16*
U.S. Cl. 328—160 **4 Claims**



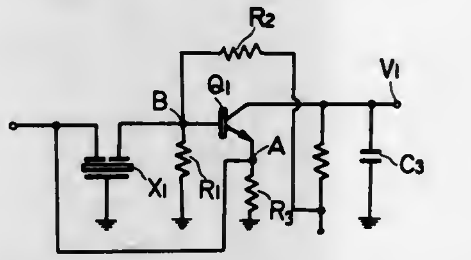
The device comprises a variable cycle ratio modulator on which is applied a first input signal, an inverter-switch connected to the modulator output and on which is applied the second input signal, an integrator circuit connected to the inverter-switch, to a two-threshold comparator and to an inversion device, and a device for counting the signals from the comparator.

3,648,183
SIGNAL LEVEL RESPONSIVE CIRCUIT
Ahdor H. Alton, Lake Zurich, and Mitchell I. Kohn, Skokie, both of Ill., assignors to Gulton Industries, Inc., Metuchen, N.J.
Original application May 26, 1969, Ser. No. 827,714, now Patent No. 3,591,077, dated July 6, 1971. Divided and this application Aug. 20, 1970, Ser. No. 65,575
Int. Cl. H03k *3/15, 3/295, 17/30*
U.S. Cl. 328—196 **6 Claims**



A signal level responsive circuit including a Schmitt trigger-type circuit is provided which acts both as a signal level responsive circuit and a phase detector by energizing at least one of the current control devices of the circuit with a pulsed waveform voltage resembling a half-wave rectified AC voltage. The signal fed to the control input terminal of the Schmitt trigger circuit comprises a chopped waveform of the varying amplitude control signal involved, the chopped waveform also resembling a half-wave rectified AC waveform whose pulses vary in amplitude with the control signal and synchronized with the pulsed energizing voltage waveform. The Schmitt trigger circuit per se most advantageously has a very small hysteresis, but the signal level responsive circuit has a much greater overall hysteresis provided by a feedback circuit which increases the effective amplitude variation of the control signal after the Schmitt trigger circuit is triggered into its unstable condition.

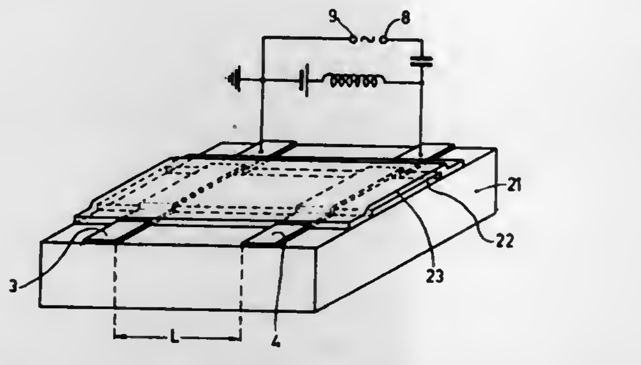
3,648,184
FM DETECTING CIRCUIT HAVING A PIEZOELECTRIC FILTER
Satoru Fujishima, and Hideo Honma, both of Kyoto-fu, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan
Filed Aug. 14, 1969, Ser. No. 850,099
Claims priority, application Japan, Aug. 14, 1968, 43/57854; Feb. 14, 1969, 44/11329
Int. Cl. H03d *1/00*
U.S. Cl. 329—198 **12 Claims**



An FM detecting circuit comprises a band pass filter composed of at least one piezoelectric resonator having three electrodes or a plurality of piezoelectric resonators having two electrodes and a transistor.

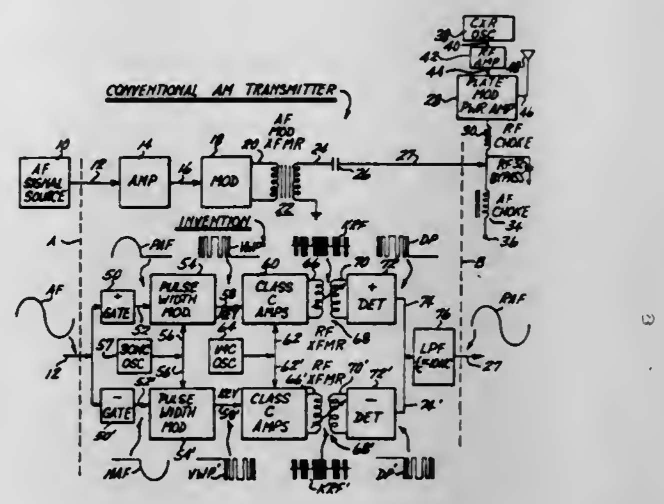
The output voltage of the transistor is increased or decreased in proportion to the difference between the phases of the input and output voltages of the band pass filter, whereby the phase detection of the input voltage can be achieved.

3,648,185
SEMICONDUCTOR DEVICE FOR AMPLIFYING MICROWAVES
Gerard Adriaan Acket, and Marinus Teunis Vlaardingerbroek, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed June 18, 1969, Ser. No. 834,280
Claims priority, application Netherlands, June 29, 1968, 6809255
Int. Cl. H03f *3/04*
U.S. Cl. 330—5 **5 Claims**



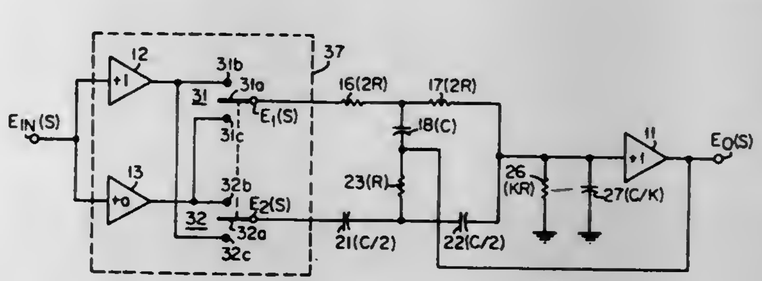
A semiconductor microwave amplifier is described with a construction to suppress the formation of travelling domains producing unwanted oscillations. The device construction includes an active epitaxial layer on a substrate, and adjoining the active layer a higher resistivity part. Contacts are provided on the active layer. The active layer is given a thickness below the length of a domain that might have formed. An advantage is that the contact spacing and dopant concentration of the active layer is much less critical.

3,648,186
AMPLIFICATION SYSTEM
Leonard R. Kahn, Freeport, N.Y., assignor to Kahn Research Laboratories, Inc., Freeport, Long Island, N.Y.
Continuation of application Ser. No. 610,306, Jan. 19, 1967, now abandoned. This application Mar. 24, 1970, Ser. No. 22,386
Int. Cl. H03f *3/38*
U.S. Cl. 330—10 **21 Claims**



An electrical signal amplification unit wherein an audio or other low-order frequency input signal width-modulates a pulsed signal having an intermediate order repetition frequency at least twice the frequency of the low-order input frequency. The width-modulated pulsed signal is then employed to key an RF carrier wave which is then amplified in Class C amplifier stages. After pulse detection, the low-order frequency signal components are isolated and fed to a utilization circuit, such as an AM transmitter. Alternate circuits are provided for amplifying both the AC and DC components, or only the AC signal components of the input signal, and for monophase detection, or polyphase detection at high-power levels.

3,648,187
NOTCH FILTER NETWORK WITH CONTROLLABLE RESPONSE
Teddy G. Saunders, Atherton, Calif., assignor to The Vadic Corporation, Palo Alto, Calif.
Filed Aug. 24, 1970, Ser. No. 66,194
Int. Cl. H03f *3/04*
U.S. Cl. 330—21 **7 Claims**

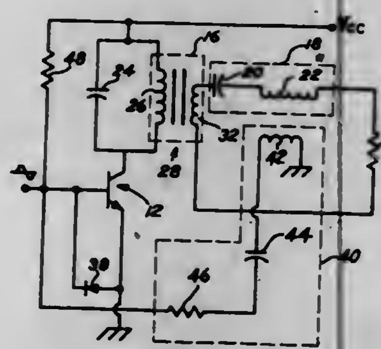


A filter network is provided which will pass a first band of frequencies and attenuate a second band of frequencies, and which is programmable to reverse its operation and attenuate the first bank of frequencies and pass the second band of frequencies. The network includes a twin-T filter network, and a pair of amplifiers are connected between the twin-T filter and the network input. By reversing the connections of the amplifiers to the twin-T network, the pass and attenuation bands of the overall network may be reversed while the gain is maintained constant.

3,648,188
TRANSISTOR POWER AMPLIFIER

Henry K. Ratcliff, Davenport, Iowa, assignor to The Bendix Corporation

Filed June 10, 1970, Ser. No. 45,163
Int. Cl. H03f *1/38*
U.S. Cl. 330—26 **10 Claims**

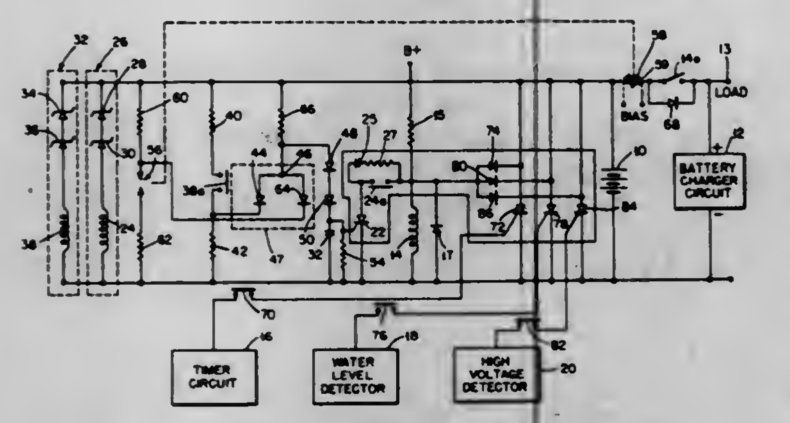


An AC amplifier which has a theoretical efficiency of 100 percent and which is particularly suitable for amplification or generation of AC power at radiofrequencies. The amplifier operates in a switching mode with a transformer being used to couple the switched DC supply through a series tuned circuit to a load connected to the secondary of the transformer. A means is also provided to insure the energy in the magnetic field of the primary is transferred without loss to the secondary circuit during pulsation of the DC supply.

3,648,189
AUTOMATIC BATTERY CHARGER CIRCUIT

John W. Marchetti, Cherry Hill, N.J., and Herbert H. Kiser, South Boro, Mass., assignors to The Budd Company, Philadelphia, Pa.

Filed Apr. 27, 1970, Ser. No. 31,899
Int. Cl. H02j *7/04*
U.S. Cl. 320—39 **10 Claims**

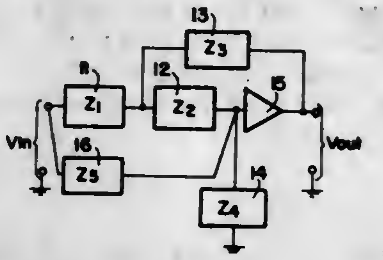


A battery charger circuit uniquely applicable to those batteries having no change in any measurable physical constant as a function of their state of charge. It includes means for starting a charge and maintaining the charging current until the battery voltage has charged to a predetermined level and the charging current has dropped below a predetermined rate. Safety features relating to charging time, liquid level and excessive charging voltage are included to prevent the battery from charging under unsafe conditions.

3,648,190
ACTIVE FILTER

Eugene J. Bruckert, Arlington Heights, Ill.

Filed Jan. 2, 1970, Ser. No. 217
Int. Cl. H03f *1/36*
U.S. Cl. 330—107 **11 Claims**

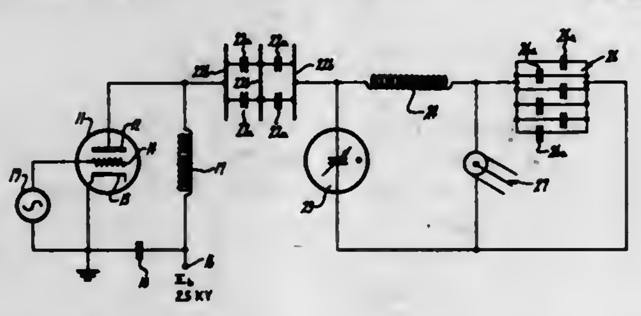


An improved high-pass or low-pass active filter section is provided by taking a standard active high-pass or low-pass filter section including an amplifier and adding thereto a single impedance between the input to the amplifier and the filter input. The addition of the single component increases the attenuation capabilities of the active filter section.

3,648,191
RADIOFREQUENCY GENERATOR CIRCUITS AND COMPONENTS THEREFOR

Harvey James Beaudry, Fremont, Calif., assignor to International Plasma Corporation

Filed Aug. 19, 1968, Ser. No. 753,474
Int. Cl. H03f *1/00*
U.S. Cl. 330—192 **2 Claims**



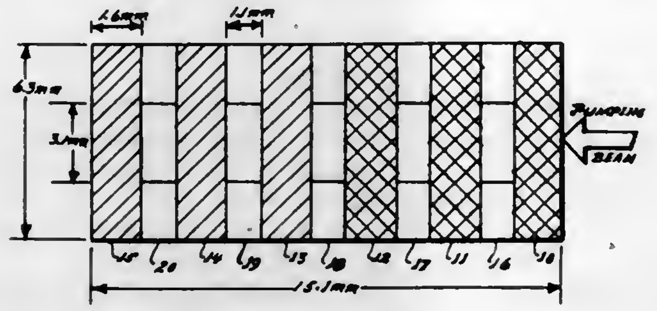
R.F. generator circuits and components therefor including an output circuit for matching the output of the power tube to a transmission line which enables the tube to be operated at power levels below that at which the output circuit is tuned while preventing destructively high plate currents from being established under such conditions by the proper selection of capacitive and inductive components to provide current-limiting resistance in the plate circuit during detuned operation; a large air capacitor in the output circuit of the power tube having metal plates which physically shape the discharge caused by instantaneously high voltages to which the output circuit may be subjected whereby corona emissions are prevented from creating large flames which can be extremely damaging to the equipment; and a power tube grid circuit which matches, in a most unique way, a driving oscillator circuit to the grid and which provides a neutralizing circuit to eliminate the adverse effects of distributive capacitants wherein the neutralizing portion of the circuit eliminates the dangerous condition of having the plate voltage separated from the grid by only a neutralizing capacitor.

3,648,192
CONTINUOUS-WAVE NONSPIKING SINGLE MODE LASER

Milton Birnbaum, Peninsula, and Curtis L. Fincher, Torrance, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Jan. 28, 1971, Ser. No. 110,497
Int. Cl. H01s *3/10, 3/05, 3/04*
U.S. Cl. 331—94.5 **5 Claims**

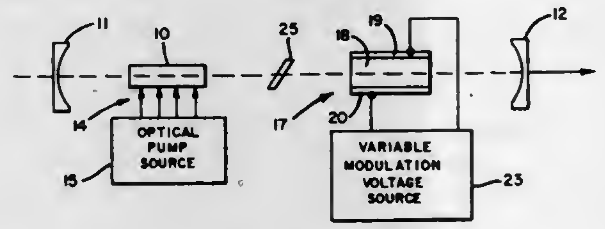
A continuous-wave, nonspiking, single-mode laser is provided wherein continuous-wave, nonspiking operation of ruby lasers cooled to 77 and 4.2°K. is obtained by end pumping a laser rod with the output of a CW argon ion laser. The laser rod is comprised of six discs, three ruby and three sapphire separated by spacers.



3,648,193
MODE-LOCKED FREQUENCY DOUBLED LASER

Jack D. Foster, Los Altos, and Larry M. Osterink, Mountain View, both of Calif., assignors to Sylvania Electric Products Inc.

Filed July 2, 1969, Ser. No. 838,440
Int. Cl. H01s *3/10*
U.S. Cl. 331—94.5 **5 Claims**

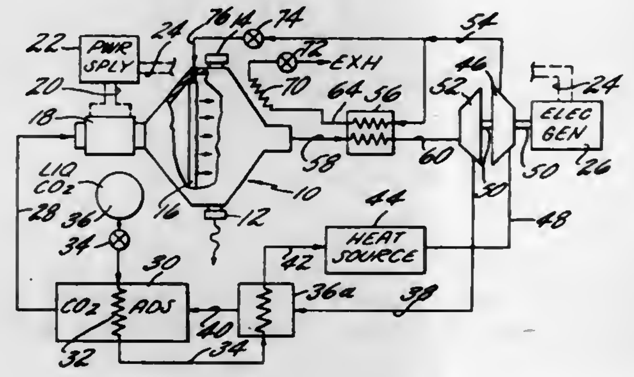


This laser comprises an intracavity nonlinear crystal that converts fundamental frequency laser light to second harmonic light and is also modulated to mode lock the laser. The modulation voltage, and thus the modulation depth, is varied to optimize the magnitude of the second harmonic power produced by the crystal.

3,648,194
SEMICLOSED CYCLE GAS LASER SYSTEM

Gorken Melikian, Springfield, Mass., and Frank R. Biancardi, Vernon, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 10, 1969, Ser. No. 858,566
Int. Cl. H01s *3/09, 3/22, 3/04*
U.S. Cl. 331—94.5 **13 Claims**

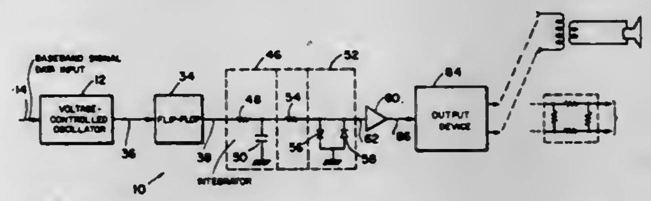


A flowing gas laser system of the mixing type removes lasing gas from the laser effluent so as to recycle the remaining gas, such as a mixture of energizing gas and relaxant gas. Fresh lasing gas is introduced into the system from a pressurized source thereof. Typically, carbon dioxide is removed from the laser effluent so as to permit reuse of a mixture of helium and nitrogen, by means of a lithium oxide or lithium hydroxide solid absorbent bed which is cooled by expanded CO_2 from the liquefied source. In one embodiment, the liquid CO_2 also precools the main gas flow prior to entrance into the CO_2 adsorber. The warmed CO_2, with or without additional external heat supplied thereto, is passed through an expander, which operates a turbine to drive a compressor used for creating flow through the system. The CO_2 which leaves the expander at temperatures of about 0° F. is then divided into two streams. One stream may be used to precool the laser effluent gases prior to reaching the compressor inlet as well as cool the laser chamber, while the other stream is used directly in the laser chamber. An excess of CO_2 may be flowed through all of the above-described processes by venting some of it to ambient, and using only part of it as the lasing gas, or a part of the CO_2 may be passed directly from the liquefied source into the laser chamber. A second embodiment employs a prime mover to drive the flow-inducing compressor, the liquid CO_2 being expanded and passed directly into the laser chamber at a very low temperature or serving to remove heat from the CO_2 adsorber, prior to its use as a lasing gas. External coolants are provided so as to cool the adsorbent or pre- and post- cool the laser effluent as it moves through a compressor, thereby maintaining the size of the compressor and the power requirements thereof quite small. Electrical power may be generated on the compressor drive shaft in either embodiment. The latter embodiment may employ readily available electrical power to run an electric excitation power supply, and even a small electric motor to drive the compressor.

3,648,195
MODULATOR USING A HARMONIC FILTER

Francis C. Marino, Huntington, N.Y., assignor to Digitronics Corporation, Albertson, N.Y.

Filed Mar. 11, 1970, Ser. No. 18,515
Int. Cl. H04l *27/12*
U.S. Cl. 332—14 **13 Claims**



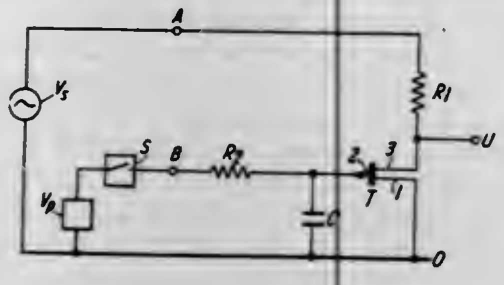
A modulator for producing a low-harmonic content information signal alternating between a first and a second frequency from a baseband signal alternating between a first and a second potential which comprises signal-generating means which is adapted to produce a square wave having a first frequency when the baseband signal is at the first potential and a second frequency when the baseband signal is at the second potential. Wave-shaping means receives the square wave and converts the square wave into respective first and second frequency output signals at least a portion of which varies linearly with time. Also provided is a passive device having a characteristic which includes a substantially logarithmic voltage versus current relationship over a first region which is connected to the wave-shaping means and which receives the first and second output signals to produce the information signal.

3,648,196
SIGNALS MODULATOR IN AUDIOMETRY APPARATUS

Guido Gay, Milan, Italy, assignor to Amplifon S.a.s., Milan, Italy

Filed Feb. 26, 1970, Ser. No. 14,613
Claims priority, application Italy, Feb. 27, 1969, 13433 A/69
Int. Cl. H03c *3/22*
U.S. Cl. 332—16 T **6 Claims**

A device for the switching and/or modulation of a signal, particularly in audiometry apparatus, comprising a voltage divider consisting of a field-effect transistor and at least one fixed resistor, the signal to be modulated being applied across

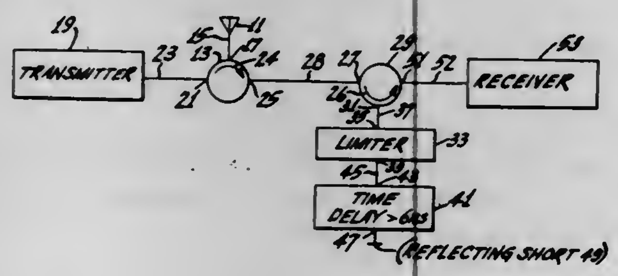


the divider and withdrawn between said transistor and said fixed resistor.

3,648,197
MICROWAVE LIMITER THAT SUPPRESSES LEADING EDGE SPIKE OF RADIOFREQUENCY SIGNAL

Wieslaw Wojciech Siekanowicz, Trenton, N.J., assignor to RCA Corporation

Filed June 1, 1970, Ser. No. 42,153
Int. Cl. H03g *11/04*; **H01p** *1/32*
U.S. Cl. 333—17 **8 Claims**

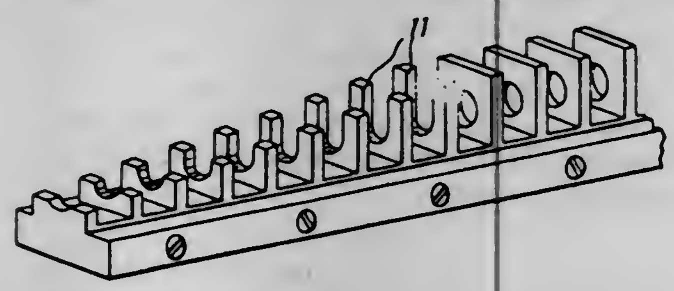


An RF limiter includes a section of transmission line having ferrite material so arranged therewith and biased as to act as a reciprocal limiter. An RF signal passing in one direction through the transmission line is reflected so that the signal passes back through the transmission line in the opposite direction. The reflected signal is delayed at least a time period approximately equal to the fall time of a leading edge spike such that, when the delayed RF reflected signal reaches the transmission line section, the ferrite material in the transmission line section is in its nonlinear operating condition.

3,648,198
DELAY LINES FOR MICROWAVE TUBES

Ta Yeou, Paris, France, assignor to Thomson-CSF

Filed July 29, 1970, Ser. No. 59,086
Claims priority, application France, Aug. 4, 1969, 6926689
Int. Cl. H03h *7/30*
U.S. Cl. 333—31 A **5 Claims**

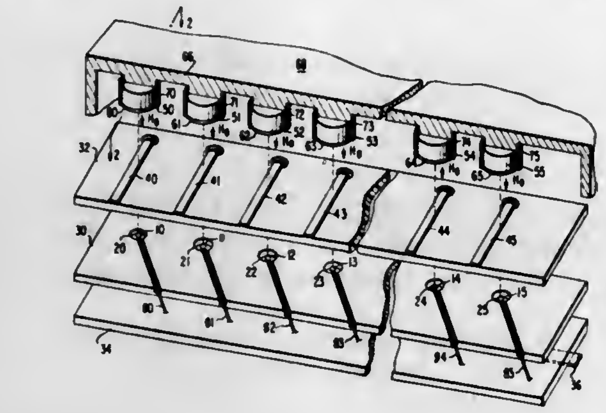


Certain UHF electron tubes using the interaction between an electromagnetic wave and an electron beam comprises a delay line made up of periodic elements having an aperture for the transit of said beam, the height of said elements decreasing at the end of the delay line to match said end to the input and/or output connections. The present invention allows to avoid the interception of a certain fraction of the beam by the element part comprised between the aperture and the edge of said element, when said part, at said end of the delay line, is reduced. The improvement relates to UHF electron tubes operating in very short wavelengths.

3,648,199
TEMPERATURE-INDEPENDENT YIG FILTER

Daniel C. Buck, Hanover, and James M. Schellenberg, Glen Burnie, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 1, 1970, Ser. No. 42,048
Int. Cl. H03h *7/10, 5/00*
U.S. Cl. 333—73 **10 Claims**

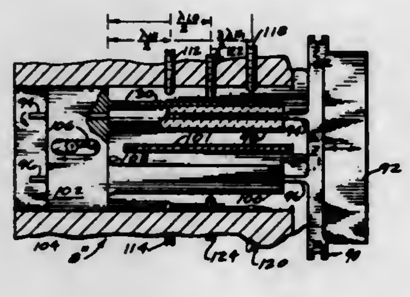


A cancellation effect is obtained between the temperature-dependent phenomenon of the externally applied magnetic field and the crystallographic orientation of a gyromagnetic element by utilizing a temperature compensating magnetic shunt in combination with a permanent magnet used to establish a unidirectional or DC magnetic field through the gyromagnetic element comprising a YIG sphere and selectively orienting its axis to a predetermined angle defined by the direction of the DC magnetic field wherein the resonance frequency of the YIG sphere increases with temperature. Thus, any decrease in saturation magnetization as a function of temperature is exactly cancelled out by selective orientation of the YIG sphere.

3,648,200
FREQUENCY SELECTIVE ATTENUATION APPARATUS

William H. Harrison, 23341 Burbank Boulevard, Woodland Hills, and Seymour B. Cohn, 5021 Palomar, Tarzana, both of Calif.

Continuation-in-part of application Ser. No. 807,632, Mar. 17, 1969. This application Sept. 22, 1969, Ser. No. 870,327
Int. Cl. H03h *7/12, 7/16*
U.S. Cl. 333—73 W **8 Claims**



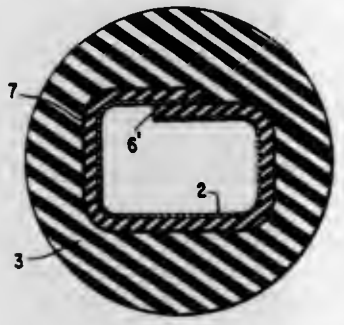
The specification discloses a frequency selective or gain equalizing attenuator having a highly controllable profile of attenuation versus frequency of microwave energy propagated along a transmission line. Spaced a quarter-wavelength apart, a pair of resonant stubs are coupled to the line through resistive loss elements. Depending upon the frequency of the incident energy and the length of the stubs, the coupling of the lossy elements to the line varies as the stub reactance varies from short to open and, accordingly, provides a predetermined desired attenuation characteristic. The overall discontinuities on the transmission line caused by

the stubs and lossy elements substantially mutually cancel each other because of their symmetry and quarter-wave spacing along the transmission line. A full reading of the specification is recommended for details of the concepts involved.

3,648,201
PLASTIC COVERED FLEXIBLE WAVEGUIDE FORMED FROM A METAL COATED DIELECTRIC LAYER

Hans Gissel, Backnang Wurttemberg, Germany, assignor to **Telefunken Patentverwertungsgesellschaft m.b.H., Ulm-Donau, Germany**

Filed Oct. 28, 1969, Ser. No. 871,870
Claims priority, application Germany, Nov. 8, 1968, P 18 07 718.4
Int. Cl. H01p *3/14, 11/00*
U.S. Cl. 333—95 R **11 Claims**

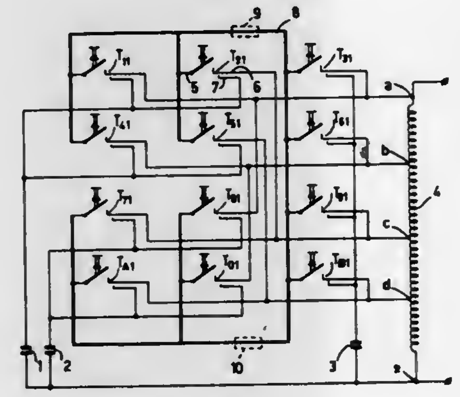


A flexible waveguide composed of a tube of noncircular cross section formed by overlapping opposite edges of a sheet, the sheet being a laminate formed of metal foil covered on one surface by a layer of flexible dielectric. The exterior of the tube is covered with additional flexible dielectric material which forms a relatively thick protective coating.

3,648,202
TRANSMITTING ARRANGEMENT FOR USE IN TONE FREQUENCY PUSHBUTTON SELECTION SYSTEMS

Jan Schalkwijk, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of application Ser. No. 511,046, Dec. 2, 1965, now abandoned. This application Mar. 19, 1971, Ser. No. 126,339
Claims priority, application Netherlands, Dec. 3, 1964, 6414016
Int. Cl. H03j *5/08, 5/32*
U.S. Cl. 334—47 **7 Claims**

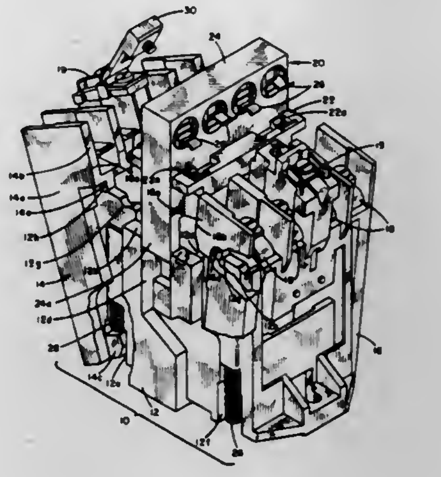


A transmitting arrangement for use in a tone frequency pushbutton selection system which by the depression of an arbitrary key a single tone frequency is produced by an oscillator coil and capacitor arrangement and depression of any two adjacent keys results in short circuiting a portion of the oscillator coil.

3,648,203
RELAY SWITCH HOUSING

Hugh Kane, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 26, 1970, Ser. No. 66,943
Int. Cl. H01h *50/02*
U.S. Cl. 335—132 **6 Claims**

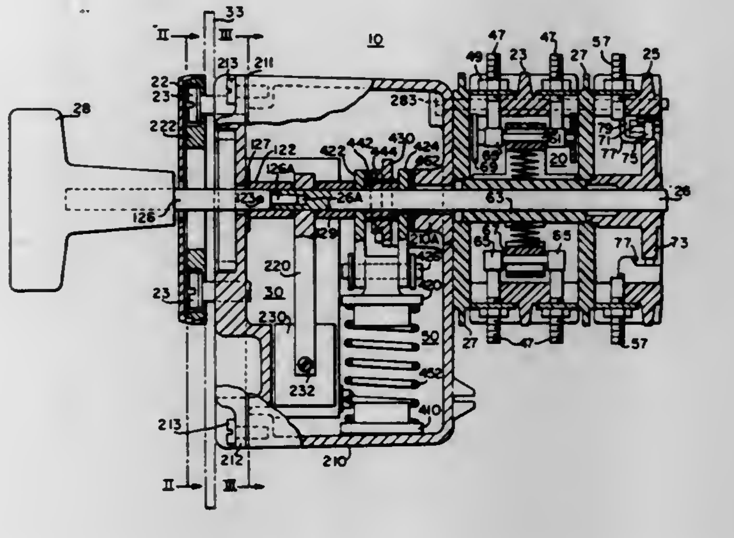


A relay switch arrangement having split housings associated with and divergently movable with respect to a base and to each other and detent means provided therebetween to allow the housings to be opened and to be maintained open against the forces tending to cause closure thereof so as to allow for ease in servicing of the magnetic frame, coil and armature-moving contact assembly of the relay switch arrangement which are encompassed by the base and the housings.

3,648,204
SWITCH HAVING MAGNETIC LATCHING MEANS

Norman Davies, Trafford, and Robert D. Binz, West View, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

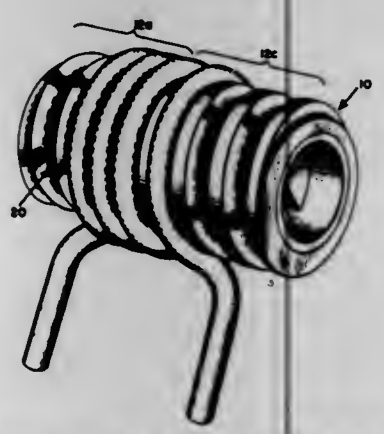
Filed Jan. 29, 1971, Ser. No. 110,871
Int. Cl. H01h *9/20*
U.S. Cl. 335—170 **6 Claims**



A rotary switch having separable stationary and movable contacts and a shaft which is rotatable to actuate the movable contacts between two operating positions. A spring biasing means is operatively connected to the shaft to bias the shaft toward a first position corresponding to one of the operating positions of the associated contacts. A lever is mounted on the shaft and carries a magnetic armature which is disposed to engage a stationary magnetic structure having a permanent magnet member in a second position of the shaft which corresponds to the other operating position of the associated contacts to magnetically latch the switch contacts in the latter operating position. An electromagnetic coil is disposed on the stationary magnetic structure and is energizable to release the magnetic armature and the shaft which then actuates the associated contacts under the influence of the spring biasing means to the first-mentioned operating position of said contacts.

3,648,205
DEVICE FOR VARYING THE INDUCTANCE OF A HELICAL INDUCTOR

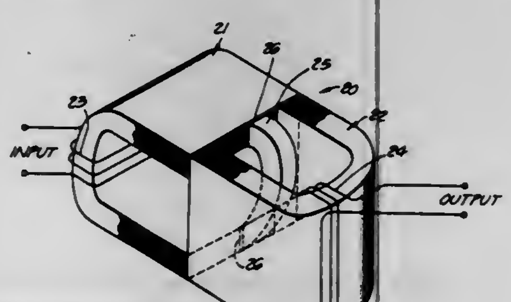
Raymond S. Bunch, and Richard B. Sanger, both of Lynchburg, Va., assignors to General Electric Company
Filed Oct. 12, 1970, Ser. No. 79,858
Int. Cl. H01f *21/02*
U.S. Cl. 336—20 **1 Claim**



An insulating member has an external helical thread that threads inside the turns of a helical inductor. A first part of the thread provides a first spacing between turns of the inductor, and a second part of the thread provides a second, greater spacing between turns of the inductor. A nonmagnetic, conductive element is positioned inside the insulating member in the vicinity of the second part of the thread. With the first part of the thread engaging the inductor, a high value of inductance is provided. When the insulating member is rotated so that the second part of the thread engages the inductor, the increased spacing of the inductor turns and the nonmagnetic, conductive element combine to decrease the inductance of the inductor by an amount dependent upon the amount that the second part of the thread and the element are introduced into the inductor.

3,648,206
CORE CONSTRUCTIONS FOR VARIABLE INDUCTORS AND PARAMETRIC DEVICES

Cravens L. Wanlass, 9871 Overhill Drive, Santa Ana, Calif.
Filed Aug. 31, 1970, Ser. No. 68,130
Int. Cl. H01f *21/08*
U.S. Cl. 336—160 **14 Claims**



Various core constructions are disclosed for use with variable inductors and parametric devices, the cores having supplemental core pieces acting in some cases as magnetic shunts and in other cases as return paths, or both, for the input and/or output portions of a magnetic core such as that disclosed in U.S. Pat. No. 3,403,323.

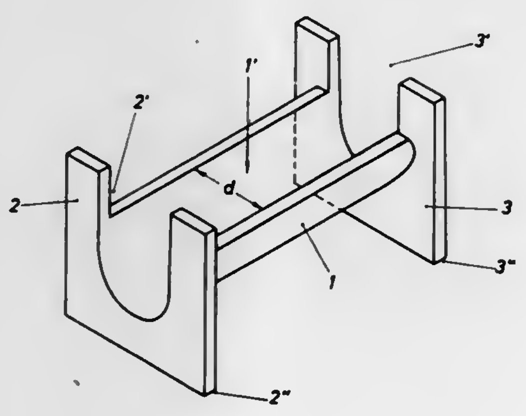
3,648,207
APPARATUS FOR STARTING AND OPERATING ELECTRIC DISCHARGE LAMPS

Saverio Caltagirone, Danville, Ill., assignor to General Electric Company
Original application Feb. 16, 1970, Ser. No. 11,454, now abandoned. Divided and this application Apr. 5, 1971, Ser. No. 131,474
Int. Cl. H01f *27/28*
U.S. Cl. 336—206 **10 Claims**

An electric discharge lamp ballast apparatus employing a high leakage reactance type of transformer with a shell-type magnetic core and with electrical coils wound of turns of generally round insulated wire which is flattened on the sides to form an essentially oblong cross section with the pair of flattened opposed sides extending in an axial direction with respect to the coil and adjacent to the layer insulation of the coil. The beginning turn or turns and the ending turn or turns of the coil not being flattened, such that they form generally round leads for the coil. Round leads for tap connections to be formed intermediate the ends of the coil are formed by a turn or turns of the coil interconnecting adjacent layers of the coil not being flattened.

3,648,208
COIL FORM

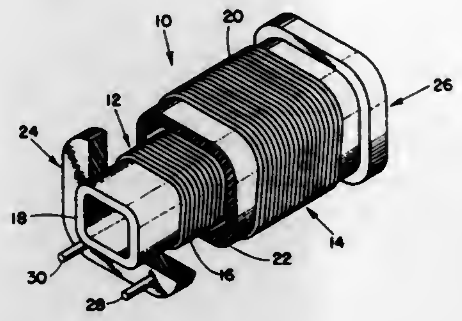
Helmut Rolf, Nurnberg, Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Feb. 3, 1970, Ser. No. 8,363
Claims priority, application Germany, Feb. 26, 1969, G 69 07 606
Int. Cl. H01f *27/30*
U.S. Cl. 336—208 **1 Claim**



A double-flanged coil form with a hollow core part is provided with an uninterrupted slot running through the core part in axial direction and through the flanges in the radial direction. The slot is as broad as the diameter or the breadth of the core part. The coil form can be die-cast or molded as a whole, avoiding the use of slides and a put-in core.

3,648,209
INDUCTANCE DEVICE WITH VACUUM INSULATION

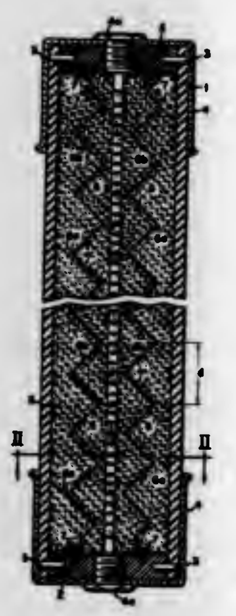
Channing C. Conger, Olmsted Falls, Ohio, assignor to The United States of America as represented by the Administrator of National Aeronautics and Space Administration
Filed Jan. 28, 1971, Ser. No. 110,402
Int. Cl. H01f *27/32*
U.S. Cl. 336—220 **5 Claims**



Electromagnetic components for use in space are made of materials of low gas entrapping capability. The electromagnetic components also includes electrical winding. The windings are loosely wound to provide adequate vent paths to the surface of the windings. The vacuum of space is utilized for insulation.

3,648,210
HIGH-VOLTAGE FUSE WITH SELF-SUPPORTING SPRING FUSE LINK

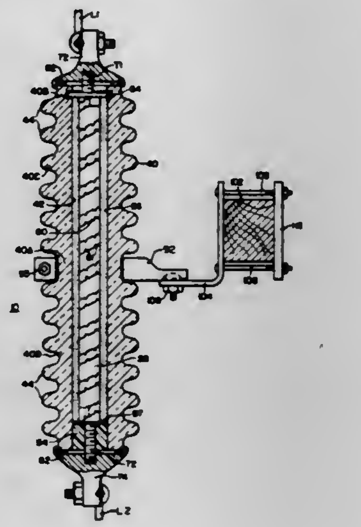
Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed Jan. 26, 1971, Ser. No. 109,779
Int. Cl. H01h *85/08, 85/12*
U.S. Cl. 337—161 **8 Claims**



A high-voltage fuse includes a self-supporting fuse ribbon fuse link, or fusible element, i.e., one that is not provided with, or wound around, a link supporting insulating mandrel. The fusible element is formed of resilient material, preferably relatively hard silver, and forms a loaded extension spring. The fusible element is bent at a plurality of points in zigzag fashion having planar sections between bends. These planar sections enclose acute angles close to 90°. The ribbon fuse link has a plurality of serially arranged perforations and each of the aforementioned planar sections encompasses a plurality of such perforations. Each of the plurality of points where the fuse link, or fusible element, is bent is coextensive with one of said plurality of perforations thereof.

3,648,211
HIGH-VOLTAGE CURRENT LIMITING PROTECTIVE DEVICE

Wesley L. McKeithan, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 10, 1969, Ser. No. 883,951
Int. Cl. H01h *85/02, 85/48*
U.S. Cl. 337—202 **10 Claims**



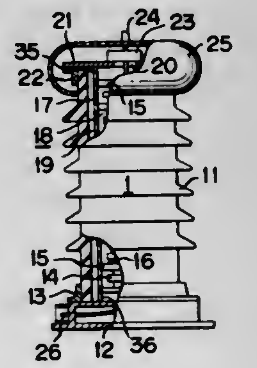
A high-voltage protective device comprising a hollow, generally cylindrical, electrically insulating member having an inner bore. A pair of terminal members is mounted on the insulating member adjacent to the opposite ends. One or more fuse links or fusible elements is disposed in the inner bore and spaced therefrom with each fuse link being connected between the associated terminal members. A finely divided or pulverulent arc quenching material substantially fills the space between each fuse link and the inner bore of the associated insulating member. A supporting means is secured to said insulating member at only one location which is axially intermediate the ends of said insulating member.

ERRATUM

For Class 337—311 see:
Patent No. 3,648,214

3,648,212
BREAKING RESISTOR WITH COOLING MEANS

Takeo Kuwabara; Kazumi Morimoto, and Hachiro Miyao, all of Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd.
Filed Sept. 26, 1968, Ser. No. 762,763
Int. Cl. H01c *1/08*
U.S. Cl. 338—53 **11 Claims**



A braking resistor is arranged to be connected to an electric power circuit when the circuit is brought into a light load state as the load becomes disconnected therefrom due to the occurrence of a fault therein. The braking resistor comprises as the unit of a plurality of resistive elements each consisting of a conducting strip or wire wound in the form of a spiral disc, said elements belonging to at least two groups which are distinct from each other with respect to the inner and outer diameters of the elements, these element discs of, for instance, two groups being concentrically spaced in an alternate fashion and said elements being enclosed within an insulating tubular member such that those elements which have greater inner and outer diameters make sealing contact with the tubular member and are spaced from a central carrying means and those elements which have smaller inner and outer diameters are spaced from the tubular member and are sealing relationship with the central carrying means thereby defining an axially folded path for a cooling medium within the tubular member.

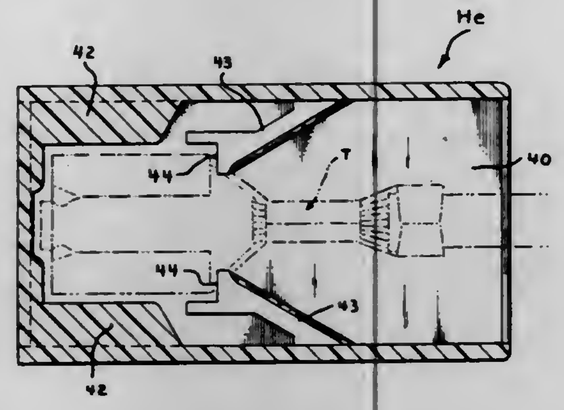
3,648,213
ELECTRICAL HOUSING MEMBER

Robert James Kobler, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of application Ser. No. 705,260, Jan. 26, 1968, which is a continuation-in-part of application Ser. No. 572,589, Aug. 15, 1966. This application Apr. 24, 1970, Ser. No. 31,813

Int. Cl. H01r *9/16*

U.S. Cl. 339—59 R **4 Claims**



A dielectric housing for housing an electrical connector comprises a passageway in the housing in which the connector is to be disposed, the passageway providing integral lance means extending outwardly from surface means of the passageway for engagement with the electrical connector along one section thereof to prevent movement of the connector out of the passageway and the passageway and the connector providing stop means spaced from the integral lance means to limit movement of the connector in the passageway.

3,648,214
CONDITION-RESPONSIVE ELECTRIC SWITCH MECHANISM

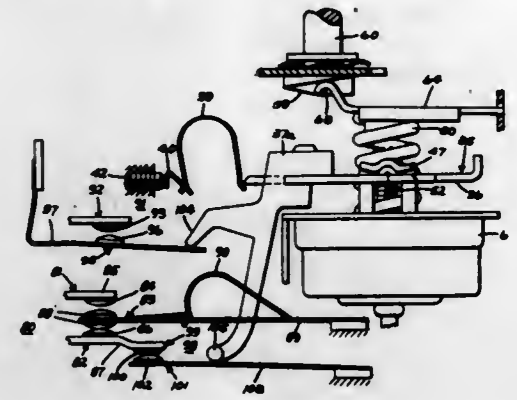
John L. Slonneger, Morrison, Ill., assignor to General Electric Company

Continuation-in-part of application Ser. No. 819,635, Apr. 28, 1969, now abandoned. This application Oct. 26, 1970, Ser. No. 83,926

Int. Cl. H01h *37/38, 37/60*

U.S. Cl. 337—311 **9 Claims**

A condition-responsive snap action electric switch mechanism, for use with a room air conditioner for instance, includes an operator which moves between extreme positions in response to a bellows. The bellows pressure increases and decreases in response to changes in temperature of the air passing over the evaporator. The switch also includes a first set of contacts to control energization of the compressor and a second set of contacts, including a snap-acting arm, to control energization of the evaporator and condenser fan motor. The operator includes an operating arm having a first portion which opens and closes the first set of contacts as the operator moves through a first, snap action, increment of travel between its extreme positions. The operating arm also includes a second portion which effects snap action of the snap-acting arm to open and close the second set of contacts as the operator moves through a second increment of travel separate from the first increment of movement.



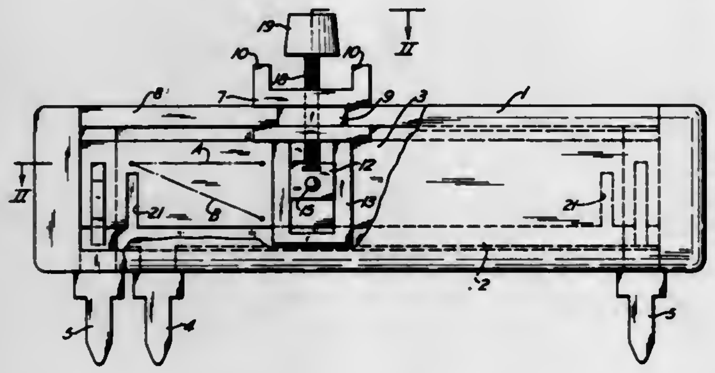
3,648,215
LINEAR MOTION VARIABLE RESISTOR WITH TRANSVERSE FINE ADJUSTMENT

Mogens W. Bang, Ridgway, Pa., assignor to Stackpole Carbon Company, St. Marys, Pa.

Filed Mar. 8, 1971, Ser. No. 121,896

Int. Cl. H01c *9/02*

U.S. Cl. 338—122 **5 Claims**



An actuator is movable along the edges of parallel resistance and collector strips mounted in a case. The resistance strip is provided near each end with a transverse notch. Bridging contact means carried by the actuator engage both strips. Movably mounted in the actuator is an adjusting member that has an inner end connected with the contact means and that can be moved lengthwise to move the contact means forward and backward beside the strip notches to vary the distance from the point of engagement of the contact means with the resistance strip to the reduced areas of the resistance strip at the inner ends of the notches for fine adjustment of the resistor.

3,648,216
RESISTANCE ELEMENTS

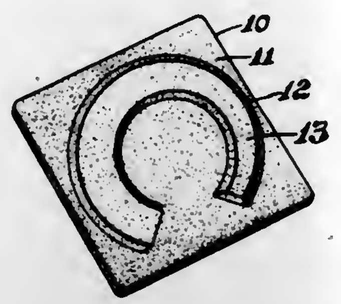
Jacob Rector, 27 Palisade Road, Linden, N.J.

Filed Apr. 7, 1970, Ser. No. 26,332

Int. Cl. H01c *9/02*

U.S. Cl. 338—142 **10 Claims**

Linear and nonlinear electrical resistance elements having base members integrally formed with ridges having plane top surfaces, the resistance material being applied to the ridges on one or more of the surfaces, the configuration of the ridges being formed to attain a predetermined resistance value and taper and the resistance material being applied to provide one resistance track or two or more parallel resistance tracks. In an alternate form of the invention, the ridge is formed with one or more peaks with the resistance material applied to a predetermined height on the upward extending sides, to form two or more parallel resistance tracks.



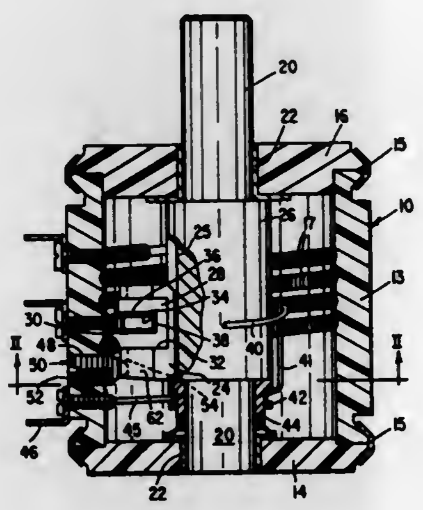
3,648,217
POTENTIOMETER EQUIPPED WITH POSITIVE POSITIONING MEANS

Robert J. De Long, Temple City, and Paul F. Gerwitz, West Covina, both of Calif., assignors to Spectrol Electronics Corporation, City of Industry, Calif.

Continuation of application Ser. No. 741,144, June 28, 1968, now abandoned. This application May 6, 1970, Ser. No. 37,374

Int. Cl. H01c *5/00*

U.S. Cl. 338—143 **3 Claims**



A variable resistor for regulating flow of electrical energy in an electrical circuit including a contact member with means for moving same over a resistance element wherein releasable securing means are provided for assuring a predetermined positioning of the contact member relative to the resistance element.

3,648,218
WOUND RESISTOR ARRANGEMENT

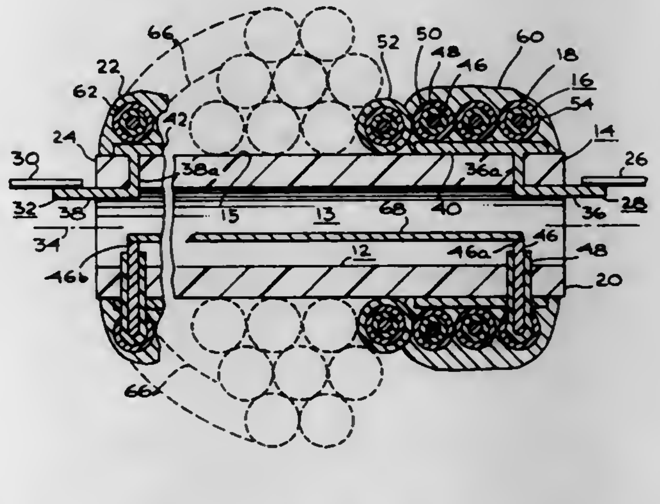
David Kellerman, 1485 South Cardiff, Los Angeles, Calif.

Filed Apr. 12, 1971, Ser. No. 133,323

Int. Cl. H01c *5/02*

U.S. Cl. 338—160 **14 Claims**

A wound resistor arrangement having a very high-resistance value in a comparatively compact form is described herein. In the wound resistor, a multicoated flexible continuous body means is wound on a bobbin means. The body means comprises a substrate, which is dielectric in nature, and may comprise a dielectric filament, a dielectric tape, and electrically conductive wire coated with an inner dielectric coating, or an electrically conductive tape coated with an inner dielectric coating upon which is provided a coating of a high resistance, continuous, electrically conductive means. The high-resistance means is the resistive element for the resistor. An outer dielectric coating is provided on the outside of the high resistance, continuous, electrically conductive means for insulating adjacent turns of the body means as wound on the bobbin from each other and from adjacent layers of turns. Lead means are provided connected to each end of the high-resistance continuous electrically conductive mans and the length of the high-resistance electrically conductive means is selected to provide the desired resistance for the resistor. The invention also comprises arrangements utilizing such a wound resistor in which the resistance may be varied during utilization and, also, a coaxial arrangement in which the high-resistance, continuous, electrically conductive means is sandwiched between an electrically conductive coating deposited on the outside of the outer dielectric coating and the electrically conductive member of the substrate. Also the resistance is coated on a flexible base, the base being wound on a bobbin. A slide contact is used to form a variable resistor.



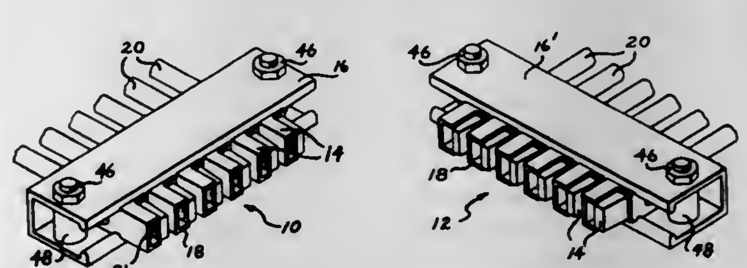
3,648,219
ELECTRICAL CONNECTOR MOUNTING RAIL AND DISCONNECTING ASSEMBLY

Wayne E. Goldman, Lexington, Mass., assignor to Anderson Power Products, Inc., Boston, Mass.

Filed Jan. 15, 1970, Ser. No. 3,015

Int. Cl. H01r *9/00, 13/62*

U.S. Cl. 339—45 M **4 Claims**

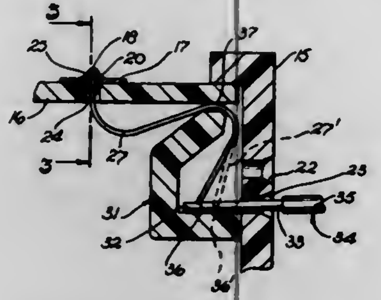


A mounting rail for mounting a plurality of uniform electrical connectors with their connecting ends in transverse alignment includes transverse locking members to engage corresponding recesses formed on the connector housing to prevent longitudinal displacement among the mounted connectors. The preferred rail is an elongated C-shaped channel member with locking lips formed on the inner surfaces of the upper and lower walls thereof, and mounting flanges may be provided at the forward or open end thereof for panel mounting. A disconnect assembly is also provided for "-peeling" the longitudinally engaged banks of connectors, which preferably comprises a lever and cam apparatus.

3,648,220
ELECTRICAL CONNECTOR

Helmut Dietmar Julinot, Toronto, Ontario, Canada, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,420
Claims priority, application Canada, May 19, 1970, 083059
Int. Cl. H01r *11/20*; H05k *1/02*
U.S. Cl. 339—17 R **13 Claims**

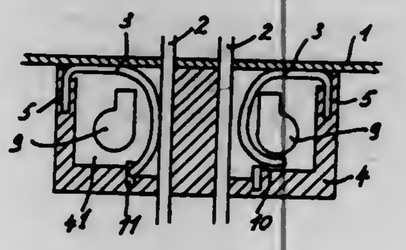


An electrical connector in which a free end of a leaf spring is located close to a supporting wall, and a wire lead is wedged in between the support and spring. The other end of the spring is soldered to a printed circuit board. Loosening or damage to the solder point is prevented on lead insertion or removal or attempted removal by wedging the free end between the lead and the board itself. The said other end of the spring has two spaced tabs which project through two holes, respectively, in the board. The tabs are tapered and take the lead insertion load without loading solder joints between the tabs and the board. The two tabs also give the spring lateral stability.

3,648,221
MULTILAYER PROGRAMMABLE WIRING BOARD

Hans Peter Tillmann, Bruxelles, and Erik Lerchs, Rhode St. Genese, both of Belgium, assignors to Burndy Corporation

Filed Mar. 12, 1970, Ser. No. 18,886
Claims priority, application Belgium, Aug. 7, 1969, 77670
Int. Cl. H01r *13/54*
U.S. Cl. 339—74 R **8 Claims**



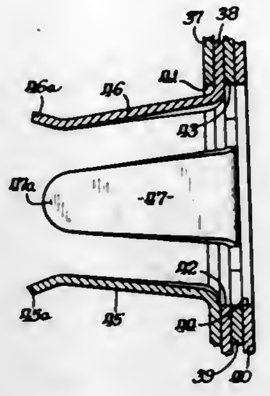
An electrical connector assembly includes an arcuate conductive spring element mounted to a body, and a rotary cam mounted to the body for expanding the effective curvature of the spring until it engages the surfaces of adjacent intersecting printed circuit boards. The spring forms a separable electrical connecting tab between a conductor on one board and a conductor on the other. Means on the body are provided for supporting circuit boards or similar conductors in proper position relative to one or more spring elements.

3,648,222
ELECTRICAL CONNECTOR HAVING LAMINATED CONTACT ELEMENT

Richard R. Cowmeadow, Bramalea, Ontario, Canada, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Mar. 16, 1970, Ser. No. 19,822
Int. Cl. H01r *11/22, 3/06*
U.S. Cl. 339—14 R **10 Claims**

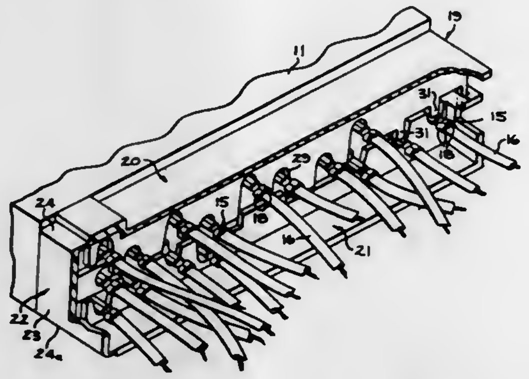
Electrical connector including a plurality of thin metal plates forming a laminated contact element and formed with integral resilient tines projecting in equiangularly spaced relation from peripheral portions of aligned holes in the plates to engage contact elements which are preferably filter pin units, the tines and plates functioning to provide a repeatably low-impedance electrical contact and path from the outer electrodes of the filter pin units to ground.



3,648,223
LOCK COLLAR FOR MULTIPLE ELECTRICAL TERMINAL CONNECTIONS

Michael L. McCray, Fern Creek, Ky., assignor to General Electric Company

Filed Dec. 8, 1969, Ser. No. 882,924
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 M **3 Claims**



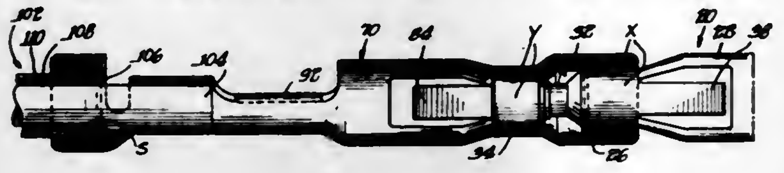
A lock collar is provided to maintain electrically conductive engagement between electrical terminals of a first group and electrical terminals of a second group wherein each of the terminals of the first group is supported relative to each other as contrasted to the terminals of the second group wherein each of the terminals relies for its support upon its connection to one of the terminals of the first group. The lock collar is adapted to be positioned about and supported by the terminals of the second group. The lock collar comprises a unitary plastic structure having first and second opposing portions adapted to extend respectively above and below the electrical terminals, an integral hinge means formed at one end thereof, and an integral locking means formed at the other end thereof.

3,648,224
SHIELDED CABLE CONNECTOR

Cletus G. McDonough, Elmhurst, Ill., assignor to Molex Products Company, Dowers Grove, Ill.

Filed Mar. 4, 1970, Ser. No. 16,346
Int. Cl. H01r *17/06;* H01r *17/18*
U.S. Cl. 339—183 **14 Claims**

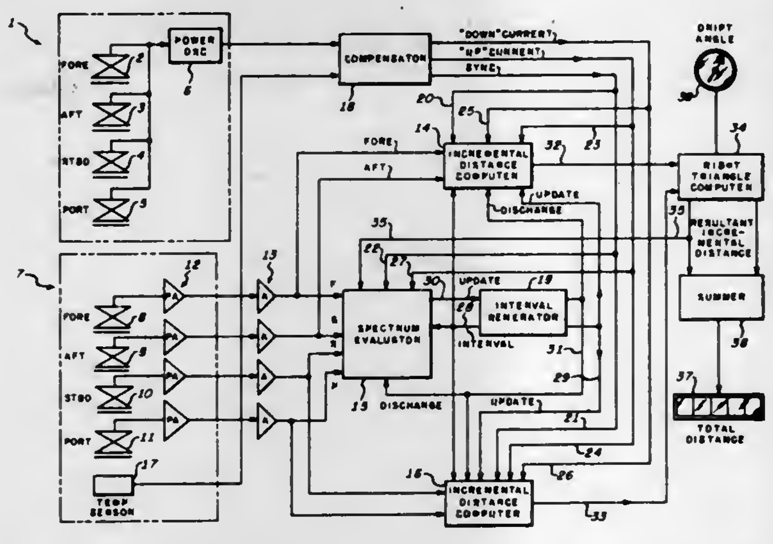
Complementary male and female connectors for shielded cables such as audio cables. Each connector is in the nature of a male or female pin terminal, respectively, and each comprises a laminated metal structure consisting of two external, rather thin sheets of conductive, resilient metal with a sheet of plastic or the like insulating material in between. The opposite ends of each terminal are reversely bent and the terminals are so configured that each terminal can be crimped on to the end of a shielded cable simultaneously to grip both the inner conductor and the outer braid or the like shield while making electrical connection therewith, but with either conductor and the shield remaining electrically isolated. The male and female terminals then are simply telescopically associated in the normal manner to effect connection respectively between two inner connectors and two external shields.



3,648,225
DIGITAL SONAR DOPPLER NAVIGATOR

Jacob A. Kritz, Westbury, and Seymour D. Lerner, Plainview, both of N.Y., assignors to Sperry Rand Corporation

Filed Dec. 4, 1969, Ser. No. 882,242
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 D **17 Claims**

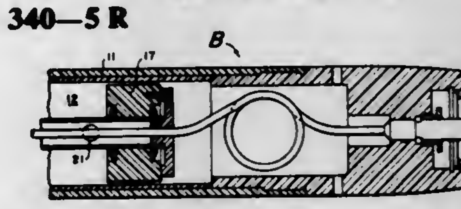


A "Janus-type" sonar Doppler navigator employs a transmitter for energizing four acoustic transducers that propagate beams in the fore, aft, port and starboard directions, respectively. Individual acoustic receivers corresponding to each of the beams supply electrical signals to a pair of incremental distance computers. The transmitter frequency and water temperature are monitored in a compensator circuit to provide corrections for variations in these quantities. The received associated signals are also applied to a spectrum evaluator for analysis of the spectral content of the received signals. Each incremental distance computer digitizes the received signals, corrects these signals in response to the output of the temperature and frequency compensator, and integrates the digitized signals throughout a time interval determined by an interval generator to provide tentative incremental distance voltages representative of the distance traveled during the corresponding time interval. If the spectral content of the received signals is satisfactory, the spectrum generator produces an UPDATE pulse that permits a readout capacitor to charge to the level of the tentative incremental distance voltage. If the spectral content is not satisfactory, the spectrum evaluator produces a RETAIN signal that permits the readout capacitor in each incremental distance computer to remain charged to the value of a previously stored signal. The voltages on the readout capacitors in both incremental distance computers are applied to further computer means for providing indications of the total distance traveled and the drift angle.

3,648,226
VIBRATION ISOLATION MODULE FOR TOWED CABLES

Hugh M. Fitzpatrick, Chevy Chase, Md.; James J. Neville, Kinnelon, N.J.; John Thompson, State College, Pa., and Fitzhugh W. Boggs, deceased, late of Hampton, N.J. (by Elizabeth M. Boggs, executrix), assignors to The United States of America as represented by the Secretary of the Navy

Filed Mar. 23, 1970, Ser. No. 21,641
Int. Cl. B63b *21/00*
U.S. Cl. 340—5 R **10 Claims**

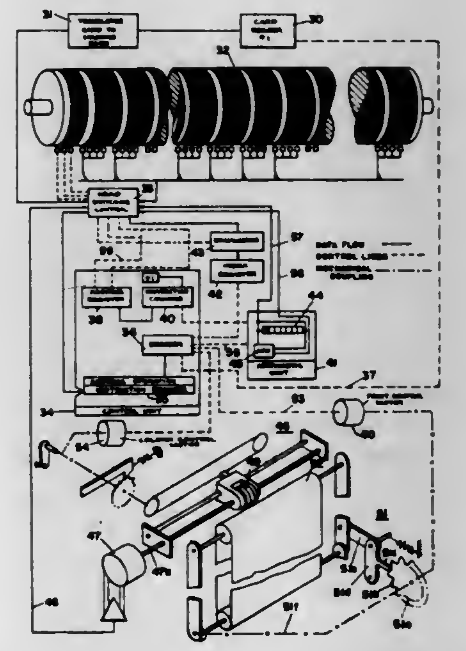


A vibration-isolation link employing pistons or diaphragms responsive to the difference in pressure between the stagnation pressure and the ambient pressure to compensate for the drag force of a towed body and employing a soft spring to maintain the piston or diaphragm in an equilibrium position.

3,648,227
CORRECTING SEISMIC TRACES FOR STATIC CORRECTIONS AND NORMAL MOVEOUT

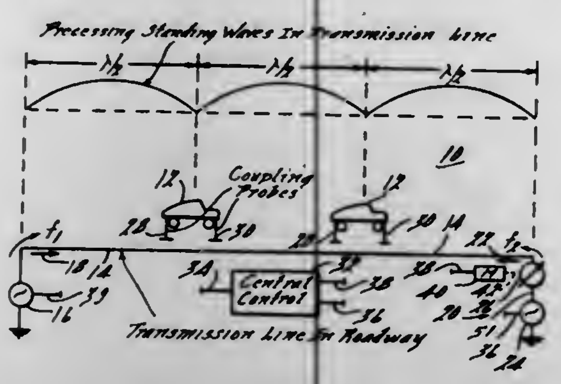
Raymond L. Sengbush, 1209 Plattner Drive, Grand Prairie, Tex.

Continuation of application Ser. No. 329,503, Dec. 10, 1963, now abandoned. This application Oct. 25, 1966, Ser. No. 589,463
Int. Cl. G01v *1/36*
U.S. Cl. 340—15.5 TD **15 Claims**



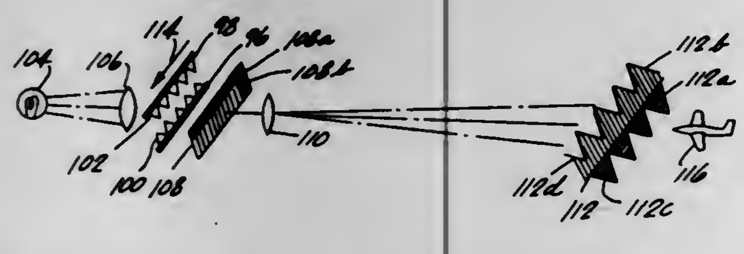
A technique for obtaining static corrections and normal moveout for a set of seismic traces. The total time shifts between all traces and a reference trace are obtained by cross-correlation. The total time shift includes the components of normal moveout, dip, and static correction. The known static corrections and the total time shifts for both end traces are combined to compute the dip and normal moveout corrections for the end traces. Dip and normal moveout for the end traces are extrapolated for dip and normal moveout for each individual trace. The static correction for each trace is obtained by subtracting the values of dip and normal moveout for each trace from the total time shift for each trace. In this manner, all of the corrections required to reduce a set of seismic traces to a common reference may be obtained.

3,648,228
CONTROL SYSTEM FOR VEHICLES
Adolphus R. Perry, Royal Oak, Mich., assignor to The Bendix Corporation
Filed Feb. 9, 1970, Ser. No. 9,768
Int. Cl. G08g *1/00*
U.S. Cl. 340—23 **17 Claims**


Processing Standing Waves In Transmission Line
λ/2
λ/2
λ/2
Coupling Probes
Control
Transmission Line In Roadway

A system for controlling the spacing and velocity of a plurality of vehicles along a pathway having a signal source at each end of the pathway emitting opposing signals which superimpose so as to establish processing nulls or characteristic value along the pathway. Each vehicle is provided with a probe to detect the nulls that it may be velocity controlled thereby.

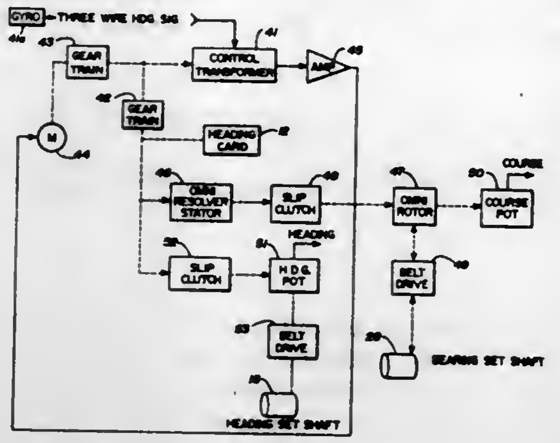
3,648,229
PULSE CODED VEHICLE GUIDANCE SYSTEM
Alan A. Burrows, Orange, and Henry C. Lehde, Westminister, both of Calif., assignors to McDonnell Douglas Corporation
Filed Mar. 23, 1970, Ser. No. 21,820
Int. Cl. G08g *5/00*
U.S. Cl. 340—26 **17 Claims**



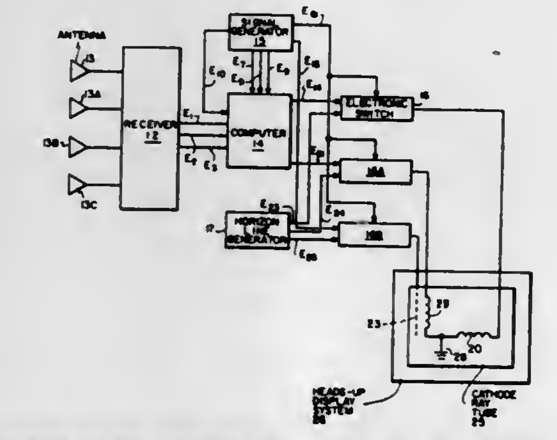
Vehicle guidance system including means for projecting a beam of light to guide a vehicle such as an aircraft, and means for pulse coding the normally lower and upper portions of the beam whereby pulse coded signals are encountered by the aircraft following the beam on any departure into the pulse coded portions. The lower and upper pulse coded portions of the beam are differentiated by frequency and/or color coding. The duration of the pulses is also preferably varied in accordance with the degree of aircraft departure into the pulse coded portions of the beam.

3,648,230
AIRCRAFT HEADING AND COURSE DISPLAY
James R. Younkin, Mineral Wells, Tex., assignor to Mitchell Industries, Inc., Mineral Wells, Tex.
Filed Sept. 8, 1969, Ser. No. 855,860
Int. Cl. B64d *43/00*; **G01s** *1/16*
U.S. Cl. 340—27 NA **13 Claims**

A heading card with an azimuth scale on the face thereof is mounted on a cage rotatable about the axis of the card. The cage is responsive to the output of a directional gyro for controlling the orientation of the heading card. An omnilocalizer-bearing selector and a bearing deviation indicator are mounted within the cage for the selection of a navigation bearing. A glide slope indicator is responsive to reception of a selected localizer frequency for moving into view over the face of the heading card. A number of malfunction and weak signal indicators are also selectively movable into view over the face of the heading card when required.



3,648,231
METHOD AND MEANS FOR PROVIDING A SYNTHETIC REAL WORLD RUNWAY CENTERLINE DISPLAY
Abner Owens, Jr., Paramus, and John F. Yurasek, Oakland, both of N.J., assignors to The Bendix Corporation
Filed Dec. 12, 1969, Ser. No. 884,420
Int. Cl. G08g *5/02*
U.S. Cl. 340—27 NA **10 Claims**

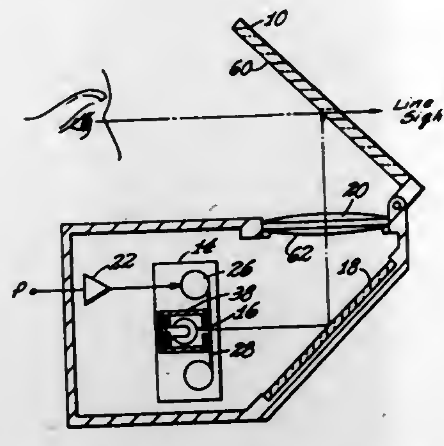


A system in an aircraft for displaying a perspective view of a synthetic runway centerline on a cathode-ray tube in a heads-up display system for guiding a pilot while landing an aircraft on the real world runway at an airport when visibility is poor. The perspective of the synthetic runway centerline changes in accordance with changes in the position of the aircraft to the runway at the airport. Beacons located at each end of the runway's centerline provide signals to a receiver in the aircraft. The receiver provides signals corresponding to the positions of the beacons. A signal generator provides deflection voltages for a synthetic runway centerline display to a computer which modifies the deflection voltages in accordance with the signals from the receiver. The cathode-ray tube provides the perspective synthetic runway centerline display in accordance with the modified deflection voltages.

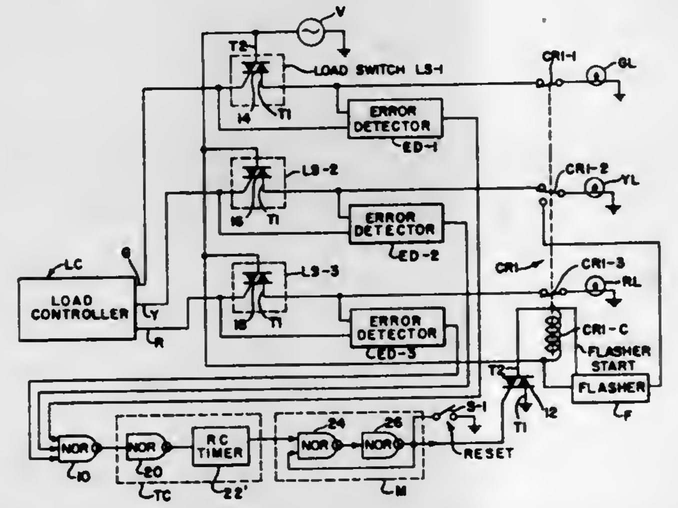
3,648,232
FLIGHT PATH DISPLAY INSTRUMENT
Alvin S. White, Marina Del Rey, Calif., assignor to Singer-General Precision, Inc.
Filed June 9, 1970, Ser. No. 44,677
Int. Cl. G08g *5/00*
U.S. Cl. 340—27 R **2 Claims**

An electro-optical flight instrument is provided which accepts input signals from appropriate sensors and transducers on an aircraft to provide a visual display of the pitch angle of

the aircraft, the visual display being established by means of a transparent screen positioned in the pilot's normal line of sight and focused at infinity. A servo reticle is driven in the instrument and is projected at infinity upon the transparent screen, the servo reticle displaying in degrees, the angle between the aircraft and the horizon.



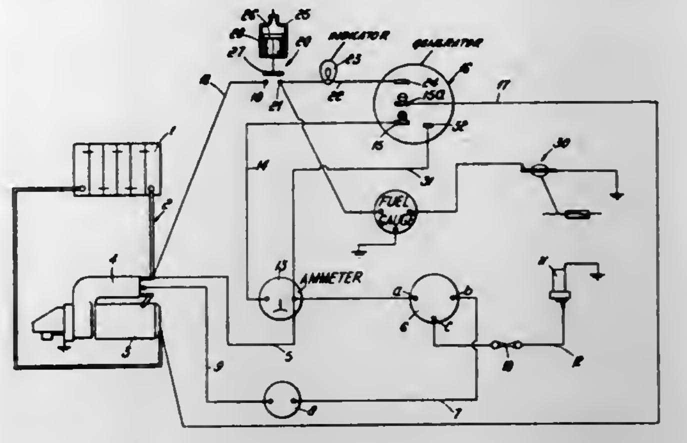
3,648,233
LOAD CONTROL ERROR DETECTOR
Larry K. Clark, Davenport, Iowa, assignor to Gulf & Western Industries, New York, N.Y.
Filed July 3, 1968, Ser. No. 827,079
Int. Cl. G08g *11/097*
U.S. Cl. 340—46 **6 Claims**



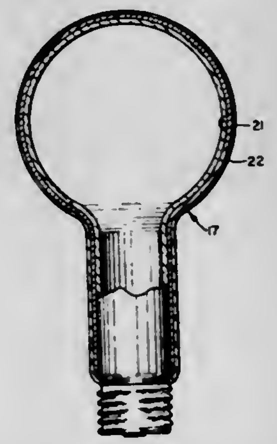
A load control error detector system is disclosed herein for use with a load control system having at least one energizable load. An activatable switching means, such as a triac, serves upon activation by a control signal to couple the load with an alternating current voltage source for energizing the load. A load control mechanism serves to provide a control signal for activating the switching means. More particularly, the error detector circuit serves to provide an error signal whenever the load is energized without a control signal being applied to the activatable switch mechanism.

3,648,234
AUTOMATICALLY ACTUATED VEHICLE INDICATOR
Bertram C. Belford, Balsall Common, Warwickshire, Great Britain, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands
Filed June 11, 1969, Ser. No. 832,260
Claims priority, application Great Britain, June 28, 1968, 30,830/68
Int. Cl. G08b *7/00*
U.S. Cl. 340—62 **1 Claim**

A vehicle electrical circuit includes a battery, a generator warning lamp and a generator in series. A normally open switch in the circuit closes in response to engine oil pressure to light the lamp which is extinguished when the generator field coil voltage equals battery voltage. A fuel gauge is also activated by the switch. This enables the electrical instruments to be automatically switched on and off by operation of the engine.



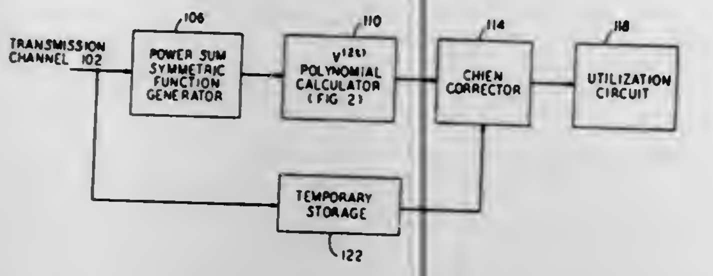
3,648,235
OPTICAL SYSTEMS
Michael R. Cahill, Bellerose, N.Y., assignor to The Marbelite Company, Inc., Brooklyn, N.Y.
Filed July 15, 1970, Ser. No. 55,060
Int. Cl. B60q *1/00*
U.S. Cl. 340—110 **11 Claims**



A traffic signal apparatus for illuminating a message in alternate colors carries two light sources of different light color outputs. A one-way light mirror is positioned about one of the light sources to allow passage of light therefrom and to reflect substantially all light from an outside source such as the second light source. This optical system construction avoids unwanted light color reflection on a message plate of the housing during periods when the light source outside of the mirror is illuminated and the light source in the mirror is unlit.

3,648,236
DECODING METHOD AND APPARATUS FOR BOSE-CHAUDHURI-HOCQUENGHEM CODES
Herbert O. Burton, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Apr. 20, 1970, Ser. No. 30,044
Int. Cl. G06f *11/00*; **G08c** *25/00*
U.S. Cl. 340—146.1 **9 Claims**

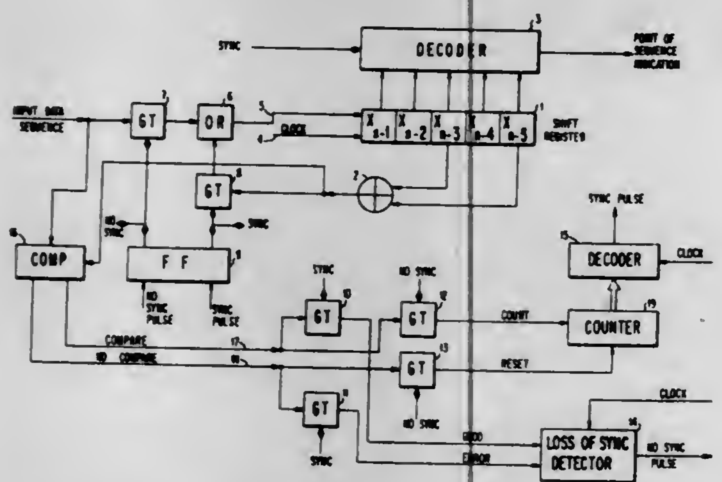
A method and apparatus are disclosed for decoding BCH codes. The disclosed method is an improvement of the so-called Berlekamp algorithm. A code word encoded in a t-error-correcting BCH code is first processed to obtain the power sum symmetric functions thereof. Utilizing these functions, certain equations are recursively solved by the arithmetic operations of addition and multiplication to obtain a polynomial whose roots give the location of errors in the code word.



3,648,237
APPARATUS AND METHOD FOR OBTAINING SYNCHRONIZATION OF A MAXIMUM LENGTH PSEUDORANDOM SEQUENCE

Alexander H. Frey, Jr., Gaithersburg; Burton E. Schlosburg, Takoma Park, and Ralph E. Tygielski, Derwood, all of Md., assignors to International Business Machines, Corporation, Armonk, N.Y.

Filed Feb. 28, 1969, Ser. No. 803,225
Int. Cl. H04l *7/08*
U.S. Cl. 340—146.1 7 Claims



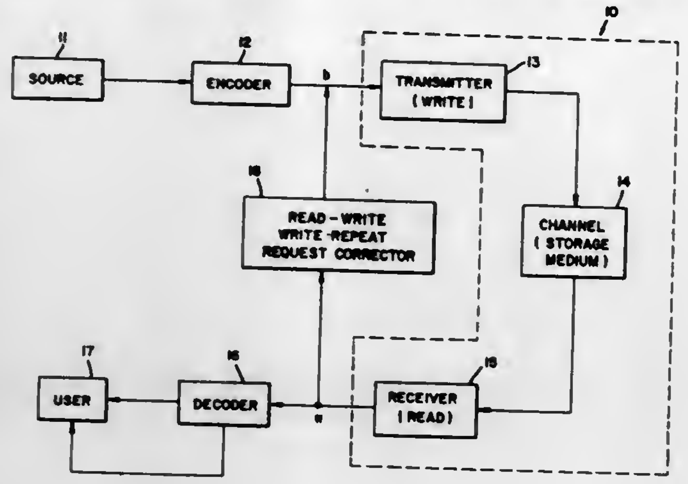
An apparatus and method for obtaining synchronization of a maximum length pseudorandom sequence included within input data. The apparatus comprises means for generating a predicted pseudorandom sequence, means for comparing the pseudorandom sequence with the input data and means for determining from said comparison whether said predicted pseudorandom sequence and said input data are the same. The method employed is a bit-by-bit comparison between the predicted values of a predicted pseudorandom sequence and the incoming values of the input data, synchronization is indicated when a predetermined number of successive comparisons are obtained, where said predetermined number of successive comparisons is less in number than the maximum length of the specified maximum length pseudorandom sequence.

3,648,238
ERROR-CORRECTING ENCODER AND DECODER FOR ASYMMETRIC BINARY DATA CHANNELS

Alfred R. Yarrington, San Jose, Calif., assignor to Precision Instrument Company, Palo Alto, Calif.

Filed May 15, 1970, Ser. No. 37,551
Int. Cl. G08c *25/00*
U.S. Cl. 340—146.1 13 Claims

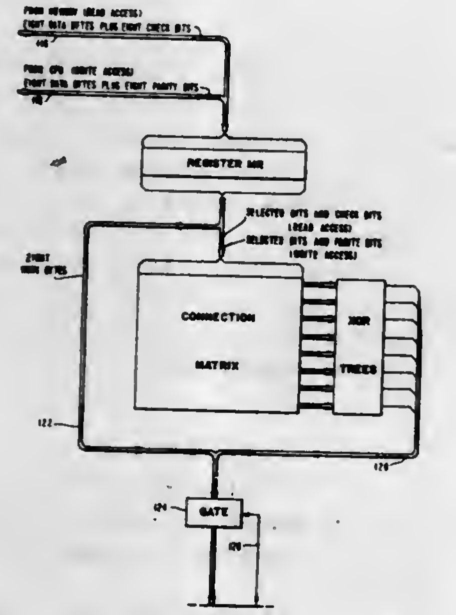
An encoding and decoding system for detecting and correcting error bursts of nonindependent multiple errors in asymmetric binary data channels. A message group is encoded by a burst error correcting cyclic code to form a code group consisting of message bits and check bits, the check bits being the remainder after division of the message bits by the cyclic code. The code group is complemented and the code group and its complement transferred to the asymmetric binary data bit channels. Upon retrieval, a bit-by-bit comparison of corresponding bits of the code group and its complement is used to detect an error in the retrieved data. The burst error pattern is compared with respective error syndromes in error cosets generated by division of the retrieved code group and its complement by the cyclic code group and its complement by the cyclic code to determine whether the error burst occurred in the code group or its complement. Correction of erroneous bits is made as the code group and its complement are shifted out.



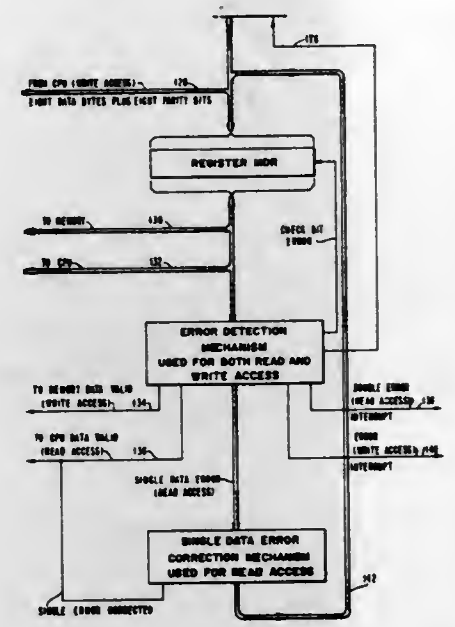
3,648,239
SYSTEM FOR TRANSLATING TO AND FROM SINGLE ERROR CORRECTION-DOUBLE ERROR DETECTION HAMMING CODE AND BYTE PARITY CODE

William C. Carter, Ridgefield, Conn.; Keith A. Duke, Wappinger Falls, and Donald C. Jessep, Jr., Poundridge, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,302
Int. Cl. G08c *25/00;* **G06f** *11/00*
U.S. Cl. 340—146.1 15 Claims


FROM MEMORY (READ ACCESS)
EIGHT DATA BYTES PLUS EIGHT CHECK BITS
FROM CPU (WRITE ACCESS)
EIGHT DATA BYTES PLUS EIGHT PARITY BITS
REGISTER MR
CONNECTION MATRIX
XOR TREES
GATE

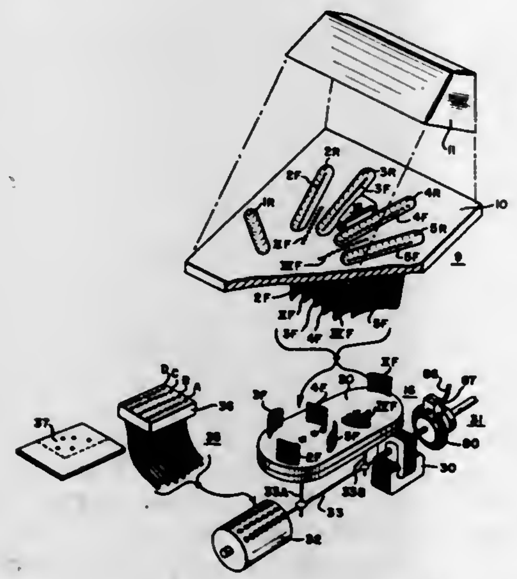
An SEC/DED error detection and data translation mechanism is described. By the use of unique circuit design features, the same logical circuitry is capable of automatically taking Hamming encoded data from memory and parity encoding same for transmission elsewhere in the system as well as forming the necessary syndromes for purposes of error detection and correction. The same circuitry is capable of receiving encoded data from elsewhere in the system, first checking for any parity error and, if parity is proper, will generate the necessary Hamming check bits for storing in the memory together with the data information. The disclosed circuitry, by means of the unique partitioning thereof, separates the error detection and correction functions. It also generates parity bits essentially in parallel with error detection after a memory read cycle with the result that the data is propagated through the correction circuitry only when a single data bit error is detected.


REGISTER MDR
ERROR DETECTION MECHANISM USED FOR BOTH READ AND WRITE ACCESS
SINGLE DATA ERROR CORRECTION MECHANISM USED FOR READ ACCESS

3,648,240
PERSONNEL IDENTIFICATION APPARATUS

Ian H. Jacoby, Franklin Lakes; Anthony J. Giordano, Midland Park, and Warren H. Floretti, West Caldwell, all of N.J., assignors to Identification Corporation, Northvale, N.J.

Filed Jan. 15, 1970, Ser. No. 3,100
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 E 12 Claims

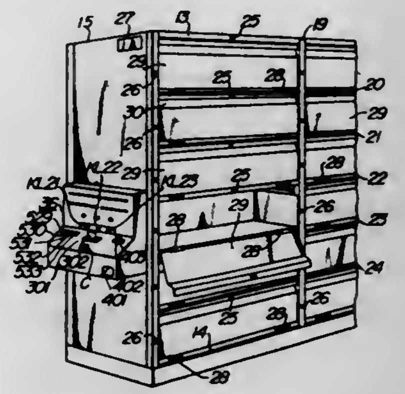


Apparatus is provided to electrooptically gauge predetermined dimensions of a human hand, circuit means are provided which automatically compare the gauged hand dimensions with the same selected hand dimensions that have been previously recorded and the person's identity is either verified or rejected.

3,648,241
STATIONARY STACK ASSEMBLY WITH REMOTELY CONTROLLED ACCESS

Han-Ichiro Naito, Akishima-shi, and Tsuneo Yamaguchi, Tokyo, both of Japan, assignors to Elecompack Company Limited, Shinjuku-ku, Tokyo, Japan

Filed Mar. 20, 1969, Ser. No. 808,930
Claims priority, application Japan, Mar. 22, 1968, 43/18577
Int. Cl. H04q *9/00*
U.S. Cl. 340—147 R 12 Claims

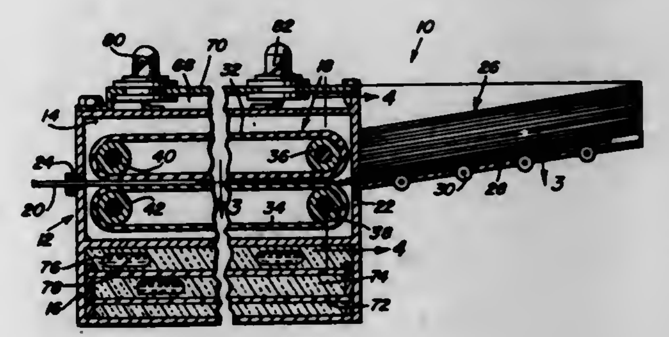


A stationary stack assembly comprising a plurality of suitably spaced stacks, which is so designed that the storage position of an article to be stored or taken out is indicated by operating keys on a keyboard in accordance with a code number representative of the storage position information or by means of a position card on which the storage position is previously memorized and the range of activity of an attendant in the stack assembly is restricted by the qualification accorded to the attendant and further the date and time when the article was stored or taken out, the attendant who handled the article and the storage position the article are recorded automatically.

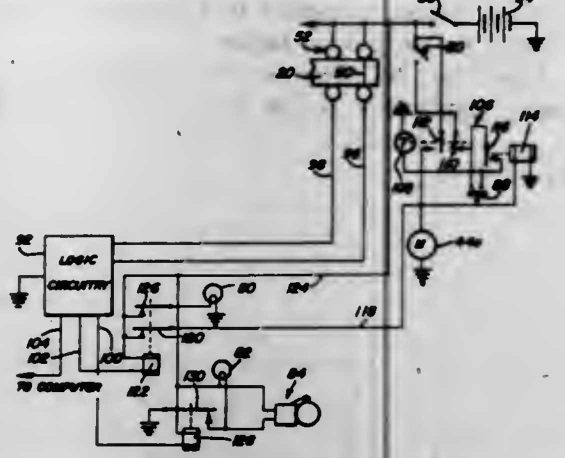
3,648,242
CARD VALIDATING APPARATUS AND METHOD

Gregory Grosbard, Long Beach, N.Y., assignor to Strategic Metals Research Inc.

Filed Oct. 23, 1968, Ser. No. 770,052
Int. Cl. H04g *3/70*
U.S. Cl. 340—149 13 Claims



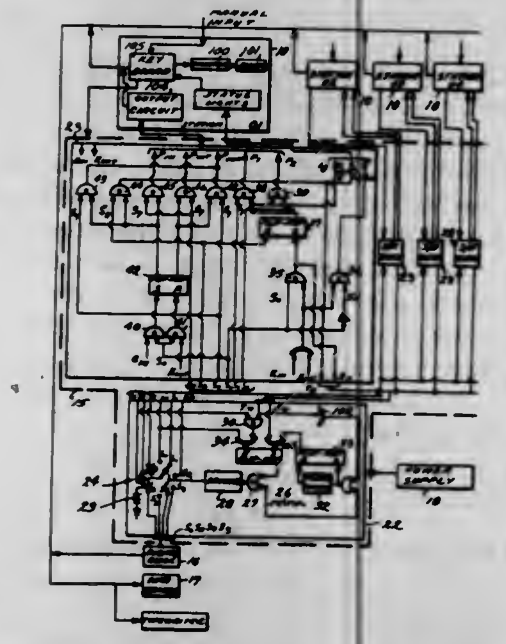
A record card internally structured in accordance with a predetermined code pattern is passed through a validating device to verify its genuineness and/or produce readin signals for a computer. The validating device senses coded informa-



tion which is processed through logic circuitry built into the device in such a manner as to prevent alteration thereof.

3,648,243
RECORDING SYSTEM FOR JOB-ACCOUNTING INFORMATION

Walter J. Wiggins, 308 North Tioga St., Ithaca, N.Y.
Filed Feb. 6, 1970, Ser. No. 9,387
Int. Cl. H04q *9/00*
U.S. Cl. 340—152 15 Claims

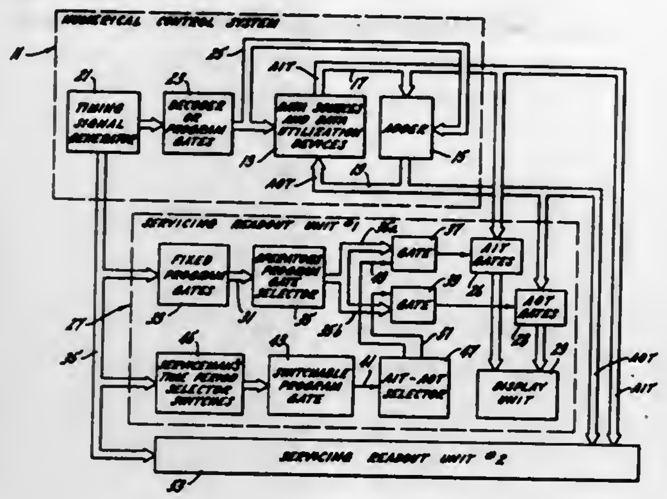


An apparatus for centrally recording digital job-accounting information from a plurality of remote stations with central station control means for allowing access from only one remote station to the central station at a time, means to record manually inserted check-in, checkout and job identification information and automatic means to automatically record all other desired job-accounting information. Indicator and warning means are also provided to assist in normal operation of the apparatus and/or warn an operator of possible missing manually inserted information.

3,648,244
READOUT SYSTEM FOR SELECTIVE DISPLAY OF DIGITAL DATA ON TIME-SHARED CONDUCTORS

John K. McGee, Houston, Tex., assignor to Giddings & Lewis Machine Tool Company, Fon du Lac, Wis.
Continuation of application Ser. No. 618,699, Feb. 27, 1967, now abandoned. This application Jan. 26, 1970, Ser. No. 6,036
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 18 Claims

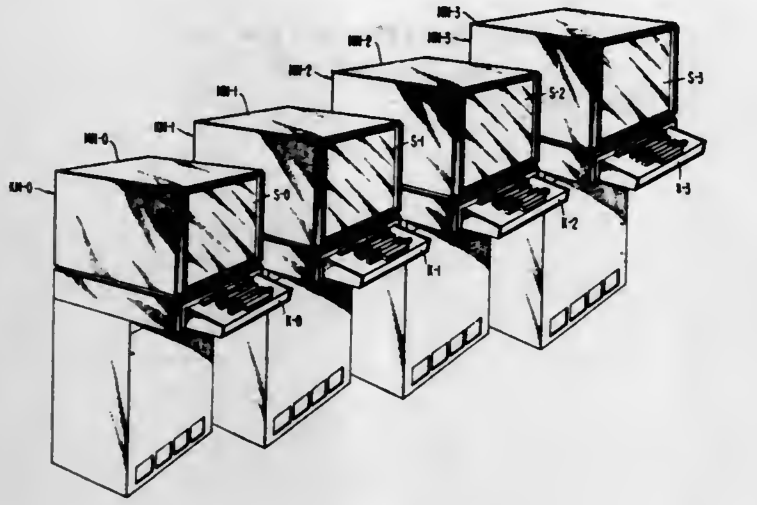
A two axis, digital, numerical control system for a turret lathe, using a common add-subtract unit which receives and sends information signals over a single pair of time-shared multiconductor trunk lines. A display device whereby infor-



mation signaled during a selected time period and at either the inputs or the outputs of the adder may be viewed. For a more detailed abstract see Table of Contents.

3,648,245
TIME-SHARED APPARATUS FOR OPERATING PLURAL DISPLAY MEDIA, AND DISPLAY METHODS INCLUDING PAGING, DISPLAYING SPECIAL FORMS AND DISPLAYING INFORMATION IN TABULATED FORM

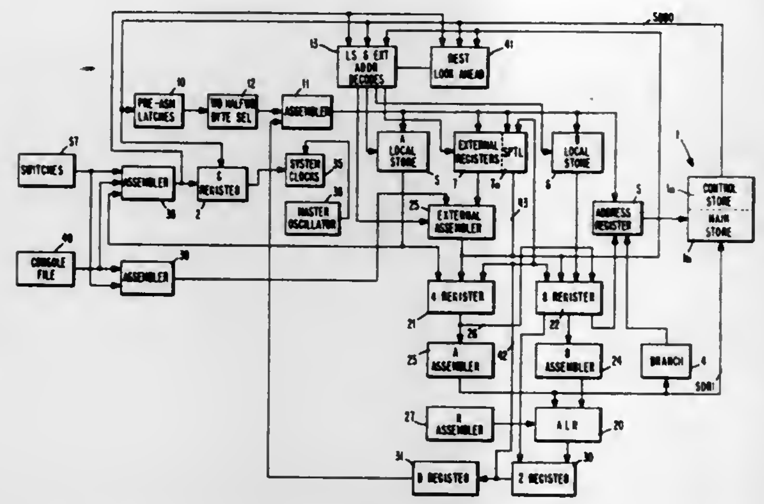
Thomas J. Dodds, Jr., Secane, Del.; Clegg Eagleson, Philadelphia, and Harold F. Gibson, Downingtown, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.
Filed Jan. 30, 1970, Ser. No. 7,055
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 14 Claims



A cathode-ray tube display terminal having a single cathode-ray tube keyboard-monitor or plural cathode-ray tube keyboard-monitors which time-share a magnetic core memory, a symbol generator, a printer and an input/output section for two-way communication with a digital computing system. The digital computing system may select any one of the keyboard-monitors, or some or all of the keyboard-monitors to receive information. Methods are disclosed for displaying information in tabulated form, for transmitting and receiving information in excess of the capacity of the cathode-ray tube screen, and for displaying special forms which limit operator access to predefined areas of the cathode-ray tube screen.

3,648,246
DECIMAL ADDITION EMPLOYING TWO SEQUENTIAL PASSES THROUGH A BINARY ADDER IN ONE BASIC MACHINE CYCLE

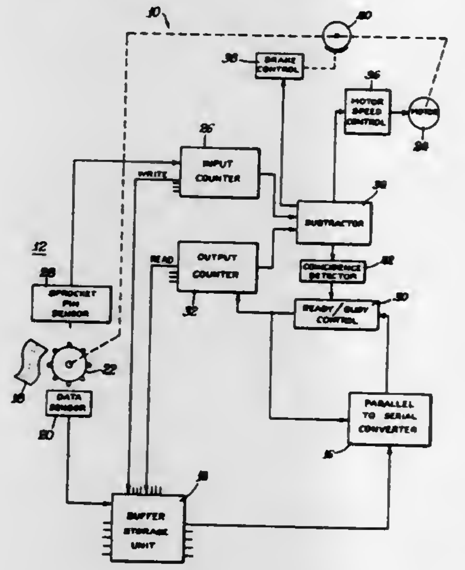
Frank A. Zurla, Johnson City, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 16, 1970, Ser. No. 29,225
Int. Cl. G06f *7/38*
U.S. Cl. 340—172.5 5 Claims



The present improvement makes use of a high-speed microprogrammed processor which has means for selecting the time duration of each basic machine cycle as the current control word is being executed. During a decimal add operation, the decimal operands are processed as normal binary values and the result is processed a second time in the binary adder to correct the result if necessary. The two ALU (arithmetic and logic unit) steps are executed during one machine cycle which is slightly longer than a normal binary add (or prior art decimal add) cycle; however, this arrangement improves overall processor performance by removing a stage of delay from the ALU input for all ALU operations. In addition, decimal error checking savings are effected.

3,648,247
DATA HANDLING SYSTEM

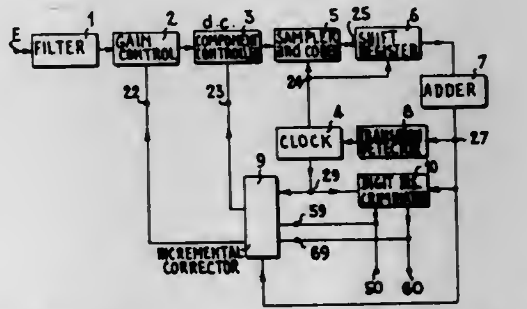
John Guzak, Jr., Arlington Heights, Ill., assignor to SCM Corporation, New York, N.Y.
Filed Apr. 22, 1970, Ser. No. 30,632
Int. Cl. G11c *9/00;* G06f *5/04*
U.S. Cl. 340—172.5 13 Claims



A system for transferring successive data units from a record reader to a data processor includes a buffer which is coupled between the reader and the processor and which has a plurality of individually addressable stages each adapted to store a single data unit. One counter addresses the storage elements to receive successive input data units and maintains a running count of the number, while a second counter does the same for withdrawn data units. A logic circuit controlled by the two counters establishes the difference between the number of data units supplied and withdrawn and continuously varies the speed of the record reader in an attempt to maintain the system in continuous operation. As an example, the reader speed is increased when the difference between supplied and withdrawn data units is decreased, and reader speed is decreased when the difference is increased, thereby to avoid either emptying or filling the buffer.

3,648,248
APPARATUS INCLUDING SAMPLING AND QUANTIZING MEANS FOR DISCRIMINATING RECEIVED DIGITAL SIGNALS

Pierre Deman, and Jean Pierre Gouyet, both of Paris, France, assignors to Thomson-CSF and Jean Daniel Label
Filed June 8, 1970, Ser. No. 44,045
Claims priority, application France, June 13, 1969, 6919677
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 5 Claims

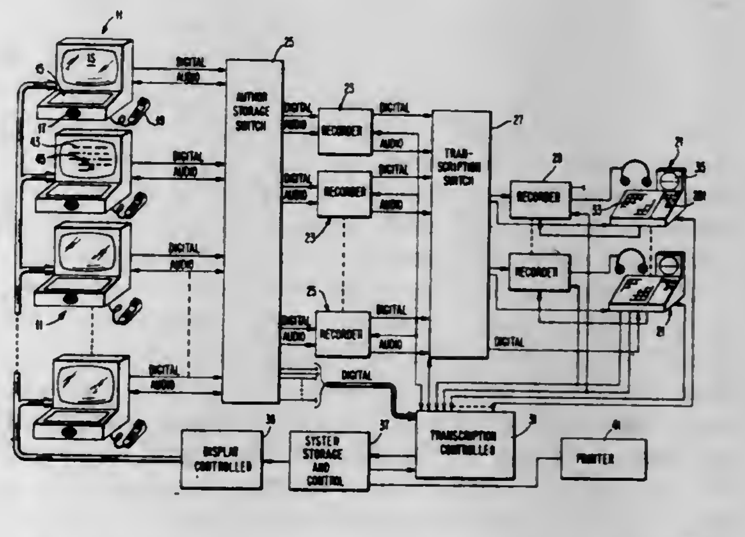


A device for processing digital pulse code modulated signals comprises means for sampling and quantizing the signal at a frequency which is a multiple of that at which the digits are transmitted. These samples are stored and summed after each sampling operation.

The result of the summing is fed to reference threshold devices to generate the requisite parameters for the control of the receiver, by means of logic circuits.

3,648,249
AUDIO-RESPONSIVE VISUAL DISPLAY SYSTEM INCORPORATING AUDIO AND DIGITAL INFORMATION SEGMENTATION AND COORDINATION

Paul E. Goldsberry, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 8, 1970, Ser. No. 96,036
Int. Cl. G06f *7/00;* G11b *11/00*
U.S. Cl. 340—172.5 12 Claims



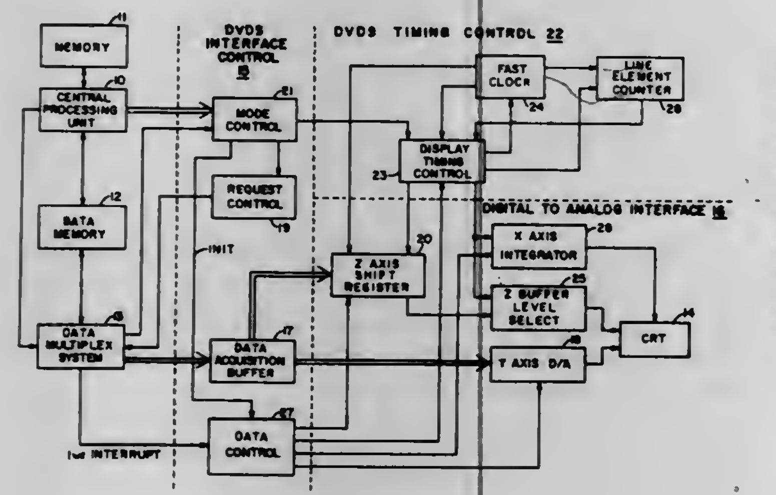
Each of a plurality of segments of dictated audio information from a plurality of remote author terminals is switched under system control to one of a plurality of operator transcription stations for transcription of the audio information. System controls further effect the placement of transcribed information in machine readable form in system storage in proper sequence for display at the originating author terminal. System controls are facilitated by the recording of digital identification signals alongside recorded segments of audio information, the digital signals insuring proper system information identification and sequencing. Simple author controls enable selected text recall and display, text form and content modification and text highlighting. Further author controls effect audio text segmentation.

3,648,250

DIGITAL VIDEO DISPLAY SYSTEM USING CATHODE-RAY TUBE

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of; Arthur I. Zygielbaum, Alhambra; Warren L. Martin, and Alexander Engel, both of LaCanada, all of Calif.

Filed Nov. 13, 1970, Ser. No. 89,209
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **16 Claims**



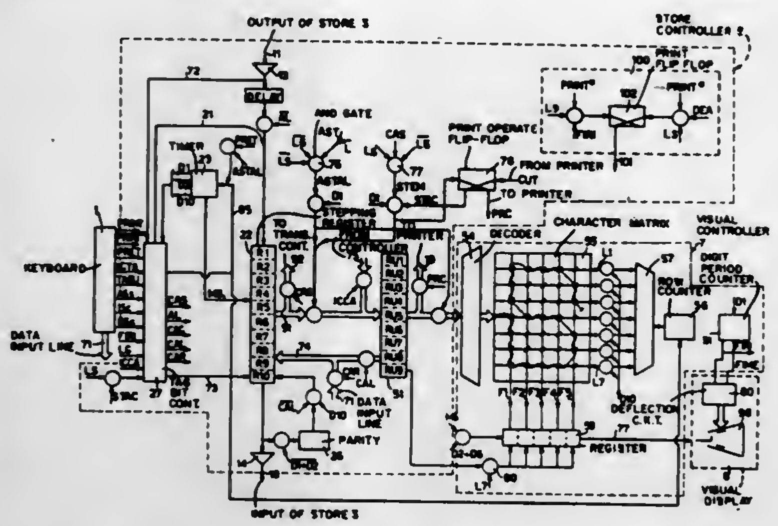
A digital video display system (DVDS) is disclosed for display of image, alphanumeric and other data on a cathode-ray tube (CRT) with sequential raster scan and two, four or eight gray shades. The DVDS includes a central processing unit for activating the system, selecting the X (horizontal axis) and Z (intensity modulation) modes, and designating the starting location of two successive rasters of data from a memory accessed by a data multiplexer subsystem (DMS). At the end of each raster, the DMS interrupts the computer for a new starting location of a raster of data to follow the next while a DVDS control subsystem is prepared for the next raster. The first word of raster data designates the Y-axis value to be transmitted to the CRT vertical deflection system through a static digital-to-analog converter. Each word thereafter contains a predetermined number *n* of bits for *n*/3, *n*/2 or *n*/1 display elements (DE) in the respective eight, four and two gray shade modes. DE groups are transmitted to the CRT intensity control through a static digital level select network. As each DE group is read, an X-axis integrator is incremented by one, two or four units depending upon the X-axis mode selected. A counter determines when all DE groups of a word have been displayed in each of the gray shade modes, and resets all of the DVDS, thereby shutting off display after one, two or three DMS-memory cycles in the eight, four and two gray shade modes, respectively, until the next word is automatically read out of memory as a separate counter in the DVDS keeps track of the DMS-memory cycles for the different gray shade modes.

3,648,251

TERMINAL APPARATUS FOR TRANSMITTING AND RECEIVING INFORMATION

Francesco Serracchioli, Banchette, and Antonio Bartocci, Ivrea, both of Italy, assignors to Ing. C. Olivetti & C.S.p.A., Ivrea (Turin), Italy

Filed Jan. 29, 1969, Ser. No. 794,870
Claims priority, application Italy, Feb., 1968, 50567-A/68
Int. Cl. G06f *3/12, 13/02*
U.S. Cl. 340—172.5 **3 Claims**



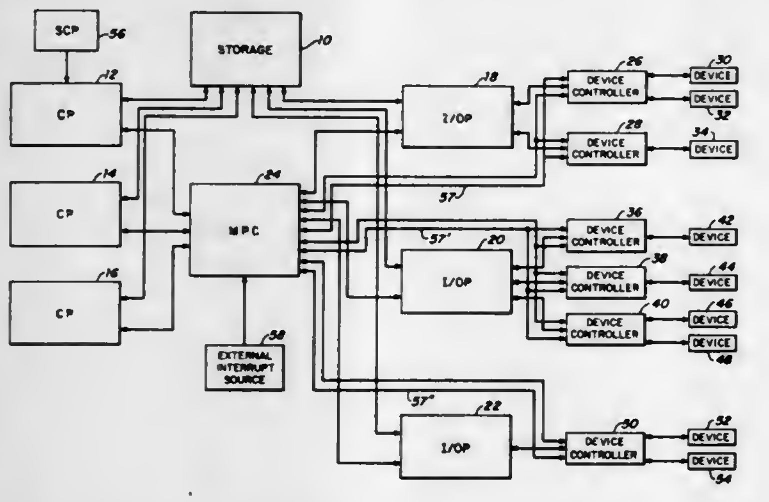
A display and printing terminal for a data processing system including a serial recirculating store for storing the information to be sent to or received from the processing system, a keyboard for entering information into the store and a display device for displaying the information in the store. A selectively actuable printing device which operates asynchronously with the store, prints out the information contained in the store. The recording of control characters at selected locations in the store allow portions of the information to be deleted during print out.

3,648,252

MULTIPROGRAMMABLE, MULTIPROCESSOR COMPUTER SYSTEM

John E. Thron, Cambridge; William E. Woods, Natick, both of Mass.; Ronald Bellettiere, Philadelphia, Pa., and Howard Stein, University Heights, Ohio, assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 3, 1969, Ser. No. 873,381
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **10 Claims**



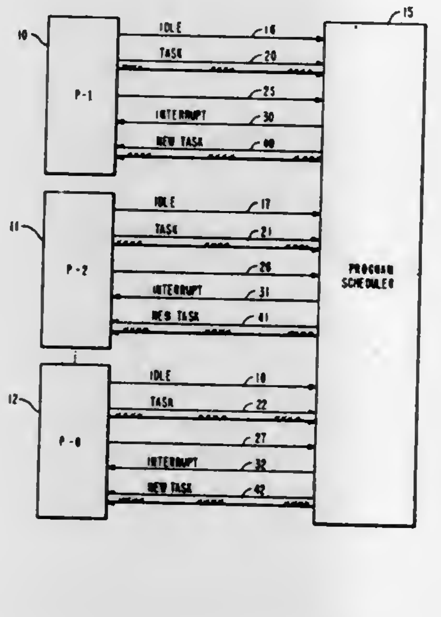
A multiprogrammable, multiprocessor computer system is disclosed including at least one central processor for performing arithmetic and logic operations, at least one input/output processor for performing input and output operations, storage means connected with each of the processors and adapted for storing central processor programs associated with the central processor and channel programs associated with the input/output processor, and a multiprocess controller connected to each of the processors for accepting control of a program from a processor in response to an interrupt and providing control of another program to that particular processor in accordance with a predetermined priority arrangement including a plurality of activity state indicators, one associated with each of the programs in the storage means, each of the activity state indicators representing the activity state of its respective program.

3,648,253

PROGRAM SCHEDULER FOR PROCESSING SYSTEMS

Alvin P. Mullery, Chappaqua, and Frank W. Zurcher, Jr., Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y. and Burroughs Corporation, Detroit, Mich.

Filed Dec. 10, 1969, Ser. No. 883,983
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **40 Claims**



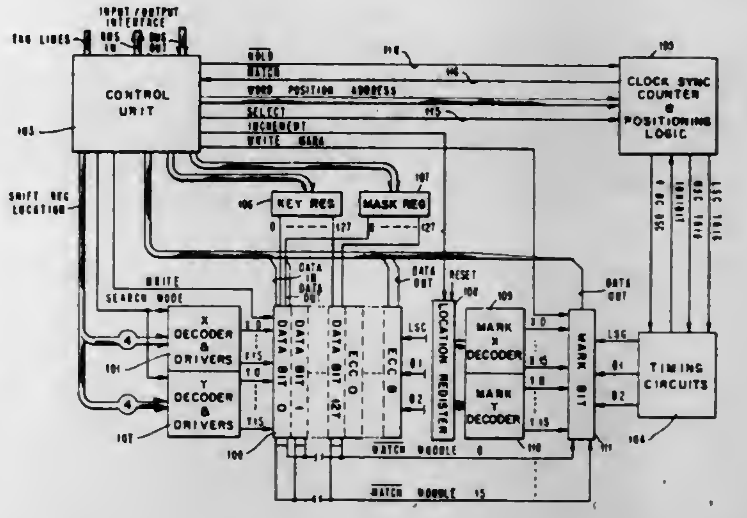
A program scheduler is provided for use with a multiprocessor system or its equivalent, such as a multiprogrammed processor unit, and the program scheduler receives tasks to be executed, schedules them for assignment, allots a task to each processor and interrupts the processors to assign new tasks. The program scheduler includes a plurality of buckets or tables where task words are stored, and associated with each task word is a T_e field which specifies the estimated processor time required to complete the task and a T_d field which indicates the time remaining before the task must be completed. The ratio T_e/T_d provides an indication of the need of each task word for processor service since the need for such service becomes more urgent as the ratio approaches 1. A scheduling algorithm periodically recalculates the service ratio and shifts tasks, if need be, from one table to another whereby tasks with a similar service ratio are stored in a common table. Task words within a given table are divided into classes according to the length of time a task has not received service. An allocation algorithm allots tasks to processors from the older classes first and proceeds in sequence through the various classes to the latest classes. Both the scheduling algorithm and the allocation algorithm service all tables in the program scheduler, but the tables with higher service ratios are serviced more often by each algorithm than tables with lower service ratios. When many task words are awaiting processor service, a given task word receives processor service at a rather low frequency when it has a small service ratio, but it receives processor service at a relatively high frequency as its service ratio approaches 1.

3,648,254

HIGH-SPEED ASSOCIATIVE MEMORY

William F. Beausoleil, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,434
Int. Cl. G06f *7/34*
U.S. Cl. 340—172.5 **16 Claims**



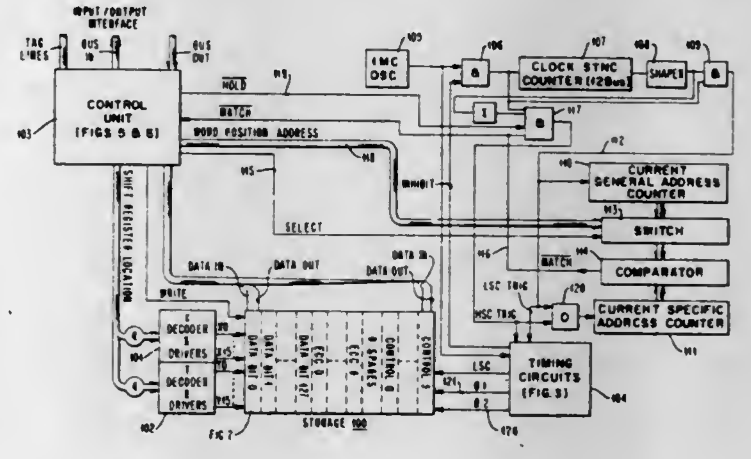
An associative search apparatus for an electronic bulk storage in which data are stored in parallel by word in a plurality of memory elements in which data bits are electronically rotatable. The memory elements are selectable by a memory selection matrix. Search tables are organized on a modular basis so that the simultaneous search of many table entries is accomplished at one time. Smaller or larger logical entries are searched within the system by executing several search operations. The first search operation marks the location of where word match conditions occurred in the first table search. The second search operation compares the second search argument against the second table only at the same relative positions where matches occurred in the first table. Marking enables any table regardless of size to be searched by using the results of a previous search operation to determine the entries to be searched on subsequent search operations.

3,648,255

AUXILIARY STORAGE APPARATUS

William F. Beausoleil, Poughkeepsie, N.Y.; Fred A. Ordemann, Jr., San Jose, Calif.; Wilbur D. Pricer, Poughkeepsie, N.Y., and Norbert G. Vogl, Jr., Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,435
Int. Cl. G06f *7/34*
U.S. Cl. 340—172.5 **34 Claims**



An electronic bulk storage having the characteristics of a sequential access storage device, such as a disk or a drum, but which has a low-access time and a variable instantaneous data rate. Data re stored parallel by word in a plurality of electronically rotatable memory elements selectable by a memory selection matrix. Each element has a feedback loop for recirculating data and when selected, a group of elements is read or written in parallel to a word at a time by electronically rotating the selected memory elements.

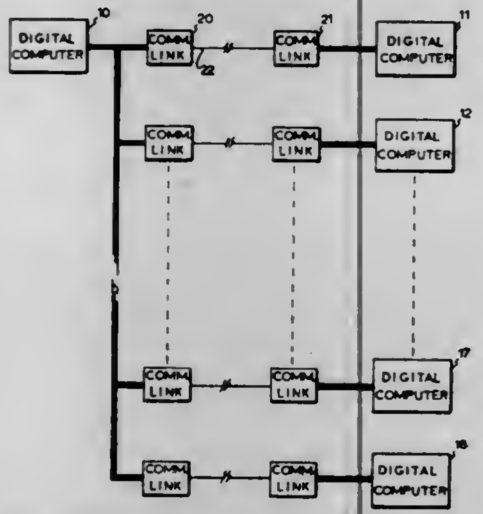
3,648,256
COMMUNICATIONS LINK FOR COMPUTERS

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Arthur I. Zygielbaum, Alhambra; James W. Layland, Pasadena, and Warren L. Martin, LaCanada, all of Calif.

Filed Dec. 31, 1969, Ser. No. 889,374

Int. Cl. G06f *15/16*

U.S. Cl. 340—172.5 **17 Claims**



A system is disclosed for a computer to communicate with a selected one of a plurality of other computers through two identical communications links associated with the communicating computers. A single channel connects the two links which operate at a clock rate independent of the computers. Binary digits and clock pulses are combined and converted into a three-level signal for serial transmission over the single channel. Both control messages and data words may be transmitted. Each message and word transmitted is checked for error by the receiving link before it is accepted and the receiving computer is interrupted. If error is found, an error message is automatically transmitted to the originating computer.

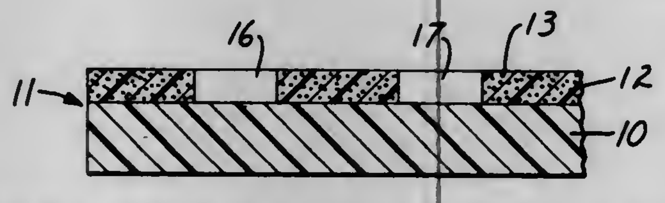
3,648,257
SHEETLIKE MATERIAL, THE METHOD OF STORING AN IMAGE CONSISTING OF DIFFERING MAGNETIC, ELECTRICAL, AND OPTICAL PROPERTIES

Joseph A. Wiese, Jr., and William B. Barte, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Original application Aug. 24, 1966, Ser. No. 574,791, now Patent No. 3,526,542. Divided and this application Dec. 1, 1969, Ser. No. 879,952

Int. Cl. G11c *13/02, 13/04, 11/14*

U.S. Cl. 340—173 LS **9 Claims**



Methods of recordation, development, and readout of information from a sheetlike storage medium having an imaging layer which includes a homogeneous mixture of a halogen-containing binder and alpha ferric oxide. The medium is recorded with an information-modulated high-energy beam, developed with heat, and read out by detecting changes in the field created by exposing the medium to a uniform field of electromagnetic energy.

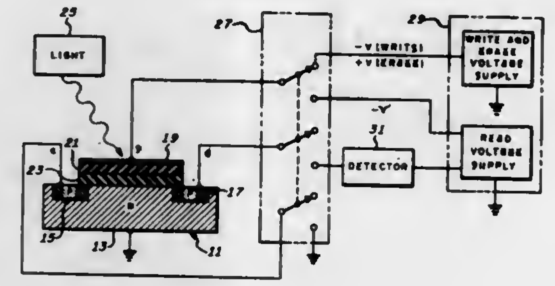
3,648,258
OPTICAL MEMORY CIRCUIT

Frank A. Sewell, Jr., Newton Centre, Mass., assignor to Sperry Rand Corporation

Filed July 1, 1969, Ser. No. 838,279

Int. Cl. G11c *11/42, 13/04*

U.S. Cl. 340—173 LS **9 Claims**



A memory circuit contains a variable threshold transistor arranged to receive optically coded information from an external light source. A WRITE voltage pulse is applied between the gate electrode and the substrate during the WRITE interval. The source and drain elements of the transistor are left "floating" during a WRITE interval whereupon the conduction threshold of the transistor assumes a level dependent upon the amplitude and duration of the WRITE voltage pulse and the intensity of the light received from the external source. Subsequently applied READ voltages produce a drain current having a magnitude indicative of the intensity of the light received during the occurrence of the WRITE voltage pulse.

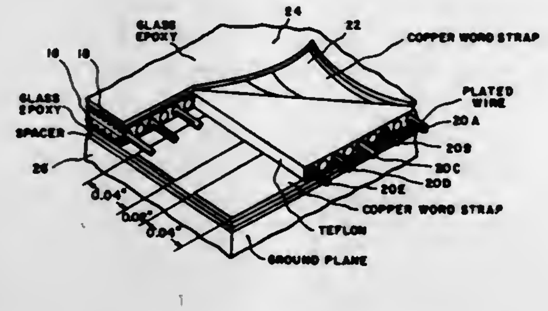
3,648,259
PLATED WIRE MEMORY

Robert D. Fisher, and Ernest W. Jones, both of Woodstock, N.Y., assignors to Ferroxcube Corporation, Saugerties, N.Y.

Filed June 22, 1970, Ser. No. 48,158

Int. Cl. G11c *5/04, 11/04, 11/14*

U.S. Cl. 340—174 PW **8 Claims**



A noise-reduction scheme in a plated wire memory array contemplates the use of a nonswitchable noise-cancelling wire made of magnetically coated beryllium copper and placed coplanar and on the same center-to-center spacing as the remainder of the switchable wire array. The magnetic proximity loading effect of the noise-cancellation wire is equivalent to the effect of the magnetically coated plated wire and thus interposition of the noise cancellation wire on an equivalent geometric spacing with the array does not create a magnetic anomoly.

3,648,260
MAGNETIC DEVICES

Ernst M. Gyorgy, Madison; Richard C. Sherwood, New Providence, and Le Grand G. Van Uitert, Morris Township, all of Morris County, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 17, 1969, Ser. No. 877,369

Int. Cl. G11b *5/62*

U.S. Cl. 340—174 TF **4 Claims**

Partial substitution of small amounts of cobalt may result in a reduction in size of "bubble" magnetic domains in a variety of canted antiferromagnetic materials exemplified by rare earth orthoferrites. The reduction in domain size is ordinarily accomplished by virtue of a shift in the magnetic reorientation temperature, permitting improved device operation in this temperature region.

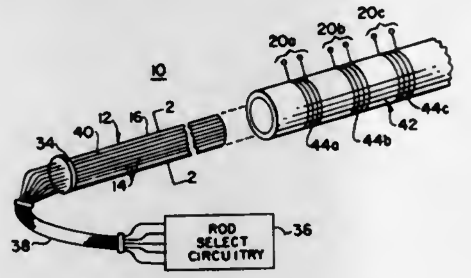
3,648,261
MAGNETIC ROD READ ONLY MEMORY

Cebern B. Trimble, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed May 18, 1970, Ser. No. 38,458

Int. Cl. G11c *17/00, 11/04*

U.S. Cl. 340—174 SP **10 Claims**



A row by column read only memory matrix utilizes etched magnetic rods as the memory elements of the matrix. Each rod is divided into a given number of equilength ordered sections and the rods are positioned so that corresponding sections of each rod are in alignment. In this manner the rods form the rows of the matrix and the aligned sections from the columns of the matrix. A coil is wound around each row of the matrix. Various circuits are shown by which the read only memory can be operated with either a parallel output or a serial output.

3,648,262
MEMORY ARRANGEMENT

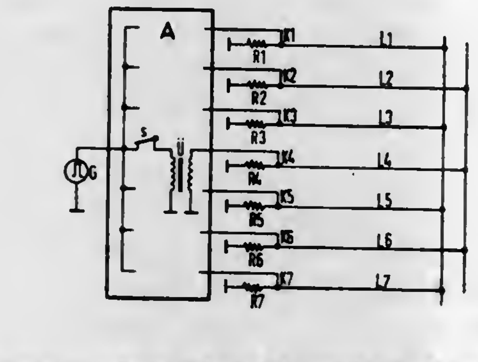
Hermann Kadow, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 25, 1969, Ser. No. 836,496

Claims priority, application Germany, July 3, 1968, P 17 74 500.5

Int. Cl. G11c *7/00, 11/06*

U.S. Cl. 340—174 M **6 Claims**



A memory system having a plurality of control lines, to individual lines of which impulses from a source of constant current may be selectively applied, each line being provided with inductive feed, and having a termination at the feed end thereof at least corresponding approximately with its wave resistance, the other ends of the parallel control lines being interconnected at least in groups with return flow being effected over other of associated lines whereby such connecting points are not led to a ground or other specific return line to improve the characteristics of the control lines as wave conductors and shorten the buildup processes associated with the return current, and thereby achieve an increase in operating speeds.

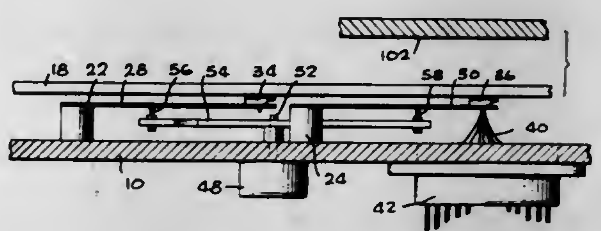
3,648,263
DATA HEAD ACTUATION APPARATUS AND CIRCUIT

George H. Kunstadt, 19005 Ventura Blvd., Tarzana, Calif.

Filed May 11, 1970, Ser. No. 35,985

Int. Cl. G11b *21/04*

U.S. Cl. 340—174.1 E **12 Claims**



Magnetic discs and drums are employed as computer memories and have data heads aerodynamically supported on the boundary air layer as the memory medium rotates. The data heads are mounted on leaf springs and are lifted from the magnetic surface when the magnetic medium is stopped. The data heads are driven toward the surface into an aerodynamic lift relationship adjacent the moving magnetic surface as the surface approaches top speed. The data head driver is a solenoid which receives increased energization in the last stages of magnetic medium drive motor speed increase.

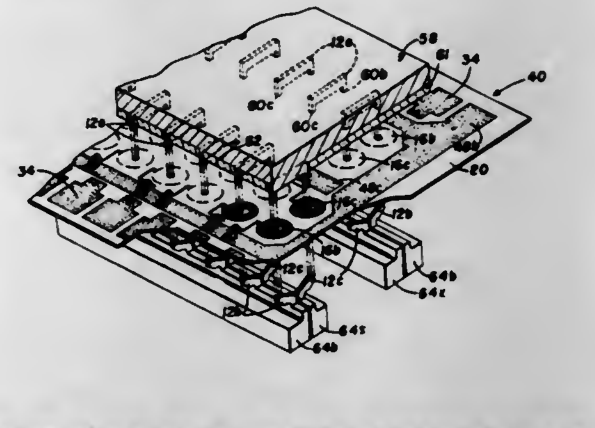
3,648,264
MAGNETIC HEAD WITH PRINTED CIRCUIT COIL

Norman P. Gruczelak, King of Prussia, Pa., and Joe T. Pierce, Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 30, 1968, Ser. No. 763,751

Int. Cl. G11b *5/20, 5/42*

U.S. Cl. 340—174.1 F **1 Claim**



An array of read-write heads for a magnetic storage means, such as a disk or drum, is disclosed. Each head is comprised of a flux carrying means, such as a gapped ferrite loop and a flux-producing means, such as a pair of coils inductively coupled to the loop. The coils, together with a portion of the associated addressing circuitry, are supported by a substrate. The halves of the ferrite loops that lie on opposite sides of the substrate are formed as separate ferrite parts. The halves of the ferrite loops are disposed on opposite sides of the coil assembly so that the halves of the loops mate through holes in the substrate and form the gapped ferrite loops.

In one embodiment, the halves of the ferrite loops are partially formed on the faces of ferrite blocks which support the loop halves during fabrication. After the halves are assembled on opposite sides of the substrate, the excess material of the ferrite assemblies is cut away to leave the discrete ferrite loops and the associated coils embedded within a solid structure which also appropriately isolates the parts electrically and magnetically.

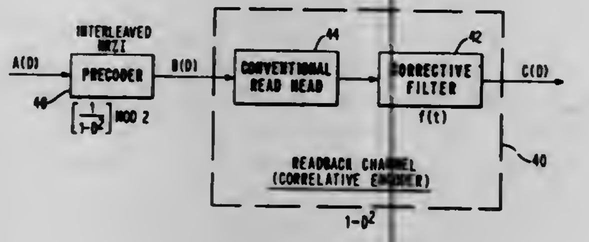
In another embodiment, the halves of the ferrite loops are formed individually and supported by a ceramic housing during mating with the coil assembly and the other halves of the loops.

The substrate can be an insulator, such as glass, in which case the coil circuitry can be a photographically patterned metal film and the addressing diodes discrete semiconductor devices. Or the substrate can be a semiconductor, in which case either the coils or the addressing diodes, or both, may be diffused in the sheet of semiconductor material. Or the substrate may be a selectably reducible material such as YIG or TiO_2 in which conductive paths can be selectively formed in the substrate by a scanned energy beam. Or the substrate may be the face of a subassembly for holding either of the halves of the ferrite loops prior to final assembly, or coils may be formed on the faces of both subassemblies.

3,648,265
MAGNETIC DATA STORAGE SYSTEM WITH INTERLEAVED NRZI CODING

Hisashi Kobayashi, West Los Angeles, Calif., and Donald T. Tang, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,051
Int. Cl. G11b *5/06*; H03k *13/00, 13/24*
U.S. Cl. 340—174.1 G **2 Claims**



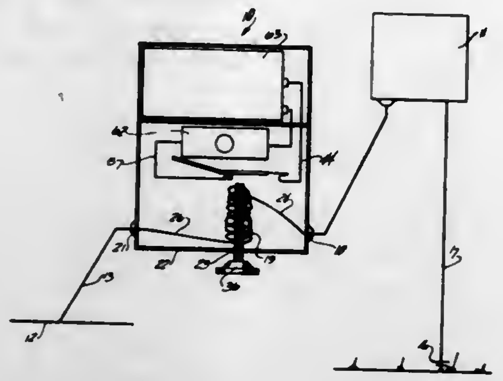
A digital magnetic recording system which uses conventional NRZI coding and a readback channel of conventional design operates, in effect, as a precoding and correlative level coding process that is characterized by a transfer function of 1-D (where "D" is a delay operator). Under these conditions, the minimum spacing that can be permitted between adjacent digit symbols in the magnetic recording medium without incurring excessive intersymbol interference during readback is rather large and severely limits the recording density. The present invention uses interleaved NRZI coding and a special filter in the readback channel to provide a precoding and correlative level coding scheme characterized by a transfer function $1-D^2$. This mode of operation permits much denser packing of the data in the recording medium without causing excessive intersymbol interference during readback.

3,648,266
ELECTRIC FENCE SHORT DETECTOR

Vernon W. Crist, Wessington Springs, S. Dak.

Filed Apr. 17, 1970, Ser. No. 29,591
Int. Cl. G08b *21/00*
U.S. Cl. 340—254 **5 Claims**

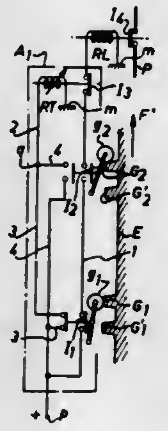
An apparatus to be used in conjunction with an electric fence, whereby when the fence is shorted, a current impulse is provided in a coil in the apparatus which causes a core to be magnetized to attract an armature, thus completing an internal circuit and activating an indicator device.



3,648,267
METHOD OF DETECTION OF THE SPEED OF A MOVING BODY IN EXCESS OF A REFERENCE SPEED, AND THE CORRESPONDING APPARATUS

Jean Lavaresne, Villecresnes, France, assignor to Nord-Aviation Societe Nationale de Constructions Aeronautiques, Paris, France

Filed June 12, 1969, Ser. No. 832,787
Claims priority, application France, June 14, 1968, 155124
Int. Cl. G08b *21/00*
U.S. Cl. 340—263 **7 Claims**



The present invention relates to a method of detection of the speed of a moving body in excess of a predetermined reference speed, the said moving body being displaced with respect to a fixed reference. It also concerns an apparatus for carrying into effect the above method, especially applicable to the control of the speed of members of automatic flight apparatus for aircraft.

The stopping of the said moving body is effected by the change in state of a circuit capable of assuming the two states, interrupted or established, and that the said change in state is caused by simultaneously bringing to the closed condition, three detectors of the interrupted or established state of a single circuit, when the speed of the moving body exceeds the limiting speed.

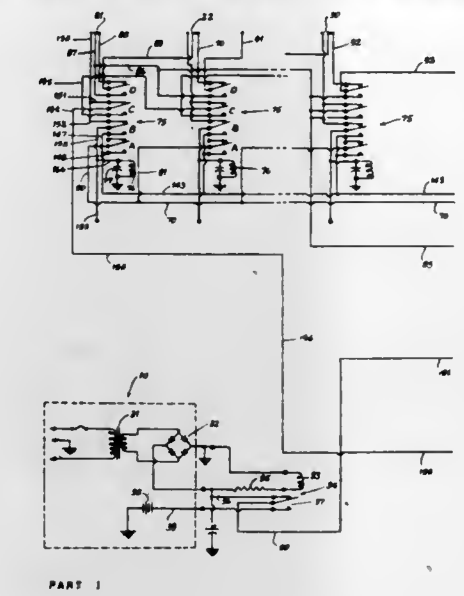
3,648,268
SURVEILLANCE AND ALARM SYSTEM

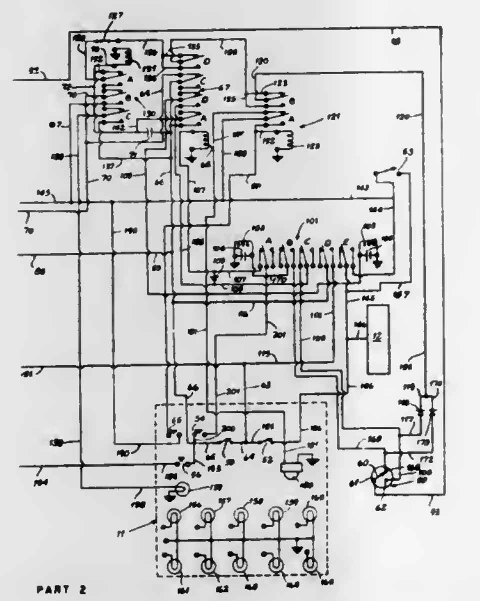
Melvin Paull, 8001 Rosline Drive, St. Louis, Mo.

Filed Nov. 3, 1969, Ser. No. 873,468
Int. Cl. G08b *13/22*
U.S. Cl. 340—276 **43 Claims**

A surveillance and alarm system having a plurality of entry responsive means for detecting entry into predetermined locations throughout a building, and indicating means for

maintaining surveillance on the building and for indicating the number and locations of entries into the locations. Means are also provided for maintaining a closed series loop circuit between entry responsive means and for indicating any interruption in signal in the series loop circuit. The system further includes an external signalling device responsive to an entry or an interruption in signal, and means for selecting any one of several system mode variations.

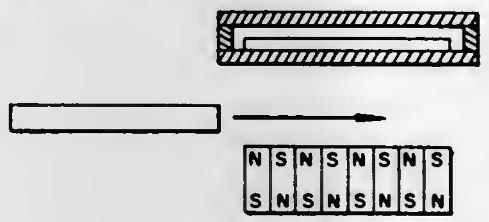




3,648,269
MAGNETIC FLUID DISPLAY DEVICE

Ronald E. Rosenweig, Lexington, Mass.; Joseph Resnick, deceased, late of New York, N.Y.; Louis Berger, executor; Harry Resnick, executor, and Peter Messina, executor, all of Ellenville, N.Y., assignors to Ferrofluidics Corporation, Burlington, Mass.

Filed July 16, 1970, Ser. No. 55,392
Int. Cl. G08b *5/22*
U.S. Cl. 340—373 **21 Claims**

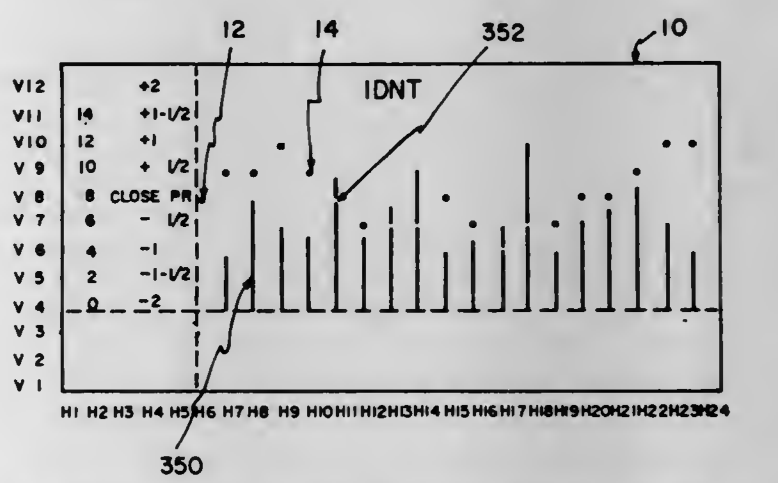


An immiscible, transparent fluid and an opaque magnetic fluid are contained within a defined volume, such as a sandwich-type construction having a transparent face through which an optical display may be observed. The transparent fluid preferentially wets the wall and results in complete displacement of opaque fluid when the fluids are moved one to the other. A magnetic field captures the magnetic fluid in a predetermined optical pattern. The optical pattern is controlled by varying the intensity and location of the magnetic field to produce various patterns.

3,648,270
GRAPHIC DISPLAY SYSTEM

Robert Lee Metz, Nichols, and Carl Greenblum, Stamford, both of Conn., assignors to The Bunker-Ramo Corporation, Stamford, Conn.

Filed Aug. 11, 1969, Ser. No. 848,901
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **35 Claims**

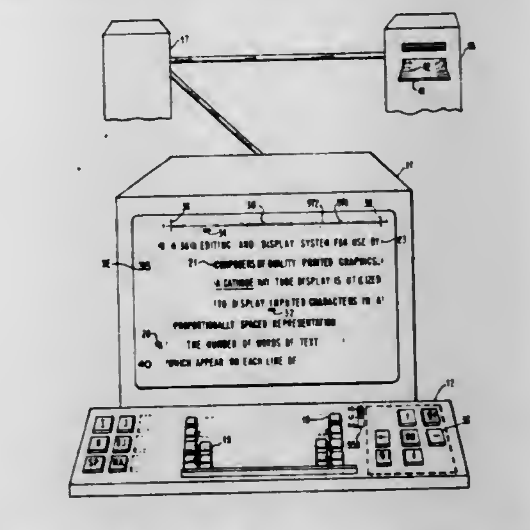


A graphic display system including separate means for storing a representation of a value to be graphically displayed and a reference value which is less than the value representation. The reference value is incremented in steps of predetermined amounts and compared with the stored representation. When a match is detected, a predetermined change is caused in the display on a display device. This change may be the generating of a dot on the display, the initiating of a line, the terminating of a line, or the like.

3,648,271
VISUAL EDITING SYSTEM INCORPORATING SELECTABLE LETTER SPACING DISPLAY AND ASSOCIATED SCALE DISPLAY

Robert L. McConnell, and Jack W. Simpson, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 2, 1970, Ser. No. 15,793
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **8 Claims**

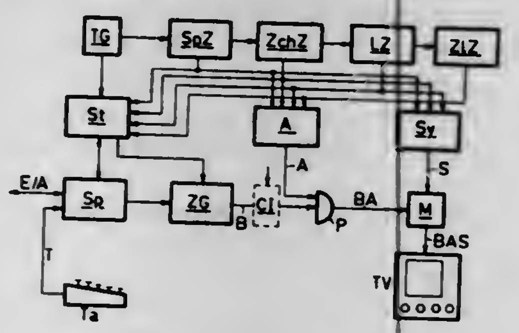


A data composing, editing, formatting and display system for use by composers of business documents and quality printed graphics. A cathode-ray tube display is utilized to display text characters imputed by a secondary media reader in a manner analogous to a display of a page of typed data on a typewriter. The number of words of text which appear on each line of displayed text between margin boundaries are optimized. Additional text may be inserted or deleted at any point in the displayed text or the margin boundaries can be altered resulting in the displayed text shifting to accommodate the additional text or new boundaries. Text shifting results in reoptimization of the displayed lines without resultant loss of word integrity or paragraph definition. Operator controls are actuable to effect display of the displayed characters in either standard spacing or in proportional spacing. When standard spacing is specified, each character has the same escapement value. When proportional spacing is specified, the escapement value of the character varies in accordance with the character width. Since the average character width in proportional spacing is less than the average character width of standard spacing characters, a shift from standard spacing to proportional spacing could result in additional space located at the end of each line of displayed text. The operator may thereafter specify an optimization operation to maximize the number of words of proportionally spaced characters which appear within the margin boundaries on each display line. A set of scales corresponding to the escapement value selected can selectively be displayed adjacent to the text characters to inform the operator of the space that the displayed line will occupy on a printed document. Additionally, a partial adjust operation enables the operator to align the text on even pica positions when shifting from standard spacing to proportional spacing.

3,648,272
ARRANGEMENT FOR PROPORTIONING ACTIVELY OR PASSIVELY LIGHT-RADIATING SURFACES

Jurgen Schroder, Hamburg, and Hans Georg Nussbaum, Bremen, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 17, 1970, Ser. No. 20,371
Claims priority, application Germany, Mar. 22, 1969, P 19 14 764.9
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **8 Claims**



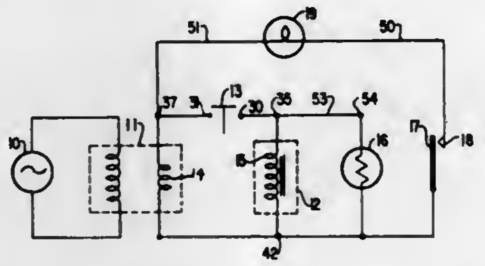
An arrangement for displaying characters or symbols on a screen of a display device where characters selected by comparing a predetermined area of the displays stored in a memory with a counter circuit controlled by a column counter, a character counter, a scan line counter and a reading line counter inverts the selected characters in an inverter stage connected between a character generator and the display device.

3,648,273
ANNUNCIATOR WITH TIMED ILLUMINATION MEANS

Donald J. Gardner, 3741 Penbrook Lane # 13, Flint, Mich.

Filed Aug. 17, 1970, Ser. No. 64,344
Int. Cl. G08b *27/00*
U.S. Cl. 340—326 **10 Claims**

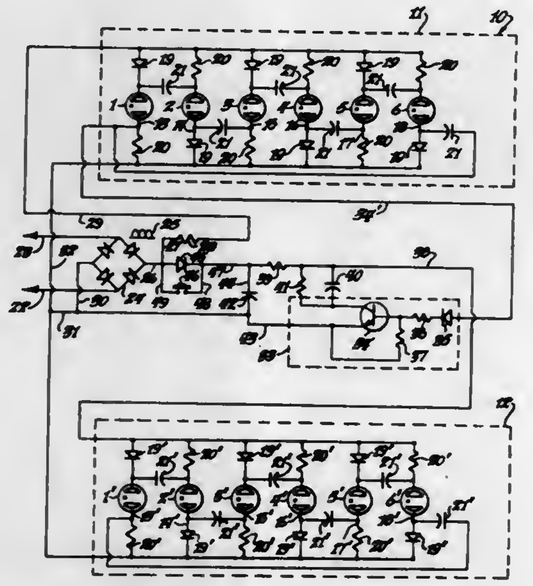
An annunciator control system is provided having a momentary-on pushbutton switch to activate a doorbell, chimes or other audio signal means and a delay means to provide electric current to an illuminating device for a predetermined period of time after the switch is depressed. The illuminating means may be an ordinary incandescent lamp located in the pushbutton switch housing to illuminate the person activating the device or it may be a remotely located lamp such as an entrance way lighting fixture to illuminate the entrance for a fixed period of time after the system is activated.



3,648,274
RANDOM INDICATING DEVICE

Donald T. Roth, 250 Marilla St., Buffalo, N.Y.

Filed Dec. 24, 1969, Ser. No. 887,938
Int. Cl. H03k *23/18*
U.S. Cl. 340—332 **5 Claims**



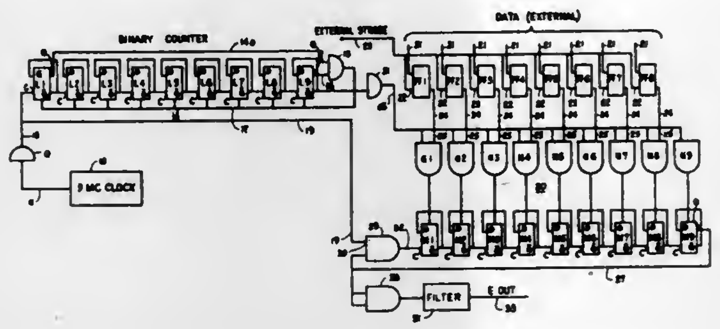
A random indicating device consisting of first and second ring counter circuits each having a plurality of lamps therein which will ignite in sequence, a full wave rectifier for converting alternating current into the pulses for effecting sequential ignition of the lamps in the first ring counter circuit, a carry circuit for effecting sequential ignition of each of the lamps in the second counter circuit upon completion of an entire cycle of ignition of all of the lamps of the first circuit, and a switch arrangement for stopping each of the circuits upon the actuation of the switch, thereby to obtain a random selection.

3,648,275
BUFFERED ANALOG CONVERTER

Kenneth F. Bower, Merritt Island, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Apr. 3, 1970, Ser. No. 25,488
Int. Cl. H03r *13/02*
U.S. Cl. 340—347 DA **2 Claims**

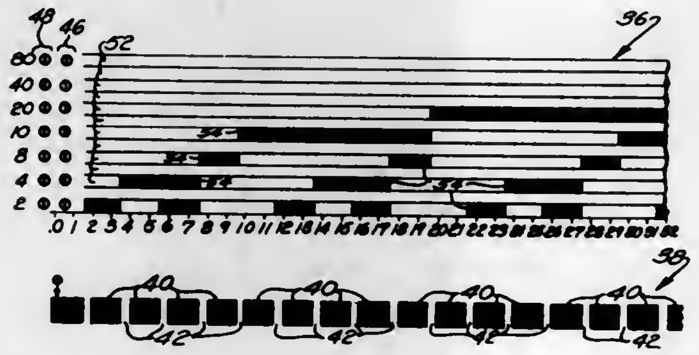
A converter for converting a binary digital code into an analog representation. The converter includes a timing system which is operated by a clock signal to produce a synchronized timing pulse. The digital information is fed into a holding register, and such is gated through a plurality of gates that feeds the complement of the digital code into a counter. The relative duration of the output signal of the last state of the counter in a logic "one" state corresponds to the weight of the digital code being fed into the holding register.



3,648,276
SEGMENTED SCALE

Ralph H. Schuman, Cleveland, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Dec. 11, 1969, Ser. No. 884,292
Int. Cl. G01b *11/04;* **G08c** *9/06;* **H03k** *13/02*
U.S. Cl. 340—347 A **15 Claims**



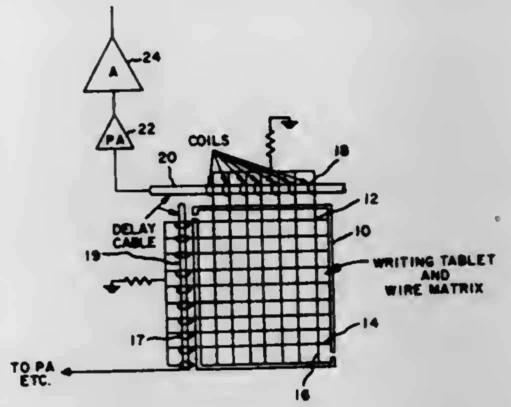
An apparatus for determining the position of one part, such as a movable operating head of a machine tool, relative to a reference position on another part, such as a base of the machine tool, includes an improved scale assembly on one part of the machine tool. This scale assembly includes a plurality of identical scale segments which are spaced apart and independently adjusted relative to a standard, such as a laser interferometer, so that any error in the positioning of one scale segment does not affect the other scale segments. A relatively coarse scale is associated with the plurality of identical scale segments to provide a unique representation for each of the identical scale segments. Suitable control circuitry switches between leading and lagging signal generators in a reading assembly mounted on the other part of the machine tool to avoid activating signal generators at transitions between scale segments.

3,648,277
MAGNETIC GRAPHICAL DATA DEVICE

Albert L. Whetstone, Southport, Conn., and Samuel Fine, New City, N.Y., assignors to Science Accessories Corporation, Southport, Conn.

Filed July 21, 1970, Ser. No. 56,868
Int. Cl. G06g *7/04;* **H03k** *13/02*
U.S. Cl. 340—347 AD **8 Claims**

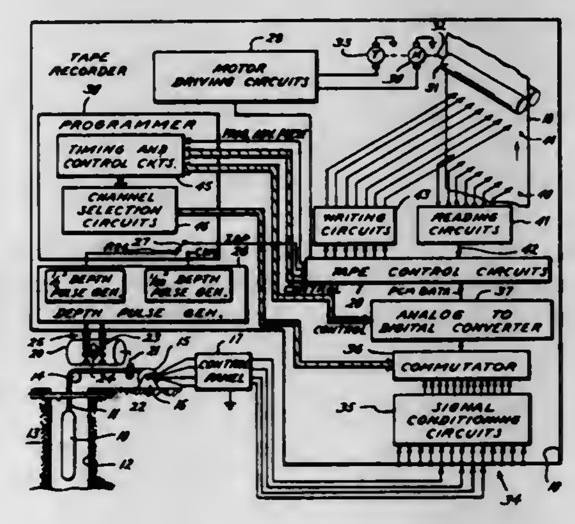
A coordinate digitizing device is provided with a localized source of magnetic energy positioned with respect to a wire array, each of said wires terminated in a common delay line. The magnetic energy is pulsed at a desired point, initiating a digitization time interval required for a pulse appearing along a wire of the array to traverse the delay line and reach a device for terminating digitization, and is an indication of the relative digital magnitude representative of the magnetic pulse device's position above the array.



3,648,278
METHODS AND APPARATUS FOR USE IN PROCESSING WELL LOGGING DATA

Gerald K. Miller, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Original application Feb. 6, 1968, Ser. No. 703,428, now Patent No. 3,457,544. Divided and this application Dec. 30, 1968, Ser. No. 787,683
Int. Cl. H03k *13/16*
U.S. Cl. 340—347 AD **11 Claims**



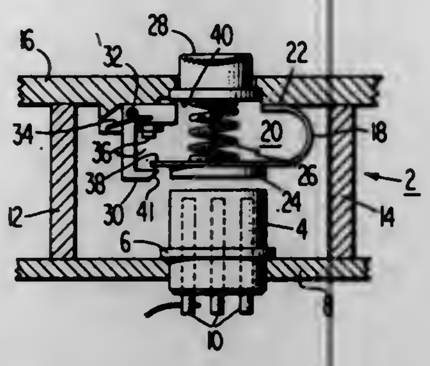
In accordance with an illustrative embodiment of the invention, a variable duty cycle analog-to-digital converter for use with well logging magnetic tape recording apparatus is disclosed. For those well logging signals which require a high degree of amplitude resolution, a long duty cycle is used. On the other hand, for those well logging signals which require a high degree of depth resolution, as, for example, dipmeter signals, a short duty cycle is used to allow the tape recorder to utilize a fast sampling rate.

3,648,279
MULTIELECTRODE TRANSDUCER ELEMENT

James Power Watson, Jupiter, Fla., assignor to RCA Corporation

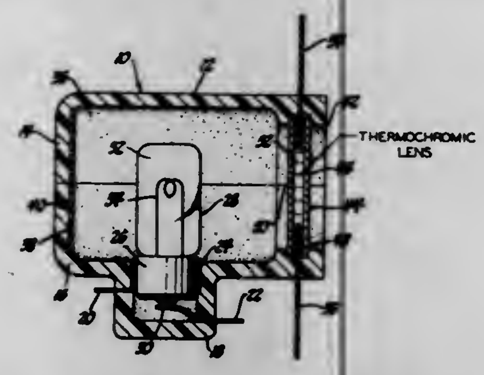
Filed May 14, 1970, Ser. No. 37,124
Int. Cl. G08c *19/00*
U.S. Cl. 340—365 **9 Claims**

A transducer means suitable for use as the mechanical-to-electrical translating element of the key of a keyboard. It includes a plurality of electrodes embedded in a body of amorphous, piezoelectric material. When the key is actuated to strike the body, a voltage is induced at each electrode. The electrodes of the various keys may be connected in different ways to common buses to provide a coded output from the keyboard.



3,648,280
THERMOCHROMIC LIGHT-FLASHING SYSTEM

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 15, 1970, Ser. No. 37,663
Int. Cl. G08b *5/00*
U.S. Cl. 340—366 **2 Claims**

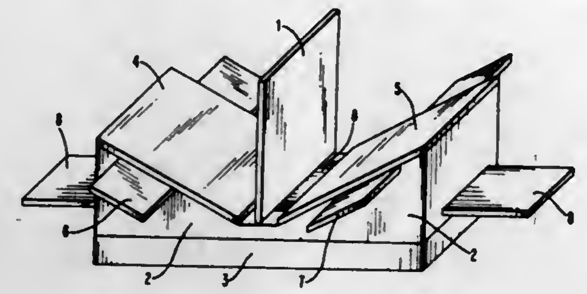


In preferred form, a flasher device having a light source in an opaque case with a light-reflective inner surface. A thermochromic lens including cholesteric liquid crystals is located in an opening within said enclosure. It is heated by the light source and cooled by heat transfer fins. The cholesteric liquid crystals respond to changes in the temperature of the lens to traverse the entire visible spectrum from red to violet. The liquid crystal is colorless above and below its operating range. Changes in the ambient temperature around the enclosure and the changes in the color of the crystals will vary the temperature of the thermochromic lens to produce a repetitive flashing color play effect.

3,648,281
ELECTROSTATIC DISPLAY PANEL

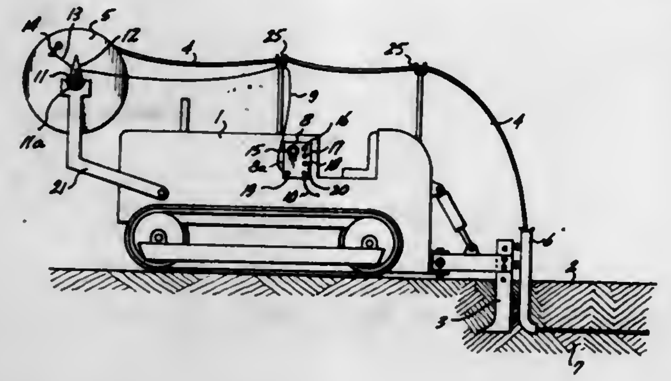
Harald Dahms, Ossining, and Heinrich E. Hunziker, Katonah, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 30, 1969, Ser. No. 889,279
Int. Cl. G08b *5/00*
U.S. Cl. 340—373 **13 Claims**

This disclosure describes an electromechanical display panel operated by electrostatic forces. The panel is composed of individual display units which provide dual color display under passive illumination. Their distinctive feature is a novel and very simple configuration, leading to advantages of small size, high speed, relatively low-operating voltage and feasibility of fabricating economically panels containing a large number of such units. The units consist of electrically conducting, rectangular flags, positioned within parallel, V-shaped grooves by a magnetic field that biases the flag toward the central position in the groove. The panel possesses the half-select property. Voltages are applied to the flags and to electrode strips on the groove walls to cause a selected flag to show one or its other side. No erase step is required between writing operations. A written pattern is held indefinitely by electrostatic biasing and can be read out by employing the capacitance between a flag and its adjacent wall electrode.



3,648,282
ALARM SIGNAL APPARATUS TO INDICATE DAMAGE TO THE INSULATION OF AN ELECTRICAL CABLE AS IT IS BEING LAID UNDERGROUND

John B. Kelly, 2205 54th Ave. E., Tacoma, Wash.
Filed Feb. 17, 1970, Ser. No. 11,964
Int. Cl. G08b *21/00*
U.S. Cl. 340—421 **15 Claims**

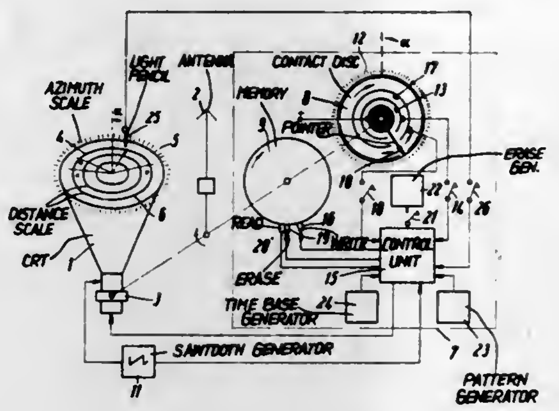


During underground cable laying operations of electrical cables such as power, telephone, and TV cables, a cable damage alarm signal apparatus is secured to cable laying machinery equipped with a combined plow tooth and cable chute. This cable damage alarm signal apparatus has a detection circuit connected between the metal sheath of the cable, or alternatively its inner conductor, and the frame of the cable laying machinery. Upon damage of the insulation of the cable, current flows in the detection circuit and the alarm circuit is energized.

3,648,283
APPARATUS FOR DISPLAYING BEARING MARKERS ON A RADAR SCREEN

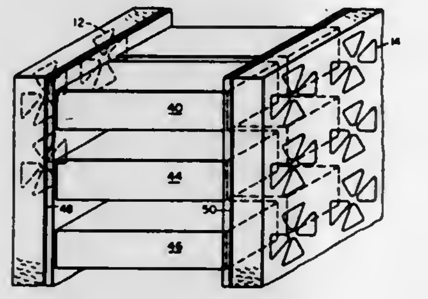
Carl Wilhelm Busch, and Kurt Scheer, both of Bremen, Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed July 11, 1969, Ser. No. 840,941
Claims priority, application Germany, July 12, 1968, P 17 73 831.7
Int. Cl. G01s *7/12*
U.S. Cl. 343—5 EM **10 Claims**

Apparatus for use with a position-finding system that operates according to the reflected beam principle. This position-finding system, e.g., a radar system, has a revolving beam-receiving antenna as well as a cathode-ray display tube with a deflection system arranged to rotate in synchronism with the antenna. The apparatus according to the present invention is intended to provide a display of one or more radially extending traces on the screen of the cathode-ray tube at selectable angular positions thereof to provide reference bearing information to the operator of the system. The apparatus includes a memory device, connected to rotate in synchronism with the antenna, for storing signals at preselected angular positions on its surface. The apparatus further includes means to write signals into or erase signals from the memory device and means to repeatedly read out these signals from the memory device during each revolution thereof to display a bearing trace on the cathode-ray tube screen in response to each signal when read.



3,648,284
TWO-FACE PHASED ARRAY

Peter R. Dax, and Thomas M. Moore, both of Severna Park, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 6, 1969, Ser. No. 847,833
Int. Cl. G01s *9/02;* **H01q** *3/26*
U.S. Cl. 343—5 R **4 Claims**

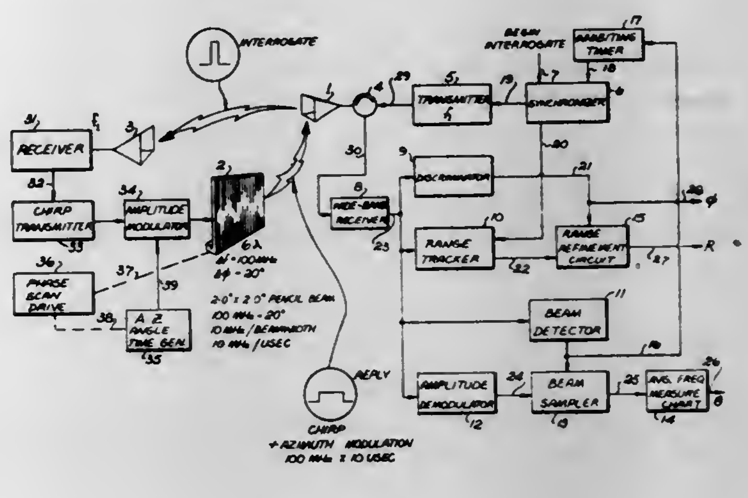


A phased array consisting of two radiating faces back-to-back with time shared solid-state transmit circuits disposed thereinbetween for enabling each of the radiating faces in a high-duty cycle operating mode to optimize utilization of the solid-state capabilities of the transmit circuits.

3,648,285
AIRCRAFT ELECTRONIC LANDING RESPONSER SYSTEM USING SCANNING PENCIL BEAM GROUND ANTENNA

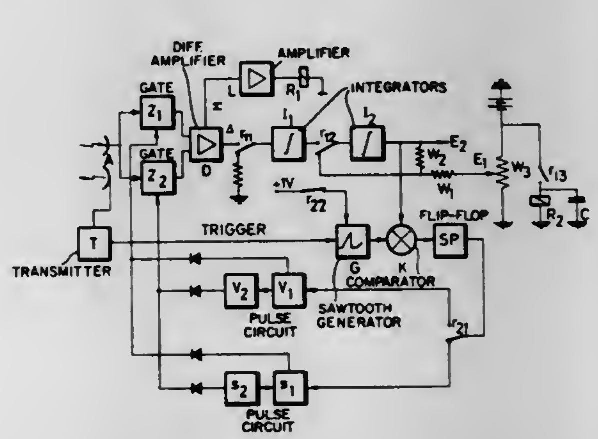
Lon L. Sanders, Palos Verdes Peninsula, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Mar. 30, 1970, Ser. No. 23,757
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.5 R **10 Claims**

An electronic approach and landing aid system involving the use of an airborne interrogator and a ground station having a rapid elevation frequency scan and a somewhat slower azimuth phase scan of a planar array. Each interrogating pulse produces a chirp pulse at the ground station and each chirp pulse produces one complete elevation scan cycle of the pencil beam formed by the planar array. Elevation angle data is air derived from the frequency of the pencil beam energy as it passes across the aircraft, and range is determined in proportion to ground chirp time between interrogating pulses and corresponding replies. Azimuth position of the ground antenna pencil beam is separately supplied through an independent modulation which is correspondingly decoded in the air.



3,648,286
METHOD AND APPARATUS FOR SEARCHING, SELECTING AND TRACKING TARGETS UTILIZING A RADAR HAVING A RANGE GATE

Hellmuth Schoneborn, Assling, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft Mit Beschrankter Haftung, Ottobrunn near Munich, Germany
Filed Dec. 2, 1969, Ser. No. 881,547
Claims priority, application Germany, Dec. 13, 1968, P 18 14 476.8
Int. Cl. G01s *9/14*
U.S. Cl. 343—7.3 **10 Claims**

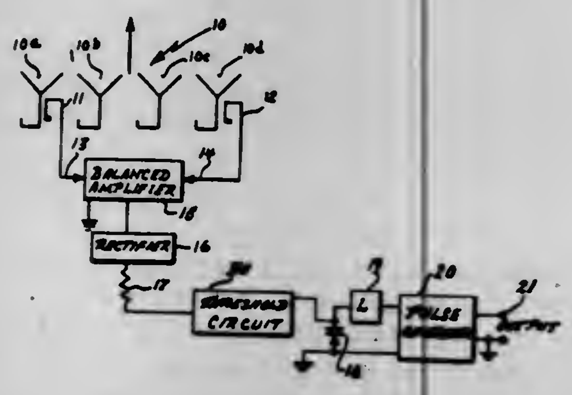


In a method for searching, selecting and tracking targets in a given range, utilizing a radar set having a range gate, two successive and contiguous gating pulses are generated responsive to transmission of each radar pulse, and have a duration and position, relative to the radar pulse, corresponding to the target area to be covered so as to contain all echo pulses resulting from the radar pulse. The two gating pulses are displaced, in time, relative to the echo pulses in a time direction such that each gating pulse contains the same content of echo pulse energy or, alternatively speaking, so that the echo pulse having the maximum amplitude is evenly divided between the two gating pulses and centered on the separation line therebetween. The durations of the gating pulses are then decreased, either continuously or stepwise; so that the combined duration is substantially equal to the duration of the echo pulse having the maximum amplitude, while both gating pulses are displaced, in time, relative to this pulse so that the echo pulse remains centered on the separation line between the two gating pulses. The apparatus includes a differential amplifier, a sawtooth wave generator, a comparator and at least one pair of pulse circuits, with the sawtooth generator being triggered by the radar pulse transmitter.

3,648,287
FREQUENCY ADAPTIVE TRANSMITTER TO AVOID JAMMING

James N. Lind, Costa Mesa, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Dec. 18, 1969, Ser. No. 889,869
Int. Cl. G01s *7/36*
U.S. Cl. 343—18 E **2 Claims**

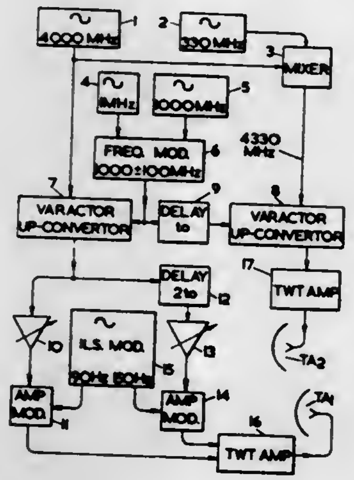


A frequency adaptive transmitter to avoid jamming wherein a combination of a frequency agile transmitter, a balanced amplifier and a directionally sensitive antenna senses that it is being jammed at a certain frequency and then retunes the transmitter to a frequency region free of the jamming signal.

3,648,288
AIRCRAFT LANDING RADIO GUIDANCE RECEIVERS

John Benjamin, Farnborough, and John Michael Jones, Hindhead, both of England, assignors to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed May 19, 1970, Ser. No. 38,830
Claims priority, application Great Britain, May 20, 1969, 25,695/69
Int. Cl. G01s *1/02*
U.S. Cl. 343—108 R **8 Claims**



Transmitter apparatus for glide path guidance includes two aerials spaced apart (preferably so that the perpendicular bisector of a line joining the aerials is parallel to the desired glide path) and means for feeling them with distinct but related frequency-modulated waveforms so as to yield at least two distinguishable cross-correlation products whose relative amplitudes will vary differentially with displacements from the desired glide path.

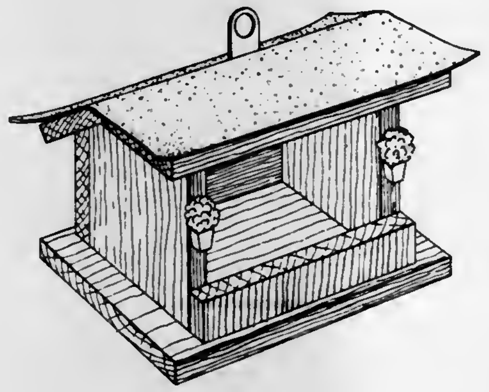
One aerial may be fed with a first carrier frequency modulated with a first modulation signal and the other aerial with a second carrier frequency modulated with second and third modulation signals, the second modulation signal being a frequency modulated waveform amplitude-modulated at 90 Hz., the first modulation signal being the said frequency-modulated waveform delayed by a time delay *to*, and the third modulation signal being the said frequency-modulated waveform delayed by a time delay 2*to* and amplitude-modulated at 150 Hz. A monitor receiver has inputs connected to inputs mounted on reflectors of the two aerials.

DESIGNS

MARCH 7, 1972

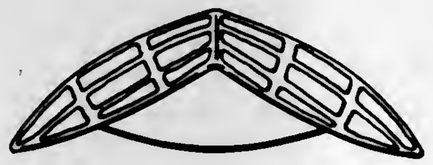
223,047
BIRD FEEDER

Leonard M. Stanek, 230 Belle Drive, Northlake, Ill. 60164
Filed May 14, 1970, Ser. No. 22,987
Term of patent 3½ years
Int. Cl. D30—*03*
U.S. Cl. D30—14



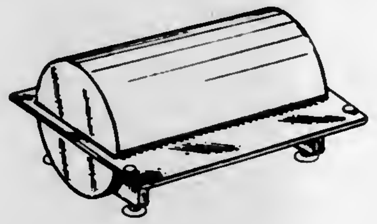
223,048
TURTLE SHELL TOY

Edwin B. Tillinger, 5403 Twining Drive, Tinker Air Force Base, Oklahoma City, Okla. 73145
Filed Nov. 25, 1970, Ser. No. 26,160
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2



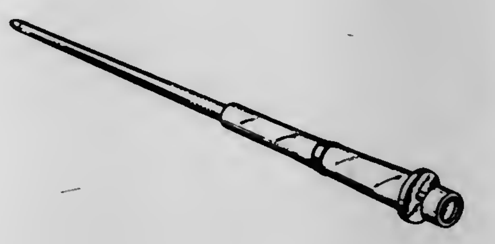
223,049
PAPER TOWEL DISPENSER

Riley H. Brooks, 1522 1st St., Webster City, Iowa 50595
Filed Nov. 12, 1970, Ser. No. 25,952
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D52—2



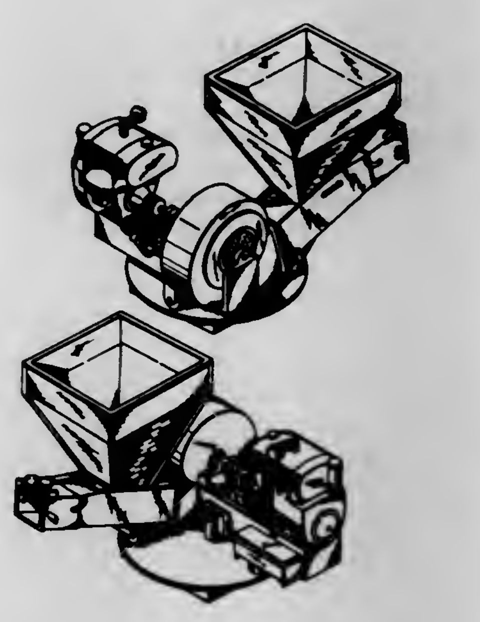
223,050
TEMPERATURE PROBE

Stephens N. Sato, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.
Filed Dec. 15, 1969, Ser. No. 20,507
Term of patent 14 years
The portion of the term of the patent subsequent to Sept. 29, 1984, has been disclaimed
Int. Cl. D10—*04*
U.S. Cl. D52—7

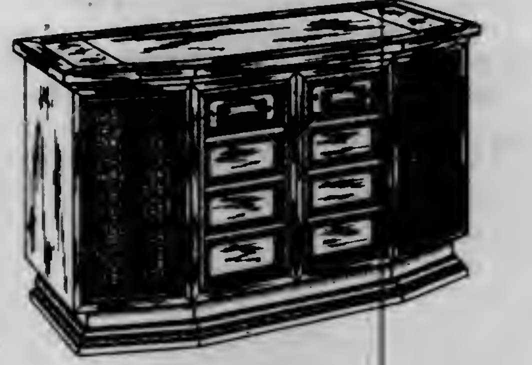


223,051
PARTICULATE MATERIAL DISTRIBUTOR FOR UTILIZATION ON OIL POLLUTION SPILLS

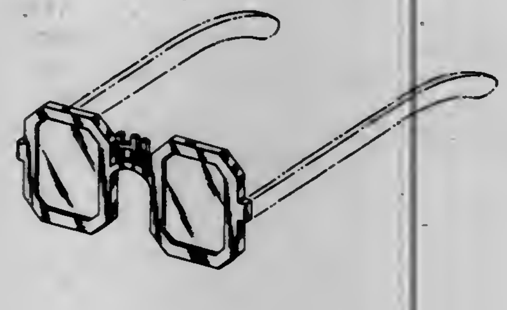
Ralph E. Lingert and Richard E. Keyes, Cincinnati, Ohio, assignors to The Finn Equipment Company, Cincinnati, Ohio
Filed Aug. 27, 1970, Ser. No. 24,717
Term of patent 14 years
Int. Cl. D15—*03, 99*
U.S. Cl. D55—1



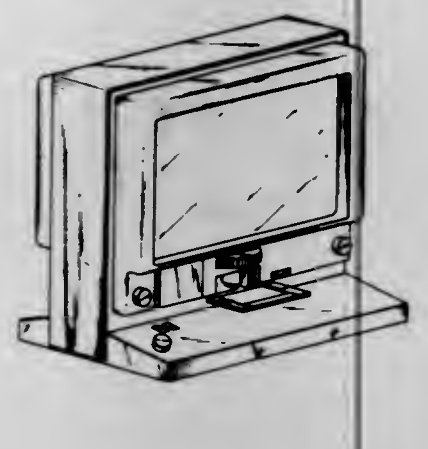
223,052
PHONOGRAPH CONSOLE
William B. Donnelly, Syracuse, N.Y., assignor to
General Electric Company
Filed Nov. 10, 1970, Ser. No. 25,911
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



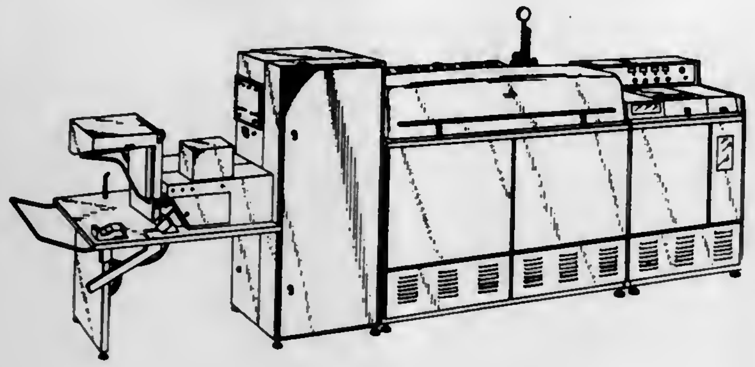
223,053
EYEGLASS FRAME FRONT
William E. Woodruff, 245 Jackson St.,
Columbus, Ohio 43206
Filed June 8, 1970, Ser. No. 23,342
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1



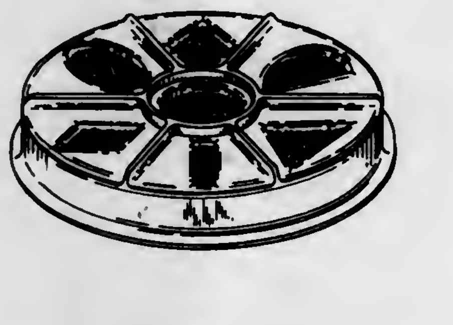
223,054
MICROFILM VIEWER
William Charles Kinsinger, New York, N.Y., assignor to
Metagraphic Systems, Inc., Bronx, N.Y.
Filed Aug. 25, 1970, Ser. No. 24,683
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



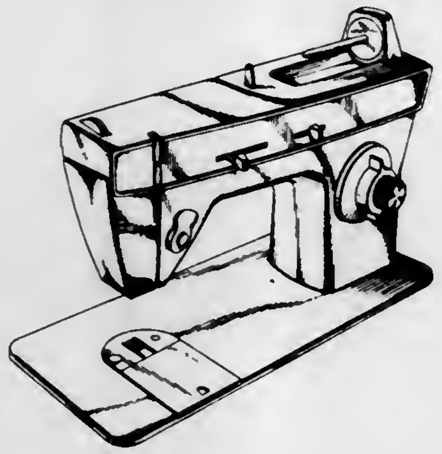
223,055
PHOTOGRAPHIC FILM PROCESSOR
Ralph M. Vigna, Rochester, N.Y., assignor to Eastman
Kodak Company, Rochester, N.Y.
Filed Aug. 27, 1970, Ser. No. 24,733
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1



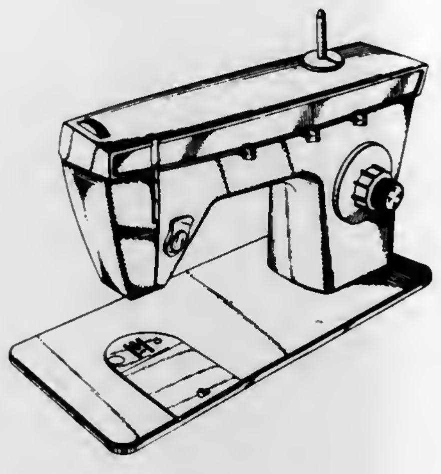
223,056
STAMP PAD OR THE LIKE
Eugene J. Majewski, 121 Elmore St.,
Park Ridge, Ill. 60068
Filed Nov. 30, 1970, Ser. No. 26,221
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—10



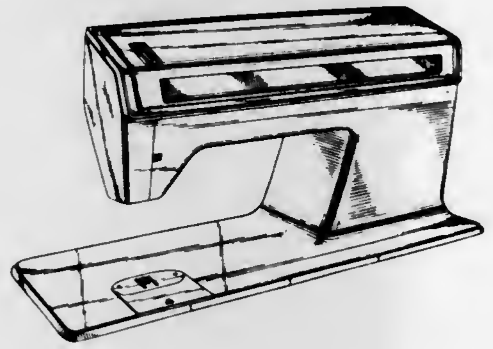
223,057
SEWING MACHINE FRAME
Donald M. Genaro, Haworth, N.J., assignor to The
Singer Company, New York, N.Y.
Filed Aug. 10, 1970, Ser. No. 24,382
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



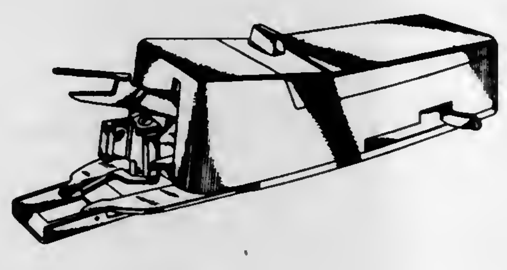
223,058
SEWING MACHINE FRAME OR SIMILAR ARTICLE
Donald M. Genaro, Haworth, N.J., assignor to The
Singer Company, New York, N.Y.
Filed Aug. 14, 1970, Ser. No. 24,501
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



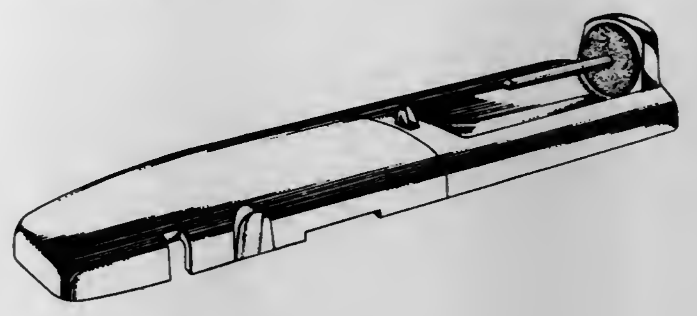
223,059
SEWING MACHINE FRAME
Donald M. Genaro, Haworth, N.J., assignor to The
Singer Company, New York, N.Y.
Filed Oct. 5, 1970, Ser. No. 25,337
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



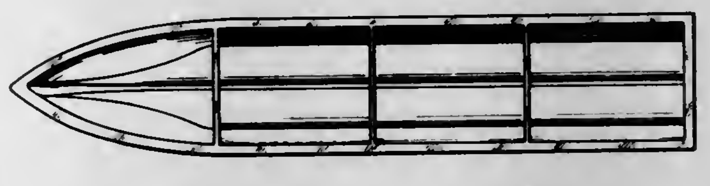
223,060
SEWING MACHINE ATTACHMENT FOR MAKING BUTTONHOLES OR THE LIKE
Donald M. Genaro, Haworth, N.J., assignor to The
Singer Company, New York, N.Y.
Filed May 25, 1970, Ser. No. 23,132
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—2

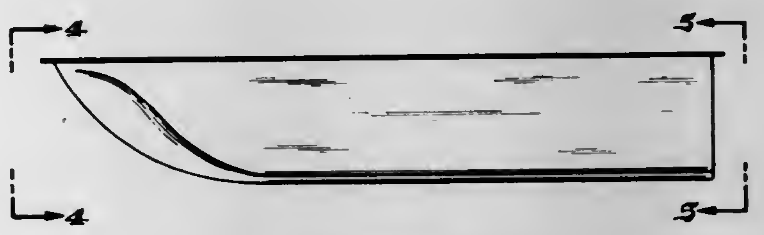


223,061
TOP COVER FOR A SEWING MACHINE OR SIMILAR ARTICLE
Thaddeus J. Zylbert, Morris Plains, N.J., assignor to The
Singer Company, New York, N.Y.
Filed June 19, 1970, Ser. No. 23,576
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—2

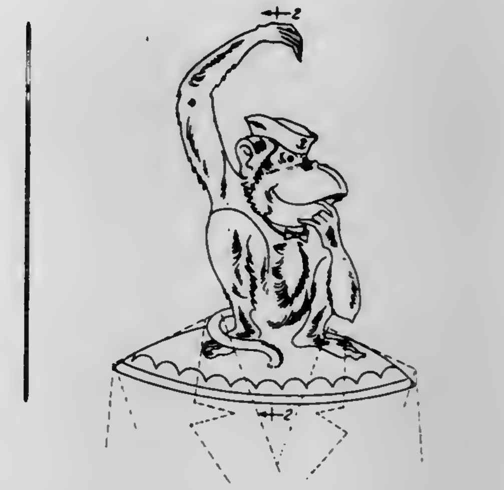


223,062
BOAT HULL
Robert Frank Winter, 7221 N. Peoria Ave.,
Tulsa, Okla. 74126
Filed Nov. 25, 1970, Ser. No. 26,159
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



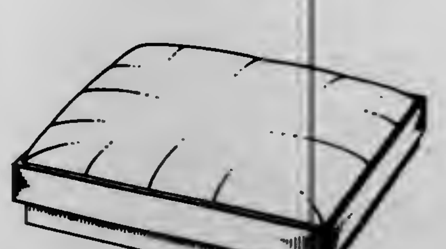


223,063
HANGER
Borislav D. Jovanovich, 6122 N. Kenmore,
Chicago, Ill. 60603
Original design application Nov. 29, 1968, Ser. No. 14,711, now Patent No. 215,898, dated Nov. 4, 1969. Divided and this application Sept. 29, 1969, Ser. No. 19,819
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D80—8



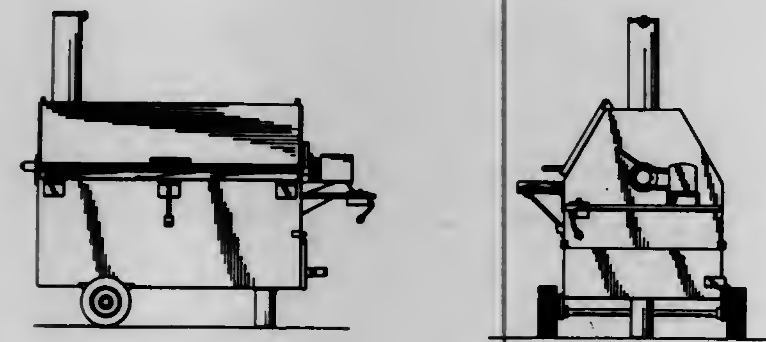
223,064
PILLOW DISPLAY STAND

James T. Peterson, Prospect Heights, Ill., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Dec. 12, 1969, Ser. No. 20,477
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D80—9



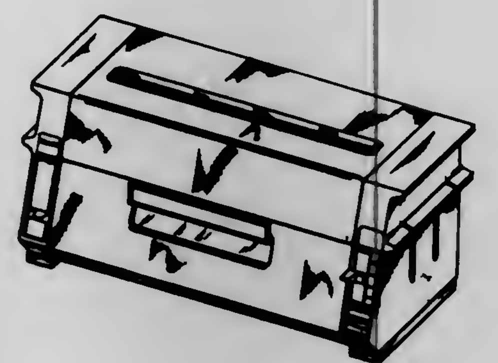
223,065
CHARCOAL OVEN

Anthon H. Turner, Kingfisher, Okla., assignor to Turner and Sons, Kingfisher, Okla.
Filed June 23, 1970, Ser. No. 23,622
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10



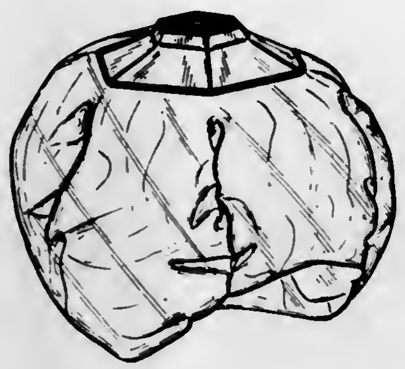
223,066
COMBINED TOASTER AND OVEN OR THE LIKE

Thomas E. Hanson, Syracuse, and John E. Jolliffe, Manlius, N.Y., assignors to Proctor-Silex Incorporated, Philadelphia, Pa.
Filed Aug. 3, 1970, Ser. No. 24,275
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10



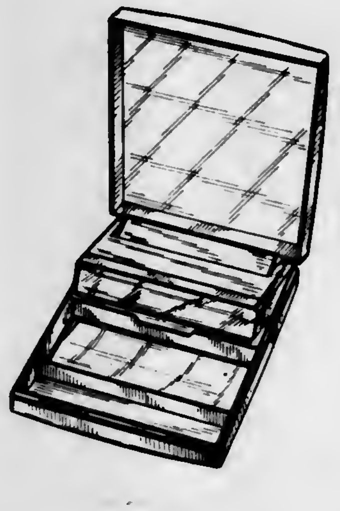
223,067
ELECTRIC HAIR DRYER BONNET

Norman A. Steinkamp, Chicago Heights, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed July 6, 1970, Ser. No. 23,840
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10



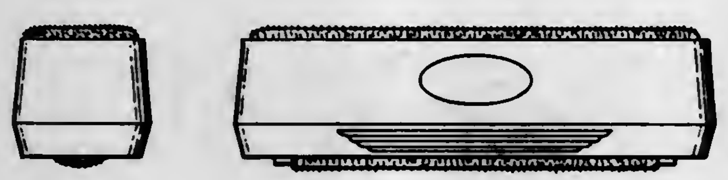
223,068
COMBINED ILLUMINABLE MAKEUP MIRROR AND VANITY CASE

Douglas G. Long, Lombard, and Robert S. Waters, Oakbrook, Ill., assignors to Sunbeam Corporation Chicago, Ill.
Filed July 9, 1970, Ser. No. 23,877
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D86—10



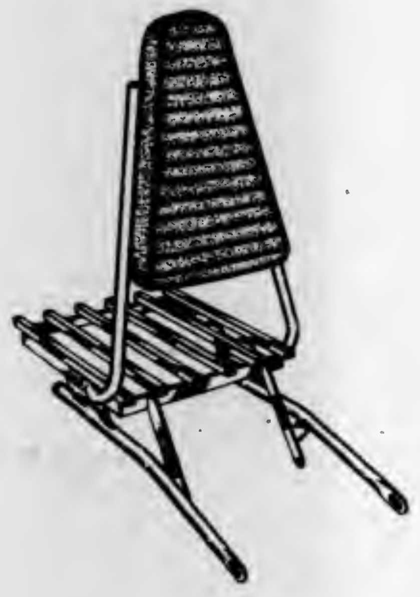
223,069
CLOTHING CARE IMPLEMENT

Eric Michael Roth, R.R. 1, Unionville, Ontario, Canada
Filed Feb. 1, 1971, Ser. No. 111,802
Claims priority, application Canada Sept. 4, 1970
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D86—13



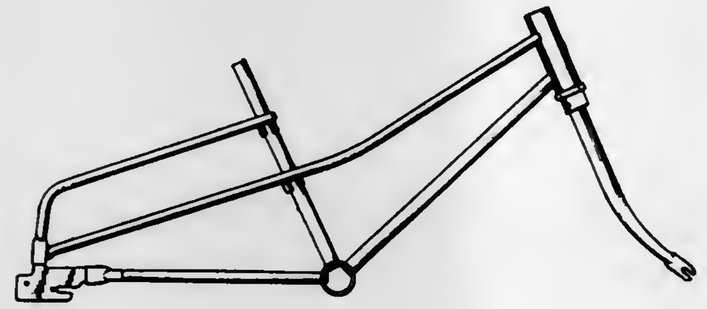
223,070
MOTORCYCLE LUGGAGE CARRIER AND BACKREST COMBINATION

John H. Heltzen, 1091 Terrace Drive 90807, and Frank G. Stone, 6655 Orange, Apt. D 90805, both of Long Beach, Calif.
Filed Jan. 20, 1971, Ser. No. 108,234
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—3



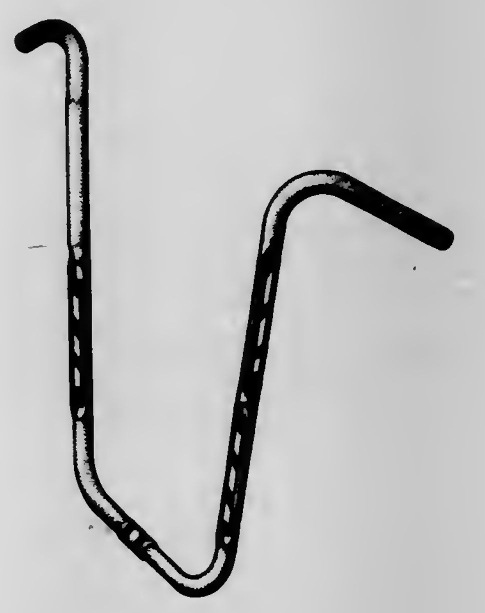
223,071
BICYCLE FRAME

Viktor Schreckengost, Cleveland Heights, Ohio, assignor to The Murray Ohio Manufacturing Co., Nashville, Tenn.
Filed Aug. 20, 1970, Ser. No. 24,612
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D90—8



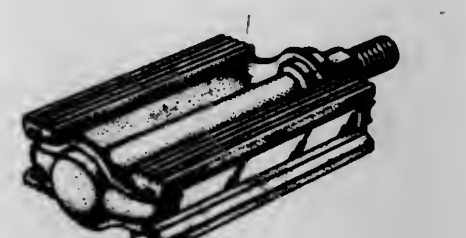
223,072
REFLECTIVE BICYCLE HANDLEBAR

Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Oct. 26, 1970, Ser. No. 25,649
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—11



223,073
REFLECTIVE BICYCLE PEDAL

Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Nov. 13, 1970, Ser. No. 25,956
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—14

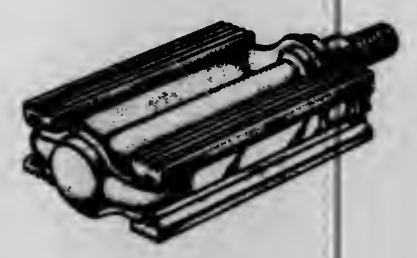


223,074
REFLECTIVE BICYCLE PEDAL

Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.

Filed Nov. 13, 1970, Ser. No. 25,957
Term of patent 14 years
Int. Cl. D12—*16*

U.S. Cl. D90—14

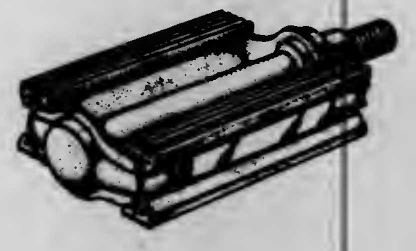


223,075
REFLECTIVE BICYCLE PEDAL

Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.

Filed Nov. 13, 1970, Ser. No. 25,958
Term of patent 14 years
Int. Cl. D12—*16*

U.S. Cl. D90—14

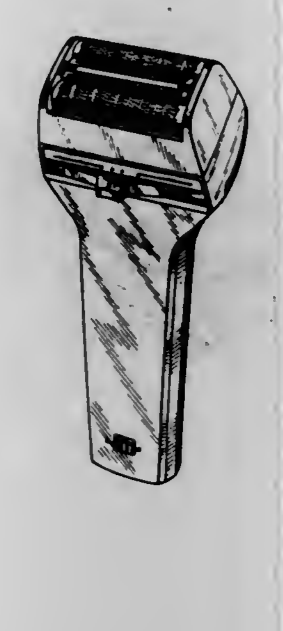


223,076
ELECTRIC SHAVER

Robert O. Ernest, Oak Park, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Filed Jan. 11, 1971, Ser. No. 105,792
Term of patent 14 years
Int. Cl. D28—*03*

U.S. Cl. D95—3

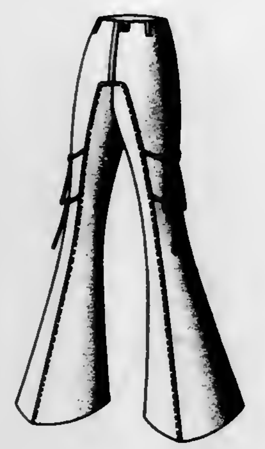


223,077
PANTS

Jack S. Benrube, Miami Beach, Fla., assignor to Nathan Rosen, North Miami, Fla., and Morris Luxenberg, Brooklyn, N.Y., fractional part interest to each

Filed Nov. 16, 1970, Ser. No. 25,977
Term of patent 14 years
Int. Cl. D2—*02*

U.S. Cl. D2—227

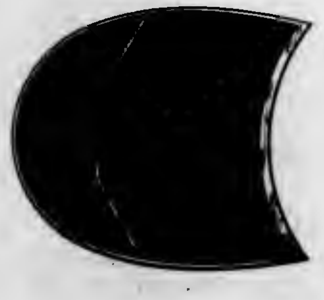


223,078
SHOE HEEL

Kenneth E. Jones, Andover, Mass., assignor to SCOA Industries, Inc., Columbus, Ohio

Filed Sept. 28, 1970, Ser. No. 25,214
Term of patent 14 years
Int. Cl. D2—*04*

U.S. Cl. D2—323

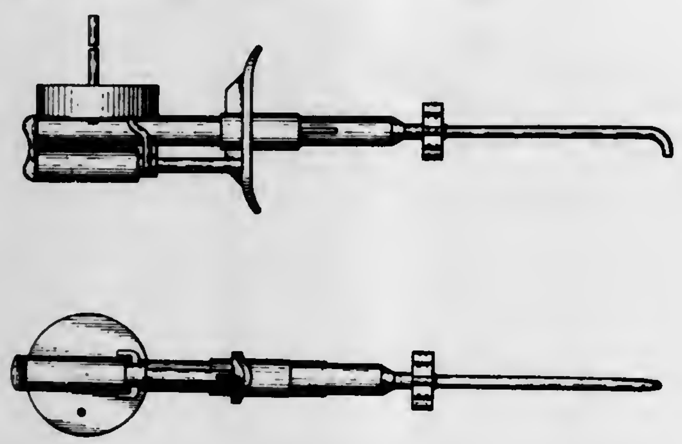


223,079
MEDICAL, DENTAL AND VETERINARY IRRIGATOR AND APPLICATOR

Garrison G. Trupp, 4600 York Road, Baltimore, Md. 21212, and Marc A. Trupp, 23 Stonehenge Circle, Pikesville, Md. 21208

Filed July 24, 1970, Ser. No. 24,107
Term of patent 14 years
Int. Cl. D24—*03*

U.S. Cl. D24—1

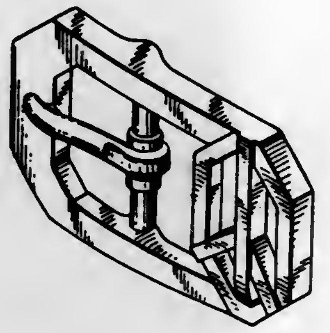


223,080
BUCKLE

Norman A. Roy, Cold Spring Harbor, N.Y., assignor to NAR Enterprises, Inc., New York, N.Y.

Filed Aug. 17, 1970, Ser. No. 24,508
Term of patent 14 years
Int. Cl. D2—*07*

U.S. Cl. D2—446

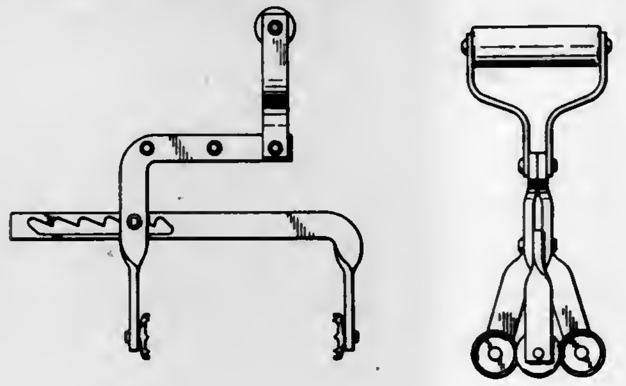


223,081
BATTERY CARRIER

Alan A. Freedman, Williamsville, N.Y., assignor to Bergman Tool Mfg. Co., Inc., Buffalo, N.Y.

Filed Dec. 3, 1970, Ser. No. 26,270
Term of patent 14 years
Int. Cl. D8—*05*

U.S. Cl. D8—14

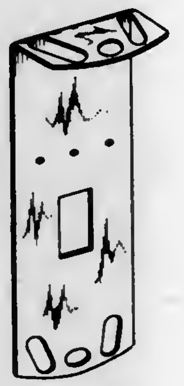


223,082
BRACKET FOR AUTOMOTIVE CONDENSERS

Jacob F. Fromm, Upper Montclair, N.J., assignor to Springfield Electrical Specialties, Inc., New York, N.Y.

Filed Oct. 16, 1970, Ser. No. 25,526
Term of patent 14 years
Int. Cl. D8—*08*

U.S. Cl. D8—233

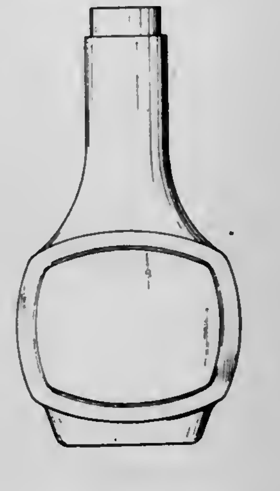


223,083
BOTTLE

James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 15, 1970, Ser. No. 25,501
Term of patent 14 years
Int. Cl. D9—*01*

U.S. Cl. D9—113

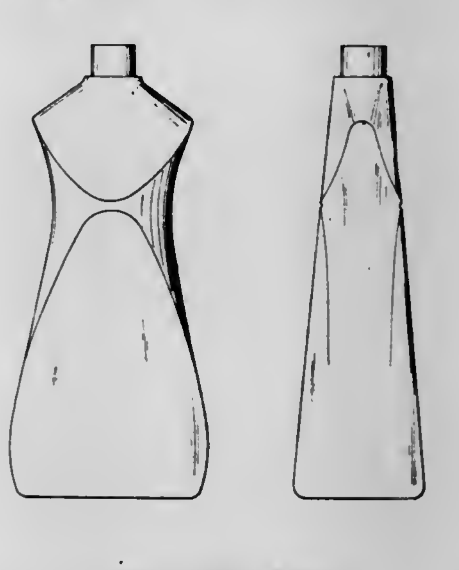


223,084
BOTTLE

Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 15, 1970, Ser. No. 25,502
Term of patent 14 years
Int. Cl. D9—*01*

U.S. Cl. D9—116

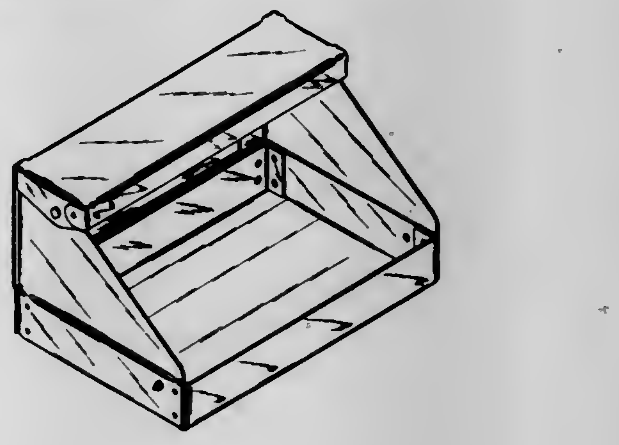


223,085
COMBINED DISPLAY AND STORAGE CASE

Charles R. Zimmerman, Los Angeles, Calif., and Raymond Tuccio, Scotch Plains, N.J., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Sept. 2, 1970, Ser. No. 25,018
Term of patent 14 years
Int. Cl. D9—*03*

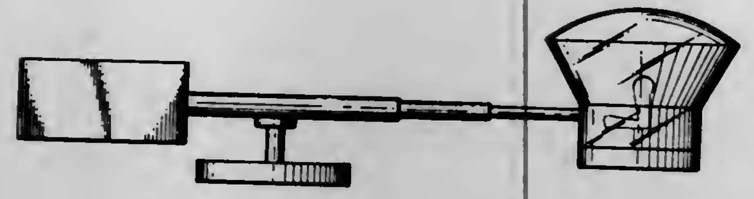
U.S. Cl. D9—221



223,086

ROTATABLE SURVEILLANCE CAPSULE FOR BUILDINGS

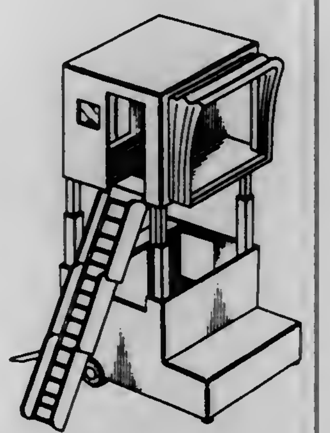
Ronald B. Royster, Sr., 1705 Belle Haven Drive, Apt. 203,
Landover, Md. 20785
Filed Jan. 15, 1970, Ser. No. 20,943
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



223,087

PORTABLE LOADING VESTIBULE

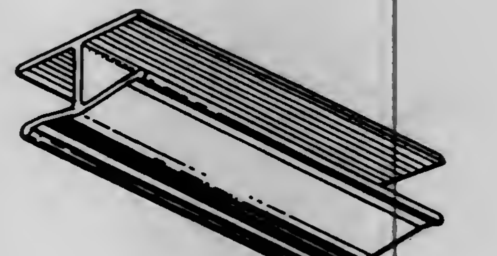
Ronald C. Hinman, Mission Viejo, Calif., assignor to
Western Gear Corporation, Lynwood, Calif.
Filed Sept. 30, 1970, Ser. No. 25,292
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1



223,088

EXTRUDED H CONNECTOR MEMBER

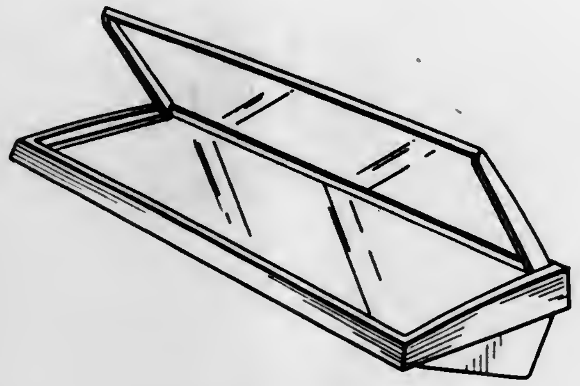
Irvine Kimmel, 2375 NW. 75th St.,
Miami, Fla. 33147
Filed Aug. 17, 1970, Ser. No. 24,548
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6



223,089

REAR VIEW MIRROR

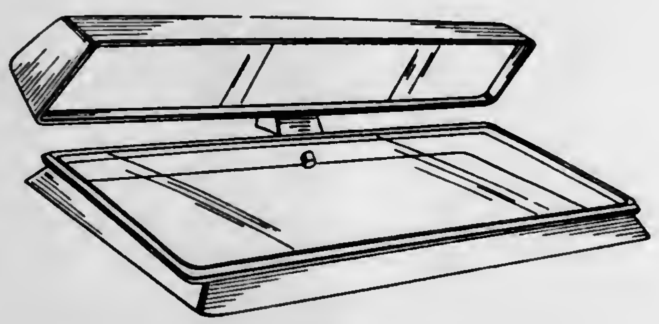
Lynn Harold Hodge, 12618 Wyoming Ave.,
Detroit, Mich. 48238
Continuation-in-part of design application Ser. No. 17,288, May 23, 1969. This application Aug. 17, 1970, Ser. No. 24,531
Term of patent 3½ years
Int. Cl. D12—*16*
U.S. Cl. D14—6



223,090

STATIONARY CAR-TOP MIRROR

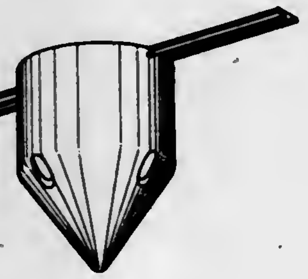
Lynn Harold Hodge, 12618 Wyoming Ave.,
Detroit, Mich. 48238
Continuation-in-part of design application Ser. No. 18,206, July 15, 1969. This application Aug. 17, 1970, Ser. No. 24,533
Term of patent 3½ years
Int. Cl. D12—*16*
U.S. Cl. D14—6



223,091

DRIVE POINT FOR EXPLOSIVE CHARGE

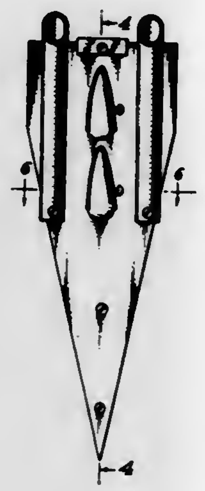
Stanley T. Graham and Robert G. Rintoul, both of 448
42nd Ave. SE., Calgary 24, Alberta, Canada
Filed June 24, 1969, Ser. No. 17,842
Term of patent 14 years
Int. Cl. D22—*03*
U.S. Cl. D22—10



223,092

BEACH INSERTABLE STANDARD FOR PAIR OF FISHING POLES WITH FISH ALARMS

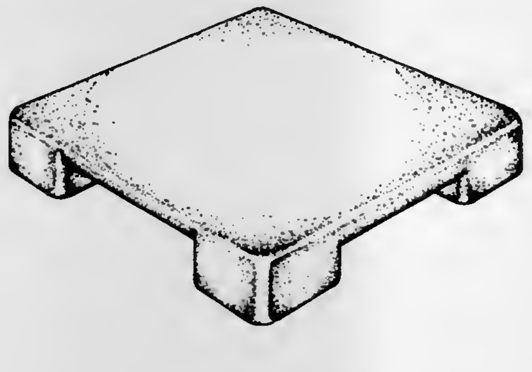
Augusta Tucker, Jr., 547 W. 91st St.,
Los Angeles, Calif. 90044
Filed Dec. 8, 1969, Ser. No. 20,395
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22



223,093

LIGHTNING INSULATOR PAD FOR CAMPERS

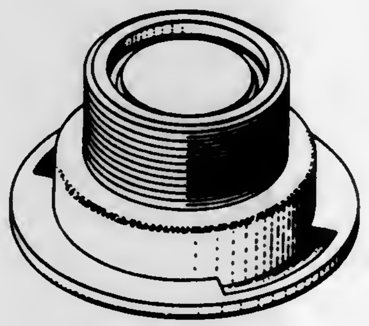
John B. Cato, 206 Combs St., Milton, Fla. 32570
Filed July 22, 1970, Ser. No. 24,071
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D23—10



223,094

CONVERTIBLE VALVE FOR VACUUM RELEASE OR PRESSURE RELIEF

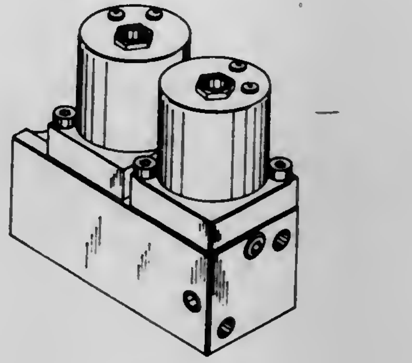
Clarence B. Coleman and Harry R. Kattelmann, Oakland, Calif.; said Kattelmann assignor to Fabricated Metals, Inc.
Filed Aug. 20, 1970, Ser. No. 24,608
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



223,095

SOLENOID CONTROLLED VALVE

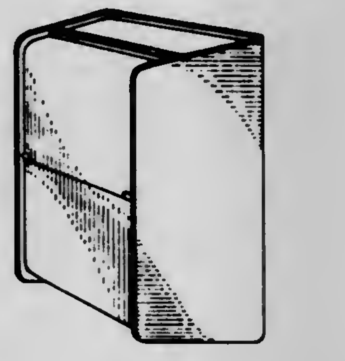
C. Andrew Allen, Chatham, Ga., assignor to
S. A. Allen, Inc.
Filed Sept. 17, 1970, Ser. No. 25,043
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



223,096

CABINET FOR PROCESSING DATA DISCS

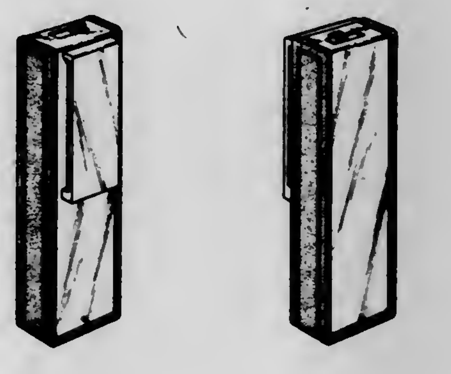
Channing W. Gilson, Los Angeles, Calif., assignor to
Infotechnics, Inc., Van Nuys, Calif.
Filed Sept. 23, 1970, Ser. No. 25,159
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



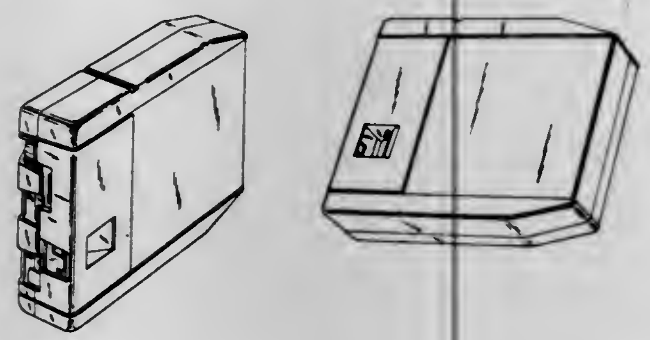
223,097

RADIO PAGER OR SIMILAR ARTICLE

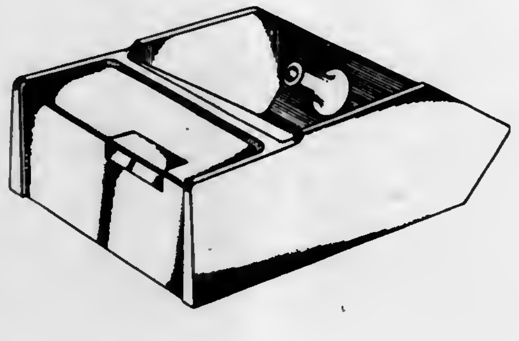
Donald K. Krumin, Fort Landerdale, and Richard J. Toth, Oakland Park, Fla., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Nov. 18, 1970, Ser. No. 26,070
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



223,098
AUDIO VISUAL CARTRIDGE
Paul D. Catalano, Manhasset, and George C. Hoehne, Bellerose, N.Y., assignors to Retention Communications Systems, Inc., New York, N.Y.
Filed Dec. 14, 1970, Ser. No. 26,497
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—14



223,099
BATTERY CHARGER
Stephens N. Sato, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.
Filed Sept. 25, 1970, Ser. No. 25,188
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15



LIST OF PATENTEES
TO WHOM
PATENTS WERE ISSUED ON THE 7TH DAY OF MARCH, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aba Corporation: *See—*
    Rossi, Alberto; and Sury, Ernst, 3,647,791.
Abe, Fujio; and Crawford, Clifford R., to Burlington Industries, Inc. Data monitoring system. 3,648,026, Cl. 235-92.
Abe, Hisao: *See—*
    Tatsumi, Masanori; and Abe, Hisao,3,647,884.
Abe, Junnosuke: *See—*
    Ishizawa, Kazutomo; Nagata, Yasunori; Abe, Junnosuke; and Fukuoka, Akira,3,646,992.
Abe, Yoshiaki: *See—*
    Inoue, Takashi; and Abe, Yoshiaki,3,646,916.
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Dingley, Wilfred; Bednar, John S.; and Rogers, Raymond R., to Canadian Patents and Development Limited. Plating high strength steel without hydrogen embrittlement. 3,647,648, Cl. 204-34.

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- Zahradnik, George J.; and Pudark, Arthur A., to Dick, A. B., Company. Automatic stopping mechanism for a motion picture projector. 3,647,288, Cl. 352-174.
- Zalusky, James T.: *See—*
  - Zipin, Richard B.; and Zalusky, James T.,3,647,302.
- Zarrello, Thomas. Dye machine with fabric tension adjustment. 3,646,784, Cl. 68-20.
- Zaweski, Edward F.; and Meltsner, Bernard R., to Ethyl Corporation. Antioxidant composition for organic materials. 3,647,749, Cl. 260-45.85
- Zeman, Jack R. Artificial fish lure. 3,646,699, Cl. 43-35.
- Zemlin, John C., to USM Corporation. Stiffener and process for stiffening flexible sheet material. 3,647,616, Cl. 161-190.
- Zenith Radio Corporation: *See—*
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- Zenkner, Kurt. Device for adjusting the temperature. 3,646,875, Cl. 98-2.08
- Zerand Corporation: *See—*
  - Vischulis, George; and Sedlak, Charles K., 3,647,600.
- Ziegler, Carl; and Sprague, James M., to Merck & Co., Inc. Nuclear sulfonyl substituted N-acylbenzenesulfonamides. 3,647,873, Cl. 260-556.
- Ziemelis, Andris Eduardovich: *See—*
  - Berzin, Gunard Valdemarovich; Kalnin, Arvid Yanovich; Sushkov, Alexandr Fedorovich; Skrupsky, Voldemar Petrovich; Ziemelis, Andris Eduardovich; Soloviev, Boris Fedorovich; Leeniex, Karl Mikhailovich; Sovetin, Vladimir Kirilovich; Gulbis, Yan Karlovich; Dalbinsh, Yan Yanovich; Priede, Bruno Andreevich; Upman, Karl Kristapovich; Muzhits, Vitold Iosifovich; Junga, Yan Petrovich; Krogzem, Ivar Arnoldovich; Greitan, Zigurd Boleslavovich; and Rotsen, Karl Arturovich,3,646,687.
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- Zilahy, Zoltan E.; and Dato, Anthony L., to Standard Tool & Manufacturing Co. Machine having overhang supports for pallets. 3,646,656, Cl. 29-200.
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- Zipf, Frederick W., III, to Blessings, Inc. Disposable draw sheet. 3,646,624, Cl. 5-334.
- Zipin, Richard B.; and Zalusky, James T., to Bendix Corporaion, The. Apparatus for and method of obtaining precision dimensional measurements. 3,647,302, Cl. 356-106.
- Zisa, William J.: *See—*
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- Zurla, Frank A., to International Business Machines Corporation. Decimal addition employing two sequential passes through a binary adder in one basic machine cycle. 3,648,246, Cl. 340-172.5
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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

- Adams, Benjamin B.: *See—*
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- Allied Chemical Corp.: *See—*
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- Baker, Joseph W., and I. Schumacher. Bacteriostatic aralkanols. T896,003, 3-7-72, Cl. 260—618.
- Beach, David E. Lens cover and signal device. T896,020, 3-7-72, Cl. 95—11.
- Dillon, Brian D.: *See—*
  - Huffaker, James E., and Dillon. T896,014.
- Du Pont de Nemours, E. I., and Co.: *See—*
  - Harris, Roland G. T896,016.
  - Parsons, Joseph F. T896,005.
  - Reilly, Eugene P. T896,013.
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  - Starr, Frank C., Jr. T896,009.
  - Wolinski, Leon E. T896,017.
- Eastman Kodak Co.: *See—*
  - Stevenson, George M. T896,001.
- Glanvill, Alan B. Antistatic Polyolefin composition. T896,006, 3-7-72, Cl. 260—93.7.
- Halasa, Adel F. Composition of matter and method. T896,004, 3-7-72, Cl. 260—79.5.
- Harris, Roland G., to E. I. du Pont de Nemours and Co. Food package. T896,016, 3-7-72, Cl. 99—171.
- Huffaker, James E., and B. D. Dillon. Method of making plywood cores. T896,014, 3-7-72, Cl. 161—60.
- Lewis, Howard M. Prevention of fiber shedding from napped polyester blankets. T896,015, 3-7-72, Cl. 117—138.8.
- Lochmaier, Wayne W. Emulsions and uses thereof. T896,010, 3-7-72, Cl. 117—136.
- Nadeau, Gale F., Jr. *See—*
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- Parsons, Joseph F., to E. I. du Pont de Nemours and Co. Sandwich wire coating construction. T896,005, 3-7-72, Cl. 117—218.
- Reilly, Eugene P., to E. I. du Pont de Nemours and Co. Copolymers of methyl methacrylate. T896,013, 3-7-72, Cl. 260—86.1.
- Richard, Paul H., to E. I. du Pont de Nemours and Co. Frictional compositions. T896,002, 3-7-72, Cl. 117—161.
- Rufino, Jose J., to E. I. du Pont de Nemours and Co. Process of modifying polycarbonamide fibers with orthophenylphenol. T896,012, 3-7-72, Cl. 8—130.1.
- Schumacher, Ignatius: *See—*
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- Starr, Frank C., Jr., to E. I. du Pont de Nemours and Co. High friction article based on a polyimide resin. T896,009, 3-7-72, Cl. 260—37.
- Stevenson, George M., to Eastman Kodak Co. High purity polyester depolymerization products from polyester scrap by complete hydrogenation. T896,001, 3-7-72, Cl. 260—617.
- Stoneham, Jeffrey R., and B. B. Adams. Battery holder. T896,007, 3-7-72, Cl. 136—173.
- Tajb, Bernard, to Allied Chemical Corp. Scuff-resistant urethane coated fabrics. T896,018, 3-7-72, Cl. 117—76.
- Valentine, David L. Esters of 4-methylcyclohexanemethanol. T896,008, 3-7-72, Cl. 260—475.
- Ville, Ivan B.: *See—*
  - York, William C., and Ville. T896,011.
- Wolinski, Leon E., to E. I. du Pont de Nemours and Co. Thermoforming laminar foam structures. T896,017, 3-7-72, Cl. 264—321.
- York, William C., and I. B. Ville. Cleaning method and apparatus for removing developer from photosensitive elements. T896,011, 3-7-72, Cl. 117—37.
- Zaffrann, Ralph D., and G. F. Nadeau, Jr. Lithographic reproductions. T896,019, 3-7-72, Cl. 96—33.

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- Allen, C. Andrew, to S. A. Allen, Inc. Solenoid controlled valve. 223,095, 3-7-72, Cl. D23—19.
- Allen, S. A., Inc.: *See—*
  - Allen, C. Andrew. 223,095.
- Benrube, Jack S., assignor to Nathan Rosen and Morris Luxenberg, fractional part interest to each. Pants. 223,077, 3-7-72, Cl. D2—227.
- Bergman Tool Mfg. Co., Inc.: *See—*
  - Freedman, Alan A. 223,081.
- Brooks, Riley H. Paper towel dispenser. 223,049, 3-7-72, Cl. D52—2.
- Catalano, Paul D., and G. C. Hoehne, to Retention Communications Systems, Inc. Audio visual cartridge. 223,098, 3-7-72, Cl. D26—14.
- Cato, John B. Lightning insulator pad for campers, 223,093, 3-7-72, Cl. D23—10.
- Coleman, Clarence B., and H. R. Kattelmann; said Kattelmann assignor to Fabricated Metals, Inc. Convertible valve for vacuum release or pressure relief. 223,094, 3-7-72, Cl. D23—19.
- Donnelly, William B., to General Electric Co. Phonograph console. 223,052, 3-7-72, Cl. D56—4.
- Eastman Kodak Co.: *See—*
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- Freedman, Alan A., to Bergman Tool Mfg. Co., Inc. Battery carrier. 223,081, 3-7-72, Cl. D8—14.
- Fromm, Jacob F., to Springfield Electrical Specialties, Inc. Bracket for automotive condensers. 223,082, 3-7-72, Cl. D8—283.
- Genaro, Donald M., to The Singer Co. Sewing machine frame. 223,057, 3-7-72, Cl. D70—1.
- Genaro, Donald M., to The Singer Co. Sewing machine frame or similar article. 223,058, 3-7-72, Cl. D70—1.
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- Hanson, Thomas E., and J. E. Jolliffe, to Proctor-Silex Incorporated. Combined toaster and oven or the like. 223,066, 3-7-72, Cl. D81—10.
- Heltzen, John H., and F. G. Stone. Motorcycle luggage carrier and backrest combination. 223,070, 3-7-72, Cl. D90—3.
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- Hodge, Lynn H. Rear view mirror. 223,089, 3-7-72, Cl. D14—6.
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- Hoehne, George C.: *See—*
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- Kimmel, Irvine. Extruded H connector member. 223,088, 3-7-72, Cl. D13—6.
- Kinsinger, William C. Metagraphic Systems, Inc. Microfilm viewer. 223,054, 3-7-72, Cl. D61—1.
- Krumin, Donald K., and R. J. Toth, to Motorola, Inc. Radio pager or similar article. 223,097, 3-7-72, Cl. D26—14.
- Lingert, Ralph E., and R. E. Keyes, to The Finn Equipment Co. Particulate material distributor for utilization on oil pollution spills. 223,051, 3-7-72, Cl. D55—1.

- Long, Douglas G., and R. S. Waters, to Sunbeam Corp. Combined illuminable makeup mirror and vanity case. 223,068, 3-7-72, Cl. D86—10.
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- Pawsat, Carlton P., and R. F. Humlong, to Wald Mfg. Co., Inc. Reflective bicycle pedal. 223,074, 3-7-72, Cl. D90—14.
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- Schreckengost, Viktor, to The Murray Ohio Mfg. Co. Bicycle frame. 223,071, 3-7-72, Cl. D90—8.
- Singer Co., The: *See—*
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  - Genaro, Donald M. 223,059.
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- Springfield Electrical Specialties, Inc.: *See—*
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- Steinkamp, Norman A., to Sunbeam Corp. Electric hair dryer bonnet. 223,067, 3-7-72, Cl. D86—10.
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  - Zimmerman, Charles R., and Tuccio. 223,085.
- Tucker, Augusta, Jr. Beach insertable standard for pair of fishing poles with fish alarms. 223,092, 3-7-72, Cl. D22—22.
- Turner, Anthon H., to Turner and Sons. Charcoal oven. 223,065, 3-7-72, Cl. D81—10.
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  - Turner. Anthon H. 223,065.
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- Wald Mfg. Co., Inc.: *See—*
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  - Pawsat, Carlton P., and Humlong. 223,072.
  - Pawsat, Carlton P., and Humlong. 223,073.
  - Pawsat, Carlton P., and Humlong. 223,074.
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  - Long, Douglas G., and Waters. 223,068.
- Weckman, Richard L. Owens-Illinois, Inc. Bottle. 223,084, 3-7-72, Cl. D9—116.
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- Woodruff, William E. Eyeglass frame front. 223,053, 3-7-72, Cl. D57—1.
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- Zimmerman, Charles R., and R. Tuccio, to Mattel, Inc. Combined display and storage case. 223,085, 3-7-72, Cl. D9—221.
- Zylbert, Thaddeus J., to The Singer Co. Top cover for a sewing machine or similar article. 223,061, 3-7-72, Cl. D70—2.

CLASSIFICATION OF PATENTS

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30	3,647,406
	3,647,407
99A	3,647,408
117	3,647,409
184	3,647,410
CLASS 66	
25	3,646,779
85A	3,646,780
85	3,646,781
87	3,646,782
95	3,646,783
CLASS 68	
20	3,646,784
175	3,646,785
CLASS 70	
59	3,646,786
70	3,646,787
CLASS 71	
1	3,647,411
29	3,647,416
59	3,647,412
98	3,647,413
CLASS 72	
8	3,646,788
10	3,646,789
43	3,646,790
56	3,646,791
	3,646,792
137	3,646,793
187	3,646,794
238	3,646,795
258	3,646,796
289	3,646,798
326	3,646,797
370	3,646,799
391	3,646,800
410	3,646,801
CLASS 73	
17	3,646,802
27A	3,646,803
45.5	3,646,804
67.9	3,646,805
71.5	3,646,806
71.6	3,646,807
141A	3,646,809
155	3,646,808
161	3,646,810
182	3,646,811
190R	3,646,812
359	3,646,813
398AR	3,646,815
398R	3,646,814
425.4	3,646,816
425.6	3,646,817
517R	3,646,818
CLASS 74	
3.5	3,646,819
6	3,646,820
10.33	3,646,821
10.45	3,646,823
16	3,646,824
53	3,646,822
63	3,646,825
142	3,646,826
424.8	3,646,827
484	3,646,828
513	3,646,829
516	3,646,830
518	3,646,831
519	3,646,832
589	3,646,833
674	3,646,834
860	3,646,835
864	3,646,836
CLASS 75	
.5BB	3,647,415
1	3,647,414
35	3,647,417
82	3,647,418
	3,647,419
84	3,647,420
84.1A	3,647,421
101	3,647,422
103	3,647,423
123AA	3,647,424
124	3,647,425
129	3,647,426
CLASS 81	
10	3,646,837
CLASS 82	
1C	3,646,838
1	3,646,839
82	3,646,840
CLASS 83	
104	3,646,842
112	3,646,643
171	3,646,841
CLASS 84	
1.01	3,647,929
1.18	3,647,927
1.24	3,647,928
318	3,647,930
411	3,647,931
419	3,646,843
CLASS 86	
20A	3,646,845
20	3,646,844
CLASS 87	
1	3,646,846
CLASS 89	
1G	3,646,847
CLASS 90	
11C	3,646,848
CLASS 91	
52	3,646,849
391	3,646,850
459	3,646,851
467	3,646,852
CLASS 92	
76	3,646,853
98	3,646,854
CLASS 93	
1C	3,646,855
35R	3,646,856
37R	3,646,857
62	3,646,858
CLASS 95	
10CT	3,646,859
	3,646,860
10C	3,646,861
11UW	3,646,863
11.5R	3,646,864
	3,646,865
31AC	3,646,862
	3,646,867
42	3,646,868
53EB	3,646,869
59	3,646,870
64B	3,646,871
89R	3,646,873
89	3,646,872
CLASS 96	
1.5	3,647,427
	3,647,428
	3,647,429
	3,647,430
	3,647,431
1.6	3,647,432
	3,647,433
3	3,647,434
	3,647,435
	3,647,436
	3,647,437
27	3,647,438
29R	3,647,439
29	3,647,440
	3,647,441
	3,647,442
33	3,647,443
	3,647,444
35	3,647,445
35.1	3,647,446
	3,647,447
38.4	3,647,456
41	3,647,457
45.2	3,647,458
48	3,647,448
	3,647,450
50	3,647,449
52	3,647,451
55	3,647,452
61	3,647,453
64	3,647,455
66	3,647,460
	3,647,461
	3,647,462
66.5	3,647,459
67	3,647,454
68	3,647,463
76	3,647,464
78	3,647,465
90	3,647,467
99	3,647,466
100	3,647,468
107	3,647,469
115	3,647,470
116	3,647,471
CLASS 98	
1.5	3,646,874
2.08	3,646,875
2.11	3,646,876
110	3,646,877
CLASS 99	
34	3,647,472
52	3,647,473
83	3,647,474
86	3,646,894
105	3,647,475
	3,647,476
136	3,647,477
137	3,647,478
140R	3,647,479
	3,647,480
	3,647,481
141A	3,647,482
	3,647,483
145	3,647,484
174	3,647,485
186	3,647,486
225	3,647,487
339	3,646,878
	3,646,879
349	3,646,880
351	3,646,881
408	3,646,882
CLASS 100	
53	3,646,883
CLASS 101	
33	3,646,884
328	3,646,885
378	3,646,886
CLASS 102	
34.5	3,646,887
67	3,646,888
70B	3,646,889
CLASS 104	
1	3,646,890
26R	3,646,891
148	3,646,892
CLASS 105	
182R	3,646,893
CLASS 106	
35	3,647,488
39DV	3,647,489
54	3,647,490
	3,647,491
187	3,647,493
288Q	3,647,494
291	3,647,492
300	3,647,495
309	3,647,496
CLASS 108	
118	3,646,895
139	3,646,896
CLASS 110	
8A	3,646,897
14	3,646,898

CLASS 112

235	3,646,899
258	3,646,900

CLASS 114

.5	3,646,901
66.5H	3,646,902

CLASS 115

1	3,646,904
12R	3,646,903
70	3,646,905

CLASS 116

	3,646,906

CLASS 117

5.5	3,647,497
8	3,647,498
17.5	3,647,499
21	3,647,500
34	3,647,501
36.1	3,647,502
36.4	3,647,503
36.7	3,647,504
37R	3,647,505
	3,647,506
38	3,647,507
	3,647,508
45	3,647,509
46CG	3,647,511
46FC	3,647,510
47A	3,647,512
	3,647,513
	3,647,514
62	3,647,515
64	3,647,516
71M	3,647,517
71R	3,647,518
	3,647,519
93.31	3,647,520
95	3,647,521
100B	3,647,522
	3,647,523
107.1	3,647,524
111	3,647,525
115	3,647,526
138.8A	3,647,527
155UA	3,647,528
161UN	3,647,529
201	3,647,530
211	3,647,531
212	3,647,532
	3,647,533
	3,647,534
	3,647,535
227	3,647,536
	3,647,537
234	3,647,538
235	3,647,539
	3,647,540
239	3,647,541

CLASS 118

264	3,646,907
304	3,646,908
629	3,646,909
637	3,646,910

CLASS 119

51	3,646,911
51.12	3,646,912
51.13	3,646,913

CLASS 123

32EA	3,646,914
	3,646,915
	3,646,916
	3,646,917
	3,646,918
41.82	3,646,919
117A	3,646,920
	3,646,921
	3,646,922
119A	3,646,923
119B	3,646,925
120	3,646,924
148E	3,646,926

CLASS 126

39J	3,646,927
41R	3,646,928

CLASS 128

1R	3,646,929
2.05T	3,646,931
2.06F	3,646,930
95	3,646,932
145.8	3,646,933
212	3,646,934
276	3,646,935
283	3,646,936
287	3,646,937
292	3,646,938
321	3,646,939
421	3,646,940

CLASS 131

9	3,646,941
65	3,646,942
140C	3,646,943
187	3,646,944

CLASS 132

11	3,646,945

CLASS 134

3	3,646,946
57D	3,646,948
167C	3,646,947

CLASS 135

58	3,646,949

CLASS 136

6	3,647,542
	3,647,543
20	3,647,586
24	3,647,544
26	3,647,545
43	3,647,546
75	3,647,547
82	3,647,548
83R	3,647,549
86A	3,647,550
122	3,647,551
131	3,647,552
134R	3,647,553
145	3,647,554
162	3,647,555
170	3,647,556
177	3,647,557
234	3,647,558
	3,647,559
	3,647,560

CLASS 137

13	3,646,950
81.5	3,646,951
	3,646,952
155	3,646,953
318	3,646,954
382	3,646,955
525	3,646,956
	3,646,957
553	3,646,958
565	3,646,960
577	3,646,961
594	3,646,962
596.12	3,646,959
608	3,646,963
614.03	3,646,964
614.06	3,646,965
625.4	3,646,966
625.47	3,646,967
625.64	3,646,968
627.5	3,646,969

CLASS 138

46	3,646,970
	3,646,971
111	3,646,972

CLASS 139

153	3,646,973

CLASS 141

392	3,646,974

CLASS 144

34E	3,646,975
242R	3,646,976

CLASS 146

78R	3,646,977
83	3,646,978
189A	3,646,979

CLASS 148

1.6	3,647,561
2	3,647,562
	3,647,563
	3,647,564
	3,647,565
6.15R	3,647,567
6.15Z	3,647,568
6.16	3,647,569
6.3	3,647,566
9.5	3,647,570
12.3	3,647,571
16.6	3,647,572
101	3,647,573
103	3,647,574
111	3,647,575
126	3,647,576
150	3,647,577
171	3,647,578
	3,647,579
175	3,647,580
	3,647,581

CLASS 150

52R	3,646,980

CLASS 151

41.7	3,646,981
	3,646,982

CLASS 152

323	3,646,983

CLASS 156

3	3,647,582
6	3,647,583
11	3,647,584
17	3,647,585
71	3,647,587
79	3,647,588
165	3,647,589
211	3,647,590
220	3,647,591
285	3,647,592
300	3,647,593
306	3,647,594
331	3,647,595
345	3,647,596
415	3,647,598
502	3,647,599
504	3,647,600
511	3,647,601
528	3,647,602

CLASS 157

13	3,646,984

CLASS 160

168	3,646,985
	3,646,986

CLASS 161

5	3,647,603
15	3,647,604
31	3,647,605
52	3,647,606
89	3,647,607
95	3,647,608
160	3,647,609
163	3,647,611
165	3,647,612
	3,647,613
166	3,647,614
170	3,647,615
190	3,647,616
216	3,647,617

CLASS 162

161	3,647,610
205	3,647,618
206	3,647,619
211	3,647,620
274	3,647,621

CLASS 164

5	3,646,987
251	3,646,988
274	3,646,989
304	3,646,990
342	3,646,991

CLASS 165

1	3,646,992
9	3,646,993
69	3,646,994

CLASS 166

.5	3,646,995
212	3,646,996
250	3,646,997
276	3,646,998
281	3,646,999
285	3,647,000

CLASS 169

1A	3,647,001
16	3,647,002

CLASS 172

40	3,647,003
152	3,647,004
259	3,647,005
803	3,647,006

CLASS 174

34	3,647,932
43	3,647,933
65R	3,647,934
68.5	3,647,935
69	3,647,936
88B	3,647,937
128	3,647,939
143	3,647,938

CLASS 175

5	3,647,007
18	3,647,008
242	3,647,009

CLASS 176

68	3,647,622
	3,647,623

CLASS 177

230	3,647,010

CLASS 178

5.4HE	3,647,941
5.4ST	3,647,943
	3,647,945
	3,647,946
	3,647,947
	3,647,948
5.4R	3,647,940
	3,647,944
5.4	3,647,942
5.6	3,647,949
5.8A	3,647,950
6.6A	3,647,951
	3,647,953
	3,647,954
6.8	3,647,957
7.2	3,647,952
7.3D	3,647,958
7.6	3,647,955
	3,647,956
7.8	3,647,960
7.85	3,647,961
7.87	3,647,959
17C	3,647,962
19	3,647,963
68	3,647,964
69.5CB	3,647,965
70R	3,647,966
88	3,647,967

CLASS 179

1F	3,647,969
1N	3,647,968
1.5	3,647,970
2DP	3,647,972
	3,647,973
2A	3,647,971
5R	3,647,974
15AL	3,647,976
15BA	3,647,975
	3,647,977
15A	3,647,978
18AH	3,647,981
18ES	3,647,979
	3,647,980
81A	3,647,982
99	3,647,983
100.1DR	3,647,985
100.2MD	3,647,986
	3,647,989
100.2R	3,647,988
100.2S	3,647,991
100.2Z	3,647,984
	3,647,987
	3,647,990
170.2	3,647,992
	3,647,993

CLASS 180

6.48	3,647,011
8F	3,647,012
13	3,647,013
14	3,647,014
27	3,647,015
105R	3,647,016
105	3,647,017
124	3,647,018

CLASS 181

.5	3,647,019
33HC	3,647,020
	3,647,021
33G	3,647,022

CLASS 182

23	3,647,023

CLASS 184

6.18	3,647,024

CLASS 185

39	3,647,025

CLASS 186

1C	3,647,026

CLASS 187

73	3,647,027

CLASS 188

1	3,647,028
32	3,647,029
72.3	3,647,030
72.6	3,647,031
112	3,647,032
251R	3,647,033
343	3,647,034

CLASS 190

45	3,647,035

CLASS 192

26	3,647,036
106F	3,647,037
141	3,647,038
146	3,647,039

CLASS 195

1.8	3,647,624
11	3,647,625
28N	3,647,626
	3,647,627
29	3,647,628
30	3,647,629
63R	3,647,630
80	3,647,631
139	3,647,633
142	3,647,632

CLASS 196

132	3,647,634
	3,647,635

CLASS 197

16	3,647,040
19	3,647,041
	3,647,042

CLASS 198

	3,647,043
31AC	3,647,044
41	3,647,045
127	3,647,046
174	3,647,047
177	3,647,048
192	3,647,049
203	3,647,050
204	3,647,051
233	3,647,052

CLASS 200

4	3,647,994
24	3,647,995
48	3,647,996
50C	3,647,997
61.42	3,647,998
61.45R	3,647,999
153S	3,648,000
157	3,648,001
166BB	3,648,003
166C	3,648,002
166H	3,648,004

CLASS 201

1	3,647,053

CLASS 202

263	3,647,636

CLASS 203

9	3,647,637
11	3,647,638
14	3,647,639
29	3,647,054
38	3,647,640

CLASS 204

1T	3,647,641
11	3,647,642
15	3,647,643
	3,647,644
	3,647,645
25	3,647,646
32R	3,647,647
34	3,647,648
35N	3,647,649
35R	3,647,650
43	3,647,652
73A	3,647,651
130	3,647,653
140.5	3,647,654
158R	3,647,655
	3,647,656
168	3,647,657
181	3,647,658
	3,647,659
	3,647,660
	3,647,661
192	3,647,662
	3,647,663
	3,647,664
194	3,647,665
195	3,647,666
	3,647,668
212	3,647,669
219	3,647,670
224	3,647,671
244	3,647,673
284	3,647,672
	3,647,674
299	3,647,667
300	3,647,675
312	3,647,676

CLASS 206

1R	3,647,055
5	3,647,056
17	3,647,057
56AC	3,647,058
58	3,647,059
	3,647,060
83.5	3,647,061

CLASS 208

48	3,647,677
59	3,647,678
63	3,647,679
65	3,647,680
111	3,647,681
120	3,647,682
196	3,647,683

CLASS 209

3	3,647,062
74	3,647,063
80.5	3,647,064
88	3,647,065
169	3,647,066
242	3,647,067
310	3,647,068

CLASS 210

31	3,647,684
39	3,647,685
44	3,647,069
48	3,647,686
63	3,647,687
83	3,647,070
107	3,647,071
150	3,647,081
225	3,647,082
236	3,647,083
492	3,647,084
500	3,647,085
	3,647,086

CLASS 211

1.3	3,647,073
4	3,647,072
40	3,647,074
88	3,647,076
126	3,647,077
134	3,647,078
153	3,647,075
176	3,647,079
	3,647,080

CLASS 212

59	3,647,087

CLASS 213

8	3,647,088

CLASS 214

1BB	3,647,090
1A	3,647,089
6B	3,647,091
6S	3,647,092
8.5C	3,647,093
17DA	3,647,094
41	3,647,095
83.36	3,647,096
506	3,647,097
508	3,647,098
674	3,647,099

CLASS 219

8.5	3,648,005
58	3,648,006
59	3,648,007
67	3,648,008
69D	3,648,013
118	3,648,014
121EM	3,648,009
121P	3,648,015
142	3,648,016
213	3,648,017
214	3,648,010
271	3,648,018
386	3,648,019
413	3,648,011
	3,648,012

CLASS 220

1.5	3,647,100
3	3,647,103
4R	3,647,101
17	3,647,102
20	3,647,104
23.4	3,647,105
26D	3,647,113
31R	3,647,106
46	3,647,108
47	3,647,109
60R	3,647,107
72	3,647,110
83	3,647,111
97D	3,647,112

CLASS 221

59	3,647,114

CLASS 222

39	3,647,115
70	3,647,116
100	3,647,117
145	3,647,118
402.18	3,647,119
402.22	3,647,120
402.24	3,647,121
501	3,647,122

CLASS 226

22	3,647,123
46	3,647,124
62	3,647,125
105	3,647,126
155	3,647,127
195	3,647,128

CLASS 227

112	3,647,129

CLASS 228

5	3,647,130
	3,647,131

CLASS 229

2.5	3,647,132
37	3,647,133
55	3,647,134

CLASS 233

1A	3,647,135

CLASS 235

61.11D	3,648,023
61.11E	3,648,024
61.7B	3,648,020
	3,648,021
61.9R	3,648,022
83	3,648,025
92DN	3,648,029
92PD	3,648,026
92PL	3,648,030
92QC	3,648,027
92C	3,648,028
150.1	3,648,031
150.21	3,648,033
150.26	3,648,034
150.5	3,648,032
151.1	3,648,035
154	3,648,036
164	3,648,038

181	3,648,039
	3,648,040
186	3,648,041
189	3,648,042
197	3,648,037
	3,648,043

CLASS 237

8	3,647,136

CLASS 239

102	3,647,137
104	3,647,138
177	3,647,139
242	3,647,140
265.29	3,647,141
288.3	3,647,142
342	3,647,143
456	3,647,144
460	3,647,145
559	3,647,146
599	3,647,147

CLASS 240

8.16	3,648,044
44.2	3,648,045
93	3,647,148

CLASS 241

65	3,647,149
75	3,647,150
92	3,647,151

CLASS 242

55.2	3,647,158
55.53	3,647,159
60	3,647,152
82	3,647,153
83	3,647,154
106	3,647,155
118.1	3,647,156
191	3,647,157

CLASS 244

1N	3,647,160
3.2	3,647,161
	3,647,162
49	3,647,163
63	3,647,164
102A	3,647,166
118P	3,647,165
121	3,647,167
122A	3,647,168
129	3,647,169
136	3,647,170

CLASS 248

221	3,647,171
361R	3,647,172

CLASS 249

31	3,647,173

CLASS 250

41.9DS	3,648,046
41.9G	3,648,047
49.5A	3,648,048
71.5R	3,648,049
208	3,648,050
211J	3,648,051
213R	3,648,052
214P	3,648,053
223R	3,648,054
231R	3,648,055
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1	3,647,174
61	3,647,175
122	3,647,176
129	3,647,177
148	3,647,178
172	3,647,179
306	3,647,180
317	3,647,181
361	3,647,182

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8.55C	3,647,688
25	3,647,689
33.3	3,647,690
51.5A	3,647,691
	3,647,692
	3,647,694
57	3,647,693
62	3,647,695
62.1	3,647,696
62.9	3,647,697
79.2	3,647,699
79.4	3,647,698
89	3,647,700
180	3,647,703
182	3,647,701
	3,647,702
	3,647,704
301.2R	3,647,705
301.4P	3,647,706
301.4S	3,647,707
301.6R	3,647,708
317	3,647,709
319	3,647,710
344	3,647,711
364	3,647,712
408	3,647,713
417	3,647,714
429R	3,647,715
445	3,647,716
455Z	3,647,717
	3,647,718
466PT	3,647,719
476	3,647,720

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2B	3,647,183
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30	3,647,185
78	3,647,186

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4	3,647,187
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45	3,647,189
104	3,647,190

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2.5AK	3,647,721
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18S	3,647,725
	3,647,727
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23AR	3,647,729
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28.5AV	3,647,733
28.5	3,647,732
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75R	3,647,759
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78TF	3,647,762
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78P	3,647,764
78R	3,647,761
79	3,647,766
80.7	3,647,767
80.78	3,647,768
85.5S	3,647,770
85.5	3,647,769
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	3,648,068
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9	3,647,272
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201	3,647,269
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10	3,648,082
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DESIGN PATENTS

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DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

10 : 896,002
10 : 896,009
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27 : 896,003
36 : 896,007
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39 : 896,004
42 : 896,001

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896,016
47 : 896,008

896,010
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48 : 896,015

U.S. GOVERNMENT PRINTING OFFICE: O—1972

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

March 14, 1972 Volume 896 Number 2

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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office either on the basis of 4 years or more service in the Examining Corps or under Rule 341(e) of the "Rules of Practice of the United States Patent Office in Patent Cases."

Information tending to affect the eligibility of said applicants on moral or ethical, or other grounds should be furnished the Commissioner of Patents on or before March 31, 1972.

Ballantyne, Donald G., 815 Du Chateau, Mont St. Hilaire, Quebec, Canada
Frome, Morton J., 12714 Saddlebrook Drive, Silver Spring, Md. 20906
Geiger, Laverne D., 5710 Huntington Parkway, Bethesda, Md. 20014

LUTRELLE F. PARKER,
Feb. 15, 1972. *Chairman, Committee on Enrollment.*

TITLE 43—PUBLIC LANDS: INTERIOR

Subtitle A—Office of the Secretary of the Interior

[Circular 2320]

PART 25—USE OF THE "JOHNNY HORIZON" SYMBOL

On page 21207 of the Federal Register of November 4, 1971, there was published a notice and text of a proposed amendment to Subtitle A of Title 43, Code of Federal Regulations. The purpose of the amendment is to provide rules for the commercial manufacture, importation, reproduction, and use of the character "Johnny Horizon"—the official symbol for a public service antilitter and environmental cleanup program to maintain the beauty and utility of the Nation's public lands carried on by the Department of the Interior. It also provides guidelines for noncommercial use and for contributions of money and personal property to the "Johnny Horizon" program. These regulations are promulgated in accordance with the Act of September 25, 1970 (84 Stat. 870).

Interested persons were given until December 16, 1971, within which to submit comments, suggestions, or objections to the proposed amendment. Only one comment was received which suggested that the word "importation" be included in certain sections to prevent the importation of unauthorized "Johnny Horizon" items manufactured or reproduced outside of the United States. This suggested change has been made. A reference to State agencies as possible cooperators has also been added.

The proposed amendment is hereby adopted as changed, and is set forth below. This amendment shall become effective February 15, 1972.

HARRISON LOESCH,
Feb. 4, 1972. *Assistant Secretary of the Interior.*

Sec.
25.0–1 Purpose.
25.0–2 Objectives.
25.0–3 Authority.
25.0–5 Definitions.
25.1 Commercial use.
25.2 Noncommercial use.
25.3 Contributions.
25.4 Unauthorized use.

AUTHORITY: The provision of this Part 25 issued under the Act of September 25, 1970 (84 Stat. 870).

A new Part 25 is added to Subtitle A, Title 43 of the Code of Federal Regulations to read as follows:

§ 25.0–1 *Purpose.*

This subpart establishes rules for the commercial and noncommercial use of the "Johnny Horizon" symbol and name.

§ 25.0–2 *Objectives.*

The objectives of these regulations are (a) to maintain the integrity of the name and characterization of "Johnny Horizon"—the official symbol for a public service antilitter and environmental cleanup program to maintain the beauty and utility of the Nation's public lands, (b) to authorize the noncommercial use of the symbol, and (c) to provide for use or royalty fees for the manufacture, reproduction, or use of the symbol for commercial purposes.

§ 25.0–3 *Authority.*

The Act of September 25, 1970 (84 Stat. 870) authorizes the Secretary of the Interior to establish and collect use or royalty fees for the manufacture, reproduction, or use of the "Johnny Horizon" name and symbol. The Act makes unauthorized manufacture, reproduction, and use a crime (18 U.S.C. 714). The Act also provides that royalty and use fees will be deposited in a special account and used for the purpose of furthering nationwide antilitter campaigns.

§ 25.0–5 *Definitions.*

As used in this part:

(a) The term "Johnny Horizon" means the name or characterization "Johnny Horizon" originated by the Bureau of Land Management, Department of the Interior, as the official symbol for a public service antilitter and environmental cleanup program, and as described in 18 U.S.C. 714, the representation of a tall, lean man, with strong facial features, who wears slacks and sport shirt buttoned to the collar (both green, when colored), no tie, a field jacket (red, when colored), boot-type shoes (brown, when colored) and who carries a backpack.

(b) "Director" means the Director of the Bureau of Land Management, or the person he delegates to act for him on matters pertaining to the "Johnny Horizon" program.

(c) "Johnny Horizon program" means those activities and supporting services conducted in furtherance of a public service antilitter and environmental cleanup campaign which uses the "Johnny Horizon" name or symbol.

§ 25.1 *Commercial use.*

(a) *Licenses.* The "Johnny Horizon" name or symbol may be used for commercial purposes only under a license issued pursuant to the regulations in this part. Licenses will be granted to any individual, business, or corporation if the Director determines that the proposed commercial use will promote the purposes of the "Johnny Horizon" program and will not impair the integrity of the name or symbol.

(b) *Terms and conditions.* In order to maintain the integrity of the "Johnny Horizon" program and to regulate the manufacture, importation, reproduction, and use of the "Johnny Horizon" name and symbol licenses will be subject, but not limited, to the following terms and conditions:

(1) Payment of fair return to the United States for its Property through negotiation of use or royalty fees.

(2) Licenses are nontransferable.

(3) All proposed products must be approved by the Director prior to manufacture, importation, or reproduction by the licensee. Substances inherently dangerous to users shall not be used.

(4) All licenses shall contain Equal Employment Opportunity provisions in compliance with Executive Order 11246, as amended (30 F.R. 12319 (1965)), and regulations issued pursuant thereto (41 CFR Chapter 60 and Part 17 of this chapter).

(5) Alteration of artwork must first be approved by the Director.

(6) Licenses shall be subject to revocation by the Director at any time he finds that (i) the use involved is injurious to the characterization of "Johnny Horizon," or (ii) there has been a violation of the terms and conditions of the license.

§ 25.2 *Noncommercial use.*

(a) *Permitted uses.* Products bearing the name or symbol of "Johnny Horizon," provided by the Government or acquired from licensed sources, may be used without a license or advance permission by any person or organization for the purpose of furthering antilitter and environmental cleanup campaigns, provided that no charge is made by the unlicensed user for service or products.

(b) *Technical advice.* To the extent possible, technical advice will be given to interested parties upon request to the Director.

(c) *Cooperation.* The Director may enter into cooperative agreements with other Federal and State agencies for use of the name or symbol of "Johnny Horizon." Agreements shall state the responsibilities of each agency pertaining to (1) maintaining the integrity of the program, (2) supplying materials, (3) assisting other groups or organizations, (4) restrictions of uses of materials, (5) altering artwork, and (6) making arrangements with public personalities engaged in the program.

§ 25.3 *Contributions.*

The Director may accept contributions of money and personal property by any person or organization for use in the "Johnny Horizon" program.

§ 25.4 *Unauthorized use.*

Manufacture, importation, reproduction, or use of the "Johnny Horizon" name or symbol, except as provided for under these regulations, in this part is prohibited (18 U.S.C. 714).

[FR Doc. 72–2144; Filed 2–11–72; 8:51 a.m.]

37 F.R. 3183; Feb. 12, 1972

Disclaimers

3,382,169.—*Joseph Thompson,* East Amwell Township, Hunterdon County, N.J. PROCESS FOR DEIONIZING AQUEOUS SOLUTIONS. Patent dated May 7, 1968. Disclaimer filed Feb. 4, 1972, by the assignee, *Illinois Water Treatment Co.*

Hereby enters this disclaimer to claims 2, 3 and 6 of said patent.

3,429,094.—*James P. Romualdi,* Pittsburgh, Pa. TWO-PHASE CONCRETE AND STEEL MATERIAL. Patent dated Feb. 25, 1969. Disclaimer filed Jan. 27, 1972, by the assignee, *The Battelle Development Corporation.*

Hereby enters this disclaimer to claims 1, 2, 5, 6, and 10–18, inclusive, of said patent.

Dedications

2,899,781.—*Lynn A. Williams,* Winnetka, Ill. COOLANT APPLICATOR. Patent dated Aug. 18, 1959. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

2,950,239.—*Lynn A. Williams,* Winnetka, Ill. CONTROL SYSTEM FOR ELECTROLYTIC GRINDING. Patent dated Aug. 23, 1960. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

2,961,394.—*Lynn A. Williams,* Winnetka, and *William F. Gradolph, Jr.,* Elmhurst, Ill. GRINDING APPARATUS. Patent dated Nov. 22, 1960. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,002,907.—*Lynn A. Williams,* Winnetka, Ill. ELECTROLYTIC HOLE SINKING. Patent dated Oct. 3, 1961. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,017,340.—*Lynn A. Williams,* Winnetka, Ill. ELECTROLYTIC APPLICATOR. Patent dated Jan. 16, 1962. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,019,178.—*Lynn A. Williams,* Winnetka, Ill. ELECTRODE FOR ELECTROLYTIC SHAPING. Patent dated Jan. 30, 1962. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,041,265.—*Lynn A. Williams,* Winnetka, Ill. ELECTRODE FOR ELECTROLYTIC HOLE SINKING. Patent dated June 26, 1962. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,043,766.—*Lynn A. Williams,* Winnetka, Ill. ELECTROLYTIC GRINDING APPARATUS. Patent dated July 10, 1962. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,103,482.—*John W. Graham,* Koegasbrug, Republic of South Africa. ELECTROLYTIC GRINDING. Patent dated Sept. 10, 1963. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

Certificates of Correction for the Week of Mar. 14, 1972

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PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 22, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-08-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-04-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-02-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-14-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	6-23-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-11-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-05-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-04-71
PHYSICS, GROUP 280—R. L. EVANS, Director Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	1-04-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	1-04-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	1-06-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	1-04-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-02-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	2-22-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	1-15-71

Expiration of patents: The patents within the range of numbers indicated below expire during March 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,702,901 to 2,705,321, inclusive
Plant Patents	Numbers 1,855 to 1,873, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED DECEMBER 14, 1971

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T896,021

STABILIZED OXIDIZED-POLYETHYLENE COMPOSITIONS

Daniel L. Edwards, Jr., and Sarah J. Dickerson, both of P.O. Box 511, Kingsport, Tenn. 37662

Continuatiion of application Ser. No. 779,245, Nov. 26, 1968. This application Aug. 14, 1970, Ser. No. 63,951

Int. Cl. C08f *45/46*
U.S. Cl. 260—29.6 MP

No Drawing. 15 Pages Specification

Compositions of stabilized oxidized-polyethylene are provided which have improved color stability when reacted with alkaline reagents. The improved color stability is obtained by incorporating into the oxidized-polyethylene a stabilizing amount of a phosphorus-containing compound which is (1) an oxy acid of phosphorus in which the phosphorus atom has an oxidation state of +1 or +3; (2) an alkali metal salt of an oxy acid as described in (1) wherein the alkali metal is lithium, sodium, or potassium; or (3) a reaction product of an oxy acid as described in (1) with ammonia, morpholine, or a primary, secondary or tertiary amine having 1 to 6 carbon atoms.

T896,022

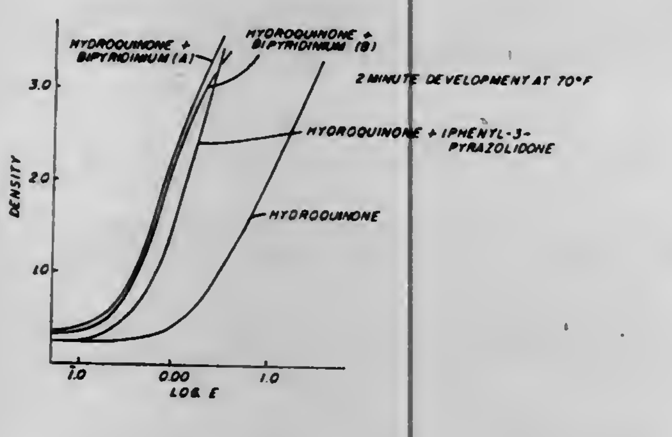
PHOTOGRAPHIC DEVELOPER COMPOSITIONS AND METHOD

Leslie A. Williams, % Kodak Limited, London, England, and William E. Lee, Kodak Park Works, Rochester, N.Y. 14650

Filed Aug. 21, 1970, Ser. No. 65,828

Int. Cl. G03c *5/30*
U.S. Cl. 96—66.3

1 Sheet Drawing. 26 Pages Specification



The silver halide developing activity of photographic developing agents such as hydroquinone or ascorbic acid is increased by incorporating in an alkaline solution of the developing agent a bis quaternary salt of a 2,2′- or a 4,4′-bipyridyl compound, such as 1,1′-dialkyl-4,4′-bipyridinium dibromide.

T896,023

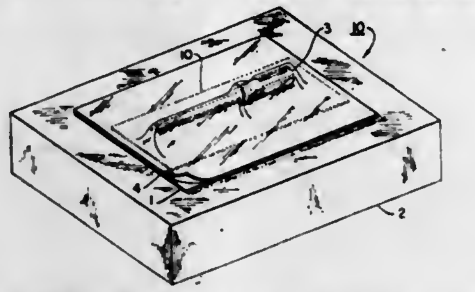
SKIN PACKAGING AND ENCAPSULATING ARTICLES SUPPORTED ON A PLASTIC SUBSTRATE

Barry S. Rope, 25610 Shiawassee, Apt. 162, Southfield, Mich., and Ernest L. Myers, Rte. 1, Hiltons, Va. 24258

Filed Dec. 2, 1970, Ser. No. 94,258

Int. Cl. B65d *73/00, 75/36, 85/00*
U.S. Cl. 206—80 A

1 Sheet Drawing. 11 Pages Specification



In the so-called "skin packaging" process an article to be packaged is laid on a substrate, or supporting element, in the form of a cardboard or other porous sheet of such size as to leave a substantial portion of free margin around the article. A thin transparent film of thermoplastic material, heated to a sufficient temperature so as to be in a softened and tacky condition, is then draped over the article. Application of a vacuum to the underside of the substrate causes the covering film to bond to the substrate and thus completely enclose the article. By employing a substrate comprising an impervious, thermoplastic material composed of a material the same as or similar to that of the covering sheet, in lieu of the cardboard or porous substrate, the article to be packaged can be completely encapsulated with the result that gaseous, vaporous or solid impurities are kept out of contact with the packaged article. This improved method and means of skin packaging is useful in packaging a wide variety of commercial products and is especially useful in the packaging of surgical materials or instruments which must be kept sterile and free from all impurities or microorganisms while in packaged form.

T896,024

PHOTOGRAPHIC ELEMENTS, COMPOSITIONS AND PROCESSES USING EUTECTIC COMPOSITIONS

Howard A. Miller and Richard W. Henn, both % Eastman Kodak Co., Kodak Park Division, Rochester, N.Y. 14650

Filed Dec. 21, 1970, Ser. No. 100,436

Int. Cl. G03c *5/30*
U.S. Cl. 96—66.3

No Drawing. 20 Pages Specification

In an image reproduction process wherein a latent image is developed employing a silver halide processing agent in a liquid medium, the liquid medium can be provided by intimately bringing together under ambient conditions at least two eutectic precursors each of which is solid under ambient conditions but which form a liquid medium in intimate contact. A photographic element containing urethane can be pressed on a solid composition containing a processing agent, such as a silver halide developing agent and a development activator, and a eutectic precursor which is 2,2-diethyl-1,3-propanediol; 2,2,4-trimethyl-1,3-pentanediol; 2-butyne-1,4-diol; and/or 1,3-dimethylurea, to form a liquid medium. Various addenda employed in photographic elements, such as developers, accelerators, hardeners, antifoggants, fixing agents, stabilizing agents, dye and the like can be employed with the described eutectic precursors.

T896,025

CONTROLLED FOAM DETERGENT FORMULATION

Paul Sosis, Fair Lawn, N.J., and Richard D. Katstra, Englewood, Calif., assignors to Continental Oil Company, Ponca City, Okla.

Filed Jan. 27, 1971, Ser. No. 110,344

Int. Cl. C11d *1/831*
U.S. Cl. 252—121

No Drawing. 13 Pages Specification

A controlled foam detergent formulation containing ethoxylated nonionic surfactants, sodium linear alkylbenzene sulfonates, and a foam modifier, such as a linear fatty acid containing less than five percent C_{20} component in the fatty acid carbon chain of C_{16} to C_{22}.

T896,026

POLYESTERAMIDES OF p-AMINOMETHYLPHENOLS

Bernard C. Cossar, Pittsford, and Frederick L. Hamb, Rochester, N.Y. (both of 1669 Lake Ave., Rochester, N.Y. 14650)

Filed Feb. 1, 1971, Ser. No. 111,756

Int. Cl. C08g *20/30*
U.S. Cl. 96—87

No Drawing. 24 Pages Specification

High molecular weight, film forming polyesteramides of p-aminomethylphenols and dicarboxylic acids are readily convertible into photographic film bases. The polyesteramides of this invention have an inherent viscosity of from about .30 to about 1.00.

T896,027

SUBSTITUTED INDANONES AND INDANDIONES AS ORGANIC PHOTOCONDUCTORS

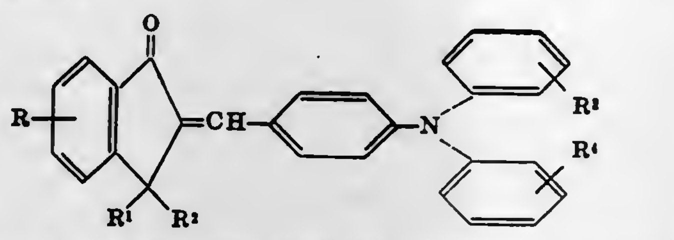
John A. Ford, Jr., Rochester, and Donald P. Specht, Spencerport, N.Y. (both of Kodak Park, Rochester, N.Y. 14650)

Filed Feb. 24, 1971, Ser. No. 118,496

Int. Cl. G03c *5/06*
U.S. Cl. 96—1.5

No Drawing. 18 Pages Specification

Certain 2-arylidene-1-indanones and 2-arylidene-1,3-indandiones are useful as photoconductors in electrophotographic elements. Typical compounds of this type have the formula:



wherein R is a hydrogen atom, an alkylamino radical or a diarylamino radical including substituted diarylamino radicals having such substituents as a halogen atom, an alkyl radical or an alkoxy radical; R^1 and R^2, when taken separately, each represents hydrogen and when taken together represent an oxo group; and each of R^3 and R^4 represents a hydrogen atom, a halogen atom, a nitro radical, an alkyl radical, an alkoxy radical and an acylamino radical. Electrophotographic elements are prepared by mixing these photoconductive compounds with a suitable polymeric, film-forming, electrically insulating binder and coating on an electrically conductive support. Various sensitizers can also be used if desired.

T896,028

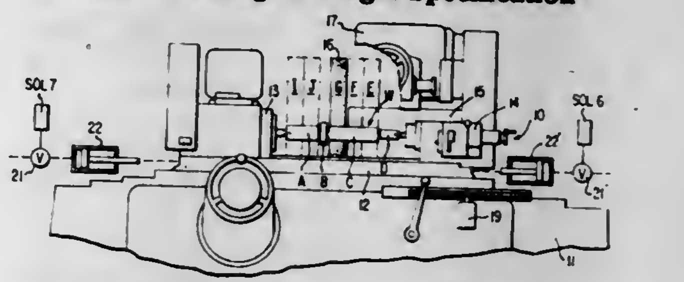
AUTOMATIC PLUNGE AND BLEND PASS CONTROL SYSTEM FOR GRINDING MACHINES

Glenn M. Snyder, Waynesboro, and Lester R. Luckenbach, Mont Alto, Pa., assignors to Landis Tool Company

Filed Feb. 26, 1971, Ser. No. 119,266

Int. Cl. B24b *49/00*
U.S. Cl. 51—165.77

1 Sheet Drawing. 15 Pages Specification



A control system in an automatic machine tool, such as a numerically controlled grinding machine (10), for effecting a series of longitudinally spaced plunge grind operations on a cylindrical workpiece (W) to provide constant size on the diameters (A and C) being ground. The control system is used when the length of the diameter to be ground is greater than the width of the grinding wheel (16), thus requiring more than one plunge grind. On the last plunge grind, the grinding wheel (16) is advanced inwardly a small increment beyond the previous infeed movements. The work support (12) and the workpiece (W) are then moved longitudinally so that the grinding wheel (16) will make a light cut along the previously ground length of the workpiece to provide a constant size and remove surface marks. The entire sequence is controlled by the punched tape or card, and an electric-hydraulic control circuit. The latter circuit is effective to hydraulically move the work support (12) longitudinally at the proper time in the grinding sequence to effect a "blend pass" operation. Of course, it is also possible to have different combinations of movements to effect the "blend pass" operation, such as (1) move the work support (12) both longitudinally and transversely; (2) move the wheel support (15) both longitudinally and transversely; or (3) move the work support (12) transversely and the wheel support (15) longitudinally.

T896,029

POLYMER CROSS-LINKING

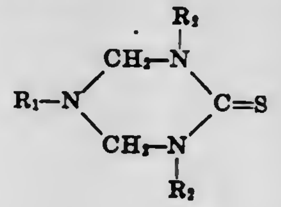
Henry C. Tillson, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of application Ser. No. 803,987, Apr. 3, 1969. This application Mar. 1, 1971, Ser. No. 120,046

Int. Cl. C08f *27/06*
U.S. Cl. 260—79

No Drawing. 17 Pages Specification

Epihalohydrin polymers, homopolymers as well as copolymers with other epoxides or oxetanes, can be crosslinked by heating within the range of from about 250° F. to about 380° F. in admixture with at least one metal compound selected from salts of aromatic carboxylic acids, salts of aliphatic carboxylic acids, salts of carbonic acid, salts of phosphorous acid, salts of silicic acid and oxides of the metals of Group II–A, II–B and IV–A of the Periodic Table, such as the lead oxides or salts of the above acids, and at least one triazine-2-thione having the general formula



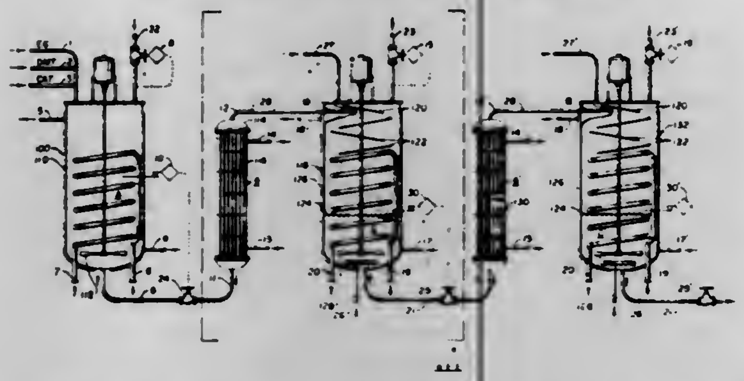
where R_1 is selected from alkyl, cycloalkyl and hydrogen radicals and R_2 and R_3 are hydrogen or lower alkyl radicals. The cross-linkable composition of the epihalohydrin polymer, metal salt or oxide and triazine-2-thione is storage stable at normal room temperatures and can be shipped without fear of cross-linking.

T896,030

APPARATUS FOR THE CONTINUOUS TRANSESTERIFICATION OF AROMATIC DICARBOXYLIC ACIDS WITH DIOLS

Hans Westermann, Walter Meckstroth, Horst-Dieter Bures, and Hans-Ernst Zobel, Marl, and Joachim Bergmann, Gladbeck, Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 8, 1971, Ser. No. 121,953
Claims priority, application Germany, Mar. 18, 1970, 20128078
Int. Cl. B01j *1/00;* **C07c** *69/82*
U.S. Cl. 23—260
1 Sheet Drawing. 15 Pages Specification



Apparatus for continuous transesterification of dialkyl esters of aromatic dicarboxylic acids with diols including an initial reactor establishing a stirring zone within which reaction takes place followed by an initial reactor arrangement including a heated second reactor estabilshing a tubular zone within which reaction takes place without back-mixing of the reaction materials and a third reactor establishing a stirring zone within which reaction takes place and separation of vaporous by-products occurs, the resulting reacted material entering at least one other reactor arrangement including a heated reactor establishing a tubular zone within which further reaction takes place without backmixing of the materials and the temperature of the materials is further increased and another reactor establishing a stirring zone within which still further reaction takes place and a separation of vaporous by-products occurs, each of the reactor zones adapted to be operated under different temperatures and each of the reactor arrangements and the initial reactor adapted to be operated under different pressures whereby the pressure and temperature conditions are modified depending on the reaction rates desired.

T896,031

PICTORIAL PARALLAX PANORAMAGRAM INCLUDING A CELLULOSE ESTER HOT MELT THERMOPLASTIC VIEWING SCREEN

Harris N. Stephens, Jr., P.O. Box 511,
Kingsport, Tenn. 37662

Continuation of application Ser. No. 846,621, July 31, 1969, which is a continuation-in-part of application Ser. No. 758,114, Sept. 6, 1968. This application Mar. 12, 1971, Ser. No. 123,875
Int. Cl. B44c *1/20;* **D21h** *1/42;* **G02b** *27/22*
U.S. Cl. 117—10
No Drawing. 11 Pages Specification

A cellulose ester coating composition suitable for coating substrates such as paper which contain printed lineiform images is embossed with a lens-like surface pattern to produce a pictorial parallax panoramagram. The composition contains between about 65–85% by weight of cellulose acetate butyrate, having a butyryl content greater than 38% by weight together with about 15–35% by weight of a plasticizer having a boiling point of at least 325° C. As a hot melt at 375° F., the composition has a viscosity of between about 2,000 and 50,000 centipoises and a melt stability of between about 1.0 and 1.6 hours.

T896,032

SUBSTRATES HAVING STRIPPABLE PROTECTIVE COATINGS

Travis L. Gordy, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation of abandoned application Ser. No. 783,712, Dec. 13, 1968. This application Mar. 29, 1971, Ser. No. 129,193
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 V
No Drawing. 17 Pages Specification

Articles of manufacture are described which comprise a substrate (e.g. automobile molding) having a readily strippable coating of a composition comprising petroleum wax and ethylene-isobutyl acrylate copolymer. Suitable ethylene-isobutyl acrylate copolymer contains from about 18 to about 32 weight percent isobutyl acrylate and has melt indexes in the range of from about 2 to about 260. The petroleum wax-ethylene/isobutyl acrylate composition forms a readily strippable film on many substrates which are coated for protection. The composition works well without a release agent on substrates having very smooth surfaces. For example, the composition has worked well, not requiring a release agent, on numerous articles made of aluminum, stainless steel, vinyl, acrylonitrile-butadiene-styrene (ABS) polymer and combinations of these materials. On some surfaces having a microscopic roughness (e.g. certain types of anodized aluminum), it is helpful to include a very small amount of release agent to provide better stripping. Examples of suitable release agents are sorbitan monooleate, sorbitan monopalmitate and sorbitan monostearate. The various materials can be present in the following amounts (parts by weight): petroleum wax—45 to 65; ethylene-isobutyl acrylate copolymer—35 to 55.

T896,033

FILM FORMING POLYMERIC COMPOSITIONS

Frederick L. Hamb and John C. Wilson, both of 1669 Lake Ave., Rochester, N.Y. 14650

Filed May 7, 1971, Ser. No. 141,344
Int. Cl. G03c *1/78*
U.S. Cl. 96—87 R
No Drawing. 34 Pages Specification

Novel high molecular weight polyesters containing stereospecific, 2,3-disubstituted, condensed norbornane units are useful in the preparation of photographic film bases.

T896,034

FILM FORMING POLYMERIC COMPOSITIONS

Frederick L. Hamb and John C. Wilson, both of 1669 Lake Ave., Rochester, N.Y. 14650

Filed May 7, 1971, Ser. No. 141,398
Int. Cl. G03c *1/78*
U.S. Cl. 96—87 R
No Drawing. 28 Pages Specification

Novel, high molecular weight polymers containing 3,6-dihydroxy-9,9-dimethylxanthene units are useful in the preparation of photographic film bases.

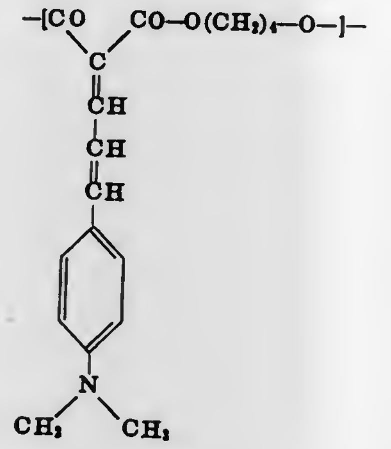
T896,035

POLYMERIC SPECTRAL SENSITIZERS FOR LIGHT-SENSITIVE SILVER HALIDE GRAINS

Frederick J. Rauner and Paul B. Gilman, Jr., both of 1669 Lake Ave., Rochester, N.Y. 14650

Filed May 19, 1971, Ser. No. 145,008
Int. Cl. G03c *1/02, 1/08*
U.S. Cl. 96—114
No Drawing. 17 Pages Specification

A light-sensitive composition comprising grains of silver halide and a polymer having chromophoric functional groups is disclosed. The polymer serves as a spectral sensitizer for the light-sensitive silver halide grains. In addition to its use as a spectral sensitizer, the polymer may also be used as a binder for the light-sensitive grains. In one embodiment utilizing the invention, there is provided a support upon which there is placed a photographic emulsion comprising light-sensitive silver halide grains and a polymer having repeating units of the formula:



T896,036

SHOE LINER

Charles Lewis King, Wilmington, and Joseph Henry Ryan, Jr., Claymont, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 849,518, Aug. 12, 1969. This application May 19, 1971, Ser. No. 145,063
Int. Cl. A43b *23/07*
U.S. Cl. 161—92
No Drawing. 6 Pages Specification

A shoe linear relatively light in weight and having excellent cushioning properties, with excellent conformation to the design and shape of the shoe without its wrinkling in use comprising a laminated structure of:

(a) A microcellular foam sheet of a thermoplastic crystalline polymer prepared from a polyolefin such as linear polyethylene or polypropylene, a polyester such as polyalkylene terephthalate or an isothalate, or a polyamide with isotactic polypropylene preferred, wherein the foam sheet is comprised of polyhedral-shaped closed cells whose median diameter is at least 500 microns having cell walls characterized by a non-uniform texture, said sheet having a work-to-break value of at least 10,000 inch pounds per cubic inch, a maximum density of 0.03 gram per cubic centimeter and a specific work-to-tear value of at least 250 inch pounds per square inch, laminated to

(b) A shoe lining fabric material such as cotton; silk; rayon; nylon, with the preferred fabric being nylon or rayon in a tricot or satin weave; or a nonfabric lining material such as polyurethane or polyvinyl chloride.

Lamination can be accomplished by

(a) Nonadhesive bonding, i.e., heating and pressing together the surfaces to be laminated, or

(b) Adhesive bonding with a synthetic rubber pressure-sensitive adhesive or a hot melt adhesive such as an ethylene polymer or a copolymer of ethylene and vinyl acetate.

REISSUES

MARCH 14, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

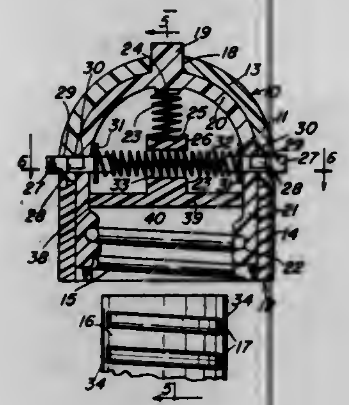
27,303
COMBINATION BOTTLE AND CLOSURE CAP UNIT THEREFOR

August J. Durso, 1604 Blackthorn Drive, Glenview, Ill. 60025, and Frank C. Maurer, Skokie, and George A. Panczyszyn, Glenview, Ill.; said Maurer and Panczyszyn assignors to said Durso

Original No. 3,516,563, dated June 23, 1970, Ser. No. 791,647, Jan. 16, 1969, which is a continuation-in-part of Ser. No. 741,586, July 8, 1968. Application for reissue July 13, 1970, Ser. No. 54,668

Int. Cl. A61j *1/00*

U.S. Cl. 215—9 **28 Claims**



A combination bottle and closure cap unit therefor are provided which include a bottle for use, among other ways, in holding or packaging liquid or solid medicines, pills, aspirin, and other tablets, capsules, and other materials which may be dangerous to small children and particularly if and when taken in large quantities. The bottle has a neck portion on which the closure cap unit is removably mounted. The closure cap unit and the neck portion of the bottle include coacting attaching means for detachably attaching the closure cap unit to the neck portion of the bottle. The closure cap unit also includes means for restraining movement of the closure cap unit into and out of assembled relationship on the neck portion of the bottle, and manually operable operating means for the restraining means. The closure cap unit likewise includes manually operable control means for the restraining means and for preventing movement of the restraining means independently of the manually operable control means therefor. To remove the closure cap unit from the neck portion of the bottle it is necessary for the operator to use both hands simultaneously, that is, to hold the bottle in one hand and against rotational movement while, at the same time, with the other hand manipulating both the operating means for the restraining means and the control means for the restraining means whereupon the closure cap unit may be removed from the bottle by giving the bottle a partial rotational movement or twist. This makes it impossible or at least extremely difficult for small children to remove the closure cap unit from the neck of the bottle since small children cannot ordinarily use both hands simultaneously in performing such an operation.

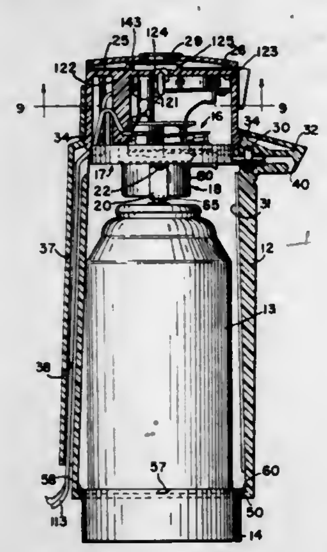
27,304
DISPENSER WITH HEATING MEANS

Theodore R. Flowers, Fairfield, Conn., assignor to Warner-Lambert Company, Milford, Conn.

Original No. 3,358,885, dated Dec. 19, 1967, Ser. No. 521,118, Jan. 17, 1966. Application for reissue Dec. 18, 1969, Ser. No. 10,663

Int. Cl. B67d *5/62*

U.S. Cl. 222—146 HA **5 Claims**



A dispensing arrangement for heating and dispensing a product from an aerosol container. The aerosol container is loosely locked within the dispenser in spaced relation thereto and downward movement of the dispenser actuates the aerosol valve, releasing the contents into an electrically heated heat exchanger. Means is provided to release the contents of the can in the event of overheating by the electrical heating means with additional means provided to effect release of the container contents if heated externally.

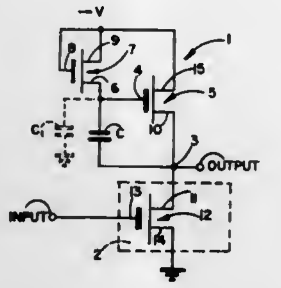
27,305
FIELD EFFECT TRANSISTOR DRIVER USING CAPACITOR FEEDBACK

Robert W. Polkinghorn, Huntington Beach, Arthur F. Pfeifer, Whittier, and William H. Dierking, Orange, Calif., assignors to North American Rockwell Corporation

Original No. 3,506,851, dated Apr. 14, 1970, Ser. No. 601,774, Dec. 14, 1966. Application for reissue May 25, 1970, Ser. No. 40,142

Int. Cl. H03k *17/00*

U.S. Cl. 307—251 **5 Claims**



This invention relates to a driver for MOS devices comprising a capacitor, including means for charging and preventing discharge of the capacitor, connected between the gate electrode of the output transitor and the output for feeding back the output voltage to the gate electrode, whereby relatively higher voltage and current output from the driver is achieved without increasing the supply voltage.

27,306
PHTHALIDE COMPOUNDS AND THEIR PREPARATION

Ryohei Oda, Kyoto, Hiroshi Fujii, Amagasaki, and Hiroyuki Moriga and Taiji Higaki, Nishinomiya, Japan (all % Kanzaki Paper Mfg. Co., Ltd., 4 Ginza Higashi 4, Chuo-ku, Tokyo, Japan)

No Drawing. Original No. 3,244,730, dated Apr. 5, 1966, Ser. No. 295,820, July 17, 1963. Application for reissue Aug. 5, 1966, Ser. No. 574,260

Int. Cl. C07d *5/38*

U.S. Cl. 260—343.4 **3 Claims**

1. 5-nitro-3,3-bis-(4-dimethylaminophenyl)-phthalide.

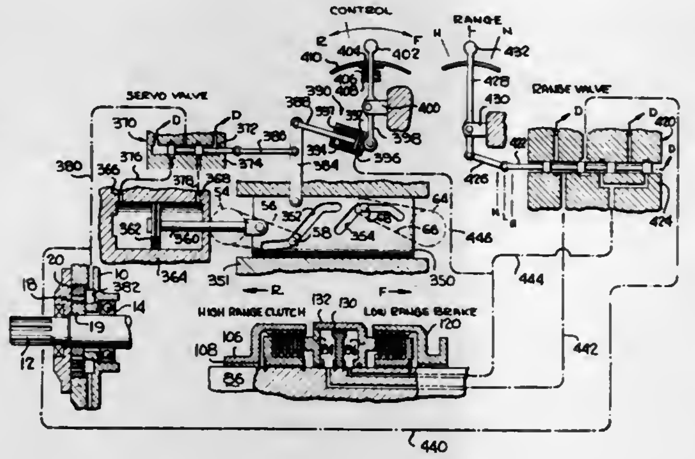
27,307
EXTENDED RANGE HYDRAULIC TRANSMISSION

George M. De Lalio, Huntington, N.Y., assignor to General Motors Corporation, Detroit, Mich., and Sundstrand Corporation, Rockford, Ill., fractional part interest to each

Original No. 3,306,129, dated Feb. 28, 1967, Ser. No. 449,679, Apr. 12, 1965. Application for reissue Feb. 27, 1969, Ser. No. 848,754

Int. Cl. F16h *47/04, 37/06*

U.S. Cl. 74—687 **29 Claims**



A power train includes an input means and an output means, the output means being operatively connected with a speed differential gear means. A first drive transmitting means including hydraulic transmission means is connected between the input means and the gear means. A second drive transmitting means is connected between the input means and the gear means, and means is provided for drivingly connecting and disconnecting the second drive transmitting means. The power train can be changed from a single drive path condition to a dual drive path condition and vice versa while maintaining a constant drive ratio between the input means and the output means.

27,308
UNDERWATER LOW TEMPERATURE SEPARATION UNIT

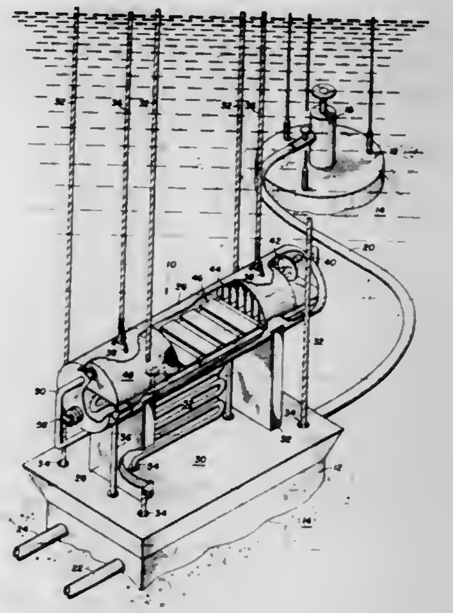
John R. Leonard, Houston, Tex., assignor to Mobil Oil Corporation

Original No. 3,384,169, dated May 21, 1968, Ser. No. 550,705, May 17, 1966. Application for reissue Apr. 8, 1970, Ser. No. 26,477

Int. Cl. E21b *43/01, 39/00*

U.S. Cl. 166—.5 **18 Claims**

An apparatus involving an underwater separator assembly comprising a landing base and a removable separator which mates therewith. The base is adapted to be affixed to the marine bottom and be connected through a first flowline means to a producing well and through one or more additional flowlines to production facilities. The separator which has an inlet adapted to be releasably connected to said first flowline and one or more outlets adapted to be releasably coupled to said additional flowlines, respectively, is lowered on guide means to the base and is mated therewith.



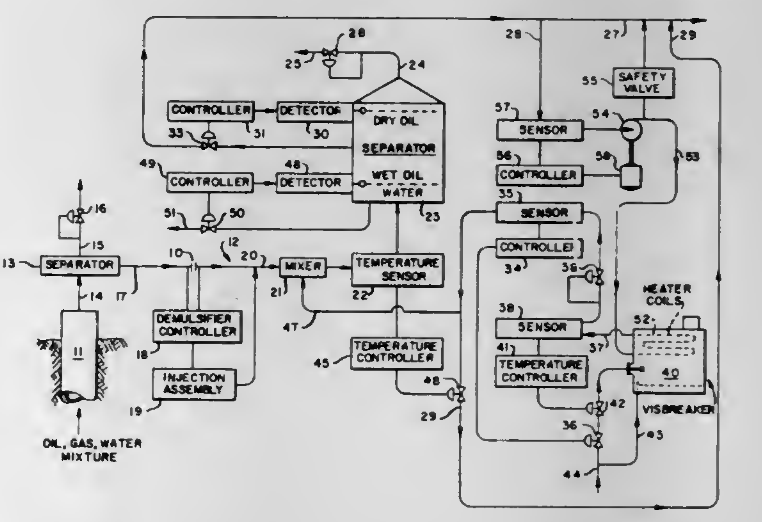
27,309
PROCESS FOR TRANSPORTING VISCOUS FLUIDS

Paul R. Scott, Houston, and Ronald F. Scheuerman, Bellaire, Tex., assignors to Shell Oil Company, New York, N.Y.

Original No. 3,474,596, dated Oct. 28, 1969, Ser. No. 700,200, Jan. 24, 1968. Application for reissue May 7, 1970, Ser. No. 35,599

Int. Cl. B01d *19/00*

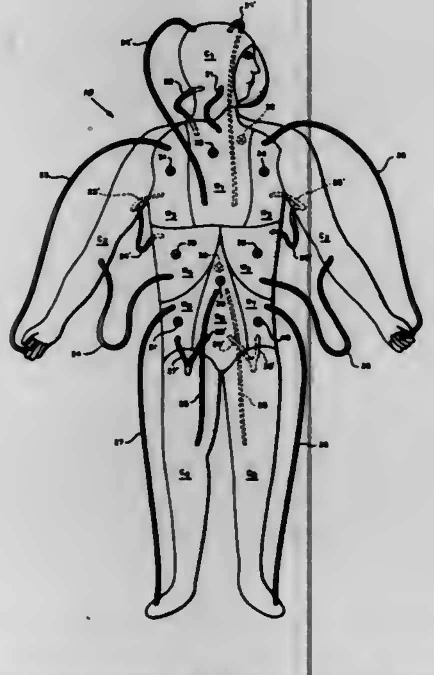
U.S. Cl. 55—45 **8 Claims**



A process for reducing the viscosity of a stream of viscous fluid flowing within a pipeline having constituents which solidify upon cooling. A portion of the stream is diverted and heated to a temperature at which thermal degradation of at least some of the constituents thereof takes place thus lowering its average molecular weight and viscosity. The heated portion is then blended with the remainder of the stream thereby increasing the temperature of the entire stream flowing within the pipeline.

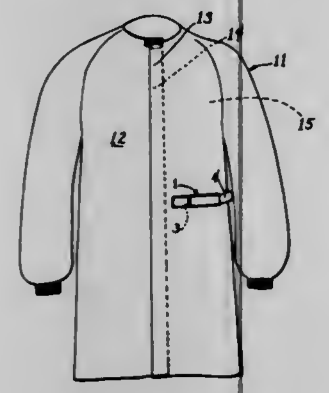
PATENTS
GRANTED MARCH 14, 1972
GENERAL AND MECHANICAL

3,648,289
DEEP-SEA DIVE SUIT
Floyd E. Moreland, 820 Johns Road, Cherry Hill, N.J.
Filed Mar. 24, 1970, Ser. No. 22,266
Int. Cl. B63c *11/06*
U.S. Cl. 2—2.1 R **4 Claims**



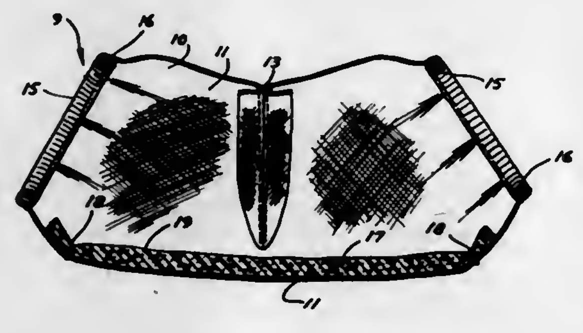
Present invention relates to a deep sea dive suit and self-contained underwater breathing and heating apparatus therefor. The improved suit is laminated in six layers which form a passageway for the circulation of an oxygen-gas mixture that transmits heat from the warmer parts of the body to its extremities. The oxygen-gas mixture is generated from a supply of a cryogenic oxygen containing liquid stored in a back pack reservoir. The cryogenic liquid is heated, converted to a gas, circulated through the suit and finally conditioned for breathing by the diver.

3,648,290
OPERATING ROOM GOWN BELTING MEANS
Edward G. Hartigan, Schaumburg, Ill., assignor to The Kendall Company, Boston, Mass.
Filed Apr. 8, 1970, Ser. No. 26,473
Int. Cl. A41d *9/00*
U.S. Cl. 2—114 **14 Claims**



A belting means for operating room gowns which includes a belt folded a plurality of times or rolled throughout a portion intermediate its two ends and positioned within a housing. The housing may be a sleeve which is open at each end attached to or forming part of the gown in the region of the gown wearer's waist. The ends of the belt extend from each end of the housing sleeve and may be covered by a protective wrap. Each end of the belt may be grasped and pulled from that end of the housing out of which it extends. To employ this belting means on a person wearing a gown, portions of the belt within the housing are aseptically withdrawn from the housing in opposite directions and carried around the wearer so that the belt encircles his body near the waist outside the gown. The belt ends are then fastened together. If the belt is not affixed to the housing or gown, it may optionally be rotated around the wearer to place its fastened ends at a location where they will not interfere with activity.

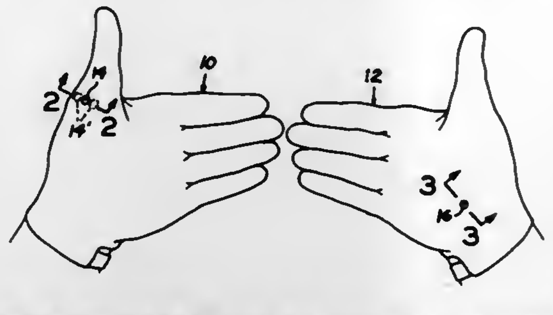
3,648,291
PROTECTIVE GARMENT FOR BEDRIDDEN PEOPLE
Alva L. Pankers, Bloomington, Minn., assignor to William A. Braddock, Minneapolis, Minn.
Filed July 6, 1970, Ser. No. 52,570
Int. Cl. A41d *13/08*
U.S. Cl. 2—16 **8 Claims**



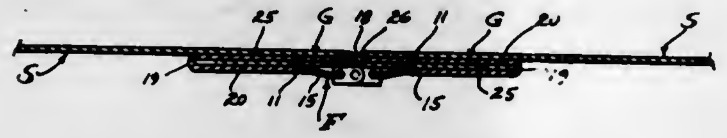
A garment for protecting an elbow or other protuberance of a bedridden patient includes sleeve for encompassing such protuberance. The sleeve is made from a cloth having a relatively low coefficient of friction with respect to sheets and other bedclothes and employing a nonabsorbent monofilament fiber such as nylon. The sleeve has a stretchability at least in direction transverse of the axis of the sleeve. A non-slip cushion constituted as a sheet of foam rubber is adhered to the interior of the sleeve to provide a protuberance-covering pressure-bearing portion constituted as a laminate of foam rubber sheeting directly in contact with the flesh and covered by the cloth layer, this portion being devoid of any seams or other obstructions which can cause localized pressure on the flesh at the pressure-bearing portions of the protuberance. A casing in the end of each sleeve completely covers an elastic cord. Together they tend to prevent the sleeve from rolling up and they act to stabilize the garment to maintain the cushion in contact with the pressure bearing portion of the flesh adjacent the protected protuberance.

3,648,292
GOLF CLUB GRIP GUIDE
Carl D. Strickler, 3412 N. W. 19, Oklahoma City, Okla.
Filed Nov. 23, 1970, Ser. No. 92,095
Int. Cl. A41d *19/00*
U.S. Cl. 2—161 A **4 Claims**

In a pair of golf gloves cooperating protuberances are formed respectively on the thumb stall of the left-hand glove and palm portion of the right-hand glove for identically positioning the golfer's hands in a desired gripping position each time he addresses the ball.

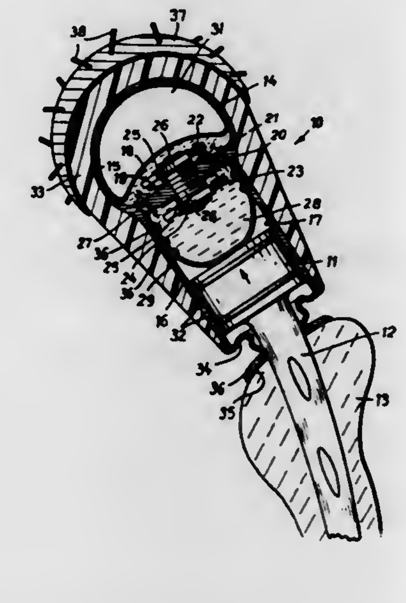


3,648,293
FASTENER AND POSITIONING GUIDE THEREFOR
Vera E. Del Vecchio, 1523 11th Street, Santa Monica, Calif.
Filed Feb. 6, 1970, Ser. No. 9,144
Int. Cl. A41d *1/14, 1/06*
U.S. Cl. 2—218 **3 Claims**



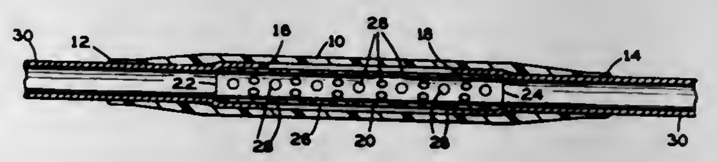
A positioning guide and fastener combination used in joining together adjacent sections of garments and the like. It is the exacting alignment of the adjoining next adjacent garment sections which is established and maintained by a mounting and positioning guide comprised of transversely stiff tapes affixed, permanently or temporarily, to the fastener assembly and having juxtaposed edges engageable into the full depth of the fold that establishes the usual seam allowance. The said tapes are longitudinally flexible and properly position the complementary sides of the fastener which are then sewed to their respective said next adjacent garment sections.

3,648,294
ENDOPROSTHESES, ESPECIALLY FOR HIP JOINTS
Esfandiar Shahrestani, Luxemburger Str. 183, Cologne, Sulz, Germany
Filed Feb. 4, 1970, Ser. No. 8,647
Claims priority, application Germany, Feb. 8, 1969, P 19 06 284.1
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **12 Claims**



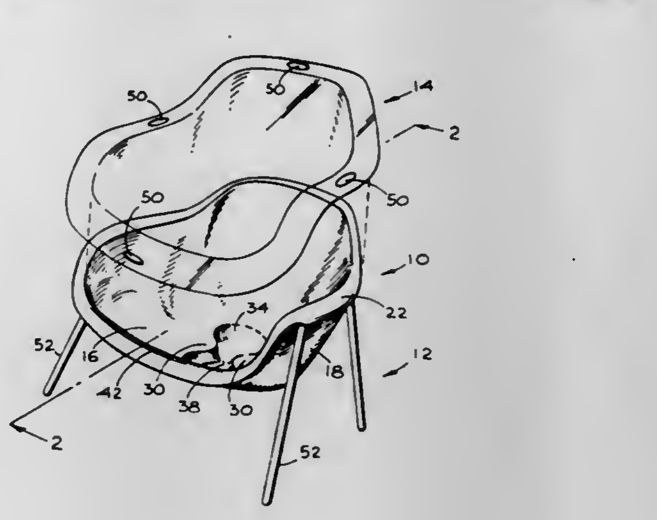
Disclosed are endoprostheses which include a piston forming a joint head and mounted on a bone and a cylinder for receiving the piston and mounted in the mating bone. The cylinder is divided into two sections, the section for receiving the piston contains a liquid, advantageously in bellows, which liquid is forced into the other section of the cylinder to compress a gas, the compressed gas therein thereby cushioning shocks. Flow of liquid between the sections is controlled by back pressure valves.

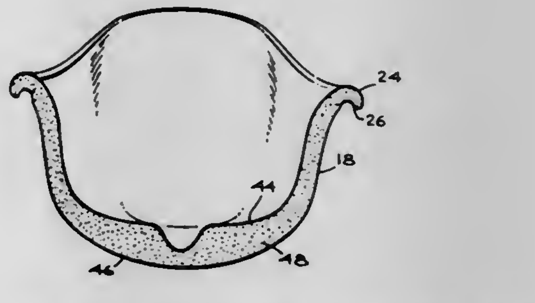
3,648,295
GUIDE FOR GROWING BLOOD VESSELS OR THE LIKE
James R. Palma, 1520 Curry Road, Schenectady, N.Y.
Filed Oct. 12, 1970, Ser. No. 79,973
Int. Cl. A61f *1/24;* **A61b** *17/11*
U.S. Cl. 3—1 **4 Claims**



A device for guiding growth of blood vessels or the like for use in the surgical repair of impaired blood vessels or like tissues. A flexible inner perforated tube having an outside diameter approximately equal to the inside diameter of the severed blood vessel is located inside an outer imperforate flexible tube having an inside diameter approximately equal to the outside diameter of the severed blood vessel. The severed ends of the blood vessel are positioned between the inner and outer tube ends in spaced relationship, whereby blood can flow through the perforated tube to the space between the inner and outer tubes to promote growth and subsequent joining of the several blood vessel ends.

3,648,296
SITZ BATH
Nina B. Craft, Malibu, and Gary R. Sprague, Glendale, both of Calif., assignors to Medical Planning Associates, Malibu, Calif.
Filed Mar. 26, 1970, Ser. No. 22,829
Int. Cl. A47k *3/22*
U.S. Cl. 4—6 **9 Claims**



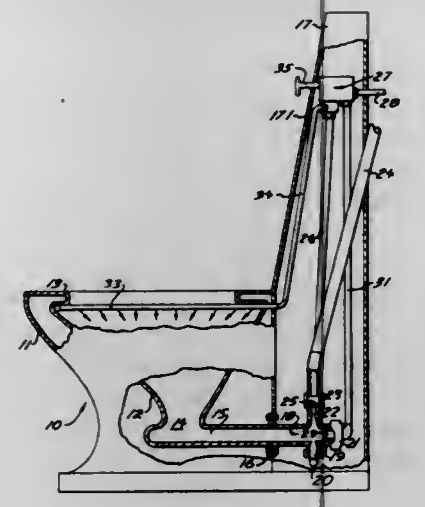


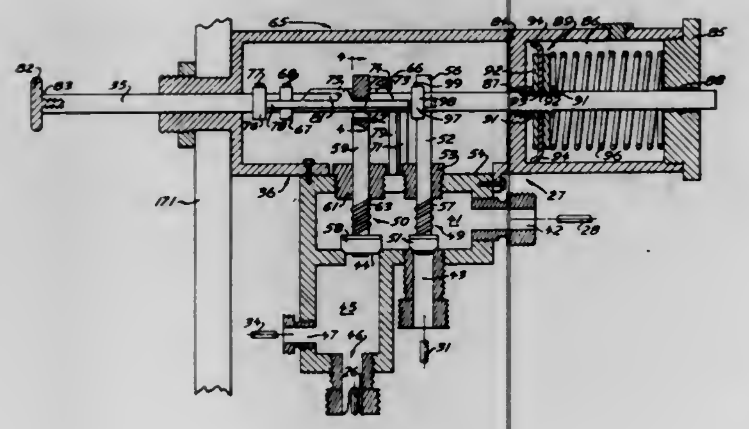
A lightweight unit for perineal hydrotherapy including a lightweight unitary tub having an integral seat, armrest and a back rest; a supporting frame structure for the tub and a disposable liner for lining the tub during use. A recessed area is provided beneath the perineal area of the patient opening wider fore and aft of the ischeal tuberosity to provide a reservoir of heated water in which the traumatic perineal areas are immersed.

3,648,297

APPARATUS FOR FLUSHING WATER CLOSETS

Lorne A. MacMillan, 45210 Walton Road R.R. 3, Sardis, British Columbia, Canada
Filed Nov. 23, 1970, Ser. No. 91,635
Int. Cl. E03d *11/02*
U.S. Cl. 4—73 **5 Claims**





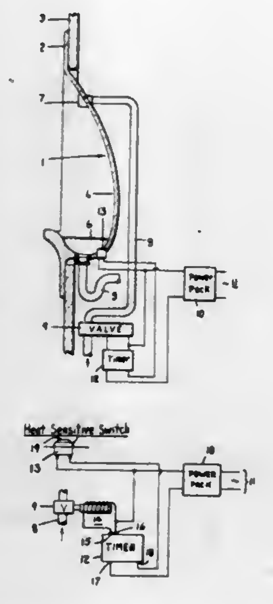
A water closet and apparatus for flushing water delivered from a high pressure source as a mulching jet into a bottom of a closet bowl as scouring jets for cleaning sides of the bowl and as an activating jet for an ejector pump for evacuating the bowl, delivery of water being controlled by an automatically operated valve controlled distributor for delivering a predetermined quantity of water through the mulching jet before causing operation of the ejector pump and scouring jets.

3,648,298

FLUSHING SYSTEM

William Keith Gross, Agincourt, Ontario, Canada, assignor to Canadian Seating Company Limited, Toronto, Ontario, Canada
Filed Dec. 8, 1969, Ser. No. 883,135
Int. Cl. E03d *13/00*
U.S. Cl. 4—100 **2 Claims**

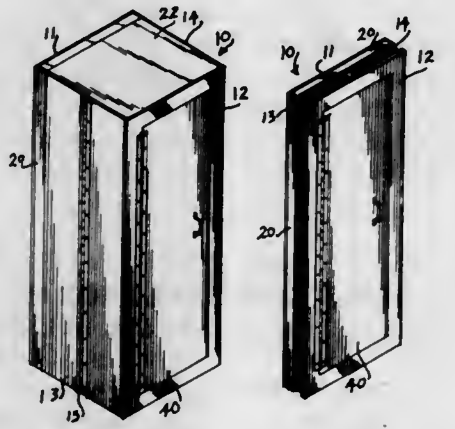
In a urinal flushing system, the supply of water through a supply pipe is controlled by a normally closed solenoid valve, the solenoid valve being energized by a timer circuit including a heat-sensitive element positioned at the inner surface of the bowl.



3,648,299

COLLAPSIBLE SAUNA

David L. Durst, Houston, Minn.
Filed Apr. 27, 1970, Ser. No. 32,089
Int. Cl. A61h *33/06*
U.S. Cl. 4—160 **1 Claim**



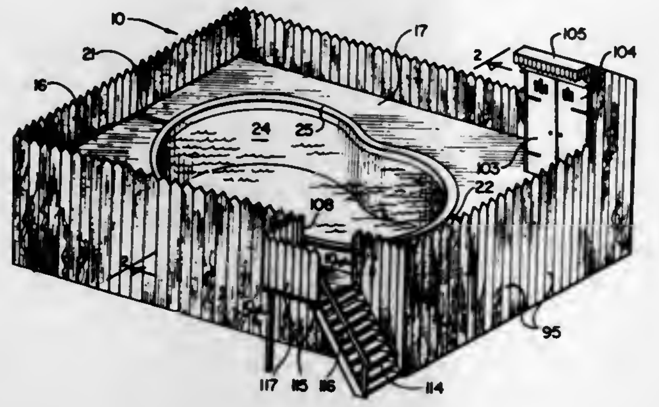
The sauna includes a collapsible enclosure having front and rear walls joined by foldable sidewalls with upper and lower walls hingedly affixed to the rear wall for movement into horizontal positions to form a complete enclosure in the extended position. An adjustable heating element and water containing device associated therewith are affixed to the rear wall to provide the desired heat and humidity during operation.

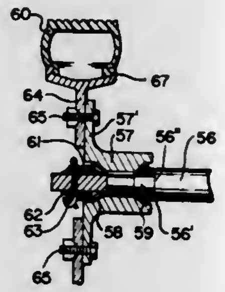
3,648,300

PORTABLE SWIMMING POOL CONSTRUCTION

Sydney M. Eisenberg, 3901 North Lake Drive, Milwaukee, Wis.
Filed Oct. 15, 1970, Ser. No. 81,006
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.19 **8 Claims**

This swimming pool construction comprises generally two platform floor pieces which are hingedly connected to one side of the pieces so that the pieces can be opened up in book fashion to be extended. The pieces are cut away adjacent a hinge connection to provide a swimming pool opening and the fiberglass swimming pool unit may be placed into this opening and supported from the platform by its peripheral flange at the top of the swimming pool unit or tank. Means are provided for stiffening the extended pieces when open and also telescoping jacks are provided at each side of the open pieces to support the same in an elevated position so that the swimming pool tank will be suspended from the platform without engagement with the ground. Removable fence pieces can be secured about the full platform area and to the edges thereof and will extend above and below the platform. Bathhouse assemblies, a step and platform assembly for providing access to the pool is provided at opposite sides of the extended platform. The telescoping jacks are pivotally connected to their mounting structures and can be adjustable between vertical and horizontal positions. In the horizontal position they can be stored. Wheel and axle assemblies in which the axles thereof are releasably clamped to the wheel mounting structures can be removed once the platform is supported upon its jacks. With the jacks raised the platform can be supported upon the wheels and transported. A hitch device is provided on one of the platform pieces for the purposes of towing or pulling the assembly. The wheel structures are provided, but one of the pieces can effect transportation of the construction upon the platforms being hinged over one another. The fence pieces, bathhouse pieces, step pieces can be placed on the overlying floor pieces and covered by the fiberglass swimming tank when placed thereover and rested upon its top flange, so that the entire assembly with all the various pieces can be supported in tact.



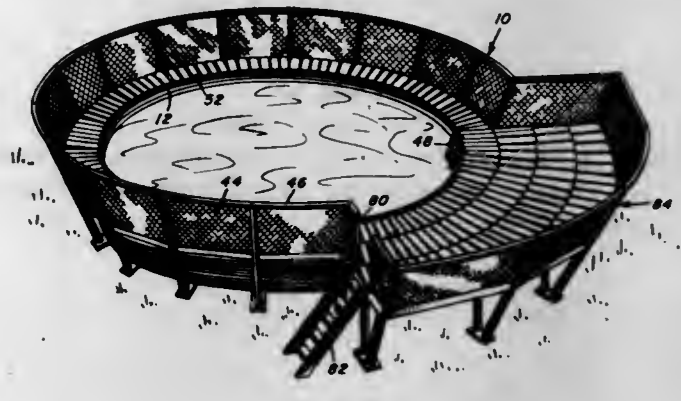


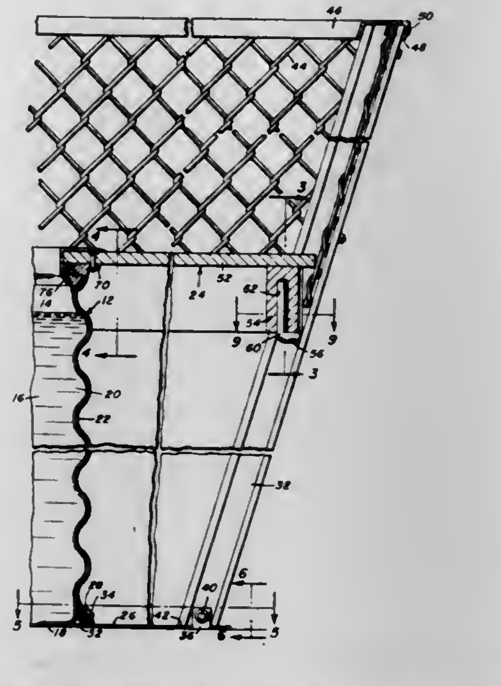
3,648,301

SWIMMING POOL

Wiley Hosmer, 1720 Peachtree N.W., Atlanta, Ga.
Continuation of application Ser. No. 736,446, June 12, 1968, now abandoned. This application Apr. 6, 1970, Ser. No. 23,096
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.19 **6 Claims**

A swimming pool incorporating a peripheral wall corrugated horizontally and peripherally for retaining a flexible liner and forming the support for the inner edge of a peripheral deck. A plurality of supporting elements are connected with the bottom of the peripheral wall and extend radially outwardly therefrom together with upstanding and outwardly inclined outer posts connected thereto for supporting the outer periphery of a peripheral deck and also supporting a retaining fence.

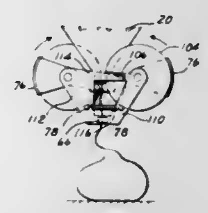


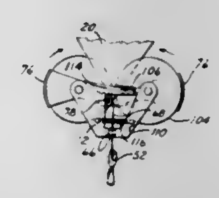


3,648,302

PORTABLE WATERLESS WATER CLOSET

Paul T. Winters, Arvada, Colo., assignor to Development Industries, Inc., Denver, Colo.
Filed Oct. 22, 1970, Ser. No. 83,068
Int. Cl. A47k *11/02*
U.S. Cl. 4—142 **10 Claims**





This invention relates to a portable waterless water closet wherein the waste materials are sealed off and stored for subsequent removal in a disposable bag stored in a magazine beneath the seat. More specifically, the invention is directed to the manually operated mechanism that includes a pair of counterrotating shoe-carrying elements that grasp and pull successive lengths of the bag from the magazine while, at the same time, cooperating with a pair of opposed spring-loaded jaw members to provide a double seal isolating the waste materials in a storage compartment during the interval between successive uses. Each of the counterrotating elements carry both primary and secondary shoes adapted to alternately and successively grip and pull the bag while camming the spring-loaded jams apart during the bag-pulling operation. These shoe-carrying elements are operatively interconnected such that rotation of one through a complete revolution brings about a corresponding rotation of the other and also completes the waste disposal cycle.

3,648,303

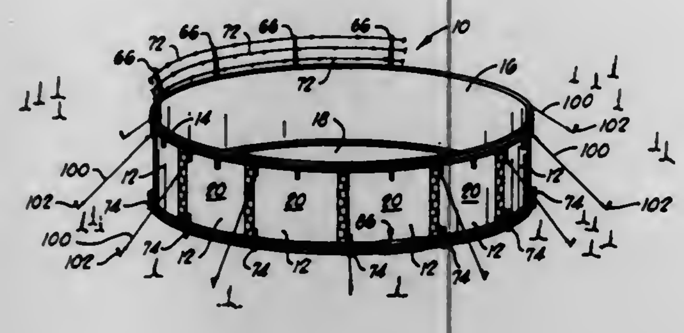
PORTABLE TANK

William H. Stewart, and Robert B. Feittel, both of Oklahoma City, Okla., assignors to W. H. Stewart Company, Oklahoma City, Okla.

Filed May 21, 1970, Ser. No. 39,439

Int. Cl. E04h *3/16, 3/18*

U.S. Cl. 4—172.19 **16 Claims**



A tank structure having a plurality of arcuately shaped panel sections, each panel being adapted to be interconnected such that the sections are secured in the assembled relationship, and including a seal liner, each panel being adapted to cooperate with the seal liner to prevent leakage of the fluid contained therein.

3,648,304

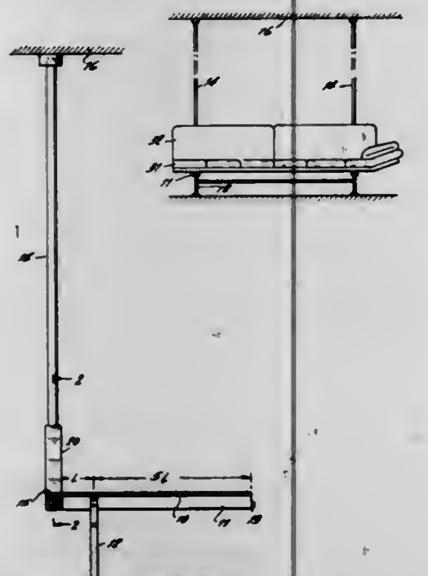
ARTICLE OF FURNITURE

William Maldonado Ogui, 26 Madison Street, New York, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,714

Int. Cl. A47c *17/40;* **A47b** *5/00*

U.S. Cl. 5—10 R **4 Claims**



An article of furniture in the nature of a bench in which the horizontal weight-supporting portion is mounted upon single spaced legs and weight imposed upon the horizontal load-bearing member is distributed between the legs and spaced upright members which bear against the ceiling above the article of furniture.

3,648,305

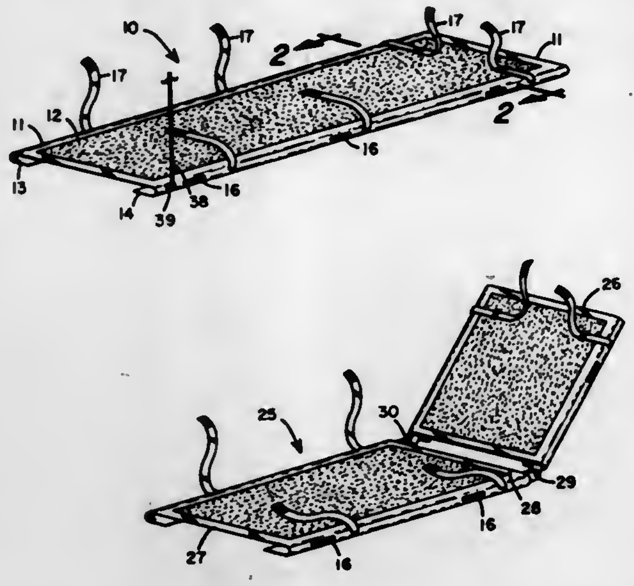
PATIENT CARRIER

Robert A. Ersek, 8806 Minnetonka Blvd., Minneapolis, Minn.

Filed Dec. 9, 1969, Ser. No. 883,429

Int. Cl. A61g *7/10;* **G01n** *23/04*

U.S. Cl. 5—82 **6 Claims**



A patient litter with a body supporting platform fabricated from a generally radiolucent plastic resinous substance and having a substantially uniform cross-sectional radio absorbing thickness and being adapted to support a patient on the upper surface thereof. X-ray film cassette receiving means are disposed immediately beneath the body supporting platform, these means being adapted to receive electromagnetic radiation from a source through the body of a patient on the body supporting platform, and thence through the body supporting platform. Means are provided for transporting the litter when occupied by a patient, and strap means are also provided for retaining a patient thereon.

3,648,306

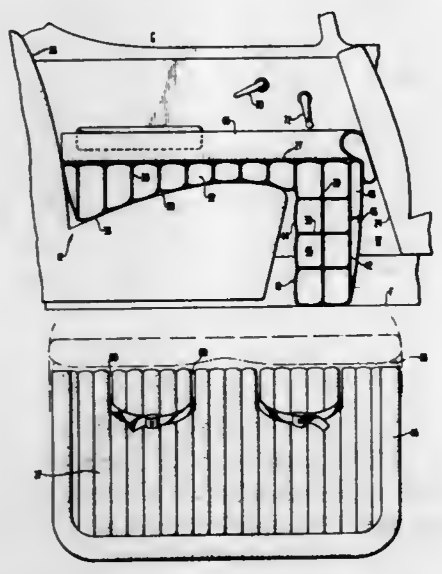
PROTECTIVE AND SUPPORT DEVICE FOR VEHICLE TRAVEL

Seymour Auerbach, 115 Hesketh Street, Chevy Chase, Md.

Filed June 11, 1970, Ser. No. 45,284

Int. Cl. A47d *7/00;* **A47c** *27/08, 27/18*

U.S. Cl. 5—94 **18 Claims**



The device includes an inflatable unit having a first portion conformable, when inflated, to overlie the seat of an automobile and a second depending portion adapted for disposition in the well between the front and back seats of the automobile or in the front seat well. The first portion provides a generally flat support surface between the front and rear seat backs. In one form, an inflatable tube is secured about the edges of the unit to fill the gap between the unit and the automobile sides and the forward walls of the wells. In another form, one or more inflatable tubes are secured along the edge of the first mentioned tube to project above the support surface, the one or more tubes defining an enclosed area about the support surface as well as providing a protective cushion between the enclosed area and the fixed interior parts of the automobile such as door and window handles and the like. The unit, in another form, is slotted to receive safety belts and, in another form, pockets are provided in the tube. In still another form, one or more inflatable seats are releasably secured to the unit. In a further form, the unit has a central opening, the unit forming a protective cushion about an individual, i.e., a child sitting on the automobile seat.

3,648,307

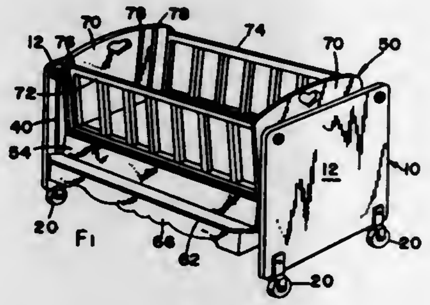
CHILD'S ARTICLE OF FURNITURE

James R. Meade, 51 Byberry Avenue, Hatboro, Pa.

Filed Jan. 15, 1970, Ser. No. 2,994

Int. Cl. A47d *9/02, 7/00*

U.S. Cl. 5—108 **21 Claims**



A child's article of furniture of the swinging type convertible to a number of different items, according to the use desired, including a base frame having opposite ends rigidly supported vertically, a cradle member comprising a child-supporting unit and a base unit detachably connected and arranged to be pivotally supported by a pair of U-shaped torsion bars supported at the upper ends adjacent the opposite sides of the end members of said base frame and the legs of the torsion bars being tensioned in a manner tending to move the upper ends toward each other, whereby the lower horizontal portions of said torsion bars substantially resist longitudinal movement of the bars axially of themselves, the child's supporting member unit having front and rear side members extending between the ends thereof, one of said side members being removable to permit the mounting of a horizontal tray member and the rear side member being selectively positionable in a number of different positions spaced inwardly from the outer edges of said end members of the child-supporting unit and thereby provide adjustable seating of a child in said supporting unit, and the base unit attached to said child's supporting unit being arranged to be detached from said torsion bars for use either as a stationary cradle or settee, or bassinet and car bed.

3,648,308

ELEVATED TRACTION PILLOW

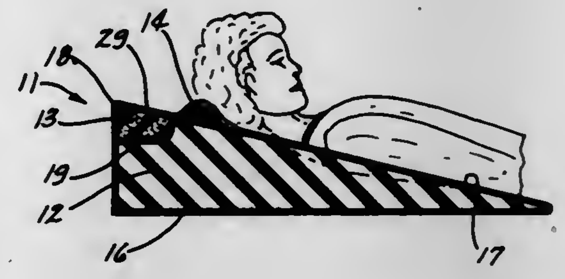
Monte H. Greenawalt, 225 Southgate, Dubuque, Iowa

Filed May 26, 1970, Ser. No. 48,626

Int. Cl. A47g *9/00*

U.S. Cl. 5—338 **6 Claims**

An elevated traction pillow is described herein having, in side view, a substantially triangular configuration. The pillow extends, in length, from proximate the sacrum to above the head of the user and is comprised of a firm support member and a head-receiving member. The support member comprises all of the triangular configuration except for the apex thereof wherein the head-receiving member is secured. The head-receiving member is comprised of material offering negligible resistance when receiving the head of an individual. In a preferred embodiment, a cervical spine support, i.e., neck support, is formed on the firm support member adjacent the head-receiving member and extends upwardly of the firm support member.



3,648,309

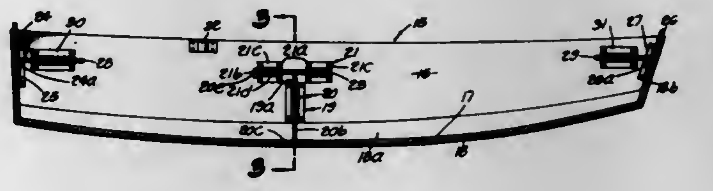
SEMIRIGID FOLDABLE BOAT

Milan Novakovich, 215 Apolena Avenue, Balboa Island, Calif.

Filed Sept. 21, 1970, Ser. No. 73,722

Int. Cl. B63b *7/06*

U.S. Cl. 9—2 F **10 Claims**



A lightweight foldable boat comprised of substantially flat elongated flexible elements positioned so as to form side and bottom panels, said panels being spatially secured to each other at their extremities and adjacent edges by a foldable material impervious to liquids and the like thereby defining an elongated open faced vessel. A removable expansion member, which is slightly larger in width and depth then the width and depth of the formed vessel prior to the expansion of the latter, is positioned in the midsection of the vessel in tensional engagement with the side and bottom panels thereof, thereby outwardly bowing the same. A removable locking member is inserted to engage the expansion member so as to maintain the latter in tensional engagement with the side and bottom panels, said locking member being engaged with the side panels to prohibit movement of the locking member in a plane normal to said locking member, accordingly preventing subsequent displacement of the expansion member thereby maintaining the side and bottom panels in a substantially rigid outwardly bowed position.

3,648,310

BOAT STRUCTURE

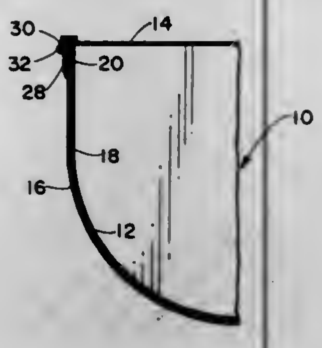
Frank W. Butler, 10354 Van Alden, Northridge, Calif.

Filed Oct. 19, 1970, Ser. No. 81,719

Int. Cl. B63b *3/20, 5/24*

U.S. Cl. 9—6 **4 Claims**

Herein described is a boat structure useful in a dual hull boat arrangement. The dual hulls near the gunwales are spaced apart along the top edge thereof. A rigid structure is disposed between the spaced hull structure. The deck of the boat terminates with a downwardly depending skirt which fits over the spaced hulls and including the rigid structure. The hull, the skirt and the rigid material are then bonded and thereafter screwed together.



3,648,311
ROTARY CONNECTOR FOR CONNECTING THE ENDS OF MULTIPLE CONDUITS

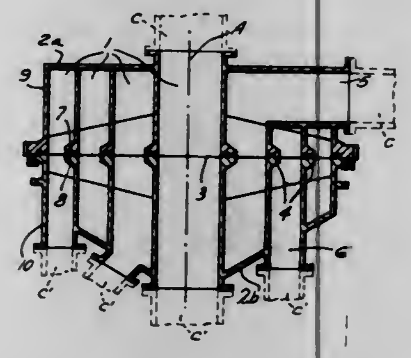
Siegfried Voss, Bremerhaven, Germany, assignor to Aktien-Gesellschaft"Weser, Breman, Germany

Filed Aug. 25, 1969, Ser. No. 852,729

Claims priority, application Germany, Aug. 24, 1968, P 17 75 549.6

Int. Cl. B63b *21/52;* **F16l** *39/04*

U.S. Cl. 9—8 P **7 Claims**



A rotary connector for connecting the ends of multiple conduits associated with buoys and analogous floating platforms for transporting flowable matter from ship to shore, and vice versa. A housing has two substantially cup-shaped sections whose respective open sides face one another. The sections are internally subdivided into a plurality of concentric discrete compartments with each compartment of one section communicating with a corresponding compartment of the other section. Connecting means fluid-tightly connects the housing sections to one another, with freedom of rotation of the sections relative to one another and with fluidtight connection of the communicating compartments with one another. Inlets are provided on one of the housing sections each communicating with one of the compartments thereof and outlets are provided on the other of the housing sections each communicating with one of the compartments of this other housing section.

3,648,312
EXPANSIBLE COLLAR

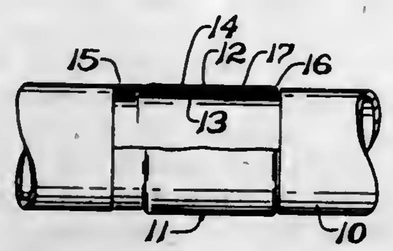
Gerald L. May, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Apr. 2, 1970, Ser. No. 25,150

Int. Cl. B63b *21/52*

U.S. Cl. 9—9 **7 Claims**

A double wall inflatable cylinder of elastomeric material having a pair of overlapping layers of cords extending in intersecting relationship at an angle to a line extending axially of the cylinder for compact storage in the retracted position, maximum expansion of the outer wall and gripping of a core by the inner wall in the inflated condition. A layer of circumferentially extending cords at one edge of the cylinder limits expansion of the cylinder at that edge and the walls are invaginated at the other edge to provide a double fold for compact stowage.



3,648,313
APPARATUS FOR MACHINING PIPES AND THE LIKE

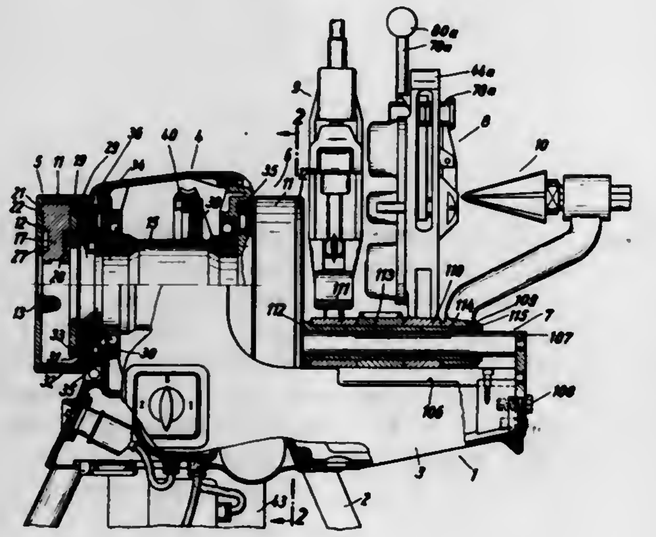
Artur Fohl, Haubersbronn, Germany, assignor to Rems-Werk Christian Foll & Sohne, Waiblingen, Germany

Original application Aug. 19, 1968, Ser. No. 753,615, now Patent No. 3,599,261. Divided and this application June 16, 1970, Ser. No. 46,618

Claims priority, application Germany, Aug. 26, 1967, R 46 781

Int. Cl. B23g *1/00, 5/12*

U.S. Cl. 10—96 **15 Claims**



An apparatus for clamping and rotating workpieces such as pipes and for performing machining operations, such as pipes, in which the workpiece is clamped by devices which have clamp levers pivoted at their outer ends to a rotary housing and have their inner workpiece engaging ends inclined and in which the machining operation for cutting threads is carried out by cutting elements moveable radially on a support therefor. The cutting elements are spring biased toward retracted position and are held in cutting position by a stop element which is adapted to be moved to ineffective position by movement of a member which is engaged and moved by the end of a workpiece being machined.

3,648,314
SELF-STABILIZING FLOTATION MODULE

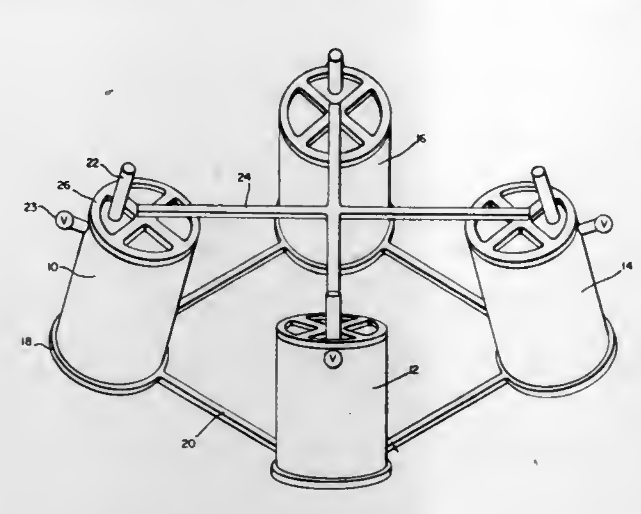
Dwight Wesley Garrison, Picayune, Miss., assignor to General Electric Company, Daytona Beach, Fla.

Filed Dec. 10, 1970, Ser. No. 96,881

Int. Cl. B63c *7/10*

U.S. Cl. 114—53 **3 Claims**

A module having open-bottomed containers from which liquid is displaced by gas for lifting submerged material. The containers are held in an inclined position so that excess gas can escape gradually, and mounted relative to each other so that no net moments are imposed on the module.



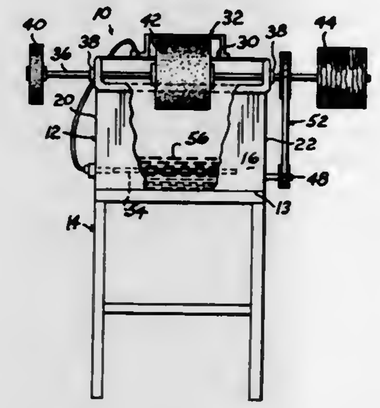
3,648,315
GOLF CLUB CLEANER

Gentry J. V. Hash, 1729 Churchill Way, Oklahoma City, Okla.

Filed June 22, 1970, Ser. No. 48,065

Int. Cl. A46b *13/04*

U.S. Cl. 15—4 **1 Claim**



A golf club cleaning device including an upwardly open receptacle containing washing liquid. A shaft transversely journaled by the upper edge portions of opposing walls of the receptacle is provided with scrubbing brushes and a fabric buffer. An electrical resistance heating element heats the washing fluid.

3,648,316
SURFACE-TREATING APPARATUS

George Habian, Manhasset, and Edwin Franklin, Bayside, both of N.Y., assignors to Garsite Products, Inc., New York, N.Y.

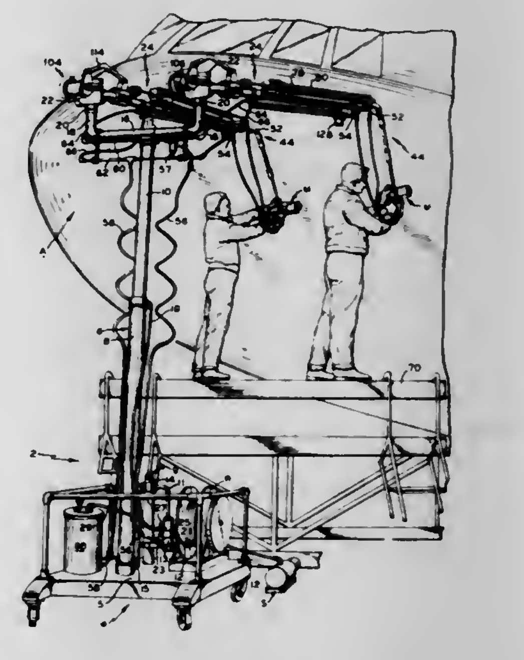
Filed Aug. 25, 1969, Ser. No. 852,584

Claims priority, application Great Britain, Sept. 18, 1968, 44351/68

Int. Cl. B64f *5/00*

U.S. Cl. 15—21 E **17 Claims**

A system for treating or working on the surface of vehicles, such as airplanes. It is provided with a vertically extensible mast mounted on a carriage for movement relative to the aircraft to be serviced, or at a fixed location depending on the requirements of the job. Two generally horizontally extending extensible booms are swivelly connected to the upstanding arms of a yoke on the top of the mast. Each boom is provided with an underwing high level counterpoise mechanism for maintaining a boom in a desired operating position, and also to serve as means for minimizing the effort required by an operator while working on the surface of an airplane. The forward end of each extensible portion of each boom mounts a surface-treating machine which can operatively support selected types of cleaning, and polishing brushes and applicators which may be needed for the work to be done. These machines are relatively light in weight and are provided with rotating brush supporting spindles so designed that the cleaning and polishing brushes and other tools which may be detachably used in the machine can efficiently be operated over large areas of the surface being worked on. Fluid under pressure, preferably compressed air, is used for raising and lowering the mast, delivering fluid to the cleaning and polishing machines, and for driving the air motors of the machines for rotating their brush and applicator supporting spindles. Suitable valves and conduits effect the desired continuous supply of compressed air to the system. A constant lead and supply line is maintained as a carriage is moved to different areas of the aircraft surface thereby eliminating drag and crisscrossing of lines due to the provision of reeling apparatus on the carriage which maintains the air lines at all times under control.



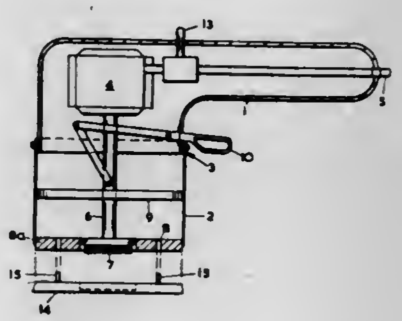
3,648,317
POLISHING DEVICE

David C. Lewis, 6 Sandy Lane, Petersham, near Richmond, England

Filed May 4, 1970, Ser. No. 34,155

Int. Cl. A46b *13/04*

U.S. Cl. 15—29 **8 Claims**



An electrically driven polishing device have a rotatable polisher, a container for polish and a polish spreader with means for expressing controlled amounts of polish from the container onto the spreader.

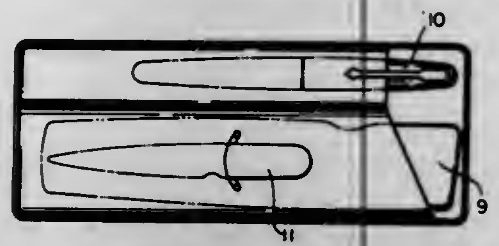
3,648,318
CLEANING-BRUSH

Teruya Tsuruzawa, Osaka, Japan, assignor to Nippon Seal Co., Ltd., Osaka, Japan

Filed Apr. 29, 1969, Ser. No. 820,119

Int. Cl. A47l *17/00*

U.S. Cl. 15—105 R **2 Claims**



The brush surface of the disclosed cleaning-brush is comprised of short bristles implanted so as to slant in one direction and a holding means for securing the brush surface.

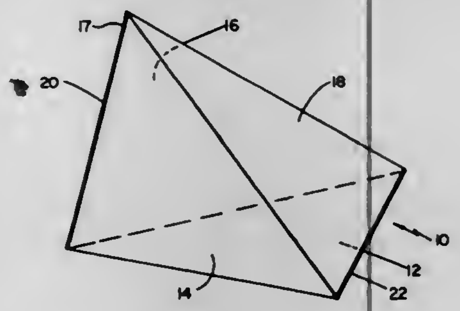
3,648,319
TETRAHEDRAL WIPING PAD

Philip A. Mitchell, East Walpole, Mass., assignor to The Kendall Company, Boston, Mass.

Filed June 18, 1970, Ser. No. 47,431

Int. Cl. A47l *13/16*

U.S. Cl. 15—118 **1 Claim**



A blank of fluid-transmitting sheet material is formed into the shape of a tetrahedron filled with a fluid-absorbing mass such as textile fibers, to produce a wiping pad with four surfaces, of especial utility in the graphic arts.

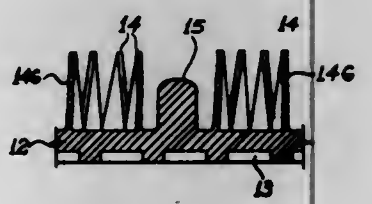
3,648,320
DOOR MAT

George Carr Woolley, 399 Clarke Avenue, Westmount, Quebec, Canada

Filed Oct. 13, 1970, Ser. No. 80,355

Int. Cl. A47l *23/26*

U.S. Cl. 15—217 **6 Claims**



A mat base is molded from thermoplastic material integrally with upwardly projecting flexible bristles and with rigid nubs at spaced points between the bristles. The bristles are higher than the nubs to effect cleaning of shoes, but the nubs sustain the weight of the user and support the shoes at an elevation above the mat base to protect the bristles from breaking and to avoid contact of shoes with dirt accumulated on the base.

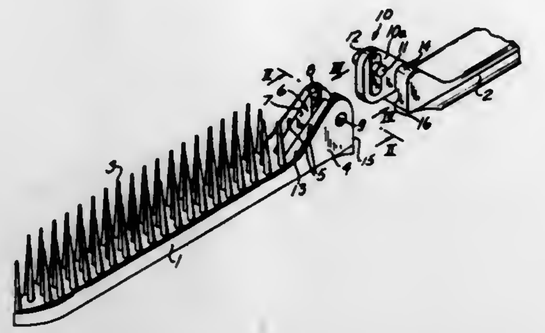
3,648,321
FOLDING UTENSIL

Joseph Vallis, 353 Cortleigh Boulevard, Toronto, Ontario, Canada

Filed Apr. 13, 1970, Ser. No. 27,799

Int. Cl. A46b *9/10*

U.S. Cl. 15—185 **10 Claims**



An elongated main body section and an elongated handle section each have a free end. Cooperating hinge portions in form of hinge pins or projections and recesses are respectively provided on these free ends and hingedly connect the sections for relative movement between the first and the second position in which they respectively extend in parallelism and in longitudinal alignment with one another. Cooperating cam means is provided on the ends and serves to urge the sections into the first position when they are displaced relative to one another from the second position by a predetermined amount towards the first position, and vice versa.

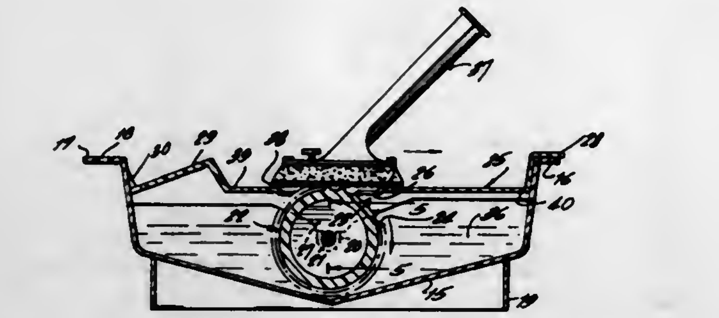
3,648,322
PAINT METERING TRAY AND RECEPTACLE

Edward H. Meisner, Dumont, N.J., assignor to Red Devil Incorporated, Union, N.J.

Filed July 17, 1970, Ser. No. 55,741

Int. Cl. B44d *3/12*

U.S. Cl. 15—257.05 **3 Claims**



A longitudinally ribbed roller is freely journaled within a trough. A portion of the roller extends through an elongated opening formed in a tray overlying the trough. When a pad-type painting tool is moved across the top of the roller a metered amount of the paint carried within the trough is dispensed to the paint applying surface of the painting tool. Upstanding teeth on the roller insure its rotation as the painting tool is drawn across it despite the use of viscous paint.

3,648,323
WINDSHIELD WIPER ASSEMBLY

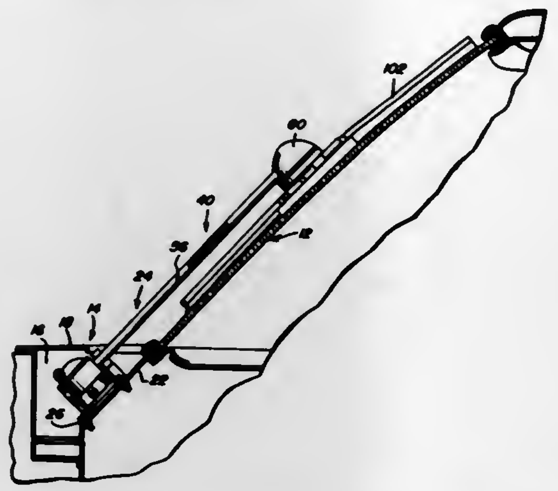
Leo J. Le Blanc, Sr., 1116 Cypress Lake Drive, Fort Myers, Fla.

Filed Dec. 28, 1970, Ser. No. 101,833

Int. Cl. B60s *1/44*

U.S. Cl. 15—250.22 **11 Claims**

A windshield wiper arm assembly oscillatably supported from a marginal edge portion of a windshield for angular displacement of approximately 90° between a retracted position closely adjacent and generally paralleling the windshield marginal edge portion and an extended position projecting inwardly of the marginal edge portion with the arm overlying the windshield glass. A first motor assembly is provided for selectively swinging the support arm between its retracted and extended operative position and a rotary blade equipped wiper head is journaled from the free end of the support arm. A second motor assembly is provided and drivingly coupled to the rotary head through a drive shaft journaled through the support arm and is operative to rotate the blade equipped head when the support arm is in its extended operative position. Also, the rotary head is provided with at least one generally radially extending blade which may be positioned in closely adjacent parallel relation to the support arm when the latter is being swung toward and is disposed in its retracted position generally paralleling and closely adjacent the aforementioned marginal edge portion of the associated windshield assembly.



3,648,324
QUICK RELEASE BALLAST WEIGHTS AND BELT

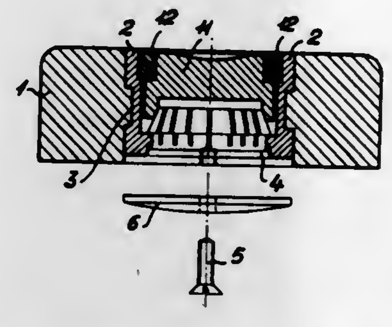
Giuseppe Stradella; Umberto Stradella, both of Via Roma 13; Giuliano Daniele, Via Roma 244 D, and Fernado Gatti, Via Cavour 37, all of Recco, Italy

Filed Aug. 5, 1969, Ser. No. 847,641

Claims priority, application Italy, Aug. 6, 1968, 7224 A/68

Int. Cl. A47g *1/10;* **A44b** *1/38;* **B63c** *11/00*

U.S. Cl. 16—1 **4 Claims**



Safety-weight for ballast-belts for use by skin-divers for fishing, to be used preferably in an assembly of similar weights, comprising an annular member made of lead and provided with a central bushing of resistant material having suitable internal annular beads for snap-connection of said weight to a suitable device provided with a diametrically resilient head having a suitable configuration and to be connected to the ballast-belt. The weight is characterized in that said central bushing has permanently mounted therein an axially movable pushbutton which is accessible from outside and can operate on the resilient head of the connection device, which head—under the action of said pushbutton—will be diametrically contracted thus releasing the lead annular member which, therefore, will be disconnected.

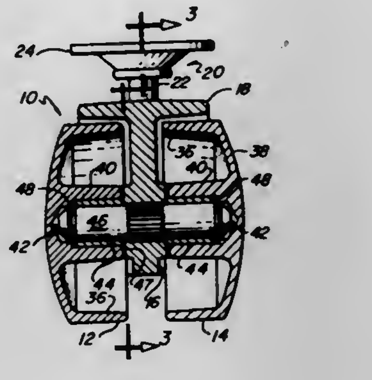
3,648,325
DOUBLE WHEELED CASTER

Robert S. Cartwright, Booneville, and Charles N. Stewart, Winston-Salem, both of S.C., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Aug. 24, 1970, Ser. No. 66,230

Int. Cl. A47b *91/00*

U.S. Cl. 16—46 **1 Claim**



The following specification describes a two-wheel caster in which the junctions between parts are camouflaged for improved appearance. Both wheels have a blind hole and are press fit on bushings. The bushings are rotatably secured on the respective end of a common shaft located between the two wheels by means of a respective C-ring engaged in a shaft groove. The shaft is cantilever supported in a radial wall between the wheels with the wall having a peripheral arcuate hood wall formed integral therewith and overlapping a large portion of the wheel periphery. The pintle stem is rotatably secured by means of a C-ring engaged in a stem groove in a boss having a blind hole or recess extending into the radial wall.

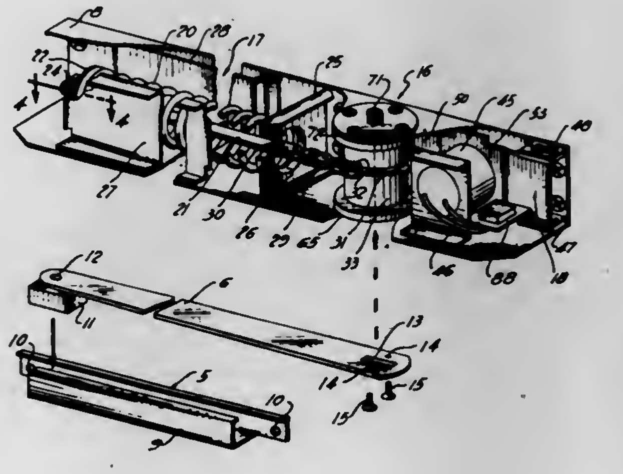
3,648,326
ELECTROMECHANICAL DOOR HOLDER-CLOSER

Joseph J. Gaysowski, Westchester, Ill., assignor to Rixson Inc., Franklin Park, Ill.

Filed Nov. 21, 1969, Ser. No. 878,604

Int. Cl. E05f *15/20*

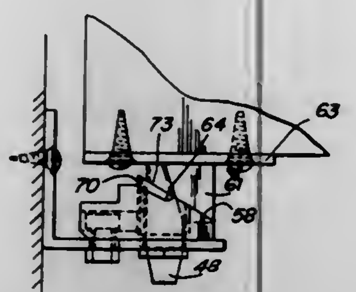
U.S. Cl. 16—48.5 **16 Claims**



An electromechanical door holder-closer to maintain remote fail-safe holding of a door in an open position, and also to effect closure of the door in response to the application of a manual closing force, the opening of an operating switch, the malfunctioning of condition detection circuitry for fire or smoke, or, alternatively, the detection of an undesired condition.

3,648,327
HINGE SET

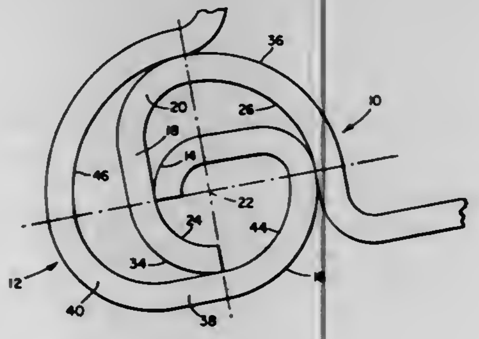
James A. Edeus, Rock Falls, Ill., assignor to National Manufacturing Co., Sterling, Ill.
Filed Sept. 25, 1970, Ser. No. 75,338
Int. Cl. E05f *1/06*
U.S. Cl. 16—153 **10 Claims**



A gravity hinge set includes upper and lower hinges providing three directions of adjustment with the load bearing hinge being provided with insertable ramps for converting the hanger set from one in which the door can remain in an opened position when fully opened to one in which the door always and automatically returns to a closed position.

3,648,328
HINGE

Francis J. McCabe, Apt. 16 Regency Woods, Doylestown, Pa.
Filed Mar. 24, 1970, Ser. No. 22,223
Int. Cl. E05d *1/04*
U.S. Cl. 16—178 **6 Claims**

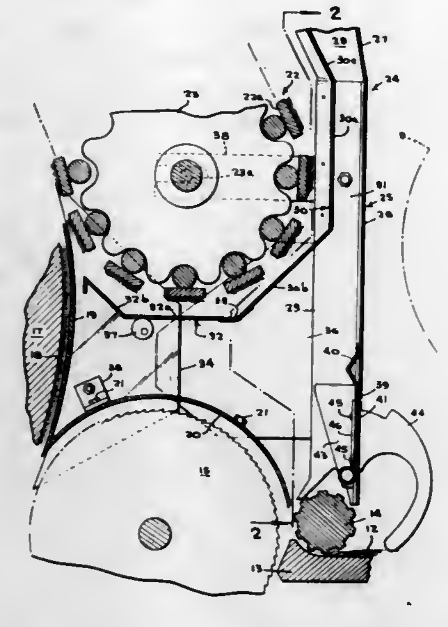


A hinge means comprises complimentally configured hinge portions having curved surfaces which cooperate to provide ball and socket action over at least 180° degrees of travel.

3,648,329
LICKERIN PNEUMATIC MANIFOLD WITH AUTOMATIC MODULATING DAMPER FOR REGULATING INTERNAL STATIC PRESSURE

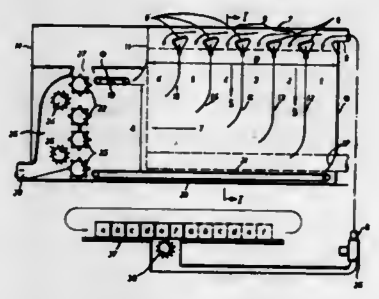
James F. King, Jr., Winston-Salem, N.C., assignor to The Bahnson Company, Winston-Salem, N.C.
Continuation of application Ser. No. 780,301, Nov. 29, 1968, now abandoned. This application Sept. 22, 1970, Ser. No. 74,503
Int. Cl. D01g *15/82*
U.S. Cl. 19—107 **13 Claims**

A suction manifold structure for carding machines to capture fly from junction orifices through which fly is discharged while minimizing withdrawal of usable fiber, which has walls coacting with parts of the carding machine to define a suction chamber transversely spanning the carding machine. A barometric damper assembly is incorporated in the manifold structure and exposed to the internal static pressure in the chamber to automatically respond to variations in the internal static pressure from a selected value and vary outside air admission through an opening in the walls to maintain the selected value in the chamber.



3,648,330
METHOD AND APPARATUS FOR MIXING STAPLE FIBERS

Rolf Binder, Raterschen, and Max Meier, Winterthur, both of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland
Filed Mar. 26, 1969, Ser. No. 810,500
Claims priority, application Switzerland, Mar. 27, 1968, 4643/68
Int. Cl. D01g *13/00*
U.S. Cl. 19—145.5 **27 Claims**

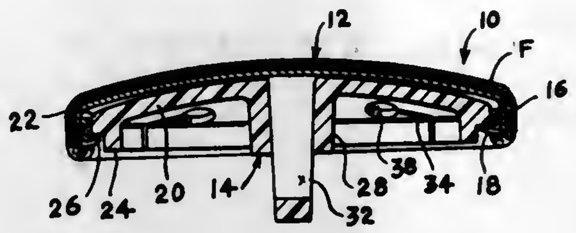


The fiber bales are moved continuously over the plucking machine and the plucked flocks are distributed among the various chutes. The flocks become layered in each chute according to the sequence of bales moved across the plucking machine. Thereafter, the flocks in the chutes move separately at uniform speeds along paths of different or the same lengths into a common path disposed at least 90° to the chutes where the separate streams of flocks are joined together and laterally compressed. The mixed flocks are then taken off by the take-off rolls.

3,648,331
COVERED BUTTON

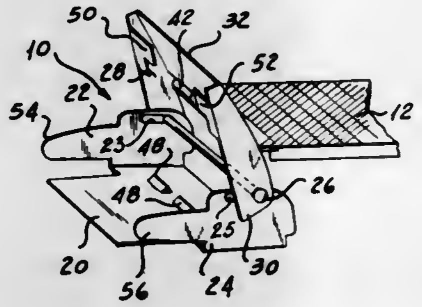
James B. Kruger, Oxford, and Joseph Cooper, Westport, both of Conn., assignors to Scovill Manufacturing Company, Waterbury, Conn.
Filed July 17, 1970, Ser. No. 55,758
Int. Cl. A44b *1/12*
U.S. Cl. 24—113 R **6 Claims**

A covered button comprises a rigid shell having inward teeth and a resilient one-piece plastic shank having a periphery adapted to snap past the teeth and hold the fabric in place. An annular flange on the shank protects the points of the teeth and forms a ledge into which the teeth dig when the cover is subjected to pull-apart forces.



3,648,332
SLIP-THROUGH BUCKLE FOR WATCHBAND

Seymour Hauser, North Bergen, N.J., assignor to Kreisler Manufacturing Corporation, North Bergen, N.J.
Filed June 29, 1970, Ser. No. 50,634
Int. Cl. A44b *11/12*
U.S. Cl. 24—191 **8 Claims**

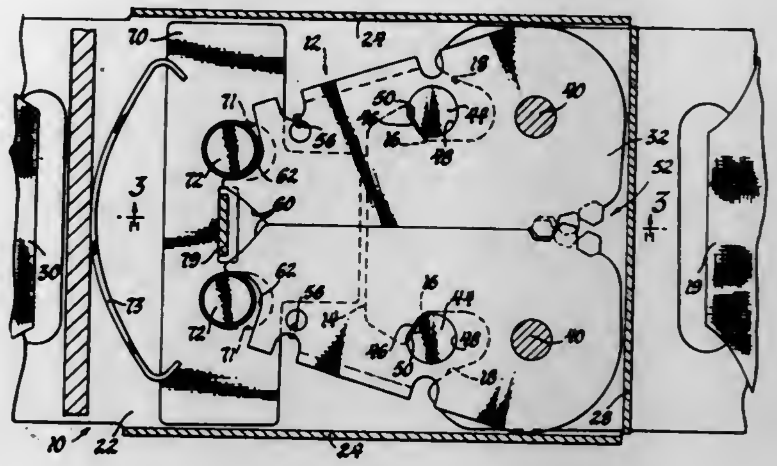


A slip-through watchband buckle in which one end of the band is pivotally secured to the buckle cover at a location between the free end of the cover and the other end of the cover which is mounted on the sides of the buckle base for pivotal movement between an open position away from the base and a closed position over the base and for sliding movement in its closed position between a locked position and a released position. After the tongue has been slipped through the buckle over the base to a position at which a rib or projection on the base engages a recess in the underside of the tongue the cover first is pivoted to its closed position to bring the buckle end pivot to a slightly beyond dead center position with reference to the cover pivot and then is slid to its locked position positively to hold the tongue in place.

3,648,333
SEAT BELT BUCKLE ASSEMBLY

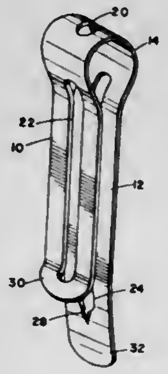
Robert W. Stoffel, Ferndale, Mich., assignor to Jim Robbins Seat Belt Company, Mt. Clemens, Mich.
Filed Oct. 20, 1969, Ser. No. 867,584
Int. Cl. A44b *11/26*
U.S. Cl. 24—230 AT **13 Claims**

A seat belt assembly including a support means with a pair of latch members rotatably supported by the support means for movement between latched and unlatched positions. Each latch member includes a pair of interconnected parallel and spaced plates with pins extending between the plates. The pins have a circular portion and a planar portion as viewed in cross section and are disposed in holes in the latch plate, the holes in the latch plate having circular portions contiguous with but longer than the circular portions of the pin for allowing the pins to rotate a limited amount relative to the latch plates. A tongue plate having slots extending laterally thereinto to define planar surfaces is insertable into the assembly to engage the pin for moving the latch plates to the latched position where the planar surfaces of the pins engage the planar surfaces of the tongue plate. Because of the limited rotatability of the pins, the planar surfaces thereof remain in sliding contact with the planar surfaces of the tongue plate. There is also included a manually operatable locking means including a pair of cylindrical roller elements engageable with the latch plates for retaining the latch plates in the latched position.



3,648,334
CLIP FOR ATTACHING SIGN TO A STAFF

Calvin D. Swalm, 4138 Cass Street, San Diego, Calif.
Filed July 2, 1970, Ser. No. 51,782
Int. Cl. A44b *21/00*
U.S. Cl. 24—259 PC **4 Claims**

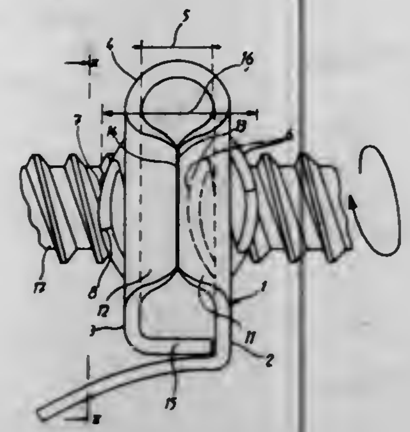


A spring clip for use on an automobile radio antenna, or any like staff, to hold a card, tag or sign for identification of the vehicle or for various types of price tagging or small displays. The clip has two generally rectilinear legs joined by a loop which can accommodate the ball tip of an aerial, or the like, and the legs are slotted for lateral gripping of the staff. A prong on one leg is provided to engage the card or sign and prevent downward slippage while the unrelieved edges of this slot in this leg provide an effective gripping action when pressing the card against the staff, even tending to effect slight local deformation, and thus assuring against tilting of the card.

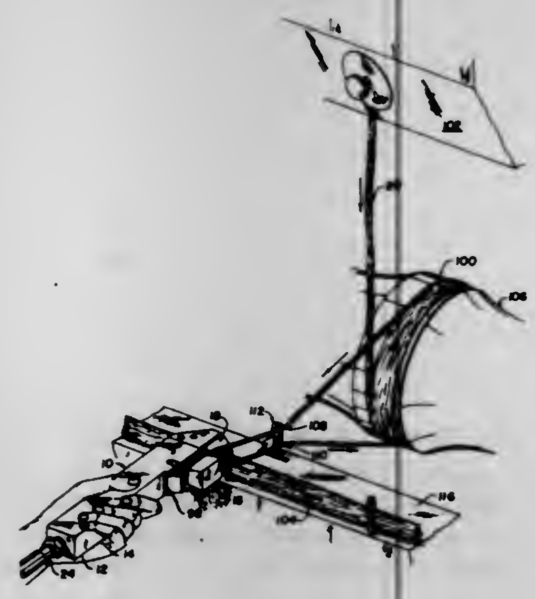
3,648,335
HOSE CLIP

Wolfgang Henning, 3538 Niedermarsberg, Dutlingstal, Germany
Filed June 22, 1970, Ser. No. 48,117
Claims priority, application Germany, June 28, 1969, P 19 33 714.5
Int. Cl. B65d *63/06*
U.S. Cl. 24—279 **3 Claims**

A hose clip of sheet metal is formed as a part-circular element with two end flanges interconnected by a clamping screw. The clamping screw is also of sheet metal and has a head which abuts one of the flanges. The other flange is formed of two portions folded together so as to be face-to-face but spaced apart. Each portion of this other flange has an aperture in threaded engagement with the screw member. Side flaps of each portion are bent towards the opposite portion to abuttingly engage the latter portion and maintain the spacing between the two portions.

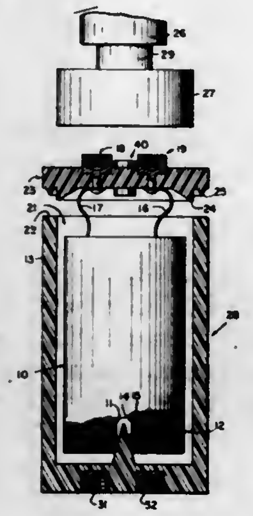


3,648,336
PORTABLE YARN HANDLING DEVICE
Richard E. Bevington, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 7, 1970, Ser. No. 78,702
Int. Cl. D02g *3/00*
U.S. Cl. 28—1 R **9 Claims**



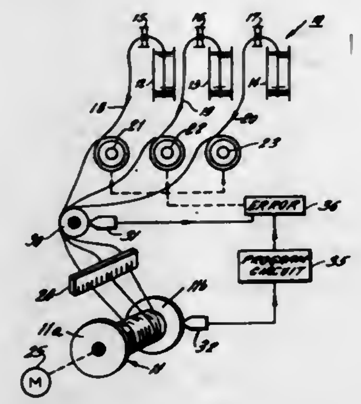
A portable yarn handling device for entangling a moving cabinet yarn end with a moving tow and for severing the cabinet yarn end at the same time as and closely adjacent the entanglement; and the method for entangling a moving cabinet yarn end with a moving tow. The housing of the device has a shear slot and an entangling slot, and a leg portion extending from the housing between the two slots to guide the cabinet yarn end around the leg portion and through each of the slots. The device is positioned over a moving tow with the two being received within the entangling slot closely adjacent the moving cabinet yarn end, and upon actuation by the operator holding the device, the moving cabinet yarn end is entangled with the tow by an air stream impinging upon the cabinet yarn end and the tow within the entangling slot and is severed by a movable knife blade within the shear slot closely adjacent the location of the entanglement.

3,648,337
ENCAPSULATING OF ELECTRONIC COMPONENTS
John B. Greskamp, and William J. Evans, both of Indianapolis, Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Filed Aug. 24, 1970, Ser. No. 66,487
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.42 **7 Claims**



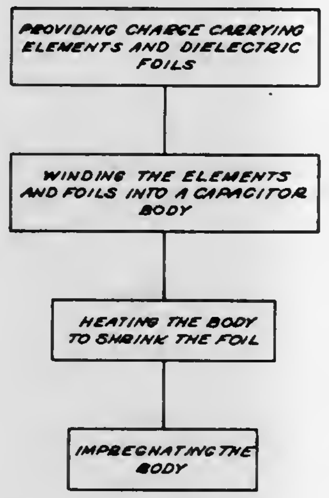
The open ends of thermoplastic containers encapsulating electronic components are closed with a compatible plastic material, the materials being sealed by ultrasonic welding utilizing a specially designed energy director.

3,648,338
AUTOMATIC TENSION CONTROL APPARATUS
Walter F. Mruk, Huntington Valley, Pa., assignor to MDC Technology Corp., a subsidiary of Management Data Corporation, Warminster, Pa.
Filed Oct. 14, 1970, Ser. No. 80,649
Int. Cl. D02h *13/26*
U.S. Cl. 28—36 **8 Claims**



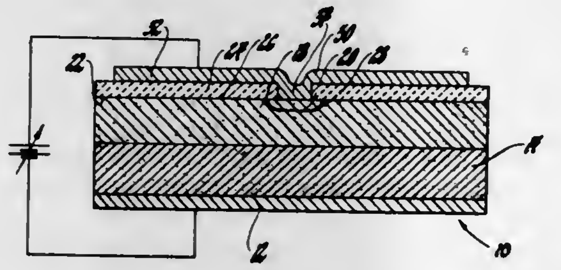
The speed at which a filament should be winding on a reel at any given instant in order to have the reel packed in a predetermined manner is computed and compared to the measured speed of the filament. The tension on the filament is then changed so as to adjust the buildup of the filament on the reel as the filament is wound until the measured speed is equal to the programmed speed at any given instant. In a preferred embodiment, a pulse output tachometer connected to a metering roll generates a pulse train related to the movement of filament past the roll. A second pulse output tachometer is connected to the reel being wound to generate a pulse train representative of the total angular rotation and the instantaneous angular velocity of the reel. The output of the second tachometer is then operated upon to deliver a programmed pulse output representative of the speed of the filament winding on the reel needed at that particular total angular rotation in order to pack a beam in a predetermined manner. The programmed pulse output is compared to the metering tachometer output, and filament tension is adjusted so that the program is followed.

3,648,339
METHOD OF MAKING IMPREGNATED CAPACITOR
Heinz Preissinger, and Reiner Simson, both of Muenchen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed May 1, 1970, Ser. No. 33,773
Claims priority, application Germany, May 5, 1969, P 19 22 822.9
Int. Cl. H01g *13/04*
U.S. Cl. 29—25.42 **3 Claims**


PROVIDING CHARGE CARRYING ELEMENTS AND DIELECTRIC FOILS
WINDING THE ELEMENTS AND FOILS INTO A CAPACITOR BODY
HEATING THE BODY TO SHRINK THE FOIL
IMPREGNATING THE BODY

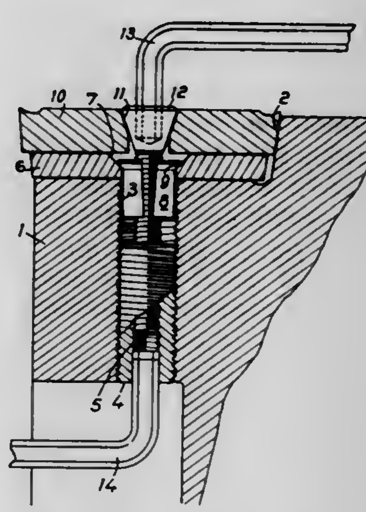
An impregnated capacitor which has a coiled body of alternate layers of plastic dielectric foils and charge-carrying elements characterized by the outer or convex surfaces of the charge-carrying elements being rougher than the inner or concave surface to facilitate the flow of an impregnating material through the coiled body. The process for making the capacitor includes heating the coiled body prior to impregnation to shrink the dielectric foil to increase the space between each of the concave surfaces and its adjacent dielectric layer and to decrease the spacing between each of the convex surfaces and its adjacent dielectric layer, then impregnating the coiled body to fill all the spaces or gaps between the layers.

3,648,340
HYBRID SOLID-STATE VOLTAGE-VARIABLE TUNING CAPACITOR
Bernard A. MacIver, Lathrup Village, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 11, 1969, Ser. No. 848,968
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.42 **2 Claims**



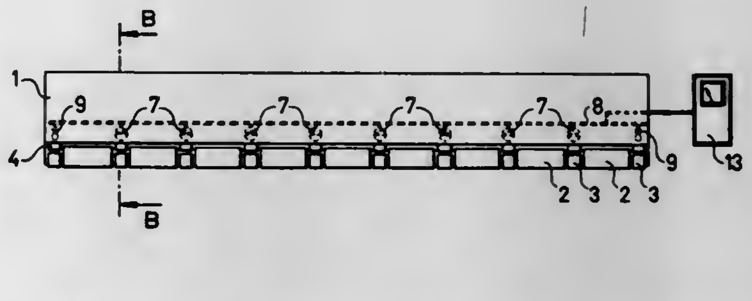
A hybrid varactor including a surface varactor and a junction varactor. One form of the hybrid varactor includes the PN-junction of the junction varactor contiguous the semiconductor-insulator interface of the surface varactor. The capacitance of the device is primarily due to the space-charge depletion region associated with the semiconductor-insulator interface. The PN-junction functions primarily to prevent inversion at the semiconductor-insulator interface.

3,648,341
DEVICE FOR LOCKING A CUTTING PLATE ON THE BODY OF A TOOLHOLDER
Guy Viellet, Neuilly-sur-Seine, France, assignor to Societe Industrielle D'Electro-Metallurgie, Paris, France
Filed Feb. 24, 1970, Ser. No. 13,584
Claims priority, application France, Apr. 1, 1969, 6909922
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **2 Claims**



This invention relates to a device for locking a cutting plate with its support plate on the body of a toolholder comprising a screw which passes through the cutting plate and the support plate before being screwed into the body of the toolholder, wherein the body of the toolholder has a tapped housing receiving an externally threaded sleeve, said sleeve itself having a tapped housing intended for receiving the screw.

3,648,342
MOVABLE COMBINATION OF ROLLS
Gerhard Walter Dorfel, Riittulanmaki, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed Feb. 18, 1970, Ser. No. 12,355
Claims priority, application Finland, Apr. 29, 1969, 1258
Int. Cl. B21b *31/08*
U.S. Cl. 29—125 **10 Claims**



A beam provides a support for a series of rolls journaled side by side between bearing brackets. The bearing brackets are forked and movable vertically in relation to the beam. The relative movement of the brackets is controlled by, e.g., pressure bellows, diaphragm cylinders, pneumatic or hydraulic cylinders and the like. The rolls are journaled between the bearing brackets in pivot bearings mounted in the furcations of the bearings. Between these furcations there has been journaled a smaller diameter intermediate roll to establish a substantially continuous line of contact together with the rolls. By the aid of the control elements disposed between the beam and the brackets the shape of the contact line is changed as desired.

The combination of rolls may be used as a loading roll for a roll of a material web which is to be wound up, for the purpose of achieving uniform lineal pressure over the entire width of the roll.

The combination may also be utilized as a support roll for a moving web, wire or felt to equalize differences in tension occuring in the direction across the wire, felt or material web.

3,648,343

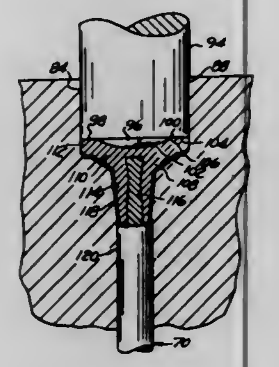
METHOD OF MAKING A COMPOSITE HIGH-TEMPERATURE VALVE

John Haller, Northville, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Original application Dec. 10, 1968, Ser. No. 782,651, now Patent No. 3,583,672. Divided and this application Mar. 23, 1970, Ser. No. 21,576

Int. Cl. B21d *53/00*

U.S. Cl. 29—157.1 R **6 Claims**



A valve head blank consisting of a briquette of water-atomized high-temperature-resistant metal powder, commonly called "superalloy powder" (FIGS. 1 to 5 inclusive) is compressed by the upper punch of a briquetting press in the cavity of a die containing a core rod to form a socket in the head, which is then sintered in a sintering furnace in a protective atmosphere at about 2,000° F. Meanwhile, a valve stem of ordinary steel has been cold-headed or machined at its upper end to form a slightly flared reduced-diameter nose thereon. This valve stem is placed in the die cavity of a press with its flared nose projecting upward into the die cavity. A trumpet-shaped lubricant sleeve of nonferrous metal, such as copper, is then placed in the die cavity, followed by the reheated sintered valve head with its socket telescoping with the flared nose of the valve stem. The upper punch of the press is then caused to compress and thin the valve head while at the same time to elongate and interlock the neck thereof with the flared nose of the valve stem by an extrusion action as the metal lubricant sleeve facilitates the deformation of the respective parts.

Alternatively (FIGS. 6 to 9 inclusive), gas-atomized superalloy powder is molded into a valve head blank consisting of a preform in a mold also containing a core pin, this assembly being sintered in a sintering furnace as before. A flared-nose stem is again placed in the die cavity, followed by the lubricant metal sleeve and hot sintered preform, whereupon the hot-forming, extruding and elongating operation is carried out as before.

3,648,344

PROCESS OF FABRICATING A RADIATOR CORE

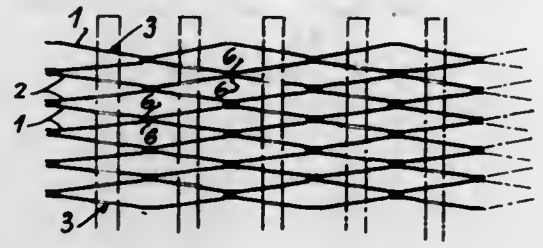
Andre Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Filed June 15, 1970, Ser. No. 46,033

Claims priority, application France, June 18, 1969, 6920355

Int. Cl. B21d *53/02*

U.S. Cl. 29—157.3 B **4 Claims**



Heat exchanger in which alternate sets including two fins each are connected along transverse staggered lines while the fins are flat, said fins which bear outlet holes for the pipes are then bundled up and the fins are finally stretched out along lines so as to form a honeycomb structure wherein the pipes are embedded.

3,648,345

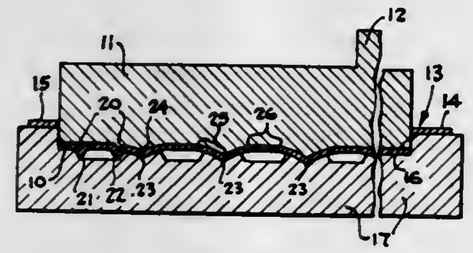
METHOD OF MANUFACTURING LIGHTWEIGHT-TYPE WHEELS

Walter J. Zenner, 1776 Sherwood Road, Des Plaines, Ill.

Original application Nov. 17, 1967, Ser. No. 683,993, now Patent No. 3,534,682. Divided and this application Jan. 15, 1970, Ser. No. 3,064

Int. Cl. B21d *53/26;* **B21k** *1/28, 1/42*

U.S. Cl. 27—159 R **5 Claims**



A method of manufacturing lightweight-type wheels in which a strip of sheet steel is embossed with a series of type characters and, during embosure, the strip is bent or indented along a series of transverse lines, between rows of characters, to an extent sufficient to cause the strip to assume a closed, polygonal, tubular shape. The tubular strip is then affixed to a plurality of internal sheet steel reinforcing members for mounting on an operating shaft.

3,648,346

TRANSVERSE CAM OPERATED STATION FOR AN AUTOMATIC NONSYNCHRONOUS MULTISTATION ASSEMBLY MACHINE

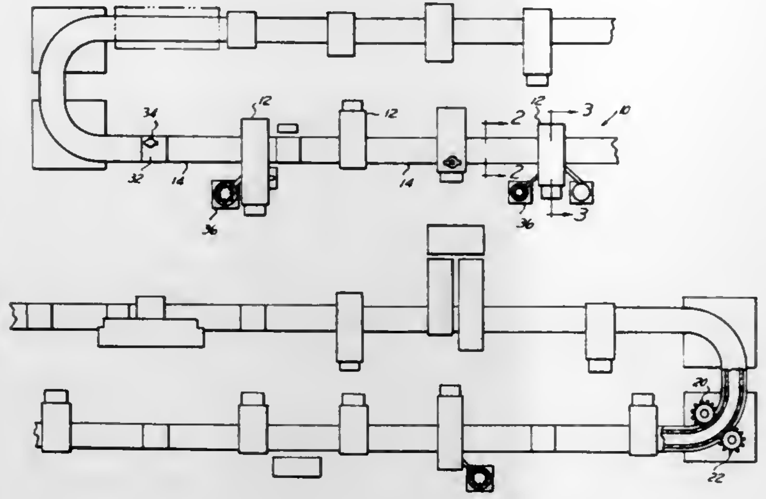
James T. Graham, Birmingham, and Fred W. Hackstock, Sterling Heights, both of Mich., assignors to The Bendix Corporation

Filed Aug. 3, 1970, Ser. No. 62,228

Int. Cl. B23p *19/00, 19/04*

U.S. Cl. 29—200 A **14 Claims**

A station for an automatic nonsynchronous multistation assembly machine operated by a cam shaft extending transversely to the line of movement of the parts in the transport system, and featuring grooved drum-type segmented cams.



3,648,347

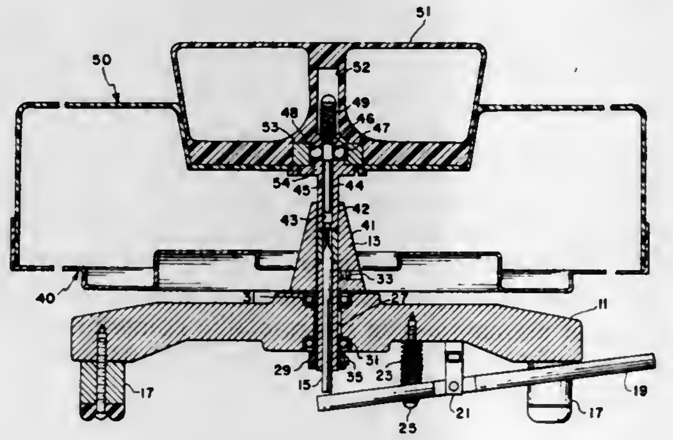
DISK PACK CLEANING TABLE

Joseph T. Guy, Sr., 80 Henry Clay Road, Newport News, Va.

Filed Mar. 23, 1970, Ser. No. 21,732

Int. Cl. B23p *19/00, 19/04*

U.S. Cl. 29—200 D **6 Claims**



A mount for removing the plastic dust cover from a digital computer disk pack for inspection and cleaning wherein the disk pack is placed on a rotatable spindle and an ejector within the spindle engages the dust cover release to remove the cover allowing access for cleaning.

3,648,348

ARRANGEMENT FOR RETAINING A CLOSING OR SUPPORT MEMBER IN A CYLINDRICAL HOUSING

Friedrich Freimuth, Lohfeldweg 15, 4975 Eidinghausen, Germany

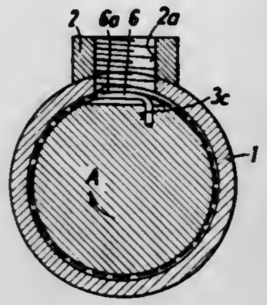
Filed Apr. 20, 1970, Ser. No. 29,891

Claims priority, application Germany, Apr. 21, 1969, P 19 20 093.2

Int. Cl. B23p *19/00, 11/00*

U.S. Cl. 29—200 B **10 Claims**

Arrangement for retaining a closing or support member in a cylindrical housing, especially in a hydraulic cylinder by a retaining wire which is disposed in a circular channel formed by circular grooves in the housing and the closing or support member. The closing or support member has a bore and the housing has an opening extending substantially radially in the plane of the grooves to permit insertion of the wire in the bore, whereupon the closing and support member is rotated thereby to pull the wire into the channel formed by the two grooves, and to retain the closing and support member in engagement with the cylindrical housing.



3,648,349

METHOD FOR TREATING A HOT-ROLLED METAL BODY AND THE LIKE

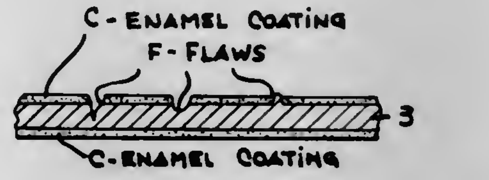
Georges Schaumburg, bis rue de Londres, Montigny-les-Metz, France

Filed June 23, 1969, Ser. No. 835,359

Claims priority, application Germany, June 24, 1968, P 17 71 666.4

Int. Cl. B23q *17/00*

U.S. Cl. 29—407 **2 Claims**



A hot-rolled metal body emerges from between the last two rolls of the rolling-mill train in a hot, solid, and relatively scale-free condition and passes immediately into a treatment chamber prior to any substantial formation of scales on the body. In this chamber a powder, consisting of a mixture of reducing agents and substances which fuse at the temperature of the body, are blown against it and melt. On cooling, this melt hardens to form a glassy, enamellike coating which breaks in the region of any surface flaws to indicate the presence of the latter and protects the body from further scaling as it further cools.

3,648,350

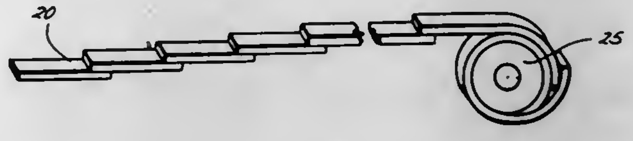
METHOD OF FORMING COIL PACKAGES OF METAL FOIL STRIPS

Patrick E. Cassidy, and Philip S. Lowell, both of Austin, Tex., assignors to Tracor, Inc., Austin, Tex.

Continuation of application Ser. No. 683,221, Nov. 15, 1967, now abandoned. This application Aug. 19, 1968, Ser. No. 756,729

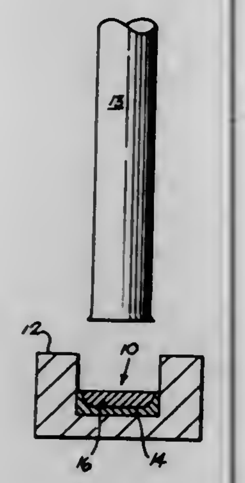
Int. Cl. B23p *17/00*

U.S. Cl. 29—423 **8 Claims**



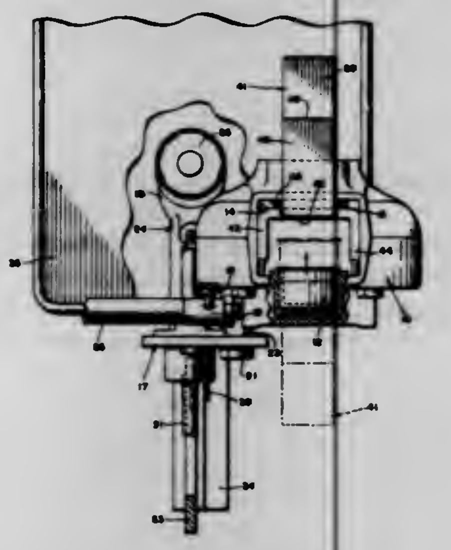
Method of forming a coil comprising a plurality of overlapping foil strips including the steps of forming a ribbon of the foil strips by bonding the strips together with an adhesive, coiling the ribbon, and then removing the adhesive.

3,648,351
METHOD OF FORMING A HOLLOW COMPOSITE ARTICLE BY EXTRUSION
Ronald A. Kibler, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.
Filed Dec. 16, 1968, Ser. No. 783,816
Int. Cl. B22f
U.S. Cl. 29—420 **7 Claims**



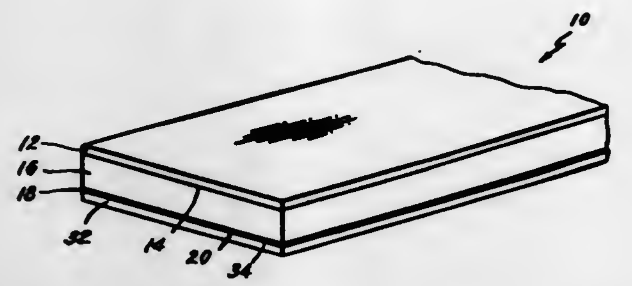
This disclosure pertains to a method for impact extruding multimetal hollow articles by placing a slug of such metals in a die cavity, bringing a punch to forcefully bear on the slug and extruding the article between the cavity-punch clearance whereby the various metals are selectively disposed in laminar form through the article, including the sidewall portions, and articles so produced.

3,648,352
METHOD AND DEVICE FOR REMOVING DISK BRAKE PISTONS
Silas E. Simmonds, 676 Main, Batavia, Ohio
Continuation-in-part of application Ser. No. 764,423, Oct. 2, 1968, now abandoned. This application Sept. 2, 1969, Ser. No. 857,290
Int. Cl. B23p *19/02*
U.S. Cl. 29—427 **15 Claims**



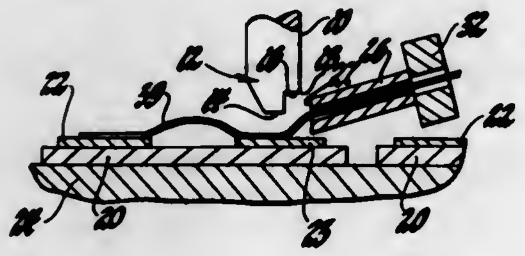
Each of the brake pistons within a disk brake caliper is removed therefrom for overhaul by increasing liquid pressure applied thereto until the piston is released from the caliper. When more than one piston is mounted in a caliper and the pistons are liquid connected to each other, all of the pistons except one are retained within the caliper by suitable means so that only the one piston can respond to the increasing liquid pressure.

3,648,353
METHOD OF MAKING AUTOMOTIVE TRIM
Ray B. Anderson, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 2, 1970, Ser. No. 478
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **4 Claims**



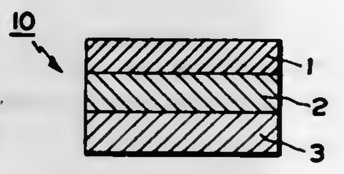
An automotive trim material to be detachably mounted on a painted steel automotive body by means of clips secured to the body is shown to comprise a composite metal laminate material having an outer layer of stainless steel disposed exteriorly of the trim configuration, an intermediate layer of mild steel material, and an opposite outer surface layer of aluminum material, said laminate layer materials being metallurgically bonded together in the solid phase, the stainless steel layer being in scratch-resistant, cold-worked condition, the mild steel layer being in easily formed, annealed condition, and the interface between the mild steel and the aluminum layers being substantially free of embrittling aluminum-iron intermetallic compounds. The composite metal laminate material is formed by roll-squeezing layers of selected metal materials together with reduction in the thicknesses thereof at a temperature below the temperature at which a liquid phase of the layer materials is formed and below a temperature at which intermetallic compounds of aluminum-iron are formed, thereby metallurgically bonding the layers together and cold-working the layer materials. The resulting bonded composite material is then heated to a selected temperature which is above the recrystallization temperature of said mild steel material, which is below the recrystallization temperature of said stainless steel material, and which is below the temperature at which any substantial amount of aluminum-iron intermetallic compound is formed at the bonded interface between the mild steel and aluminum materials of the laminate.

3,648,354
TAILLESS BONDER FOR FILAMENTARY WIRE LEADS
Condon F. Mashino, Lafayette, and Carlton D. Barker, Tipton, both of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 17, 1969, Ser. No. 877,061
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **6 Claims**



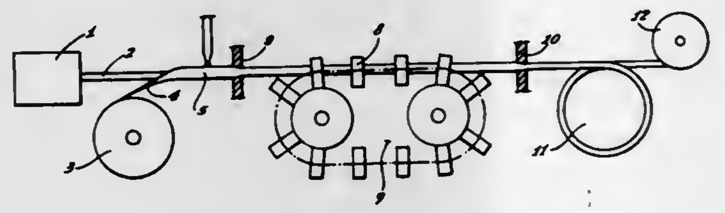
A bonding apparatus and method is disclosed for bonding an interconnecting filamentary wire between two contact pads of a semiconductor device without any significant tail. One form of the apparatus includes an upstanding bonding wedge having a flat side surface, a bonding surface, and a shoulder intersecting the flat side surface forming a wire shearing edge adjacent but not coplanar with the bonding surface. The outlet end of a wire guide tube is moved past the shearing edge and along the flatted surface to sever the wire adjacent the bond.

3,648,355
METHOD FOR MAKING AN ELECTRIC CONTACT MATERIAL
Sankichi Shida, Nara, and Tsunehiko Todoroki, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed June 30, 1970, Ser. No. 51,278
Claims priority, application Japan, July 2, 1969, 44/53639
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.7 **13 Claims**



Novel electrical contact materials are provided. The materials are comprised of three bonded layers including a top layer of palladium, an intermediate layer of a silver alloy and a nickel-copper alloy spring layer.

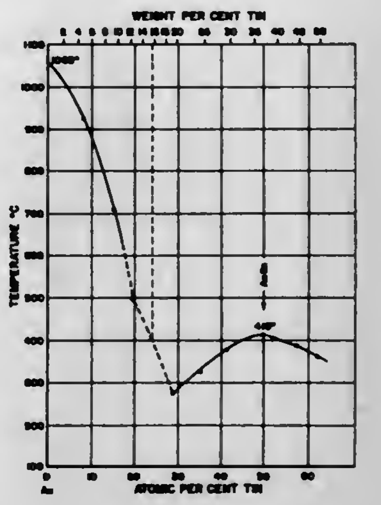
3,648,356
METHOD FOR MAKING COPPER PLATED ALUMINUM WIRES
Gerhard Ziemek, Hannover, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany
Filed Feb. 2, 1970, Ser. No. 7,590
Claims priority, application Germany, Feb. 13, 1969, P 19 07 107.9
Int. Cl. B21d *39/04*
U.S. Cl. 29—474.1 **4 Claims**



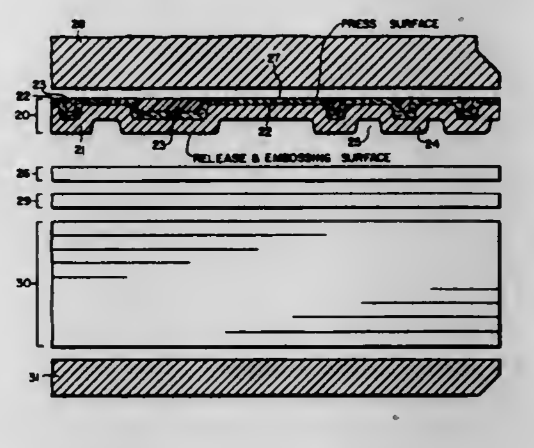
Aluminum is extruded, and the resulting core when still warm is lined with copper by deforming a copper tape around the core, welding the tape edges and drawing the resulting tube onto the core, and possibly further to obtain wire of desired diameter.

3,648,357
METHOD FOR SEALING MICROELECTRONIC DEVICE PACKAGES
Harry J. Green, Jr., Monroe County, N.Y., assignor to General Dynamics Corporation
Filed July 31, 1969, Ser. No. 846,414
Int. Cl. B23k *31/02*
U.S. Cl. 29—492 **6 Claims**

A method of hermetically sealing flat pack containers having Kovar cans and covers which are gold plated on their sealing surfaces is described. The containers are first vacuum pretinned with an eutectic gold-tin solder so as to dissolve a constant amount of gold from the gold plated sealing surfaces. The containers and covers thus prepared are then juxtaposed at their sealing surfaces and fused together to hermetically seal the containers. Microelectronic devices are assembled within the container before the pretinned layers are fused together.



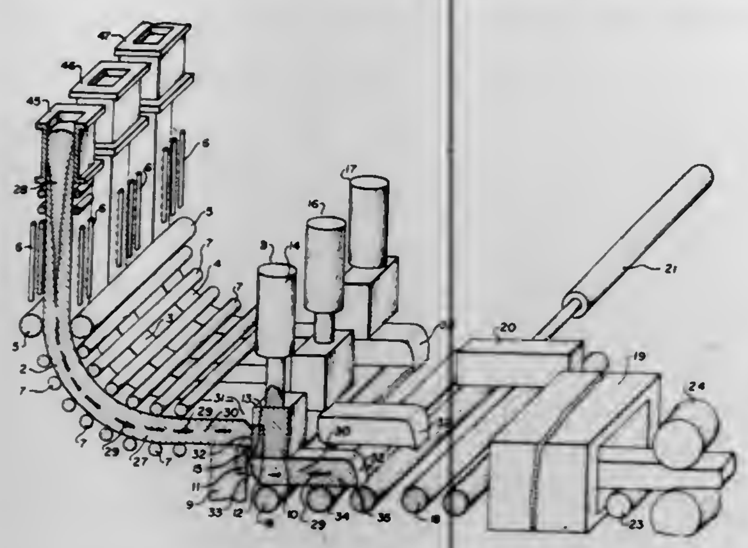
3,648,358
PROCESS FOR TEXTURING THE SURFACE OF HIGH PRESSURE LAMINATES
Daniel L. Cannady, Jr., Allendale, and Salvatore E. Palazzolo, Hampton, both of S.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 24, 1969, Ser. No. 869,191
Int. Cl. B23p *17/00, 25/00*
U.S. Cl. 29—527.4 **5 Claims**



A release-embossing sheet, having a patterned, indented release side and a flat press side, for use in a laminating assembly, is made by embossing a film or foil sheet material to produce patterned indented surfaces, filling the indentations on one side with a resinous composition, and curing the resin.

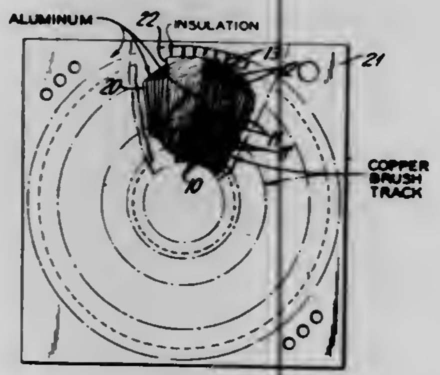
3,648,359
WORKING OF CONTINUOUSLY CAST METAL STRAND
William E. Dennis, Pittsburgh, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Filed Dec. 30, 1969, Ser. No. 889,151
Int. Cl. B23p *17/00, 25/00*
U.S. Cl. 29—527.7 **9 Claims**

Continuously cast metal strand with a porous center portion is sheared into lengths by working the solidified skin so as to form a solidified zone extending across the strand and severing it in this zone. Lengths so sheared from multiple strands are passed sequentially through a single reheating furnace and a single rolling mill.



3,648,360
METHOD FOR MAKING AN ALUMINUM ARMATURE

William B. Tucker, East Norwich, N.Y., assignor to Photocircuits Corporation
Original application Apr. 3, 1967, Ser. No. 627,969, now Patent No. 3,488,539. Divided and this application May 16, 1969, Ser. No. 844,228
Int. Cl. H01r *43/00*
U.S. Cl. 29—597 **7 Claims**

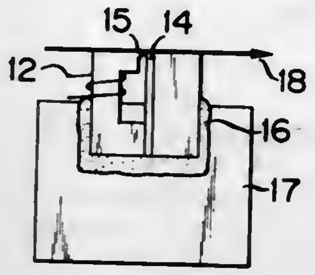


A permanent magnet-type DC machine including an aluminum armature having a copper brush track metallurgically bonded to exposed winding segments. The copper brush track can be formed either (1) by forming one array of winding segments from copper clad aluminum and then etching away undesired copper, (2) by depositing copper selectively in the brush track area or (3) by bonding sheet copper brush track to the aluminum.

3,648,361
METHOD OF MANUFACTURING A MAGNETIC HEAD

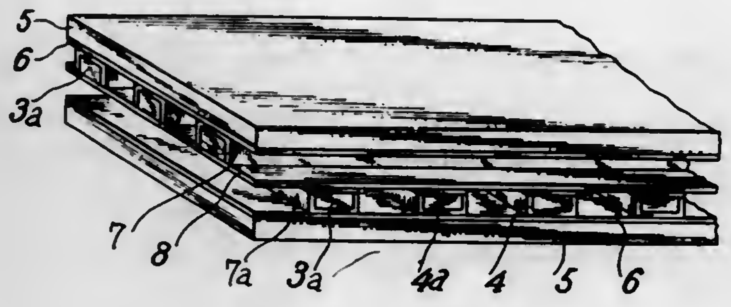
Motoi Yagi, Zushi-shi, and Yoshihisa Kawamura, Chigasaki-shi, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed June 23, 1969, Ser. No. 835,631
Claims priority, application Japan, June 26, 1968, 43/43929; Dec. 5, 1968, 43/88614; June 28, 1968, 43/54343
Int. Cl. G11b *5/42;* **H01f** *7/06*
U.S. Cl. 29—603 **7 Claims**

A method of making an improved magnetic head used for recording and reproduction in a tape recorder. The magnetic head includes two core halves or pole pieces abutting against each other and between the core halves are formed a hard nonmagnetic spacer and a void space. These core halves are designated in turn as a first core half and a second core half as counted in the travelling direction of the tape. A wedge-shaped lip is formed on the tape-contacting surface of the first core half and extends in the travelling direction of the tape in a manner to cover the void space between the core halves.



3,648,362
METHOD FOR PRODUCING A MEMORY MATRIX

Shintaro Oshima, and Toshihiko Kobayashi, both of Tokyo-to, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan
Filed July 7, 1969, Ser. No. 839,404
Claims priority, application Japan, July 10, 1968, 43/47829
Int. Cl. H01f *7/06*
U.S. Cl. 29—604 **2 Claims**

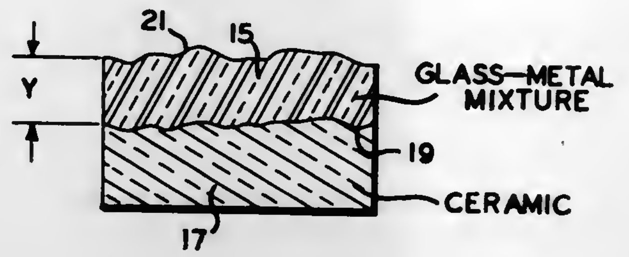


A method for producing a memory matrix having a number of magnetic parallel lines and with magnetic flux keepers and a number of magnetic parallel memory lines each comprising a conductive line and two series-coupled ferromagnetic films deposited on the conductive line so as to form a closed-magnetic circuit around the conductive line. One of the two ferromagnetic films is deposited on the conductive line adhered on a flexible, insulative sheet by a solventproof adhesive so as to produce magnetic parallel lines. The magnetic parallel lines are transferred to the surface of a substratum on the surface of which is a strong adhesive stronger than the solventproof adhesive. The other of the two ferromagnetic films is deposited on the conductive liens of the magnetic parallel lines so as to produce magnetic parallel memory lines. A product of the second step is associated with a product of the third step so that parallel lines of two groups are insulated and intersect each other substantially at 90°.

3,648,363
METHOD OF MAKING RESISTOR

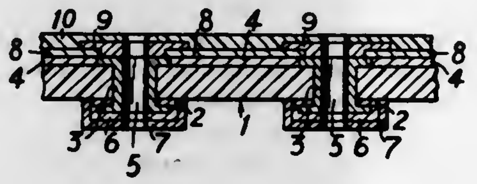
Joseph Burton Buzard, Emporium; Kenneth W. Coleman, North Warren, both of Pa.; Martin Leroy Zelenz, Seneca Falls, N.Y., assignors to Sylvania Electric Products, Inc.
Original application June 14, 1968, Ser. No. 737,179, now abandoned. Divided and this application Mar. 6, 1970, Ser. No. 17,213
Int. Cl. H01c *17/00*
U.S. Cl. 29—610 **6 Claims**

A process for fabricating resistor material includes the steps of casting a suspension to provide a film casting, heating to provide a film, cutting the film to size, attaching the film to a substrate, and firing to provide resistor material. A resistor is fabricated by a process of selecting a substrate, depositing a conductor pattern thereon, applying an adhesive, attaching a self-supporting cut film to the substrate, and firing the substrate and attached film and conductors to provide a resistor. An electrical circuit is provided by applying a solder layer to the conductor pattern on the substrate, attaching electrical components to the solder layer, and encapsulating the structure to provide an electrical circuit. A resistor includes a substrate, electrical conductors affixed thereto, and a layer of resistor material affixed to the conductors and conforming to the contour of the substrate.



3,648,364
METHOD OF MAKING A PRINTED RESISTOR

Tsunehiko Endo, Tokyo, Japan, assignor to Hokuriku Electric Industry Co., Ltd., Toyama-Prefecture, Japan
Filed Apr. 30, 1970, Ser. No. 33,438
Int. Cl. H01c *7/00, 17/00*
U.S. Cl. 29—620 **17 Claims**

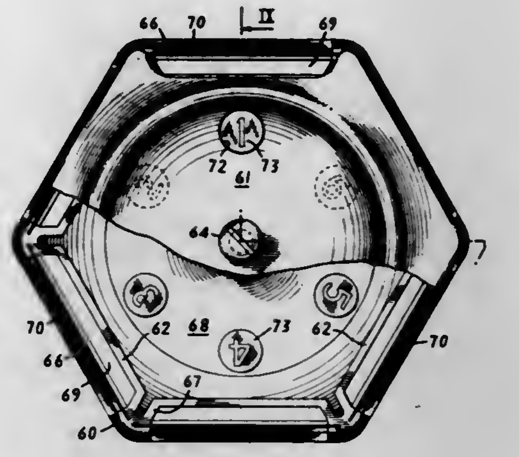


A printed resistor comprising an insulating matrix board, copper layers printed on one side of said board by etching and having predetermined patterns, impedance layers screen printed on the other side of said board, and conductors applied in holes formed in said board and extending through said holes for electrically connecting between selected ones of said copper layers and said impedance layers and the process for producing said printed resistor.

3,648,365
MULTIPLE-BLADE RAZOR

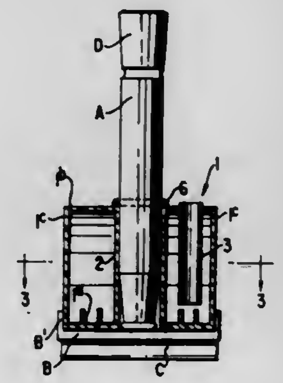
Clemens A. Iten, and Harold B. Bickers, both of Staunton, Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Oct. 9, 1969, Ser. No. 864,978
Int. Cl. 30 *346.57;* **B26b** *21/22, 21/06*
U.S. Cl. 30—40 **16 Claims**

A safety razor of disposable character in the shape of a generally flat disk embodying a blade holder with a series of individual blades arranged at the periphery thereof in generally end-to-end relation, the holder being arranged in generally face-to-face relation with respect to a cover part and rotatable relative thereto, the cover part having a blade exposure opening at the periphery the said relative rotation permitting individual exposure of the respective blades at the opening, the other blades being protected from contact within the razor cover parts, and the razor being provided with a protective cover removably mounted over the blade exposure area. Directional detent means and a final stop means prevent repositioning of a used blade at the shaving area.



3,648,366
FACE WETTER FOR SHAVING

Jack Robert Harrison, Sr., 9209 Ferndale Road, Dallas, Tex.
Filed Sept. 4, 1970, Ser. No. 69,687
Int. Cl. B26b *21/44;* **B65d** *47/00*
U.S. Cl. 30—41 **7 Claims**

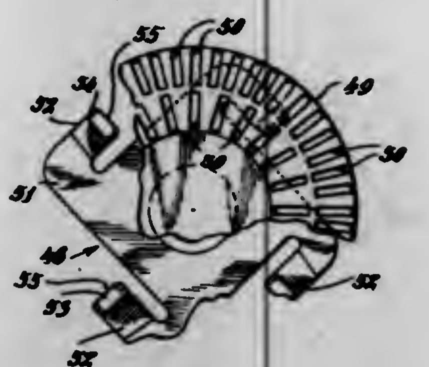


The safety razor has a handle carrying a head adapted to hold a double-edged safety razor blade, the head having a recessed underside. A face wetter vessel adapted to carry a liquid is mounted on the handle and has a base entering the recessed underside of the razor head. The base has a series of perforations therein at opposite sides thereof adjacent to the edges of the razor blade through which drops of the liquid are deposited on the face of the user when the razor handle is tilted from the vertical in the act of shaving.

3,648,367
CUTTERHEAD FOR ELECTRIC DRY SHAVER

Robert J. Tolmie, Fairfield, Conn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Aug. 4, 1969, Ser. No. 849,273
Int. Cl. B26b *19/04*
U.S. Cl. 30—43.6 **6 Claims**

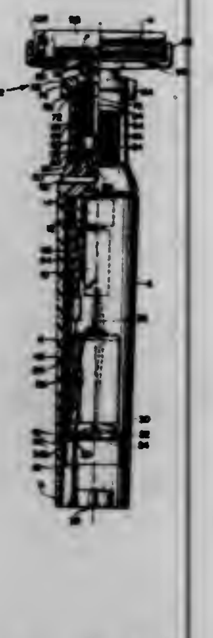
A cutterhead for an electric dry shaver which includes a stationary outer cutter having a plurality of hair reception slots and a movable inner cutter having a plurality of cutter teeth wherein the cutter teeth are provided with buffed surfaces adjacent the hair entry portions of the hair reception slots in the outer cutter.



3,648,368
SAFETY RAZOR

Paul W. Douglass, Winchester, and Joseph E. Koehler, Norwell, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Mar. 23, 1970, Ser. No. 21,860
Int. Cl. B26b *21/32, 21/18*
U.S. Cl. 30—60.5 **6 Claims**



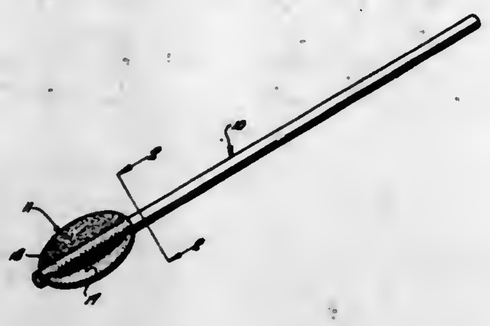
A safety razor including a head portion suitable for mounting double edge cutting means and a handle portion in which there is mounted an electric motor, a shaft rotatable by the motor, and a weight eccentrically mounted on the free end of the shaft, rotation of the weight operating to cause vibration of the head portion of the razor. Also mounted in the handle portion are means for adjusting the positions of the cutting edges of a razor blade relative to the razor, and proximate to the adjusting means are means for opening and closing the razor.

3,648,369
EATING IMPLEMENT

Vaughn D. Frodsham, La Mirada, Calif., assignor to Dudley Lyon, La Mirada, Calif., a part interest

Filed Mar. 9, 1970, Ser. No. 17,815
Int. Cl. A47j *43/28*
U.S. Cl. 30—141 **6 Claims**

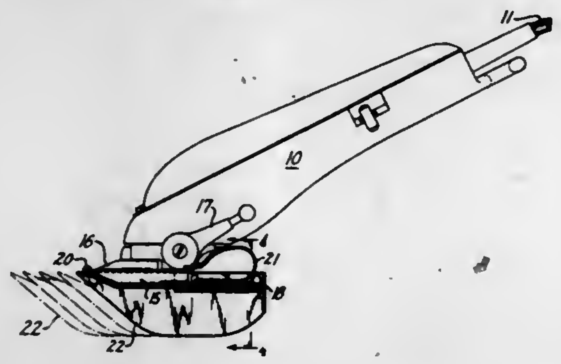
A sipping straw has bonded to it a scoop for receiving and transferring food. The scoop may be a flat blade, a shaped bowl or a plurality of tines. Each scoop has a channel or groove along one of its axes with an adhesive layer in the groove to secure the scoop to the straw.



3,648,370
SHOE COMB AND ATTACHMENT

Daniel Cercone, 212 Cedarville Street, Pittsburgh, Pa.

Filed Apr. 3, 1970, Ser. No. 25,377
Int. Cl. B26b *19/20*
U.S. Cl. 30—201 **3 Claims**

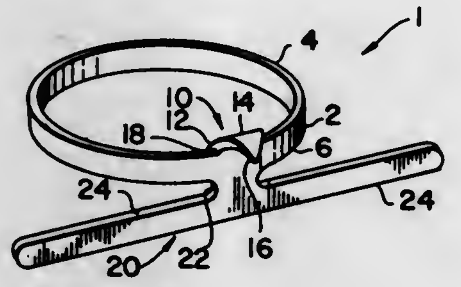


This invention relates generally to an improved, tapering shoe comb adapted for use in detachable connection with a hair clipper and more particularly to a shoe comb which is attached to the hair clipper by means of a semipermanent base piece which is attached directly to the bottom of the clipper so that it may be practically employed with clippers which do not have sufficient extra width of the stationary comb plate for other means of attachment.

3,648,371
RING-MOUNTED DEFENSIVE BLADE

Charles Petrosky, 1118 N. Jefferson Street, Arlington, Va.

Filed May 2, 1969, Ser. No. 821,305
Int. Cl. B26b *27/00*
U.S. Cl. 30—298 **9 Claims**

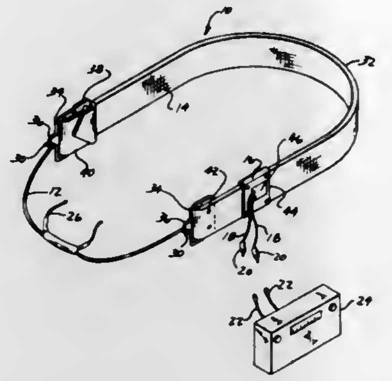


A ring outwardly appearing as a conventional wedding band has an inward and downward pointed triangular blade with sharpened cutting edges and stabilizing wings which extend laterally from the ring. In case of attack, a person wearing the ring simply touches the point to the clothing or skin of the attacker, and pulling away rips the clothing or skin so that the attacker may later be identified.

3,648,372
ORTHODONTIA DEVICE

Stanley Kirschenbaum, 2185 Loines Avenue, Merrick, L. I., N.Y.

Continuation-in-part of application Ser. No. 850,854, Aug. 18, 1969, now Patent No. 3,533,163, dated Oct. 13, 1970. This application Sept. 10, 1970, Ser. No. 71,098
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 D **3 Claims**

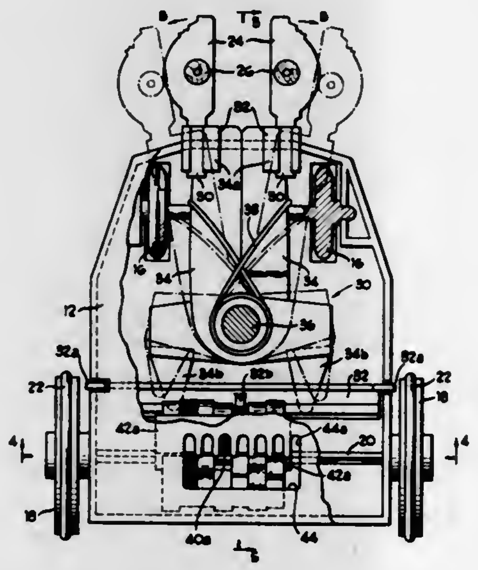


An orthodontia appliance is provided including a mouth brace and elastic-retaining band designed to exert a predetermined force on the brace when the brace is positioned in the mouth of a patient. The band is provided with an adjusting clamp and an integral strain gauge which, when connected to a suitable readout device gives an indication of the force exerted on the brace by the band and therefore the force exerted on the patient's teeth.

3,648,373
DRAWING DEVICE

Howard J. Morrison, Highland Park, and Marvin I. Glass, Chicago, both of Ill., assignors to Marvin Glass & Associates

Filed Sept. 14, 1970, Ser. No. 71,868
Int. Cl. B43l *13/00*
U.S. Cl. 33—18 R **5 Claims**

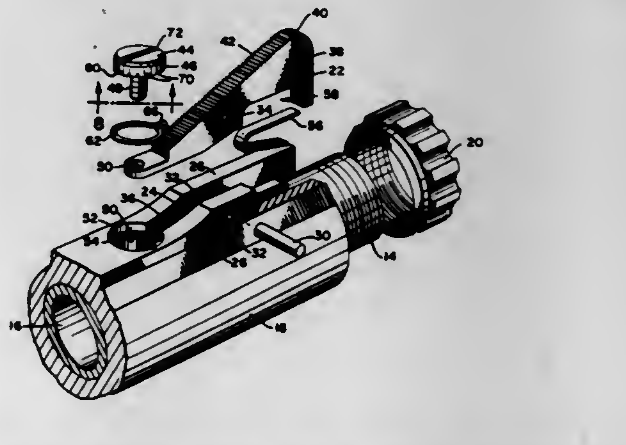


A drawing device which includes a frame movable over a marking surface by at least a pair of wheels fixedly secured to a shaft for rotation with the wheels. At least one marking member is mounted on the frame and movable relative thereto to draw a predetermined pattern onto the marking surface in response to movement of the frame over the marking surface. A cam drum, having a plurality of different, individual cam runs disposed longitudinally therealong, is secured to the rotating shaft and a linkage is operatively connected to the marking member, with a cam follower of the linkages engageable with the cam drum to move the marking member relative to the frame in a pattern determined by the individual cam runs on the cam drum. The cam follower portion of the linkage and the cam drum are relatively shiftable to thereby permit selective determination of the pattern to be drawn by the drawing device. The marking member is journaled on the frame for movement toward and away from the frame, as well as pivoting movement relative to the frame, to provide for further selective changes of the drawn pattern.

3,648,374
ADJUSTABLE FIREARM SIGHT

Karl R. Lewis, 77 Onley Road, Wethersfield, Conn.

Filed Aug. 15, 1969, Ser. No. 850,370
Int. Cl. F41g *1/26*
U.S. Cl. 33—58 R **9 Claims**

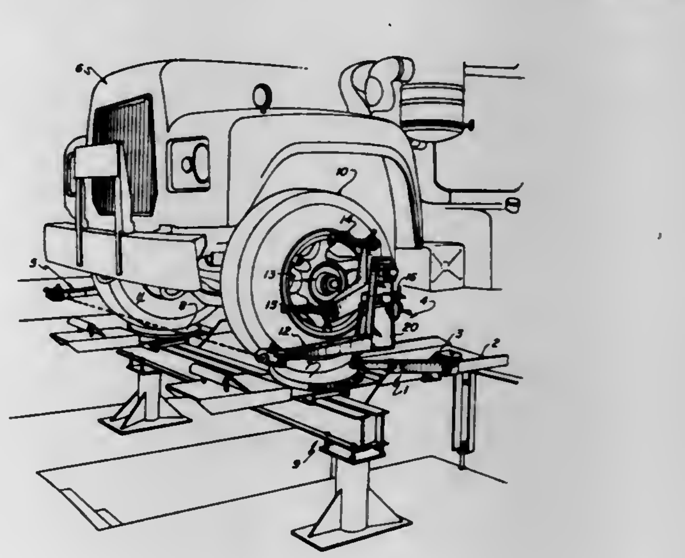


A sight for a firearm, which may be the front sight of a revolver or other handgun, is adjustable to control the elevation of its sighting surface. The sight is pivoted about a transverse axis and includes an adjustment screw which is held against the stationary structure of the firearm by a biasing spring working between the sight and such stationary structure.

3,648,375
SUPPORT FOR A PORTABLE WHEEL ALIGNER

Edward D. Wilkerson, Washington Valley Road, Morristown, N.J.

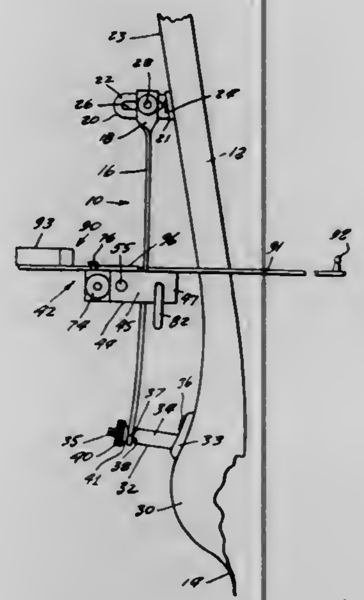
Filed Apr. 16, 1970, Ser. No. 29,024
Int. Cl. A47f *5/00*
U.S. Cl. 33—46 W **4 Claims**



A support for a portable wheel aligner unit to carry adjustably the aligner unit from a storage position to a position adjacent a vehicle wheel to be aligned. The support comprises a pair of telescoping arms adapted to extend an adjustable length, swing about a vertical axis, and also to tilt through a limited angular range in a vertical plane. One end of the telescoping arms is clamped to a runway of a pit, power, or drive-on vehicle rack. The other end of the arms carry an extensible post which supports a ball which is received by a loosely mating socket which is an integral part of the aligner unit. A spring retaining yoke is coupled to the aligner unit to enable relative movement of the aligner with respect to the post. The foregoing structure enables an operator to conveniently store the aligner unit and bring it into operating position on a vehicle wheel without the necessity for manually lifting the total weight of the aligner.

3,648,376
BOW SIGHT

William J. Millnamow, 9 Hausman Street, Brooklyn, N.Y.
Filed Jan. 13, 1970, Ser. No. 2,543
Int. Cl. F41g *1/00;* **F41b** *5/00*
U.S. Cl. 33—46 A **7 Claims**

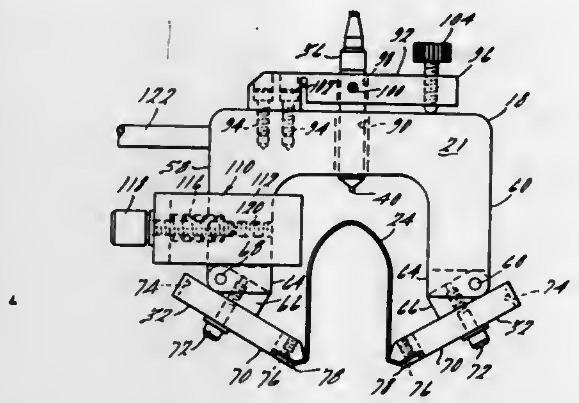


A sighting device for archery bows consisting of a guide rail mounted at its upper and lower ends in spaced relation to an upper bow section with one end of the guide rail adjustable relative to its spacing from the bow section. Adjustably mounted on the guide rail for up and down movement thereon is a sighting unit including a carriage secured to the guide rail by a clamping action. A sighting member support bar is mounted at one side of the carriage for lateral movement to selected adjusted positions, being supported on the carriage by a guide pin and a control pin. Manually operated means on the carriage connected to the control pin moves the support bar to an adjusted selected position. The support bar has affixed to its top surface a sighting member consisting of a tube with crosshairs on the rear end of a rod, the front end of the rod having a raised ball that is in visual alignment with the intersecting axis of the crosshairs.

3,648,377
SLING ROUNDNESS GAGE

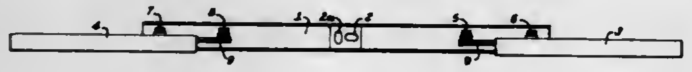
Frederick W. Witzke, Ann Arbor, Mich., assignor to The Bendix Corporation
Filed June 25, 1969, Ser. No. 836,368
Int. Cl. G01b *5/20, 5/28, 7/28*
U.S. Cl. 33—174 R **24 Claims**

A gage for measuring the out-of-roundness of cylindrical or spherical objects, which can perform such measuring while the objects are still mounted in the machine used in shaping them. A gage frame holds a flexible, nonstretchable sling in an opened looped position and also holds a transducer adapted to sense radial variations of the surface of the object being measured. In operation the sling is looped around a large arc of the circumference of the object being measured, thereby supporting the frame a fixed distance from the object and serving as a reference member. Upon rotation of the object about its circular center the transducer senses radial variations in the object's surface while relative movement between the object's center and the sling due to lobing conditions of the object are virtually eliminated. Also disclosed is a more accurate roundness measuring apparatus using two such gages in tandem.



3,648,378
ARRANGEMENTS IN AN EXTENSIBLE AIR-BUBBLE-TYPE LEVEL

Hans Kristian Thingstad, Fornhojdsvagen 13, and Horst Jurgensen, Sveagatan 19, both of Sodertalje, Sweden
Filed July 17, 1970, Ser. No. 56,248
Claims priority, application Sweden, Dec. 14, 1967, 17,157/67
Int. Cl. G01c *9/00*
U.S. Cl. 33—208 **1 Claim**



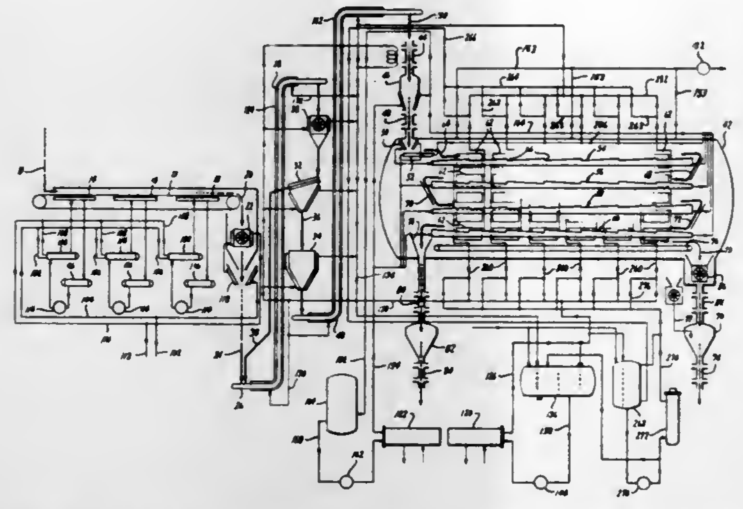
An air bubble level having a main portion of generally I-shaped cross section which is engaged by extensible members partly surrounding the main portion and which can be clamped in various extended positions by clamping means located within the extensible means and cooperating with a plate located in the main portion of the level so that actuation of the clamping means will move the plate and cause the extensible members to be raised and clamped against the main portion.

3,648,379
CONTINUOUS FREEZE DRYING SYSTEM

James L. Mercer, Los Altos, Calif., and Lorne A. Rowell, Lachine, Quebec, Canada, assignors to John T. Horton, Hinsdale, Ill.
Filed Mar. 16, 1970, Ser. No. 19,917
Int. Cl. F26b *5/06*
U.S. Cl. 34—5 **15 Claims**

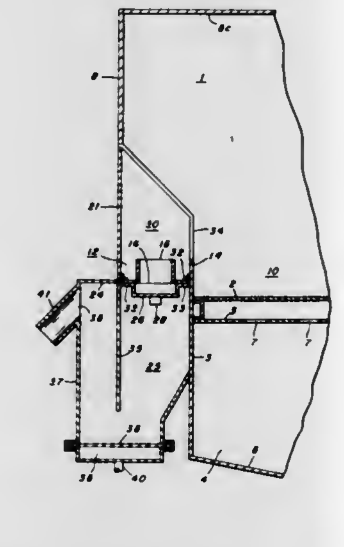
A system of apparatus (and method) for the continuous freezing and freeze drying of solids-containing aqueous liquids to obtain a freeze dried product. The feed liquid is frozen as a thin sheet on a continuously moving belt and is broken to form discrete pieces which are further reduced in size prior to freeze drying. The frozen particles are moved on a chilled multistage vibratory conveyor in an evacuated chamber wherein refrigerated condensers and radiant energy sources cooperate with the conveyor to sublimate the ice content of the frozen particles to form a freeze dried product. The vibrating conveyor is constructed to minimize transfer of vibratory forces as well as the effects of changes in length of the conveying sections as a result of temperature

change. The system operates continuously to receive the liquid feed, to discharge the freeze dried product, and to separate and remove ice collecting on the condensers. The system functions to accomplish the freezing and freeze drying operations in the relatively short period of from 40 to 110 minutes.



3,648,380
FLUIDIZED BED LEVEL CONTROL

Rudolph L. Guilloud, Allison Park, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed May 28, 1970, Ser. No. 41,450
Int. Cl. F26b *3/08*
U.S. Cl. 34—10 **8 Claims**

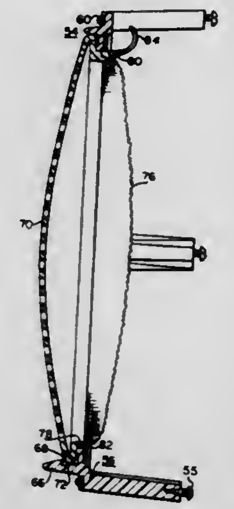


A method and structure for stabilizing the depth of material in a first, highly turbulent fluidized bed of solids by discharging the flow of material from the bed over a weir into a second, relatively calm fluidized bed of solids, the weir defining a boundary between the two beds. The level of the second bed is maintained at substantially the same height as the top of the weir, and an outlet opening is provided in the second bed for discharging the solids therefrom in a constant, consistent manner in comparison to that of the first, turbulent bed.

3,648,381
LINT TRAP FOR A CLOTHES DRYER

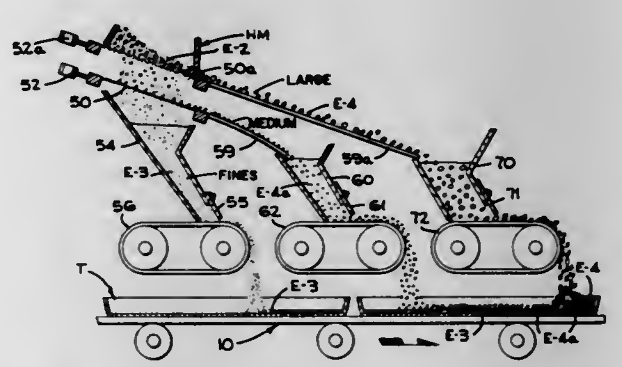
John J. Fox, Lexington, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 9, 1970, Ser. No. 45,099
Int. Cl. F26b *21/02*
U.S. Cl. 34—82 **10 Claims**

A lint trap is provided on the door of a clothes dryer where it is readily visible and accessible for cleaning. The lint trap is generally coextensive with the opening to the dryer basket and has a flange portion which, when the door is closed abuts the front baffle around the perimeter of the opening so that all air exiting from the basket must pass through the lint trap prior to coming into contact with any relatively cool surface. The flange supports a separable perforated filter guard and a fine mesh removable screen filter. The guard protects the screen and the lint deposited thereon from the clothes as they tumble within the dryer.



3,648,382
FREEZE DRYING SOLIDS BEARING LIQUIDS

Henry A. Oldenkamp, and Clyde D. Watson, both of San Jose, Calif., assignors to FMC Corporation, San Jose, Calif.
Original application Sept. 15, 1967, Ser. No. 668,109, now Patent No. 3,556,818. Divided and this application Sept. 3, 1970, Ser. No. 78,319
Int. Cl. F26b *5/04*
U.S. Cl. 34—92 **4 Claims**

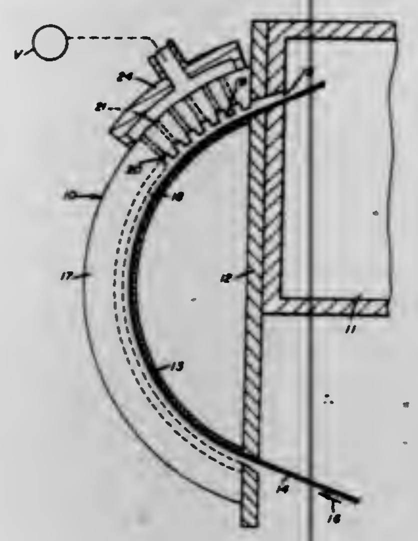


Freeze dried coffee extract is prepared by grinding frozen chunks of extract into particles of varying size, spreading the ground particles into trays so that the fines are at the bottom, and freeze drying the bed of particles in the trays.

3,648,383
SEALING APPARATUS FOR TRANSPORT OF MATERIAL BETWEEN REGIONS AT DIFFERENT PRESSURES

Roger L. Saunders, Boxmoor, England, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 6, 1970, Ser. No. 25,758
Claims priority, application Great Britain, Dec. 1, 1969, 58,597/69
Int. Cl. F26b *25/00;* **F16j** *15/44*
U.S. Cl. 34—242 **7 Claims**

A seal to permit the passage of material, such as a continuous web bearing a layer of coating composition, between two zones at different gas pressures comprises a narrow passageway in communication with the two zones, a plurality of transverse ribs spaced along the longitudinal extent of the passageway, and a plurality of spaced apertures located within the troughs between adjacent ribs and communicating with a vacuum manifold for withdrawing gas from the passageway to provide a progressive change in pressure from a value at the inlet to the passageway equivalent to the pressure in the zone from which material is being transported to a value at the outlet from the passageway equivalent to the pressure in the zone into which the material is being transported. In a preferred embodiment, the seal is comprised of a smooth arcuate plate and a curved castellated shoe positioned opposite and in close proximity to the plate to define a narrow arcuate passageway therebetween. The seal is especially useful in the vacuum drying of web material having a surface coating which is especially susceptible to damage, such as a web consisting of a support coated with one or more layers of photographic emulsion.



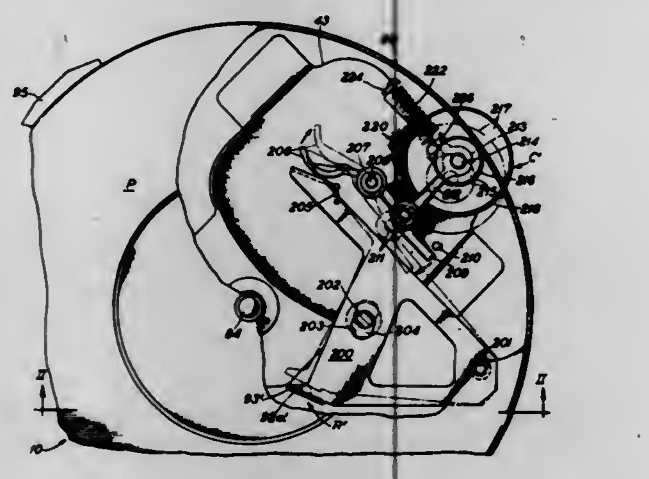
3,648,384
TURNTABLE DRIVE RELEASE MECHANISM

Richard W. Roberts, Lombard, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 7, 1970, Ser. No. 26,380

Int. Cl. G09b *1/00;* **G11b** *17/00*

U.S. Cl. 35—8 A **6 Claims**



A turntable drive release mechanism for an audiovisual educational apparatus of the type disclosed in U.S. Pat. No. 3,483,633 is disclosed employing a continuously driven friction drive wheel which is moved out of engagement with a turntable in response to an indexing lever carried on and moving with the turntable. The lever engages a releasable stop shaft and pivots to bear against a bellcrank which, through a link, moves the drive wheel away from the turntable while maintaining its contact with the drive motor. Upon release by the stop shaft the drive is returned to engagement by a spring and rotates the turntable one revolution until the indexing lever again contacts the bellcrank and stop shaft, thus returning the turntable to the "home" position.

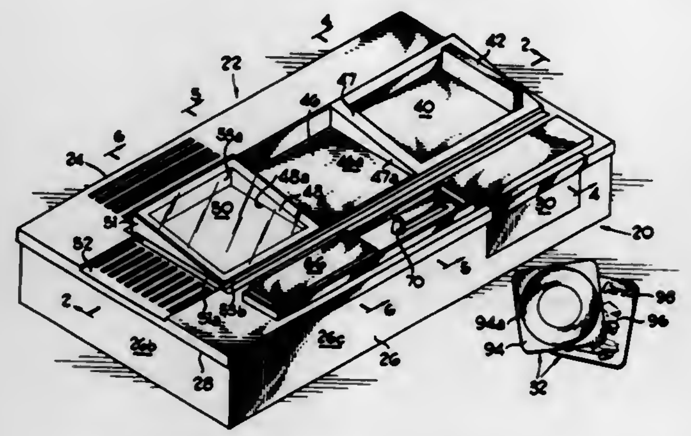
3,648,385
EDUCATIONAL TOY WITH PHONOGRAPH

Gordon A. Barlow, Evanston, and Marvin I. Glass, Chicago, both of Ill., assignors to Marvin Glass & Associates

Filed Mar. 20, 1970, Ser. No. 21,254

Int. Cl. G09b *5/06*

U.S. Cl. 35—8 A **4 Claims**



A child entertainment and instruction toy including a sound reproducing phonograph mechanism characterized by the provision of a cardlike information conveying element having the usual helical record grooves on one side thereof and a readily perceived matter on the other side such as text matter, pictures or surface characteristics perceived by touch; and a phonograph mechanism for use therewith of the type having a rotating stylus which moves vertically upwardly to track in the grooves of the card, with the card presented for sound reproduction with the grooves facing downwardly and the side having the readily perceived matter presented face up to view and/or touch.

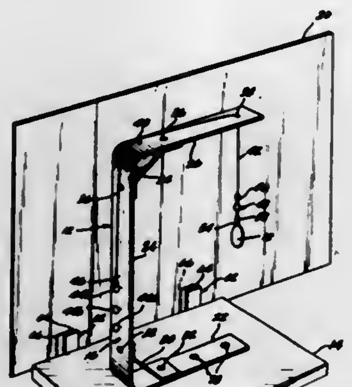
3,648,386
VISUAL TRAINING MACHINE

Beverly I. Stone, 2525 Grand Summit Road, Torrance, Calif.

Filed Aug. 4, 1969, Ser. No. 847,074

Int. Cl. G09b *1/06*

U.S. Cl. 35—8 R **1 Claim**



A visual training machine including a base having a support member secured thereto, the support member having an upright portion with a laterally projecting arm extending horizontally therefrom. A pivot point aperture which is formed in the arm receives a fine line. An object to be identified and observed is connected to one end of the line extending downward from the pivot point and can be raised, lowered, swung back and forth, spiral motion and/or rotated. The other end of the line includes a looped portion thereof which can be connected to any one of various adjustment hooks or which can be held in the operator's hand. Positioned behind the machine can be placed a backdrop of complementing or contrasting configuration relative to the object. In addition a display board having a plurality of different objects, only one of which is identical to the suspended object can be utilized by the observer.

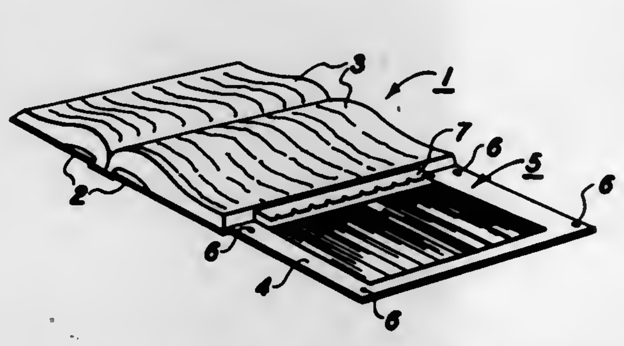
3,648,387
EDUCATIONAL AID

Roy J. Lahr, Westport, Conn., assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,486

Int. Cl. G09b *5/06;* **G11b** *5/00*

U.S. Cl. 35—8 A **7 Claims**



An educational aid through which printed information intelligence is coordinated with an audio reproduction to selectively produce an audio presentation of the printed information. A record member operatively associated with a text of printed information and having recorded thereon a reproducible audio recording of the printed information is supported within a sound-reproducing apparatus. A transducer associated with the sound-reproducing apparatus is selectively positioned relative to the record member in response to the positioning of an indicator member at selected portions of the text material to generate an audio presentation of the particular text material.

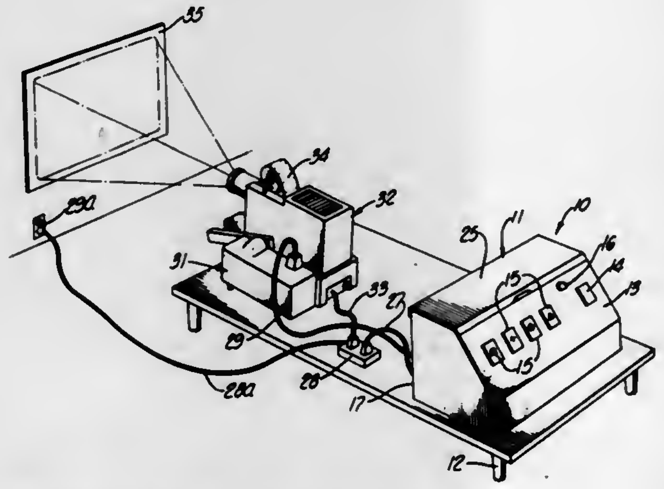
3,648,388
TEACHING DEVICE

Edgar L. Lowell, Los Angeles, and Aaron H. Lipsky, Beverly Hills, both of Calif., assignors to John Tracy Clinic, Los Angeles, Calif.

Filed Nov. 20, 1969, Ser. No. 878,421

Int. Cl. G09b *7/06*

U.S. Cl. 35—9 A **23 Claims**



A teaching device for use with a slide or film strip projector which is adapted to project images from a series of slides regulates the advance of the slides. The device includes a housing having a plurality of select switches and an advance switch which actuates the advance of each slide. Circuit means within the housing prevent operation of the advance switch until the correct selection of one of the select switches is made for each slide. Removable program means adapted to be inserted into the housing to program the circuit means for each series of slides.

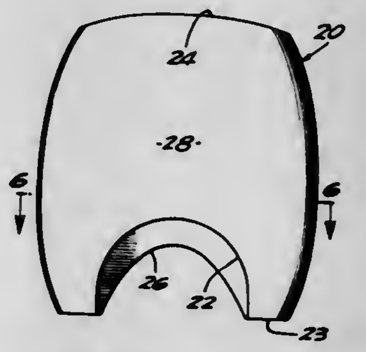
3,648,389
SYNTHETIC THORAX

Aldon L. Melzian, Arcadia, Calif., assignor to Sierra Engineering Co., Sierra Madre, Calif.

Filed Nov. 24, 1969, Ser. No. 879,252

Int. Cl. G09b *23/30*

U.S. Cl. 35—17 **5 Claims**



A Synthetic Thorax for use with test dummies to simulate human bodily reactions under impact conditions. The Synthetic Thorax is made of high density polyethylene having dimensions similar to a human thorax and is 0.30 inch thick.

3,648,390
FOOTWEAR FOR SURGEONS

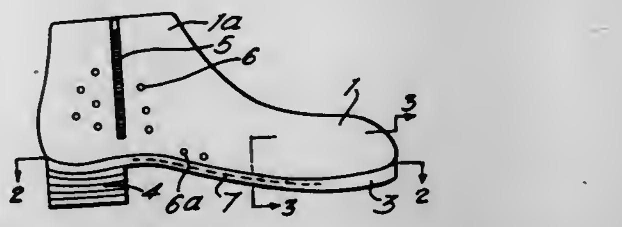
Antonio Corvi, Corso Garibaldi, 14, Fiorenzuloa D'Arda (Piacenza), Italy

Filed June 3, 1970, Ser. No. 43,093

Claims priority, application Italy, Dec. 19, 1969, 42,292–A

Int. Cl. A43b *7/06*

U.S. Cl. 36—3 **3 Claims**



The present invention relates to footwear for surgeons and in particular a boot construction wherein the shank muscles of the operator are not subjected to stress, the ankle is well supported and the foot prevented from movement within its enclosure during those extended periods when the surgeon's body is bent forward.

3,648,391
MATERIAL-HANDLING BUCKET

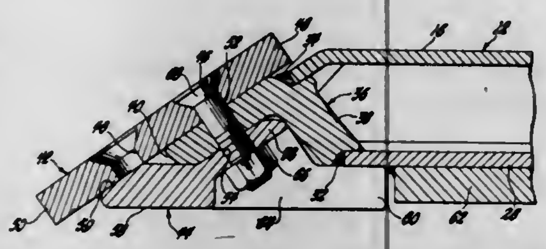
Steve Kabay, and Leslie J. Lesko, both of Novelty, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 15, 1970, Ser. No. 55,133

Int. Cl. E02f *9/28*

U.S. Cl. 37—141 T **4 Claims**

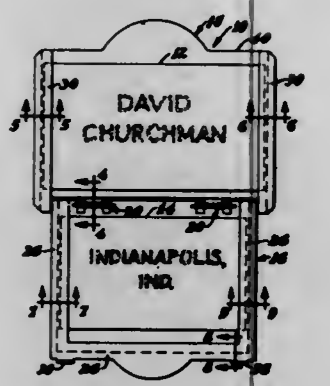
A material-handling bucket having a pair of laterally spaced sidewalls interconnected by a transversely extending U-shaped main plate. The forward edge of the main plate is provided with an L-shaped support member which serves as a common member for removably retaining a plurality of cutting blades and wear shoes fastened together by the same bolts.



3,648,392
LAPEL PIN

Michael S. Churchman, 6433 East 30th Street, Indianapolis, Ind.

Filed Feb. 26, 1970, Ser. No. 14,272
Int. Cl. A44c *3/00*
U.S. Cl. 40—1.6 **2 Claims**

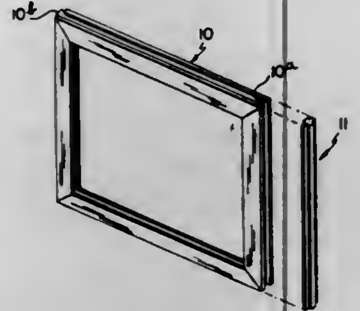


A pin for the lapel or other clothing of the wearer, which provides an ornamental pin or organization badge in one condition of the parts, but which is movable to another condition in which the parts may present an identification text which is concealed in the other condition.

3,648,393
INTERCONNECTED PICTURE FRAMES

Salvatore C. Parrilla, 14612 Woodworth Avenue, East Cleveland, Ohio

Filed Apr. 13, 1970, Ser. No. 27,656
Int. Cl. G09f *1/12*
U.S. Cl. 40—152 **4 Claims**

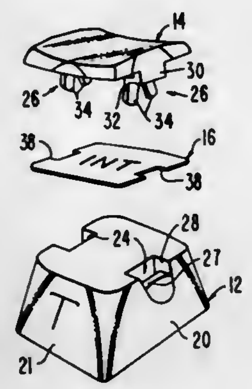


An interconnecting strip is provided for use with small picture frames of a uniform predetermined length where two opposite parallel sides of a rectangular frame are provided with a dovetail tongue-and-groove formation, one of the formations being female and the other being male, each adapted to interfit the opposite-type formation on a like frame. The interconnecting member for joining two such sides of two frames in a pleasing arrangement is a unitary strip of the same predetermined length as the same dimension of the uniform frames and this strip has a plurality of dovetail tongue-and-groove formations on angularly related sides, these formations being complementary respectively to the female and male frame side formations.

3,648,394
KEYTOP STRUCTURE

Neal Hepner, Birmingham, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 12, 1970, Ser. No. 1,997
Int. Cl. G09f *3/08*
U.S. Cl. 40—331 **3 Claims**

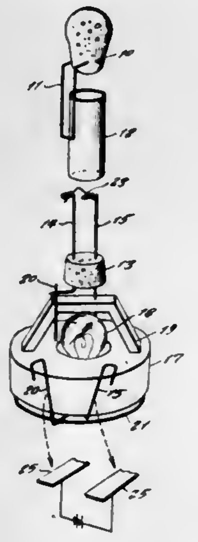


A keytop for the keys of business machines, the keytop being of sectional construction comprising a base, a removable transparent cap and a removable key identification marker held by and between the base and the removable cap.

3,648,395
ELECTRIC CAP GUN AND LIGHT THEREFOR

Albert Nathanson, 75-60 199th Street, Flushing, N.Y.

Filed Feb. 5, 1970, Ser. No. 8,890
Int. Cl. F41c *3/06*
U.S. Cl. 42—54 **2 Claims**

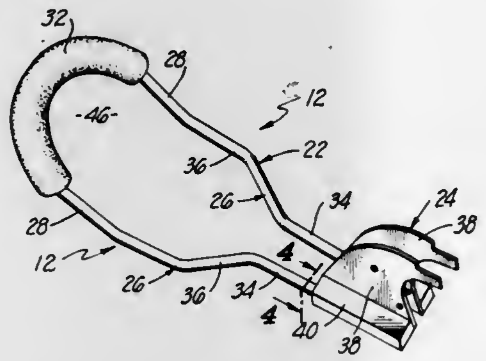


A combination electric light and electrically dischargable toy percussion cap gun unit embodying a round base, with a center hole in which is pressure fitted a miniature electric bulb, over which is a transparent plastic tube mounted on a cork supported by an arch. Passing through the cork are two conductors joined by a metallic beating element at their upper ends. The heating element is in contact with a percussion cap, of the kind commonly used in toy cap guns, affixed to the underside of a cork inserted into the upper opening of the tube, from which cork projects a U-shaped conductor which when properly positioned against the two conductors at the bottom of the tube closes the electric circuit, causing a short circuit thru the metallic element, the heat of which detonates the percussion cap and blows the top cork outwardly. Discharge of the cork and its U-shaped conductor off the upper opening of the tube breaks the electrical contact at the lower end of the tube and shunts the electric current to another conductor mounted against the contact side of the base of the bulb, which together with a contact at the lower terminal contact point of the bulb ignites the bulb. This conductor extends from the contact side of the bulb across the bottom surface of the base of the unit to a connection with a ring-shaped conductor affixed to the rim of the base. One of the two conductors inside the tube extends horizontally from the bottom of the lower cork, while the other conductor passes through the hole in the base, around and in contact with the lower terminal contact point of the bulb, outward to the rim of the base and upward to end in a loop just above the top surface of the base, insulated at its intersection with the ring-shaped conductor. Another U-shaped conductor, the upper end of which is in close proximity with the horizontal section of one of the conductors inside the tube, also passes through the hole in the base, then at a right angle outward to the rim of the base and upward to end in a loop just above the top surface of the base, but in contact with the ring-shaped conductor at its intersection with it.

3,648,396
STABILIZING ATTACHMENT FOR HAND GUNS

Smith, Roger A., 19320 Heber Street, Glendora, Calif.

Filed May 21, 1970, Ser. No. 39,451
Int. Cl. F41c *29/00, 23/00*
U.S. Cl. 42—94 **12 Claims**



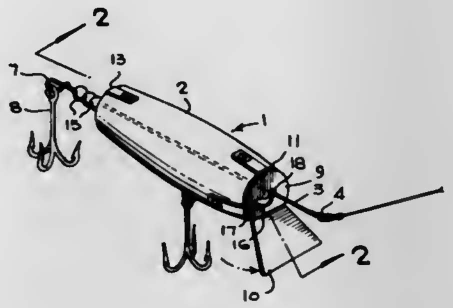
A stabilizing attachment for a hand gun. The attachment has a generally U-shaped arm rod which is attached to and extends rearwardly from the butt end of the hand grip of the gun to receive the shooter's forearm. The laterally spaced side members of the arm rod have rear upturned extremities joined by an arcuate upwardly arching connecting portion mounting a shock pad which seats against the radius bone of the forearm. The attachment reduces recoil, positively orients the bore of the gun relative to the forearm to improve shooting accuracy, increases leverage against recoil, eliminates wrist movement, and prevents twisting of the gun out of the hand when fired.

3,648,397
FISHING LURE

Donald Du Bois, 6627 North Washington Blvd., Arlington, , Va.

Filed Feb. 16, 1970, Ser. No. 11,815
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.12 **7 Claims**

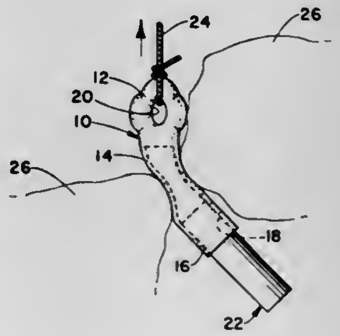
A fishing lure which includes a rotatable element secured to the member by which it is attached to a fishing line by passage of the attaching member through a control slot formed in the rotatable element. The control slot has seats at its ends on opposite sides of the center of the rotatable element in which the attaching means rests. In a preferred form, the rotatable element is mounted on a shaft having means for attachment to the line, the shaft having a pivotal connection to the rotatable element spaced longitudinally of the member from the control slot. The rotatable element cants to one side or the other of the shaft depending upon which slot seat is engaged. Opposite rotation results from shifting from one seat to the other.



3,648,398
ADJUSTABLE AND RELEASABLE SINKER ADAPTED FOR ATTACHMENT TO FISHING LINE

Carl W. Newell, 635 Cavanagh Road, Glendale, Calif.

Filed Jan. 19, 1970, Ser. No. 3,637
Int. Cl. A01k *95/00*
U.S. Cl. 43—43.12 **1 Claim**



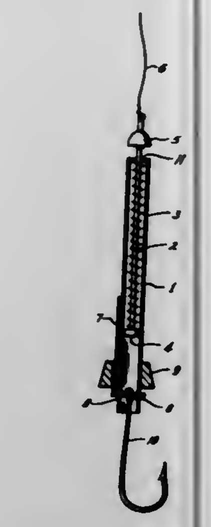
A unitary tubular holder, preferably molded of resilient material such as plastic, has an attachment eye molded at one end thereof with the bore opening at the other end thereof. A preferably cylindrical weight is positioned in the holder bore open end preferably partially extending from the holder and expanding the holder for releasable gripping therebetween. The holder fastening eye may be attached to a fishing line and engagement of the weight by an exterior object will cause a release of the weight from the holder bore upon a force at the holder fastening eye.

3,648,399
FISH HOOK RELEASING DEVICE

Kenneth R. Lloyd, 251 Coach Lamp Lane, Houston, Tex.

Filed Dec. 15, 1969, Ser. No. 885,040
Int. Cl. A01k *91/04*
U.S. Cl. 43—43.12 **3 Claims**

A device for releasing a fish hook from a fishing line when engaged with a fixed object in the water, without loss of any



portion of the fishing equipment other than the fish hook itself.

3,648,400

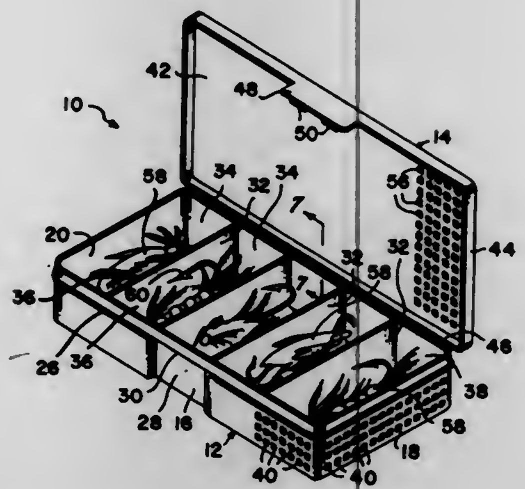
LURE BOX

Henry S. Wolfe, Beaver Hill Apart., Apt. #B-219, Jenkintown, Pa.

Filed Jan. 9, 1970, Ser. No. 1,668

Int. Cl. A01k *97/00*

U.S. Cl. 43—54.5 3 Claims



A lure box comprising a container and a lid therefor. The container is divided into a plurality of compartments for separating and containing fishing lures. One of the compartments has at least one sidewall and the bottom thereof perforated. The lid is also perforated in the area of the perforated compartment. Wet lures are placed in the perforated compartment to facilitate the drying of the lures after use.

3,648,401

LOW VOLUME INSECTICIDE AEROSOL GENERATOR

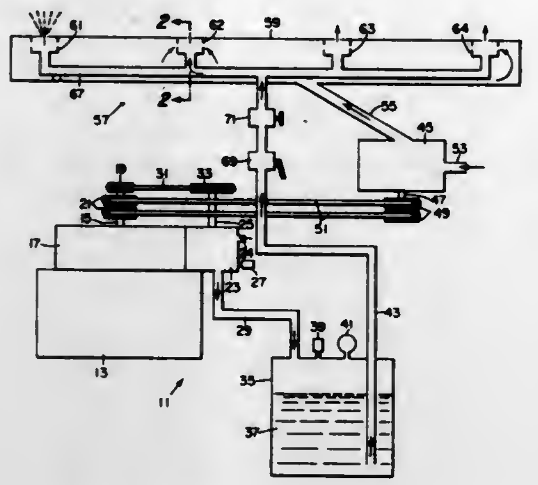
George S. Stains, Indian Wells, Calif., assignor to ULV Manufacturing Corporation, Richmond, Calif.

Filed Feb. 4, 1970, Ser. No. 8,574

Int. Cl. A01m *7/00, 19/00*

U.S. Cl. 43—129 5 Claims

A method of producing an insecticide spray for killing insects with droplets in the size range of from about 5 microns to about 15 microns. The spray consists of an insecticide, such as Naled-14, diluted with a nonvolatile liquid, such as cottonseed oil, in a ratio of 1 to 4 by volume. The aerosol generating equipment includes an engine driven blower supplying air at about 450 cubic feet per minute at a pressure of about 4 p.s.i. This air is supplied to a group of four air-liquid



double vortical nozzles that atomizes the insecticide into the 5- to 15-micron size range.

3,648,402

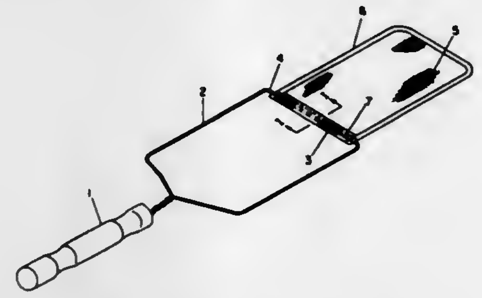
INSECT SWATTER

Reuben A. Siggers, P.O. Box 105, Institute, W. Va.

Filed Feb. 11, 1970, Ser. No. 10,322

Int. Cl. A01m *3/02*

U.S. Cl. 43—137 8 Claims



An insect swatter comprising a handle, an enclosed loop attached to one end of the handle and a swatter blade pivotally mounted on the enclosed loop and adapted to freely rotate 360° within the loop.

3,648,403

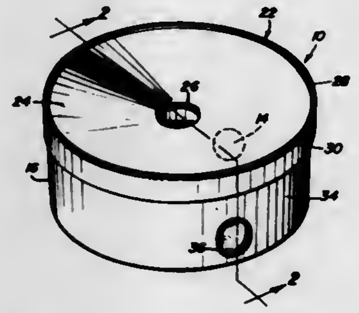
PLAY TOY FOR FELINES, DOGS AND CHILDREN

Harry L. Gommel, 2869 Calle Aventura, Miraleste, Calif.

Filed Jan. 30, 1970, Ser. No. 7,095

Int. Cl. A63h *33/00*

U.S. Cl. 46—1 R 2 Claims



A hollow housing including top and sidewalls having access openings formed therein through which the paws of cats and dogs or forearms of children may be thrust from the exterior of the housing. A play object is disposed within the housing for free movement therein and the size and shape of the housing as well as the locations of the access openings are such that the play object may be reached while positioned in any location within the housing by a cat, a dog or a child disposed on the exterior of the housing, the overall size of the housing being determined by whether it is to be used by large cats and/or dogs or children.

3,648,404

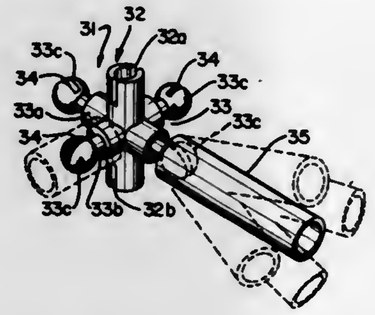
CONNECTOR UNIT HAVING RADIAL ARMS FOR STRAIGHT OR ANGULAR CONNECTIONS

Charles S. Ogsbury, Gold Hill, and Don C. Witte, Salina Star Route, Boulder, both of Colo.

Filed Apr. 14, 1969, Ser. No. 815,605

Int. Cl. A63h *33/10, 33/12*

U.S. Cl. 46—29 1 Claim



In a toy building set, connector units have a plurality of relatively angularly disposed connector arms radiation from a common center for each unit with each arm having a generally cylindrical or spherical male connector portion, or both, which serve as releasable connecting members for press-fitting insertion through openings in sheets of selected shapes and tubes of selected lengths. The tubes are constructed to expand when fitted over the spherical male portions to provide a tenacious grip with a substantial degree of angular movement therebetween. Shoulder portions on the connector arms may be provided to limit the extent of movement of the sheets and tubes along the connector arms for square corners and resulting structures which conform to a selected scale.

3,648,405

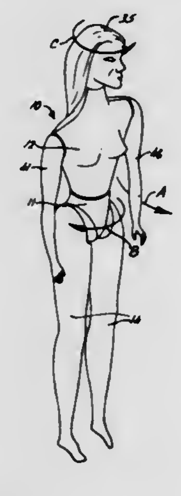
DOLL TWISTABLE AT THE WAIST

Sidney Tepper, Millburn, N.J., assignor to Topper Corporation

Filed Oct. 13, 1970, Ser. No. 80,364

Int. Cl. A63h *11/00*

U.S. Cl. 46—120 6 Claims



A doll including upper and lower torso portions pivotally interconnected at the waist. A head and an arm are pivotally mounted on the upper torso portion. Transmission means, such as meshing gears, connected to the arm, head, and lower torso portion, transmit swinging movement of the arm to the head and lower torso portion.

3,648,406

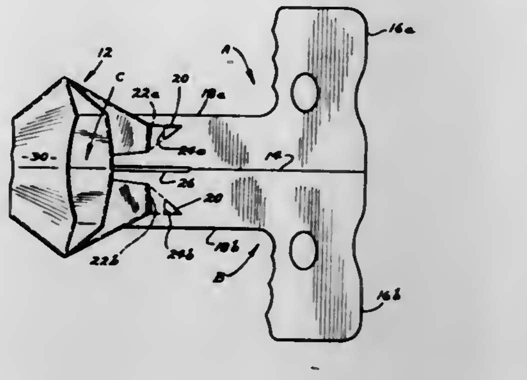
PAPER POPPER TOY

Isaac Shavinsky, 701 16th, Minneapolis, Minn.

Filed June 24, 1970, Ser. No. 49,461

Int. Cl. A63h *5/00*

U.S. Cl. 46—174 3 Claims



A paper popper toy for popping a folded paper popper member, the toy having a handle portion and a body portion formed from a single piece of material which is opened flat for insertion of the paper to be popped and folded together for use and having a slot in the frontal body portion of the toy extending from the center fold line so that the halves forming the frontal body portion may spread outwardly away from each other as the paper is popped.

3,648,407

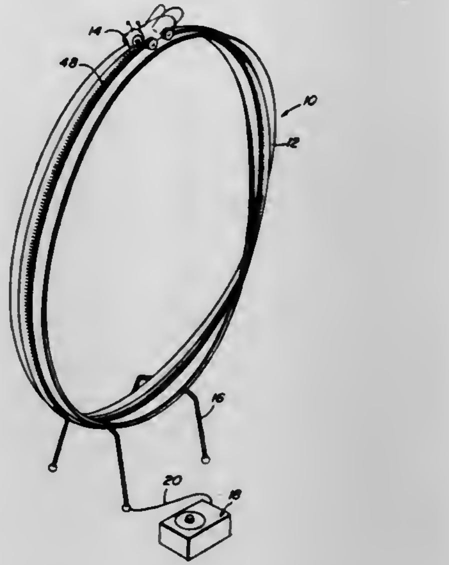
DYNAMIC MOBIUS BAND

Jerome Pressman, 4 Fessenden Way, Lexington, Mass.

Filed Aug. 19, 1970, Ser. No. 65,122

Int. Cl. A63h *19/10, 33/26*

U.S. Cl. 46—243 P 8 Claims



A dynamic model of a Mobius band is provided. A track defining a Mobius band is provided with a self-propelled vehicle which moves about the track to demonstrate the one-sided topological characteristics of the surface.

3,648,408

PROGRAMMED SELF-PROPELLED TOY

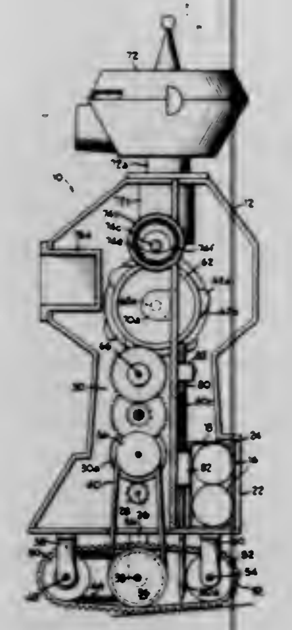
Rouben T. Terzian, and Marvin I. Glass, both of Chicago, Ill., assignors to Marvin Glass & Associates

Filed Mar. 3, 1970, Ser. No. 15,774

Int. Cl. A63h *33/26*

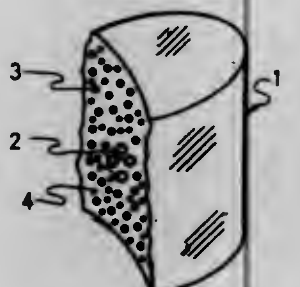
U.S. Cl. 46—244 D 17 Claims

A programmed animated toy resembling a robot which has a body portion with a plurality of members mounted for movement relative thereto, such as arms and a head. Power drive means is mounted on the body portion for moving the robot over a supporting surface. A programming cam drum having a plurality of cam tracks is provided and operatively associated with the power drive means for steering the robot as it moves over the supporting surface, for moving the aforesaid members relative to the body portion of the robot, for dismembering said members from the body portion, and for causing the robot to fall over, all in a correlated predetermined timed sequence. The cam drum is replaceable by other programming cam drums having different programs to effect different timed sequences of the aforesaid functions. The members are replaceably mounted on the body portion of the robot.



3,648,409
HERBICIDE RESISTANT SEED CARRIERS AND PROCESS FOR MANUFACTURE THEREOF

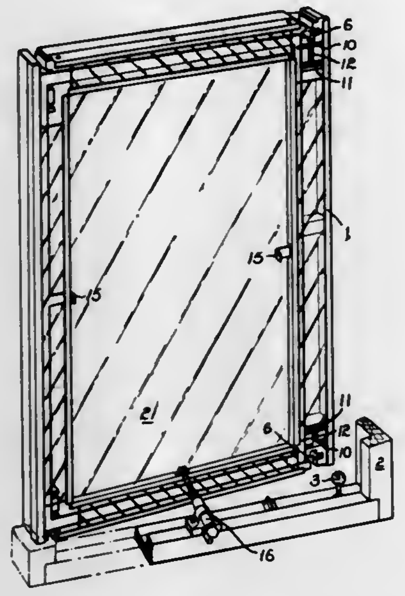
Paul E. Johnson; Clarence G. Haugh; George F. Warren, all of W. Lafayette, Ind., and Bernard A. Kratky, Sullivan, Wis., assignors to Purdue Research Foundation
Filed Dec. 9, 1969, Ser. No. 883,483
Int. Cl. A01c *1/06*
U.S. Cl. 47—57.6 **1 Claim**



Localized deposit of activated carbon-vermiculite mixture around seeds gives significant protection against certain pre-emergent herbicides. The mixture can be compressed in tablet form with a liquid fertilizer binder, or incorporated in water soluble mats, and permits precision field seeding with good protection from pre-emergence application of herbicides.

3,648,410
SUPPORTS FOR WINDOW SASHES

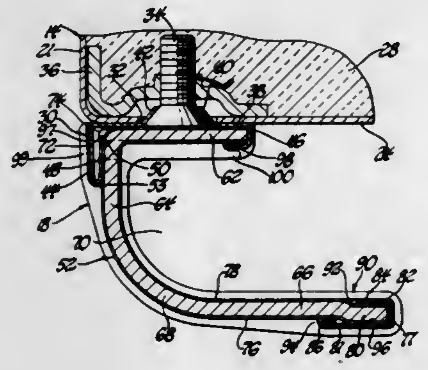
Michael P. Ettridge, 29 Longview Crescent, O'Halloran Hill, Australia (5158)
Filed Aug. 24, 1970, Ser. No. 66,355
Claims priority, application Australia, Aug. 28, 1969, 60186
Int. Cl. E05d *15/52*
U.S. Cl. 49—192 **4 Claims**



A window sash and frame, wherein the sash is pivotally supported to the frame at the four corners thereof, whereby selective pivots may be disengaged to allow the window to pivot about two adjacent pivots.

3,648,411
REFRIGERATOR DOOR TRIM HANDLES AND MOUNTING STRIP

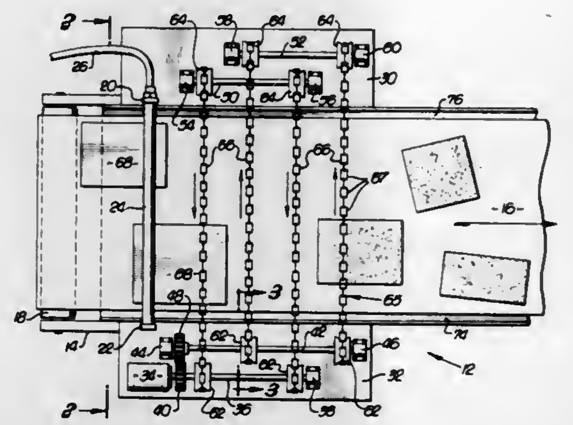
Orson V. Saunders, Dayton, and Louis D. Benasutti, Fairborn, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 13, 1970, Ser. No. 89,412
Int. Cl. E05b *1/04*
U.S. Cl. 49—460 **3 Claims**



An appliance door trim handle and panel mounting assembly in which a pair of trim handles are located along the inner vertical edges of each door closure of a side-by-side refrigerator freeze or the like. Each door trim handle assembly includes a channel-shaped mounting strip fixedly secured to the face of the door and a substantially J-shaped handle having its backwall seated in interlocked fashion in the mounting strip pocket. The mounting strip has a pair of legs one of which provides a recess adapted to receive the free edge of the handle backwall while the opposite leg has a resilient flange adapted to engage a plurality of lanced projections provided in the backwall of the handle allowing the resilient flange to snap back after the projections pass over the flange to thereby produce a snug fit which cannot be altered without the aid of tools.

3,648,412
PLATE GRAINING APPARATUS

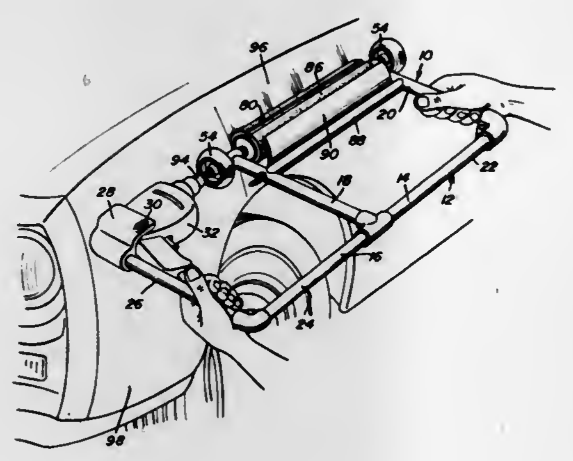
Charles T. Hathaway, 518 Rancho Lindo Drive, Covina, Calif.
Filed Sept. 23, 1970, Ser. No. 74,700
Int. Cl. B24b *7/12, 21/04, 1/00*
U.S. Cl. 51—61 **11 Claims**



An apparatus adapted to grain a planar surface of a plate comprising a moving conveyor which carries such plate into and out of contact with moving graining means which operate to impress grit into contact with the planar surface and produce a random roughening thereof.

3,648,413
AUTOMOBILE BODY ROLL SANDER

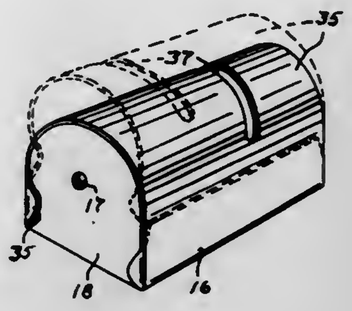
Guy V. Godwin, 17408 Villa Corta Street, La Puente, Calif.; Gilbert L. Santana, 740 South Euclid, and Raymond L. Santana, 508 West 4th, both of La Habra, Calif.
Filed Apr. 10, 1970, Ser. No. 27,349
Int. Cl. B24b *23/00*
U.S. Cl. 51—170 PT **8 Claims**



A journaled drum having a longitudinal outer groove in which the opposite ends of a band of abrasive material encircling the drum are anchored. The drum includes opposite end rollers provided with resilient outer peripheral portions and journaled for rotation relative to the drum about axes coinciding with the axis of rotation of the drum and the diameters of the rollers are substantially equal and slightly greater than the diameter of the drum defined by the outer surfaces of the band of abrasive material disposed thereabout.

3,648,414
BLADE SHARPENERS

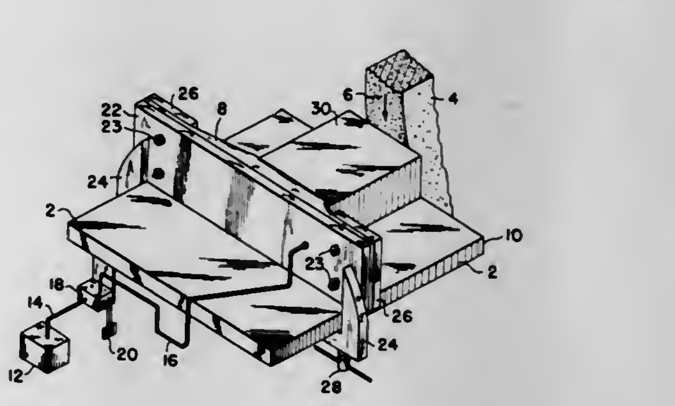
Willis F. Thompson, 57 Hillis Street, Portland, Maine
Filed Apr. 22, 1970, Ser. No. 30,746
Int. Cl. B24b *3/52, 3/54*
U.S. Cl. 51—208 **14 Claims**



Blade sharpeners are disclosed that have at lease one abrasive wheel of cylindrical section and blade supports at both of its sides tapering towards the axis thereof for supporting one face of a double bevelled cutting edge with its other face against the proximate wheel side. The sharpeners are either of the free rolling type or are rotatably mounted in a support. The sharpeners have removable covers, each cover provided with a slot to receive a blade having a single bevel cutting edge and support it with its bevelled face tangentially engaging the periphery of the subjacent wheel. When the sharpeners include two axially aligned wheels, the abrasive of one is finer than that of the other.

3,648,415
APPARATUS FOR FEEDING WORK TO A GRINDER WHEEL

James G. Bair, Wexford, Pa., assignor to Fox Grinders, Inc., Pittsburgh, Pa.
Filed Oct. 7, 1970, Ser. No. 78,799
Int. Cl. B24b *41/06, 47/20*
U.S. Cl. 51—215 R **5 Claims**

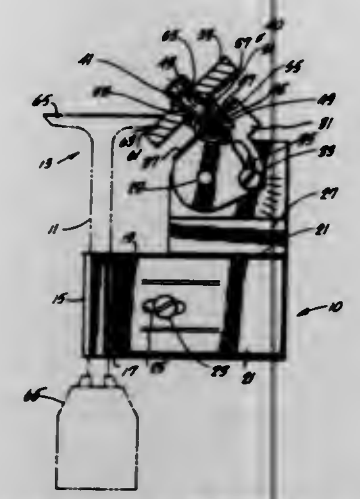


A pneumatically inflatable bag is positioned on a work supporting plate for advancing a work piece against a grinding wheel. The bag is backed by a plate on the work supporting plate which prevents the bag from movement away from the grinding wheel.

3,648,416
PORTABLE VALVE FACER

Jack Rogers, 6557 Costello Avenue, Van Nuys, Calif.
Filed May 22, 1970, Ser. No. 39,696
Int. Cl. B24b *19/00*
U.S. Cl. 51—241 VS **16 Claims**

A portable valve facer is disclosed for grinding the seating face of a valve. The valve facer includes adjustable mounting plates having arcuate sections cooperating to rotatably support the valve stem. One of the plates further defines an extension that pivotally supports a sector having a slotted flange for receiving a grinding wheel assembly. Adjustment means are also provided for varying the angular and linear position of the grinding wheel assembly to enable the grinding wheel to engage the seating face of various diameter valve heads. The valve stem is adapted to be rotatably driven by a hand drill or the like with the rotary motion of the valve head causing the seating face to frictionally rotate the grinding wheel. During such movement, the frictional motion to the grinding wheel with the grinding action interengagement causes the grinding wheel to grind the surface of the seating face.



3,648,417

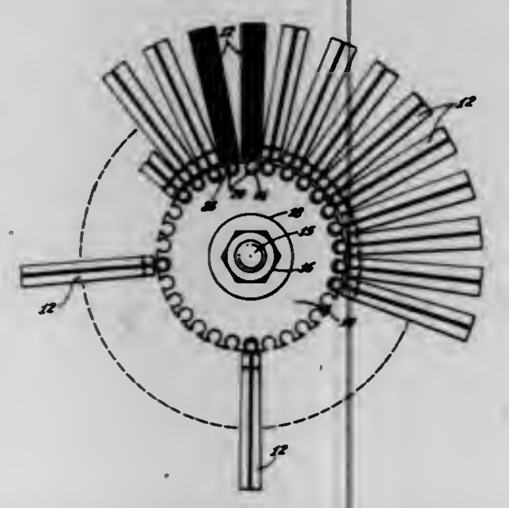
ROTARY ABRASIVE DEVICE

Aleck Block, Los Angeles, Calif., assignor to Merit Abrasive Products, Inc.

Filed Jan. 27, 1969, Ser. No. 794,243

Int. Cl. B24b *9/02*

U.S. Cl. 51—334 **5 Claims**



An improved and specialized type of construction for an abrasive drum of the type in which a plurality of abrasive packs are mounted in uniform circumferential spacing around the entire cylindrical surface of a central hub, the hub being provided with longitudinal mounting slots, one for each pack. The abrasive drum of the invention combines a hub construction in which the slot sidewalls diverge continuously from a relatively wide slot opening, with abrasive packs, each of which is comprised of a number of abrasive strips joined at their base edge to form a substantially flat base seating on the cylindrical surface of the drum; and each pack is provided with a resiliently deformable plastic retainer which is molded in cross section to provide an anchoring rod portion retained in said slot by said slot sidewalls, and a radial web portion extending from said rod into said pack of abrasive strips, said rod having a transverse dimension substantially less than the width of said slot to permit hinge action of said packs on said hub during rotation of said abrasive drum.

3,648,418

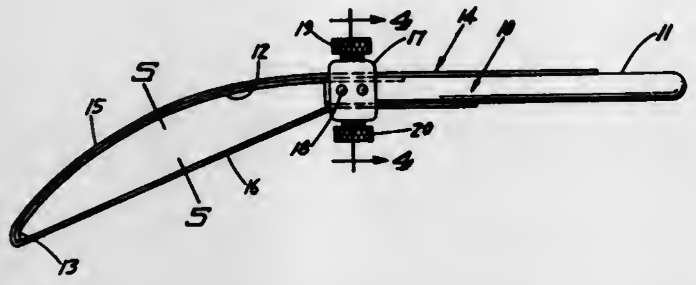
HAND ABRADING TOOL

Ljudo Churchich, 1777 Agate Street, St. Paul, Minn.

Filed July 15, 1970, Ser. No. 55,155

Int. Cl. B24d *15/04*

U.S. Cl. 51—392 **9 Claims**



A hand abrading tool comprising a handle and a flat flexible blade over which is stretched a tape or strip of abrasive cloth, paper, etc. Clamping means control the tension of the abrasive strip and of the spring steel blade. The blade may be flexed or bowed longitudinally so as to permit the abrasive strip to conform laterally to small channels and grooves and odd shapes.

3,648,419

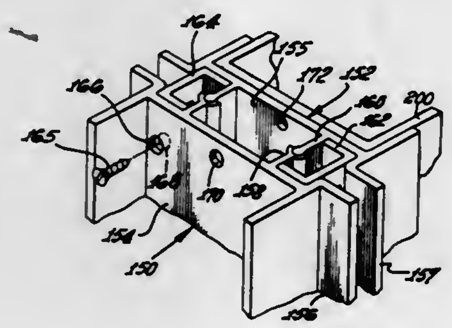
COMBINED BRACKET MOUNTING AND SUPPORT AND METAL STUD STRUCTURE

Robert A. Marks, 17158 Enadia Way, Van Nuys, Calif.

Filed Oct. 20, 1969, Ser. No. 867,662

Int. Cl. A47g *29/02;* **A47f** *5/08*

U.S. Cl. 52—36 **2 Claims**



A bracket support and mounting system for use with metal channel-shaped studs. A slotted channel is positioned relative to and connected to the metal stud usually by another element which may be integral with a guide flange. A pair of guide flanges provide a corridor for a bracket to the slots of the slotted channel. Five embodiments of system designs are illustrated.

3,648,420

BUILDING CONSTRUCTION

John A. Nelson, 126 Colonial Court, New Port Richey, Fla.

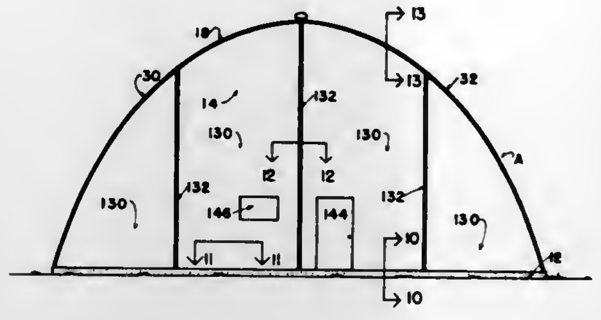
Filed Sept. 8, 1970, Ser. No. 70,026

Int. Cl. E04b *1/32*

U.S. Cl. 52—86 **5 Claims**

The invention relates to a building constructed by attaching to each other and to a footing a series of curved plastic roof panels, each of which includes molded-in support

members, and by simultaneously assembling end walls, attaching said walls to the footing, and thereafter interlocking the said end walls with the panels comprising the end of the roof to establish a weather seal.



3,648,421

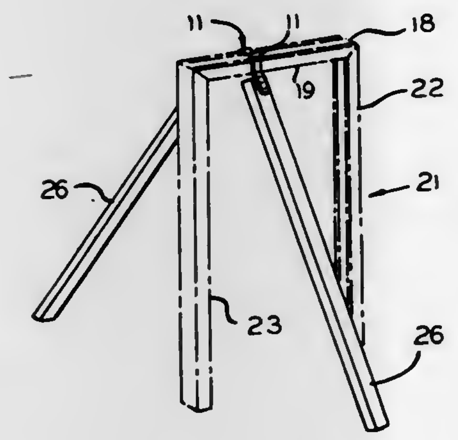
DOOR FRAME BRACE

Willard L. Bjork, 7341 W. 114th Place, Worth, Ill.

Filed Oct. 7, 1969, Ser. No. 864,369

Int. Cl. E04g *21/18, 21/26*

U.S. Cl. 52—99 **1 Claim**



A unique brace for supporting metal door frames during construction therearound of masonry walls. The brace comprises a characterized hook section which because of its conforming shape removably but securely fastens to accessible portions of the frame. Means are provided for readily attaching 2 × 4's to the hook section to extend the hook section to a supporting surface.

3,648,422

MONUMENT CONSTRUCTION

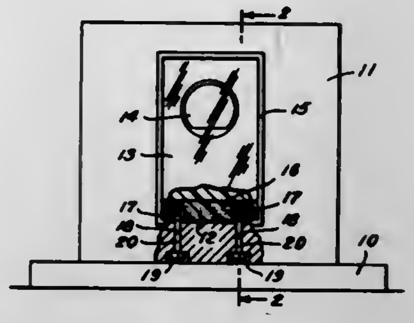
Charles G. Tate, Jr., North Providence, R.I., assignor to Tate Manufacturing Company, Providence, R.I.

Filed May 21, 1970, Ser. No. 39,266

Int. Cl. E01f *9/02*

U.S. Cl. 52—104 **6 Claims**

The construction of the present invention comprises a monument in which the stone portion is cut out to provide a central opening in place of the usual carving of the stone. Into this cut out portion is mounted a plastic embedment. This comprises a clear plastic block, usually made of Lucite, in which any desired insignia or wording can be floated in a conventional manner. The embedment is mounted in the opening in such manner that the mounting means are not visible to the eye. This produces a smooth effect, the plastic material wearing exceptionally well, even as long as the stone. This materially cuts the cost, increases the speed of manufacture, and permits changes or additions in the monument by merely changing the embedment.



3,648,423

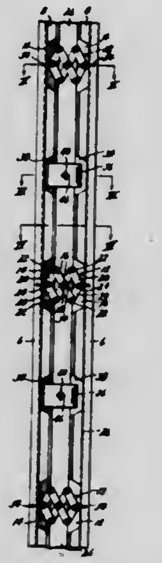
EXPANSION JOINT

Delmar W. Cole, 10 Merchant Street, Emporia, Kans.

Filed Nov. 19, 1969, Ser. No. 878,093

Int. Cl. E04b *1/68;* **E04f** *15/14*

U.S. Cl. 52—109 **4 Claims**



An expansion joint for structural panels adapted to bridge gaps between adjoining panels and to permit relative movement therebetween, said joint including a pair of side bars adapted to be affixed respectively to the contiguous edges of said panels and having smooth surfaces normally coplanar with said panels, a cover plate bridging the gap between said side bars, with its edges resting respectively in sliding engagement with the smooth surfaces of said bars, and linkages interconnecting said side bars at intervals along their lengths, each of said linkages having a center point always disposed midway between said side bars regardless of the spacing therebetween, said cover plate being attached to these center points whereby to be maintained in centered bridging relationship to said gap.

3,648,424

FRAME FOR AN OPENING IN A RELOCATABLE BUILDING

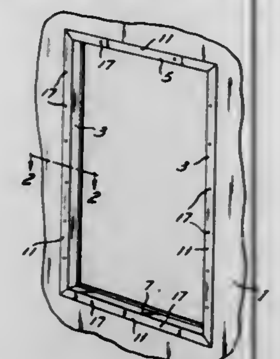
Rodney W. Winyard; Francis J. Fortsch, and Vincent C. Braun, all of Warren, Ohio, assignors to The American Welding & Manufacturing Company

Filed July 17, 1970, Ser. No. 55,860

Int. Cl. E06b *1/04*

U.S. Cl. 52—213 **8 Claims**

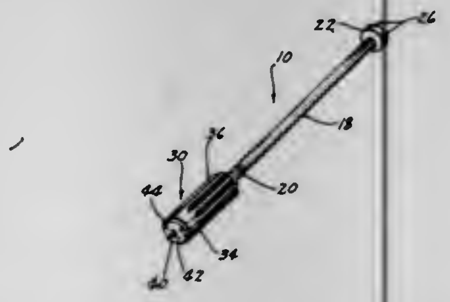
A frame for an opening in a relocatable building comprising jamb members connected at their upper ends to the ends of a header member and at their lower ends by a member such as a sill or threshold, each jamb and header member



having a body with a face and a flange extending in opposite directions from the longitudinal edges of the body.

3,648,425
ADJUSTABLE BRIDGING DEVICE

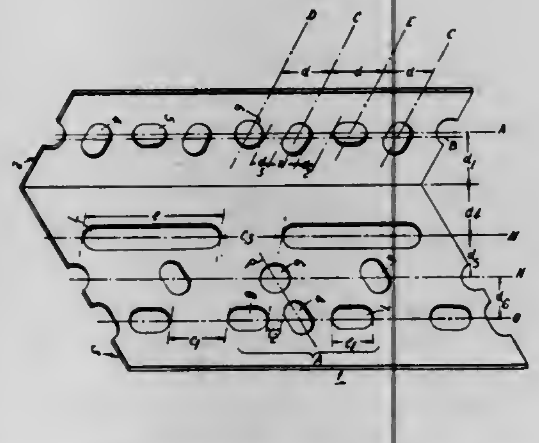
Charles D. Bolton, Sidney, Iowa
Filed May 14, 1970, Ser. No. 37,123
Int. Cl. E04c *3/04;* **E04g** *17/06*
U.S. Cl. 52—632 **1 Claim**



A device including threadably engaged telescoping members adapted to be extended into engagement with spaced apart nonmetallic floor joists. One end of the device has two pointed projections for penetrating a joist and limiting the member from rotating while the other end has a single pointed projection for penetrating a joist but permitting the member to be rotated to extend the device.

3,648,426
CONSTRUCTIONAL ELEMENTS

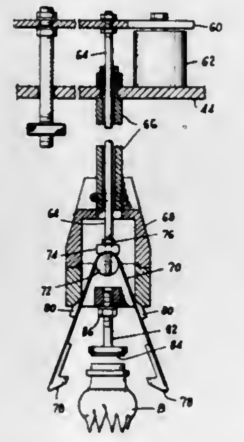
Banwari Lal Chaudhary, c/o S. R. Chaudhary Madhusuden Vegetable Products Co., Ltd. P.O. Box Rakhial, Ahmedabad, Gujarat, India
Filed Aug. 1, 1969, Ser. No. 846,793
Int. Cl. E04c *3/08*
U.S. Cl. 52—633 **1 Claim**



Elongated L-shaped metallic constructional elements provide a pair of angularly disposed flanges with at least one row of holes in each flange. The holes can be of different shapes and in one row holes extending transversely to the longitudinal direction of the element are alternately spaced apart by round holes and longitudinally extending holes. The flanges can be of the same or different widths and can contain one or several rows of holes.

3,648,427
APPARATUS FOR LOADING FRANGIBLE CONTAINERS

John L. Raudat, North Madison, and Lloyd D. Johnson, Portland, both of Conn., assignors to Emhart Corporation, Bloomfield, Conn.
Filed Aug. 11, 1970, Ser. No. 62,961
Int. Cl. B65b *57/10*
U.S. Cl. 53—61 **8 Claims**

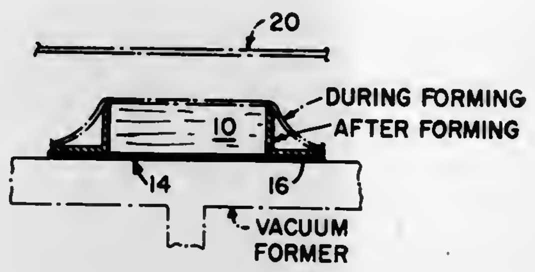


A machine is disclosed for loading frangible containers, such as relatively tall glass bottles of the thin walled-non-returnable-variety, into upwardly open packing cases. The bottles are conveyed in discrete side-by-side lanes into a grid structure where they are isolated by conventional brake means associated with each lane. A frame arranged over the grid structure carries a vertically reciprocable carriage having a plurality of individual container gripping units for holding a group of containers while a bottom portion of the grid is opened. Means is provided for retracting the frame and the grid structure slightly, away from those bottles being held by the brake means so that the carriage can be lowered and the bottles passed downwardly through the open grid structure into the case. Each gripper unit comprises a hollow tubular stem portion supported from the carriage, and a lower housing portion which contains a generally U-shaped spring member having depending leg portions with laterally opposed jaws at their respective ends for engaging the neck portion of a container. Each unit also includes a rod slidably mounted in the tubular stem, and connected to the apex of each spring member so that a vertically reciprocable plate in the carriage, to which the upper ends of these rods are connected, can be moved vertically to open and close the jaws on a container.

3,648,428
FILM-TO-FILM SKIN PACKAGING

Lyle W. Colburn, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Feb. 20, 1968, Ser. No. 706,913
Int. Cl. B65b *31/00*
U.S. Cl. 53—21 FC **3 Claims**

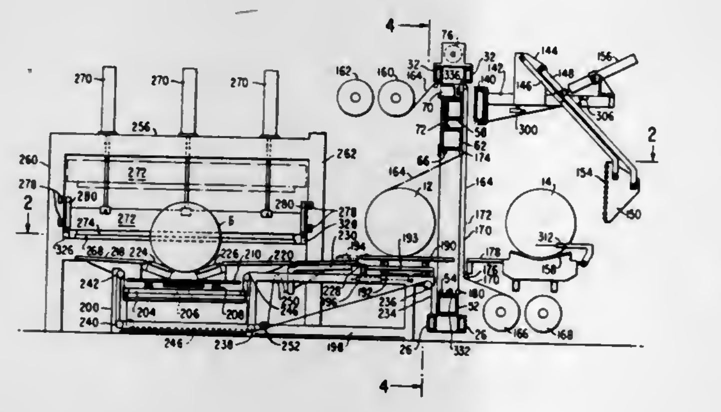
The invention relates to film-to-film skin packaging of articles in which plastic films are placed above and below articles to be tightly packaged therein, effecting a sealed enclosure, and wherein said films are subjected to heat and suction in a vacuum forming machine causing adherence to each other. The primary purpose of the invention is to yield a tamper proof, sealed and airtight package, capable of retaining a controlled atmosphere therein. This is achieved by providing a perforate area on one film which marginally and closely surrounds the article to be packaged. Subsequently another film is applied to the article and both films are then subjected to heat and suction. By virtue of the marginal perforate area, evacuation of the enclosure due to suction effect is achieved. A plurality of packages may be made simultaneously by providing a plurality of nonperforate areas on the base film which are substantially congruous to contiguous areas of respective articles placed thereon. A secure film-to-film adhesion at the perforate areas closely surrounding the articles results; and the film used, if adhesively compatible



with the articles packaged, adheres thereto. Thus, the film covering must be destroyed to remove the article. Likewise, where a paper or cardboard wrapper or carton initially encloses the article, e.g., a deck of cards, such wrapper materials can be adhesively compatible with the film so that the film adheres. Accordingly, the package is rendered tamperproof. Where the wrapper or carton is printed, the ink used can be adhesively compatible with the film. Further, by providing an insert in each package permeated with a selected media which volatilizes in the sealed package, a controlled and preserving atmosphere is achieved.

3,648,429
PACKAGING MACHINE

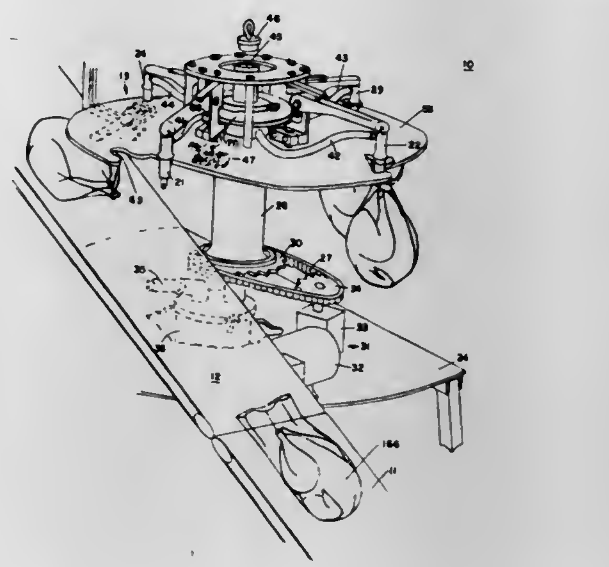
Ralph L. Davidson, Worcester, and James H. Arsenault, Whitinsville, both of Mass., assignors to Curtis & Marble Machine Co., Worcester, Mass.
Filed Dec. 23, 1969, Ser. No. 887,558
Int. Cl. B65b *11/12, 11/48, 51/30*
U.S. Cl. 53—77 **9 Claims**



Apparatus for wrapping bundles in heat-sealable plastic sheet material and sealing the plastic along the side and ends of the bundle. A vertically adjustable side sealing mechanism adapts itself to different size bundles, and the end sealing mechanism automatically is adjusted to perform its end sealing at a horizontal diametrical plane the same as the side sealing is done and at a constant height above floor level. Additional pressure applying means are provided to insure proper sealing along elongated bodies, as well as safety latches to prevent accidental release of the sealing members.

3,648,430
VACUUMIZING AND CLIPPING SYSTEM

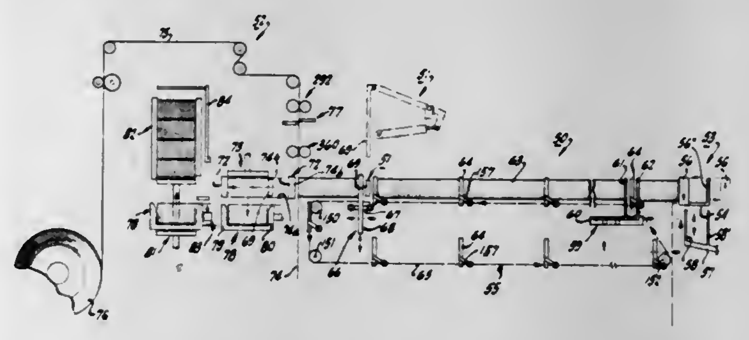
John T. Roberts, Simpsonville, and Philip L. Reid, Greenville, both of S.C., assignors to W. R. Grace & Co., Duncan, S.C.
Filed Feb. 9, 1970, Ser. No. 9,868
Int. Cl. B65b *31/04*
U.S. Cl. 53—112 B **6 Claims**



Apparatus and method wherein a bagged product is clamped onto a nozzle, transported by the nozzle-clamping means for a period of time corresponding to the period necessary for complete vacuumization of the bag, the nozzle is partially withdrawn from the bag during transportation so that the bag's neck portion is empty, this portion of the bag is inserted into the throat of a clipper and serves to activate the clipper, activation of the clipper results in severing the bag's neck portion above the clipped area causing the bagged product to move from the apparatus.

3,648,431
IN-LINE BANDING APPARATUS

Ellsworth A. Hartbauer, Lafayette, and John R. Erickson, Antioch, both of Calif., assignors to Crown Zellerbach Corporation, San Francisco, Calif.
Filed May 5, 1969, Ser. No. 821,774
Int. Cl. B65b *1/24, 63/02, 13/04*
U.S. Cl. 53—124 CC **33 Claims**

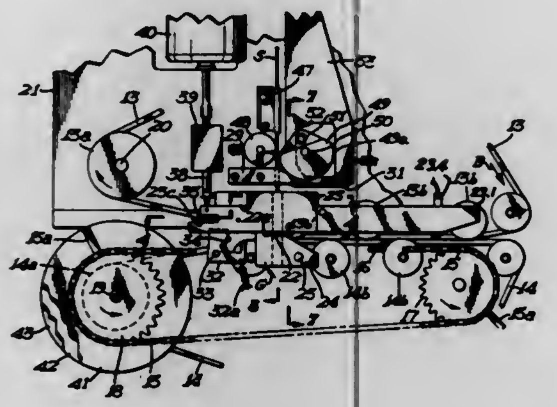


A machine for and method of accepting the group-by-group discharge from a bag collator and for forming such groups into bundles each of which constitutes a predetermined number of bags. After formation, the bag bundles are compressed by application of forces thereto adequate to develop high-bag friction within the interior of each bundle. Each compressed bundle is advanced into and through banding apparatus in a step-by-step progression during which a band is wrapped or folded about the bundle and has adhesive applied to its overlapping flaps, and the band-equipped bundle is then maintained under compressional constraint through a plurality of cycles of the machine to enable the adhesive to cure before the bundle is ejected therefrom.

3,648,432
CONTINUOUS TIER

August R. Zellmer, New Richmond, Wis., and John D. Tetrick, White Bear Lake, Minn., assignors to Domain Industries, Inc., New Richmond, Wis.

Filed Jan. 8, 1970, Ser. No. 1,441
Int. Cl. B65b *51/08*
U.S. Cl. 53—135 **10 Claims**

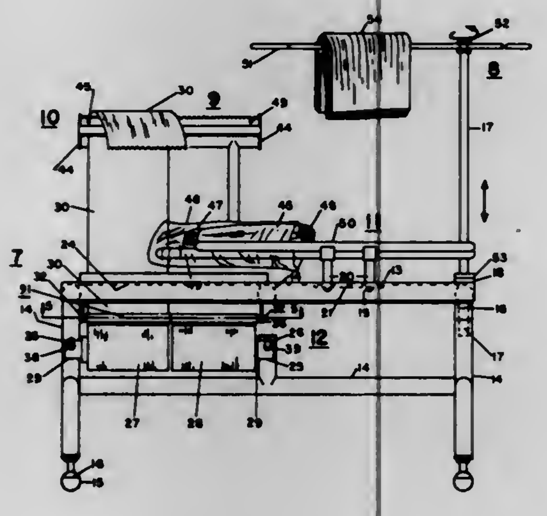


A bag closer having V-belts gripping and carrying the bag into a separable gathering pocket and against a length of twistable strand and then releasing the bag; pushers compacting the gathered bag neck and moving the gathered bag neck through the separable pocket and against and past a flipper which swings the trailing ends of the strand into a continuously revolving twister hook which twists the strand ends together while the bag neck continues to move along a linear path.

3,648,433
BAGGING TABLE AND PROTECTIVE CLOTH DISPENSER

Dave L. Owen, Wellford, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Dec. 16, 1969, Ser. No. 885,512
Int. Cl. B65b *39/00, 67/04*
U.S. Cl. 53—255 **7 Claims**

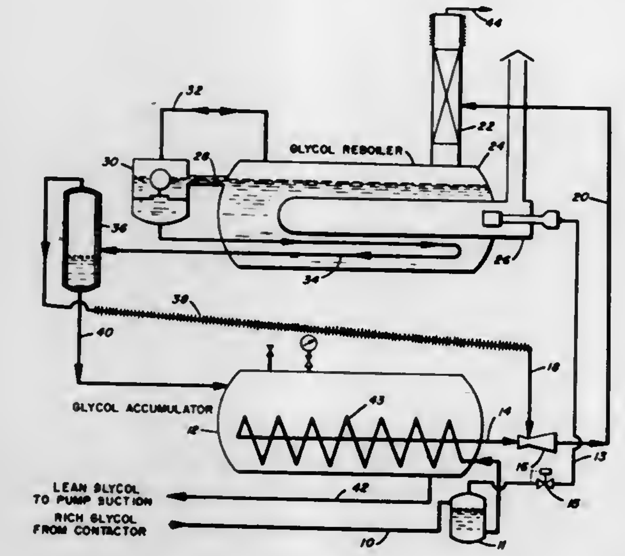


Disclosed is a table apparatus for bagging food products, particularly boneiin cuts of fresh meat. The table is preferably a dual station device and is provided with bone cut protective cloth storage racks; cloth cutters; cloth feed roller assemblies; a radiating arm, rotatable bag storage rack; and loading chutes.

3,648,434
GLYCOL REGENERATION USING EDUCTOR FLASH SEPARATION

Charles K. Gravis, III; Harold S. Wood, and Robert A. Hodgson, all of Tulsa, Okla., assignors to Maloney-Crawford Tank Corporation, Tulsa, Okla.

Filed Feb. 27, 1969, Ser. No. 802,793
Int. Cl. B01d *53/14*
U.S. Cl. 55—32 **13 Claims**

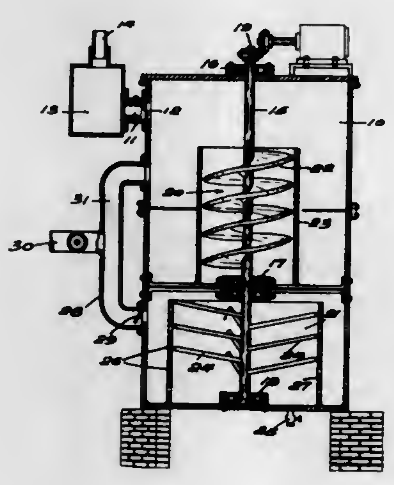


Reconcentration of liquid desiccant, such as glycol, used in the dehydration of gaseous steams, is accomplished by aiding the separation of water subsequent the reboiler by an induced vacuum into a separate flash chamber. The vacuum is created by a pump that is fluid impelled by either the desiccant or gas available in the process.

3,648,435
METHOD AND APPARATUS FOR PURIFYING EXHAUST GASES

Alberto Olague Soria, Calle Uruguay 37 Desp. 313, and Avelino Martinez Sanchez, Avenue Emerson #215, both of Mexico City, Mexico

Filed Mar. 9, 1970, Ser. No. 17,717
Claims priority, application Mexico, Apr. 15, 1969, 110404
Int. Cl. B01d *47/02*
U.S. Cl. 55—86 **7 Claims**

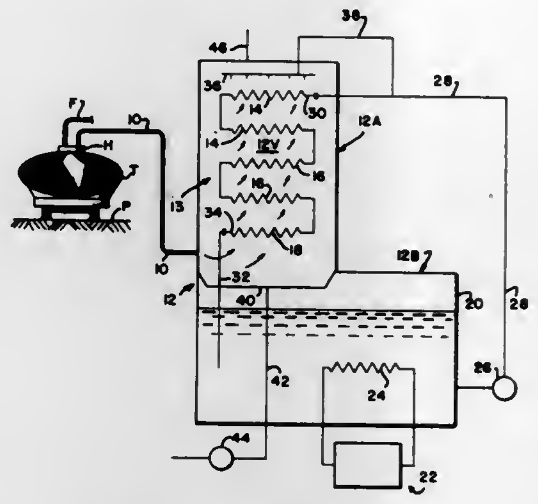


Apparatus and method for removing impurities and noxious materials from exhaust gases generated by the combustion of fuels in which the gases are passed through a chamber for extraction of the impurities and noxious materials by an absorber liquid.

3,648,436
GASOLINE VAPOR RECOVERY

Roger L. Schonewald, and Victor Kevorkian, both of Belle Mead, N.J., assignors to Ingersoll-Rand Research Inc., Princeton, N.J.

Filed Mar. 26, 1970, Ser. No. 22,880
Int. Cl. C10g *5/06;* **F17c** *13/00*
U.S. Cl. 55—88 **8 Claims**

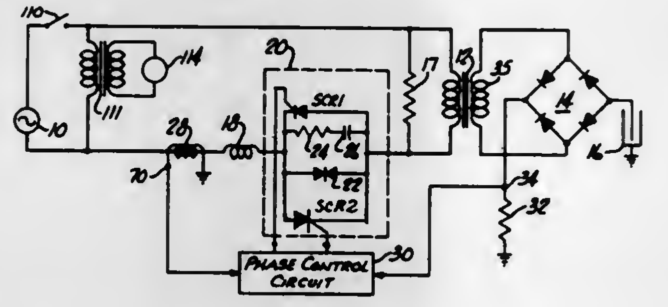


A vapor recovery device in which the vapors expelled from a tank into which gasoline is being pumped is conducted into a container in which cooling coils are disposed for cooling of the vapors flowing upwards around these coils. Also disposed in the container, downstream of the flow path of the vapors, is a spray ring for spraying refrigerated gasoline downwardly for absorption of the vapors cooled by the cooling coils. The coolant for the cooling coils and the spray ring is obtained from the lower section of the container containing gasoline refrigerated by means of a commonly known refrigeration system. The device may include beds of packing material positioned in the flow path of the vapors and refrigerated gasoline to increase vapor recovery.

3,648,437
AUTOMATIC SCR PRECIPITATOR CONTROL

Richard J. Bridges, Baltimore, Md., assignor to Koppers Company, Inc.

Filed July 23, 1969, Ser. No. 844,027
Int. Cl. B03c *3/66*
U.S. Cl. 55—105 **9 Claims**

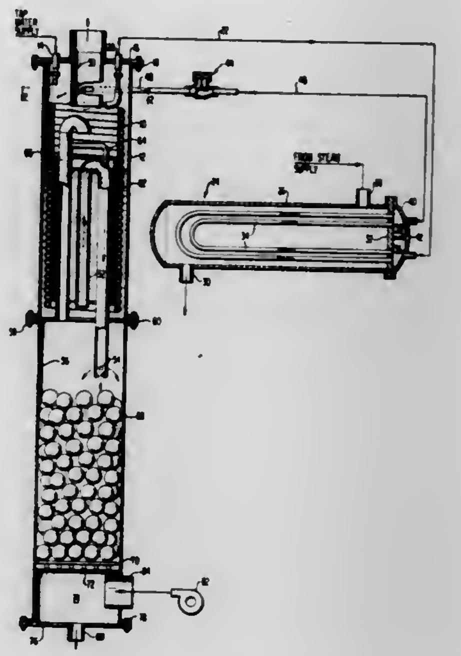


An automatic precipitator energization control circuit wherein precipitator voltage is rapidly reduced to zero for an independently selective period of duration upon the occurrence of each spark or flashover in the precipitator and gradually increased to a voltage level determined with reference to the voltage level of the precipitator at the time the spark occurred. The deleterious effects of multiple sparks or spark bursts are eliminated, a soft start is assured, and true r.m.s. current is sensed to provide a current limit to override the spark control circuitry to limit the input power to the unit and to clear a short circuit condition in the precipitator from dirt buildup or the like.

3,648,438
LIQUID PURIFICATION AND AERATION SYSTEM

Alva G. Arbogast, P. O. Box 1193, Charleston, W. Va.

Filed Feb. 9, 1971, Ser. No. 113,917
Int. Cl. B01d *19/00*
U.S. Cl. 55—191 **8 Claims**

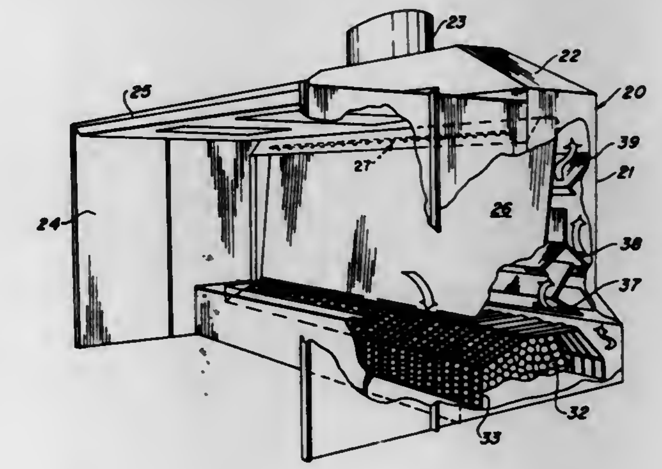


A liquid purification and aeration system including a condenser coil for preheating supply liquid, an external steam heater for superheating the liquid, a centrifugal nozzle for injecting the superheated liquid into a flash chamber surrounding the coil, a baffled overflow tube within the coil for maintaining a predetermined water level, a particulate aeration bed beneath the flash chamber for dispersing the sterile water overflow, and a filtered blower for forcing clean air up through the bed to aerate the fresh sterile water. The superheating pasteurizes the supply liquid to destroy bacterial impurities, the flashing removes and vents entrapped gaseous contaminants, and the aeration further purifies the liquid and oxidizes any remaining impurities.

3,648,439
BUOYANT FILTER MASS

Harry Szczepanski, 900 Clancy Avenue, N.E., Grand Rapids, Mich.

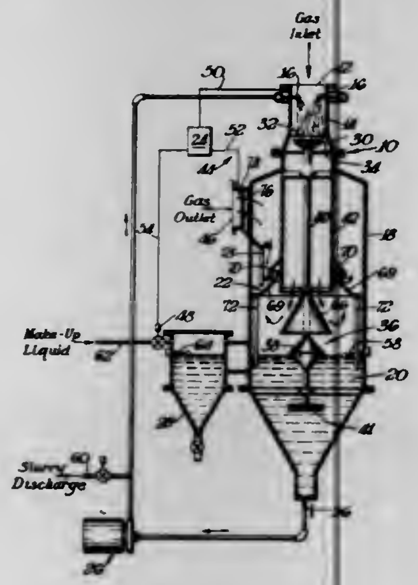
Filed Apr. 1, 1969, Ser. No. 811,812
Int. Cl. B01d *47/00*
U.S. Cl. 55—223 **8 Claims**



A group of elements is placed, and preferably supported by buoyancy in a liquid. The elements and portions of elements disposed above the surface of the liquid function as a filter mass for a stream of gaseous material forced to traverse the mass by a cowling. The liquid may be selected to be a solvent to some of the condensable and entrained materials carried in the stream. Filtered deposits on the elements are removed either by the effect of gravity tending to rotate the heaviest portions of the elements down into the liquid, or by recirculating the elements in the liquid.

3,648,440
WET SCRUBBER SYSTEM

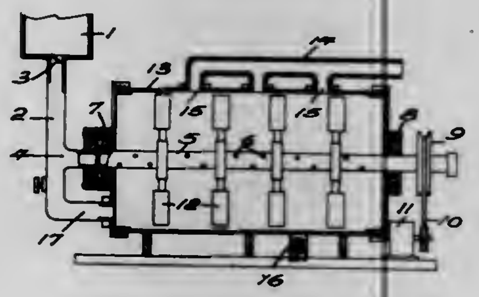
Richard T. Egan, Williamsport, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed Sept. 2, 1969, Ser. No. 854,451
Int. Cl. B01d *47/00*
U.S. Cl. 55—226 **11 Claims**



A wet scrubber system includes a receptacle having a gas inlet at its top and a liquid sump at its bottom. The gas is intimately mixed with a scrubbing liquid in a contact section which has a frustoconical scrubbing section therebelow. A vertically movable target plate is in the scrubbing section for vertical adjustment in accordance with the pressure of the system.

3,648,441
APPARATUS FOR PURIFYING GASES

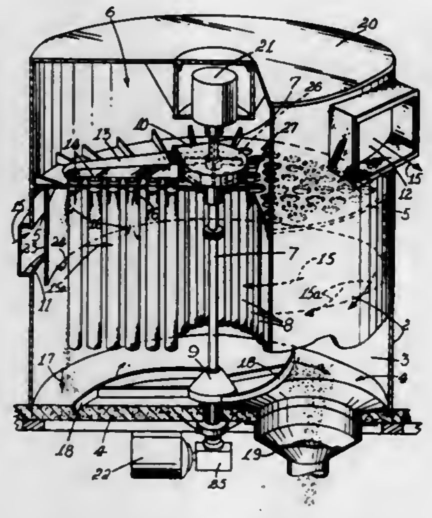
Alberto Olague Soria, Calle Urugnay 37 Desp 313, and Avelino Martinez Sanchez, Avenue Emersen 0215, both of Mexico City, Mexico
Filed Mar. 9, 1970, Ser. No. 17,715
Claims priority, application Mexico, Nov. 4, 1969, 115,085
Int. Cl. B01d *47/02*
U.S. Cl. 55—247 **1 Claim**



Apparatus for removing impurities and noxious materials from exhaust gases generated by the combustion of fuels in which the gases are passed through an agitation chamber containing an absorber liquid and provided with agitators for extraction of the impurities and noxious material therefrom.

3,648,442
DUST COLLECTORS

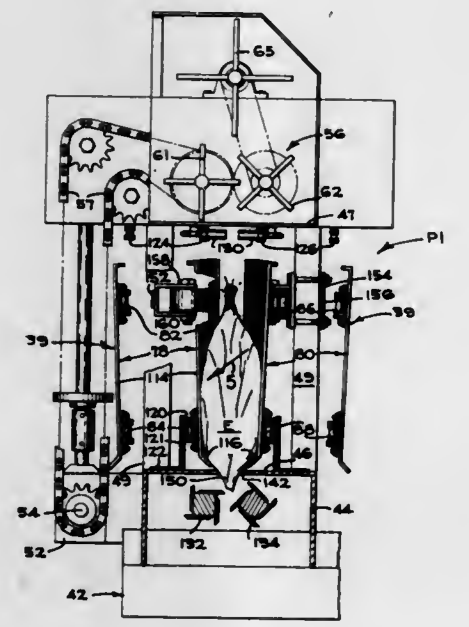
Ronald F. Bourne, Johannesburg, South Africa, assignor to The Asbestos Grading Equipment Company (South Africa) (Proprietary) Limited, Selby, Johannesburg, Transvaal, South Africa
Filed May 20, 1970, Ser. No. 39,041
Claims priority, application South Africa, May 30, 1969, 69/3882
Int. Cl. B01d *41/00, 45/18, 46/04*
U.S. Cl. 55—294 **8 Claims**



Air air filter is provided in which dust laden air is passed through a plurality of filtering bags and from which the trapped dust is dislodged by reversing the flow of air through the bag walls sequentially. The trapped dust which falls under the influence of gravity onto the floor of the filter is swept towards an exhaust port and suitably discharged.

3,648,443
CORN PICKER HEAD WITH SPRING-BIASED BUTT STOPS

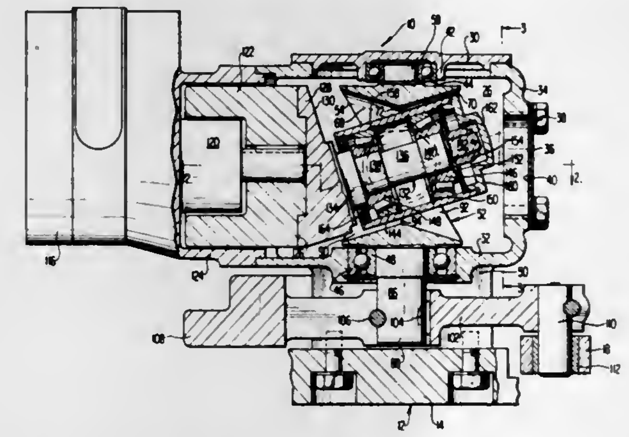
Bobby Joe Sears, Hoopeston, Ill., assignor to FMC Corporation, San Jose, Calif.
Filed Mar. 25, 1970, Ser. No. 24,044
Int. Cl. A01d *45/02*
U.S. Cl. 56—111 **5 Claims**



A sweet corn picker head for market ears includes moving stop bars formed of a pair of driven endless gathering belts having flexible confronting flights of closely spaced upright stop bars that straddle and grip the cornstalks. The upper portions of the confronting flights are resiliently biased toward each other by rollers which are mounted on adjustable leaf springs. The flights thus maintain gripping control of the ears and the ears, regardless of size variations, are positively controlled to prevent clumping and relative horizontal movement between the ears and stop bars.

3,648,444
DRIVE UNIT FOR RECIPROCATING ELEMENT

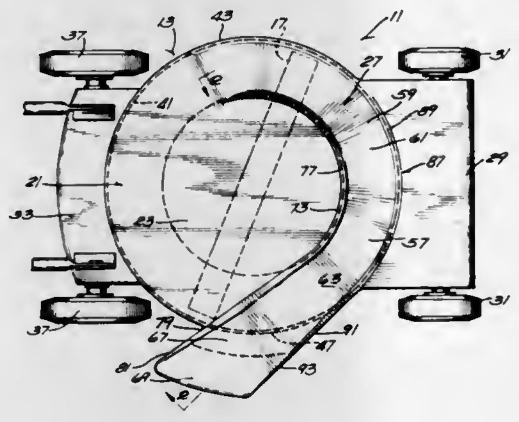
Thomas J. Dunn, P.O. Box 110, Hackettstown, N.J.
Filed July 22, 1970, Ser. No. 57,243
Int. Cl. A01d *55/02*
U.S. Cl. 56—296 **3 Claims**



A drive unit for an element to be reciprocated converts a rotary energy source to reciprocating movement through a wobble box having a driven shaft attached to the power source. The wobble box is maintained by stub shafts in a crank assembly, the crank assembly having slant walls permitting movement of the box upon rotation of the driven shaft. The crank assembly carries a crank shaft fixedly secured to a lever.

3,648,445
ROTARY MOWER SAFETY CHUTE OUTLET

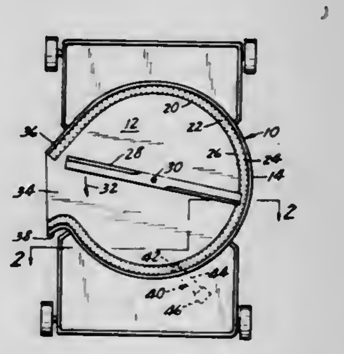
James F. Efflandt, Milwaukee, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Oct. 26, 1970, Ser. No. 83,783
Int. Cl. A01d *55/18*
U.S. Cl. 56—320.2 **4 Claims**



Disclosed herein is a blade housing for a lawn mower having a vertically extending sidewall and a top deck including a main portion and a chute portion extending from the top deck main portion and arcuately about the axis of intended blade rotation and then generally tangentially outwardly from the sidewall. The chute portion includes a top wall having, about the plane of intended blade rotation, a height which gradually increases in the direction of intended blade rotation. The blade housing also includes means for preventing such discharge from the chute portion of objects which could cause injury to persons, such means comprising a surface extending upwardly and outwardly from below the plane of intended blade rotation to form a chute bottom wall, together with the provision of a terminal portion of the chute top wall, which portion extends outwardly and downwardly from beyond the outer end of the surface for cooperation with the surface so as to block such discharge.

3,648,446
LAWN MOWER WITH CLEANING MEANS

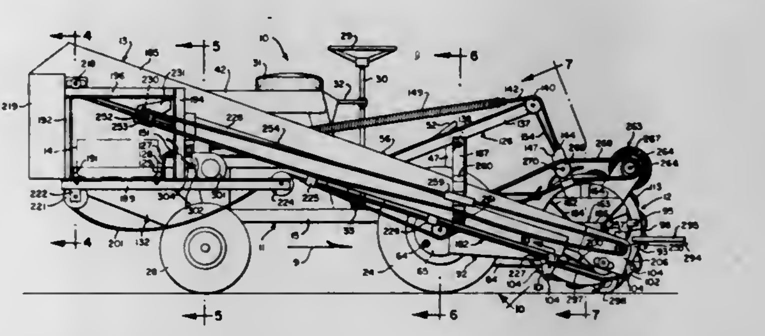
Raymond E. Haapoja, Route 2, Mora, Minn., and Patrick Shettler, Box 232, Ogilvie, Minn.
Filed Dec. 11, 1970, Ser. No. 97,280
Int. Cl. A01d *55/18*
U.S. Cl. 56—320.2 **8 Claims**



A lawn mower having a housing and a rotating blade housed therewithin, the housing being provided with a perforated conduit as a portion of its inner surface. Water under pressure is forced through the conduit and exits through the perforations therein, flushing lawn trimmings from the inner surface of the housing.

3,648,447
FRUIT HARVESTING MACHINE FOR LOW PLANTS

Charles G. Burton, Lewiston, N.Y., assignor to Chisholm-Ryder Company, Inc., Niagara Falls, N.Y.
Filed Apr. 13, 1970, Ser. No. 27,858
Int. Cl. A01d *45/22*
U.S. Cl. 56—330 **12 Claims**



A machine for harvesting fruit on relatively low plants such as wild lowbush blueberries including a vehicle mounting a horizontally disposed reel at the front thereof with its axis oriented transversely to the direction of vehicle travel, the reel mounting articulating tines which move toward and away from the reel during the process of picking the blueberries from the bushes and dumping the blueberries into the inside of the reel, the reel being floatingly mounted by means of a spring arrangement to cause it to yield with minimum damage when it encounters obstructions, a first conveyor within the reel in effective communication with a second conveyor outside of the reel which receives berries from the first conveyor and carries the blueberries rearwardly along the sides of the machine to a dumping station where the berries are dumped into a container, the second conveyor being so located that the berries therein are not subject to abrasion from plants through which the machine passes, the second conveyor including an inner solid conveyor which carries the berries and an outer open conveyor which permits the berries to fall through but retains the debris, thereby separating the debris from the berries in an efficient manner, the machine also including a rear steering mechanism for providing sharp steering in the field.

3,648,448

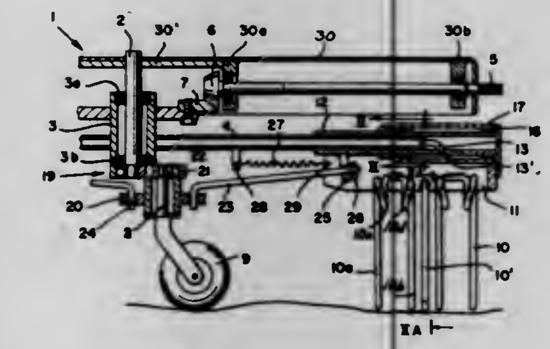
HAY RAKE, TEDDER OR CROP-TURNING IMPLEMENT

Josef Maugg, Glarus, Switzerland, assignor to Maschinenfabrik FAHR AG, Gottmadingen, Germany

Filed Aug. 11, 1970, Ser. No. 62,993

Int. Cl. A01d *79/00*

U.S. Cl. 56—370 **16 Claims**



A rake, tedder or crop turner for mowed crop adapted to build or destroy a windrow comprises a rotary rake having a plurality of spokes anchored to a rotating hub. The rake tines are fixed to a sleeve mounted on the end of each rake arm and centrifugally displaceable outwardly upon the rotation thereof against a restoring force which, in the absence of rake rotation, tends to draw the sleeve inwardly. In addition, an eccentric is provided for periodically drawing the sleeves inwardly as the rake rotates. Each sleeve and the corresponding spoke are provided with complementary camming means imparting an angular displacement to the sleeve about the axis of the spoke, thereby lifting the tines from the crop material at a predetermined point during each rotation of the rake and lifting all of the tines upon inward movement of the sleeve when the rake is not rotated.

3,648,449

SPOOL HOLDER FOR TWISTING MACHINE OR THE LIKE

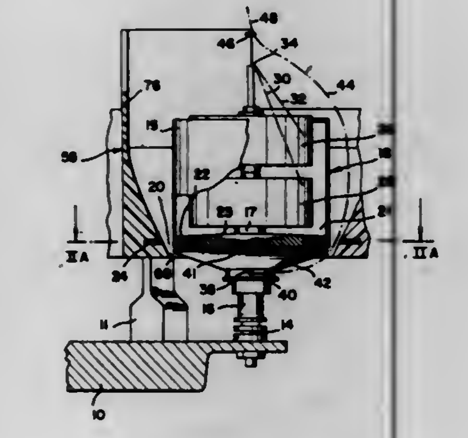
Aloys Greive, Munster, Westphalia, Germany, assignor to Hammel GmbH Zwirnerei-und Spinnereimachinen, Munster, Westphalia, Germany

Filed May 4, 1970, Ser. No. 34,007

Claims priority, application Germany, May 13, 1969, P 19 24 508.0

Int. Cl. D01h *7/86, 1/42, 7/18*

U.S. Cl. 57—58.76 **8 Claims**



An assembly of thread-dispensing units, mounted on a common spindle bank, include each a spindle with a rotating throwoff disk beneath a magnetically arrested tubular spool holder through which the thread of one or more spools is guided downwardly for passage through the disk hub whence it emerges generally radially to form a balloon enveloping the spool or spools. A housing with an upwardly diverging inner peripheral wall, of circular outline at the bottom and square outline at the top, surrounds the spool holder with sufficient clearance to remain out of contact with the ballooning thread while preventing any entanglement of threads from adjoining units in the case of a rupture.

3,648,450

APPARATUS FOR THE CONTINUOUS SPINNING OF TEXTILE FIBERS

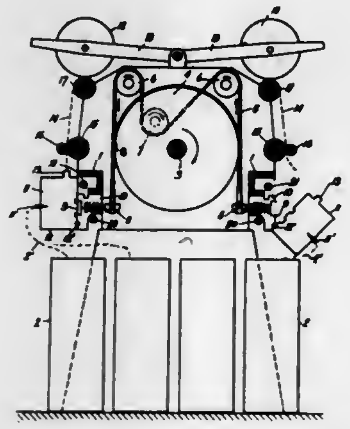
Miloslav Prochazka; Bedrich Cesenek; Vladimir Mach, all of Nachoda; Karel Kaulich; Zdenka Pacakova, both of Cerveny, Kostelec, all of Czechoslovakia; Ladislav Bradzda, deceased, late of Cerveny Kostelec, Czechoslovakia; Drahuska Brazdova, and Dagmar Brazdova, heirs, both of Cerveny Kostelec, (S, assignors to Said ELITEX, Zavody textilniho Strojirenstvi, generalni reditelstvi, Liberec, Czechoslovakia, by said Prochazka, Cesenek, Mach, Kaulich and Pacakova

Filed Mar. 19, 1970, Ser. No. 21,157

Claims priority, application Czechoslovakia, Mar. 20, 1969, PV 1984

Int. Cl. D01h *1/12, 7/00, 13/26*

U.S. Cl. 57—58.89 **12 Claims**



Apparatus for the continuous spinning of textile fibers by the open end spinning method, particularly by means of a spinning chamber operating under pressure. The separate spinning units of the apparatus are driven by a common drive from which they are separately disengageable. The spinning chamber of each spinning unit is mounted in a stationary body on the machine frame; the separating and feeding mechanisms of each spinning unit are mounted in a body which is generally movable away from the spinning chamber, whereby to improve the ease with which the spinning units may be attended and maintained.

3,648,451

NOVEL YARN AND PROCESS

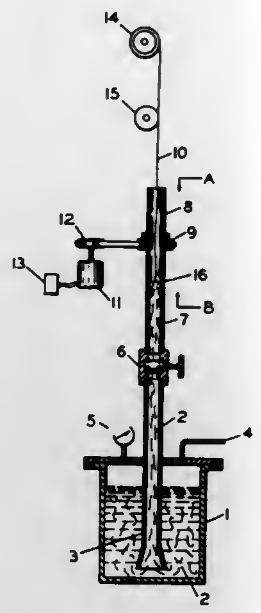
Myrne R. Riley, Rolla, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 16, 1970, Ser. No. 11,719

Int. Cl. D02g *3/04, 3/18;* **D01d** *5/06*

U.S. Cl. 57—140 BL **19 Claims**

A fluid vortex spinning process for yarn in which a dispersion of high-modulus refractory fibers and lower modulus fibers in a viscous carrier liquid as a flowing stream is rotated about its axis to produce a composite staple fiber yarn of axially aligned high-modulus refractory fibers intermixed with and intertwined by lower modulus fibers and the composite yarns so produced.



3,648,452

METHOD OF FORMING REINFORCING YARNS OR CORDS

Maurice A. Young, Lichfield, England, assignor to Dunlop Holdings Limited, London, England

Filed July 28, 1969, Ser. No. 848,139

Claims priority, application Great Britain, Aug. 3, 1968, 37,148/68

Int. Cl. D02g *3/02, 3/36;* **C03c** *25/02*

U.S. Cl. 57—164 **16 Claims**

Method of making yarns and cords from brittle filaments having a specific modulas greater than 200×10⁶ inch. Bundles of brittle filaments are impregnated with a liquid which can subsequently be converted into an elastic solid of high Poissons ratio, the bundles are twisted individually to form yarns or together to form cords and the liquid is converted to the elastic solid, of which the following is a specification.

3,648,453

ELECTRIC TIMEPIECE

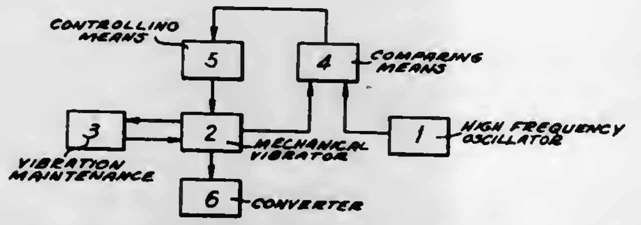
Susumu Aizawa; Koichi Nakamura; Yuki Tsuruishi, all of Suwa-shi, and Kikuo Oguchi, Suwa-gun, Nagano-ken, all of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed July 16, 1969, Ser. No. 842,278

Claims priority, application Japan, July 19, 1968, 43/50764

Int. Cl. G04c *3/04;* **H03b** *3/02*

U.S. Cl. 58—23 R **3 Claims**



An electric timepiece wherein a mechanical vibrator is synchronized with a signal which compares signals of a relatively high-frequency time standard with a relatively low-frequency mechanical vibrator. A first embodiment applies nonlinear characteristics of frequency in response to changes in vibrating amplitude of the mechanical vibrator. In a second embodiment, a time standard signal is utilized as a synchronizing signal to control the phase of the input signal for driving the mechanical vibrator and for synchronizing the mechanical vibrator.

3,648,454

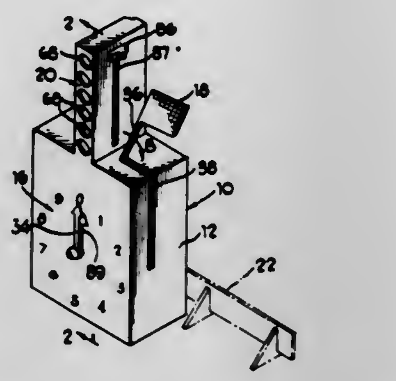
TIMING APPARATUS FOR TOY RACING CARS

Howard J. Morrison, Highland Park, Ill., assignor to Marvin Glass & Associates

Filed Nov. 16, 1970, Ser. No. 89,593

Int. Cl. G04b *5/20;* **G04f** *7/10*

U.S. Cl. 58—145 A **18 Claims**



A timing apparatus for use as an accessory with toy racing cars or the like to time a car as it travels from a starting point to a second point. The apparatus includes a frame and a timer mounted on the frame, the timer having a visual clock indicator. An actuating mechanism is operatively connected with the timer and includes a time delay device to actuate the timer a predetermined time after conditioning the actuating mechanism to permit an operator of a car to condition the actuating mechanism and then move to his respective car at the starting point before the timer is actuated. A gate member is operatively associated with the timer to automatically stop the timer when a car reaches the gate. A visual indicating device is associated with the time delay device to indicate the time progression of the time delay device so that an operator of a car can observe the time within which he must ready his car for operation.

3,648,455

SYSTEM FOR PURIFYING AN EXHAUST GAS FROM AN INTERNAL COMBUSTION ENGINE

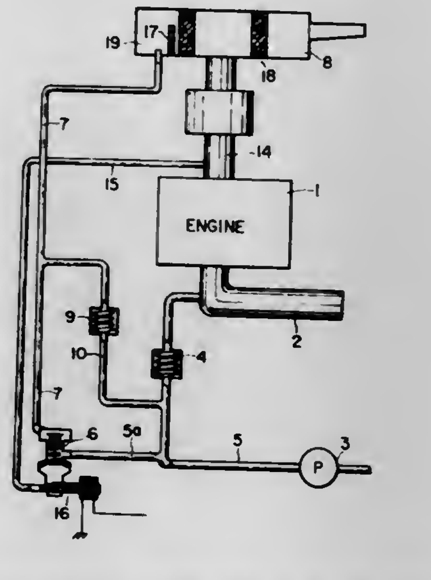
Takumi Muroki, Hiroshima, Japan, assignor to Toyo Kogyo Company Limited, Aza-Shinchi, Fuchu-cho, Aki-gun, Hiroshima-Ken, Japan

Filed Mar. 13, 1970, Ser. No. 19,183

Claims priority, application Japan, Apr. 2, 1969, 44/30207

Int. Cl. F01n *3/10*

U.S. Cl. 60—278 **5 Claims**



A system for purifying exhaust gas from an internal combustion engine having an air cleaner, which system has a secondary air conduit for supplying secondary air from an air pump for combustion with the exhaust gas of the engine. An exhaust conduit means also extends from the secondary air conduit to the air cleaner for exhausting excess air, with the excess air being diffused against a buffer plated provided in the air cleaner to cool the air heated by the compression of the air pump.

3,648,456

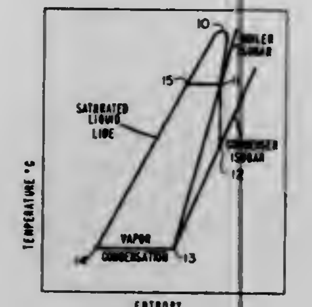
POWER GENERATION WITH RANKINE CYCLE ENGINES USING ALKYLATED ADAMANTANES AS A WORKING FLUID

Max Eredrick Bechtold, Kennett Square, and Charles William Tullock, Landenberg, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 17, 1970, Ser. No. 64,222

Int. Cl. F01k *25/00;* **C09k** *3/02*

U.S. Cl. 60—36 **5 Claims**



Adamantanes having lower alkyl bridgehead substitutents can be used as working fluids in Rankine cycle engines, and particularly in small vapor turbine systems.

3,648,457

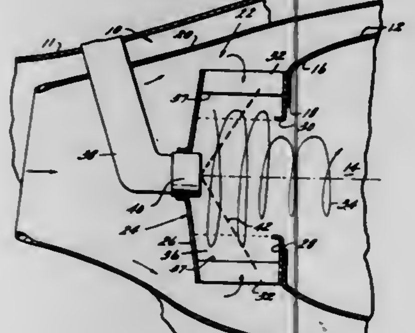
COMBUSTION APPARATUS

Melvin Bobo, Cincinnati, Ohio, assignor to General Electric Company

Filed Apr. 30, 1970, Ser. No. 33,244

Int. Cl. F02c *3/24;* **F23r** *1/10*

U.S. Cl. 60—39.74 R **6 Claims**



A combustion apparatus and fuel delivery means therefor having a spray nozzle projecting into a housing and adapted to direct fuel toward an annular array of vanes. The vanes are spaced radially outwardly of a housing outlet which is disposed in flow communication with the combustion chamber, and are adapted to receive pressurized air and direct it radially inwardly of the housing so as to generate a whirling mass of air within the housing and a vortical discharge from the outlet, whereby large fuel particles are centrifugally prevented from entering the combustion chamber until they have been sheared into small atomized droplets and small fuel droplets are entrained in the vortex and carried into the combustion chamber in a highly dispersed manner.

3,648,458

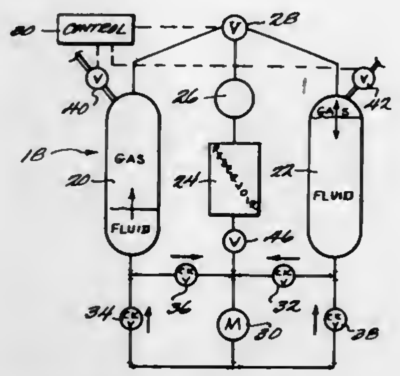
VAPOR PRESSURIZED HYDROSTATIC DRIVE

Roy E. McAlister, 5285 N. Red Rock Drive, Phoenix, Ariz.

Filed July 28, 1970, Ser. No. 58,934

Int. Cl. F15b *15/18, 13/042*

U.S. Cl. 60—51 **9 Claims**



A hydrostatic drive system generally of the type wherein vapor is alternately directed into one of two reservoir tanks so that working fluid in that tank is forced out of the tank by pressure of the vapor and through a fluidic motor to generate a mechanical output before it returns to refill the other tank. When the first tank is substantially depleted, the vapor pressure is directed into the refilled tank so that fluid from that tank now flows through the motor to refill the first, now depleted, tank. In one embodiment, cyclic pressure generated by a vapor generator forces fluid cyclically through an AC fluid motor. In another embodiment, heat from the working fluid is employed to generate the vapor pressure and reduce the temperature of the working fluid passing through the motor. In a further embodiment, the fuel serves as the working fluid and the vapor from the refilling tank is combusted to provide heat to convert the fuel from its liquid to vapor state. In another embodiment, the combustion gases are combined with the vapor so that, when water is the working fluid, the water vapor in the combustion gases serves as make up working fluid. In a further embodiment, heat from working fluid on its way to the motor is transferred to other working fluid in a second system to drive a second motor. Further aspects of the invention are set forth below.

3,648,459

WARP KNITTING MACHINE, PARTICULARLY RASCHEL MACHINE

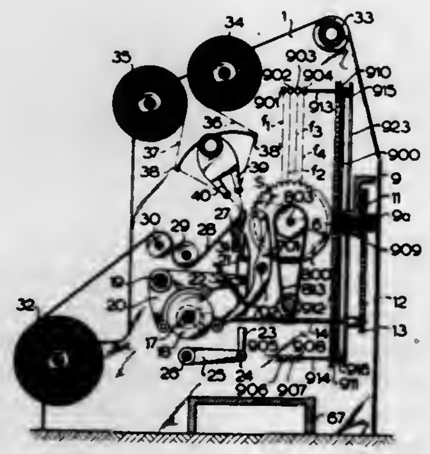
Stefan Furst, deceased, late of Moenchengladbach, Germany; Stefanie Dormanns, Webgerg, and Hans-Joachim Furst, heirs, Moenchengladbach, both of Germany, assignors to W. Schlafhorst Co., Moenchengladbach, Germany

Filed July 24, 1970, Ser. No. 58,008

Claims priority, application Germany, July 26, 1969, P 19 38 046.2

Int. Cl. D04b *23/06*

U.S. Cl. 66—84 **5 Claims**



A warp knitting machine comprises warp knitting-needle means defining a needle zone, a device for filling weft threads into the web being knitted, said device having movable weft-thread storers and thread guide members for placing the weft threads into said storers, each of said guide members comprising a plurality of weft thread guide means for successively seizing respective weft threads, and weft-exchanging members coactively coordinated to said respective guide means for readying several weft threads of given length to be successively seized by each of said guide means.

3,648,460

GAS TURBINE ENGINE FUEL CONTROL SYSTEM

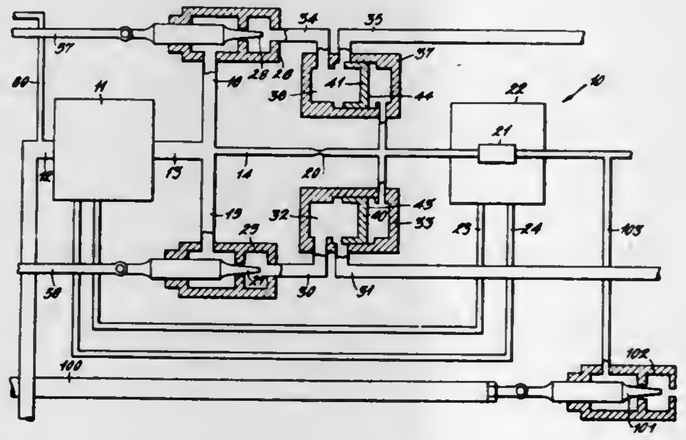
Christopher Linley Johnson, Hartshorne, near Burton-on-Trent, and John Robert William Whitmarsh, Derbyshire, both of England, assignors to Rolls-Royce Limited, Derby, England

Filed Nov. 13, 1970, Ser. No. 89,288

Claims priority, application Great Britain, Nov. 19, 1969, 56,677/69

Int. Cl. F02k *3/10*

U.S. Cl. 60—243 **14 Claims**



The invention concerns a gas turbine engine fuel control system comprising a first burner supply conduit and at least one second burner supply conduit, a fuel pump which communicates with both said conduits so as to be adapted to supply fuel thereto, first and second restrictors respectively provided in the first and second burner supply conduits, a flow control valve which is connected in the first burner supply conduit downstream of the first restrictor, the flow control valve controlling fuel flow therethrough in dependence upon the value of at least one engine variable, and valve means in the second burner supply conduit downstream of the second restrictor therein, the valve means being controlled in dependence upon the difference in the pressure in the first burner supply conduit downstream of the first restrictor and upstream of the flow control valve, and the pressure downstream of the second restrictor.

3,648,461

SOLID PROPELLENT ROCKET MOTOR NOZZLE

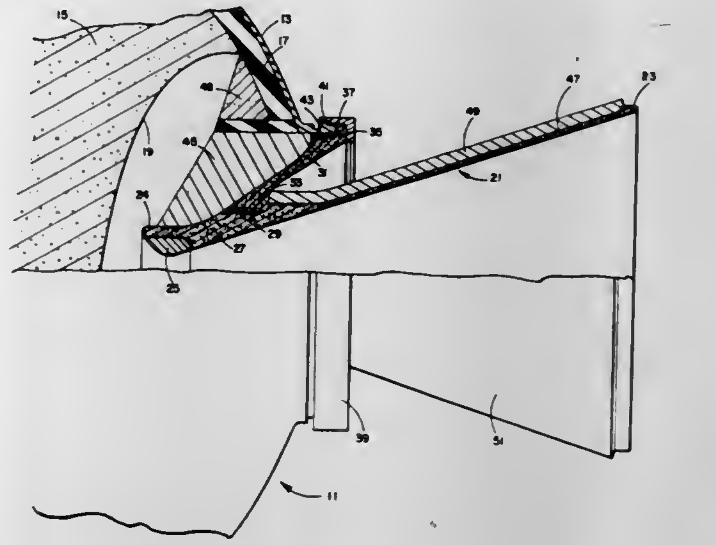
Richard L. Bailey, Lancaster; Warren L. Dowler, Sierra Madre, and John I. Shafer, Pasadena, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed May 13, 1970, Ser. No. 36,926

Int. Cl. F02k *1/00*

U.S. Cl. 60—271 **10 Claims**

A solid propellent motor comprised of a metal casing for containing the solid propellent charge, a thin wall nozzle formed of carbon or graphite fibers or filaments, disposed in a carbon or graphite binder; the nozzle is affixed to the high strength case by an elongated transition section formed of a carbonaceous material reinforced with carbonaceous fibers. The nozzle expansion cone has an insulative nonablative covering thereon to prevent undue radiation of heat, and the transition section has an insulative layer of ablative or nonablative material to control the heat path to the metal casing.



3,648,462

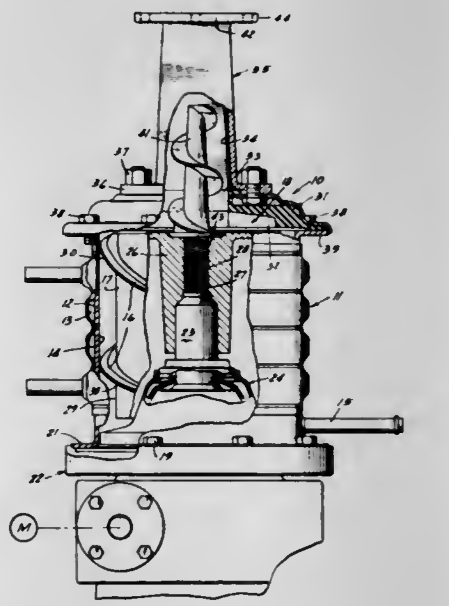
EVAPORATOR COVER CONSTRUCTION FOR AN ICE MAKING APPARATUS

John B. Lyman, Bloomington, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 22, 1970, Ser. No. 39,777

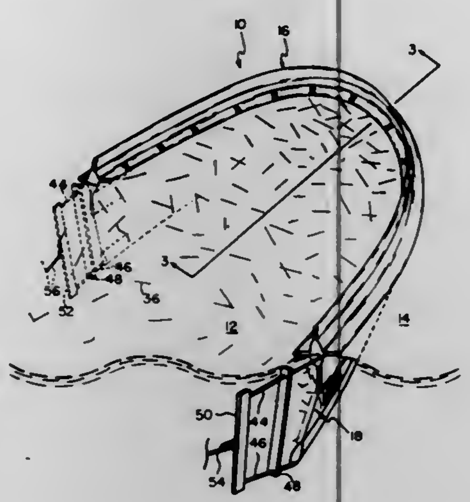
Int. Cl. F25c *1/14*

U.S. Cl. 62—354 **10 Claims**



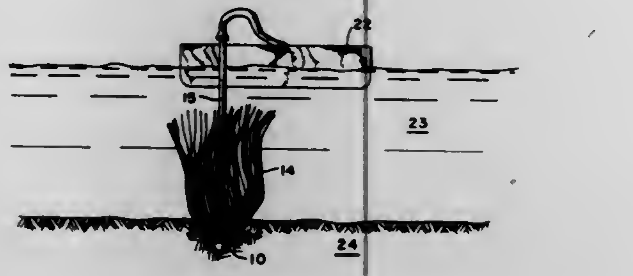
A cover or cap assembly for an evaporator of an ice making apparatus has an inner cover member forming a collection chamber receiving ice flakes or slush and being composed of an elastomeric material or similar thermally insulative material having a substantially low thermal conductivity relative to thermally conductive, metallic material and forming a surface having improved lubricity relative to the ice flakes or slush moving through the collection chamber. An outer, rigid backing member composed of a thermally conductive maetallic material receives the inner cover in nested assembly, and the inner cover has integrally formed insulative barriers between the backing member and the contiguously disposed portions of the ice making apparatus.

3,648,463
FLOATING BOOM FOR OIL-SOAKED MATERIAL
Ray R. Ayers, 12522 Shepherd's Ridge, Houston, Tex.
Filed Sept. 8, 1970, Ser. No. 70,098
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **3 Claims**



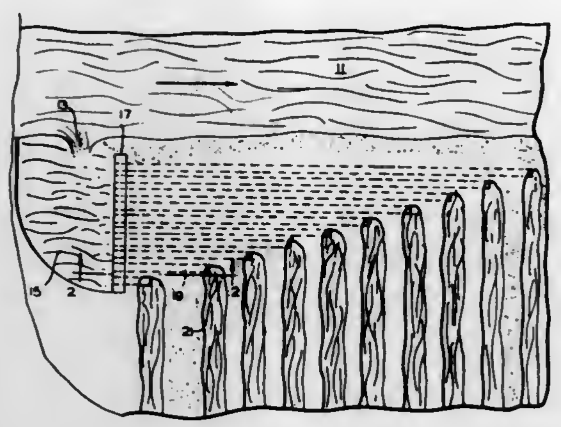
Apparatus for containing or collecting oil-soaked material in a body of water is disclosed. The apparatus comprises an elongate buoyant boom having a foraminous skirt depending therefrom. An impervious shaped section is secured to the bottom of the foraminous skirt to react against water movement under the boom to maintain the lower skirt end depressed in the water. A spreader bar is used to maintain the top and bottom of the skirt spaced a predetermined distance apart.

3,648,464
METHOD AND MEANS FOR PLACING ARTIFICIAL SEAWEED
Keith W. Edwards, 47 Station Road, Thames Ditton, England
Filed Jan. 22, 1970, Ser. No. 5,001
Claims priority, application Great Britain, Jan. 22, 1969, 3,579/69
Int. Cl. E02b *3/04;* **E02d** *7/24*
U.S. Cl. 61—3 **5 Claims**



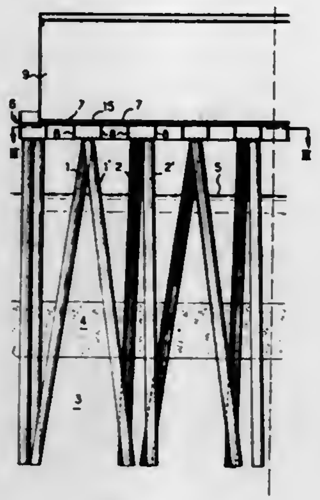
A method and means for placing "artificial seaweed" in place on a particulate floor of a body of water comprises releasably securing the lower end of a fluid conduit to an anchoring means, such as a dish-shaped plastic article, having strands of buoyant, water-resistant elongated flexible strands secured thereto and having fluid outlet orifices communicating with said fluid conduit and directed against said particulate floor; forcing fluid through' said conduit while said anchoring means is adjacent to or resting on or pressed against said floor to displace particulate matter; causing said anchoring means to settle into the resulting cavity as it is formed; discontinuing flow of said fluid; permitting particulate to settle over said anchoring means; and disconnecting said conduit.

3,648,465
IRRIGATION SYSTEM
Roger William Fiala, P.O. Box 169, Jerome, Idaho
Filed Dec. 11, 1968, Ser. No. 783,063
Int. Cl. E02b *13/00, 3/00*
U.S. Cl. 61—12 **4 Claims**



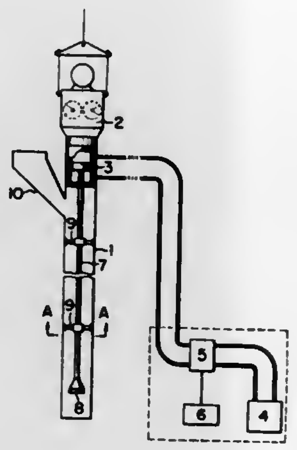
A substantially solid structure to be placed in the ground adjacent a water reservoir, the structure having a plurality of holes with their centers along a straight line. Pipes are inserted in the holes and extend outwardly from the structure away from the reservoir. The structure is placed in the ground so that the holes are horizontal with respect to the waterline level of the reservoir.

3,648,466
ELEVATED RESERVOIR FOR USE WITH OFF-SHORE OIL WELLS
Henri Houdin, 18 rue Theodore de Banville, Paris, and Rene Perzo, 42 rue de Sevres, Boulogne, both of France
Filed May 4, 1970, Ser. No. 34,060
Claims priority, application France,.May 5, 1969, 6912401
Int. Cl. E02d *21/00;* **E02b** *17/00;* **E04b** *1/22*
U.S. Cl. 61—46 **10 Claims**



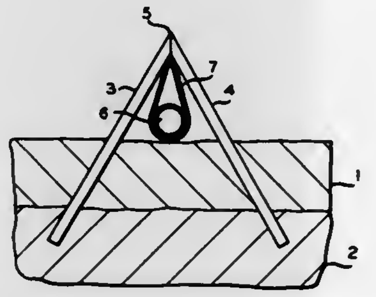
Elevated reservoir carried by platform which comprises a plurality of box-like sections, each of which is supported by a plurality of inclined pilings. Adjacent sections are spaced by ribs aligned with their sides and connected by prestressing cables extending through the ribs and box sides. The platform enables the piles to act as a unit in resisting horizontally applied forces.

3,648,467
MACHINES FOR CONTINUOUSLY FORMING SAND PILES
Mitsuro Ogawa, 31, 1 chome, Tanabe-honmachi, Higashisumiyoshi-ku,, Japan
Filed Apr. 23, 1970, Ser. No. 31,324
Claims priority, application Japan, Aug. 27, 1969, 44/68170
Int. Cl. E02d *5/38, 7/38, 3/10*
U.S. Cl. 61—53.64 **7 Claims**



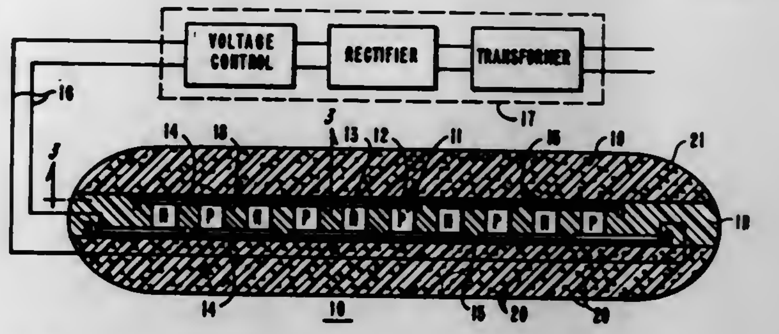
A machine for continuously forming sand piles comprises a casing with a hopper connected thereto near its upper end. A vibratory pile driver is mounted at the upper end of the casing above the hopper and a ram is mounted in the casing for undergoing reciprocatory movement therein under the action of a drive means which is independent of the pile driver. The ram carries a tamping plate at its lower end and in the lowermost end stroke position, the tamping plate is located a small distance above the lower end of the casing. As the casing is being lifted from the ground after being sunk therein and sand has been supplied to the casing via the hopper, the ram is reciprocably moved in the casing as the latter is continuously lifted and while the vibratory pile driver is continuously operated.

3,648,468
LAMBDA SUPPORTED PIPELINE FOR ARCTIC USE
John R. Bowers, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Feb. 11, 1970, Ser. No. 10,455
Int. Cl. B63b *35/02;* **F16l** *1/00, 3/00*
U.S. Cl. 61—72.1 **14 Claims**



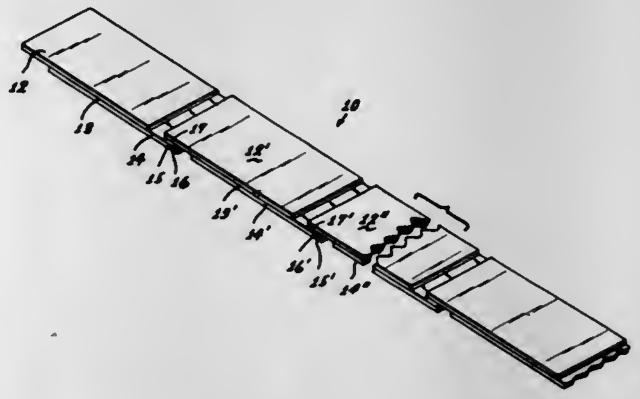
A stable pipeline in permafrost areas is achieved by supporting pipe on or from supports of lambda construction. The members of the lambda supports extend declivously into solidly frozen permafrost and so maintain a stable line of pipe that will not sink into ground thawed by summer warmth or by heat leakage from the pipeline.

3,648,469
THERMOELECTRIC PILLOW
James E. Chapman, 7736 Paseo Del Rey, Playa Del Rey, Calif.
Filed Apr. 10, 1970, Ser. No. 27,317
Int. Cl. F25b *21/02*
U.S. Cl. 62—3 **11 Claims**



A thermoelectric pillow having a thermoelectric unit which operates according to the Peltier effect to transfer heat from a first side to a second side thereby cooling the first side and heating the second side.

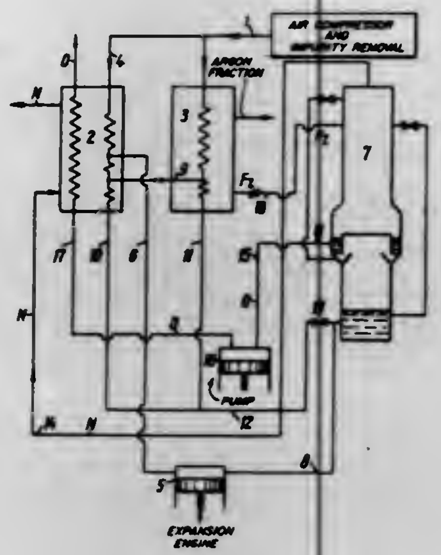
3,648,470
MATERIALS COMPOSITION ARRANGEMENT FOR THERMOELECTRIC HEATING AND COOLING
Gary E. Schultz, 18415 Prairie Street, Northridge, Calif.
Filed May 28, 1970, Ser. No. 41,309
Int. Cl. F25b *21/02*
U.S. Cl. 62—3 **12 Claims**



A plurality of alternating junctions of two types arranged in a series configuration. The first junction type is comprised of two materials in overlapping arrangement. The second junction type is also comprised of two materials and additionally has a third material therebetween. Current flow through the junction produces a Peltier heating or cooling effect at the first type of junction. Either no thermal effect or both Peltier heating and cooling occur at the second type of junction which cancel out. The effect is the cumulative Peltier effects produced at the first type of junction.

3,648,471
METHOD OF LIBERATION OF NITROGEN AND OXYGEN FROM AIR
Genrikh Maxovich Basin, ulitsa Gorkogo, 8, kv. 8; Ilya Vladimirovich Gorenshtein, ulitsa Lenina, 48, kv. 14; Mark Eleazarovich Lemberg, Prospekt Schevchenko, 8a, kv. 19; Semen Grigorievich Linetsky, Krasnoflotsky pereulok, 9/6; Anatoly Eliseevich Myasoed, ulitsa Gagarina, 8, kv. 23, and Yakov Benediktovich Zanis, ulitsa Tolstogo, 13, kv. 3, Odessa, all of U.S.S.R.
Filed Mar. 7, 1969, Ser. No. 805,183
Int. Cl. F25j *3/02, 3/04, 5/00*
U.S. Cl. 62—22 **2 Claims**

A method of liberation of nitrogen and oxygen from air on the cycle of average or high pressure and subsequent frac-

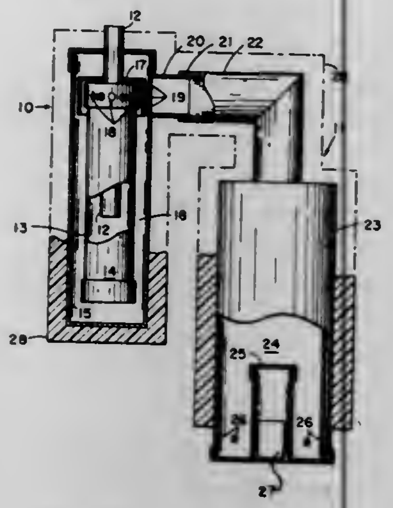


tionation, which provides for the division of air to be throttled into two flows, of which the first one is cooled together with air directed into the expander, while the second flow is cooled independently, at least part of said second flow being mixed with said first flow at a temperature close to the critical one, additionally cooled, throttled and directed for fractionation.

3,648,472
CRYOGENIC FLUID DISCHARGE MUFFLER

Joseph Z. Kozlowski, Jasper, Ala., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 6, 1970, Ser. No. 9,299
Int. Cl. F17c *7/02*
U.S. Cl. 62—45 **7 Claims**

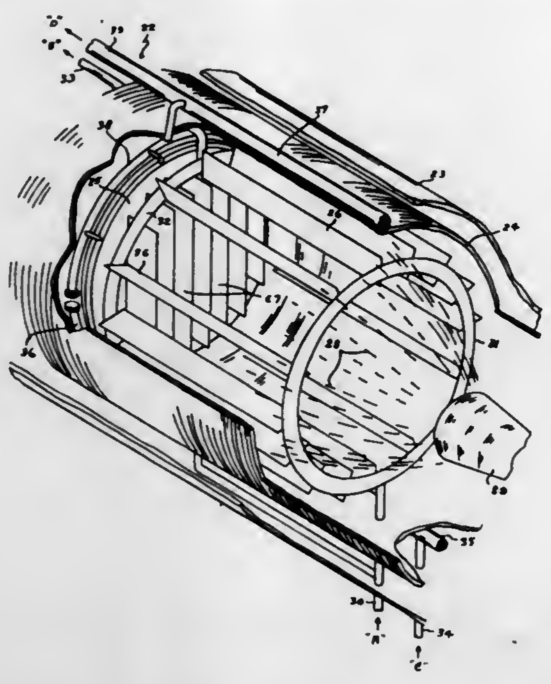


A cryogenic discharge muffler wherein the operation thereof depends on a small amount of cryogenic liquid being retained in a sump portion of the muffler assembly. The liquid boils away during off-cycles and prevents ice buildup on the muffler. The muffler is intended to disperse cryogenic liquid so that the liquid will evaporate on contact with air and thereby reduce or substantially minimize the hazard generally associated with the discharge of cryogenic liquids.

3,648,473
PUMPING SYSTEM FOR LOW-DENSITY GAS FLOW IN SPACE CHAMBERS AND WIND TUNNELS

William B. Stephenson, Tullahoma, Tenn., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Aug. 19, 1970, Ser. No. 65,048
Int. Cl. B01d *5/00*
U.S. Cl. 62—55.5 **10 Claims**

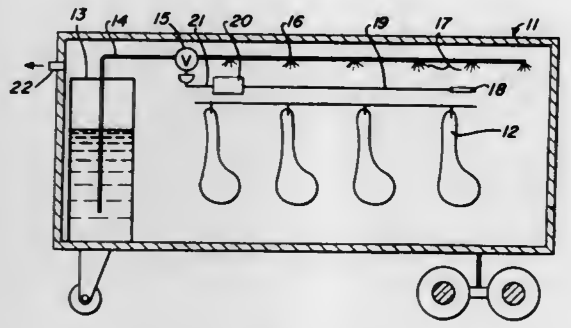


A low-density cryopumping system for pumping high velocity high temperature, directed gas flow from a wind tunnel and/or rocket nozzle by means of condensation on a structure consisting of a series of condensing surfaces positioned downstream of the nozzle, and oriented in spaced-apart relation to each other and parallel to the gas flow to thereby permit the flow to initially bypass therethrough for direct impingement against a precooling structure positioned further downstream from the condensation structure. The gas is thereby cooled and thereafter deflected upstream in diffused manner for its subsequent impingement against, and condensation and collection on, the condensing surfaces.

3,648,474
BEEF REFRIGERATION AND PRESERVATION METHOD

Sheldon W. Moline, White Plains, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Aug. 8, 1969, Ser. No. 848,540
Int. Cl. F25d *17/02*
U.S. Cl. 62—64 **6 Claims**

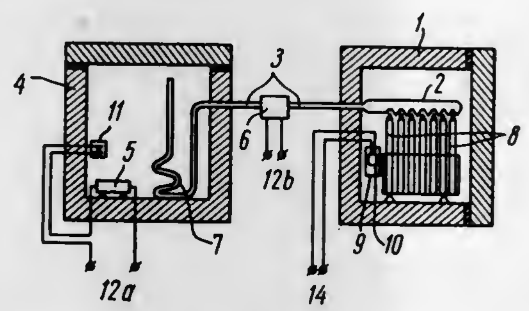


Fresh beef is both refrigerated and preserved during transit by providing a liquid mixture comprising 7–15 mol percent oxygen and 85–93 mol percent nitrogen in a storage container, and spraying same into an enclosed chamber to surround the beef with cold gas maintained at 30–40° F.

3,648,475
APPARATUS FOR FREEZING NUCLEUS-CONTAINING CELLS AND OTHER BIOLOGICAL MATERIALS

Anatoly Efimovich Kiselev, ulitsa Kostyakova, 8/6, kv. 182, Moscow; Nadar Nikolaevich Mgebrishvili, prospekt Chavchavadze 12; Marlen Mikhailovich Rokva, prospekt Vazha Pshavela, IV kvartal, korpus 24, kv. 22; Iosif Konstantinovich Makhatadze, Digomshy massiv, IV kvartal, korpus 8, kv. 34; Shalva Viktorovich Kakhiani, ulitsa Barnova, 126; Sergei Ivanovich Oganov, prospekt Vazha Pshavela, II kvartal, korpus 32, kv. 18; Georgy Valeryanovich Bakuradze, prospekt Chavachavadze 22, kv. 65, and Petz Mikhailovich Badalov, prospekt Vazha Pshavela, IV kvartal, korpus II, kv. 28, Tbilisi, all of U.S.S.R.

Filed July 29, 1969, Ser. No. 845,775
Claims priority, application U.S.S.R., Dec. 31, 1968, 1293405
Int. Cl. F25b *49/00*
U.S. Cl. 62—126 **3 Claims**



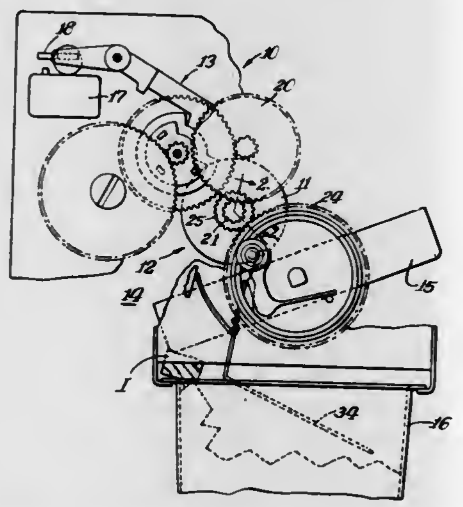
An apparatus for freezing nucleus-containing cells and other biological materials comprising a refrigerant vessel connected to a freezing chamber and furnished with a forced-feed system for refrigerant delivery to the freezing chamber. In the apparatus, provision is made for a regulator coupled to a temperature transmitter, which is disposed in the freezing chamber, and also to the refrigerant forced-feed system.

The apparatus makes it possible to completely automate the entire freezing process and further permits the programming of freezing processes to be made without accounting for the critical temperature range in which there occurs maximum deterioration of nucleus-containing cells. The apparatus provides for the optimum freezing rate while the biological materials being frozen traverse the critical temperature zone.

3,648,476
CLUTCH FOR DOMESTIC ICE MAKER WITH DEFROST TIMER DRIVE MOTOR

William J. Linstromberg, Evansville, Ind., assignor to Whirlpool Corporation

Filed June 18, 1970, Ser. No. 47,518
Int. Cl. F25d *21/00*
U.S. Cl. 62—137 **7 Claims**

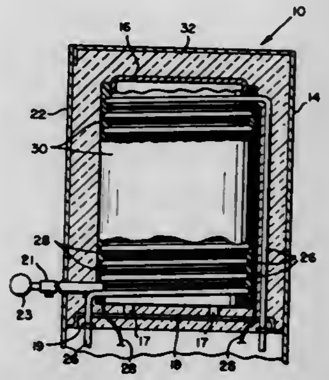


A control means for use in a refrigeration apparatus permitting the use of a single motor for driving both a defrost control mechanism and an ice maker control mechanism. The control means includes a slip clutch permitting the motor to continue to drive the defrost timer mechanism notwithstanding a stoppage of the ice maker mechanism, such as by jamming thereof.

3,648,477
TANK DEFROSTER FOR BEVERAGE DISPENSING MACHINE

Edward W. Shartle, Irondequoit, N.Y., assignor to Fasco Industries, Inc., Rochester, N.Y.

Filed June 26, 1970, Ser. No. 50,030
Int. Cl. F25d *21/06*
U.S. Cl. 62—155 **2 Claims**

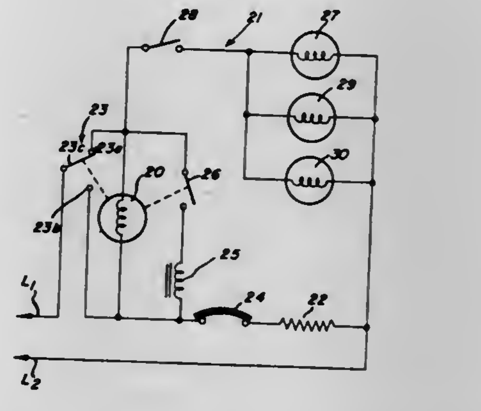


A slush-type soft drink dispenser contains one or more cylindrical tanks for holding the drinks that are to be dispensed. Each tank has the usual tap or spigot, and is surrounded by a helically-wound tubular evaporator or cooling coil which is connected in the usual manner to a refrigerator unit in the dispenser, and by a helically-wound electrical heater coil, the convolutions of which alternate with those of the cooling coil. The coils are secured by a flexible layer of mastic to the outside of each tank, and this assembly is enclosed in a layer of heat insulation in the dispenser. A switch is provided for selectively actuating the refrigeration unit and the heater coil, respectively.

3,648,478
DEFROST CIRCUIT FOR REFRIGERATOR

William J. Linstromberg, Evansville, Ind., assignor to Whirlpool Corporation

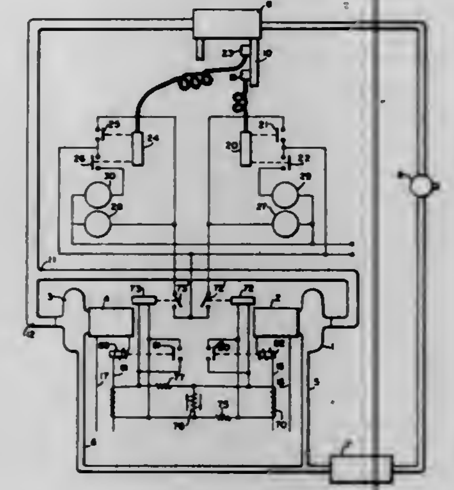
Filed June 17, 1970, Ser. No. 46,922
Int. Cl. F25d *21/06*
U.S. Cl. 62—157 **9 Claims**



A defrost control for refrigeration apparatus such as a refrigerator-freezer utilizing a single timer motor for cyclically driving an ice maker and effectively continuously timing a series of defrost operations. The timer motor is connected alternatively in parallel with and in series with the compressor motor to provide an improved timing operation.

3,648,479
REFRIGERATION SYSTEM WITH MULTIPLE CENTRIFUGAL COMPRESSORS AND LOAD BALANCING CONTROL

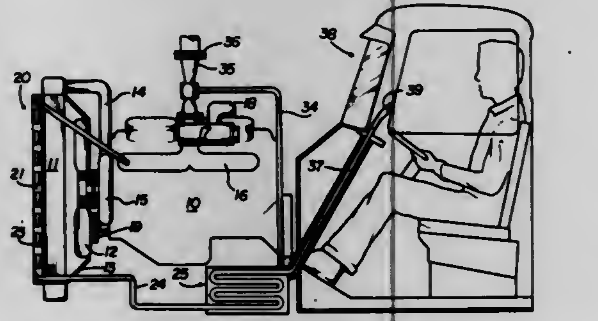
Douglas K. Richardson, Staunton, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 28, 1970, Ser. No. 75,914
Int. Cl. F25b *41/04*
U.S. Cl. 62—217 **8 Claims**



A refrigeration system with two or more electric motor driven centrifugal gas compressors to a single common load circuit is provided with electric circuit interconnections for the respective electric controls of the movable capacity controlling means of the respective compressors such that increased current drawn by the electric motor of a more heavily loaded one of the compressors is effective to adjust the respective capacity control means and reduce the capacity of that compressor to balance the current drawn by the other motors and compressors and thus evenly divide the single load between the two or more compressors.

3,648,480
AIR CONDITIONING IN CONJUNCTION WITH INTERNAL COMBUSTION ENGINE

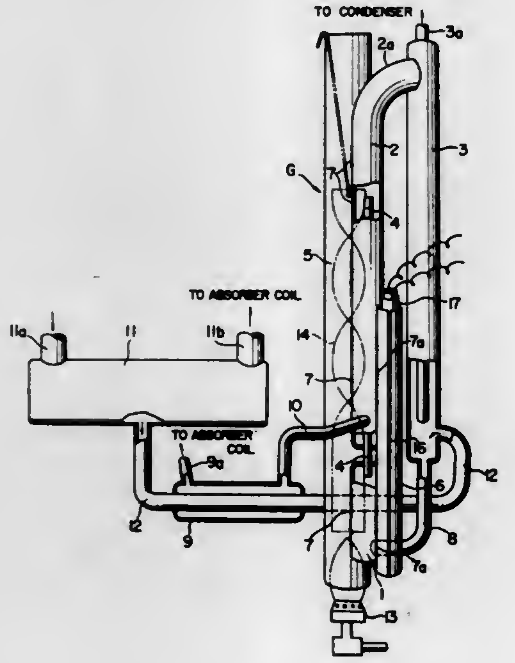
Cleal T. Watts, 6733 Country Club Circle, Dallas, Tex.
Filed Jan. 30, 1970, Ser. No. 7,050
Int. Cl. F25b *19/00*
U.S. Cl. 62—268 **5 Claims**



An air conditioning system wherein air under pressure is derived from an air manifold on an internal combustion engine. The source of air pressure may be a turbocharger, a supercharger or other air pressure means driven by the engine. The air is forced into a primary coil or heat exchanger, preferably in front of the engine radiator, and is cooled to ambient or nearly ambient temperature. The air then passes through a coil in a reduced pressure water vapor cooler and thence outwardly through an insulated line and an orifice in the end thereof. The expansion of air emitted from the orifice is then directed to the space to be cooled. A feature of the invention has to do with the reduced pressure water vapor cooler which is connected with vacuum means created by the engine, for example, a venturi in the exhaust.

3,648,481
GENERATOR OF ABSORPTION REFRIGERATION APPARATUS

Tsuneo Ando, Gifu, and Hironori Nakashima, Aza-Koyamanishi, both of Japan, assignors to Howa Sangyo Kabushiki Kaisha, Sakurada-cho, Atsuta-ku, Nagoya-shi, Aichi-ken, Japan
Filed June 9, 1970, Ser. No. 44,749
Claims priority, application Japan, June 13, 1969, 44/46128
Int. Cl. F25b *27/00, 33/00*
U.S. Cl. 62—236 **5 Claims**



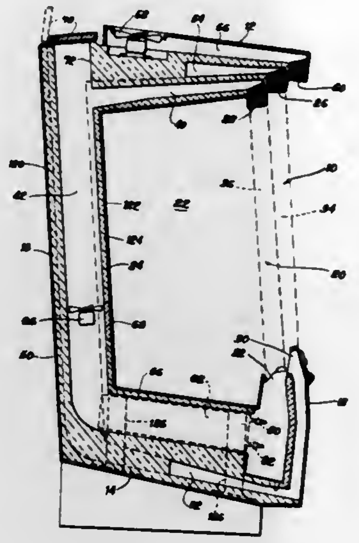
A generator of an absorption refrigeration apparatus having a pumping chamber to which a rich refrigerant solution is supplied from an absorber, and above which a boiler tube is vertically disposed in vertical alignment with the pumping chamber, with the boiler tube being connected at its top to a condenser via a vapor-liquid separator. A vapor lift tube extends from the pumping chamber upward into the boiler tube to open at its top within the tube. The boiler tube and pumping chamber are provided on their sides with dual heating a device for heating refrigerant solution in the tube and chamber. The arrangement of the parts is such that a compact general configuration of the generator is afforded.

3,648,482
METHOD AND APPARATUS FOR PRODUCING REFRIGERATING CONSTRUCTIONS

Sterling Beckwith, Menlo Park, Calif., and Robert E. Vogel, Deerfield, Ill., assignors to Kysor Industrial Corporation, Cadillac, Mich.
Original application Mar. 16, 1967, Ser. No. 623,685.
Divided and this application Sept. 5, 1969, Ser. No. 870,713
Int. Cl. A47f *3/04*
U.S. Cl. 62—256 **15 Claims**

A refrigerated enclosure including driven airstreams circulating across an access opening to the enclosure. Passages for

carrying the streams are located in the top, back and bottom walls of the enclosure. The passages are formed by solidifying foam around pattern members with metal foil being located on the interior surfaces of the passages.

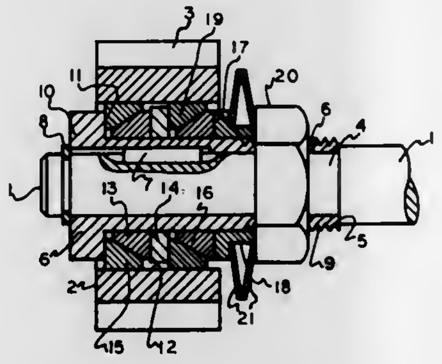


ERRATUM

For Class 62—354 see:
Patent No. 3,648,462

3,648,483
OVERLOAD FRICTION COUPLING

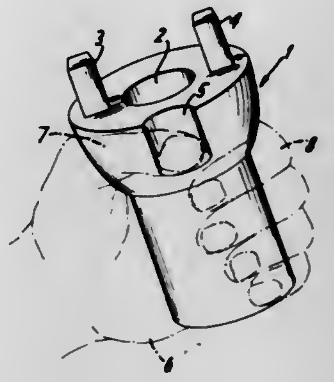
Roger Garcia, Jr., Pittsfield, Mass., assignor to General Electric Company
Filed June 1, 1970, Ser. No. 42,285
Int. Cl. F16d *7/02*
U.S. Cl. 64—30 **11 Claims**



The overload friction coupling employs a tubular sleeve having an axial abutment and clamping nut securing therebetween two opposed Bellville springs, a spring carrier, two pairs of expanding and contracting wedge rings, and a spacer washer between the rings. With the axial clamping pressure of the Bellville springs, the rings will contract into engagement with the sleeve and simultaneously expand into engagement with the inner cylindrical surface of a spur gear. With the sleeve keyed to a motor shaft, the spur gear is securely supported at its opposite axial ends, due to the spacer ring, along cylindrical bearing and torque transmitting surfaces. The torque at which the coupling will slip, that is provide relative rotational movement between the gear and shaft, is predetermined by the axial pretensioning of the Bellville springs, which in turn is determined by the degree to which the adjusting nut is threaded on to the sleeve.

3,648,484
TUBULAR KNITTING DEVICE

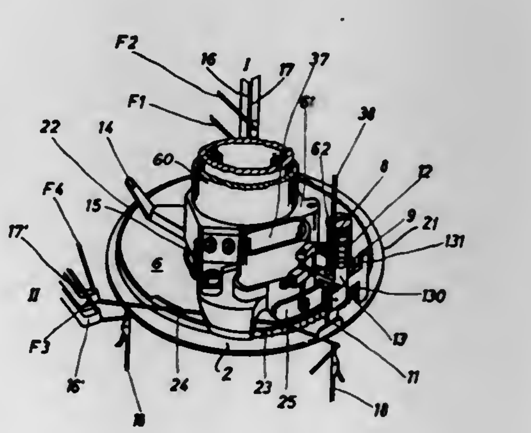
Eileen Gordon, 205 Third Avenue, New York, N.Y.
Filed July 29, 1969, Ser. No. 845,744
Int. Cl. D04b *3/00*
U.S. Cl. 66—4 **11 Claims**



The present invention provides a new tubular knitting device requiring only two yarn retention members. The device is further adapted to knit the yarn without constant reorientation of the device. The device preferably includes a yarn alignment depression longitudinally running along the upper portion of the outer peripheral surface of the device with the device so configured as to allow its acceptance within the palm as to make the depression accessible to the thumb of a user.

3,648,485
THREAD-CUTTING MECHANISM FOR CIRCULAR-KNITTING MACHINES

Peter Boy; Heinz Kohler, both of Ingolstadt, and Heinz Lucke, Rheine, all of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany
Continuation of application Ser. No. 704,958, Feb. 12, 1968, now abandoned. This application Aug. 24, 1970, Ser. No. 66,567
Claims priority, application Germany, Feb. 11, 1967, Sch #40219
Int. Cl. D04b *15/61*
U.S. Cl. 66—134 **12 Claims**

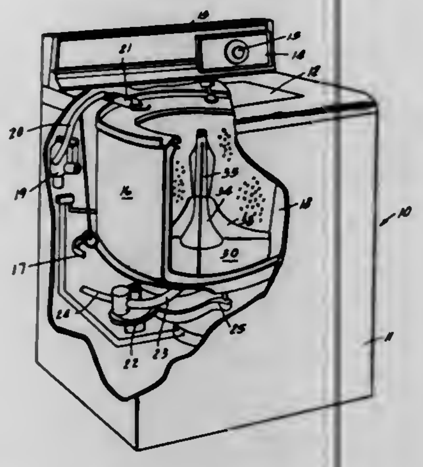


A ring rotating in synchronism with the needle cylinder has a cutting edge cooperating with a counterknife vibrated radially of the ring by cooperating spring and cam means. A thread is held for cutting between a rib on the ring and a shoe or disc engageable with such rib.

3,648,486
LAUNDRY BASKET WITH REMOVABLE AGITATION MEANS

Alexander B. Rosinski, Jr., and Edward E. Wiessner, both of St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 29, 1970, Ser. No. 76,401
Int. Cl. D06f *37/14*
U.S. Cl. 68—4 **12 Claims**

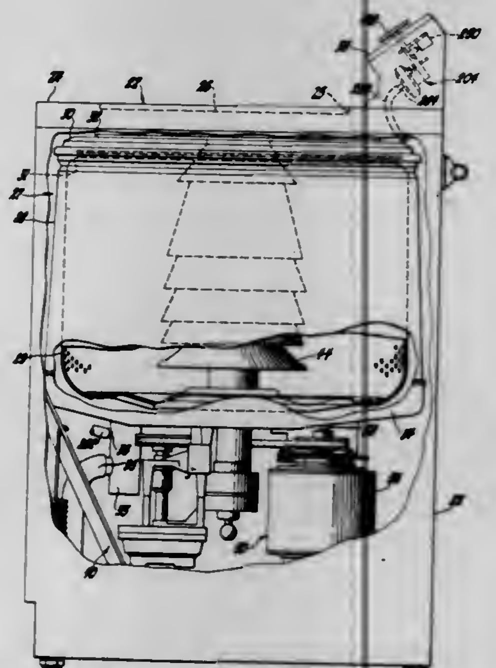


An upstanding basket for use in a vertical axis automatic washing apparatus characterized by having an axially disposed hub portion on a bottom wall of the basket with agitator vanes extending outwardly from the hub portion along the bottom wall. The hub portion has an axially extending stub for telescopically receiving an end of an agitator extension which is removably mounted thereon. The agitator configuration of the basket can be changed or varied to be either the configuration of the hub portion alone or a combination of the configuration of the hub portion and the configuration of the agitator extension which extension can be provided in various sizes and with various agitator vane configurations.

3,648,487
WASHER LOAD SENSOR CONTROL

Robert E. Hoffman, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1970, Ser. No. 89,350
Int. Cl. D06f *13/04, 23/04, 33/02*
U.S. Cl. 68—12 R **3 Claims**

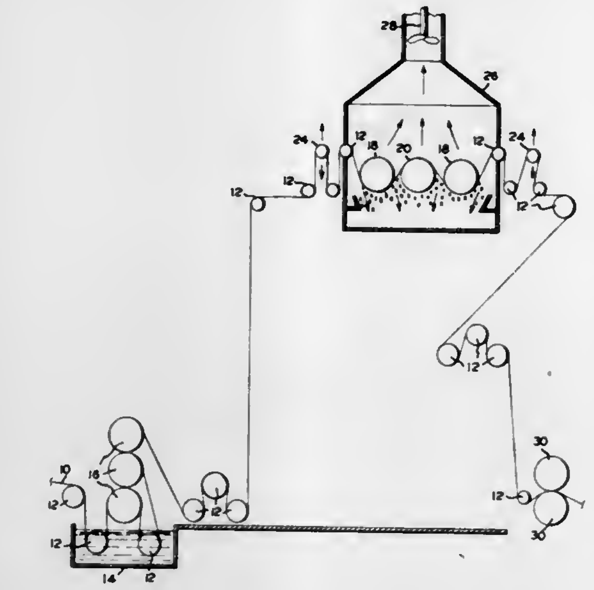


A domestic clothes washer having a pair of nested tubs one of which is imperforate to retain the washing fluid, the other of which is perforated and rotatable to centrifuge the washing fluid from the clothes being washed thereon. A agitator in the perforate tub is adapted to reciprocate to provide pulsating toroidal circulation of washing fluid. Conventional sequential operating timer means are provided to selectively admit water to the tub to spin the tub and to vertically reciprocate the agitator at normal and slow speeds. A water level pressure switch is provided incorporating an auxiliary switch actuated by a separate cam located on the pressure switch cam shaft whereby the auxiliary switch will automatically override the agitate speed control switch to reciprocate the agitator at a slow speed when the water level within the outer tub is below a predetermined level.

3,648,488
APPARATUS FOR PRODUCING HEAT INDUCED EFFECTS ON FLEXIBLE SUBSTRATES

Sumner H. Williams, Short Hills, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Oct. 8, 1970, Ser. No. 79,071
Int. Cl. D06c *23/00;* **D06p** *7/00*
U.S. Cl. 68—13 R **12 Claims**



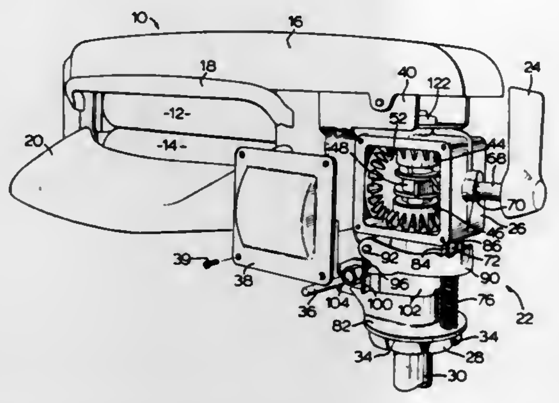
An apparatus for producing a chemical reaction or physical change on a flexible substrate, e.g., textile fabric, which comprises: means to impregnate the flexible substrate with a liquid substance capable of migrating through the application of heat; a heated die or roller means having a predetermined pattern so as to locally apply heat to said flexible substrate; transport means so as to transport the flexible substrate over the heated die or roller and in circumferential contact therewith so as to migrate the liquid substance to the surface of the flexible substrate in accordance with the predetermined pattern of the die or roller; and vacuum means associated with said heated die or roller so as to pull the heat radiated from the die or roller through and around the flexible substrate. Such use of vacuum means in association with the heated die or roller having a predetermined pattern eliminates water spotting which could occur on the flexible substrate.

Such an apparatus can be utilized in conjunction with a system which includes a multiplicity of heated dies and rollers so arranged that the flexible substrate is made to travel an undulating or sinusoidal path around the same whereby the heated dies or rollers apply heat to opposite faces of the flexible substrate either locally or overall.

3,648,489
INSTINCTIVE WRINGER

Ronald W. Taylor, Guelph, Ontario, Canada, assignor to GSW Limited-GSW Limitee, Toronto, Ontario, Canada

Filed June 29, 1970, Ser. No. 50,413
Int. Cl. D06f *45/06*
U.S. Cl. 68—253 A **5 Claims**

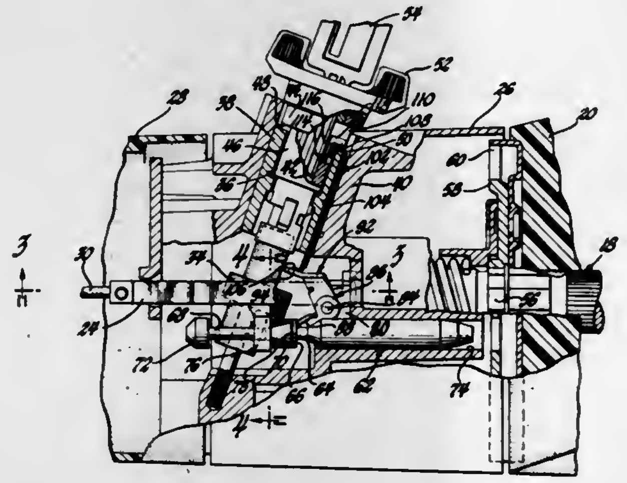


A motion translating and force transmitting device especially as applied to an instinctive wringer includes a rocker arm having wing members thereon which translate pivoting motion of the rocker arm about an axis to either end of a bell crank which is pivoted about an axis parallel to the plane of motion of the rocker arm. Cam means are indexed against a spring loaded index pin and are de-indexed by the reaction of the cam face with a cam shifting pin outwardly from the cam pivot of the operative index. A component of the force of the planar pivoting motion of the rocker arm is transmitted to either end of the bell crank so that, while the bell crank pivots, the moment-arm of the force being transmitted about the bell crank pivot remains constant.

3,648,490
COINCIDENTAL LOCK

Dan R. Kimberlin, Saginaw, and Floyd A. Schluckebier, Frankenmuth, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 18, 1970, Ser. No. 99,619
Int. Cl. B60r *25/02*
U.S. Cl. 70—186 **3 Claims**

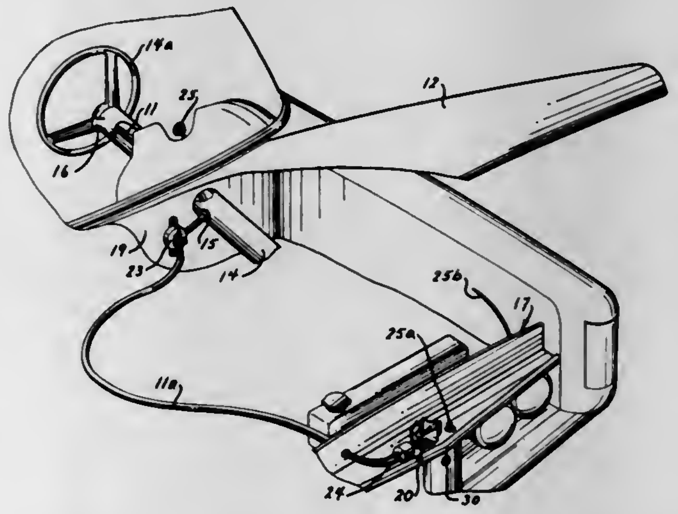


A coincidental lock adapted for vehicle steering column applications includes a lock bolt movable between locking and unlocking positions, a latch operative in a latched position to prevent movement of the latch bolt to the locking position, a lock cylinder on the steering column supporting a pawl for engagement on a key when the latter is inserted in the lock cylinder, and means operably connecting the pawl and the latch. The key, upon insertion in the lock cylinder, bodily moves the pawl into a cavity in the lock cylinder and maintains the pawl therein and the pawl, upon bodily movement thereof, urges the latch toward the latched position to prevent locking movement of the lock bolt once the latter achieves the unlocking position and as long as the key remains in the lock cylinder.

3,648,491
VEHICLE ANTITHEFT ARRANGEMENT

Thomas A. Kennard, P. O. Box 279 1231 South West Street, Olney, Ill.

Filed Dec. 29, 1969, Ser. No. 888,458
Int. Cl. E05b *65/19, 47/04*
U.S. Cl. 70—241 **2 Claims**

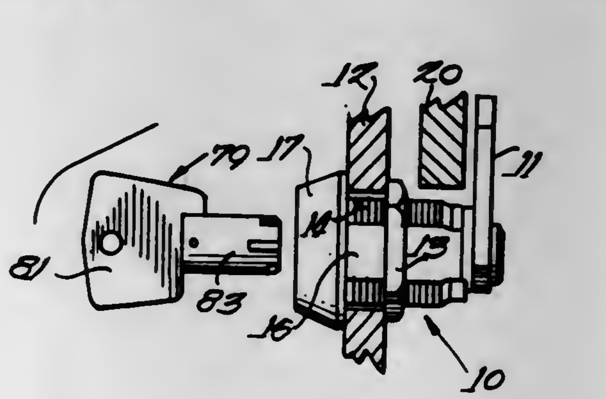


An arrangement for preventing the theft of a vehicle characterized by an electrically controlled hood latch operated by the ignition key for the vehicle, and where alternative manual unlatching means is provided.

3,648,492
PIN TUMBLER LOCK AND KEY STRUCTURE

Russell W. Walters, and Richard M. Brattland, both of Rockford, Ill., assignors to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed Mar. 27, 1970, Ser. No. 23,389
Int. Cl. E05b *27/00*
U.S. Cl. 70—363 **19 Claims**

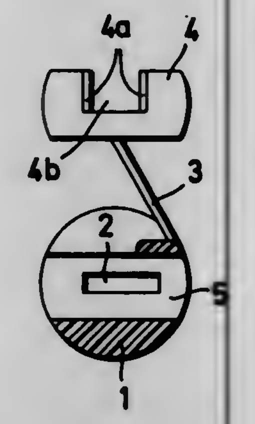


A pin tumbler lock having a cylindrical lock housing receiving a rotatable plug shaft with a front barrel and a rear barrel secured thereon, a center barrel secured in the lock housing and an index ring stationarily mounted in the lock housing and encompassing the front barrel. The front, center and rear barrels have a plurality of axially extending passages receiving tumblers, change tumblers and locking pins. The index ring includes a pair of oppositely disposed radial openings normally aligned with radial openings in the front barrel and receiving a pair of inwardly biased retaining pins having rounded inner ends cooperating with depressions in the surface of the key. Rearwardly of the retaining pins is a second pair of radial openings in the index ring normally aligned with radial openings in the front barrel to receive inwardly biased drivers and antitorque pins also cooperating with the exterior surface of the key. The plug shaft within the front barrel is provided with a plurality of circumferentially equally spaced longitudinal ribs which cooperate with longitudinal grooves on the interior surface of the key so that rotation of the key provides simultaneous rotation of the plug shaft as well as the front and rear barrels and a lock bolt on the rear end of the shaft if the retaining pins, antitorque tumblers and axial pin tumblers are properly oriented by the key.

3,648,493

LOCK CONSTRUCTION

Heinz Geisler, Gummersbach, Germany, assignor to Merit-Werk Merten & Co. KG, Gummersbach (Rhld.), Germany
Filed Aug. 26, 1970, Ser. No. 67,120
Claims priority, application Germany, Aug. 28, 1969, P 19 43 754.8
Int. Cl. E05b *9/04, 15/14*
U.S. Cl. 70—375 **12 Claims**

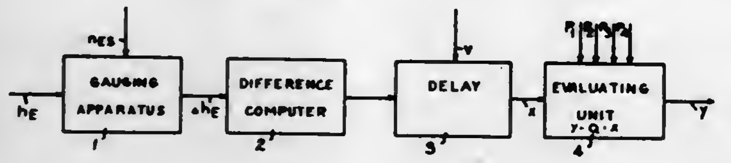


A lock has a housing and a lock cylinder turnably accommodated in the housing. The lock cylinder may be of one piece with one or more spring portions each of which may in turn be of one piece with an associated tumbler portion with the lock cylinder and all portions consisting of synthetic plastic material. The lock cylinder may also be of one piece with one or more spring portions, and cooperating coupling means may be provided on the spring portions for coupling to them respectively associated tumbler portions. The lock cylinder itself may also consist of a plurality of disk-shaped sections each of which may be of one piece with one or more spring portions and a corresponding number of tumblers, or may be of one piece only with the one or more spring portions with cooperating coupling means being provided for connecting the associated tumbler portions to the respective spring portions. Alternately, irrespective of whether the lock cylinder is of one piece or several sections, the respectively associated spring portions and tumbler portions may be of one piece with one another and cooperating coupling means may be provided on the spring portions and on the lock cylinder or on respective sections of the latter, for connecting purposes.

3,648,494

SYSTEM FOR APPLYING PILOT CONTROL TO THE ROLL GAP ADJUSTMENT OF A GAUGE-CONTROLLED COLD ROLLING STAND

Helmut Lautenschlager, Grabenstrasse 3, Hemsbach, Germany
Filed Aug. 3, 1970, Ser. No. 60,537
Claims priority, application Germany, Aug. 6, 1969, P 19 40 006.7
Int. Cl. B21b *37/00, 37/02, 37/12*
U.S. Cl. 72—8 **3 Claims**

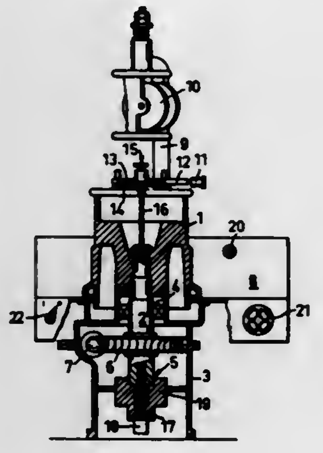


A system of applying pilot control to the roll gap adjustment of a gauge-controlled cold rolling stand. Included in the system are a gauge measuring apparatus for determining the incoming strip thickness, a differential computer for detecting changes in the gauge of the rolled strip, and delay means for the control signal to allow for running time of a point on the strip between the gauge-measuring location and the roll gap. Also included in the control is an evaluation system which takes into account deformation resistance of the rolled stock and of the roll stand constants in determination of the manipulated variable required for adjusting the roll gap.

3,648,495

INDIVIDUALLY DRIVEN DRAWING BLOCKS INTENDED FOR STORAGE-TYPE WIRE DRAWING MACHINES

Karl Lars Gunner Rabe, Arboga, and Karl Sune Ingemar Hanneus, Smedjebacken, both of Sweden, assignors to Aktiebolaget Arboga Mekaniska Verkstad, Jadersvagen, Arboga, Sweden
Filed Aug. 22, 1969, Ser. No. 852,208
Claims priority, application Sweden, Aug. 30, 1968, 11685/1968
Int. Cl. B21b *37/00;* **B21c** *1/02*
U.S. Cl. 72—10 **5 Claims**



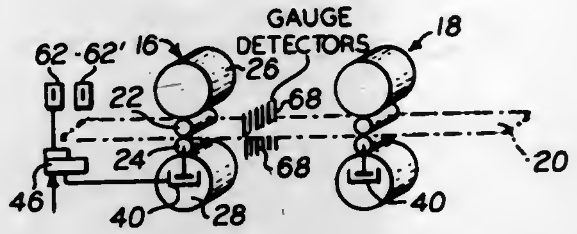
There is provided an arrangement for automatically maintaining the amount of wire stored on individually driven drawing blocks in wire drawing machines at a constant level within preselected operating conditions, the arrangement comprising a friction arm and friction elements adapted to urge at a preselected pressure a wire guiding roller or like member against the wire as it is unwound from the block, and wherein means are provided for connecting the friction arm to a device which registers deviations in the angular position of the arm and transmits a signal in response to said deviations to the motor driving the block, thereby to change the speed at which the motor and/or the block rotates.

3,648,496

APPARATUS FOR CONTROLLING ROLLING MILL

Henry Alfred Petry, Sparta; Francis Rerecich, Dover, and Gerhard Spangenberg, Boonton, all of N.J., assignors to Marotta Valve Corporation, Boonton, N.J.
Filed June 16, 1969, Ser. No. 833,286
Int. Cl. B21b *37/02, 37/06, 31/32*
U.S. Cl. 72—16 **7 Claims**

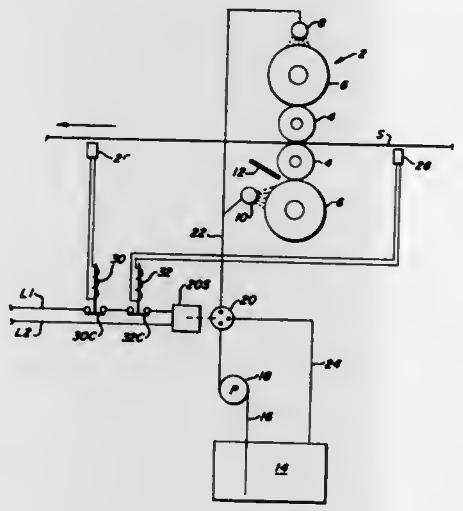
A system for controlling rolling mills, especially roll contour, has hydraulic motors supplied with working fluid through a pressure regulator. The downstream pressure of the working fluid from the pressure regulator is adjusted by selectively supplying and venting fluid from a loading chamber of the pressure regulator. The loading and unloading controls are of a nature that permits remote location, and they are operated by an attendant in accordance with signals from the mill indicating errors in the dimensions of metal being rolled by the mill. Automatic operation can be substituted for the manual operation and programmed control of the pressure can also be used. Loading and unloading valves have actuators providing dither for the valve to prevent the difference in flow rates when flow is increasing as compared to conditions when flow is decreasing.



3,648,497

APPARATUS FOR AUTOMATICALLY SUPPLYING OIL TO A HOT STRIP MILL

Alvah C. Long, Jr., Peters Township, Allegheny County, and Edward J. Stolic, Bethel Park Borough, both of Pa., assignors to United States Steel Corporation
Filed Feb. 18, 1970, Ser. No. 12,369
Int. Cl. B21b *37/00, 45/02, 27/10*
U.S. Cl. 72—21 **10 Claims**



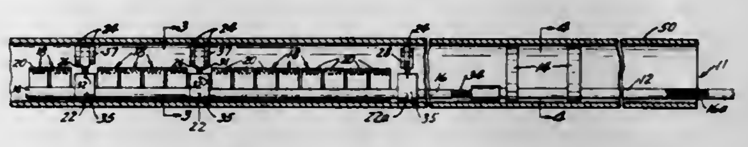
Apparatus for automatically supplying oil to a four-high hot strip mill includes oil sprays for the back-up rolls and a continuously operating pump for supplying oil through a three-way valve either to the sprays or to a recirculating system. A strip detector on the exit side of the mill positions the three-way valve to supply oil to the sprays when it first detects the leading end of the strip and a strip detector on the entry side of the mill positions the three-way valve to recirculate the oil shortly before the trailing end of the strip reaches the mill. The control system may be used with other types of mills and workpieces.

3,648,498

PEENING DEVICE FOR TUBE FINISHING

Richard F. Voss, St. Paul, and Phillip M. Winter, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 10, 1970, Ser. No. 62,320
Int. Cl. C21d *7/06*
U.S. Cl. 72—53 **4 Claims**

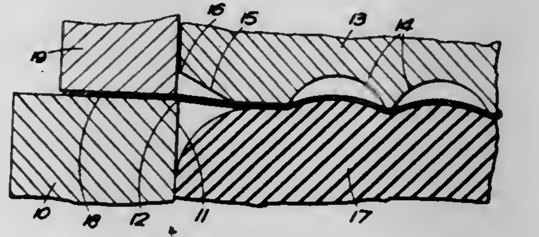
A device having particular utility for peening and finishing the inside of a tube which comprises a rotatable shaft having at least one peening flap affixed to and extending radially from a portion of the shaft. Each such flap has peening particles mounted on the radially outer portion thereof. At least one support means is provided so as to hold the portion of the shaft having peening flaps affixed thereto in close proximity to and at a fixed distance from the wall of the tube to be peened. The device is operated, and the consequent peening action obtained by rotating or driving the shaft with a motor. As the shaft rotates, a whipping action is imparted to the flaps whereby the peening particles impinge upon the inner wall of the tube and effect the peening thereof.



3,648,499

PRODUCTION OF DECORATIVE TILES

Peter Norman Frederick Langmead, Ashford Common, England, assignor to Zealand Engineering Company Limited, Ashford Common, England
Filed Dec. 11, 1969, Ser. No. 884,385
Claims priority, application Great Britain, Mar. 28, 1969, 16,517/69
Int. Cl. B21d *22/10*
U.S. Cl. 72—55 **3 Claims**



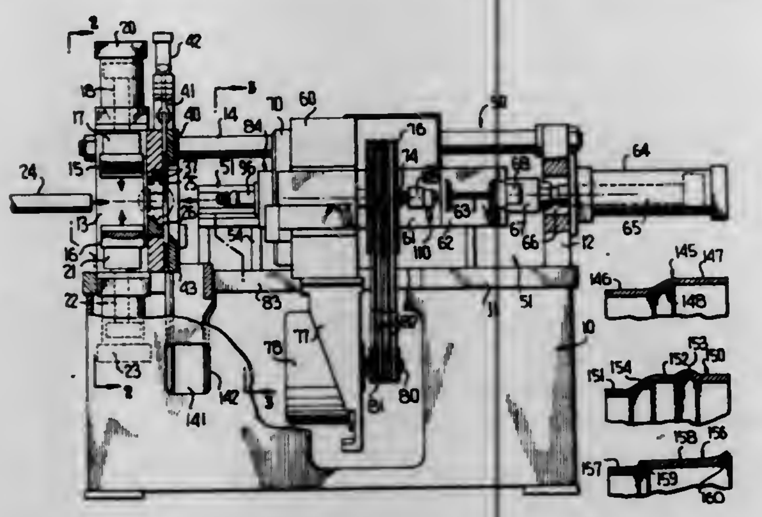
The decorative tile formed from thin stainless steel and having a plurality of depressions on one face thereof is formed by a method comprising the steps of partially forming the depressions while the tile still forms part of a larger sheet of material, severing the partially formed tile from the sheet of material by means of a punch cooperating with a cutting die, and then completing the formation of the depressions while the tile is still in the cutting die, the periphery of the tile thereby being slightly withdrawn from the walls of the die so that subsequent removal of the tile from the die is facilitated.

3,648,500

METHOD AND APPARATUS FOR FORMING CYLINDRICAL SHAPES

John L. Vaill, Cheshire, Conn., assignor to The Torrington Company, Torrington, Conn.
Filed Aug. 22, 1969, Ser. No. 852,197
Int. Cl. B21b *17/02, 43/28*
U.S. Cl. 72—71 **4 Claims**

This disclosure relates to the forming of cylindrical shapes on end portions of tubing and severing the same from the tubing. A length of tubing is supported in projecting relation and surrounded by a die, after which a mandrel is first moved axially into the tubing to expand the same and thereafter, while the mandrel is rotating, the mandrel is shifted transversely or radially to bead the tubing. The mandrel, when shifted transversely, may also be utilized to simultaneously size the expanded portion of the tubing and to sever the formed cylindrical shape from the length of tubing. Thereafter, the mandrel is first moved back to its original axis and withdrawn from the formed shape, after which the die is opened so as to automatically release the formed shape.



3,648,501
SWAGING MACHINE FOR SWAGING TUBULAR WORKPIECES

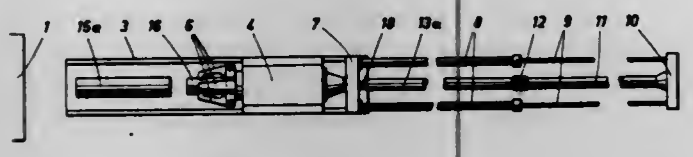
Bruno Kralowetz, Weinleiten 142, St. Ulrich, Austria

Filed June 24, 1970, Ser. No. 48,977

Claims priority, application Austria, July 2, 1969, A 6312/69

Int. Cl. B21b *25/02*

U.S. Cl. 72—76 **7 Claims**



A swaging box has receiving and discharge ends and contains swaging tool means. First and second gripping head beds are respectively disposed at said receiving and discharge ends of said swaging box outside thereof. First and second gripping heads are respectively mounted on said first and second gripping head beds. Each of said gripping heads is provided with a horizontal, rotatable, tubular spindle having an inner end which is nearer to the other gripping head, and with gripping jaws hinged to said spindle at said inner end thereof. Said spindles are axially aligned and each of said gripping heads is movable on the respective bed in the axial direction of its spindle. The machine comprises also an attachment for use in processing tubular workpieces. This attachment comprises a bridge secured to said first bed adjacent to that end of said first gripping head which is remote from said second gripping head; two cylinder-piston motors, which are flanged to said bridge and extend parallel to said spindles and away from said first gripping head, each of said motors having a displaceable member; a yoke which connects said displaceable members and comprises a center rod, which is coaxial with said spindle of said first gripping head and has a free end adjacent to said bridge; a swaging mandrel having an actuating rod which extends through said spindle of said first gripping head; and a connector carried by said free end of said center rod and releasably connected to said free end of said center rod and releasably connected to said actuating rod, whereby said motors are operable to extend and retract said mandrel relative to said spindle of said first gripping head.

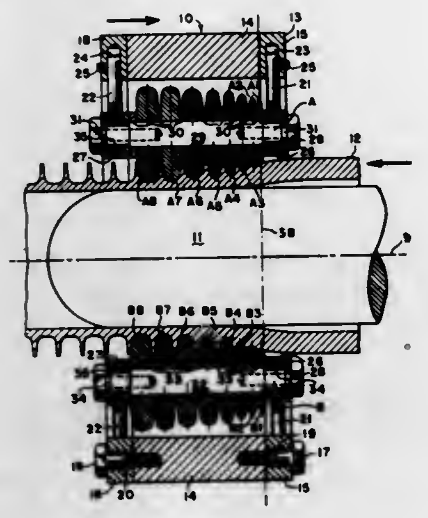
3,648,502
METHOD AND APPARATUS FOR FORMING A HEAT EXCHANGER TUBE WITH CLOSELY SPACED INTEGRAL FINS

William A. Klug, La Crosse; Andrew A. Habiger, La Crescent, and Leonard J. Bahl, La Crosse, all of Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Mar. 4, 1970, Ser. No. 16,274

Int. Cl. B21h *8/02*

U.S. Cl. 72—78 **14 Claims**



Fins are formed on a copper heat exchanger tube by a plurality of rolling dies which roll grooves into the surface of the tube. The tube walls are supported by an internal mandrel. The pitch between the roll dies generally increases but at a decreasing rate from the lead roll die to the trailing roll die to accommodate axial elongation of the tube resulting from the radially pressures exerted on the tube by the roll dies and mandrel.

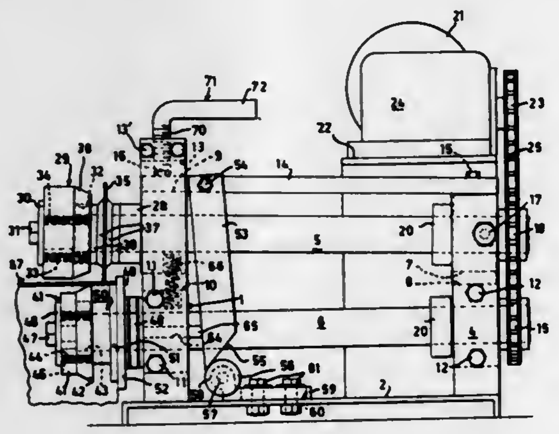
3,648,503
BEADING MACHINE AND METHOD

Laffie Harper, San Bruno, Calif., assignor to Veeder Industries, Inc., Hartford, Conn.

Filed Mar. 27, 1970, Ser. No. 23,156

Int. Cl. B21d *17/04*

U.S. Cl. 72—84 **6 Claims**



In a machine for forming an annular radially inwardly projecting bead in the cylindrical end portion of a tubular sheet metal fitting to provide the sidewalls and bottom of a radially outwardly opening channel, which machine includes male and female channel-forming power-driven rollers rotatable in opposite directions with a side of said cylindrical end portion between them, to rotate said portion and to form said bead. The male roller is floatingly supported for axial movement and is movable under force transversely thereof and radially of said cylinder toward the female roller and a rotating thrust surface axially engages the circular end edge of the tubular fitting adjacent to the male roller for progressively drawing the metal of said marginal portion to form a deeper channel than heretofore, during rotation of said rollers for rotating said tubular portion.

3,648,504
METHOD FOR BENDING AND STRAIGHTENING A CAST BAR AND PLANT FOR CARRYING OUT SUCH METHOD

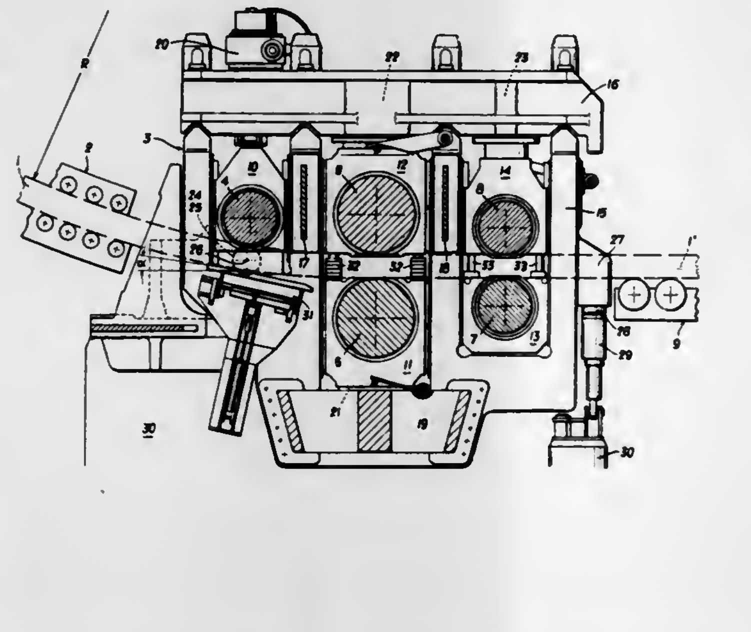
Rudolf Schoffmann, Linz, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Ling, Austria

Filed July 23, 1970, Ser. No. 57,455

Claims priority, application Austria, July 25, 1969, A 7190/69

Int. Cl. B21d *1/02*

U.S. Cl. 72—164 **11 Claims**



The invention relates to a method for bending and straightening a cast bar issuing from a stationary, curved bar guiding means of a continuous casting plant, using a bending and straightening apparatus comprising at least two bending and straightening rolls and a reaction roll, and, if desired, pulling rolls, in which the improvement resides in that the bending roll following the reaction roll is readjusted in dependence on a deviation from a desired pressure valve which is given when the cast bar is free from bending moments, the pressure being indicated by at least one pressure gauge arranged behind the bending apparatus, in order to offset the deviation from the desired value, whereupon, in cast this measure is not effective, the bending rolls are slewn around a horizontal rotation axis in a direction contrary to that in which said bending roll is readjusted, which measure guarantees that absolutely no bending moments are exerted on the cast bar leaving the bar guiding means in the area before the reaction roll nor on the bent and straightened cast bar leaving the last bending roll.

3,648,505
MULTIPLE CENTER STRAIGHTENER

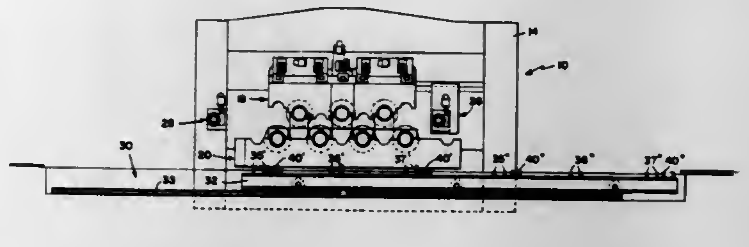
Werner W. Elbe, and Richard Kotler, both of Allegheny County, Pa., assignors to Blaw-Knox Foundry & Mill Machinery, Inc., Pittsburgh, Pa.

Filed Aug. 5, 1970, Ser. No. 61,362

Int. Cl. B21d *3/02*

U.S. Cl. 72—165 **23 Claims**

An apparatus for straightening structural sections such as beams including means for supporting the straightening rolls at a plurality of possible centers to provide a minimum intermediate and maximum fixed center settings. The machine is also adapted to permit the removal of the roll supporting structure to permit a rapid roll changing operation.



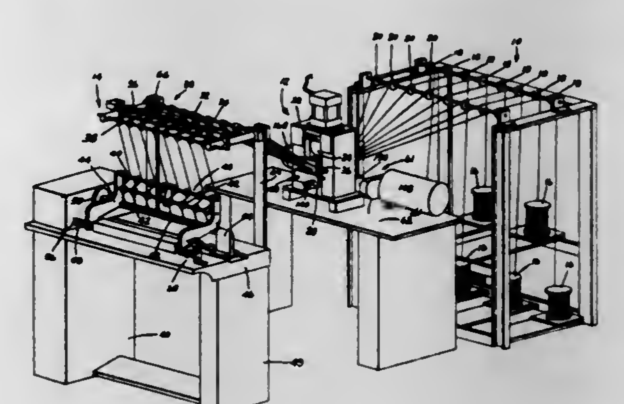
3,648,506
APPARATUS AND METHOD FOR WINDING ELECTRICAL COILS

Saverio Caltagirone, Danville, Ill., assignor to General Electric Company

Filed Feb. 16, 1970, Ser. No. 11,456

Int. Cl. B21f *3/04*

U.S. Cl. 72—206 **11 Claims**



A multiple coil winding apparatus for winding a plurality of layer wound coils of flattened wire on a single insulating winding form common to all of the coils, with insulating sheets common to all of the coils inserted between conductor layers of the coils. A plurality of strands of round conductor are flattened in a wire flattening mill as they are supplied from a wire payoff rack to a multiple coil winding machine.

The degree of flattening, or the flattening ratio, of the conductor flattened in the wire flattening mill is readily adjustable, and the flattening pressure applied to the rollers of the wire flattening mill may be readily removed to supply round conductor to the multiple coil winding machine. A roller or rollers of the wire flattening mill may be driven is synchronism with the multiple coil winding machine.

3,648,507
ROLLING MILL SLAB GUIDE

John Frederick Barry Wood, Burlington, Vt., and Michael Frank Field, Dollard des Ormeaux, Quebec, Canada, assignors to Dominion Engineering Works Limited, Montreal, Canada

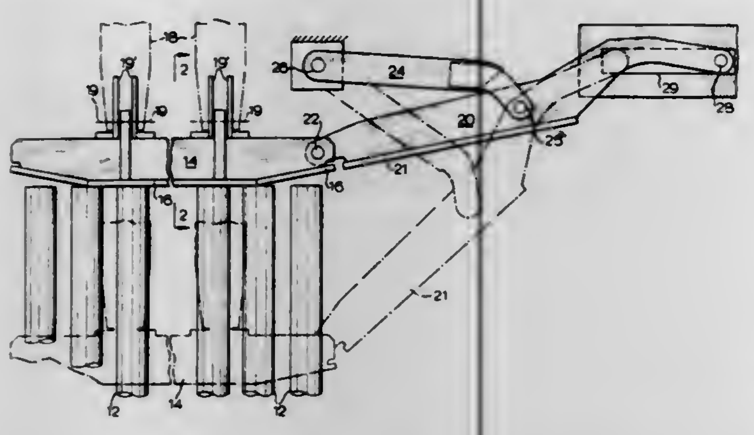
Filed Dec. 29, 1969, Ser. No. 888,703

Claims priority, application Canada, Jan. 8, 1969, 039,527

Int. Cl. B21b *39/20;* **B21d** *43/16*

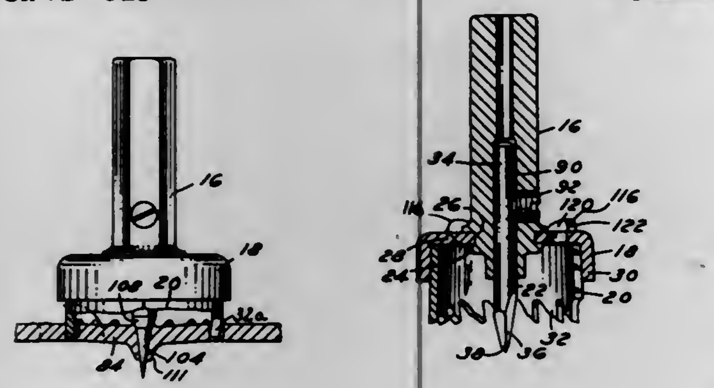
U.S. Cl. 72—250 **9 Claims**

The disclosure of this invention relates to an adjustable side guide for a rolling mill adapted to guide a slab or plate as it passes over a roller table. The guide includes a guiding head for engaging the edge of the slab or plate. To the head is connected a ram to position the guide transversely of the table and a link to longitudinally restrain the guide.



3,648,508
HOLE SAW

Everett D. Hougen, G-5072 Corunna Road, Flushing, Mich.
Original application May 6, 1968, Ser. No. 726,855, now Patent No. 3,559,513. Divided and this application July 17, 1970, Ser. No. 55,690
Int. Cl. B23b *51/08;* **B21d** *37/00*
U.S. Cl. 72—325 **4 Claims**

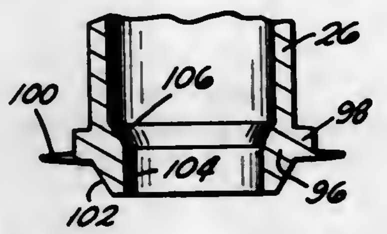


A hole saw in the form of an arbor having a cup member secured to one end thereof and a circular saw blade press fitted into the cup so that the blade flares outwardly in the direction of its cutting edge. The hole saw also includes a center pilot or drill member which may be a conventional drill, a piercing tool or a tapered pilot member. The teeth on the blade are ground so that the cutting edges are high around the outer periphery and low around the inner periphery of the blade. Selected teeth around less than half of the circumference of the blade are set radially inwardly a slight extent.

3,648,509
FORMED GAS METER CONDUIT

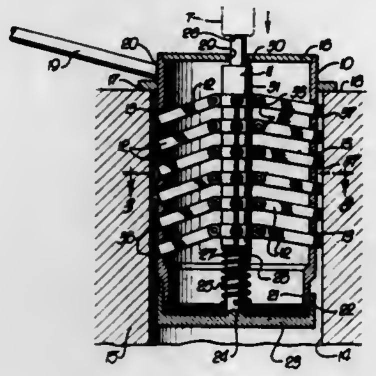
William B. McDowell, Fenton, Mich., assignor to Michigan Tube Benders, Inc., Ypsilanti, Mich.
Filed Sept. 19, 1969, Ser. No. 859,509
Int. Cl. B21d *9/00*
U.S. Cl. 72—369 **3 Claims**

The disclosure relates to a formed conduit for supporting natural gas meters having fittings defined thereon, and the method of making the same. The conduit, while in a linear tubular configuration, is formed at one end by a forging or swaging operation wherein an outwardly extending radial flange is defined thereon of the material of the conduit, and other desired configurations may be formed on the forged end, such as gasket receiving and sealing surfaces and the like. After forging the conduit is bent to a final configuration wherein the shaped end is usually bent back toward the central region of the conduit wherein the axis of the shaped end is disposed parallel to and spaced from the axis of the conduit central region, which is ultimately mounted on a supporting bracket.



3,648,510
INTERNAL PEENING TOOL

Newell John Gardner, 11661 San Vicente Blvd., Los Angeles, Calif.
Filed Aug. 1, 1969, Ser. No. 846,716
Int. Cl. B21d *41/00;* **B21j** *7/16*
U.S. Cl. 72—399 **10 Claims**



An impact tool for peening the interior wall of a bore, wherein a sleeve has rows of axially staggered holes through which peening arms project, the arms being carried by a central rod reciprocable in the sleeve and spring biased in a direction to retract the arms, impact being applied to the rod and acting to project the arms through the holes into engagement with a bore wall. The sleeve has a collar for limiting the extent of insertion of the tool into a bore, and a handle is provided to enable rotation of the tool in the bore. The rod engages an adjustable anvil to limit the extension of the peening arms from the sleeve.

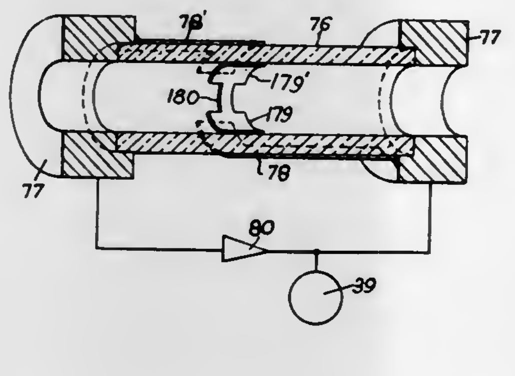
3,648,511
TESTING DEVICE FOR BRAKES AND BRAKE MATERIAL

Craig R. Groat, Pontiac, and Manfred R. Happold, Farmington, both of Mich., assignors to Link Engineering Company
Filed Apr. 3, 1970, Ser. No. 25,313
Int. Cl. G01n *3/56*
U.S. Cl. 73—9 **16 Claims**

Alternate brake discs with or without pads of brake material thereon are keyed to a stator and rotor to have alternate discs rotate relative to those in-between. Pressure is applied to one side of the stacked discs by a plurality of pistons urged toward the discs with a predetermined selected pressure. Two sets of a plurality of pistons are employed, the pistons of each group being spaced equal distances apart and alternately located with those of the other group so that uniform pressures will be provided to a pressure plate whether one, the other or both groups are employed for applying the desired pressure between the stack of brake discs during the testing thereof. The arrangement is such as to permit the bleeding off of any collected air within the piston cylinders before being pressurized by fluid which may leak from the forward end of cylinders to be collected and returned to the tank. A plurality of equally spaced air cylinders returns the pressure plate in the opposite direction to retract the pistons to a stop position. The pistons have convex arcuate ends which engage concave arcuate surfaces of floating heads which are supported by the pressure plate, the arcuate engagement being retained when the pistons are retracted by a slight pressure on the fluid delivered to the end of the cylinders.

3,648,512
METHODS AND APPARATUS FOR MEASURING THE DENSITIES OF FLUIDS

William Edward Abbotts, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, **Hampshire, England**
Original application Jan. 25, 1967, Ser. No. 611,632, now Patent No. 3,516,283. Divided and this application Jan. 28, 1970, Ser. No. 888,103
Claims priority, application Great Britain, Jan. 28, 1966, 4,042/66
Int. Cl. G01n *9/00*
U.S. Cl. 73—32 **3 Claims**

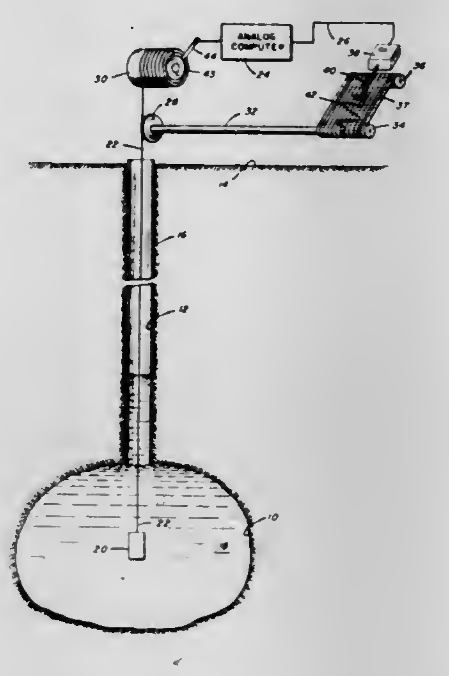


A density meter for measuring the density of a gas, having a hollow cylinder which is set into bell-like vibration when the gas is in contact with the cylinder both internally and externally to avoid differential pressure, or the cylinder walls are so thick that a gas or liquid can be applied to an internal or external surface alone, in each case the predominant frequency being measured.

3,648,513
SONIC METHOD AND MEANS FOR DETERMINATION OF SOLUTION CONCENTRATIONS

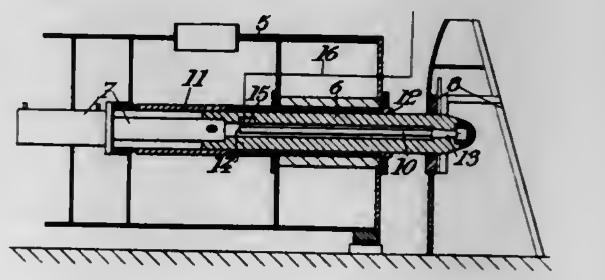
Gerald D. Patterson, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 5, 1970, Ser. No. 733
Int. Cl. G07n *29/02*
U.S. Cl. 73—53 **4 Claims**

This invention relates to a method of determining the chemical concentration of a solution. More particularly, the invention relates to determining the chemical concentration of a solution by measuring the speed of sound transmission, the temperature, and the hydrostatic pressure of the solution, and conveying these measurements to an analog computer wherein the chemical concentration is ascertained from preestablished empirical formulas.



3,648,514
MEANS FOR MEASURING FORCES, NOTABLY AT THE FOOT OF AN OSCILLATING COLUMN OR AN OFFSHORE DRILLING PLATFORM

Robert H. Vilain, Maisons-Alfort, France, assignor to Compagnie Francaise D'Enterprises Métalliques, Paris, France
Filed Nov. 20, 1969, Ser. No. 878,459
Claims priority, application France, Nov. 20, 1968, 174,568
Int. Cl. G01l *5/00*
U.S. Cl. 73—100 **6 Claims**

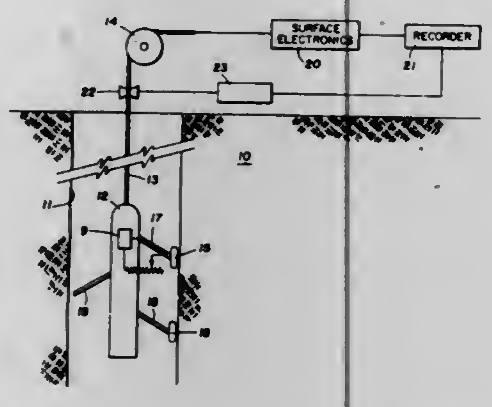


An offshore drilling platform, having a column attached through a universal joint and a bottom coupling block to a base fixed to the seabed, the connection between the bottom coupling block and said base being effected through at least three points, by two members at each point, including systems for measuring the forces exerted on the base at said three points at least, thereby to deduce the magnitude and direction of the hydrodynamic force exerted on the column, each said system comprising in combination a flexural element forming part of means for securing said members together, a nonflexing rod borne within and fixed by one end to said element, and a sensor located adjacent the free end of the rod so that the displacements of said free end of the rod relative to said element are transmitted to said sensor.

3,648,515
RADIOACTIVITY LOGGING APPARATUS HAVING SHIELDED WALL CONTACTING SOURCE AND DETECTOR

Arthur H. Youmans, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 29, 1969, Ser. No. 872,258
Int. Cl. E21b *47/00*
U.S. Cl. 73—152 **10 Claims**

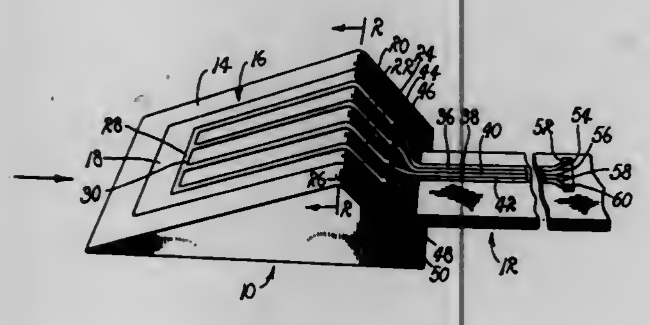


A logging apparatus having a subsurface instrument with a partially shielded source and a separate partially shielded detector, both of which contact the borehole wall. Structure combined with the source provides means whereby a neutron log or acoustic log may be obtained in conjunction with the basic measurement.

3,648,516
THIN-FILM GAUGE

T. O. Paine, Administrator of the National Aeronautics and Space Administrator with respect to an invention of, Angus D. McRonald, 2363 Mountain Avenue, La Crescenta, Calif.

Filed May 29, 1969, Ser. No. 828,920
Int. Cl. G01k *17/00*
U.S. Cl. 73—190 H **1 Claim**

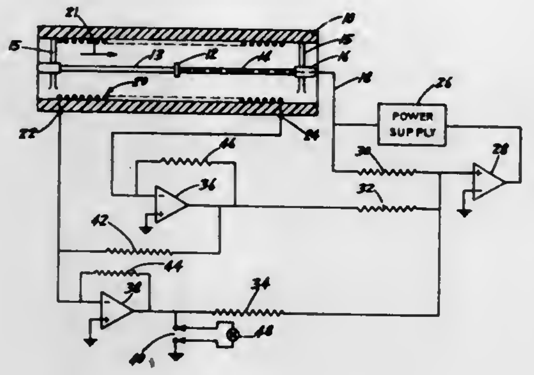


A thin-film gauge for use in measuring distributed, convective heat transfer rates occurring along given surfaces, particularly surfaces of test specimens disposed in the air stream of a wind tunnel, characterized by the utilization of a thin-film substrate and a plurality of painted platinum leads extending across the surface of the substrate including a pair of leads adapted to deliver an electrical current at a constant amperage through a selected thermally active area and a pair of leads coupled therewith at opposite sides of the thermally active area for detecting heat induced voltage drops occurring in the thermally active area so that the active length of the gauge is defined between the voltage output leads, whereby changes in heat transferred to the thermally active area are isolated and determined by detecting induced changes in voltage drop occurring therein.

3,648,517
CONTROL APPARATUS FOR MASS FLOW METER

Frank D. Dorman, St. Paul, Minn., assignor to Thermo-Systems Inc., St. Paul, Minn.

Filed Nov. 25, 1970, Ser. No. 92,571
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 F **7 Claims**

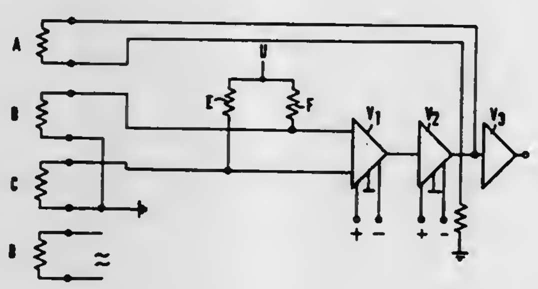


A control system for the power supply in a mass flow meter, the flow meter having an ionizing electrode and an ion collecting electrode producing first and second currents, to maintain a constant ratio between the electrical potential across and the current flow between the ionizing source and the ion collector, so that the differential of the first and second collector currents is directly indicative of mass flow in the flow meter.

3,648,518
APPARATUS FOR MEASURING THE FLOW VOLUME OF GASES AND LIQUIDS

Rainer Hans, Kolner Str. 27, Bechen; Michael Lancier, Hoverweg 4, Bensberg-Durscheid, and Hermann Becher, Veilchenweg 57, Porz-Heumar, all of Germany

Filed Feb. 5, 1970, Ser. No. 8,882
Claims priority, application Germany, Feb. 7, 1969, P 19 05 999.5
Int. Cl. G01p *5/10*
U.S. Cl. 73—204 **5 Claims**

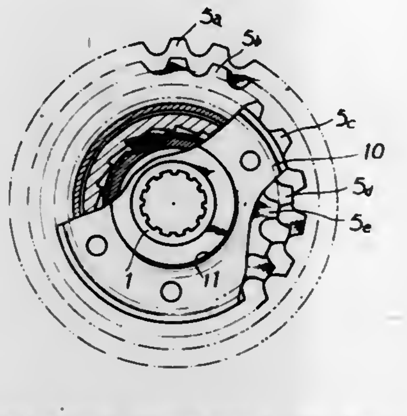


An apparatus for measuring the flow volume of gases and liquids by measuring the difference, between the voltage drop of an ohmic resistance, heated to measuring temperature and encompassed by the medium to be measured, and a second comparison resistance encompassed by the medium and constituting the reference value by a bridge network. Because of the medium-produced cooling of the measuring body formed by the resistance coil, the unbalance of the bridge network controls the replenishment of the heating power to be supplied by the measuring body, for producing the balance of the bridge network. The replenished heating power represents, in accordance with the resistance change of the measuring coil, the rate for the flow through volume.

3,648,519
MULTIPLE FREE WHEEL FOR A BICYCLE

Kikunori Nakata, and Etsuji Kishida, both of c/o Shimano Ind. Co., Ltd. No. 77, 33-cho Oimatsa-cho, Sakai, Osaka, Japan

Filed June 4, 1970, Ser. No. 43,388
Claims priority, application Japan, Mar. 3, 1970, 43/21106; Oct. 8, 1969, 44/96322
Int. Cl. F16h *9/24, 11/04*
U.S. Cl. 74—217 B **9 Claims**

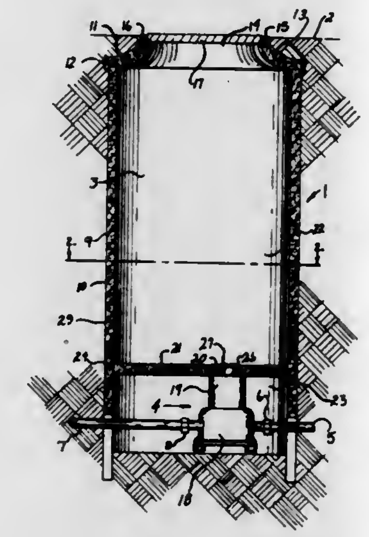


In a bicycle a free wheel comprises a plurality of sprocket wheels each provided with gear teeth having a different dent on teeth number into which the driving chain can be selectively geared. The free wheel includes a discoidal protective means mounted outside the minimum dent-numbered one of these sprocket wheels at the same interval as that at which the sprockets are mounted for preventing the driving chain from moving outwardly when it is engaged into any selected sprocket wheel.

3,648,520
WATER METER FREEZE PROTECTOR

Duane L. Price, 203 East Briar, Dodge City, Kans.

Filed July 13, 1970, Ser. No. 54,211
Int. Cl. G01f *15/10*
U.S. Cl. 73—277 **5 Claims**

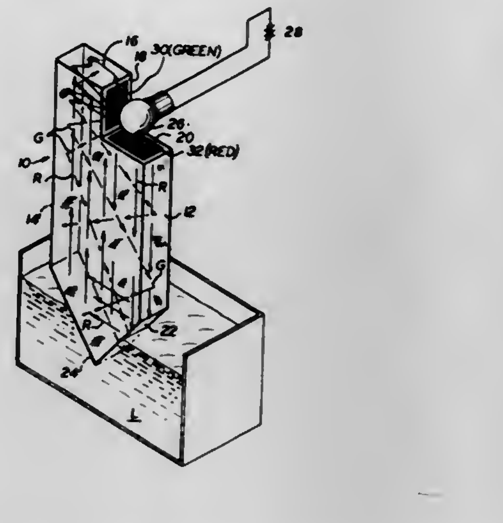


A water meter freeze protector structure wherein a water meter having a body with an upstanding register portion is located in the lower portion of a chamber formed by the wall of a meter box and a cover closing the upper end of said box. A generally horizontal wall member resting on the meter body and having an outer periphery engaged with the inner surface of the meter box and an opening aligned with and receiving the meter register portion, said wall member being of an insulating material such as synthetic resin foam and forming an insulating barrier between the portion of the chamber containing the water meter and any cold temperatures in the upper portion of the chamber caused by sub-zero atmospheric temperatures.

3,648,521
LIGHT INDICATOR

Pasquale J. Amendolia, c/o T. D. Company P. O. Box 475, St. James, N.Y.

Filed Oct. 23, 1968, Ser. No. 770,015
Int. Cl. G01f *23/00*
U.S. Cl. 73—293 **7 Claims**

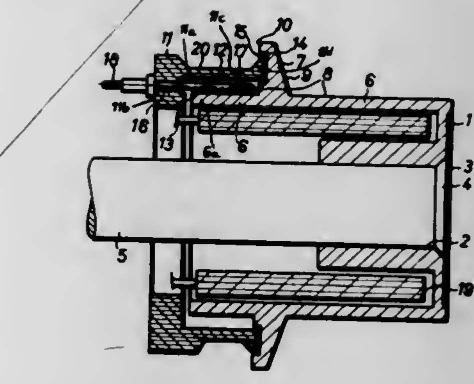


A device for indicating visually relative changes in physical phenomena including an element for transmitting light, a pair of opposed contractingly colored light sources, means for varying the relative intensity and/or condition of the light sources thereby transmitting through the element a color indicative of the change.

3,648,522
DRAW ROLL AND TEMPERATURE GAUGE ARRANGEMENT

Jakob Hafeli, and Peter Martin Pfyffer, both of Winterthur, Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Sept. 11, 1970, Ser. No. 71,577
Claims priority, application Switzerland, Sept. 15, 1969, 13,933/69
Int. Cl. G01k *13/08*
U.S. Cl. 73—351 **14 Claims**



A draw roll and temperature gauge arrangement comprising a draw roll member having an outer circumferentially extending roll wall, and a retaining rim member extending circumferentially about said roll wall. The roll wall includes an extended circumferential wall portion to one side of a face of the retaining rim member intended to confront the machine frame. An outer cover member is fixed to the machine frame and is situated opposite the extended circumferential wall portion of the draw roll. This outer cover member extends towards and in close proximity to the aforesaid face of the retaining rim member, the latter overlapping without contact the cover member. Furthermore, this cover member extends towards the retaining rim member in spaced relationship from the aforementioned extended circumferential wall portion of the draw roll member to define therebetween a compartment for receiving a temperature gauge.

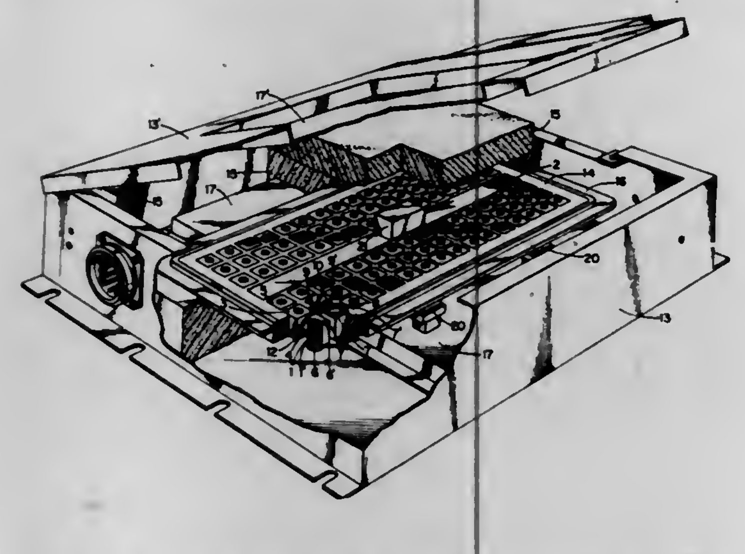
3,648,523
UNIFORM TEMPERATURE REFERENCE APPARATUS

Clarence A. Kemper, Lexington; Richard H. Eastman, Needham, and John H. Leigh, Canton, all of Mass., assignors to Joseph Kaye & Company, Cambridge, Mass.

Filed Jan. 22, 1970, Ser. No. 4,976

Int. Cl. G01k *5/52*

U.S. Cl. 73—361 **14 Claims**



This disclosure deals with an array of terminal blocks electrically insulated from one another but thermally interconnected with high-thermal conductivity therebetween to provide a uniform temperature reference system, usable within thermally insulated enclosures, for multiple thermocouple or other electrical connections to the array.

3,648,524
PRESSURE INDICATOR, ESPECIALLY FOR MEASURING PRESSURE IN DIESEL ENGINES

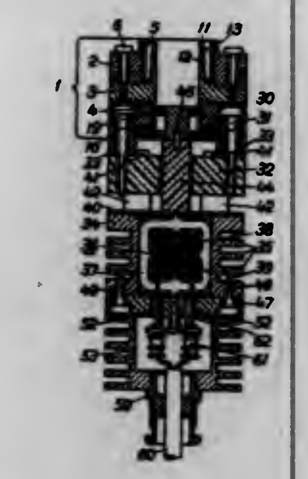
Orvar Dahle, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Oct. 22, 1970, Ser. No. 82,954

Claims priority, application Sweden, Oct. 29, 1969, 14762/69

Int. Cl. G01l *9/10*

U.S. Cl. 73—398 R **7 Claims**



A sealing cone adapted to be secured on an indicating tap of a diesel engine has a central passage communicating with a diaphragm mounted in a housing. Another housing includes a force-measuring device such as a transducer. Pressure forces are transmitted from the diaphragm to the transducer by a central cylinder, and counter-acting tensile forces by a ring surrounding the cylinder and connected by sets of low-heat-conducting screws to both housings, the screws of the two sets being symmetrically spaced from each other around the ring. The cylinder and ring are formed of rigid thermally insulating material. The transducer is thus protected from the heat of the diesel engine.

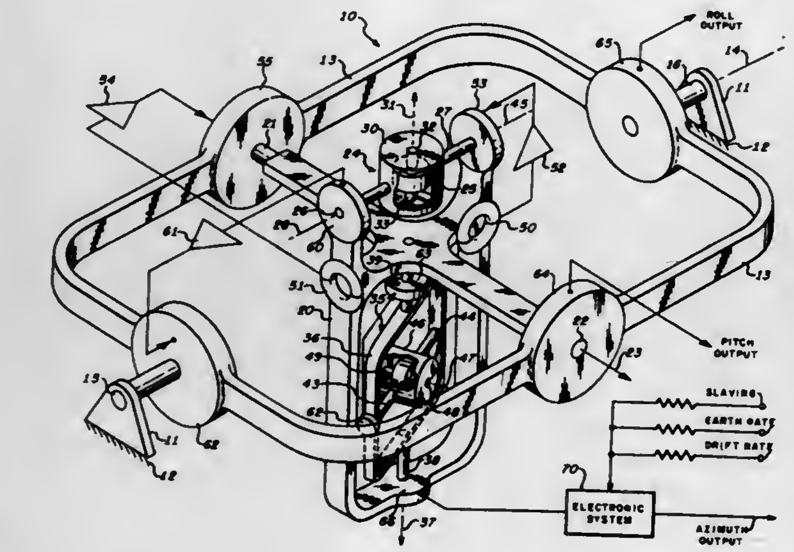
3,648,525
GYROSCOPIC STABLE REFERENCE APPARATUS

Charles B. Reed, 1290 Avenue of the Americas, Scottsdale, Ariz.

Filed Feb. 11, 1970, Ser. No. 10,537

Int. Cl. G01c *19/54*

U.S. Cl. 74—5.34 **5 Claims**



A gyroscopic stable reference apparatus for navigable craft which provides heading, pitch and roll outputs that are free of gyroscopic gimbal errors for all aircraft attitudes with a minimum of undesirable interaction between the directional and vertical gyroscopes.

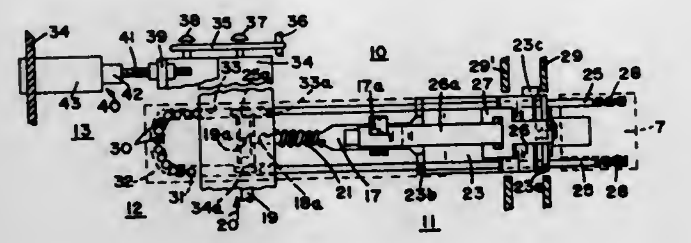
3,648,526
PUSHBUTTON SELECTOR STRUCTURE

Laszlo N. Repay, Rolling Meadows, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 5, 1970, Ser. No. 77,790

Int. Cl. F16h *35/18*

U.S. Cl. 74—10.27 **13 Claims**



A pushbutton selector structure for a radio receiver with a tuning carriage for the resonant circuits, the structure being suitable to provide a ganged assembly and including a pushbutton operated slide having a pair of parallel elongated actuator shafts mounted thereon which are adjustable along their respective lengths and have a pair of common end portions offsettable relative to each other by a presettable lengthwise distance whereby a desired station frequency is memorized. Flexible means for transmitting movement between the shafts and the tuning carriage are positioned in a guide channel and are movable by the shafts at least a distance equal to said offset lengthwise distance with the pushbutton operated slide depressed by an operator for recalling the memorized station frequency.

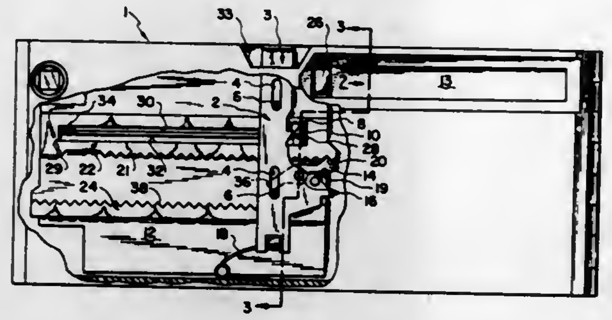
3,648,527
RECIPROCATING RATCHET MECHANISM

Leonard F. Kamp, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 17, 1970, Ser. No. 46,939

Int. Cl. F16h *57/06*

U.S. Cl. 74—17.5 **7 Claims**



A pair of opposed ratchets are mounted for reciprocation along a predetermined path, and a pawl alternately engages each ratchet along its entire length. The pawl prevents reversal of direction of the ratchets until the path in each direction has been traversed. A set of channels guides the relative movement of the pawl and ratchets through a sequence of paths to effect the operation of the mechanism.

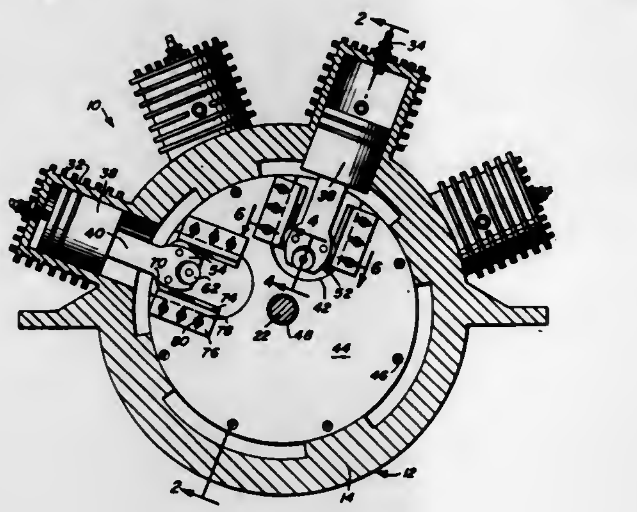
3,648,528
ROTARY CAM CONTROLLED ENGINE

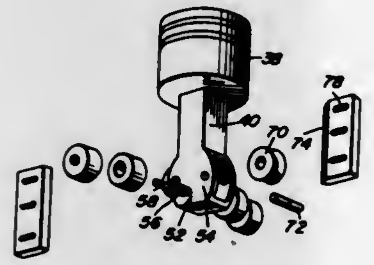
Ralph J. Smith, East Killingly, Conn., assignor to Promoco Interprises Limited

Filed Apr. 20, 1970, Ser. No. 30,093

Int. Cl. F16h *25/08*

U.S. Cl. 74—55 **4 Claims**





A low speed, high torque internal combustion engine having radially reciprocating pistons. Cam follower rollers mounted on the radially inner end of the piston rods are engaged with cams to convert radial reciprocation of the pistons into rotation of an engine shaft. Adjustable guides engage guide rollers on the piston rods to constrain movement of the piston rods along the radial paths.

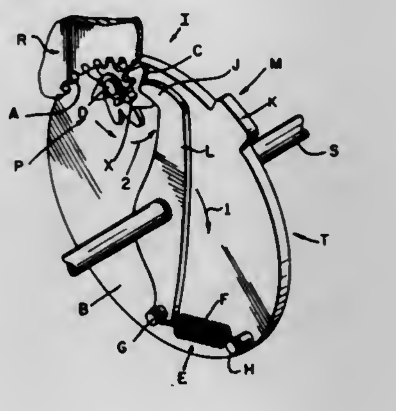
3,648,529
INTERMITTENT MOTION TRANSMISSION

Peter Illman, and Arthur G. Roberts, both of Bognor Regis, England, assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Jan. 29, 1970, Ser. No. 6,702

Int. Cl. F16h *27/00*

U.S. Cl. 74—112 **16 Claims**



An indexing means engages and disengages a constantly rotating energy storage means. When the energy storage means is disengaged, a motion transmission means, rotation of which is responsive to rotation of the energy storage means, intermittently drives cam programming means of a timer.

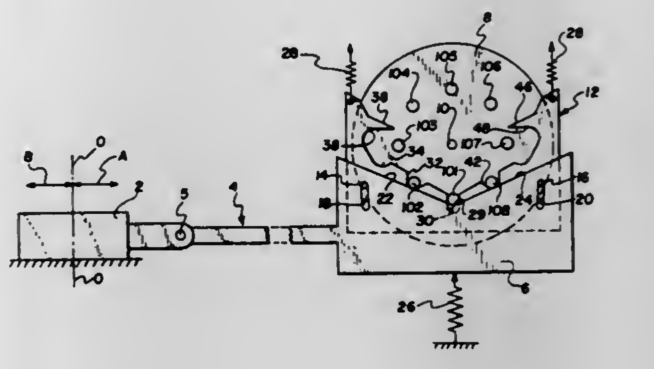
3,648,530
LINKAGE

George H. Eckerdt, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 13, 1970, Ser. No. 27,621

Int. Cl. F16h *27/02*

U.S. Cl. 74—128 **9 Claims**



A mechanism for converting reciprocating linear motion to rotary motion comprises an escape wheel rotatable in equal angular increments about an axis, a pallet for rotating the wheel, and a ramp member for actuating the pallet and controlling the displacement of the wheel. The escape wheel is rotated by the sequential application of torque by the pallet to pins extending from the face of the escape wheel, and displaced radially from the axis and angularly from each other. The direction of rotation of the escape wheel can be reversed in response to a change in the path of reciprocation of the input member, and the pallet limits rotation of the wheel to the equal angular increments regardless of overtravel of the input member.

3,648,531
FRICTION OR TRACTIVE DRIVE FLUID

Irl N. Duling, West Chester; David S. Gates, Swarthmore, both of Pa.; Robert E. Moore, Wilmington, Del., and Frederick P. Glazier, Chester, Pa., assignors to Sun Oil Company, Philadelphia, Pa., by said Duling, said Gates and said Moore

Filed Aug. 19, 1969, Ser. No. 3,256. The portion of the term of the patent subsequent to Aug. 3, 1988, has been disclaimed.

Int. Cl. F16h *15/08;* **C09k** *3/00*

U.S. Cl. 74—200 **9 Claims**

A friction or tractive drive comprises at least two relatively rotatable members in torque transmitting relationship, the tractive surfaces of the members having disposed thereon a tractant selected from the following groups (A) or (B):

A. a tractant comprising a hydrocarbon dimer of an alkyladamantane and/or alkyladamantanol of the C_{12}–C_{19} range containing one to three alkyl groups of the C_1–C_3 range, the dimer containing two adamantane nuclei which are linked to each other through an alkylene radical derived from and having the same number of carbon atoms as an alkyl group of the starting material; and

B. an ether analogous to a hydrocarbon dimer from group A.

ERRATUM

For Class 74—217 B see:
Patent No. 3,648,519

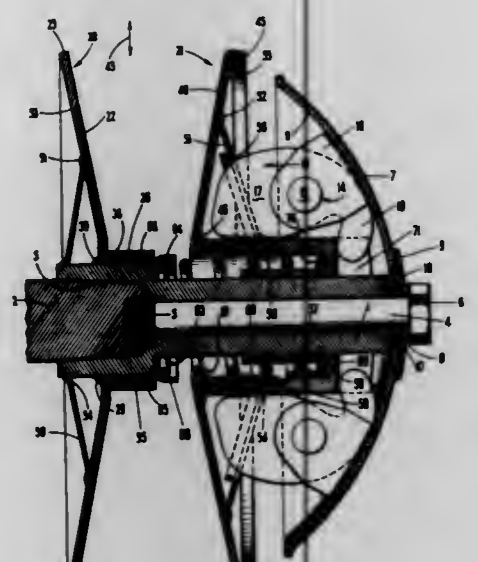
3,648,532
DRIVE SYSTEM

Ulric Vallieres, Therese, Quebec, Canada, assignor to St. Lawrence Manufacturing Company, Inc., Giffard, Quebec, Canada

Filed Apr. 29, 1969, Ser. No. 820,272

Int. Cl. F16h *55/52*

U.S. Cl. 74—230.17 **7 Claims**



A drive pulley assembly having facing sheaves that move together to engage and drive a pulley belt when rotated at higher speeds. Movement of the sheaves towards one another is effected by a plurality of counter weights that pivot under the influence of centrifugal force as the speed of rotation increases to exert an axial force on one of the sheaves to move it toward the other. A spring return is utilized.

3,648,533
TORQUEMETER REDUCTION GEAR

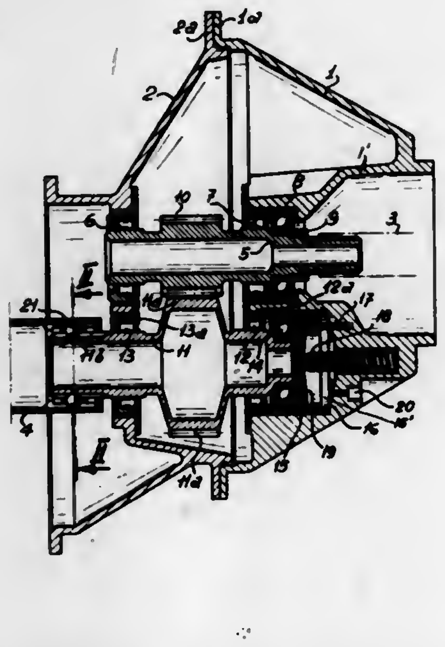
Giorgio Parenti, Parma, Italy, assignor to Siai-Marchetti S.p.A., Varese, Italy

Filed Mar. 26, 1970, Ser. No. 23,065

Claims priority, application Italy, Mar. 29, 1969, 14819 A/69

Int. Cl. F16h *57/00, 1/18*

U.S. Cl. 74—410 **5 Claims**



A reduction gear including a pair of helical parallel gears, the driven gears being integral with a shaft axially movable within a hydraulic cylinder, the pressure of fluid being proportional to the power transmitted.

3,648,534
ANTILASH MECHANISM FOR THE CHANGE SPEED GEARING OF MOTOR VEHICLES AND OTHER PURPOSES

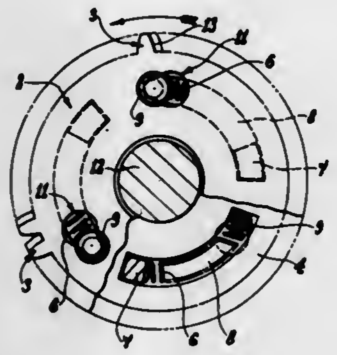
Frank Fagarazzi, Airport West, Victoria, Australia, assignor to General Motors Corporation, Detroit, Mich.

Filed June 10, 1970, Ser. No. 45,177

Claims priority, application Australia, July 3, 1969, 57437/69

Int. Cl. F16h *55/18*

U.S. Cl. 74—440 **6 Claims**



The invention concerns antilash gear mechanism for the change speed gearing of motor vehicles and other purposes and comprises a helical driven gear adapted to remain in constant mesh with a helical driving gear, a helical antilash gear axially coaligned with said driven gear and loosely mounted on one side thereof so that relative angular movement may occur between said antilash and driven gears and spring means associated with the last-mentioned gears for opposing undesirable axial separation therebetween when in use.

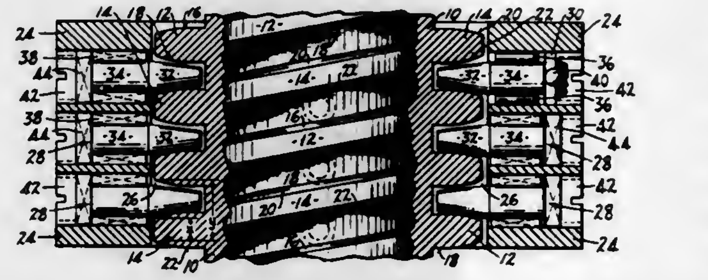
3,648,535
ANTI-FRICTION SCREW AND NUT

Arthur M. Maroth, Grumman Hill Road, Wilton, Conn.

Filed July 6, 1970, Ser. No. 52,617

Int. Cl. F16h *1/18, 55/22, 55/06*

U.S. Cl. 74—424.8 **12 Claims**



An antifriction screw and nut construction wherein helical screw threads are engaged by antifriction mounted rollers carried by an annular nut body and extending radially inward into the bore of the nut body. Several embodiments of the invention are shown, directed to the object of preventing sliding friction between the roller surfaces and the engaged screw thread surfaces due to the distortions resulting from loading of the nut. In one embodiment the sidewalls of the screw thread are rounded or convex while the rollers have a straight taper, thereby to reduce the line area of contact and improve the frictional characteristics. In another embodiment of the invention the rollers are bulged or convex while the sidewalls of the threads are of flat characteristics to reduce sliding friction. In still another embodiment, the rollers have a straight taper and the thread walls a straight characteristic but the rollers are mounted intentionally with a slight misalignment which becomes remedied under normal loading to produce a true, nonsliding line contact with minimum friction. A novel screw construction comprises a double blunt thread having sloped, opposed helical faces the angles of which are related to the thread spacing and crest thickness.

3,648,536
SELECTOR MECHANISMS FOR CHANGE-SPEED GEARS

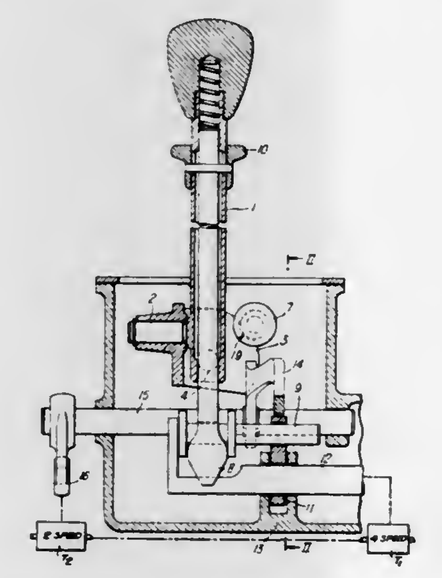
Mario Joseph Maina, Luton, England, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 18, 1969, Ser. No. 877,618

Claims priority, application Great Britain, Dec. 19, 1968, 60,286/68

Int. Cl. G05g *9/18*

U.S. Cl. 74—476 **10 Claims**



A selector mechanism for motor vehicle change speed gears, utilizing a single change speed lever for operating both a ratio selector member for a ratio-change gearbox, and a range selector member for a two-speed unit arranged to give one or more ratios additional to those obtainable from the ratio-change gearbox.

For this purpose, the change speed lever is pivotally mounted by way of a pivot pin on a carrier member which is itself pivotally mounted on a pair of coaxially arranged pivot pins and is also capable of translational movement along the pivot pins under the influence of a biasing spring. The change speed lever has a stirrup-joint motion-transmitting connection to a pivotable and slidable selector shaft forming the ratio selector member, with a stop arrangement being provided for limiting the pivotal movement of the selector shaft, and the carrier member has a flange-and-jaw motion-transmitting connection to a pivotal lever forming the range selector member. A hooklike latch member is movable with the pivotal lever to form an interlock for locking the selector shaft in one of its positions.

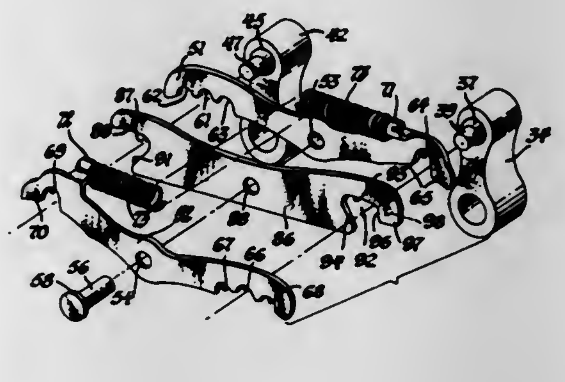
3,648,537
TRANSMISSION CONTROL

Frank C. Burrell, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 12, 1970, Ser. No. 88,908

Int. Cl. G05g *5/10*

U.S. Cl. 74—477 **4 Claims**



There is disclosed a transmission control linkage for a multispeed transmission having gearing and shiftable elements that are operable on selective shifting to establish different transmission drives through the gearing. The shiftable elements are controlled by shift fork levers with a detent mechanism operating to prevent movement of one of the shift fork levers when the other lever is not in its neutral position. A sequence mechanism cooperates with the detent mechanism to lock one of the shift fork levers against movement from one of its shift positions to a previously selected shift position until after the other shift fork lever has been moved from neutral to one of its shift positions to assure certain sequential shifting.

3,648,538
CONTROL MECHANISM

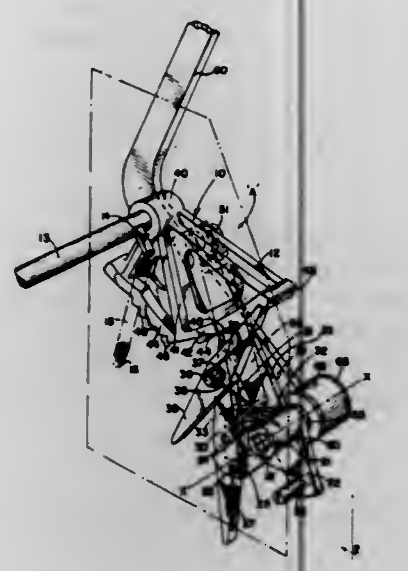
Peter Sammarco, Bellwood, and Arnold Zimmerman, Downers Grove, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed July 6, 1970, Ser. No. 52,156

Int. Cl. G05g *7/00*

U.S. Cl. 74—491 **11 Claims**

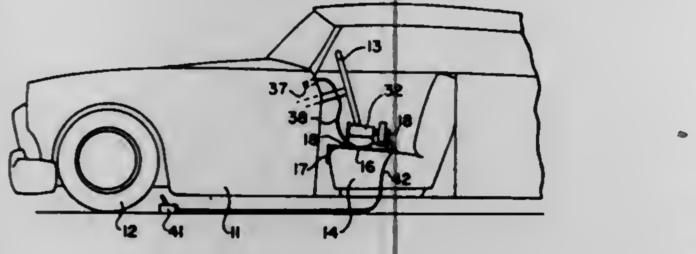
A control apparatus having a primary control element selectively movable through a predetermined sequence of indexed positions whereat it may act upon a device to effect a control of the same, the control apparatus being selectively positionable to previously indexed positions directly from an advanced position without the need of reinitiating the sequence.



3,648,539
ELECTRICALLY OPERATED, REMOTE CONTROLLED WHEEL TURNER

Rouis, Robert J., c/o Align-rite Inc., 130 Beacon Street, San Mateo, Calif.

Filed Jan. 28, 1970, Ser. No. 6,337
Int. Cl. B62d *1/24*
U.S. Cl. 74—494 **2 Claims**



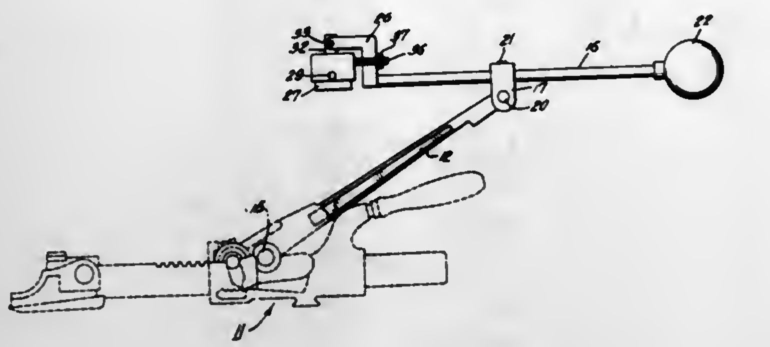
In testing and repairing front wheels of vehicles, it is necessary to turn the wheels from time to time. The present device turns the steering wheel and thus turns the vehicle wheels. A rubber roller engages the steering wheel and is turned in either direction by a motor. Reversal of the motor is controlled by a remote switch held by the operator at the vehicle wheel. The power source for the motor may be the cigar lighter electric socket.

3,648,540
LEVER OPERATED HAND TOOL IMPROVEMENT

Robert G. King, Stroud, Okla., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 21, 1969, Ser. No. 878,726
Int. Cl. G05g *5/00*
U.S. Cl. 74—524 **2 Claims**

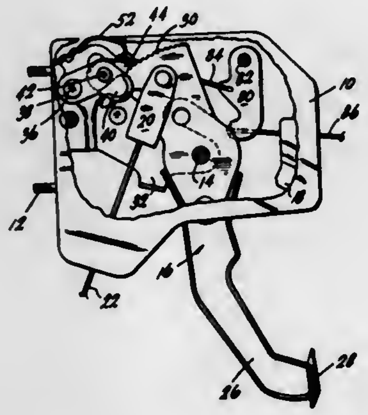
An adjustable lever arm extension for use on hand tools that employ an operating lever to apply force in operation of the tool. The extension is pivoted near the extremity of the operating lever, and has a grip that releases under predetermined force to permit the extension to pivot freely after that force has been reached. This limits the maximum amount of operating force applied by the tool.



3,648,541
EMERGENCY BRAKE WITH TOGGLE LOCK PAWL

Kenneth C. Hybarger, Jackson, Mich., and Joseph R. Kirk, deceased, late of Jackson, Mich. (by Agnes R. Kirk, special administratrix), assignors to Hancock Industries, Inc., Jackson, Mich.

Filed Apr. 23, 1970, Ser. No. 31,233
Int. Cl. G05g *5/24*
U.S. Cl. 74—540 **14 Claims**



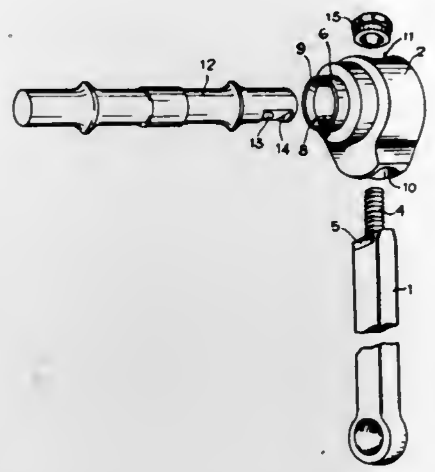
A brake actuator of the type used to operate vehicle emergency brakes wherein the actuator includes a pivotally mounted lever having ratchet teeth defined thereon. The lever is restrained against movement in a brake releasing direction by a pawl engaging the lever ratchet teeth, the pawl being pivotally mounted upon a pivotally mounted support wherein the pawl comprises a toggle, and a cam surface is employed in the release structure to minimize the force required to release the locked pawl. The toggle-type pawl permits the pawl teeth to "unroll" during disengagement of the pawl and ratchet teeth, and the double pivot mounting of the pawl makes it possible for several pawl teeth to simultaneously effectively engage the ratchet teeth.

3,648,542
PEDAL LINK ASSEMBLY FOR BICYCLES

Dino Perotti, and Mario Perotti, both of via Bailo, Sarezzo, Italy

Filed Nov. 24, 1969, Ser. No. 879,400
Claims priority, application Italy, May 31, 1969, 2768A/69
Int. Cl. G05g *1/14*
U.S. Cl. 74—594.1 **2 Claims**

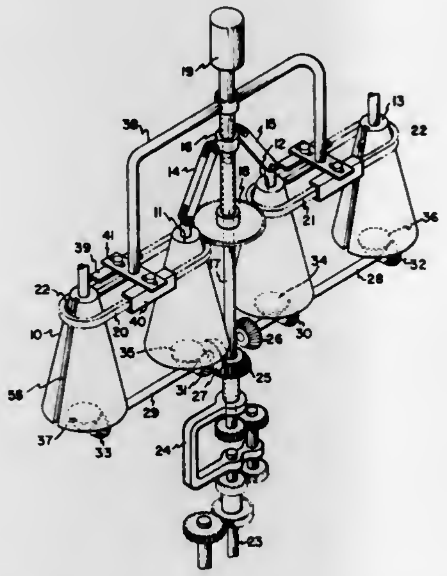
Pedal link for bicycles composed of a central hub of lightweight alloy or equivalent material, to which are connected through openings the pedal supporting link and the sprocket shaft. The link has a threaded extension which is secured ultimately by a nut and the shaft has a terminal, normal opening to allow passage therethrough of the threaded extension of the link. Bevelled surfaces on the link and in the shaft's opening ensure precision fitting of the pedal link components.



3,648,543
VARIABLE SPEED TRANSMISSION

Frank A. Fragnito, 144 South Ninth East, Salt Lake City, Utah

Filed July 6, 1970, Ser. No. 52,575
Int. Cl. F16h *37/06*
U.S. Cl. 74—681 **11 Claims**

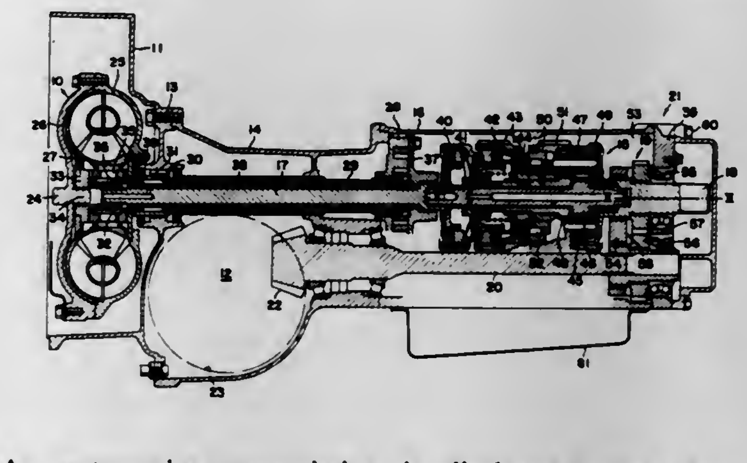


A positive-drive, infinitely variable speed transmission has been invented. The variation in speed may range from zero to any multiple of the input speed. The rotational speed of the output shaft may be varied from zero to a desired speed of rotation in either a clockwise or counterclockwise direction. The novel transmission comprises a set of four cones arranged in pairs with each pair encircled by a drive chain which is driven by said cones. The center adjacent cones of each pair are in contact with one another through a gear which meshes with the drive chain to drive a shaft connected to an external gear in contact with a planetary gear attached to the input drive shaft. The input drive shaft also drives the cones, which in turn, drive the drive chain. By varying the distance between the center adjacent cones, the center gear in contact with the drive chains is driven at various speeds depending upon the position of the chain on the cones. A sliding tooth is engaged in a keyway in the surface of each cone to provide a drive means for driving the drive chain no matter what position the chain occupies on the surface of the cone. The separation between the center adjacent cones can be accomplished by manual or power assist means. The regulation of the distance between the center cones determines the direction and speed of the output shaft for a given speed of the input shaft.

3,648,544
TRANSMISSION

Seiji Tanaka, Aki-gun, Hiroshima-ken, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan

Filed Sept. 24, 1969, Ser. No. 860,522
Int. Cl. F16h *47/08, 57/00*
U.S. Cl. 74—695 **3 Claims**

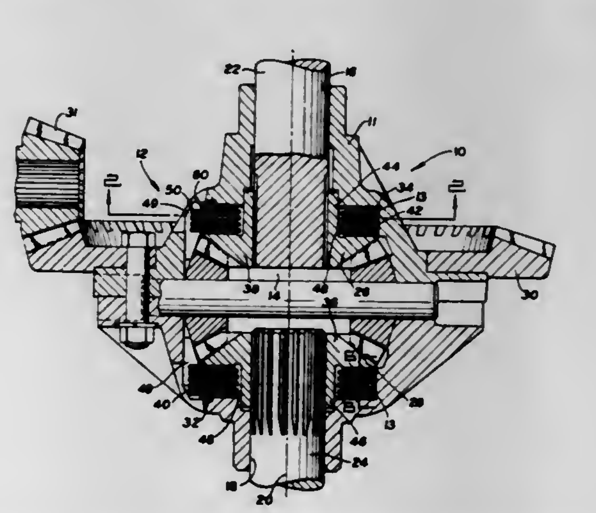


An automotive transmission is disclosed having first, second and third serially connected housings enclosing an engine driven torque converter, a wheel driving differential gear unit, and a planetary gear set in the respective housings. Input and output shafts project from opposite ends of the planetary gear set with the former connected to the torque converter and the latter connected to a reversing gear set. A further shaft connects the differential gear unit with the reversing gear unit. The transmission thus formed is compact and may be used in either front engine-front drive or rear engine-rear drive vehicles.

3,648,545
DIFFERENTIAL CLUTCH MECHANISM

Stephen M. Clancey, Battle Creek, Mich., assignor to Easton Corporation, Cleveland, Ohio

Filed May 18, 1970, Ser. No. 37,947
Int. Cl. F16h *1/44;* **F16d** *13/60*
U.S. Cl. 74—710.5 **5 Claims**

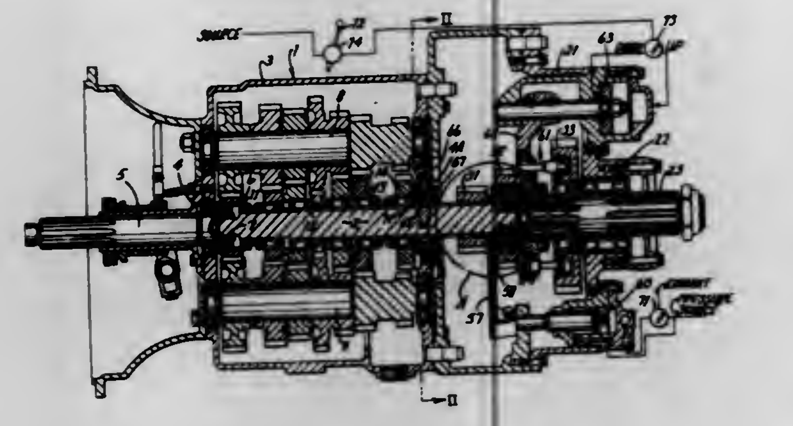


The invention of the present application serves to eliminate a stick-slip condition in a clutch for a limited slip differential mechanism by providing a novel clutching disc having a plurality of lubricant gathering slots extending through the body of the disc to provide a plurality of lubricant spreading fingers thereon. The fingers form the frictional surface of the disc and are resiliently deformable by the interaction of a sticking condition with an adjacent solid disc to create relative movement at the location of the sticking condition, thereby eliminating the sticking condition.

3,648,546
TRANSMISSION HAVING LOW-INERTIA MAINSHAFT

Thomas V. McNamara, Kalamazoo, and Edward L. Zahn, Galesburg, both of Mich., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Sept. 30, 1970, Ser. No. 76,959
Int. Cl. F16h *3/02, 3/38, 3/08*
U.S. Cl. 74—745 **13 Claims**

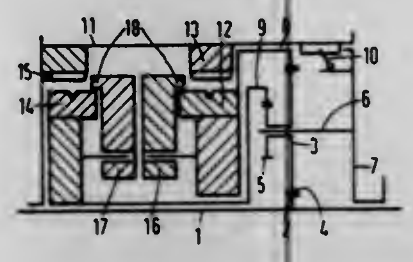


Shiftable gears arranged to minimize the need for synchronizers by utilizing, and/or avoiding, related environmental factors. In an environment where one ratio gear is always running faster than a second ratio gear, so that a shaft to which some are alternately connected must always be accelerated when said one gear is so connected and decelerated when the second gear is so connected, means are provided by which a nonrotating shift device, as a shift fork, is caused to apply a frictional drag to the shaft when the second gear is being connected and said shaft is isolated from such drag when the first gear is being connected. In a further and more specific aspect of the invention, ratio gears so connected are arranged between a main transmission and an auxiliary transmission and/or a split-shift device to extend the ratios available to the system but without adding to the synchronizers required for same.

3,648,547
AUTOMATICALLY SHIFTING, THREE-SPEED BICYCLE HUB

Hans Joachim Schwerdhofer, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed Dec. 2, 1970, Ser. No. 94,228
Int. Cl. F16h *5/42*
U.S. Cl. 74—752 E **10 Claims**

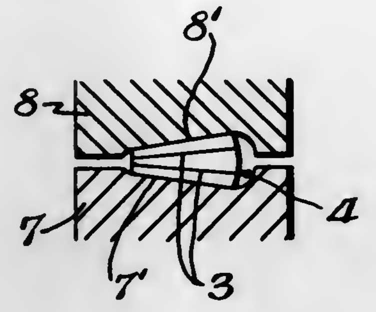


In a three-speed bicycle hub, overrunning pawl-and-ratchet clutches respectively connect the hub shell to the driver and to the ring gears of two sets of planetary gearing whose planet gears are mounted on a common planet carrier fixed to or integral with the driver. The clutches between the ring gears and the hub shell are controlled by centrifugal governors.

3,648,548
METHOD FOR PRODUCING CUTTING TOOLS

Humio Suda, Nagoya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya, Aichi Prefecture, Japan

Filed May 15, 1970, Ser. No. 37,657
Claims priority, application Japan, Aug. 6, 1969, 44/61944
Int. Cl. B21k *21/00*
U.S. Cl. 76—101 R **1 Claim**

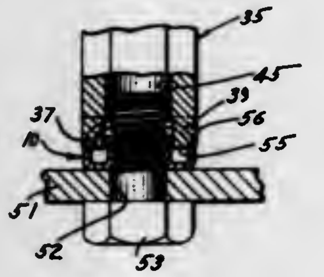


Method for producing cutting tools comprises steps of pressing blade metal blank against base metal blank while continuously rotating one of blanks relative to other for purpose of developing frictional heat. Relative rotation of blade and base metal blanks is terminated after sufficient heat is developed but pressing force is maintained. Blade and base metals are joined together to form rough forging of cutting tool. Rough forging is forged to draw it along juncture of blade and base metals. Portions of blade and base metals are cut away to form cutting tool.

3,648,549
INTERNALLY DRIVEN STOP NUT

Earl D. Siddall, Monterey Park, Calif., assignor to Helen Howell-Younes, Pasadena and Marie K. Wright, Newport Beach, both of, Calif., part interest to each

Filed Mar. 25, 1970, Ser. No. 22,538
Int. Cl. B25b *13/00, 13/02, 13/56*
U.S. Cl. 81—90 C **1 Claim**



A coupling for setting a locknut with thread gripping fins in which a wrench having tines engages and drives the nut by engagement of the fins by the tines.

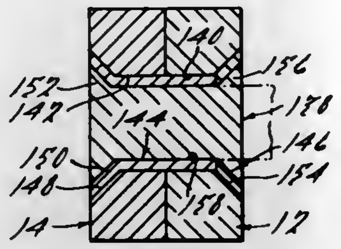
3,648,550
PLIERS

Walter J. Rozmus, Hubbardsville, N.Y., assignor to Utica Tool Company Inc., Orangeburg, S.C.

Filed Dec. 4, 1968, Ser. No. 781,019
Int. Cl. B25b *7/06*
U.S. Cl. 81—416 **5 Claims**

A pliers-like tool comprising a pair of pivotably connected lever members each having an elongated handle section and a jaw section, at least one of the handle sections being formed with a recessed portion, plunger means disposed at least in part within the recessed portion and engageable with the other of the handle sections for resisting pivotal movement of the handle sections toward one another, spring means resiliently urging the plunger means outwardly from

the recessed portion, means cooperable with the plunger means for limiting outward movement thereof with respect to the recessed portion, means defining annular bores in each of the lever members a pivot pin extending through the bores

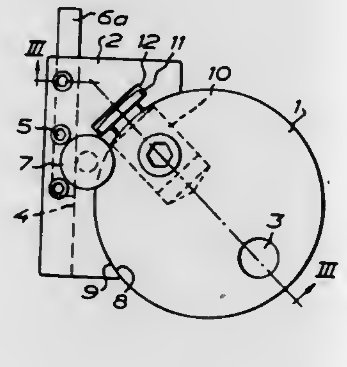


and thereby pivotably connecting the same, with the pivot pin and the bores being dimensioned such that the pivot pin is received with a press fit in one of the bores and with a slip fit in the other of the bores.

3,648,551
TOOL MOUNTING FOR SLIDE LATHES

Gustaf Adolf Dahl, Strandgatan 10, 302 46 Halmstad, Sweden

Filed Jan. 21, 1970, Ser. No. 4,696
Claims priority, application Sweden, Jan. 28, 1969, 1107/69
Int. Cl. B23b *29/04*
U.S. Cl. 82—36 **2 Claims**



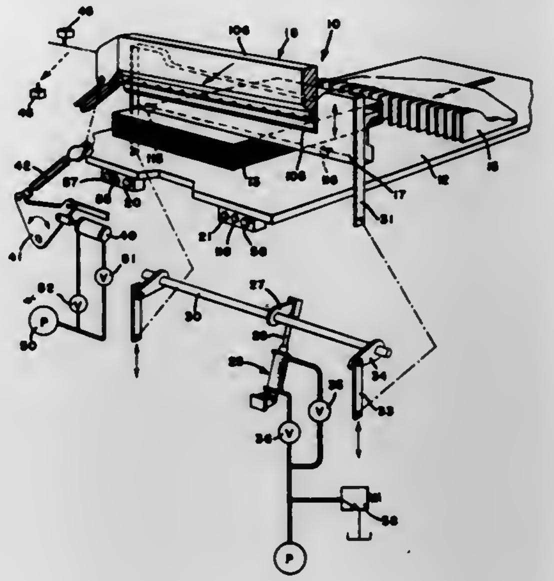
A tool mounting comprises a circular cylindrical block to be clamped on a lathe slide, and a tool holder with a corresponding circular cylindrical engagement surface to be clamped to the block by means of a radially oriented tension bolt therein, and with the lathe tool at an angle of 45° to the tension bolt.

3,648,552
FLUIDIC CONTROL FOR MATERIAL CUTTER

Edgar R. Bradley, Tipp City, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed July 17, 1970, Ser. No. 55,657
Int. Cl. B26d *7/24*
U.S. Cl. 83—68 **10 Claims**

A material cutting device having hydraulic actuating means for moving a clamp into engagement with the material and for moving a knife through the material after it is clamped is controlled by a fluidic circuit including a four input NOR gate connected to a pair of manually operated switches. A time delay circuit is included between the

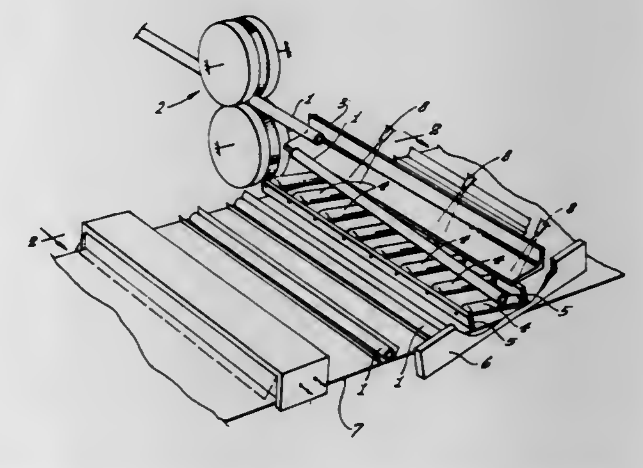


switches and the NOR gate to allow time delay in the operation of the switches by the operator.

3,648,553
DEVICE FOR TRANSPORTING ELONGATED WORKPIECES

Eckhard Tuschy, Osnabrueck, and Theodor Niggemann, Sutthausen, both of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Akteingesellschaft, Hannover, Vahrenwalder Strasse, Germany

Filed Jan. 22, 1970, Ser. No. 4,846
Int. Cl. B23d *21/04*
U.S. Cl. 83—112 **4 Claims**



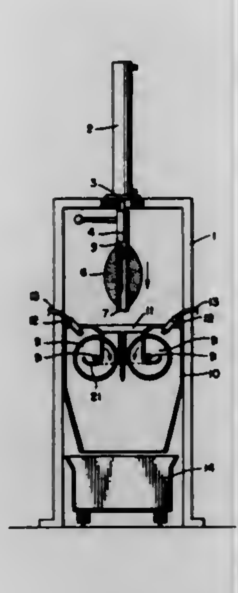
Elongated workpieces are transported crosswise to the direction in which they leave a cutter, by means rolls having inclined axes to both, that direction and the crosswise direction, and they define a plane inclined to the vertical.

3,648,554
APPARATUS FOR CUTTING SPOOL WOUND THREAD INTO STAPLE FIBERS

Walter Arnold, Klingenberg am Hang 22, Klingenberg, and Gunter Wepner, Schulstr. 81 L, Neuhaaren, both of Germany

Filed Jan. 26, 1970, Ser. No. 5,843
Claims priority, application Germany, Jan. 29, 1969, P 19 04 288.7
Int. Cl. B26d *7/08*
U.S. Cl. 83—169 **7 Claims**

Apparatus for cutting thread wound on a spool or bobbin into staple fibers including two or more circular knives arranged radially of the spool axis at equal intervals with reference to the spool circumference and with their axes or rotation in a single plane and means to hold a completely or partially wound spool while axially shifting or moving it between the circular knives for cutting engagement with the thread.

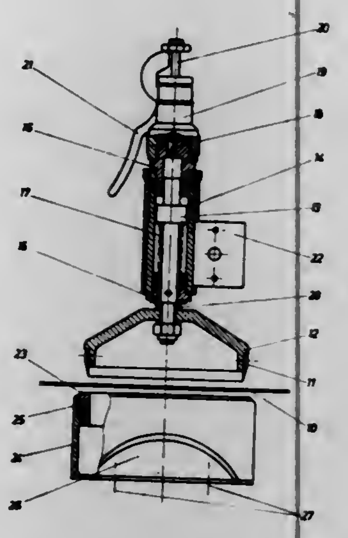


3,648,555
APPARATUS FOR THE SAMPLING FROM CONTINUOUSLY MOVING MATERIALS

Alfred W. Schraud, Op de Bult 18, and Claus Tischbein, Alter Postweg 111, both of Maschen, Germany

Filed Dec. 8, 1969, Ser. No. 888,201
Int. Cl. B26d *7/00*

U.S. Cl. 83—167 **7 Claims**



An apparatus for removing sample pieces from continuously moving materials in open width of textiles, paper, plastics and the like, comprising a mounting support, a preferably circular punching knife, a plane punching plate and an actuating appliance for the knife.

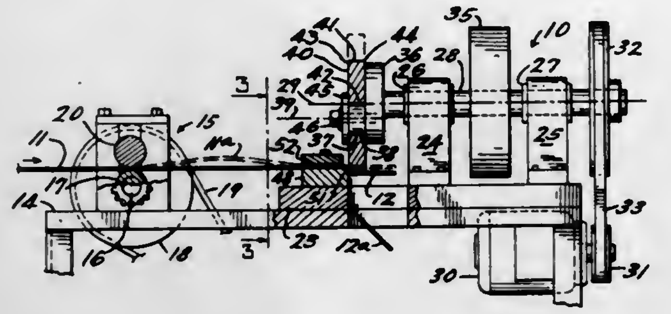
The mounting support allows the materials to pass between the knife and the punching plate. Samples are cut, when the edge of the knife is touching the punching plate. This is done in a very short time, because the knife is actuated by detonation of a cartridge. The samples are collected in a tray beyond the punching plate. The samples are pushed through an aperture in the punching plate, which is somewhat smaller than the samples, into the tray by a blast of air, caused by the movement of the knife.

3,648,556
ROTARY CUTTING APPARATUS

Clarence L. Hamilton, Muncie, Ind., and Jack E. Hutson, Greeneville, Tenn., assignors to Ball Corporation, Muncie, Ind.

Filed Jan. 7, 1970, Ser. No. 1,165
Int. Cl. B23d *25/00*

U.S. Cl. 83—262 **4 Claims**



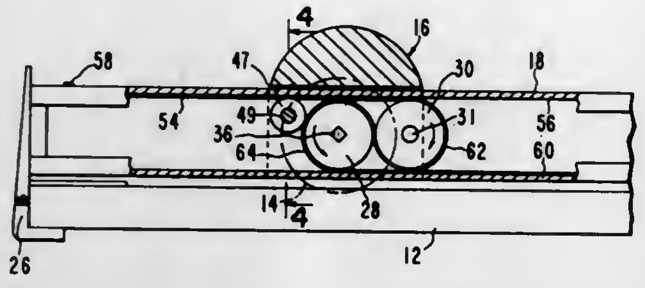
The present invention relates to a rotary cutting apparatus which is utilized for cutting or slitting of strip material into increments of a predetermined length. The strip material is moved along a longitudinal path and fed between a lower anvil member and a complementary circular knife. The circular knife is eccentrically mounted for rotation adjacent one end of a rotatable shaft. The circular knife is free to rotate relative to the shaft. A cutting edge of the anvil member and the circular knife cooperate to slit the strip material in a direction transverse of the longitudinal path.

3,648,557
ROTARY PAPER CUTTER WITH SPRING STRAP DRIVE

Jack O. Lind, 2704 Fairbrook Drive, Mountain View, Calif.

Filed Dec. 5, 1969, Ser. No. 882,573
Int. Cl. B26d *1/20*

U.S. Cl. 83—489 **9 Claims**



A paper cutter of the type having a rotary blade movable adjacent to and along one side margin of a board for supporting paper wherein the blade is coupled to one of a pair of adjacent rollers carried by a channel member disposed longitudinally of the side margin of the board. A resilient strap is secured at its ends to the ends of the channel member and is partially wrapped around the rollers to cause rotation of the same while permitting movement of the rollers and thereby the cutter blade with minimum resistance due to friction. Means is provided to bias the cutter blade toward the side margin.

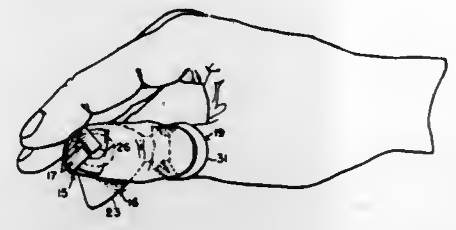
3,648,558
ELASTICALLY HELD GUITAR PICK

John E. Chenette, 390 N.E. 7th Street, East Wenatchee, Wash.

Filed Sept. 25, 1970, Ser. No. 75,535
Int. Cl. G10d *3/16*

U.S. Cl. 84—322 **6 Claims**

A guitar pick conformed to fit about the finger of a user and be maintained in operative position thereon by a communicating elastic band extending about the finger. The design may be adapted for use with either a finger digit pick or a thumb pick. A species of thumb pick allows the use of a releasably held flat planar pick element of traditional design. The finger pick has no side structure to interfere with normal playing manipulations.

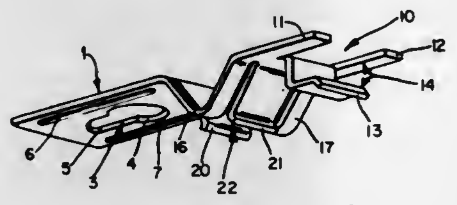


3,648,559
COVER FASTENER

Frederick W. Hudnall, Vienna, W. Va., assignor to Textron Inc., Providence, R.I.

Filed Aug. 14, 1969, Ser. No. 858,906
Int. Cl. F16b *21/06*

U.S. Cl. 85—7 **2 Claims**



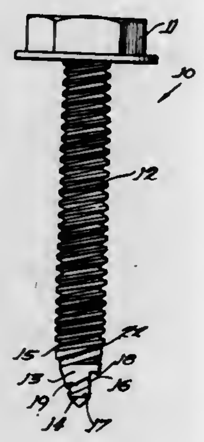
A fastener for connecting two parts together including a flat body formed with a slot adjacent one edge for use in accepting a retaining slot on one part, a retaining groove on the opposite edge of the body for accepting a retaining tongue also on said one part, an opening in the center of the body with a pair of retaining arms adapted to accept and exert pressure on a ball stud connected to the other part.

3,648,560
SELF-EXTRUDING SCREW

Kenneth L. Roser, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed June 9, 1970, Ser. No. 45,173
Int. Cl. F16b *25/00*

U.S. Cl. 85—47 **3 Claims**



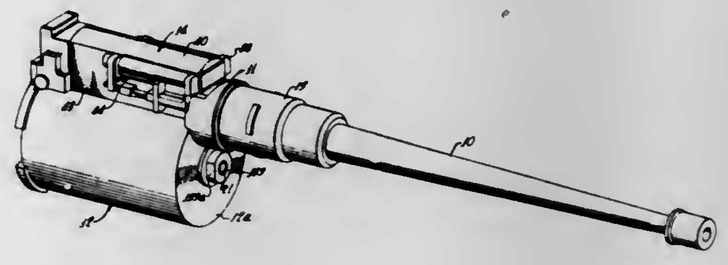
A self-extruding screw used for thin gage sheet metal to provide increased holding power, with the screw having an enlarged head, a threaded shank and a generally tapered thread-free point with a flattened side parallel the screw axis extending from adjacent the base of the conical tip to a point short of the threaded shank. An angular groove is formed in the tapered point to extend therearound, partially interrupted by the flattened surface, from adjacent the conical tip to and merging into the threads of the shank.

3,648,561
CAM ROTOR GUN

Eugene M. Stoner, 2292 No. Carriage Lane, Port Clinton, Ohio

Filed Apr. 9, 1970, Ser. No. 26,823
Int. Cl. F41f *11/00*

U.S. Cl. 89—11 **21 Claims**



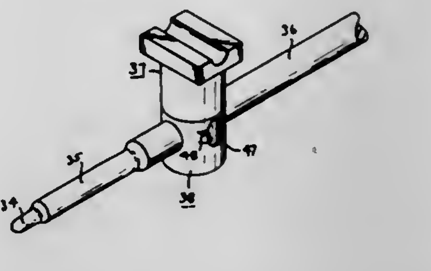
A cylindrical rotor having a continuous spiral cam slot formed in its periphery reciprocates a breech block to drive rounds of ammunition into a barrel, to fire the round and to extract the expended cartridges after firing. A cam on the front end of the rotor controls movement of a lock which temporarily locks the breech block during the firing operation. Ejector pins on the rotor thrust an ejected cartridge sideways as the breech block is being reciprocated rearwardly. A cam on the rear of the rotor controls the feeding ammunition into the path of the breech block.

3,648,562
SAFETY CAM PIN ASSEMBLY

August F. Loeble, 800 Woodlawn Avenue, Collingdale, Pa.

Filed Apr. 28, 1970, Ser. No. 32,626
Int. Cl. F41d *11/16*

U.S. Cl. 89—185 **19 Claims**



A safety cam pin assembly for replacing the standard cam pin of automatic rifles of the M-16 type, the safety cam pin assembly consisting of a modified cam pin and an obstruction safety bushing. The modified cam pin is the same as a standard cam pin with the exception that the lower portion of the cam pin shank is of reduced diameter by an amount equal to twice the wall thickness of the safety obstruction bushing, and a keyway is provided on the cam pin. The safety obstruction bushing is a sleeve which slips upward over the reduced lower portion of the modified cam pin and is provided with key elements to interfit with the keyway of the cam pin so that when the key and keyway are interfitted the bushing is rotatable with the cam pin. The sidewalls of the obstruction bushing are diametrically apertured with two sets of orthogonally disposed apertures, one set of such apertures being alignable with the firing pin aperture through the cam pin and of sufficient diameter to permit passage of the firing pin therethrough. The second set of apertures are of reduced cross section and do not permit passage of the firing pin entirely therethrough and thereby prevent the firing pin from reaching a round of ammunition when the cam pin has been omitted from the bolt assembly. Detent means are provided to retain the safety obstruction bushing in its firing pin obstructing position until such time as the cam pin is properly reinstalled into the bolt assembly.

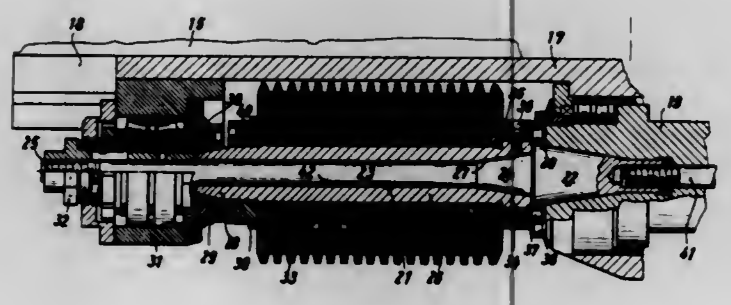
ERRATUM

For Class 89—185 see:
Patent No. 3,648,566

3,648,563
CLAMPING MEANS FOR MACHINE TOOLS, IN PARTICULAR CUTTERS

Eugen Sollinger, and Ernst Gerhardtsberg, both of Olching, Germany, assignors to Carl Hurth Maschinen-und Zahnradfabrik, Munich, Germany

Filed Sept. 29, 1969, Ser. No. 861,637
Claims priority, application Germany, Oct. 3, 1968, P 18 00 769.7
Int. Cl. B23c *1/02;* **B23f** *1/06*
U.S. Cl. 90—11 A **8 Claims**

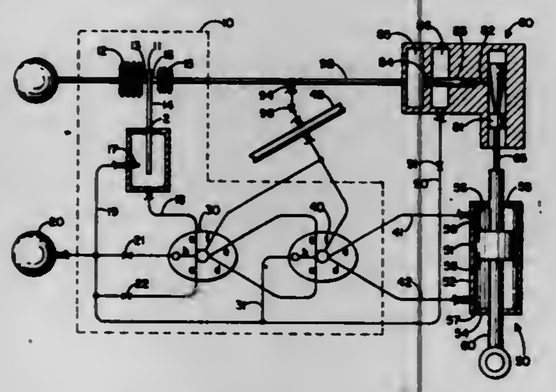


Clamping means for a machine tool, such as a gear cutter, in which the tool is fixed onto a sleeve which in turn is received onto an arbor. The sleeve is related to the arbor through two conical zones tapered in the same direction and is clamped thereon by threaded means bearing against one conical zone to urge the sleeve against a shoulder on the arbor.

3,648,564
HYDRAULIC FLUIDIC SERVOACTUATORS

Robert V. Burton, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 3, 1970, Ser. No. 25,406
Int. Cl. F15b *13/042, 13/16*
U.S. Cl. 91—3 **1 Claim**

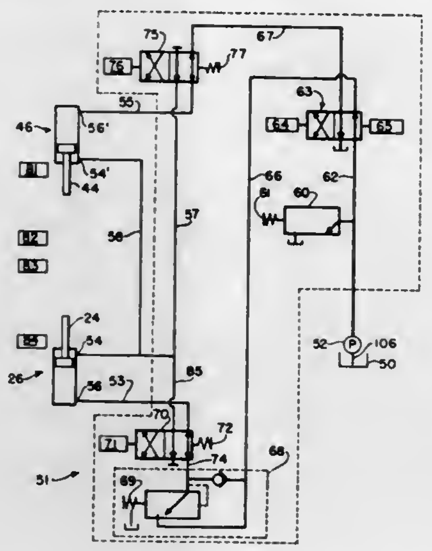


A closed loop hydraulic fluidic servoactuator employing a high pressure proportional fluid amplifier as a single stage control valve. Also disclosed are lagged feedback and lead lagged feedback circuits employed in the servoactuator.

3,648,565
SYNCHRONIZING SYSTEM

Richard O. Probst; William W. Smith, both of Indianapolis, Ind., and Henry B. Lee, Cudahy, Calif., assignors to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Filed Mar. 17, 1970, Ser. No. 20,228
Int. Cl. F01b *25/04;* **F15b** *11/22*
U.S. Cl. 91—171 **9 Claims**

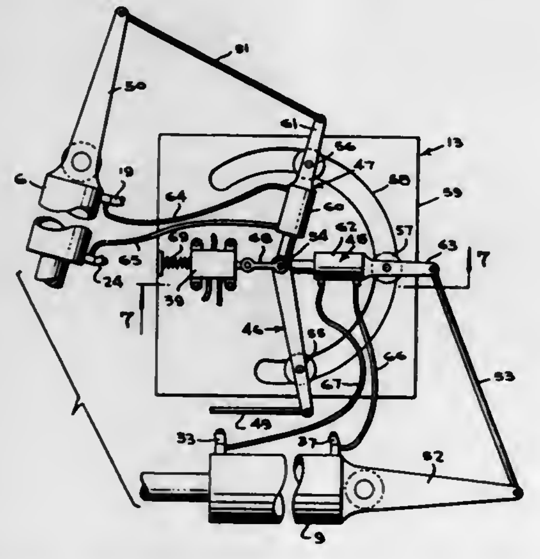


A system for and a method of synchronizing the movement of serially connected drive and driven fluid motors employed to move electrostatic coating devices across articles to be coated. The electrostatic devices coat the articles with a protective and/or decorative coating material. Valve means is connected to a source of fluid under pressure and to a fluid input port of the drive fluid motor to control the direction of movement of the fluid motors and hence control movement of the electrostatic devices cooperatively associated with the fluid motors. Means, cooperatively associated with the fluid motors, which reacts to an imbalance in the movement of the fluid motors so as to cause balanced movement of the fluid motors so that the movement of the driven fluid motor is substantially synchronized with the movement of the drive fluid motor.

3,648,566
FORCE VECTOR DIRECTION CONTROL

George B. Baron, R.D. 4, Marion, Ohio

Original application Jan. 17, 1968, Ser. No. 698,590, now Patent No. 3,512,597. Divided and this application Feb. 6, 1970, Ser. No. 14,692
Int. Cl. F01b *15/02;* **F15b** *11/08, 13/042*
U.S. Cl. 91—176 **5 Claims**

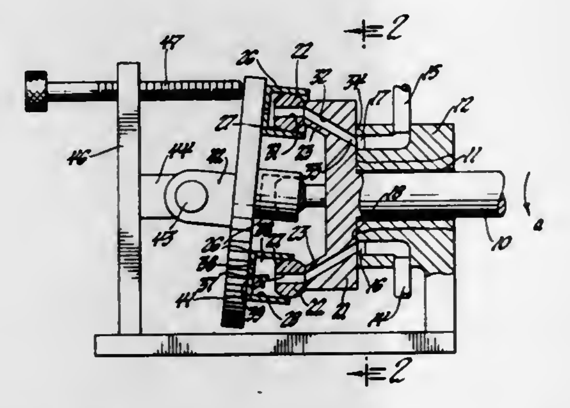


A settable control to maintain a selected resultant force vector of lift and pull cylinders of a fluid system operated walking mechanism for heavy equipment, which control has members to simulate the forces and movements of the lift and pull cylinders joined by a floating pivot to a vector control lever which opposes movement of the floating pivot along the longitudinal axis of the control lever. Movement of the pivot in other directions by the force-simulating members operates a valve control for the fluid system to maintain the selected force vector.

3,648,567
VARIABLE DISPLACEMENT AXIAL PUMP OR MOTOR

William B. Clark, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed July 6, 1970, Ser. No. 52,632
Int. Cl. F01b *13/04*
U.S. Cl. 91—505 **2 Claims**

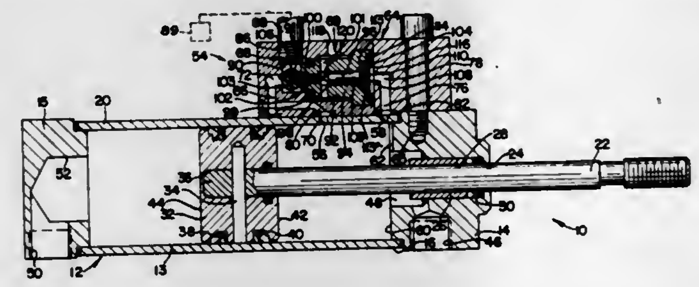


A variable displacement pump or motor unit having a power shaft drivingly connected to a rotor rotatably mounted in the stationary housing. Spherical pistons in an annular series are mounted on the rotor and each cooperates with a cylinder cup which has a sliding slipper base portion slidably engaging the stationary tilt plate. The tilt plate is pivotally mounted on the frame and the angle of the tilt plate with respect to the axis of the unit is adjusted for variable displacement.

3,648,568
SIGNAL VALVE

Lee A. Wright, Kettering, Ohio, assignor to Mosier Industries, Inc., Dayton, Ohio

Filed Mar. 9, 1970, Ser. No. 17,746
Int. Cl. F01b *25/26, 31/12*
U.S. Cl. 92—5 **4 Claims**

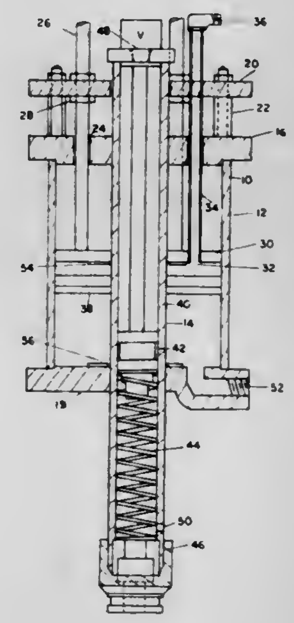


The signal valve indicates when a piston, movable in a cylinder, is moved to one end of the cylinder. The signal valve includes a housing mounted on the cylinder and having first and second passageways therein which communicate with the interior of the cylinder through first and second ports in the side wall of the cylinder. The first passageway extends through the housing between the first port and a fluid pressure sensing device. The second passageway terminates within the housing. A valve member is positioned for movement within the housing and has a first end adapted to close the first passageway and a larger second end. When the same pressure is acting on both ends of the valve member, the force on the second end is greater than the force on the first end to move the valve member to close the first passageway. When the piston is moved to one end of the cylinder between the ports, the fluid pressure acting on the piston is admitted through the first port into the portion of the first passageway between the first port and the valve member to establish a force on the valve member for moving the valve member to open the first passageway to permit operating fluid to flow through the first passageway to indicate that the piston is at the one end of the cylinder. A vent passage in the housing vents the portion of the first passageway in communication with the pressure sensing device when the first passageway is closed by the valve member.

3,648,569
POWER PRESS

Andrew L. Koches, and Francois T. W. Christiansen, both of Old Saybrook, Conn., assignors to Ultra Tech Corporation, Old Saybrook, Conn.

Filed July 8, 1970, Ser. No. 53,236
Int. Cl. F15b *15/24*
U.S. Cl. 92—13.8 **1 Claim**



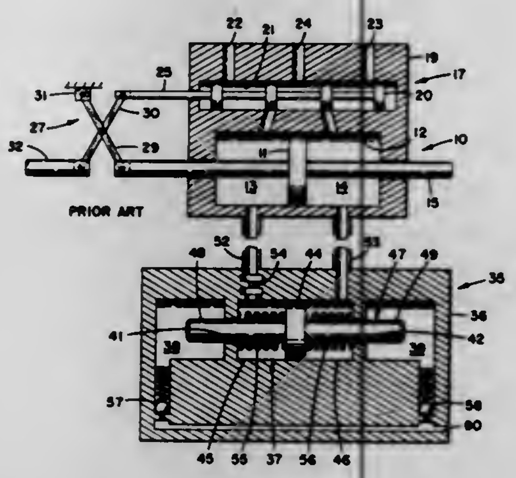
Generally speaking, the present invention contemplates a pneumatic power press tool having an elongated cylindrical piston assembly with an upper impact air port at the upper end of said assembly, and an impact piston within said assembly, acted upon by compressed air fed through said impact air port. There is an outer housing cylinder with said assembly being radially disposed and longitudinally displaceable therein. A cylinder stroke locking plate is disposed above and parallel to the top wall. Passing through the top wall is an adjustment locking rod, including locking means to lock said locking rod at desired locations. A cylinder stroke adjuster disc is adjustably held by said locking rod and defines a stroke limit within the outer housing cylinder. Connected to the outside of said piston assembly is an outer piston disc and this piston disc moves longitudinally within said outer housing cylinder between the stroke adjuster disc and bottom wall. The outer piston disc is activated by a pneumatic arrangement feeding compressed air to the outer piston disc through the stroke adjuster disc. Thus, the outer piston disc provides a first stroke and the impact piston provides a second stroke, the length and quantity of air fed to the first stroke being adjustable.

ERRATUM

For Class 92—5 see:
Patent No. 3,648,568

3,648,570
APPARATUS FOR DAMPING RESONANT VIBRATION

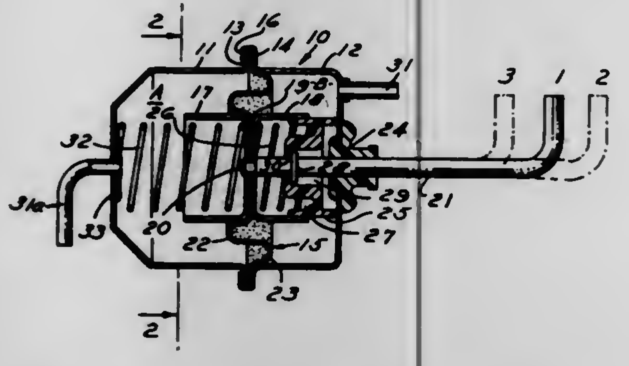
Werner G. Koch, Arlington, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.
Filed June 22, 1970, Ser. No. 48,235
Int. Cl. F01b *11/02, 29/00*
U.S. Cl. 92—60 **8 Claims**



An apparatus for damping resonant vibration within a hydraulic system having a hydraulic actuator slidable within a piston chamber and dividing the chamber into first and second chamber portions. Frictional and resilient means are employed for damping vibration, the resilient means comprising hydraulic spring means connected in series with a passageway communicating between the first and second chamber portions.

3,648,571
VACUUM MOTOR

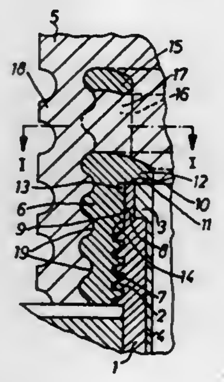
Ronald Burgess, Flushing, Mich., assignor to F & E Manufacturing Company, Flint, Mich.
Filed July 2, 1970, Ser. No. 51,933
Int. Cl. F01b *19/02*
U.S. Cl. 92—100 **13 Claims**



The combination comprising a housing and a diaphragm separating said housing into a first and second chamber. An actuating rod is fixed to said diaphragm within said housing and has an end thereof extending through said second chamber to the exterior. A plunger surrounds the rod in the second chamber and a spring between the diaphragm and the plunger yieldingly urging the diaphragm and plunger apart. Interengaging means between the plunger and the rod limit the movement of the said diaphragm and plunger apart under the action of the spring. A second spring in said first chamber yieldingly urging the diaphragm toward the plunger. The first and second chambers have openings therein for communicating selectively with a source of vacuum or the atmosphere, whereby when said openings are in communication with the atmosphere, the diaphragm and the actuating rod are in an intermediate position; when vacuum is supplied to one of said chambers, the diaphragm and the actuating rod are moved to one side axially of said intermediate position; and when vacuum is subsequently supplied to the other chamber and the first-mentioned chamber is vented to atmosphere, the actuating rod is moved to another position on the opposite side of the intermediate position.

3,648,572
DISMOUNTABLE CYLINDER FOR RECIPROCABLE PISTON MACHINES

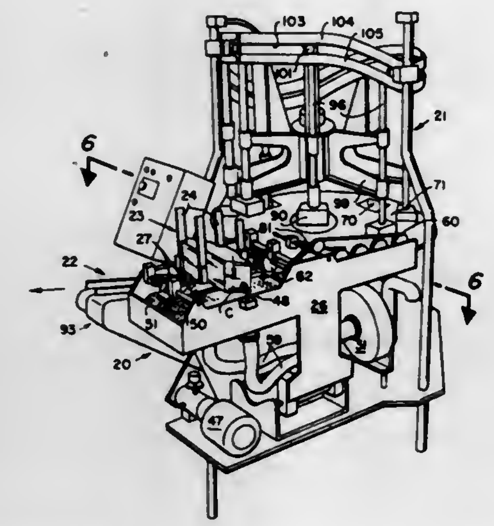
Hans Fischer, Nurnberg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft Zweigniederlassung Nurnberg, Nurnberg, Germany
Filed Mar. 27, 1970, Ser. No. 23,248
Claims priority, application Germany, Mar. 27, 1969, P 19 15 726.7
Int. Cl. F16j *11/02, 11/04*
U.S. Cl. 92—169 **15 Claims**



A dismantable cylinder-cylinder head unit, which includes a cylinder tube having its outer periphery provided with a buttress thread which is engaged by a threaded ring, which latter is cast between the cylinder head and said cylinder tube while said cylinder tube has an end face in sealing engagement with a sealing surface of a radially inwardly extending collar of said threaded ring, said sealing surface being spaced from the nearest winding of said buttress thread by a section of said cylinder tube which precisely fits into a corresponding portion of said threaded ring.

3,648,573
APPARATUS AND METHOD FOR FORMING CARTONS

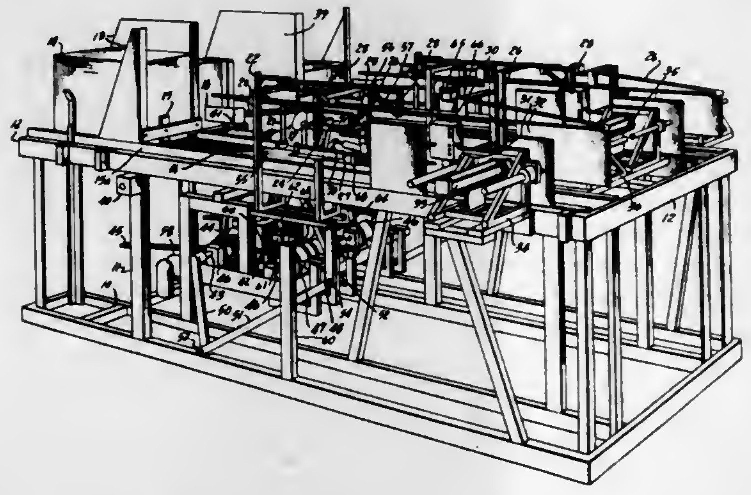
Alfred B. Le Febvre, Danville; Helmut E. W. Masch, San Jose; Louis Robert, San Mateo, and Hugh B. Morse, San Jose, all of Calif., assignors to Fibreboard Corporation, San Francisco, Calif.
Filed Apr. 29, 1970, Ser. No. 32,836
Int. Cl. B31b *1/46, 1/12, 49/02*
U.S. Cl. 93—51 M **21 Claims**



An apparatus for forming cartons comprises feeding means, including a pivoted suction cup and cooperating vacuum belt conveying means, for individually feeding carton blanks to a forming means. Such forming means comprises a rotary table having a plurality of female forming dies radially positioned thereon. A ram-type male die is reciprocally mounted above the table to cooperate with each forming die to form the carton blank into tray form. Gas burner type nozzle means are mounted adjacent to the table to discharge heated air onto partially folded corners of a polyethylene-coated carton blank prior to when it is fully formed in the forming die. After the corners are compressed and sealed, stripping means engage the formed carton to move it onto a discharge conveyor.

3,648,574
APPARATUS FOR SETTING UP FOLDED CORRUGATED CONTAINERS

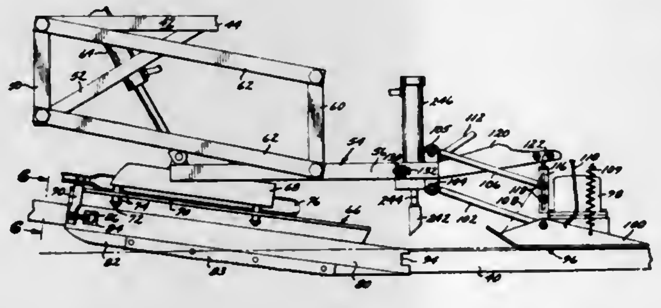
Isac G. Luke, Orlando, Fla., assignor to L & M Manufacturing and Supply, Inc., Orlando, Fla.
Filed Nov. 21, 1969, Ser. No. 878,763
Int. Cl. B31b *1/54, 1/62, 1/80*
U.S. Cl. 93—49 AC **7 Claims**



A folded corrugated container setting up apparatus for setting up containers and the tops thereto simultaneously or individually and having a single drive motor driving a single power shaft but having a pair of clutches in the drive shaft adapted to disable either the container setting up portion of the machine or the top for the container setting up portion of the machine. Each portion of the drive shaft drives a set of timing cams which directly actuate pneumatic valves to operate different steps of the folding operation. Each side of the drive shaft drives a slider crank mechanism which reciprocates a carriage having upper and lower dogs thereon for moving the containers through a series of stations performing the setup operation.

3,648,575
METHOD AND APPARATUS FOR INSERTION OF JOINT MATERIAL IN PLASTIC CONCRETE

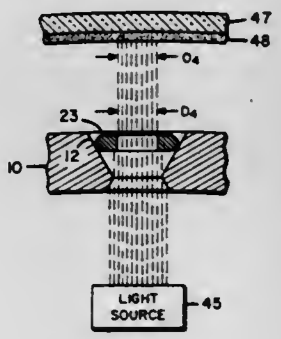
Donald W. Rasmussen, Downey, Calif., assignor to Edoco Technical Products, Inc., Long Beach, Calif.
Filed June 30, 1970, Ser. No. 51,219
Int. Cl. E01c *19/00*
U.S. Cl. 94—39 **24 Claims**



A method and apparatus for inserting joint strip material in a slab of plastic concrete or the like. The apparatus includes an elongated frame for orientation transversely of the slab and transportable in successive movements longitudinally of the slab. The frame mounts a cart adapted to be driven along the frame and carrying a strip guide or tube movable through the plastic concrete to embed the joint strip material. The cart also carries a pan which rides upon the concrete surface behind the strip guide to sense the height of the concrete, initiate operation of a means to adjust the height of the strip guide accordingly, and also smooth the concrete surface. This controls the depth of insertion of the strip material ans smooths the surface of the concrete disrupted by the insertion. The frame includes side forms engageable with the side edges of the concrete slab to preserve their integrity during the insertion operation, the forms being automatically retractable out of such engagement immediately upon longitudinal movement of the main frame. The joint strip material is unwound from a reel upon a strip unreeling traverse of the cart, held in position by clamping arms during an opposite insertion traverse of the cart, and severed upon completion of the insertion traverse. In a second embodiment feed wheels are used instead of the clamping arms.

3,648,576
TEMPORARILY REDUCING THE DIAMETRICAL OPENING OF APERTURES BY USE OF A REMOVABLE ANNULAR MEMBER

Norman B. Mears, St. Paul, and John J. Frantzen, North St. Paul, both of Minn., assignors to Buckbee-Mears Company, St. Paul, Minn.
Filed Feb. 9, 1970, Ser. No. 9,639
Int. Cl. G03b *27/02*
U.S. Cl. 95—1 **7 Claims**



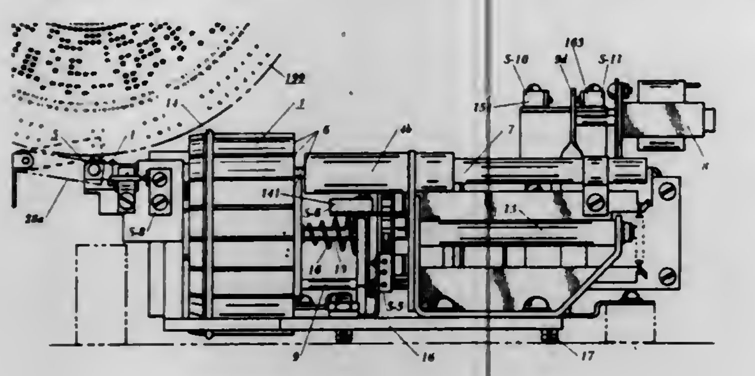
A method for temporarily reducing the diametrical opening of the apertures in a shadow mask by placing annular rings in the opening of the apertures to partially reduce the effective opening of the apertures in the mask without altering the physical characteristics of the mask.

3,648,577
FULLY AUTOMATIC PHOTOTYPESETTING APPARATUS

Max J. Lanzendorfer, York; Marvin E. Lauer, Manchester, and Robert K. Wonner, Dover, all of Pa., assignors to York Graphic Services, Inc., York, Pa.
Filed May 6, 1969, Ser. No. 822,179
Int. Cl. B41b *23/00*
U.S. Cl. 95—4.5 **16 Claims**

This invention relates to phototypesetting equipment incorporating automatic handling and photographic of pi characters.

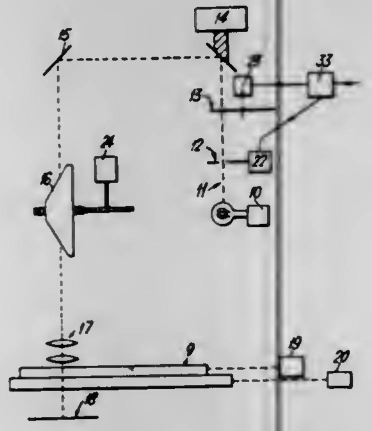
The invention may be constructed as original equipment or the apparatus for the automatic handling of pi characters may be constructed as a module for connection into existing conventional equipment with suitable electric and electromechanical controls for timely disabling and enabling the



circuitry of the existing equipment to add the pi handling principles thereto.

3,648,578
APPARATUS FOR AUTOMATICALLY DRAWING LINES

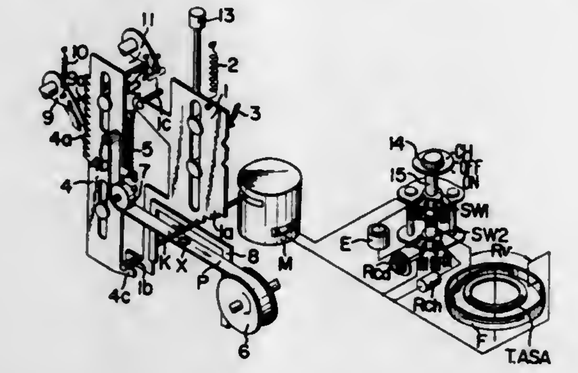
David Scarth Ritchie, Glasgow, Scotland, assignor to Barr and Stroud Limited, Glasgow, Scotland
Filed Aug. 31, 1970, Ser. No. 68,332
Claims priority, application Great Britain, Sept. 10, 1969, 44,711/69
Int. Cl. B43l *13/18*
U.S. Cl. 95—12 **7 Claims**



Apparatus for automatically tracing lines, for example for cartographic purposes, in accordance with recorded data specifying coordinates of points on the lines to be traced specified with respect to reference axes, and a method for automatically tracing such a line. The apparatus includes a source of light and optical elements for projecting a beam of light from the source onto a photographically sensitized surface, an adjustable-aperture diaphragm located in the path of the light beam to control the image size, structure for causing automatic relative movement of the light beam with respect to the surface at varying speeds in accordance with the data to produce a trace of the line on the surface, and exposure regulating means for maintaining a pre-determined exposure of the trace on the sensitized surface over the full range of image sizes. The method for automatically tracing the line includes movement of relatively movable carriages in such apparatus which are moved automatically in accordance with the recorded data to effect the relative movement of the projected beam of light over the surface to produce the trace of the line.

3,648,579
EXPOSURE METER HAVING BATTERY VOLTAGE COMPENSATING DEVICE

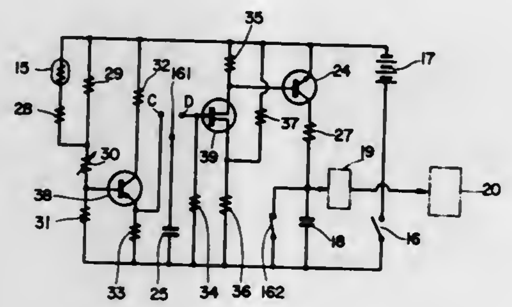
Toshio Tomomitsu, and Tatsuo Fujii, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Jan. 6, 1970, Ser. No. 904
Claims priority, application Japan, Jan. 10, 1969, 44/1681; 44/1682; 44/1683
Int. Cl. G01j *1/00, 1/42, 1/44*
U.S. Cl. 95—10 C **8 Claims**



An exposure meter in which a voltage compensation setting device displaces a fixed index mark in the case of a fixed mark coincidence type exposure meter, varies the deflection of a following pointer upon one step variation of the exposure factor in the case of a follow the pointer type exposure meter or varies the spacings between the graduated scale marks in the case of a graduated scale mark direct reading type exposure meter. The displacement of said setting device is limited to a position where the battery voltage check pointer stops upon the battery voltage check, whereby said fixed index mark may be displaced until it coincides with said pointer at said position, said deflection of said following pointer upon one step variation of the exposure meter may coincide with that of said pointer for a unit of brightness of light or said scale marks graduated or calibrated in accordance with the voltage of the battery used may be indicated to compensate the voltage drop or variation of the battery.

3,648,580
ELECTRONIC SHUTTER AND A CIRCUIT THEREFOR

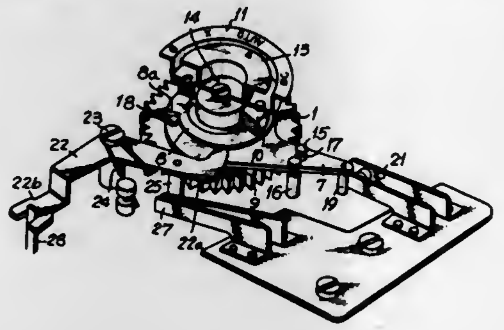
Akio Yanagi, and Shoichiro Kakuta, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Continuation-in-part of application Ser. No. 578,722, Sept. 12, 1966, now Patent No. 3,533,348. This application June 12, 1970, Ser. No. 45,774
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT **4 Claims**



An electric shutter circuit for a single lens reflex camera includes a photoelectric cell positioned to receive light from an object passing through a photographic lens, a capacitor for memorizing the intensity of the light, and resistors connected to the photoelectric cell to charge the capacitor with a voltage inversely proportional to the logarithm of the value of the intensity of the light. A field effect transistor is provided which detects the memorized voltage of the capacitor without affecting this voltage. An RC integrating circuit is connected to the field effect transistor and includes an integrating capacitor, a correcting resistor and a transistor, the resistance between the output terminals of the transistor being proportional to the detecting voltage. An electromagnetic mechanism, including an electromagnetic coil, is connected to the output terminal of a transistor switching circuit for closing the shutter when the voltage of the integrating reaches a predetermined level.

3,648,581
STRUCTURE FOR ADJUSTING A CAMERA AND CHECKING A BATTERY THEREOF

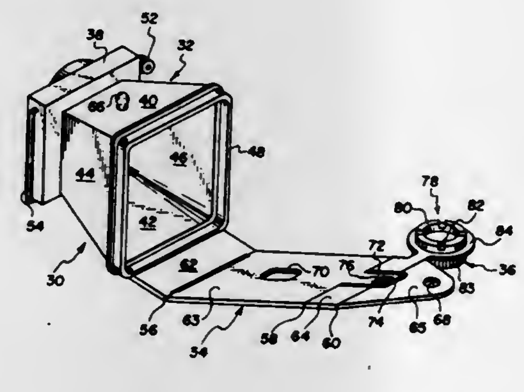
Yukio Umemura, Tokyo, Japan, assignor to Asahi Koyaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Jan. 28, 1971, Ser. No. 110,533
Claims priority, application Japan, Feb. 5, 1970, 45/11240
Int. Cl. G03b *17/18*
U.S. Cl. 95—11 R **10 Claims**



A camera having adjustable structure for determining exposure of film in the camera as well as a battery-checking structure. The adjustable structure can be selectively set with a setting structure while the battery-checking structure includes a normally open switch. Upon closing the latter switch a battery-checking circuit will be closed. The structure for setting the exposure determining structure of the camera can be moved to a position for closing the normally open battery-checking switch. When the setting structure is released it is automatically displaced to a position where the camera structure is adjusted for automatically determining the exposure and the normally open switch is in its open position.

3,648,582
CAMERA

Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 29, 1969, Ser. No. 829,009
Int. Cl. G03b *19/04*
U.S. Cl. 95—11 R **9 Claims**



A camera body for use in connection with a film cartridge includes an open backed camera structure adapted to receive a cartridge and a strap connected at one of its ends to the camera structure for securing the camera body to the film cartridge. A film-winding knob may be attached to the camera strap to be connected to the film cartridge take-up spool for advancing film. The camera structure may be provided with a viewfinder formed by a portion of the strap which extends above the film cartridge when assembled. Alternatively, the camera housing may be provided with pivoted viewfinder frames which may be swung to storage positions behind a cartridge when not in use. The camera housing may be formed of telescoping side walls to increase the size of the exposure chamber therein.

3,648,583
AUTOMATIC DRAWING MACHINE

Karl Blattner, Rain 698, Kuttigen Aargau, Switzerland
Filed Aug. 19, 1969, Ser. No. 851,365
Claims priority, application Switzerland, Aug. 19, 1968, 12790/68
Int. Cl. G03b *29/00*
U.S. Cl. 95—12 **15 Claims**

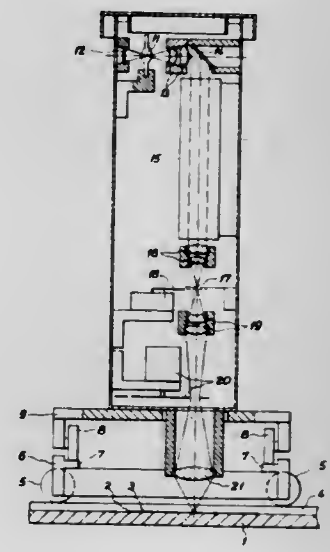
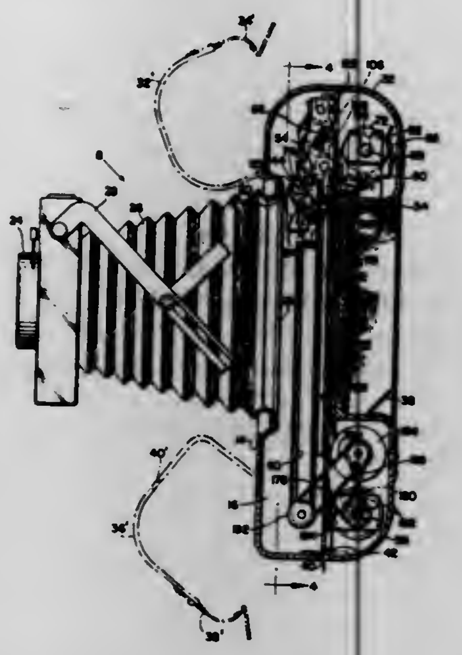


Photo-optical drawing apparatus has a head which projects a movable beam of light on a drawing board. The beam of light is projected through a diaphragm and onto the drawing board. The intensity of the light striking the drawing board is controlled by a shutter, the transparency of which varies with the molecular structure in one of its light-conductive elements.

3,648,584
PHOTOGRAPHIC FILM HANDLING AND PROCESSING SYSTEM

Michael F. Eacock, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Jan. 2, 1970, Ser. No. 7
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **32 Claims**

A carriage is mounted for reversible displacement across an exposure station of a camera and mounts in sequence an applicator, a guide bar and a resiliently compressible roller. A supply of photosensitive material is initially mounted adjacent one end of the exposure station while a supply of image-receiving material is mounted on the carriage. In its initial pass across the exposure station, the carriage draws a first section of photosensitive material onto the exposure station. After exposure and as the carriage is returned across the exposure station towards the supply of photosensitive material, a processing liquid is expressed from the applicator onto the section of exposed photosensitive sheet while a section of image-receiving material is simultaneously, progressively played out around the guide bar over the wetted photosensitive sheet and firmly pressed thereagainst by the resilient roller. In its next pass across the exposure station, the carriage advances the superposed sheets from the exposure station and draws a new section of photosensitive material thereonto. As the superposed sheets leave the exposure station, they are separated and the first section of image-receiving material ejected from the camera while the

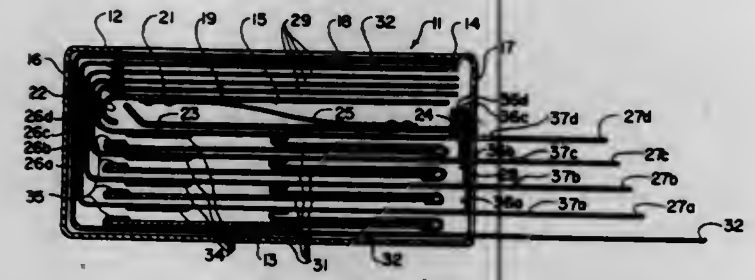


processed photosensitive sheet is stored within the camera. Other features include an edge control arrangement on the carriage and a unique application configuration.

3,648,585
PHOTOGRAPHIC FILM PACKS

Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 12, 1970, Ser. No. 45,686
Int. Cl. G03b *17/52*
U.S. Cl. 95—19 **7 Claims**



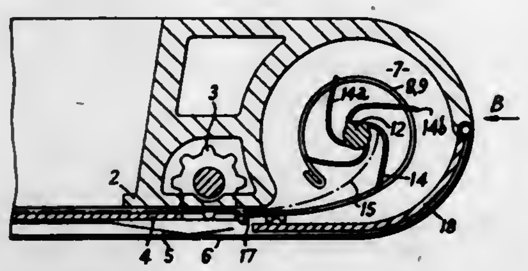
The disclosure relates to photographic film packs containing a plurality of self-processing film units adapted to be exposed and withdrawn from the film pack in sequence. A novel arrangement of restraining tabs provided by the leader members of the respective film units insures proper sequential withdrawal of the film units and prevents the removal of each successive unit from effecting movement of any of the remaining units.

3,648,586
FILM WINDING APPARATUS FOR CAMERAS

Herbert Welzel, Dresden, Germany, assignor to Kombinat VEB PENTACON DRESDEN Kamera- und Kinowerke, Dresden, Germany

Filed July 3, 1969, Ser. No. 838,933
Int. Cl. G03b *1/24, 1/58*
U.S. Cl. 95—31 R **5 Claims**

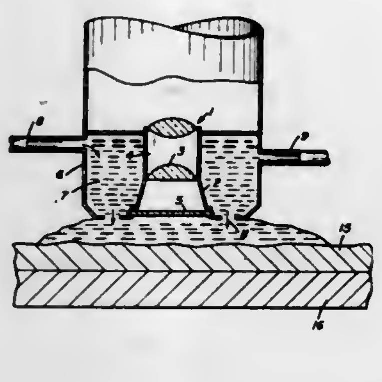
The photographic camera is provided with a chamber into which film passes from the supply spool after leaving the film gate. The chamber has two leaf springs arranged therein which act upon the edges of the film and guide the film into a roll form. In the center of the circle described by the leaf springs a catching device is provided which is formed by a spindle freely rotatably mounted on the camera and at least two arms bent into curved form and issuing from this spindle, the concave faces of which arms face in such a direction as to receive the film tongue entering the chamber. The width of the arms is equal to the distance between the two leaf springs and the arms protrude beyond the circle described by the leaf springs in the region between the two leaf springs at the beginning of the winding operation.



3,648,587
FOCUS CONTROL FOR OPTICAL INSTRUMENTS

Guy William W. Stevens, Berkhamstead, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 10, 1968, Ser. No. 776,300
Claims priority, application Great Britain, Oct. 20, 1967, 47,867/67
Int. Cl. G03b *3/00*
U.S. Cl. 95—44 R **15 Claims**

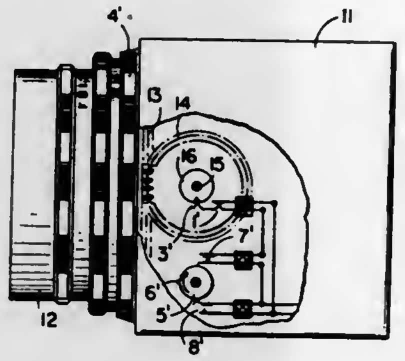


A method and apparatus particularly for making minute and very accurate images such as the negatives which are printed on photoresists in the production of microelectronic circuits. The method and apparatus employ an objective lens assembly adapted to be positioned in close proximity to a photographic emulsion layer, for focusing thereon an image of an object to be copied. In combination with the objective lens assembly there is provided a source of liquid, the liquid being of approximately the same refractive index as that of the emulsion and of a type that will not cause the emulsion to swell, and a liquid supply nozzle mounted for movement with the assembly and adapted to discharge the liquid so that a liquid stream fills the space between the assembly and the emulsion layer with a continuously renewed pool of liquid. There is further provided in combination with the assembly a device for sensing the pressure of the liquid in the nozzle so that the distance between the assembly and the emulsion layer may be monitored by noting variations in the liquid pressure in the nozzle from that obtained when the emulsion is correctly spaced.

3,648,588
MEANS FOR GUIDING THE SHUTTER IN A CAMERA EQUIPPED WITH A FOCAL PLANE SHUTTER AND POSSIBLY ALSO A CENTRAL SHUTTER

Alf Ingvar Alfredsson, Savedalen, and Lennart Gunnar Oskar Dahlgren, Vastra Frolunda, both of Sweden, assignors to Fritz Victor Hasselblad, Goteborg, Sweden

Filed Jan. 2, 1970, Ser. No. 289
Claims priority, application Sweden, June 12, 1969, 8392/69
Int. Cl. G03b *9/08*
U.S. Cl. 95—53 R **14 Claims**

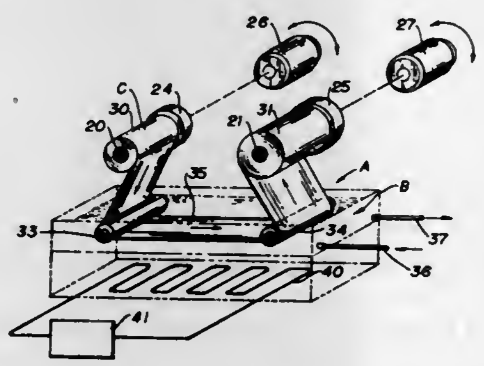


Means in cameras provided with a focal plane shutter and if desired a central shutter, for providing early or delayed release of respective shutters in relation to each other in dependence of the conditions under which an exposure is made, the means including two electrical circuits for early and delayed release respectively of the focal plane shutter, contacts embodied in the circuits and closed at a time difference corresponding to said early or delayed release of the focal plane shutter, movement transmitting means which actuates the contact of one circuit either directly or through the intermediary of coacting members to effect early release of the shutter and cam means located at an extra position "C," on the shutter speed selection means of the camera, which actuates the contact of the other circuit for effecting delayed release of the focal plane shutter.

3,648,589
METHOD AND APPARATUS FOR TESTING A PROCESSING WEB

Edward V. Merrick, San Jose, and William L. Ahrens, Sunnyvale, both of Calif., assignors to Mark Systems, Inc., Santa Clara, Calif.

Filed July 21, 1966, Ser. No. 566,971
Int. Cl. G03d *3/14*
U.S. Cl. 95—90.5 **8 Claims**

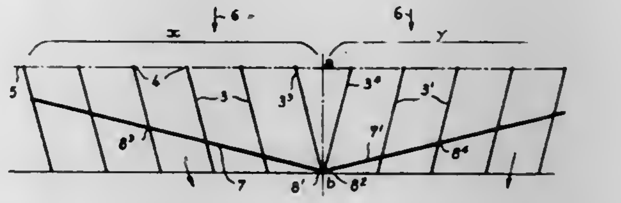


A photographic processing web imbiber and method for imbibing in which the web is wound from a first reel to a second reel through a fluid-soaking bath in loose enough winds to allow the liquid to continue being absorbed by the web while wound on the reel and having a final wind tight enough to squeegee out the liquid phases of materials in the final wind.

3,648,590
ADJUSTABLE LOUVRES FOR HEATING AND VENTILATION SYSTEMS OF VEHICLES

Jacques Mercier, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt (Hauts de Seine) and Automobiles Peugeot, Paris, France

Filed Jan. 29, 1970, Ser. No. 6,715
Claims priority, application France, Jan. 31, 1969, 6902152
Int. Cl. B60h *1/24*
U.S. Cl. 98—2 D **3 Claims**

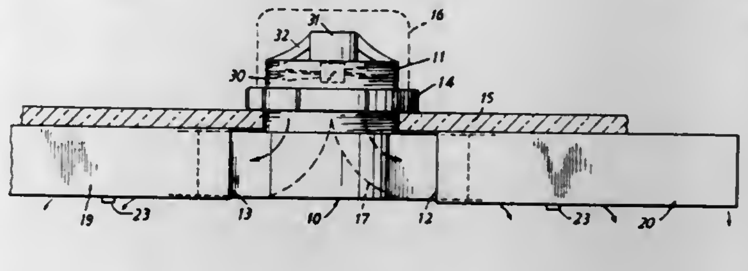


An improvement in ventilation and heating systems of automotive vehicles, characterized in that the dashboard louvres delivering heated or fresh air to the passenger compartment consist of a plurality of shutters pivoted about fixed pivot pins are responsive to oblique links adapted gradually to control the relative angular setting of said shutters with respect to one another thus achieving converging or diverging airflow.

3,648,591
VENTILATOR WITH SHUTTER MEANS

Ronald Winnett, c/o Barclays Bank, Tenterden, Kent, England

Filed Oct. 20, 1969, Ser. No. 867,606
Int. Cl. F24f *7/06*
U.S. Cl. 98—39 **9 Claims**



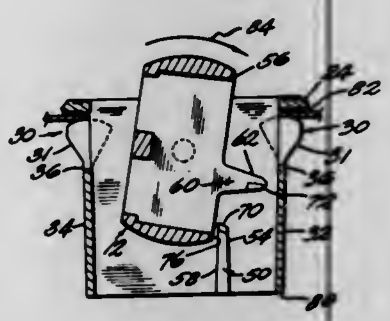
A ventilator for panel mounting, for example in a glass window pane or an automobile car body panel, consists of a hollow main body having a stem carrying an electrically driven fan and fixed through a hole in the panel, and two branches off the stem to each of which branches is connected as a prolongation thereof an elongate flexible duct having a plurality of vent openings. The duct preferably has a shutter behind the vent openings and internal air guides in the form of resilient sheet material housed in grooves formed in two opposite sidewalls of the duct for directing a proportion of the airflow to each opening. The ducts may be rotatable about their longitudinal axes and can be sprung off for cleaning. The main body may house a replaceable air filter element.

3,648,592
AIR-CONDITIONING VENT

Keith A. Nieboer, Holland, Mich., assignor to Keeler Brass Company, Grand Rapids, Mich.

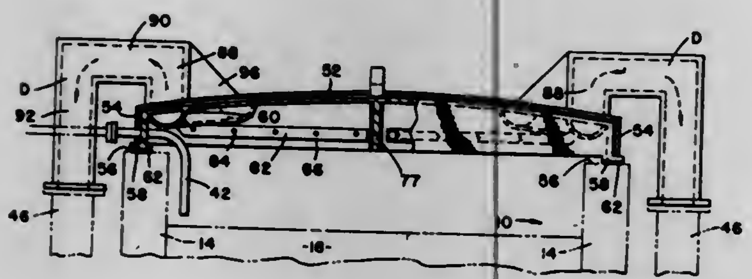
Filed Feb. 27, 1970, Ser. No. 15,049
Int. Cl. F24f *13/00*
U.S. Cl. 98—107 **24 Claims**

An air vent for an air-conditioning duct especially suitable for automobiles. The vent has a plurality of movable vanes supported by a barrel which is pivotably mounted within a duct housing. Resilient, self-locking tabs are provided on either side of the duct housing to hold the air vent in a support plate. The tabs abut against the sides of the barrel when it is in the normal operating position, but are free to move inwardly when the barrel is in an inoperative position. The air vent is shipped with the barrel in the inoperative position and, for assembly into the duct, is quickly snapped into place in the support plate. The barrel is then rotated to a normal operating position. Means are provided to retain the barrel in the normal operating position once the assembly has been fixed in the support plate.



3,648,593
ACID PICKLE TANK COVERS

Robert M. Marshall, Pittsburgh, Pa., assignor to The Cellcote Company, Berea, Ohio
Filed Oct. 13, 1969, Ser. No. 865,944
Int. Cl. F23j *11/00*
U.S. Cl. 98—115 R **4 Claims**

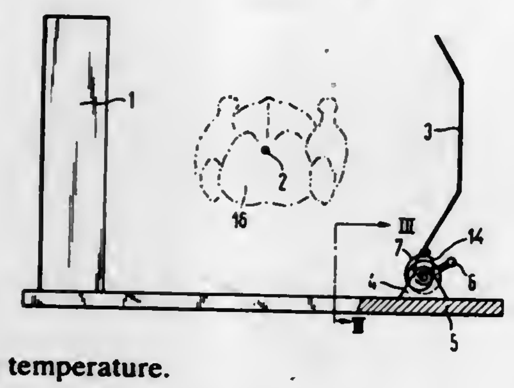


A cover assembly for a pickling line which includes a plurality of separate molded plastic cover sections; each section including a longitudinally extending top deck which is generally rectangular in shape. Adjacent the edges of the deck and substantially coextensive therewith, an an integral part of each cover section, are longitudinally extending plenum chambers of molded plastic, further including inwardly facing intake openings into said plenum chambers longitudinally along the length thereof for exhausting vapors released from the pickling line.

3,648,594
BARBECUE

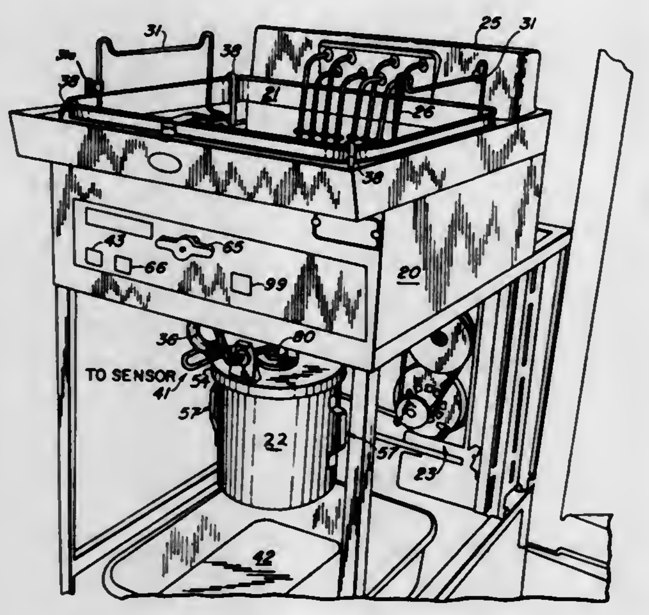
Eckhard Hundhausen, Betzdorf am Sieg, Germany, assignor to Wolfe-Gerate GmbH, Betzdorf am Sieg, Germany
Filed Jan. 20, 1970, Ser. No. 4,364
Claims priority, application Germany, Jan. 21, 1969, P 19 02 870.7
Int. Cl. A47j *37/04*
U.S. Cl. 99—331 **19 Claims**

A barbecue is provided with a temperature-responsive element which controls the position of a heat screen and thus the cooking temperature.



3,648,595
FOOD FRYER WITH CONTINUOUSLY FILTERED COOKING OIL

Wolford A. Morris, Springfield, Ill., assignor to Restaurant Products, Inc., Springfield, Ill.
Filed Apr. 22, 1970, Ser. No. 30,650
Int. Cl. A47j *37/12*
U.S. Cl. 99—342 **20 Claims**

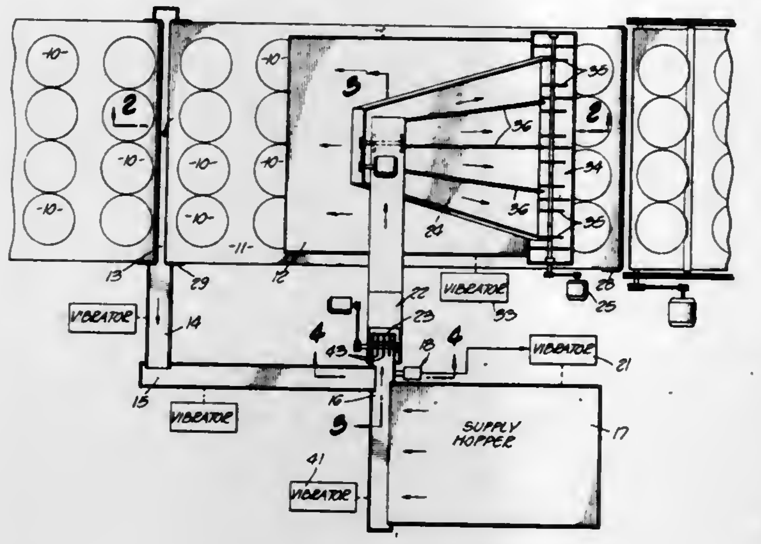


In a deep-fat cooking appliance, a cooking oil circulation system includes a filter assembly which has a disposable porous filter. A motor pump continuously draws oil from a midpoint in a deep cooking well and through the filter. The oil returns to the deep well via a downspout poised above a splash ledge in the deep well so that there is a minimum of agitation in the oil. A clogged filter alarm indicates when the porous material should be replaced.

3,648,596
PIZZA-TOPPING APPARATUS

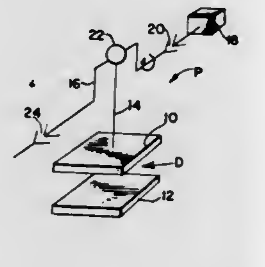
Santo Zito, Los Angeles, Calif., assignor to DOB Division of Fairmont Foods Co., Los Angeles, Calif.
Filed Nov. 28, 1969, Ser. No. 880,879
Int. Cl. A21c *9/08*
U.S. Cl. 99—450.7 **8 Claims**

An apparatus and method are provided for continuously applying a pizza topping material to a plurality of pizza shells by transmitting pizza shells along a conveying assembly, passing the shells beneath a curtain of topping material falling from a shaker platform, recovering excess topping material which falls in the spaces between the pizza shells, recirculating excess topping material to a supply chute where excess topping material is mixed with fresh topping material, controlling the flow of excess and fresh topping materials in the supply chute with an electric eye, adjusting the flow of fresh topping material into the supply chute, and transmitting combined material to the shaker platform.



3,648,597
DECELERATION-RESPONSIVE PRESS GUARD DEVICE

George L. Van Houten, 186 Rensselaer Road, Essex Fells, N.J.
Filed Nov. 12, 1969, Ser. No. 875,632
Int. Cl. B30b *15/00*
U.S. Cl. 100—53 **1 Claim**

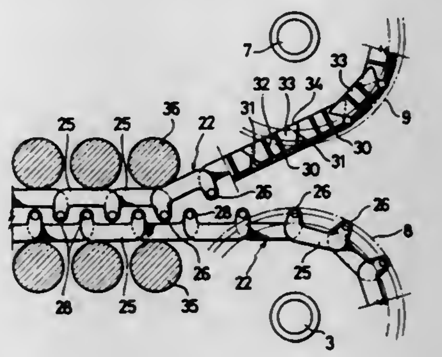


A safety device for a power press prevents an operator from reaching into the area of the press die when the press fails to stop as scheduled. The device includes a deceleration sensing arrangement which controls the operation of an actuator for a press guard, the press guard remaining in a "-prevent" position unless the operating cycle of the press includes the proper deceleration period.

3,648,598
CONTINUOUS DEHYDRATING APPARATUS FOR GARBAGE DISPOSAL

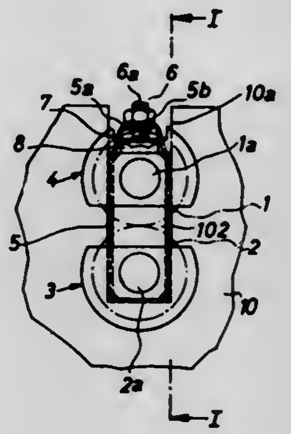
Tadao Kawada, Fukunomachi, Japan, assignor to Kawada Kogyo Kabushiki Kaisha, Higashitonami-gun, Toyama-ken, Japan
Filed May 7, 1970, Ser. No. 35,523
Claims priority, application Japan, Nov. 25, 1969, 44/94785; 44/94786
Int. Cl. B30b *9/24, 5/04*
U.S. Cl. 100—118 **5 Claims**

Apparatus for continuously dehydrating garbage having a pair of belts a portion of each of which is parallel to a portion of the other, pressure means urging those portions together and drive means for the belts so that garbage is drawn between the parallel portions and whilst there is subjected to a pressure by the belts to obtain a prolonged dehydrating compression.



3,648,599
ADJUSTABLE SHEET ADVANCING DEVICE

Helmuth Rinberger, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 22, 1970, Ser. No. 30,759
Claims priority, application Germany, Apr. 24, 1969, P 19 20 788.6
Int. Cl. B30b *3/04*
U.S. Cl. 100—169 **15 Claims**

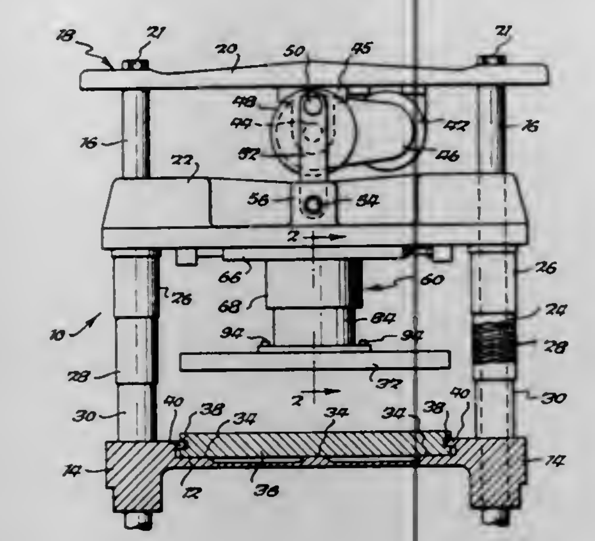


An adjustable device for advancing and/or compressing sheets or strips of photographic material comprises a pair of parallel sheet-engaging elastic rollers, a stub shaft extending axially from each end of each roller, preferably polygonal plastic bearing members rotatably receiving the stub shafts, a flexible metallic strap trained around each pair of bearing members, and means for changing the effective length of such straps to thereby move the axes of the rollers closer to or away from each other. The length changing means can comprise a screw which mates with one end portion of the respective strap and passes through a hole of the other end portion of such strap, a pressure transmitting plate interposed between the inner end of the screw and one of the corresponding bearing members, and an elastic cushion interposed between such bearing member and the plate.

3,648,600
MEAT-PRESSING APPARATUS

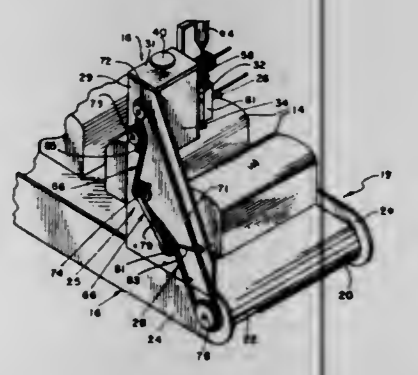
Andre Robert Jaccard, Buffalo, N.Y., assignor to Jaccard Corporation, Erie County, N.Y.
Filed Mar. 2, 1970, Ser. No. 15,337
Int. Cl. B30b *15/02*
U.S. Cl. 100—224 **11 Claims**

A meat-pressing machine which comprises a bed and at least one ram plate mounted on a plunger secured to the underside of a crosshead vertically reciprocable on guide rods extending upwardly from the bed. A plate is carried by the bed for supporting the meat to be pressed or flattened. Alternatively, a tray may be supported on the bed plate for receiving a plurality of molds cooperable with a plunger for forming meat portions into desired shapes. Each plunger is comprised of a pair of telescopically sliding sleeve members, one of which is secured to the crosshead and the other of which carries a ram member. The sleeve members are urged apart by a coil spring which also serves to absorb the energy of impact of the ram member. Means are provided for securing the sleeve members together and for limiting axial movement thereof in opposite directions.



3,648,601
CODE-MARKING MECHANISM

Roger F. Weidman, 2100 South West Street, Wichita, Kans.
Filed June 2, 1969, Ser. No. 829,436
Int. Cl. B41f *17/00*
U.S. Cl. 101—35 **3 Claims**

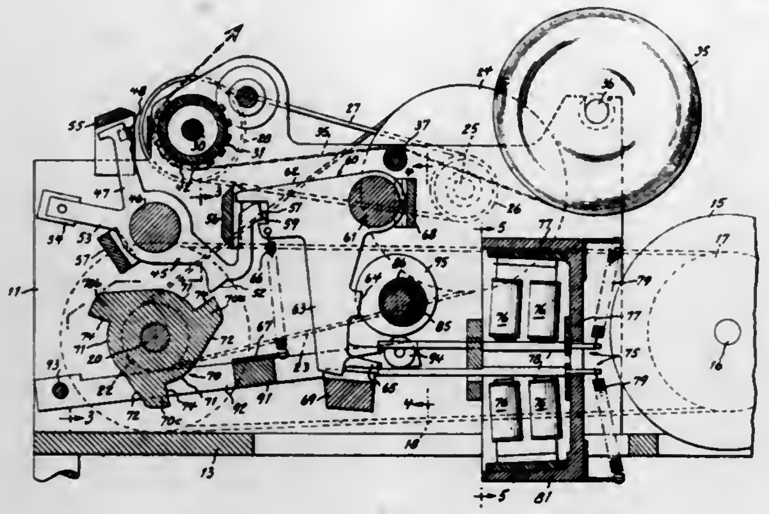


A marking mechanism has an interconnected marker and conveyor for marking commodities regardless the speed of movement thereof. The mechanism has an adjustable drive for adjustment vertically and laterally of the marker. A conveyor used as the drive force for the marking mechanism has an adjustable support bracket with a marking fluid assembly and a stamping assembly connected thereto.

3,648,602
PARALLEL INPUT PRINTING MECHANISM

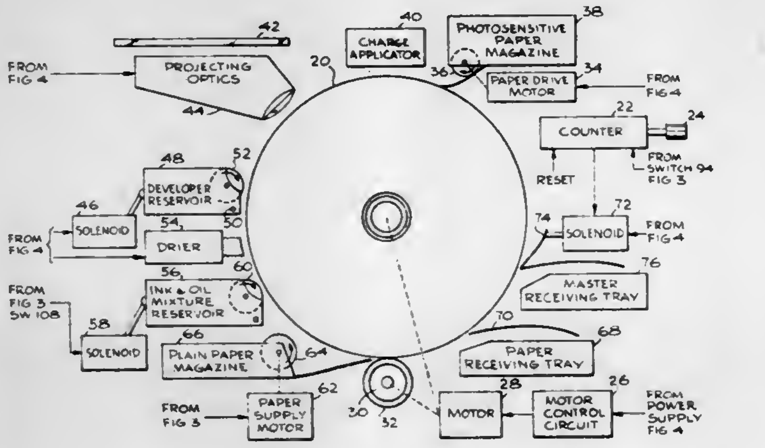
Costas Avgerinos, Wilton, and Henry R. Cofek, Fairfield, both of Conn., assignors to Avgerinos, Inc., Norwalk, Conn.
Filed Apr. 27, 1970, Ser. No. 32,272
Int. Cl. B41j *9/26*
U.S. Cl. 101—93 C **19 Claims**

A simplified print action mechanism adapted for parallel input printers has a spring-biased power lever articulated with a print hammer for free throw firing of the hammer into printing impact with a rotating print drum carrying a type font. A restore cam, acting on the print hammer during its rebound following print impact, returns the parts to restored condition and also mechanically controls the firing time of the print hammer. Print impact energy is adjustable over a wide range, while the mechanism is operating, to suit various print transfer media through compound adjusting means by which the spring tension on the power lever and/or the extent of the power stroke of the power lever is readily altered.



3,648,603
MACHINE FOR COPYING AN ORIGINAL MAKING A MASTER FROM THE ORIGINAL, AND PRINTING FROM THE MASTER

Bernard Kaminstein, Paramus, N.J., assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Feb. 27, 1970, Ser. No. 14,992
Int. Cl. B41l *11/08;* **B41n** *5/02*
U.S. Cl. 101—132.5 **5 Claims**

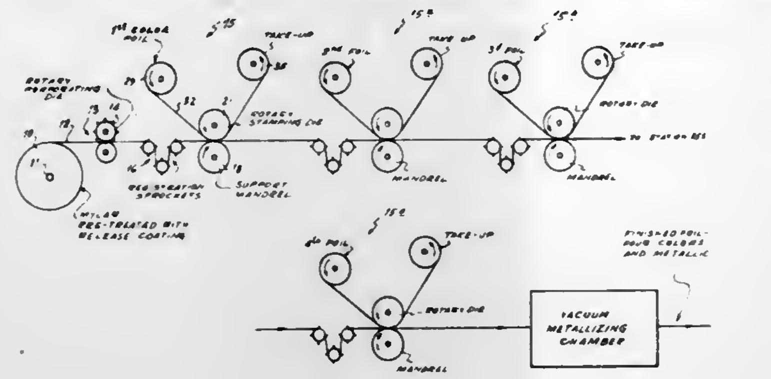


An office copy type of machine is provided which photoelectrically copies an original document, makes an offset printing master therefrom and thereafter is used to print with ink as many copies on ordinary paper as are desired.

3,648,604
APPARATUS FOR APPLYING MULTICOLOR SURFACE DECORATION

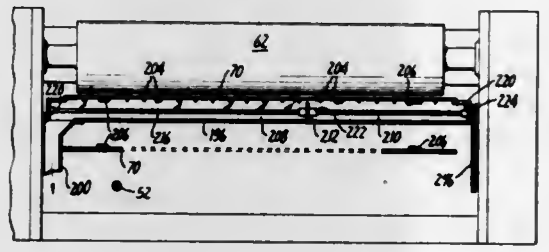
Rubin Warsager, 72 Luddington Road, West Orange, N.J.
Filed Jan. 21, 1969, Ser. No. 792,422
Int. Cl. B41f *5/06, 5/16*
U.S. Cl. 101—181 **3 Claims**

An apparatus for applying a multicolor image together with a metallized bright foil to a web of mylar cellophane or paper. The surface of an article can then be decorated with the image and foil by transferring, under heat and pressure, the multicolor image and metallized foil from the web in a single operation.



3,648,605
BOX MAKING MACHINE

William J. Hottendorf, 905 Kifer Road, Sunnyvale, Calif.
Continuation of application Ser. No. 627,041, Mar. 30, 1967, now abandoned. This application Mar. 29, 1971, Ser. No. 129,155
Int. Cl. B65h *3/12;* **B41f** *5/02*
U.S. Cl. 101—232 **3 Claims**

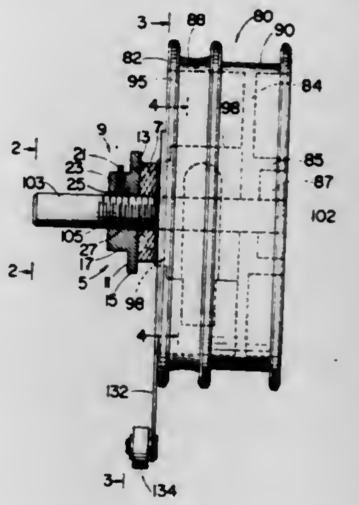


Apparatus for moving paperboard boxes continuously along a path while performing the following operations on the box blanks: feeding, printing, creasing, slotting, trimming, taping, folding, and delivering. The apparatus may be adjusted for handling box blanks of different lengths and widths. Vacuum support means for the box blanks are provided in the feeding, printing and folding sections. The feeder may be operated to deliver box blanks to the path either continuously or periodically.

3,648,606
BRAKE MECHANISM FOR PRINTING WHEEL

James J. Nickels; Tennis Mahoney, and Harry L. Hart, all of Fort Wayne, Ind., assignors to Lincoln Logotype Co., Inc., Fort Wayne, Ind.
Filed Dec. 22, 1969, Ser. No. 887,213
Int. Cl. B41f *13/10*
U.S. Cl. 101—375 **6 Claims**

A printing wheel is provided rotatably mounted on a shaft which has a portion extending outwardly from a surface of the wheel. Apparatus is provided for indexing the wheel, including a mechanism which resiliently urges the wheel to a given rotational position with respect to the shaft. A brake mechanism is provided for preventing the wheel from oscillating about the given position and being returned thereto from another rotational position by the indexing apparatus. The brake mechanism includes a washer of feltlike material surrounding the shaft extension and engaging the surface of the wheel from which the shaft extension projects. The shaft extension has a threaded section and a pressure plate member is positioned thereon engaging the washer. The pressure plate member has a plurality of radially spaced, radially extending, internally threaded bores formed therein extending between the threaded section of the shaft and the peripheral surface of the pressure plate member. A plurality of setscrews are provided respectively threadingly seated in the bores and having inner ends. Nylon elements are interposed between the inner ends of the setscrews and the threaded section of the shaft, so that upon tightening of the setscrews, the nylon elements are indented into the threads of the threaded section to provide selective adjustment of the pressure plate member, thereby to press the washer into engagement with the surface of the wheel so as to permit rotation of the wheel with respect to the shaft while preventing oscillation of the wheel about its given position, the setscrews and nylon elements further resisting loosening of the pressure plate during operation of the wheel.



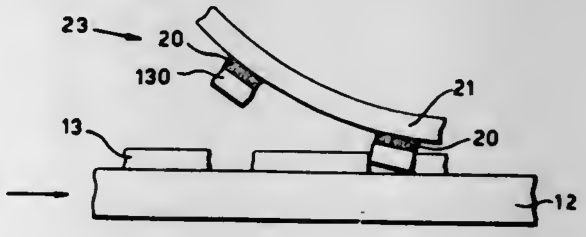
3,648,607
IMAGING SYSTEM

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Aug. 21, 1969, Ser. No. 851,872
Int. Cl. B41m *1/06*
U.S. Cl. 101—450 **21 Claims**

A migration imaging system having a migration imaging member with a binder layer of softenable material wherein a mixture of electrically photosensitive and inert fusible particles is dispersed and an imaging process wherein the fusible particles are fused thereby fixing the migrated image of the two types of particles. The imaged member is used as a lithographic printing master.

3,648,608
METHOD AND MEANS FOR MAKING A DUPLICATING MASTER

Bernard Kaminstein, Paramus, N.J., assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Continuation-in-part of application Ser. No. 668,262, June 12, 1967, Continuation-in-part of application Ser. No. 612,170, Jan. 27, 1967, now abandoned. This application Apr. 22, 1970, Ser. No. 30,753
Int. Cl. B41n *1/14*
U.S. Cl. 101—453 **13 Claims**



A duplicating master is produced from which multiple copies of an original may be made by first making a direct electrophotographic copy of the original. Thereafter, through the use of heat, the image portions of the electrophotographic copy are transferred to a transfer sheet. The transfer sheet with the image thereon, now constitutes a duplicating master and may be used as such.

3,648,609
APPARATUS FOR ACTIVATING A PRINTING MASTER

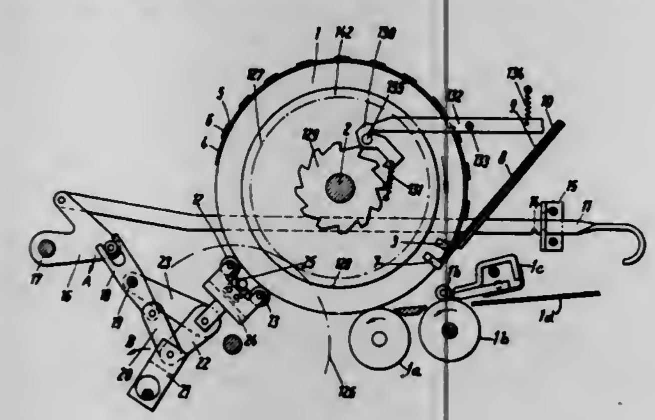
Gerhard Ritzerfeld, Franzenbaden Str. 21, Berlin-Grunewald, Germany

Original application Feb. 3, 1967, Ser. No. 619,495, now Patent No. 3,553,317, dated Jan. 5, 1971. Divided and this application May 19, 1969, Ser. No. 825,761

Claims priority, application Germany, Feb. 8, 1966, R 42 589

Int. Cl. B41m *5/18;* **B41l** *9/08*

U.S. Cl. 101—471 **15 Claims**



The heat-absorbing text of a printing master on a duplicating drum is placed in contact with a dye coating on a sheet and irradiated so that portions of the dye coating in contact with the heat-absorbing text melt and adhere to the heat-absorbing text while the remainder of the dye coating remains on the sheet when the same is pulled off the master. During the following revolutions of the duplicating drum, copy sheets are fed so that the activated text is printed on successive copy sheets.

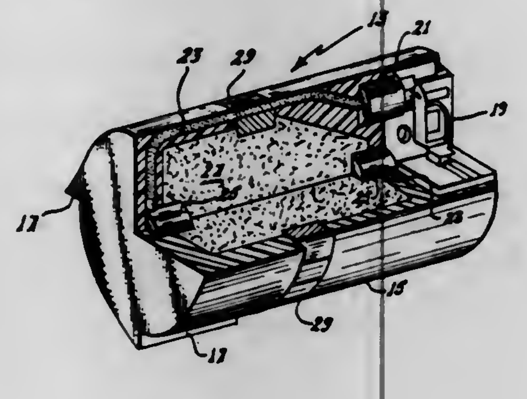
3,648,610
DUAL INITIATION SUBMISSILE

Bernard van Zyl, Altamonte Springs, and Robert L. Hoch, Orlando, both of Fla., assignors to The United States of America as represented by the Secretary of the Air Force

Filed June 11, 1969, Ser. No. 832,503

Int. Cl. F42b *25/16*

U.S. Cl. 102—4 **3 Claims**



A submissile having two equal lengths of an explosive wave carrier for accomplishing simultaneous dual end initiation by transferring the detonation to a booster at each end of the main charge. The end boosters then detonate the main charge producing detonation waves which collide and produce extremely high pressures at the center of the submissile where fragments are wrapped thereby projecting the fragments at unusually high velocities.

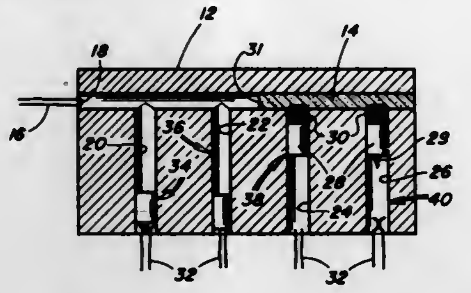
3,648,611
ELECTRICAL DEPLOYMENT CONTROL SYSTEM FOR UNDERWATER ORDNANCE

Earl A. Noel, Deerwood, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 13, 1970, Ser. No. 36,725

Int. Cl. F42b *22/00*

U.S. Cl. 102—13 **5 Claims**



Control apparatus for separating a mine casing from its anchor having a series of switches located in an explosive programmer which activates a main power source for the mine. The power source is serially connected to a normally open explosive switch in the explosive programmer, a hydrostatic pressure responsive switch, an electrically energizable explosive casing release, a tilt switch which is normally open whenever the mine is not vertically oriented, and a normally closed explosive switch also in the explosive programmer for sterilizing the system by opening after a predetermined time period.

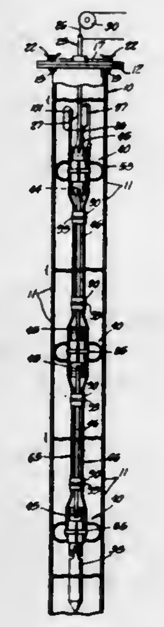
3,648,612
METHOD OF CONDUCTING STRING SHOT OPERATIONS IN AN OIL WELL

Bobby W. Grayson, 7306 Pembroke Avenue, Oildale, Calif.

Original application Apr. 10, 1970, Ser. No. 27,214, now Patent No. 3,572,245. Divided and this application Oct. 28, 1970, Ser. No. 84,739

Int. Cl. F42d *3/00*

U.S. Cl. 102—21 **25 Claims**



String shot apparatus and method of servicing perforated well casing using one or more explosive cords supported along a wire line and equipped with discriminator means for detonating the cords independently or in groups at the operator's option. The wire line includes centralizers designed to be quickly assembled to and detached from the line as well as means for securing the explosive cord to the line in a desired degree of tautness. The explosive cord includes means for eliminating stretch and preferably embodied therein to safeguard against its elongation, ballooning, and looping by frictional or other forces and temperature rise encountered during the servicing operation. A readily opened and closed blowout protector is securable across the well head to seal the well closed about the wire line to avoid a blowout if the servicing operation releases high-subsurface pressures into the well.

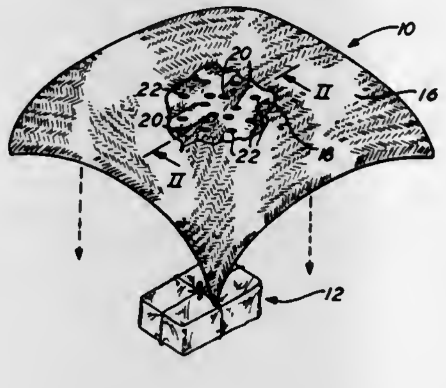
3,648,613
BOMB BLANKET

Arthur Cunn, 62 Burns Avenue, Hicksville, N.Y.

Filed Nov. 4, 1970, Ser. No. 86,902

Int. Cl. F42d *5/00*

U.S. Cl. 102—22 **13 Claims**



A bomb blanket adapted to be placed over a bomb about to explode so as to minimize the lateral blast effect and to contain the spread of shrapnel, said blanket including upper and lower covers fabricated from moisture-resistant and fire-retarding material, a plurality of layers of ballistic cloth located between the covers to make the blanket shrapnel proof, and a plurality of centrally located apertures extending through the ballistic cloth with the size, number, and orientation of the apertures being parameters selected to permit the gas released by an explosion to vent therethrough and create a vacuum under the central portion of the blanket.

The effectiveness of the blanket is due to the downward flexure or puckering of the corners of the blanket about the bomb as the bomb explodes so as to reduce the lateral blast effect and to prevent spread of shrapnel, such puckering being primarily attributable to the partial vacuum or venturi effect created on the underside of the blanket in the central region thereof as the gas released by an explosion vents through the apertures. The effect is enhanced by limiting the number of layers of ballistic cloth which extend the full dimension of the blanket so as to allow the corners of the blanket to more readily flex downwardly to enclose about the bomb. The effect is still further enhanced by tightening an adjustable strap arrangement to initially set the blanket in a puckered state about the bomb prior to explosion.

3,648,614
METHOD FOR INCREASING THE SAFETY AGAINST FIREDAMP IGNITIONS DURING BLASTING IN UNDERGROUND MINING AND BLASTING ELEMENTS USED FOR SAID PURPOSE

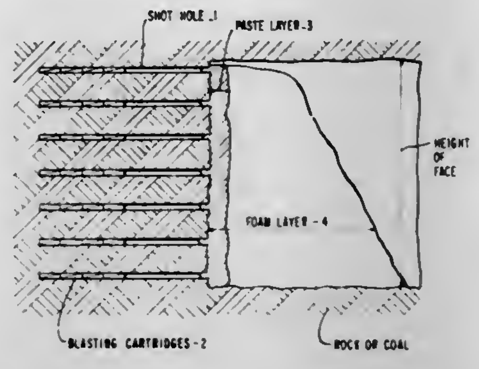
Adolf Berthmann; Paul Lingens, both of Leverkusen, and Ernst Morhenn, Beuel, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Mar. 18, 1969, Ser. No. 808,293

Int. Cl. F42d *5/00*

U.S. Cl. 102—23 **7 Claims**

The present disclosure is directed to a method for preventing firedamp ignitions during blasting in underground mining which comprises separating the space where the explosive charge is to be detonated from the space where the firedamp is present by providing therebetween a zone containing a layer in the form of, for example, a paste or a foam containing a liquid in a uniform distribution. The present disclosure is also directed to blasting elements for preventing said firedamp ignitions.



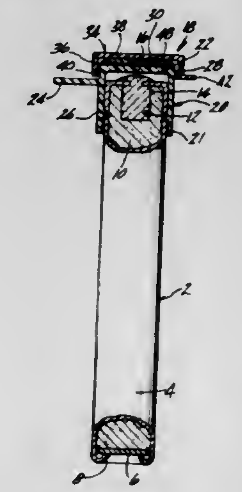
3,648,615
FUSEE CAP

Norman J. Wilkaitis, Marion, Ill., assignor to Olin Corporation

Filed Feb. 2, 1970, Ser. No. 7,897

Int. Cl. C06d *1/10*

U.S. Cl. 102—37.8 **4 Claims**



A fusee cover wherein the end wall is provided with a first set of parallel grooves extending transversely with respect to a second set of parallel grooves. A scratch mix is adhered to the end wall and extends into the grooves.

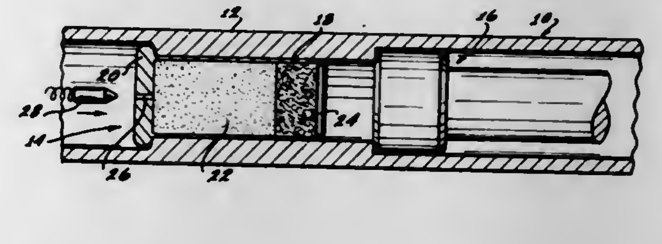
3,648,616
MULTISTAGE POWER LOAD

Yung Shing Hsu, Lewiston, Idaho, assignor to Omark Industries, Inc., Portland, Oreg.

Filed Sept. 10, 1969, Ser. No. 856,792

Int. Cl. F42b *7/02, 9/14*

U.S. Cl. 102—40 **5 Claims**



A conventional cartridge with primer contains a two stage explosive charge consisting of an explosive powder primary charge and a solid propellant booster charge. The explosive force capability of the booster charge is at least about 15 percent that of the explosive powder and the ignition of the booster charge takes place at a distinct time interval after the explosion of the primary charge.

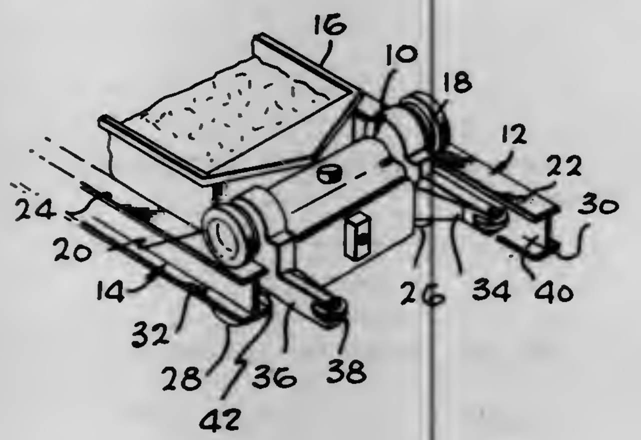
3,648,617
RESILIENT GRIPPING RAILWAY TRACTION SYSTEM

Robert Metzner, Beverly Hills; Stanley A. Dashew, and Justin A. Varney, both of Los Angeles, all of Calif., assignors to Security Pacific National Bank

Filed Aug. 11, 1969, Ser. No. 848,884

Int. Cl. B61b *3/02, 13/02, 13/04*

U.S. Cl. 104—94 **5 Claims**



Apparatus for use with a vehicle which runs along a track to increase the traction of the drive wheels so they do not slip when starting or climbing hills. One traction increasing apparatus includes an extra track member for increasing the distance between upper and lower track surfaces that support the drive wheels and lower wheels, respectively, of the vehicle.

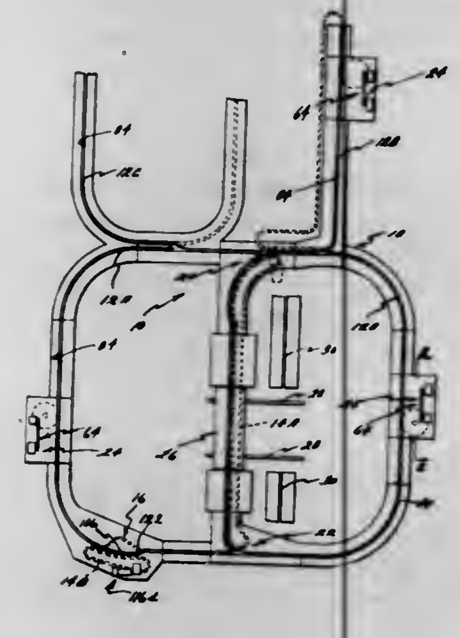
3,648,618
SUBFLOOR CONVEYOR SYSTEM AND DOLLY THEREFOR

Edward D. Pierson, Denver; James C. Wright, Golden; Carl C. De Rozario, and Peter Nemeth, both of Denver, all of Colo., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Mar. 9, 1970, Ser. No. 17,583

Int. Cl. B65g *17/42*

U.S. Cl. 104—170 **15 Claims**



This invention relates to a subfloor sprocket-driven chain conveyor wherein foreshortened links provide gaps adapted to receive a pin projecting therein from the underside of the dolly through a guide slot or track. A slack takeup mechanism is provided for the main chain whereby it is diverted from underneath the slot around a system of idler chains while a secondary chain conveyor picks up the dolly and transports it across the space where the main chain has been diverted to a position where it is again picked up by the latter. A diverter switch can be activated to engage the dolly pin and move the dolly off into an intersecting spur line employing a secondary sprocket-driven chain that carries a switch-actuating pawl followed by a dolly pin pickup dog adapted to pull the dolly off onto the spur. A return switch mechanism actuated by the dolly pin being pushed thereagainst by the pickup dog will transfer the dolly back to the main chain conveyor from a secondary intersecting conveyor when the latter is actuated in response to a sensor that locates a gap in the main chain and synchronizes the movement of the pin to coincide therewith. Another type of return switch mechanism shunts the dolly pin from one conveyor off onto a siding where it is picked up by a second nonintersecting conveyor paralleling the first as soon as a gap appears. A holding mechanism includes a first switch member operative upon actuation to engage the dolly pin and move the dolly off onto a siding against the force exerted thereon by a second spring-biased switch member that actuates automatically to return the dolly to the system upon deactuation of the first switch means. The dolly itself has a turntable-type top and a retractable pickup pin having three positions, a retracted position where it is disengaged from both the conveyor system and the slotted track, an intermediate position engaged within the slotted track but disengaged from the conveyor system, and an extended position engaged by the conveyor together with all of the aforementioned appurtenances associated therewith.

3,648,619
STOP FOR POWER AND FREE CONVEYORS

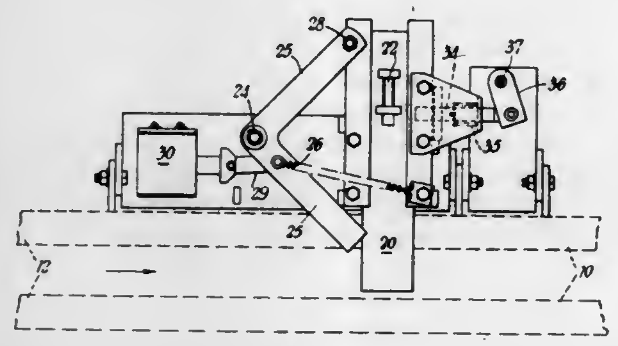
Keith Wilkinson, Hertfordshire, England, assignor to Geo. W. King Limited, Stevenage, Hertfordshire, England

Filed May 6, 1970, Ser. No. 34,972

Claims priority, application Great Britain, June 6, 1969, 28,892/69

Int. Cl. B65g *17/42*

U.S. Cl. 104—250 **5 Claims**



A power and free conveyor has trolleys driven along a fixed track by abutments on the trolleys being engaged by dogs depending from an endless drive chain. At a station, a stop is spring-biassed into an operative position in which it depresses the abutment of a trolley out of the path of the dogs. A bellcrank lever has one arm which can be moved into that path. When a dog turns the one arm, the other arm retracts the stop, and the dog then moves the trolley from the station. Thereupon, the trolley releases a latch which holds the stop retracted, so that the stop returns to its operative position.

3,648,620
FLUID GROUND EFFECT VEHICLE TRANSPORTATION SYSTEM

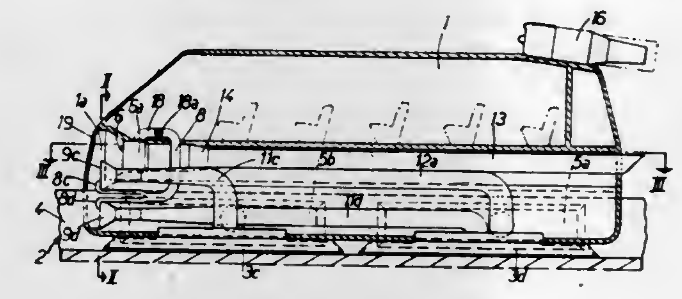
Jean Henri Bertin, Neuilly-sur-Seine; Marcel Pierre Le Nabour, Limonest, and Francois Louis Giraud, Plaisir, all of France, assignors to Bertin & Cie, Plaisir, France

Filed Dec. 24, 1969, Ser. No. 887,922

Claims priority, application France, Dec. 24, 1968, 180548; **Jan. 31, 1969, 6902066**

Int. Cl. B60v *1/08, 3/04;* **B61c** *7/00*

U.S. Cl. 105—63 **6 Claims**



A pressure fluid supply facility for the cushions of a ground effect machine or vehicle, the facility comprising at least one fluid generator connected to the inducing nozzles of static pumps whose flow resulting from the mixing of the inducing flow with the induced fluid energizes the lift cushions and guide cushions of the machine, wherein each cushion is associated with at least one static pump disposed very near the cushion so as to reduce the pressure losses in the resulting flow by reduction of duct length.

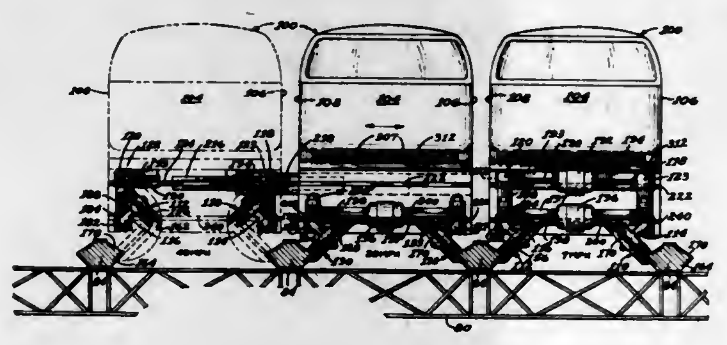
3,648,621
TRANSPORTATION SYSTEM

Kenneth C. Fleming, 1913 W. Monte Vista Road, Phoenix, Ariz.

Filed Aug. 12, 1970, Ser. No. 63,235

Int. Cl. B61f *13/00*

U.S. Cl. 105—157 **16 Claims**



A transportation system comprising a plurality of pairs of parallel spaced apart tracks and a vehicle having two sets of track engaging wheels, each set of wheels being movable laterally relative to said tracks and said vehicle, whereby said vehicle may move laterally from one pair of tracks to an adjacent pair of tracks while traveling longitudinally therealong.

3,648,622
HIGH CAPACITY FREIGHT CARS

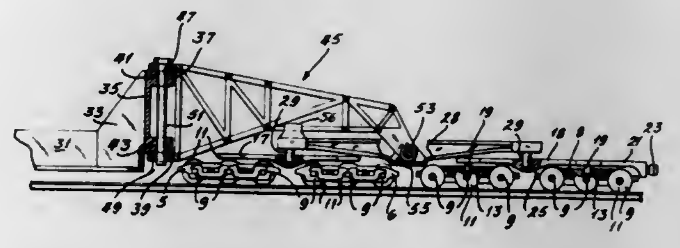
Richard L. Lich, Town and Country, Mo., assignor to General Steel Industries, Inc., St. Louis, Mo.

Filed Sept. 12, 1969, Ser. No. 857,335

Int. Cl. B61d *3/16*

U.S. Cl. 105—367 **11 Claims**

A railway freight car for transporting long, high and extremely heavy objects and requiring several pairs of swivel trucks at each end because of the weight of the car structure and load. The car comprises two sets of swivel trucks, a span bolster or underframe supported by each set of trucks, longitudinally extending superstructures carried by the span bolsters or underframes and held against swivel with respect thereto, the superstructures having vertical axis elongated pivot elements at the centers of their inboard ends, and lading support means connected by the pivot elements to the superstructures whereby to accommodate articulation of the lading support means and superstructures in the horizontal plane so as to limit the subtended chord length while rounding curves to the distance between the vertical axis pivot elements and thus minimize lateral overhang while maintaining the lading and both superstructures rigid in their longitudinal vertical plane. To accommodate the car to vertical track curvature, means are provided between the trucks and superstructures for permitting tilting of the superstructures in their longitudinal vertical planes with respect to the truck sets.



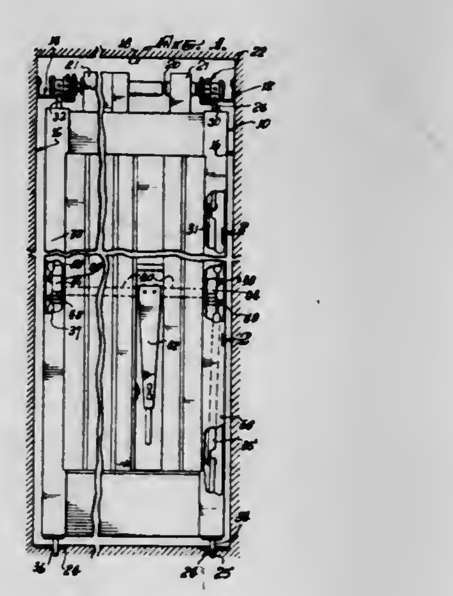
3,648,623
LOAD DIVIDING GATE WITH RELEASE MECHANISM

John W. Erickson, Huntington Beach, Calif., assignor to Preco Inc., Los Angeles, Calif.

Filed Nov. 25, 1970, Ser. No. 92,715

Int. Cl. B60p *7/14*

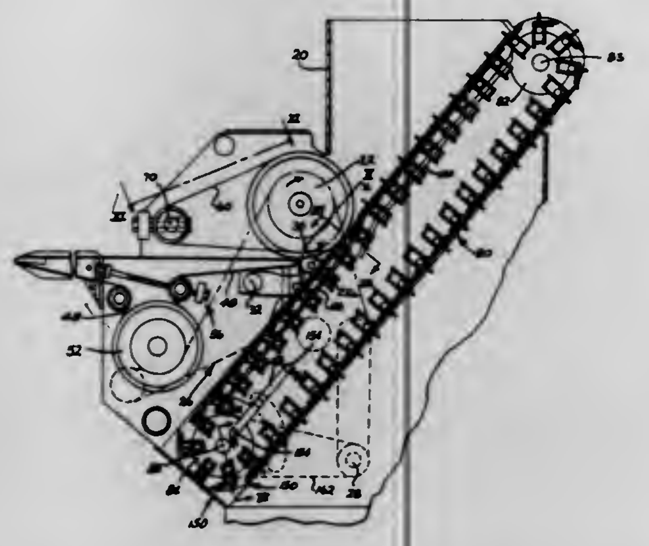
U.S. Cl. 105—376 **5 Claims**



In load dividing gates with conventional mechanism for operating the locking pins, the load sometimes exerts such extreme lateral force on the gate that the pins cannot be withdrawn to release the gate. The present mechanism provides one or more arcuate toothed racks on the pin operating crankshaft, with a fixedly mounted fulcrum edge spaced radially from the rack by a distance of the same order as the tooth pitch. A conventional crowbar can then exert extremely high torque on the crankshaft, acting on successive teeth to rotate the shaft progressively until the pins are released. The rack teeth are preferably formed directly on the crank member of the coupling linkage.

3,648,624
PATTY MAKING MACHINE

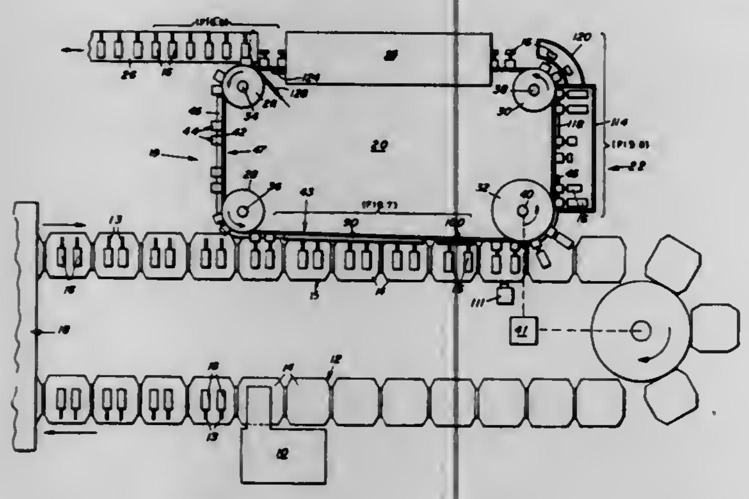
Albert F. Verhoeven, Grand Rapids, Mich., assignor to Werner Lehara, Inc., Grand Rapids, Mich.
Continuation-in-part of application Ser. No. 833,565, June 16, 1969, now Patent No. 3,589,308. This application Aug. 7, 1970, Ser. No. 62,044
Int. Cl. A21c *11/10*
U.S. Cl. 425—232 **25 Claims**



An improved patty making apparatus wherein the shred-engaging mechanism also serves to compact the shreds into patties. Specifically, a slat conveyor is provided with pins reciprocatingly mounted so as to project from the slats as the latter move through the hopper to a compacting roller, and so as to withdraw to a position under the slats at the point where the slats contact the roller. The slat conveyor is wound around a sprocket, thereby causing adjacent slats to separate from each other, and cleaning fluid is sprayed from inside the conveyor at the separated slats so as to wash trapped shreds therefrom by means of the separations.

3,648,625
AUTOMATIC PICKUP AND ENROBING APPARATUS FOR STICK-TYPE NOVELTIES

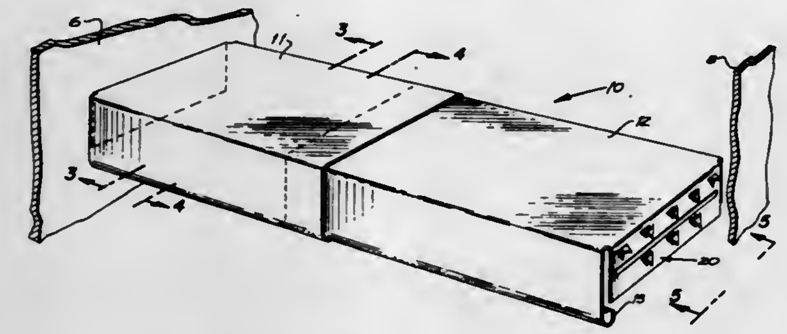
Robert Taylor Glass, 415 West 6th Street, Austin, Tex.
Filed June 16, 1970, Ser. No. 46,783
Int. Cl. A23g *5/00*
U.S. Cl. 425—93 **17 Claims**



This disclosure relates to a pickup and enrobing apparatus which will pick up stick-type novelties from a transporting conveyor which carries the novelties in a horizontal position. The apparatus includes a pickup conveyor which has a plurality of pivotally mounted clamps which grip the novelty sticks so that the novelties can be removed from the transporting conveyor. The pickup conveyor carries the novelties through an enrobing process, and the enrobed novelties are then passed through a chiller where the coating is hardened. The novelties are released from the pickup conveyor as the conveyor emerges from the chiller unit and are concurrently subjected to an airstream so that they will fall to an output conveyor with their sticks oriented in the same direction.

3,648,626
END-SUPPORTED ADJUSTABLE SHELF SYSTEM

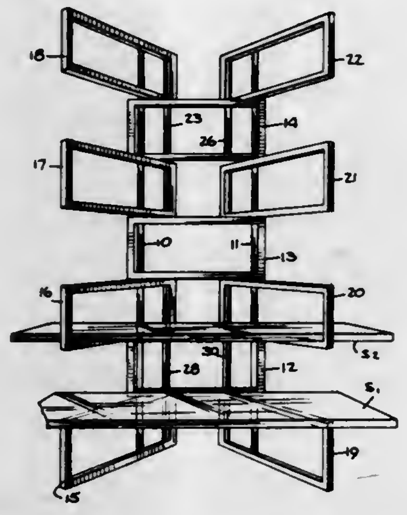
John C. Schuster, 2000 West Pacific Ave., West Covina, Calif.
Filed Feb. 6, 1970, Ser. No. 9,342
Int. Cl. A47b *23/00;* **A47f** *5/08;* **F04g** *3/00*
U.S. Cl. 108—42 **5 Claims**



An end-supported, telescopically expandable shelf member having end support appendages or members. The end support appendages may utilize outwardly extending prong arrangements, pressure-sensitive tape, conventional screw or other means, or any combination of them to secure the shelf to substantially parallel supporting surfaces, such as beams or walls. In other applications the shelf members are utilized in conjunction with side mounting members adapted to receive the shelf end support appendages, the side mounting members being directly secured to the supporting surfaces.

3,648,627
FOLDABLE ETAGERE

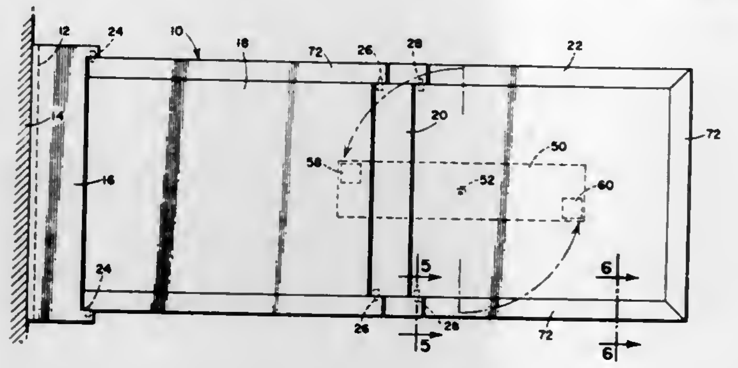
Louis F. Schliemann, and Jerome E. Borgos, both of 418 West 25th Street, New York, N.Y.
Filed May 5, 1970, Ser. No. 34,682
Int. Cl. A47f *5/10*
U.S. Cl. 108—111 **2 Claims**



A collapsible etagere which, when erected, is constituted by a tier of open shelves. The frame of the etagere comprises a pair of spaced vertical poles which are bridged by a series of structural rectangles whose ends are attached to the poles, the rectangles in the series being equispaced from each other and from the upper and lower extremities of the poles to define shelf areas which are occupied by two rows of rectangular wings. The wings in each row are hingedly connected at points displaced from their inner ends to a respective pole whereby the wings may be partially outstretched from the poles to support removable shelves, or folded inwardly to collapse the structure.

3,648,628
WALL MOUNTED EXPANSIBLE TABLE

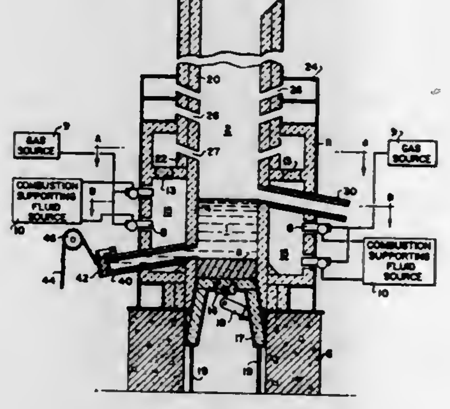
Donald A. Davis, 50 Johnson Road, Winchester, Mass.
Filed Dec. 23, 1970, Ser. No. 101,059
Int. Cl. B65d *3/00*
U.S. Cl. 108—33 **7 Claims**



An expansible table supported from a vertical surface and movable between a collapsed position adjacent said surface to an expanded generally horizontal position. The table comprises a plurality of pivotally connected table sections and a cleat member pivotally connected to one of such sections. The cleat member can be pivoted to a position extending under all of the table sections when the latter are unfolded, with support legs being pivotally mounted on the cleat member for supporting the table when fully expanded.

3,648,629
APPARATUS FOR THE DESTRUCTION OF REFUSE

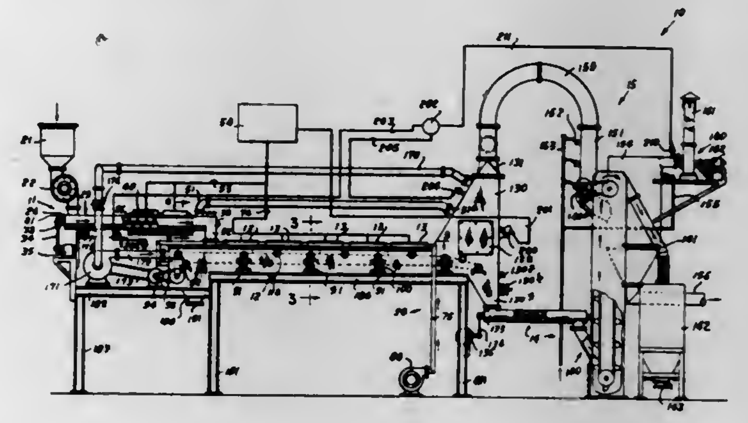
Kenneth J. Southwick, Quincy, Mass., assignor to Pyro-Magnetics Corporation, Needham, Mass.
Continuation-in-part of application Ser. No. 786,685, Dec. 24, 1968, now Patent No. 3,527,178, Continuation-in-part of application Ser. No. 44,788, June 9, 1971, Continuation-in-part of application Ser. No. 46,694, June 16, 1970. This application July 9, 1970, Ser. No. 53,412
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **6 Claims**


GAS SOURCE
COMBUSTION SUPPORTING FLUID SOURCE
GAS SOURCE
COMBUSTION SUPPORTING FLUID SOURCE

The apparatus comprises an integration of structural elements to provide adjacent first and second zones for the destruction of refuse. The first zone is a heat generating zone in which fuel burning heating means are employed to heat a mass of material disposed therein thereby providing a high temperature environment for a second zone communicating therewith. The second zone is an incineration zone for soft refuse such as paper. Materials which do not readily combust fall to the heated mass of material and melt or are otherwise consumed and absorbed. The residue discharges from the incinerator intermittently either as a gas or in molten form by way of removal spouts located in the vicinity of the first zone.

3,648,630
INCINERATOR

Jim F. Hobbs, Richardson, and Craig Smyser, Dallas, both of Tex., assignors to Shirco, Inc.
Filed May 20, 1970, Ser. No. 38,936
Int. Cl. F23g *5/10*
U.S. Cl. 110—8 E **25 Claims**



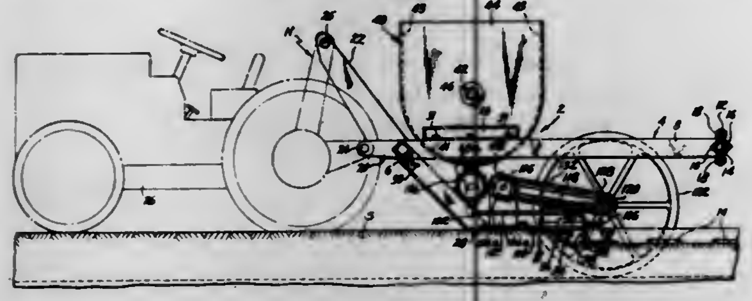
A continuous-type incinerator for burning sludge from wastewater treating plants and similar refuse including a feed system having an infrared heating unit for refuse fragmentation, an elongated combustion chamber housing a continuous conveyor belt for moving refuse along the chamber, infrared heating units for applying intense heat to burn the refuse on the conveyor belt, a combustion gas recirculating system for returning combustion gases from the discharge end of the chamber to the inlet end to supplement the infrared heat, a cooling and combustion air system for forcing air over the infrared heating units and directing the air into the inlet end of the chamber to support combustion of the refuse, an ash removal system connected with the discharge end of the combustion chamber, a gas scrubber system connected with the discharge end of the combustion chamber, and a control system for manipulating the recirculation of combustion gases and controlling the temperature of the infrared heating units over the combustion chamber. Sludge is fed into the incinerator through the feed system in which infrared heat at about 2,500° F. breaks it into small particles for improved combustion. The sludge is moved on the conveyor belt along the chamber where recirculated combustion gases and infrared heat at a temperature in the range of 1,200° to 1,500° F. drives off all moisture and completely burns all volatile components of the sludge. The chamber is operated under a vacuum to prevent escape of noxious odors. At the discharge end of the chamber and conveyor belt, ash is dumped into the removal system and the combustion gases are directed into the scrubber which cools them, vents them to the atmosphere, and removes solid entrained particles.

3,648,631
VOLUME DISPLACEMENT SEED PLANTER, MATRIX, AND METHOD OF PLANTING SEED

Melvin L. Fiedler, 1515 Larkspur Street, McAllen, Tex., and Joe N. Summers, Jr., 906 Bryce Drive, Mission, Tex.
Filed Nov. 6, 1968, Ser. No. 773,889
Int. Cl. A01c *7/18, 23/00*
U.S. Cl. 111—6 **5 Claims**

A seed planter and method for planting seeds, wherein the seeds to be planted are first suspended substantially uniformly in a suitable gel matrix, the seed-bearing matrix then being directly injected at planting depth into a prepared seed bed according to a desired planting pattern.

The planter includes a tank for the seed-bearing gel matrix, to which is connected a positive displacement dispenser pump for each row of seed to be planted, the outlet of the pump being connected to a dispenser nozzle carried behind a soil opener. The planter is moved through a prepared, dry



field, and includes a gauge wheel that engages the ground and is connected through suitable drive means to operate the dispenser pump according to a desired planting pattern to automatically dispense measured amounts of the seed-bearing el matrix as the planter moves across the gel

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3,648,632

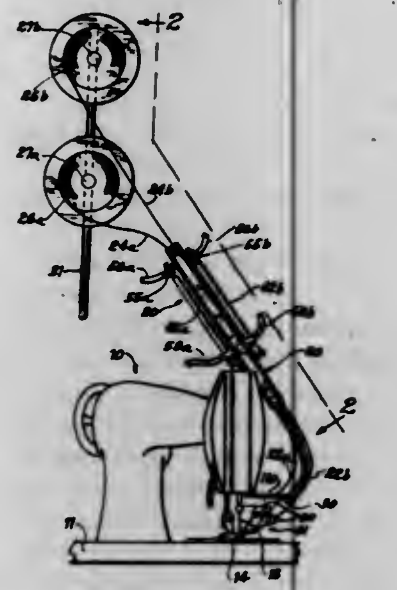
APPARATUS FOR FEEDING AND CUTTING STRIP MATERIAL

Samuel E. Miller, Wilmette, Ill., assignor to Quick Service Textiles, Inc., Chicago, Ill.

Original application Nov. 21, 1968, Ser. No. 777,592, now Patent No. 3,515,081, dated June 2, 1970. Divided and this application Jan. 21, 1970, Ser. No. 10,105

Int. Cl. D05b *37/04*

U.S. Cl. 112—130 1 Claim



Apparatus for sewing predetermined lengths of two or more different materials in strip form to a base strip in sequence along the latter. The base strip is fed continuously to the sewing station and the successive lengths of the first-mentioned materials are fed to the sewing station selectively in sequence. The first-mentioned materials are fed from respective sources of supply and are cut off to predetermined length cyclically by automatic or semiautomatic means.

3,648,633

PATTERN CAM REMOVAL MECHANISM FOR SEWING MACHINES

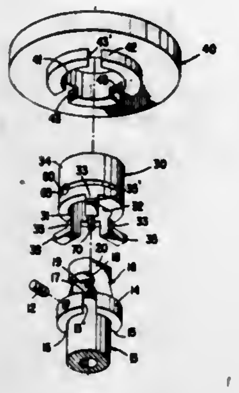
Kenneth D. Adams, Madison, N.J., assignor to The Singer Company, New York, N.Y.

Filed Dec. 16, 1970, Ser. No. 98,532

Int. Cl. D05b *3/02*

U.S. Cl. 112—158 R 5 Claims

A device for locating an exchangeable pattern cam in an operative position on a camshaft of a sewing machine or the like or for elevating the pattern cam from said operative position for exchange of cams. The device comprises a carrier locked for rotation with, but slidable along, the camshaft and



having pattern cam supporting projections as well as radially shiftable detent pins for locking a pattern cam in operative position and for defining the operative and elevated positions of the carrier.

3,648,634

THREAD-CUTTING DEVICE FOR SEWING MACHINES

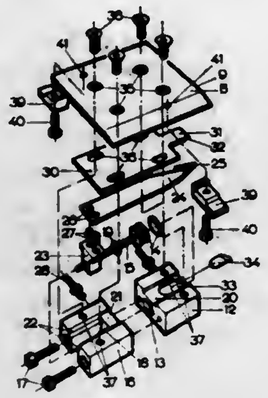
Johannus Franciscus Van Hazendonk, Zwanenburg, Netherlands, assignor to DeJong & DeVlieger Machinehandel N.V., Zwanenburg/Halfweg, Netherlands

Filed Apr. 27, 1970, Ser. No. 32,032

Claims priority, application Netherlands, Nov. 13, 1969, 6917054

Int. Cl. D05b *65/00*

U.S. Cl. 112—252 7 Claims



A thread-cutting device for sewing machines of the kind having a machine base plate with a side opening therein which accommodates the cloth plate of the machine and a removable slide plate allowing access to the space underneath the machine base plate, which thread cutting device is adapted to be mounted against the lower side of the slide plate. The thread-cutting device has a compact structure of a design allowing the device to be mounted on the slide plates of different types of sewing machines.

3,648,635

MARINE TRANSPORT

Hadi T. Hashemi, Norman, Okla., assignor to University Engineers, Inc., Norman, Okla.

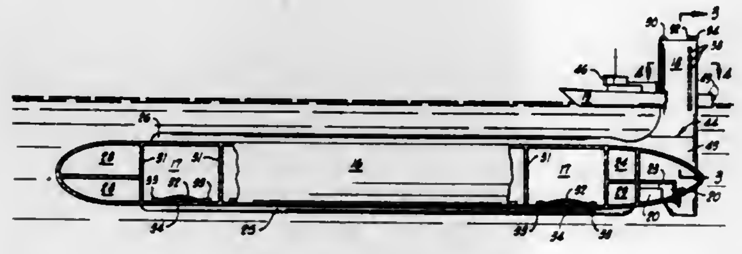
Filed Aug. 3, 1970, Ser. No. 60,276

Int. Cl. B63b *21/00;* **B63g** *8/00*

U.S. Cl. 114—16 R 25 Claims

The present invention relates generally to apparatus for marine transportation and more particularly relates to apparatus for moving bulk quantities of goods in a submarine hull with ancillary surface accommodations for the crew. A preferred embodiment of the invention may include an elongated submarine hull having a plurality of cargo holds situated therein and an engine room located in the aft portion

thereof. Power means, such as a diesel-electric unit, are located in the engine room and serve to provide motive force for the submarine hull and the related equipment. Projecting upwardly from the upper surface of the aft portion of the hull may be provided a relatively tall vertical fin, the front portion of which is restricted to form a relatively short "blade" which may be used to cut through surface ice formations. A crewboat, the rear portion of which is bifurcated and shaped to receive therein a portion of the vertical fin, is in operative engagement with a portion of the fin and receives its primary motive force therefrom. Means may be included for providing a relatively low-friction contact between the bifurcated



portion of the crewboat and the vertical fin to allow restricted pitch, roll and yaw of the boat and of the submarine hull. In addition, access means are included in the fin whereby crew members may move freely from the boat to the interior of the submarine hull. There is also included means connected between the vertical fin and the crewboat for providing energy, such as heat and electrical power, from the engine room in the submarine hull to the crewboat. Air intake and stack gas exhaust conduits also extend through the vertical fin to the atmosphere, so that the submarine hull may be propelled by propulsion systems of the type conventionally used in surface vessels, such as oil fueled steam turbines, diesel engines, gas turbines and the like.

3,648,636

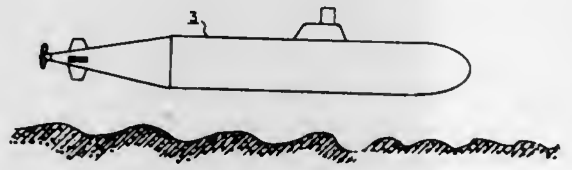
ACOUSTIC GUIDANCE SYSTEM

Israel Mentcher, Trenton, N.J., and Charles E. Thomas, Scotia, N.Y., assignors to General Electric Company

Filed Dec. 26, 1967, Ser. No. 695,310

Int. Cl. F42b *19/06, 19/01, 17/00*

U.S. Cl. 114—23 9 Claims



An acoustic homing system for an antisubmarine weapon having an explosive charge (rocket depth charge, torpedo and the like) which steers the weapon closer to a submerged target after detection while said weapon is sinking in the water. An acoustic transducer detects the target and derives steering signals for movable fins or rudder elements to change the course of the weapon.

3,648,637

HOPPER BARGE DRIVABLE WITH A DRIVING MEANS

Frans Krautkremer, Niederspay, Rhine, Germany, assignor to Schottel-Werft, Josef Becker KG., Oberspay, Rhine, Germany

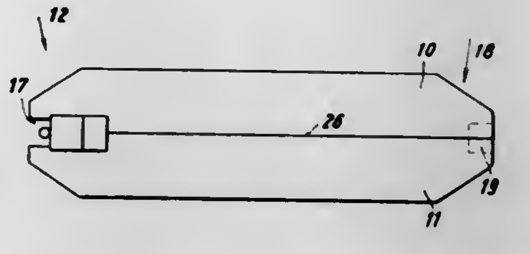
Filed Sept. 16, 1969, Ser. No. 858,315

Claims priority, application Germany, June 13, 1969, P 17 81 296.3

Int. Cl. B63b *35/30*

U.S. Cl. 114—29 10 Claims

A hopper barge with a driving and control means supporting platform mounted thereon for constant horizontal orientation in any position of the barge sections. A hopper barge arranged with lengthwise hinged sections for opening and closing thereof is provided with a deck-mounted platform for the support of drive, steering and other control mechanism. Linkages are arranged between the platform and the adjacent portions of the barge deck so that the platform remains in horizontal orientation at all times regardless of whether the barge sections are in closed or open relationship with respect



to each other. Further, the linkage systems used are mounted pivotally but nontranslatably with respect to each section of the barge and the platform, or other supported means, is likewise mounted pivotally but substantially nontranslatably with respect to the barge sections whereby, regardless of the open or closed relationship of the barge sections with respect to each other, the platform for the engine, steering or other control mechanism remains at least substantially centered at all times over the centerline of the barge.

3,648,638

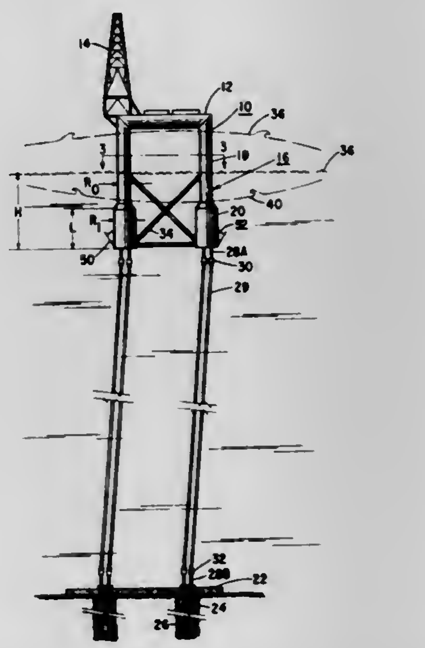
VERTICALLY MOORED PLATFORMS

Kenneth A. Blenkarn, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Continuation-in-part of application Ser. No. 754,628, Aug. 28, 1968, now abandoned. This application Mar. 9, 1970, Ser. No. 17,485

Int. Cl. B63b *35/00, 35/44*

U.S. Cl. 114—0.5 D 42 Claims

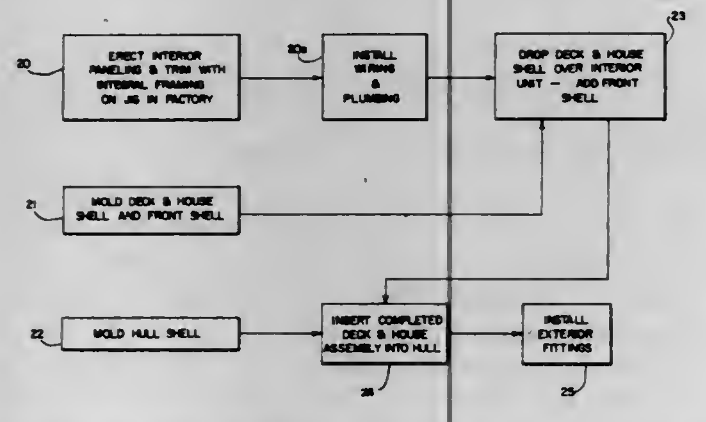


This invention relates to a structure floating on a body of water. Three or more spar buoy-type floats support the structure above the water. The structure is connected to anchors in the floor of the body of water by elongated members such as large diameter pipe. There are no other anchoring connections in the system. Each spar buoy has a unique structure so that vertical forces and overturning moments on the floating structure are minimized. The spar buoys have a buoyancy means having a volume of two parts. The first part can be defined as resulting from a straight, vertical, prismatic shape which runs the entire vertical length of the buoyancy means. The volume of this prismatic portion comprises between about 40 and 80 percent of the total displacement. The buoyancy means have a second or auxiliary volume of displacement which runs considerably less than the vertical length of the prismatic portion. This critical arrangement of buoyancy between these two parts as taught in this invention minimizes mooring forces imposed on the vertical elongated members, such as occur to react forces on the structure due to passing waves.

ERRATUM

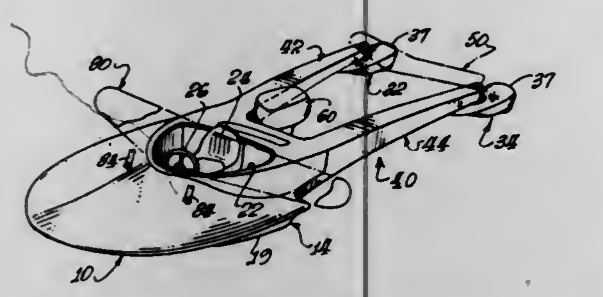
For Class 114—53 see:
Patent No. 3,648,314

3,648,639
BOAT AND METHOD OF CONSTRUCTION
Calvin G. French, Winter Garden, Fla., assignor to Ashland Oil, Inc., Houston, Tex.
Filed Feb. 26, 1970, Ser. No. 14,663
Int. Cl. B63b *3/02*
U.S. Cl. 114—65 R **10 Claims**


20
ERECT INTERIOR PANELING & TRIM WITH INTEGRAL FRAMING ON JIG IN FACTORY
20a
INSTALL WIRING & PLUMBING
23
DROP DECK & HOUSE SHELL OVER INTERIOR UNIT — ADD FRONT SHELL
21
MOLD DECK & HOUSE SHELL AND FRONT SHELL
22
MOLD HULL SHELL
INSERT COMPLETED DECK & HOUSE ASSEMBLY INTO HULL
28
INSTALL EXTERIOR FITTINGS
25

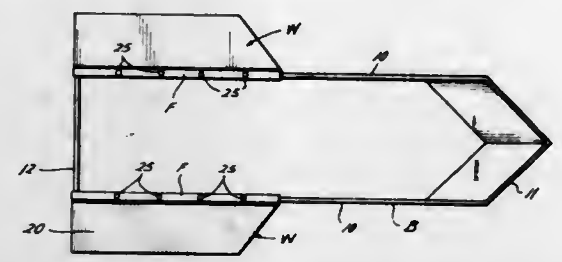
The specification discloses a novel boat and method of assembly thereof, specifically a houseboat. An interior module including all framing and interior paneling, finish, trim and fixtures is completed in a workshop area. A fiberglass exterior module with attached deck is lowered over the interior module and the complete house and deck portion is then lowered into the hull to form the completed boat.

3,648,640
HYDROPLANE BOAT
Roger A. Granger, 20321 Shadon Mountain Rd., Walnut, Calif.
Filed Sept. 14, 1970, Ser. No. 72,078
Int. Cl. B63b *1/20*
U.S. Cl. 114—66.5 R **9 Claims**



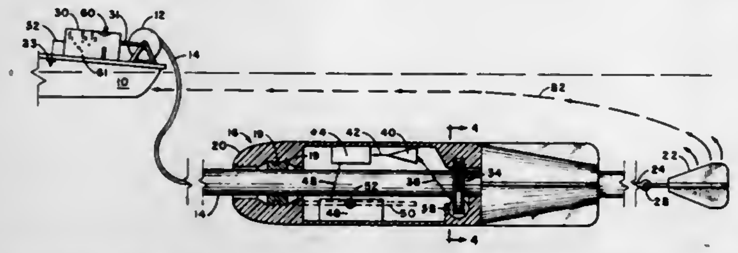
A hydroplane boat of tunneled sponson form is rendered longitudinally stable by two pontoons having planing surfaces and mounted on boom structure in spaced relation astern of the main hull and laterally spaced to trail the respective sponsons. A cross boom between the pontoons is formed as an airfoil with adjustable angle of attack. The pontoons may be rotatable about vertical axes for steering, and the entire boom structure may be adjustable about a horizontal transverse axis to vary the effective angle of attack of the main hull.

3,648,641
AUTOMATIC WING STABILIZER FOR BOATS
Lestan P. Normand, Jr., 3330 French Road, Beaumont, Tex.
Filed June 16, 1970, Ser. No. 46,684
Int. Cl. B63b *43/14*
U.S. Cl. 114—123 **6 Claims**



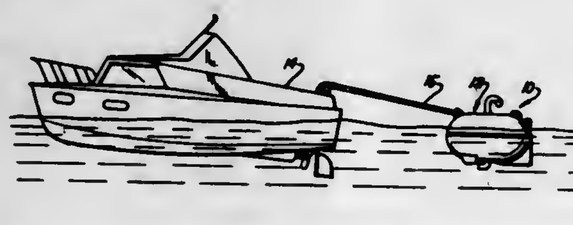
Automatic wing stabilizer for boats, wherein the stabilizer is pivotally attached to the side of a boat and is constructed so that when the boat is docked or not moving to any extent, the stabilizer hangs down substantially parallel to the side of the boat but when the boat is moving at a minimum speed and thereabove, the stabilizer automatically swings upwardly and outwardly on the top of the water line.

3,648,642
COMMUNICATION CHANNEL BETWEEN BOAT AND MARINE CABLE DEPTH CONTROLLERS
John W. Fetrow, and Kim L. Mitchell, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed Jan. 28, 1970, Ser. No. 6,613
Int. Cl. B63b *21/00;* H04b *13/02*
U.S. Cl. 114—235 B **9 Claims**



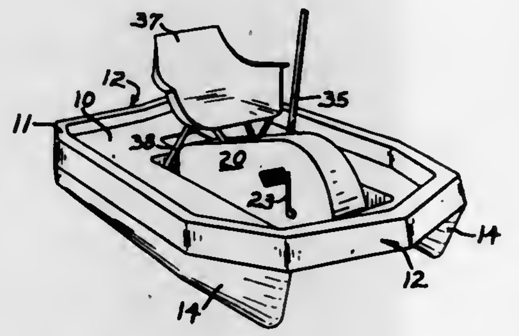
Method and apparatus for communicating between a ship and a seismic cable depth controlling apparatus which is attached to a seismic cable for the purpose of maintaining the seismic cable at a constant or predetermined depth which essentially comprises a generator on board ship applying a predetermined AC signal to a conductor along the length of the seismic cable. A toroidal core is clamped around the seismic cable and intercepts the current passing down the cable and converts the intercepted flux to an electrical signal which is applied to the control system of the cable depth controller.

3,648,643
BOATING ACCESSORY
Jerome L. Murray, 652 First Avenue, New York, N.Y.
Filed Jan. 22, 1970, Ser. No. 4,833
Int. Cl. B63h *21/00*
U.S. Cl. 115—0.5 R **16 Claims**



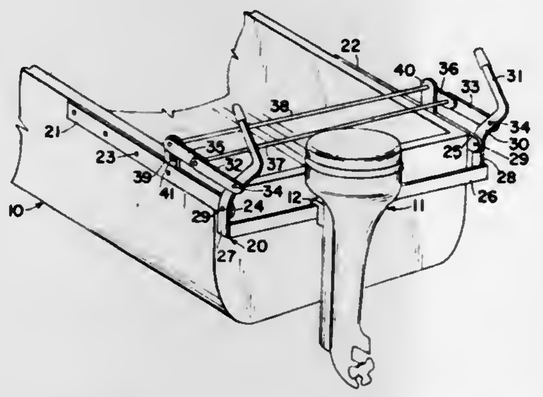
A buoyant watertight boating accessory containing an alternator or generator and an internal combustion engine for driving the alternator is moored to a boat by a connecting line which includes the necessary electrical wiring to supply electricity from the alternator to electrical appliances on the boat. The air intake to the internal combustion engine includes an air snorkel and the engine also includes an exhaust conduit for discharging products of combustion towards the boat to maintain the accessory remote from the boat to the full extent of the connecting line.

3,648,644
PONTOON VESSEL
Leedice S. Smith, Elk, Wash.
Filed Apr. 13, 1970, Ser. No. 27,732
Int. Cl. B63h *16/12*
U.S. Cl. 115—26 **10 Claims**



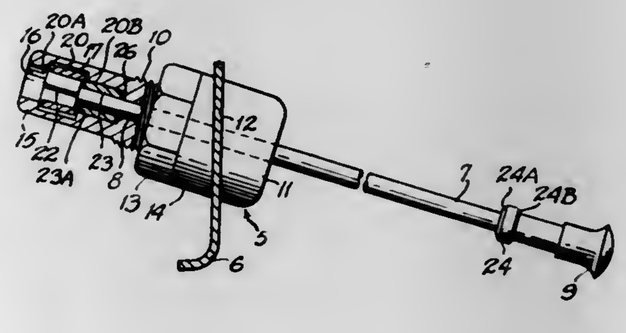
A pontoon vessel comprising a molded horizontal platform having longitudinal pontoons secured to its underside. A pedal-operated belt extends longitudinally between the pontoons and carries transverse paddles for imparting movement to the vessel. The belt is located within a central elevated enclosure bounded by recessed wells, all formed integrally with the platform. A special tensioning arrangement is provided for the pedal-operated belt. The belt has paddles, as well a symmetrical rudder, all lie within the elevational boundries of the pontoons. A seat for the user of the vessel straddles the elevated enclosure.

3,648,645
MOUNTING FOR OUTBOARD MOTOR
Harry E. Ezell, 3850 Hillcrest Lane, Mobile, Ala.
Filed Apr. 27, 1970, Ser. No. 32,021
Int. Cl. B63h *5/12*
U.S. Cl. 115—41 **9 Claims**



This invention relates to an improved support means for use in supporting an outboard motor on a boat for movement between an outboard operative position and an inboard inoperative position. The improved support means comprises a first frame means having a pair of laterally spaced members which includes means for attaching the laterally spaced frame members to the side edges of a boat. A second frame means is pivotally supported on the first frame means and includes a transverse bar member for supporting a motor. Linkage means is connected between the first frame means and the second frame means for releasably locking the first frame means in either an outboard operative supporting position or in an inboard inoperative supporting position. The linkage system includes a pair of links pivotally connected together to provide an overcenter locking means for maintaining the first frame means in either of the two positions. An abutment means is provided on the first and second frame means for holding the linkage means in either of the two locking positions. A manual operable control handle is connected to the second frame means for assisting in moving a motor supported on the second frame means to the inboard inoperative supporting position.

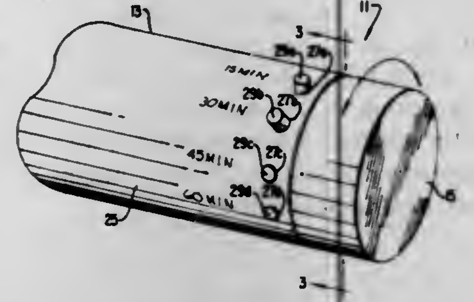
3,648,646
MANUALLY RETRACTABLY CURB FEELER
Bernard Fink, 19760 Via Escuela Drive, Saratoga, Calif.
Filed Mar. 12, 1969, Ser. No. 806,504
Int. Cl. B60q
U.S. Cl. 116—28 A **4 Claims**



The intent of my invention is to provide a manually retractable curb feeler device that can be manually extended by merely firmly grasping the feeler shaft tip and pulling it all the way out-similarly to retract it by merely firmly grasping the flexible feeler shaft near its mounting body and pushing it into the body. It further is my intent to provide for the accomplishment of this without undo force and yet have the flexible feeler shaft secure in either position without the use of any adjusting screws or nuts. It also is my intent to have this all accomplished within a single mounting body which will be directly mountable to the auto body or fender and contain within that same mounting body means for containing the flexible feeler while also insuring its retracted or extended position. By the configuration my retractable curb feeler device is intended to be the most economical means to provide for retracting the feelers for the auto to pass thru automatic car wash equipment without bending or damaging the feeler shaft, discourage mischievous children from deliberately bending the feeler shaft out of shape and also allow the feelers to be recessed for areas and extensive periods of non use. This is all accomplished via a single mounting body having bores such that two split bushings contained therein may alternately hug a retainer bushing for the extended position and hug the feeler tip reduced diameter in the retracted position. To change from either position a force enough to expand the applicable bushing in required as will be thoroughly described herein.

3,648,647
TOUCH SENSITIVE INDICATORS
Robert D. Joy, Cedar Rapids, Iowa, assignor to J-Tec Associates, Inc., Cedar Rapids, Iowa
Filed Aug. 14, 1970, Ser. No. 63,848
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 R **6 Claims**

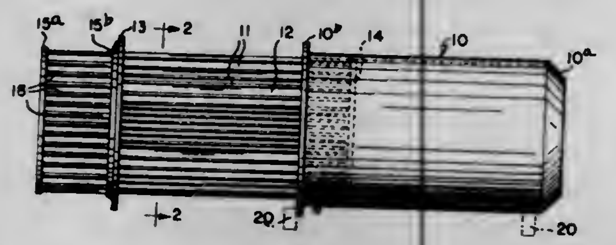
This disclosure describes touch sensitive indicators comprising a plurality of rods that are movable radially inwardly and outwardly with respect to a tubular housing. The lobe of a cam formed on the inner side of a knob impinges on the inner edges of the rods. The arcuate distance moved by the knob determines the number of rods that are moved from inner or inaccessable positions to outer or accessable positions. In this manner a touch sensitive indication of the arcuate distance moved by the knob is provided.



3,648,648
DRUM BREADER

Richard T. Johnson, Sandusky, and Fred Fetzer, Strongsville, both of Ohio, assignors to Sam Stein Associates, Inc., Sandusky, Ohio

Filed Feb. 12, 1970, Ser. No. 10,776
Int. Cl. A23g *3/26*
U.S. Cl. 118—19 **8 Claims**

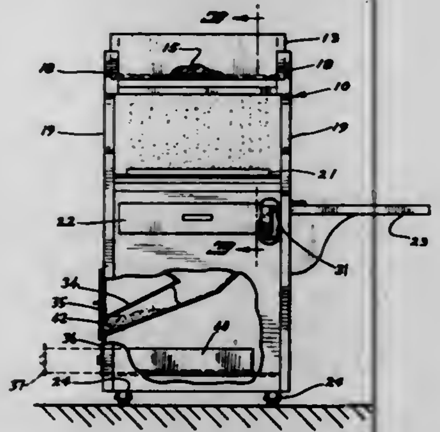


A rotatable, generally cylindrical, drum is provided for coating a product, such as pieces of chicken, with bread crumbs or flour. The inside wall of the drum is provided with radially inwardly extending ribs, some of which are shorter for shaking the product and some of which are longer for flipping the product over. A sifter cage may be provided at the discharge end of the drum comprised of parallel rods all lying in a zone which is an extension of the drum wall zone.

3,648,649
BAKER'S SPRINKLING APPARATUS

Arthur Wasserman, Minneapolis, Minn., assignor to Burd, Braddock & Bartz, Minneapolis, Minn., a part interest to each

Filed Dec. 22, 1969, Ser. No. 886,868
Int. Cl. A21c *9/04;* **B07b** *1/08, 1/32*
U.S. Cl. 118—31 **3 Claims**

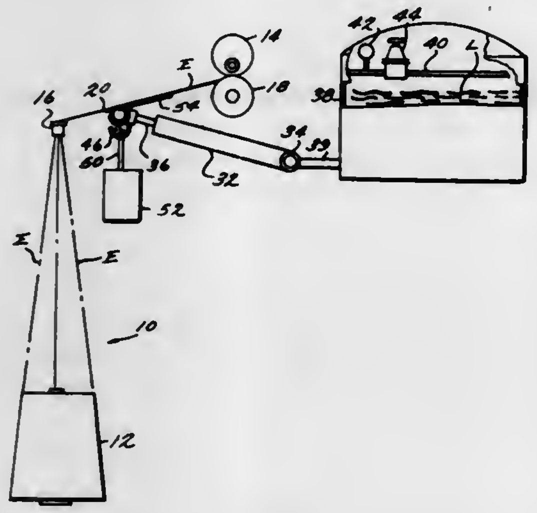


A baker's sprinkling apparatus for sprinkling peel boards and other baking surfaces with corn meal and for sprinkling bakery products such as rolls and buns with particulate toppings such as poppy seeds and sesame seeds. The sprinkler has a main frame with parallel horizontal slide rails. Slidably mounted upon the slide rails is a container with a screen mesh bottom containing the material to be sprinkled. The surface upon which the material is to be sprinkled rests upon transverse rods below the slide rails. Stop means at either end of the slide rails stop sliding movement of the container and impart a jar to it causing a predetermined amount of the material to be sprinkled from the mesh bottom and collect upon the surface below. Catch means below the transverse rods catch the excess material.

3,648,650
YARN COATING SYSTEM

Raymond D. Joy, Clarksville, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed June 2, 1969, Ser. No. 829,220
Int. Cl. B05c *3/12, 11/02*
U.S. Cl. 118—123 **7 Claims**



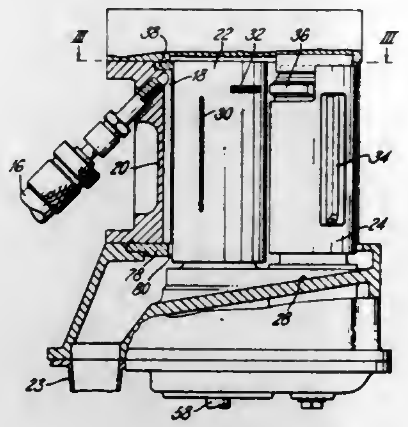
A method and system for coating yarn ends or the like on the entire outer surface so as to prepare the yarn for subsequent textile treatments and/or change the characteristics of the same. The yarn end is moved in a direction generally along its axis transversely across a narrow, elongated surface of the coating liquid and as it moves across the surface of the coating liquid, the yarn end is rolled so that the coating liquid is precisely applied to the entire outer surface of the yarn end. The system and method may be utilized with existing textile equipment, such as spinning, twisting and roving frames or winding machines and the like, without material modification to such equipment.

3,648,651
APPLYING OF ADHESIVES

Dennis Hinchcliffe, and Henry James Hubbard, both of Deptford, England, assignors to Molins Machine Company Limited, London, England

Filed Sept. 2, 1969, Ser. No. 854,521
Claims priority, application Great Britain, July 10, 1969, 34,786/69
Int. Cl. B05c *1/00*
U.S. Cl. 118—202 **12 Claims**

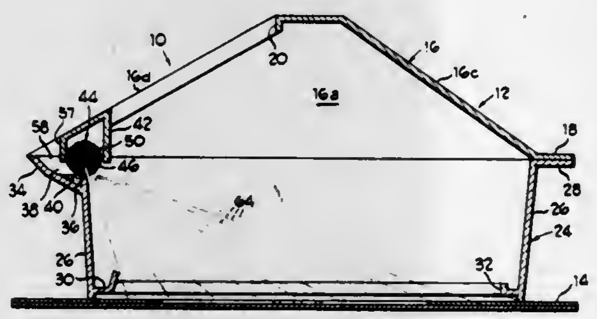
This invention concerns a paster for applying especially a low-viscosity hot-melt to a vertical workpiece. The adhesive is pumped to the upper end of a vertical groove from which a pickup drum receives adhesive which is transferred to the workpiece by a vertical transfer drum which has sponge rubber transfer members which roll in contact with pitted areas on the pickup drum to receive adhesive.



3,648,652
PAINT DESIGN SET

Allison Katzman, Chicago; Donald F. Nix, Des Plaines, and Marvin I. Glass, Chicago, all of Ill., assignors to Marvin Glass & Associates

Filed Nov. 28, 1969, Ser. No. 880,697
Int. Cl. B05c *5/00, 11/16*
U.S. Cl. 118—323 **2 Claims**



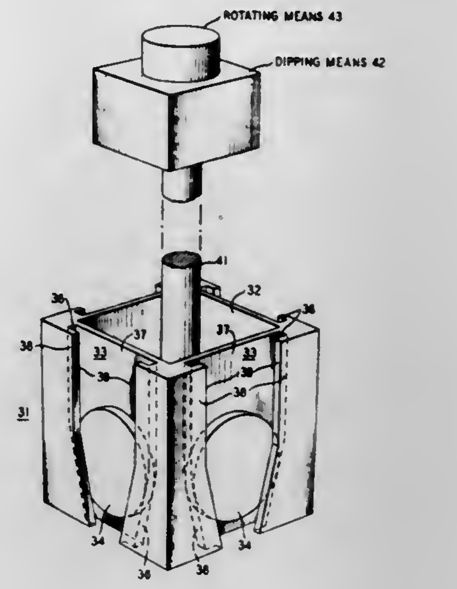
A spray painting toy of the type wherein a mistlike spray of paint particles may be emitted over a surface to provide a decorative abstraction characterized by the provision of a rotatable paint throwing brush positioned partially within a paint holding reservoir with a wiper bar intersecting the paint throwing brush so that as the brush rotates through the reservoir and collects paint, the paint will be thrown from the brush as it passes the wiper bar onto an area where paint receiving paper may be placed.

3,648,653
LIQUID PHASE CRYSTAL GROWTH APPARATUS

Robert Chase Vehse, Wyomissing, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 1, 1970, Ser. No. 41,875
Int. Cl. B05c *3/02*
U.S. Cl. 118—416 **4 Claims**

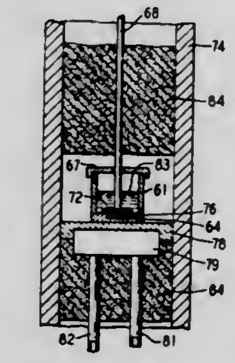
A liquid phase crystal growth apparatus designed to permit simultaneous growth upon a plurality of substrates is described. The apparatus includes a dipping head having at least one slotted channel, on at least one side, tapered to hold at least one substrate. Affixed to the dipping head by means of a rod is a dipping means which dips the head and thus the substrate into a saturated growth solution. The dipping action forces the growth solution up and over the substrate and growth is initiated thereon by lowering the temperature of the saturated growth solution.



3,648,654
VERTICAL LIQUID PHASE CRYSTAL GROWTH APPARATUS

Arpad Albert Bergh, Murray Hill, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Mar. 16, 1970, Ser. No. 19,929
Int. Cl. B05c *3/18*
U.S. Cl. 118—429 **5 Claims**



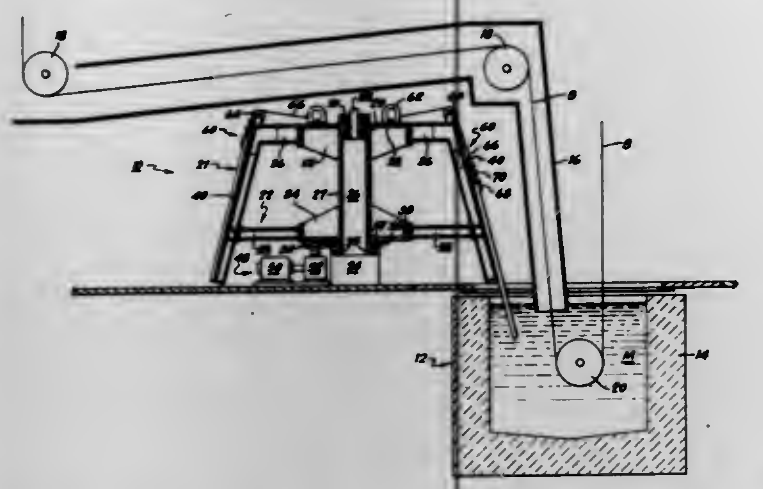
A vertical liquid phase crystal growth apparatus includes (1) a container for housing a melt and either a single substrate or a plurality of substrates, (2) a furnace, and (3) a heat sink. The melt and the substrates are isolated from one another prior to the growth process by means of a cover plate which restricts the free volume surrounding the substrate(s). The container is heated to the desired temperature and the saturated melt containing the desired dopants and the substrate are allowed to come into contact by lifting the plate. Growth is then initiated from a convection-free melt by cooling the container and, thus, the substrate by means of a heat sink which establishes a thermal gradient along the vertical axis of the container.

3,648,655
CONTINUOUS CHARGING APPARATUS

King D. Killin, Middletown, and Ellis H. Lieungh, Miamisburg, both of Ohio, assignors to Kaiser Industries Corporation, Oakland, Calif.

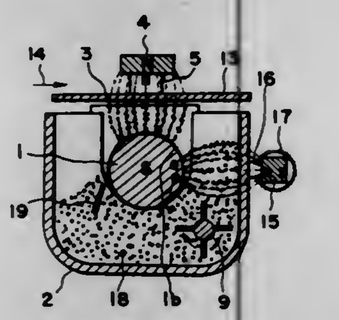
Filed Sept. 25, 1970, Ser. No. 75,320
Int. Cl. B05c *3/02*
U.S. Cl. 118—429 **12 Claims**

An apparatus for charging metal bodies into a coating pot constructed on a carousel-like carriage assembly having a plurality of feeding chutes in a circular arrangement at equally spaced intervals. Each chute is provided with a conveying unit for gradually lowering a metal body made up of several pigs or a single slab into a coating pot to maintain a constant molten metal level. Upon the pigs being consumed in one chute, the carriage assembly is automatically turned by a drive assembly to index the next successive chute with respect to the coating pot. This operation is repeated until all the chutes are empty.



3,648,656
DRY DEVELOPER FOR AN ELECTROSTATIC IMAGE DEVELOPING APPARATUS

Masaya Ogawa, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed July 7, 1970, Ser. No. 52,841
Claims priority, application Japan, July 8, 1969, 44/53984; July 10, 1969, 44/65310; July 16, 1969, 44/56197
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **4 Claims**

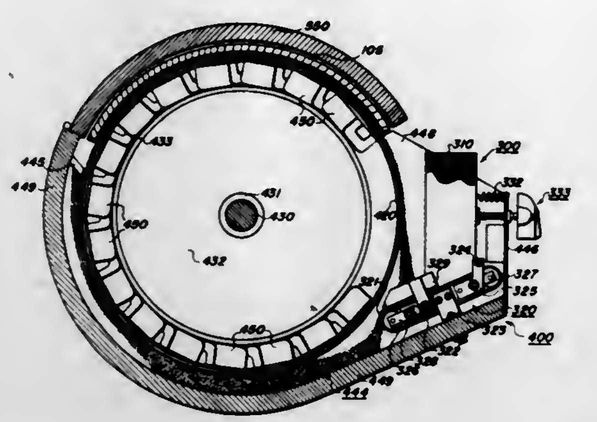


The present invention relates to a dry developer apparatus for forming a magnetic brush in electrostatic image development, wherein the developer composed of a magnetic carrier and toner magnetically adheres to a rotary roller having a specific magnetic pole. The magnetic brush is formed between the rotary roller and an opposed plate of different magnetic polarity which is mounted in parallel spaced relationship to the rotary roller by a control permanent magnet mounted in parallel spaced relationship to the roller. Rotation of the permanent magnet so that a magnetic polarity opposite to that of the roller causes the developer to be attracted to the roller surface.

3,648,657
ELECTROSTATIC IMAGE DEVELOPMENT APPARATUS

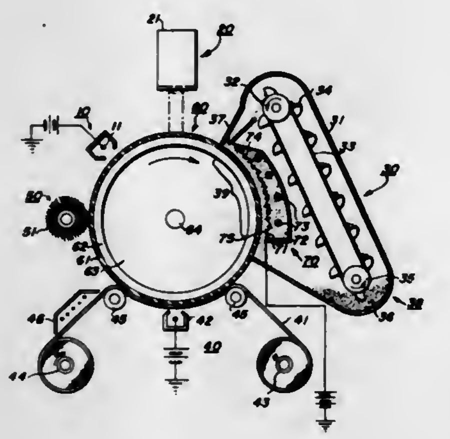
Ronald F. Rueckwald, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Continuation-in-part of application Ser. No. 733,879, June 3, 1968, now Patent No. 3,538,887, dated Nov. 10, 1970. This application May 12, 1969, Ser. No. 823,878
Int. Cl. G03g *13/08*
U.S. Cl. 118—637 **6 Claims**

Apparatus for developing latent electrostatic images in which a uniform concentration of toner powder is maintained throughout the developer system. Toner powder is uniformly dispensed to the developer mixture which mixture is magnetically attracted to the surface of a moving cylindrical applicator and transported to contact the latent electrostatic images to be developed. The images to be developed are transported in the axial direction relative to the moving cylindrical applicator and the developer material on the applicator is continuously agitated in both the axial and transverse directions across the development zone.



3,648,658
DEVELOPING APPARATUS

Ernest A. H. Weiler, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Sept. 15, 1969, Ser. No. 858,040
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **5 Claims**



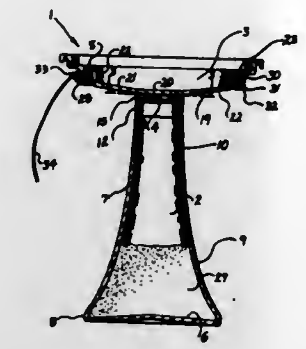
A development system wherein developer, comprising a mixture of toner particles and carrier beads, is cascaded over the surface of an insulating plate bearing a latent electrostatic image and the toner is attracted from the carrier to the plate to develop the latent image thereon having a device for supplying additional toner to the carrier beads in the development zone as the beads give up toner particles to the plate during the development process including a development electrode located adjacent the development zone having a plurality of apertures and a toner container that places additional toner particles in the apertures of the electrode.

3,648,659
ARTICLE OF MANUFACTURE

Roy A. Jones, 5600 Ridgeway, Kansas City, Mo.
Filed June 8, 1970, Ser. No. 44,264
Int. Cl. A01k *45/00*
U.S. Cl. 119—1 **9 Claims**

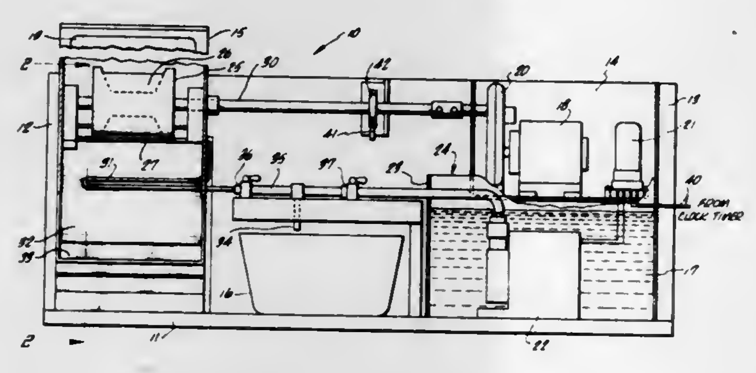
An article of manufacture comprising a top member mounted on an upper end of a pedestal with electric heating elements and a thermostat recessed in the bowl structure. A

connection is adapted to be made to the heating elements whereby the heating elements operate during cold weather to heat water in the bowl to maintain a temperature sufficient to prevent freezing.



3,648,660
AUTOMATIC ANIMAL FEEDER

Raymond D. Esquival, 1740 LaSenda Place, Los Angeles, Calif.
Filed Mar. 25, 1970, Ser. No. 22,524
Int. Cl. A01k *05/00*
U.S. Cl. 119—51.11 **7 Claims**

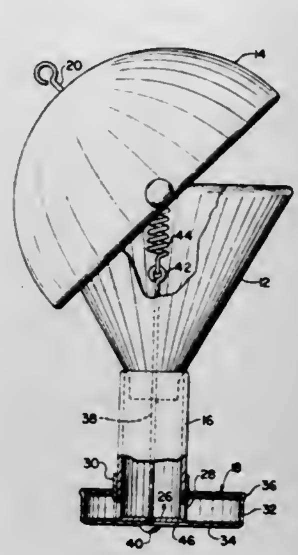


An automatic dry food pet feeder is disclosed herein having a rotatable dry food storing and dispensing means for introducing dry food to a wetting station and then to a collection station at a feeding tray available for consumption by animals. Means are provided for supplying water from a reservoir to the wetting station via an apertured water jacket and for dispensing water to a water bowl via a spigot. The distribution of water to the wetting station and into the bowl is synchronously timed with the dispensing means and is under the control of an electrical timer for overall control and under fine-time control by means of a settable microswitch operated cam settable by the drive means for the dispensing means.

3,648,661
BIRD FEEDER

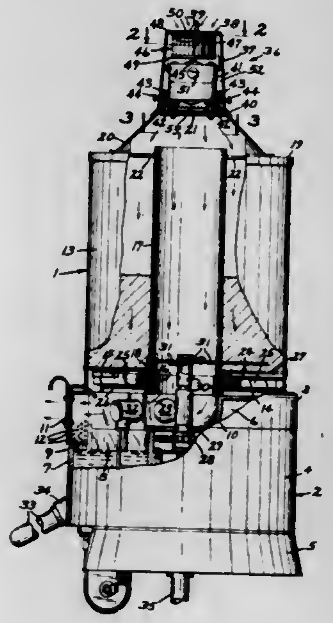
Harrington Moore, Pine Island, Newbury, Mass.
Filed Mar. 2, 1970, Ser. No. 15,521
Int. Cl. A01k *05/00*
U.S. Cl. 119—53 **7 Claims**

A funnel-shaped bird feeder is provided with a pivoted hood for easy loading, a transparent chamber for viewing feed level, and a variable combination feeding tray and perch by which the feeder may be adjusted to accommodate birds of different sizes. The feeder also includes adjustable feed opening for controlling the rate of flow of bird feed in accordance with the size of seed in the feeder.



3,648,662
VENTILATING SYSTEM FOR LIVESTOCK FEEDERS

Jerry J. Lines, Minneapolis, Minn., assignor to K & K Manufacturing Inc., Rogers, Minn.
Filed Oct. 16, 1969, Ser. No. 867,000
Int. Cl. A01k *09/00*
U.S. Cl. 119—71 **12 Claims**

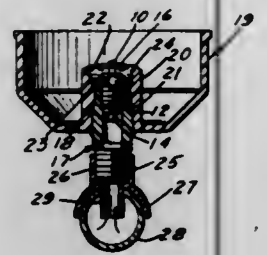


A forced air ventilating system for animal feeders wherein dry granular food is mixed with a liquid to provide predetermined quantities of liquid food. A blower is arranged to move dry air through a mixing chamber in a direction away from a dry food reservoir and dispensing mechanism for the dry food, to prevent absorption of moisture by the dry food prior to the dispensing thereof to the mixing chamber.

3,648,663
POULTRY WATERING CUP

Reed S. Kofford, P.O. Box 453, Van Nuys, Calif.
Original application Jan. 9, 1969, Ser. No. 790,016, now Patent No. 3,563,207. Divided and this application Oct. 5, 1970, Ser. No. 77,854
Int. Cl. A01k *7/00*
U.S. Cl. 119—75 **2 Claims**

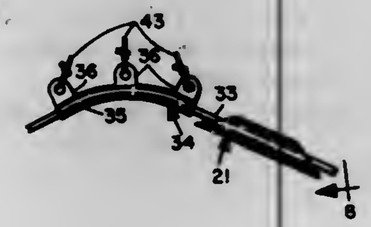
A poultry watering cup having a vertically movable valve stem normally held in an upward position by the water supply force. A cup is removably mounted on the valve assembly by frusto-conical friction fit. The cup has a small well which surrounds the upper end of the valve stem. As poultry drink



from the well, their beaks engage the upper end of the valve stem and depress it, causing the valve to open and refill the well.

3,648,664
ANIMAL TETHERING APPARATUS AND THE LIKE

William M. Nunley, 820 Martin Avenue, Portsmouth, Va.
Filed July 2, 1970, Ser. No. 51,987
Int. Cl. A01k *3/00*
U.S. Cl. 119—120 **9 Claims**

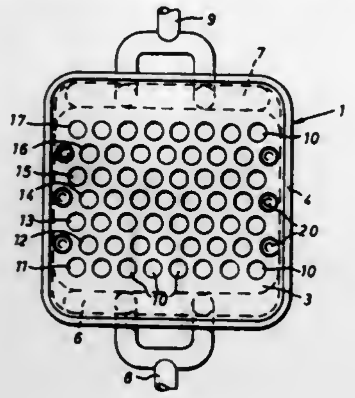


Apparatus including a horizontally disposed line or the like supported a distance above ground or floor level and having two or more angularly related sections, as well as a shuttle device moveable along the length thereof past the support points for the adjoining sections thereof. The shuttle may be in the form of a tubular element substantially encircling the line and having a suitable side slot enabling the same to move past components of a support point, as well as end surfaces shaped to facilitate movement of the shuttle past a support point, and includes a downwardly depending element to which animate or inanimate objects may be secured. Alternatively, the shuttle may include a substantially operationally vertically disposed plate element having a pair of upper rollers and a pair of lower rollers connected to a flat surface thereof substantially embracing the line or the like along the upper and lower extremities thereof; the side extremities of the line or the like being embraced by the plate element and by the spokes of a rowel rotatably carried thereby. The rowel rotates to permit such a shuttle to pass substantially horizontally disposed support lines or the like connected to the line or the like carrying the shuttle.

3,648,665
PERFORATED STRUCTURES

Peter G. Ware, Rugby, England, assignor to Dunlop Holdings Limited, London, England
Filed July 8, 1970, Ser. No. 53,098
Claims priority, application Great Britain, July 11, 1969, 34,934/69
Int. Cl. F22b *13/00*
U.S. Cl. 122—4 R **19 Claims**

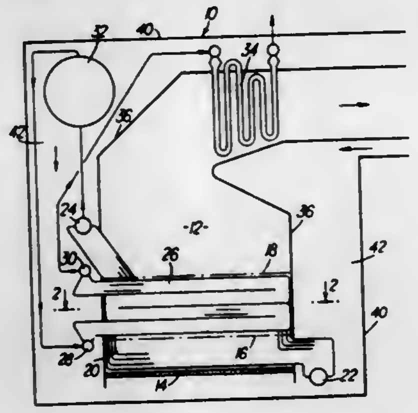
A perforated structure, particularly for use as a heat exchanger, comprising two superimposed spaced metal sheet members having tubular projections formed in the respective sheets, the projections of each sheet extending towards the opposite sheet and interfitting with corresponding projections



of the opposite sheet, a sealed gallery being formed between the two sheets, of which the following is a specification.

3,648,666
STEAM BOILERS

Gabriel Francis Foldes, Banstead, and Peter William Neve, Biggin Hill, both of England, assignors to Foster Wheeler Corporation, Livingston, N.J.
Filed Oct. 8, 1970, Ser. No. 79,233
Int. Cl. F22b *1/02*
U.S. Cl. 122—4 D **11 Claims**

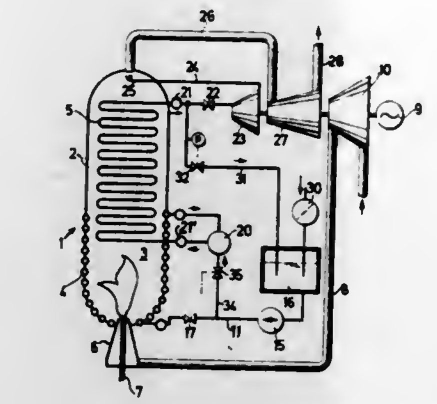


This invention relates to steam boilers which are fired by a fluidized bed burner. Immersed within the bed are at least part of the evaporating section and at least part of the superheating section of the boiler. The tubes constituting these parts of the evaporating and superheating sections are arranged so that there are alternate evaporating and superheating tubes at least in one direction across the cross section of the bed. This ensures that the bed has an even temperature and avoids small hot spots within the bed where fusion of ash particles can occur. According to a preferred subsidiary feature of the invention, the evaporating tubes extend the full height of the bed while the superheating tubes are only positioned above the static bed height. Then when the bed is shut down by stopping the supply of fluidizing air, the hot bed particles do not contact the superheating tubes.

3,648,667
APPARATUS AND METHOD FOR STARTING UP A STEAM GENERATOR

Richard Dolezal, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland
Filed Sept. 11, 1970, Ser. No. 71,437
Claims priority, application Switzerland, Sept. 23, 1969, 14327/69
Int. Cl. F22b *29/12*
U.S. Cl. 122—406 ST **10 Claims**

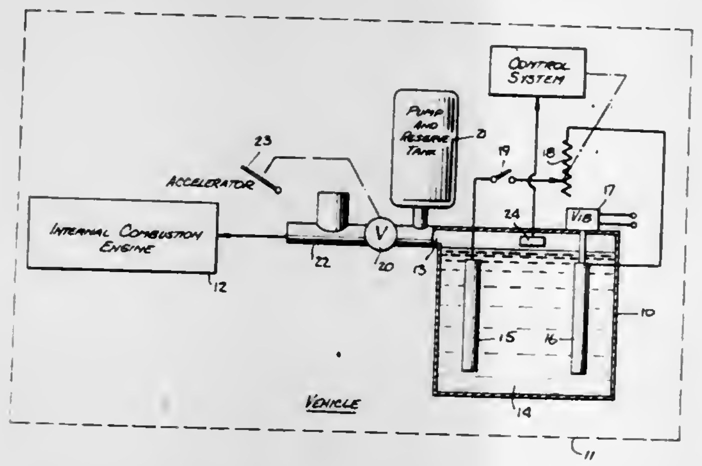
At start up, about 15 percent of a full working load of feed water is supplied to the evaporator directly while an additional flow of feed water at least 30 percent larger than the flow to the evaporator is supplied to the superheater by the additional feed line under full working pressure. During this time, the flow of working medium is bypassed back into the



degasser while the burner is supplied with about 15 percent of full fuel load and 25 percent of full combustion air load. Once steam becomes generated in the evaporator, the pressure at the superheater is rapidly reduced to permit the starting up operation to proceed at an increasing pace.

3,648,668
GAS-OPERATED INTERNAL COMBUSTION ENGINE

Francisco Pacheco, Hewlitt, N.J., assignor to Michael Ebert, New York and Eugene J. Kalil, New York, N.Y., part interest to each
Filed July 8, 1970, Ser. No. 53,112
Int. Cl. F02b *43/00;* **H01m** *17/02*
U.S. Cl. 123—3 **6 Claims**

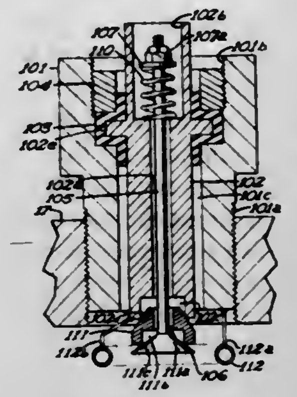


A gas-operated internal combustion engine for driving a vehicle, the vehicle carrying a hydrogen gas generator including a magnesium electrode immersed in a salt-water electrolyte. The rate of gas evolution in the generator is controlled as a function of demand, the gas being intermixed with air and supplied to the cylinders of the engine.

3,648,669
FUEL INJECTOR AND IGNITER

William J. Rank, 1704 East 58th St., Minneapolis, Minn.
Filed May 28, 1970, Ser. No. 41,320
Int. Cl. F02b *3/02*
U.S. Cl. 123—32 AH **18 Claims**

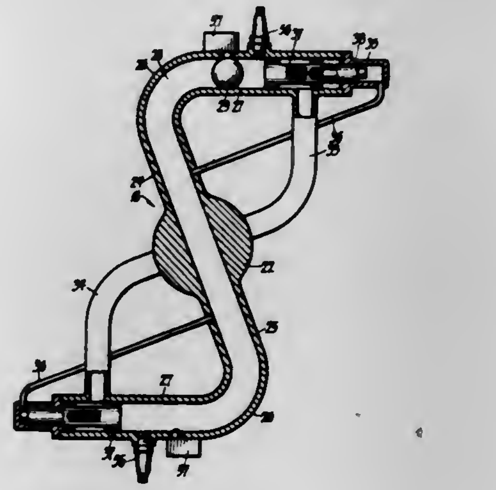
An internal combustion engine with a nozzle for injecting fuel into the cylinder under pressure and across a heater which ignites the fuel as it enters the cylinder. A variable volume pump with a unique control means for varying the volume provides fuel to the injector nozzle. The nozzle is arranged, and the heater is so disposed with respect thereto,



that substantially all of the fuel injecting by the nozzle is ignited by the heater as it enters the cylinder.

3,648,670
INTERNAL COMBUSTION ENGINE

John Royston Siddons, "Chandella," Rosehill Road, Lower Plenty, Victoria, Australia
Filed May 5, 1970, Ser. No. 34,771
Claims priority, application Australia, May 6, 1969, 54539/69
Int. Cl. F02b *71/00;* **F02d** *39/10;* **F02b** *57/04*
U.S. Cl. 123—43 R **10 Claims**

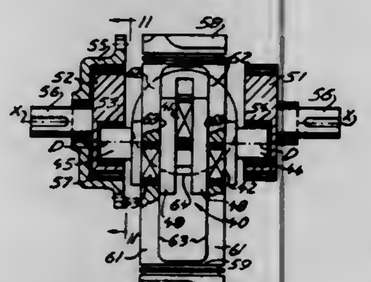


This invention provides an internal combustion engine, specifically a rotary engine, operable either by compression ignition or spark ignition and having an engine rotor with means for introducing combustible fuel to the rotor and means for exhausting burnt gases from the rotor, the rotor having at least one track for the travel therein of a free piston member, a free piston member in said track, and at least one reaction member operatively mounted in relation to the rotor so as to resist the application to the engine rotor of torque applied in a reverse direction upon the explosion of combustible gases within the rotor, the free piston member being operable upon such explosion of combustible gases to travel in said track to induce in the rotor an engine torque in the forward direction.

3,648,671
MODIFIED INTERNAL COMBUSTION ENGINE

Leopold W. Llwellyn, Burnaby, British Columbia, Canada, assignor to Kal-Pac Engineering Ltd., Vancouver, Canada
Filed Oct. 1, 1970, Ser. No. 77,216
Claims priority, application Great Britain, Oct. 4, 1969, 48,868/69
Int. Cl. F02b *75/22, 33/20*
U.S. Cl. 123—55 R **6 Claims**

Modification of a twin opposed cylinder two-stroke internal combustion engine according to U.S. Pat. No. 3,329,134 issued in 1967 to the present inventor, which engine has a power piston reciprocating in opposed aligned power cylinders, and an effectively integral charge piston reciprocating within aligned charge cylinders, axes of the reciprocations intersecting and being perpendicular. There are no connecting rods, the power piston is journaled on a central crankpin of a crankshaft, and the effectively integral charge piston is an assembly having two elements interconnected by spaced slide blocks constrained in guides, with the slide blocks being journaled on aligned crankpins spaced from the central crankpin. The crankshaft has an unusual motion rotating about an instantaneous axis midway between axes of the central crankpin and the aligned crankpins, the instantaneous axis rotating in circular locus centered on an engine axis mutually perpendicular to the cylinder axes and passing through their point of intersection. Power takeoff is by a ring gear with internal teeth in engagement with teeth of a pinion secured to an extension of a crankshaft, giving typically a 1:3 reduction drive.



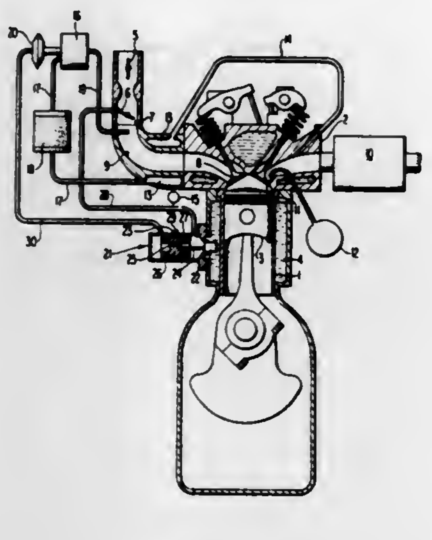
Means to constrain the instantaneous axis in the locus above will effect crankshaft motion as above. In the modified engine of the present invention, discs are journaled in the frame of the engine centered on the engine axis, the discs being bored eccentrically to receive stubs at outer ends of the crankshaft, the stubs being aligned on the instantaneous axis. Thus the instantaneous axis is constrained to move in the circular locus above, effecting crankshaft motion as in the patented engine. Accordingly, the slide blocks and guides are dispensed with and the two elements of the charge piston are bolted together and journaled on the two aligned crankpins. One of the discs has a central, outwardly extending, power takeoff shaft, so that the gear train of the patented engine is also dispensed with.

3,648,672
DEVICE FOR PURIFYING THE EXHAUST GAS OF AN INTERNAL COMBUSTION ENGINE TO REDUCE THE NITROGEN OXIDE CONTENT

Takumi Muroki, and Motoyuki Hayashida, both of Hiroshima-ken, Japan, assignors to Toyo Kogyo Company Limited, Aza-shinchi, Fuchu-cho,, Akigun, Hiroshima-ken, Japan

Filed Oct. 8, 1970, Ser. No. 79,108
Claims priority, application Japan, Aug. 10, 1969, 44/80891
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **4 Claims**

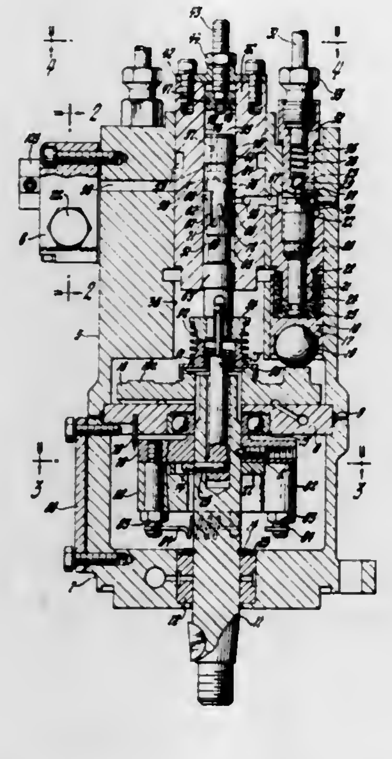
A device for purifying exhaust gas of an internal combustion engine, to reduce the nitrogen oxide content, which has an exhaust conduit for introducing part of the exhaust gas into an intake passage of the engine, a valve provided in the exhaust conduit opened by a diaphragm device to allow passage of the exhaust gas when the vacuum acting on the diaphragm device becomes over a predetermined value, a vacuum conduit for introducing the vacuum of the intake passage of a carburetor into the diaphragm device, said vacuum conduit being connected to the intake passage at a position adapted to open upstream of the throttle valve when the throttle valve is closed and to open downstream of the throttle valve when the throttle valve is slightly opened, control means operating to sense the engine temperature and provided in the vacuum conduit, said control means introducing the intake vacuum into the diaphragm device when the sensed temperature is over a predetermined value and for shutting off the introduction of the intake vacuum into the diaphragm device when the sensed temperature is below a predetermined value whereby the part of the exhaust gas is introduced into the intake passage only when the engine temperature becomes over a predetermined value and the intake vacuum becomes over a predetermined value.



3,648,673
FUEL INJECTION PUMP

Richard S. Knape, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 6, 1970, Ser. No. 52,391
Int. Cl. F02d *1/12*
U.S. Cl. 123—140 FG **6 Claims**

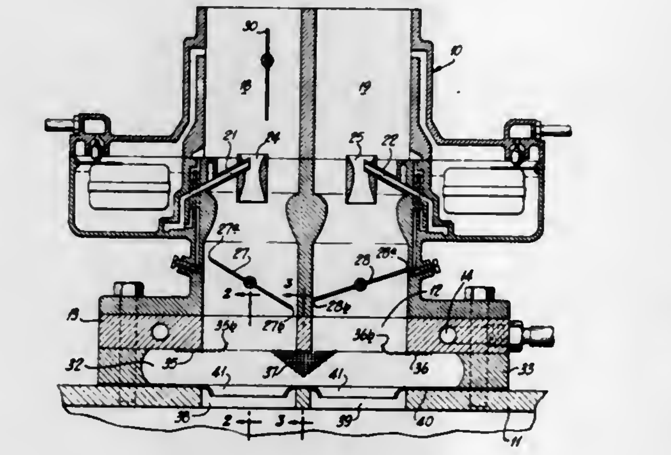


A fuel injection pump assembly in which fuel delivered from individual pump plungers is controlled by a pump drive shaft driven single control valve, the position of which, relative to the spill ports from the plungers, is controlled by means of a hydraulic governor and a flyweight-type advance mechanism.

3,648,674
REACTOR

Gordon L. Proctor, Tulsa, Okla., assignor to Gordon L. Proctor, Incorporated, Tulsa, Okla.

Continuation-in-part of application Ser. No. 349, Jan. 2, 1970, now abandoned. This application Feb. 27, 1970, Ser. No. 14,982
Int. Cl. F02m *29/04, 29/14*
U.S. Cl. 123—141 **15 Claims**

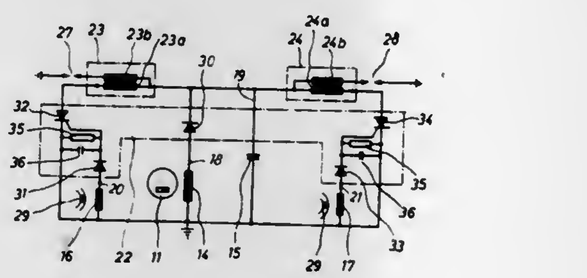


A reactor grid is positioned within the passageway between the intake manifold and carburetor of an internal combustion engine positioned to intercept streams of larger size particles of fuel which generally form around the edges of the throttle butterfly valve. These larger size particles impinge upon the grid, thereby breaking up the particles. The reactor grid may be placed in an expansion chamber which further aids in vaporizing and breaking up the liquid particles of fuel.

3,648,675
IGNITION ARRANGEMENTS FOR INTERNAL COMBUSTION ENGINES

Georg Gemander, Nurnberg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed July 15, 1970, Ser. No. 55,080
Claims priority, application Germany, July 16, 1969, P 19 36 105.8
Int. Cl. F02p *1/00*
U.S. Cl. 123—149 A **10 Claims**

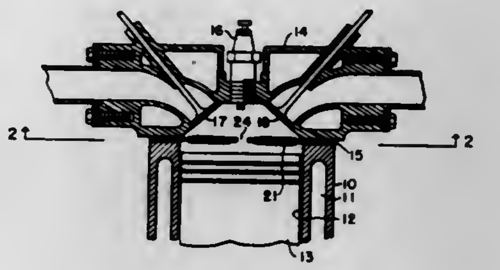


An arrangement for providing ignition pulses for an internal combustion engine while at the same time inhibiting ignition pulses from being applied when said engine is operated in the improper direction. Ignition pulses are produced through an ignition coil which has its primary winding connected to a capacitor charged through a magneto generator. Discharging of the capacitor is controlled through a thyristor which, in turn, is fired through the application of pulses derived from pulse emitters. The thyristor is switched to the conducting state, during improper operating direction of the engine, by the voltage pulse which causes charging of the capacitor when the thyristor is in the nonconducting state.

3,648,676
PROCESS FOR REDUCING DETONATION

Malden C. Lowman, Jr., San Rafael, Calif., assignor to Environmental Quality Engineering, Inc., Oakland, Calif.

Filed Mar. 17, 1971, Ser. No. 125,197
Int. Cl. F02b *23/00;* **F02n** *29/00;* **F02b** *77/00*
U.S. Cl. 123—191 R **14 Claims**

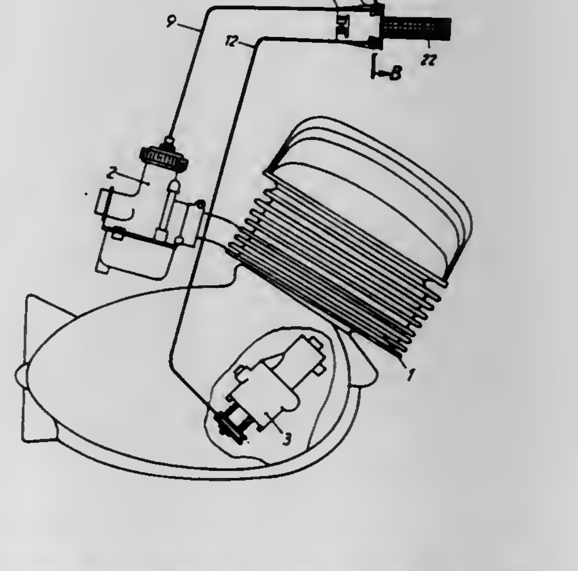


The tendency toward detonation in a spark-ignition internal combustion engine is reduced by adsorbing on an extended surface, such as a wire mesh, the free radicals resulting from oxidation of fuel which otherwise would propagate a chain reaction, the surface being within the combustion chamber, e.g., stationary at the juncture of the cylinder block and head, in spaced relation to the fixed wall of the chamber and positioned between the piston and the ignition device, and having a flame-propagation opening of minor area extending therethrough. The surface may be of material which is catalytic to the oxidation of hydrocarbons and/or N_2 to reduce the concentration of CO and/or NO_x in the exhaust gas.

3,648,677
INTERNAL COMBUSTION ENGINE WITH CONTROLLED LUBRICATION SUPPLY

Max Straubel, Munich, Germany, assignor to Zundapp-Werke GmbH, Munich, Germany

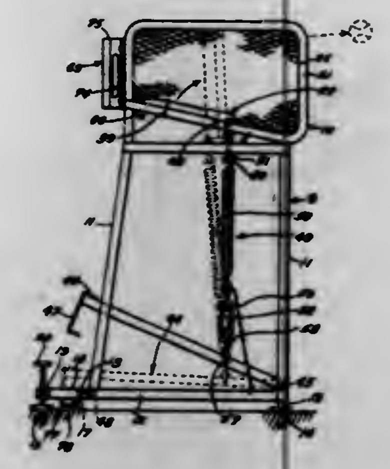
Filed Aug. 29, 1969, Ser. No. 854,166
Claims priority, application Germany, Nov. 27, 1968, P 18 11 128.9
Int. Cl. F16n *29/02*
U.S. Cl. 123—196 S **9 Claims**



A coordinated set of controls for a throttle and lubricating pump with a fail-safe feature. In normal operation, the lubricating pump output is a function of the speed setting of the throttle whereby at maximum speed setting the output of the pump is set at its maximum by interconnected linkages. In the event of a failure of the linkages, the lubricating pump is set at its maximum output for all throttle settings.

3,648,678
BASEBALL THROWING DEVICE

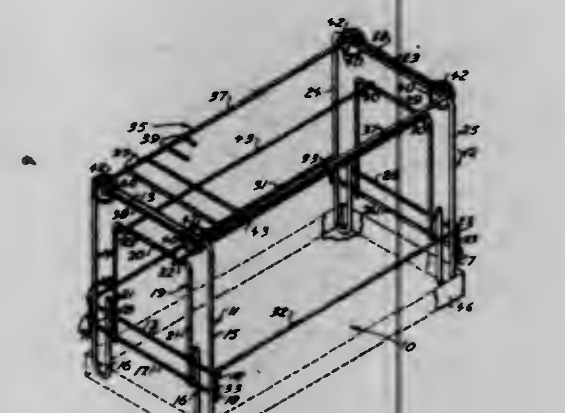
George C. Luebkeman, 115 Mt. Nebo Road, Cleves, Ohio
Filed Apr. 20, 1970, Ser. No. 29,859
Int. Cl. A63b *69/40*
U.S. Cl. 124—7 **12 Claims**



A portable baseball throwing device that is treadle-cocked and trigger releasable. The device further has an adjustable tension spring which serves to actuate a throwing arm which is cocked when the aforementioned treadle is depressed to that a depending foot on the treadle contacts the ground. The throwing arm is channel-shaped with an adjustable ball stop positioned across the channel and further with a frictional rub strip attached to each wall of the channel for accurate positioning of a baseball. For this same reason, the ball chute feeding the throwing arm has finger slots in it. The throwing arm is surrounded by a cage to protect the user of the device.

3,648,679
COLLAPSIBLE BARBECUE APPARATUS

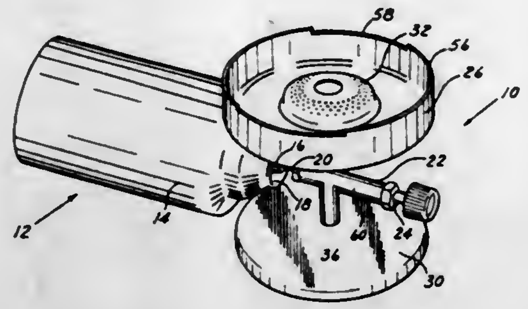
Daniel P. Quinn, 6030 Halifax St., Burnaby, British Columbia, Canada
Filed June 16, 1970, Ser. No. 46,718
Int. Cl. A47j *37/00;* **F24b** *3/00*
U.S. Cl. 126—25 A **7 Claims**



Collapsible barbecue apparatus having a pair of end frames releasably connected in upright, spaced apart relationship and a grill disposed between the frames. Connectors loosely connecting the grill and the end frames provide vertical adjustability of the grill.

3,648,680
MINIATURE CAMP STOVE

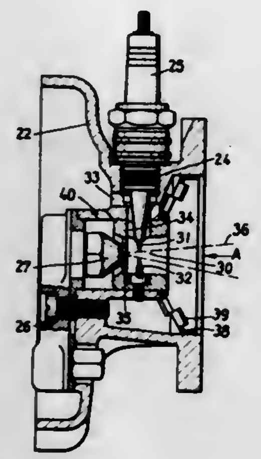
Donald L. Hein, 6973 Estes Drive, Arvada, Colo.
Filed Nov. 19, 1970, Ser. No. 91,128
Int. Cl. F24c *5/20*
U.S. Cl. 126—38 **16 Claims**



This invention relates to a miniaturized camp stove consisting of a shallow cup-shaped receptacle with a lid that houses a burner and valved gas fitting in disassembled relation. When assembled, the receptacle fits atop of a branch of the gas fitting and provides the support for the cooking vessel when held firmly in place by the burner functioning as a fastener. Another branch of the fitting fastens onto the lid which thus provides a pedestal-type base for the unit. The main stem of the fitting is disposed horizontally with respect to the aforementioned branches and one end thereof houses a hollow needle of the type adapted for insertion into the rubber valve of a fuel canister while the other end contains a flow control valve.

3,648,681
EXTRANEOUS HEATER PRIMARILY FOR MOTOR VEHICLES OPERATED WITH LIQUID FUEL, PARTICULARLY GASOLINE

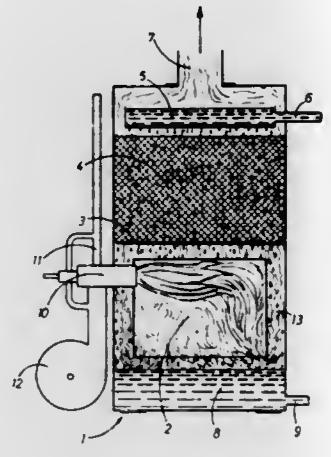
Eugen Stump, Stuttgart-Unterturkheim, and Gerhard Frankle, Grunbach, both of Germany, assignors to Firma Suddeutsche Kuhlerfabrik Julius Fr. Behr, Stuttgart-Feuerbach, Germany
Filed Feb. 17, 1970, Ser. No. 11,980
Claims priority, application Germany, Feb. 18, 1969, P 19 07 974.4
Int. Cl. F24h *3/02*
U.S. Cl. 126—110 B **7 Claims**



Heater primarily for motor vehicles operated with liquid fuel particularly gasoline, having a burner, a flame chimney and a heat exchanger, where a vaporizing nozzle is provided as well as a chamber disposed in front of it into which extends at least the electrode of a spark plug and where means are provided for introducing a partial quantity of the air of combustion into the chamber where the spark plug 31 and opposite electrode 32 are so arranged relative to the chamber that their connecting line passes through the center of the fuel cone 36 which extends from the nozzle 27 and bisects the fuel cone 36 in two locations.

3,648,682
HEATER WITH COMBUSTION CHAMBER LOCATED BELOW FLUID DISTRIBUTING MEANS

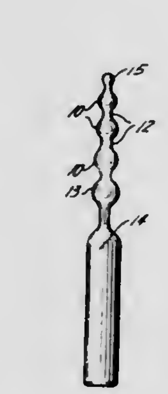
Jacques Bougard, Monceau-sur-Sambre, Belgium, assignor to Ateliers J. Hanrez Societe Anonyme, Monceau-sur-Sambre, Belgium
Filed Dec. 15, 1969, Ser. No. 885,192
Claims priority, application Belgium, Dec. 27, 1968, 68138
Int. Cl. F24h *1/10*
U.S. Cl. 126—359 **1 Claim**



Liquid to be heated is introduced into the top of a column and distributed in downward flow through the column. A combustion chamber is disposed within the column and has a closed top and closed side walls, and an open bottom. Combustion gases produced by a burner in the combustion chamber are constrained to flow through the open bottom of the chamber and then upwardly through an annular space between the chamber and column whereat the gases commence to contact the downflowing liquid. The spent gases are discharged at the top of the column and the heated liquid at the bottom of the column.

3,648,683
REVERSIBLE INTRA-VAS DEVICE

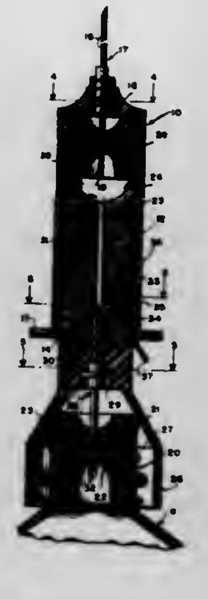
Nathan Brodie, 1103 Albemarle Road, Brooklyn, N.Y.
Filed June 29, 1970, Ser. No. 50,436
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R **7 Claims**



A device is disclosed for blocking body passages, having special application in the vas deferens for preventing the flow of sperm from the testis to the seminal vesicle. The device is maintained in place by one or more sutures, ligatures, or clips. If desired, the device may subsequently be removed.

3,648,684
DEVICE FOR THE DIRECT TRANSFER OF BLOOD FROM A HUMAN TO CULTURE BOTTLES

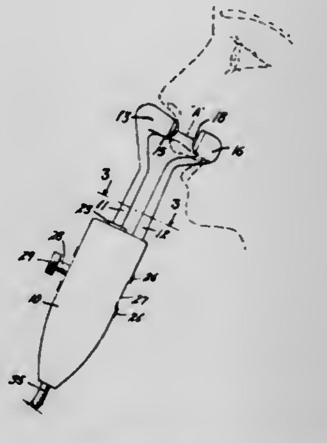
Cleora W. Barnwell, 2 Cameo Circle, Ormond Beach, Fla., and Linda J. Fogarty, 3801 N.W. 79th Ave., Coral Springs, Fla.
Filed Aug. 4, 1970, Ser. No. 60,816
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 F **5 Claims**



A device for use with a conventional vacuum adapted with insertion needle for the direct transfer of blood, usually in small quantities, from a human being to a plurality of vacuumized culture bottles with one insertion of the needle into the patient's vein. The device is especially adapted for the drawing of blood to be tested for septicemia and bacteremia, where the blood specimen must be drawn and aerated aseptically. The device eliminates the need for using syringes and tubing units for drawing blood for testing, and provides sterile aeration of the blood after it is drawn.

3,648,685
PHOTO-ELECTRIC PROBES FOR DETERMINING THE DENSITY OF BODY TISSUE FOR X-RAY PURPOSES

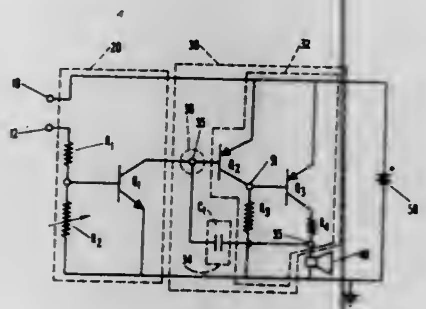
James A. Hepp, 735 Carbon St., Erie, Colo., and Gary E. Roberts, 101 West 1st St., Loveland, Colo.
Filed June 25, 1969, Ser. No. 836,315
Int. Cl. A61b *6/08;* **G01n** *33/16*
U.S. Cl. 128—2 R **6 Claims**



An internal probe to be inserted in the mouth and an external probe to be positioned externally of the mouth in alignment with the internal probe, said probes projecting in substantially parallel relation from a handle member, the internal probe terminating in a photoelectric cell and the external probe terminating in a light source optically aligned with said photocell so as to project light through the mouth tissue to said photocell to activate a meter, the reading of which is proportionate to the opaqueness or density of the intervening tissue so as to provide means for determining in advance the apparatus exposure time necessary to obtain an acceptable X-ray picture of the intervening tissue.

3,648,686
AUDIBLE PSYCHOGALVONOMETER

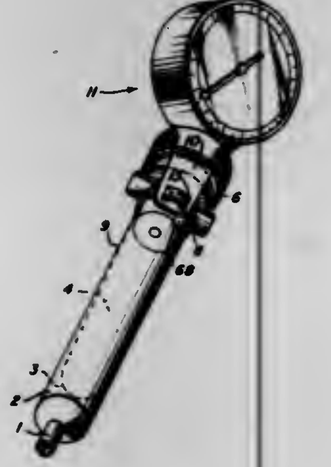
Burlyl R. Payne, 31 Townsend Terrace, Framingham, Mass.
Filed July 3, 1969, Ser. No. 839,033
Int. Cl. A61b *5/05*
U.S. Cl. 128—2.1 R **4 Claims**



A psychogalvonometer includes a pair of electrodes for sampling the galvanic skin response of a subject. The electrodes couple to an amplifier and oscillator circuit which responds to the resistive condition sampled by the electrodes. The oscillator circuit includes a spear which emits an audio signal in response to the electrical signal generated by the oscillator.

3,648,687
DISPOSABLE BLOOD PRESSURE MONITOR

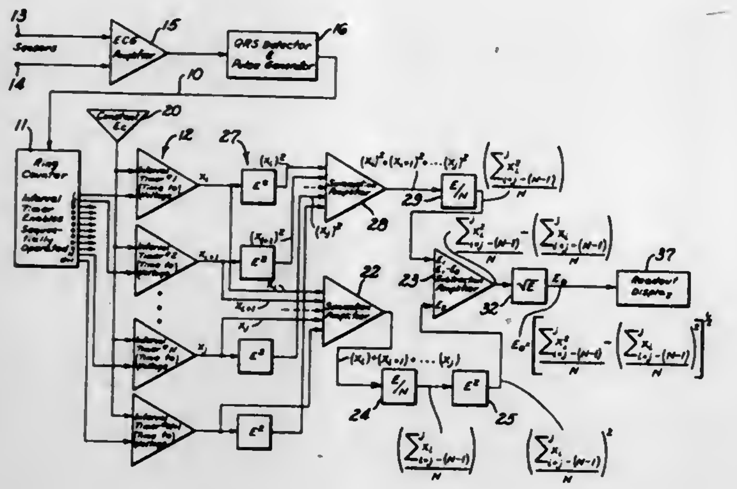
Maynard Ramsey, III, Durham, N.C., assignor to Ramtech, Inc., Tampa, Fla.
Filed Dec. 1, 1969, Ser. No. 881,121
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 D **5 Claims**



A disposable blood pressure monitor comprising an elongated tubular structure having means on one end of the tubular structure adapted to place the interior of the tubular structure in direct communication with the blood system to be monitored and a one-hole tubular stopper frictionally engaging the other end of the tubular structure. A flexible sacklike membrane is received in the same end of the tubular structure as the one-hole tubular stopper and positioned therein separating the tubular structure into first and second chambers so that the one-hole tubular stopper engages the end of the tubular structure with the peripheral edge of the membrane sealingly positioned between the internal surface of the tubular structure and the external surface of the stopper. A flexible retaining means is sealed over the top of the stopper and is affixed to the external surface of the structure to prevent accidental dislodging of the stopper. Pressure indicating means are attachably and sealably received within the hole of the one-hole stopper.

3,648,688
PULSE JITTER MEASUREMENT

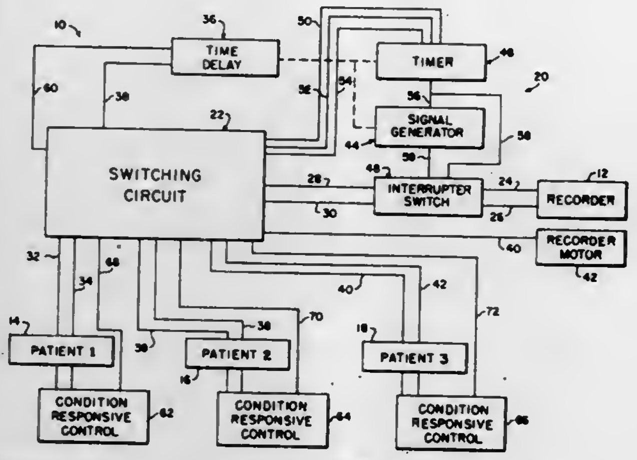
James F. O'Hanlon, Jr., and Glenn A. Sanderson, both of Santa Barbara, Calif., assignors to Human Factors Research Incorporated, Goleta, Calif.
Filed July 20, 1970, Ser. No. 56,466
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 A **4 Claims**



Apparatus for measuring the difference in intervals between pulses of a pulse train and providing continually updated output indicative of the running interval variation. Circuitry for generating voltages varying in proportion to the pulse intervals, and for calculating the square root of the difference between the average of the sum of the squares of the interval voltages and the square of the average of the sums of the interval voltages to produce an output signal characteristic of the amount of jitter in the pulse train for reading and display. A specific example for measurement of heart rate jitter.

3,648,689
CARDIAC MONITORING APPARATUS FOR A PLURALITY OF PATIENTS

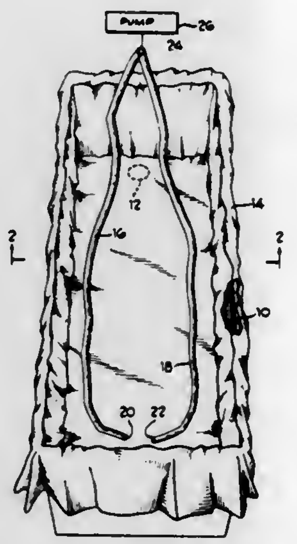
Francis I. Dominy, Janesville, Wis., assignor to The Burdick Corporation, Milton, Wis.
Filed Sept. 5, 1968, Ser. No. 757,607
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R **3 Claims**



A recording device selectively records cardiac or other physiological signals from any one of a group of patients, and each recording includes an integral segment identifying the corresponding patient. A switching circuit connects a selected patient signal line to a signal path coupled to the recording device, either automatically in response to a detected alarm condition or manually. When a patient signal line is connected to the signal path, the signal path is interrupted for a period of time and the recorder motor is energized to reach an operating condition. A signal generator is then operated for a time interval determined by the selected input to apply to the recording an identifying code or marking signal corresponding to the selected input. Thereafter, the signal path is completed and the signal generator is deenergized whereupon the patient's cardiac or other physiological signal is recorded immediately following the recording of the code or marking signal.

3,648,690
HYDROTHERAPY TANK LINER AND METHOD OF GIVING HYDROTHERAPY TREATMENTS

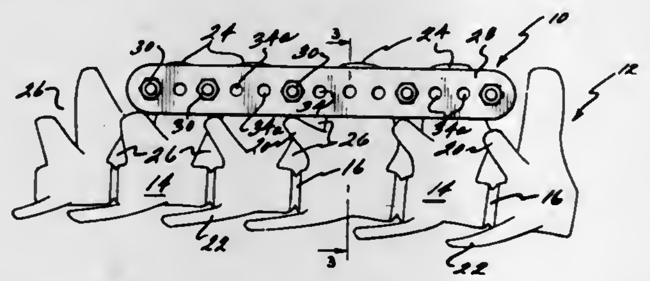
Robert C. Miller, Elgin, and Carl K. Miller, Libertyville, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Feb. 18, 1970, Ser. No. 12,216
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 **4 Claims**



A hydrotherapy tank liner of a plastic film is provided with longitudinal conduits for connection with a source of pressurized and/or pulsating gas. When used, the liner is placed in a hydrotherapy tank and filled with the treating liquid. Holes are punched or opened in the conduits for passage of the gas therethrough to agitate the liquid closely adjacent thereto. The location of the holes is selected according to the needs of the patient.

3,648,691
METHOD OF APPLYING VERTEBRAL APPLIANCE

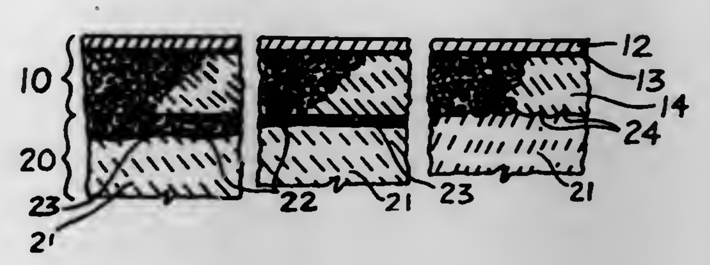
William V. Lumb, Fort Collins, Colo., and Timothy H. Brasmer, Ithaca, N.Y., assignors to Colorado State University Research Foundation, Fort Collins, Colo.
Filed Feb. 24, 1970, Ser. No. 13,542
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 D **1 Claim**



A method of applying a vertebral appliance for use in bridging one or more diseased or damaged vertebra that comprises a pair of elongate flexible multiapertured together with fasteners used to clamp same on opposite sides of the spinous processes thus spanned. Each strap is of a length adapted to span at least two spinous processes and project therebeyond on each end so that fasteners can be passed both behind and in front thereof as well as through the interspinous gap therebetween. The apertures are located considerably closer together than adjacent processes and they are fastened to the latter in position such that at least one opening registers with each one to receive a growth of soft or bony tissue that eventually extrudes therein.

3,648,692
MEDICAL-SURGICAL DRESSING FOR BURNS AND THE LIKE

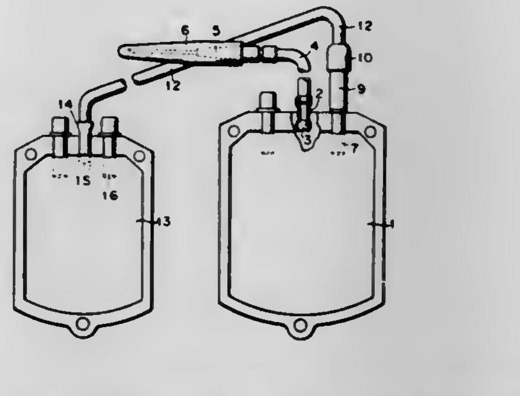
Larry M. Wheeler, Crosse Pointe Farms, Mich., assignor to Parke Davis & Company, Detroit, Mich.
Continuation-in-part of application Ser. No. 6,466, Jan. 28, 1970, now abandoned. This application Dec. 7, 1970, Ser. No. 95,637
Int. Cl. A61f *13/00*
U.S. Cl. 128—156 **8 Claims**



A medical-surgical dressing is provided for topical application as a conforming cover for the therapy and protection of burns and the like. The dressing which has a porous laminated construction includes a facing layer of thrombogenic open-cell foam material and a coextensive gas-permeable backing. When applied to the body the facing layer serves as a receptacle for debris and liquid exudate. The backing is impermeable to liquids and to bacteria whereby the dressing serves to conserve vital body fluids, facilitate clot formation, confine the debris and exudate, and expose confined bacteria to phagocytic invasion.

3,648,693
BAG APPARATUS FOR TRANSFUSION OF BLOOD OR FLUID INVOLVING HEAT SHRINKABLE TUBE MEANS

Norio Koremura, Tokyo, Japan, assignor to Jintan Terumo Co., Ltd., Shibuya-ku, Tokyo, Japan
Filed May 26, 1970, Ser. No. 40,692
Claims priority, application Japan, May 28, 1969, 44/49001
Int. Cl. A61m *05/00*
U.S. Cl. 128—214 D **2 Claims**



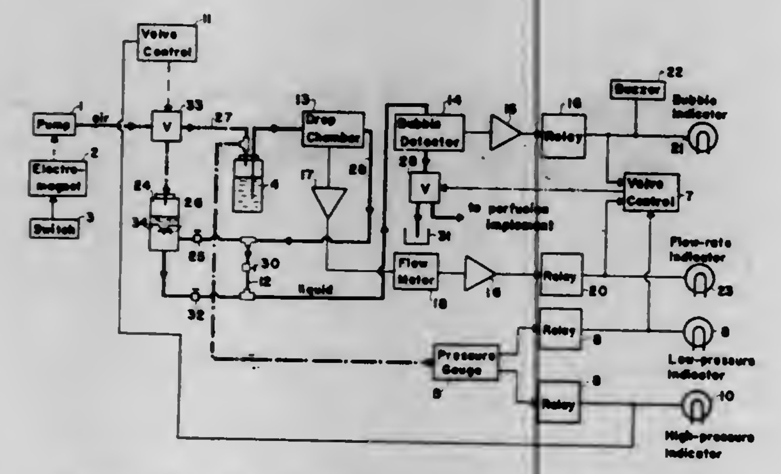
A bag apparatus for transfusion of blood and fluid which comprises a seal membrane provided in a cylindrical connection mouth member communicating with the interior of a blood or fluid transfusing bag made of flexible plastic material so as to normally prevent the fluid from being drawn out of the bag, a cannula disposed near the fluid feeding side of the seal membrane, said cannula communicating with a fluid conduit so as to draw the fluid through the seal membrane, a contractable thin walled tube for allowing the cylindrical connection mouth member and cannula to be connected airtight to each other and a heat shrinkable tube which permits a sterilizing steam to pass along the inner side thereof during steam sterilization and, after the sterilization contracts itself to bridge airtightly the conduit and thin walled tube.

3,648,694

AUTOMATIC SYSTEM WITH PERFUSION PROTECTION AGAINST MALFUNCTION

Ion Mogos; Cormel I. Muscel, and Nicolaie Dumitrescu, all of Bucharest, Romania, assignors to Institutul Oncologic Bucharest, Bucharest, Romania

Filed Sept. 25, 1968, Ser. No. 762,588
Int. Cl. A61m *5/00*
U.S. Cl. 128—214 F **6 Claims**



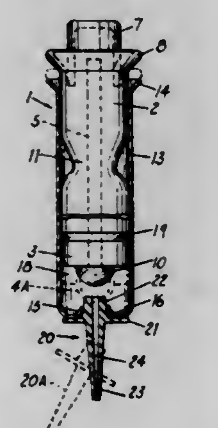
A system for performing intravenous perfusions of a treatment liquid propelled by gas under pressure includes a gauge which vents the gas line in the event of excessive gas pressure. In the event of insufficient gas pressure, the gauge actuates a controller for switching a valve to divert the liquid flow from the perfusion implement to a drain, the controller also responding in like manner to gas occlusions sensed by a bubble detector and to a slowdown in the flow rate as measured by a drop counter.

3,648,695

PRESSURIZED APPLICATOR FOR FOAMED MEDICATIONS AND SANITARY REPLACABLE APPLICATOR TIP THEREFOR

Max E. Bowen, 30885 W. 6th Mile Road, Livonia, Mich.

Filed May 1, 1970, Ser. No. 33,624
Int. Cl. A61m *3/00*
U.S. Cl. 128—225 **2 Claims**



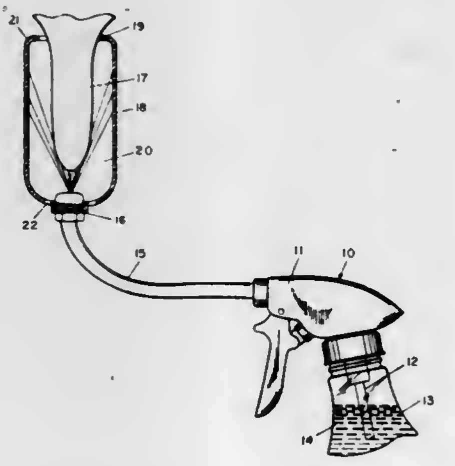
A pressurized vial for containing a medication and a foaming gas, a dose forming and ejecting sleeve telescoped around the vial, a dose releasing valve in one end of the vial having an operating button at the opposite end of the vial, a discharge opening for the dose of foamed medication in the end of the outer sleeve, and an applicator tip attachable within the discharge opening of the outer vial, characterized by an inwardly projecting portion on the tip which extends into the path of the valve element of the pressurized vial so that movement of the outer sleeve bearing the applicator tip beyond the dose dispensing movement of the sleeve will cause the end of the valve to engage the inner end of the applicator tip and eject the applicator tip from the sleeve without requiring exterior contact with the applicator tip.

3,648,696

TEAT SPRAYING APPARATUS FOR AIDING IN THE PREVENTION OF MASTITIS IN DAIRY COWS

Robert H. Keith, 2012 Roosevelt Road, Monroe, Wis.

Filed Mar. 20, 1970, Ser. No. 21,314
Int. Cl. A61n *11/02*
U.S. Cl. 128—248 **3 Claims**



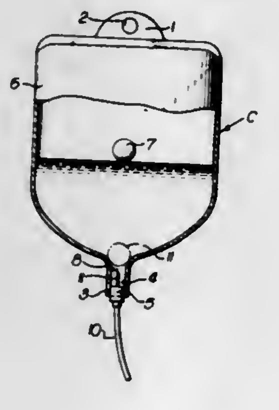
Method and apparatus for spraying disinfectant on the end of the teats of dairy cows. After milking, the teat is inserted into the top end of a tubular shroud which encircles a spray nozzle connected by an elongate rigid conduit to a pressurizing device. The teat end is then sprayed with disinfectant by triggering the hand-held pressurizing device. The shroud has an inwardly baffled upper end and drainage holes in the bottom end adjacent the nozzle.

3,648,697

INTRAVENOUS FEEDING CONTAINER AND METHOD OF PREPARING THE SAME

Newell John Gardner, 11661 San Vicente Blvd., Los Angeles, Calif.

Filed Aug. 1, 1969, Ser. No. 846,777
Int. Cl. A61j *1/00*
U.S. Cl. 128—272 **1 Claim**



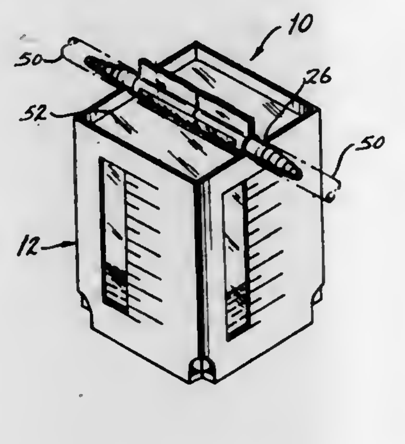
An intravenous feeding container composed of flexible material and containing a quantity of water soluble material for the preparation of an intravenous solution to be fed to a patient, the container being normally storable in a folded, flat condition. The container has a buoyant check valve at its outlet. The method of preparing intravenous feeding containers, wherein sterile water is displaced from a water supply into a normally folded, flat container having water soluble material therein, forming with said water an intravenous feeding solution.

3,648,698

SURGICAL COLLECTION UNIT

George O. Doherty, 2301 River Road, Missoula, Mont.

Filed May 23, 1969, Ser. No. 827,429
Int. Cl. A61m *1/00*
U.S. Cl. 128—276 **15 Claims**



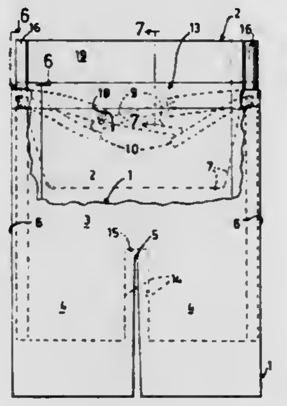
A surgical collection unit includes an inlet conduit, an outlet conduit, and an enclosed container. The inlet and outlet conduits have portions extending within and opening into the container. Means are associated with the outlet conduit for withdrawing air from the container to reduce the atmospheric pressure therein so that fluent material is forced through the inlet conduit into the container. A bypass conduit may be provided between the inlet conduit and the outlet conduit. A valve may be provided for directing the fluent material alternatively either through the bypass valve or into the container.

3,648,699

INCONTINENCE GARMENT

Edith T. Anderson, and Clifford M. Anderson, both of Yuba City, Calif., assignors to Andermac, Yuba City, Calif.

Filed Apr. 23, 1970, Ser. No. 31,161
Int. Cl. A61f *13/16*
U.S. Cl. 128—288 **5 Claims**



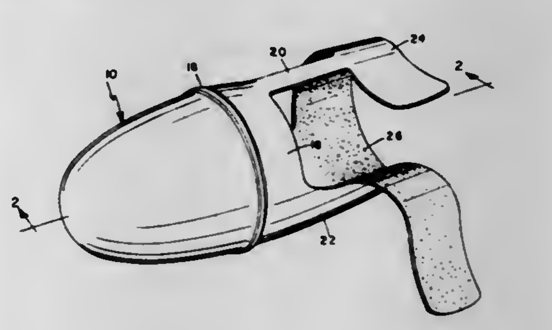
A garment, mainly for use on bedridden persons, that includes an outer piece comprising a pair of short leg portions for the legs of a person and an imperforate continuous body portion in upward continuation of the leg portions to enclose the pubic and gluteal areas and to extend to approximately the waist, and an inner piece of moisture proof, flexible, sheet material having an outline generally corresponding to the outline of the outer piece, insertable into and removable from the upper end of the outer piece. The inner piece has a layer of moisture absorbent soft, fibrous material on one side and leg portions to extend into the leg portions of the wearer. The inner piece is to be positioned to extend across the gluteal region of the wearer and past the crotch with the moisture absorbent material facing the wearer.

3,648,700

CONTRACEPTIVE DEVICE

Harold W. Warner, 233 A St., San Diego, Calif.

Filed Mar. 19, 1971, Ser. No. 126,100
Int. Cl. A61f *5/42*
U.S. Cl. 128—294 **5 Claims**



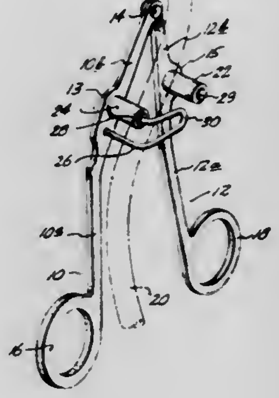
A contraceptive device for the male comprising a somewhat resilient receiver which has a unitized lining of highly absorbent character and which may be thimble-shaped and dimensioned to fit over the forward end of the male organ with sharp portions extending rearwardly to an attaching band dimensioned for overlapping encirclement of the organ behind the glans.

3,648,701

FORCEP INSTRUMENT FOR STRIPPING THE CONTENTS OF FLEXIBLE TUBES

Marion Botts, 9340 N. E. Schuyler, Portland, Oreg.

Filed Nov. 24, 1969, Ser. No. 879,155
Int. Cl. A61b *17/28, 17/08;* **F16l** *55/14*
U.S. Cl. 128—321 **4 Claims**

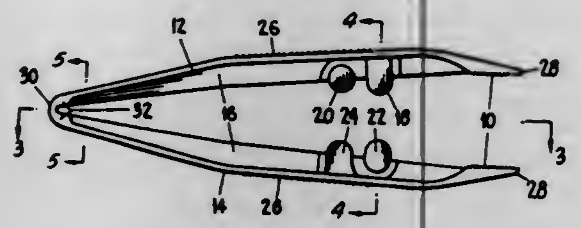


A forceplike instrument having rollers for clearing the contents of flexible tubing. The forcep comprises a pair of elongated arms pivotally joined at one set of ends and having handle loops on the other set of ends to receive the fingers of an operator's hand. Slight matching bends are formed in the arms midway of their length, and each arm is provided with a roller journaled normal to the arm length whereby a flexible tube may be gripped between the rollers when the forcep is closed. A tube restraining link extends between the outer end of one of the rollers and its arm.

3,648,702
FORCEPS

Douglas Colin Bean, Richmond, Australia, assignor to Douglas Bean Proprietary Limited, Richmond, Australia

Filed Feb. 13, 1970, Ser. No. 11,269
Claims priority, application Australia, Feb. 19, 1969, 50711/69
Int. Cl. A61b ***17/28***
U.S. Cl. 128—321 **7 Claims**

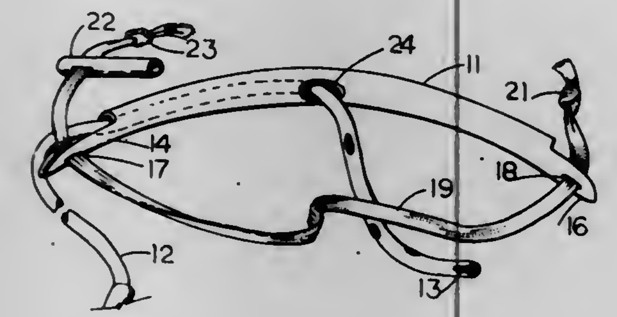


A surgical forceps moulded from plastic material having two arms forming a generally U-shaped configuration having a closed end and an open end, the arms extending in a longitudinal direction in a given plane and movable toward and away from each other in said plane, the arms being generally T-shaped in cross-section, the arms being joined at the closed end of the forceps by a thin hinge strip of resilient plastic material moulded integrally with the arms, said thin strip having a small thickness dimension extending in said longitudinal direction in said given plane, a width dimension, and a length dimension extending in and parallel to said given plane, said length being small in comparison to the width of the strip.

3,648,703
SUPPORTIVE DEVICE FOR STOMACH OR GASTRIC TUBE

Loretta Manker, 7038 Bonnie Brae, Tucson, Ariz.

Filed Aug. 3, 1970, Ser. No. 60,548
Int. Cl. A61m ***25/00***
U.S. Cl. 128—348 **6 Claims**

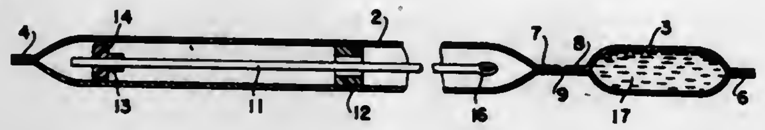


The supportive device consists of a plastic tube of larger size than the stomach or gastric tube which it is to support, and an elastic band to surround the head of a patient and hold the plastic tube across his face, under the nose. The stomach or gastric tube is threaded into one end of the plastic tube, out an aperture near the nose, into a nostril and down into the stomach. The stomach or gastric tube is prevented from retracting by a wedge pressed into the entrance of the plastic tube, tightly wedging the stomach or gastric tube in place. The wedge is in turn held in place by the elastic band. Thus, the stomach or gastric tube cannot work loose or be easily pulled out by the patient.

3,648,704
DISPOSABLE CATHETER APPARATUS

Frederick E. Jackson, 1762-B Marine Corps Base, Camp Pendleton, Calif.

Filed July 17, 1970, Ser. No. 55,769
Int. Cl. A61m ***25/00***
U.S. Cl. 128—349 R **10 Claims**

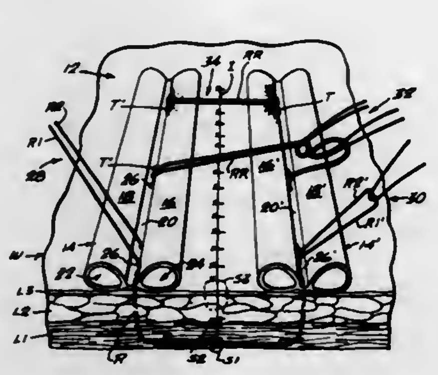


A urethral catheter tube formed of a flexible low-friction plastic is carried in a transparent plastic casing one end of which is flattened and severably joined to a plastic cap member. The other end of the casing is closed to form a reservoir. The cap member is a closed vessel containing a lubricant. When the cap is separated from the casing it can be opened to permit application of the lubricant and the casing also opened to permit insertion and implantation of the catheter. Both the lubricant and the catheter tube can be maintained in a sterilized condition and the catheter remains sterile during implantation since it can be worked out of the casing by aseptically contacting it through the casing walls, the net result being that the catheter need not be contacted by human hands.

3,648,705
RETENTION BAR MEANS FOR SURGICAL INCISION CLOSURE

Banning G. Lary, 7400 N. Kendall, Miami, Fla.

Filed July 16, 1970, Ser. No. 55,530
Int. Cl. A61b ***17/04***
U.S. Cl. 128—335 **10 Claims**

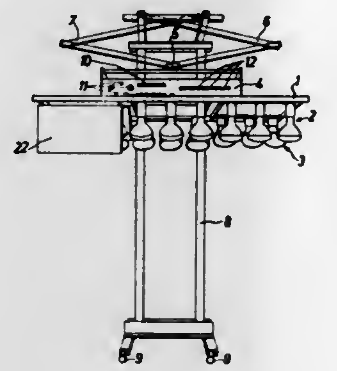


For use in retaining a surgical incision against inadvertent rupture or disruption, a pair of retention bar elements which provides reinforcing means for the retention thread loops of an incision closure and provides means for reducing flesh tearing and necrosis at the thread loop penetrations of the skin and body tissue. The pair of retention bar elements are adapted to be located parallel and on opposite sides of the line of incision of a surgical wound and preferably are formed of pliable tear resistant material, such as extruded polyvinyl plastic material. A preferred form is generally of a figure of eight configuration as seen in transverse section so that each retention bar element includes parallel dual tubular portions connected by a thin web portion. In use of the retention bar elements of the invention, retention thread loops pass through the web portions of the pair of bars, extend transversely over the incision, and encircle the confrontingly extending tubular inner portions respectively of the retention bar elements, the bar providing purchase so that the forces uniting the loops and holding the incision are oriented away from the flesh surface and do not tear it, but rather the tearing forces are transferred to the bars, and the pliability of the material yields so as to conform to the flesh surface and distribute the load of the retention loops as the contour of the flesh surface changes during the healing process as swelling occurs and then diminishes.

3,648,706
IRRADIATION APPARATUS

Jean Holzer, Gasslistrasse, Zurich 1234, Niederglatt, Switzerland

Filed Nov. 23, 1970, Ser. No. 91,904
Int. Cl. A61n ***1/00***
U.S. Cl. 128—395 **21 Claims**

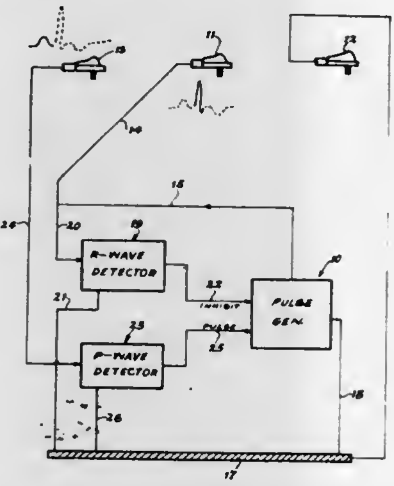


An irradiation device for thermotherapy whereby there is provided at least one series of light sources which are arranged one next to the other and intended to be placed over a portion of the human body. A control circuit means serves to switch-in the light sources of the series one after the other and during a predetermined time in order to generate a light wave which moves from one end to the other end of the series of light sources. Additionally, means are provided in order to again switch-in the first light source and to trigger a new operation cycle as soon as the last light source of the series of light sources has extinguished.

3,648,707
MULTIMODE CARDIAC PACES WITH P-WAVE AND R-WAVE SENSING MEANS

Wilson Greatbatch, Clarence, N.Y., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed July 16, 1969, Ser. No. 842,290
Int. Cl. A61n ***1/36***
U.S. Cl. 128—419 P **17 Claims**

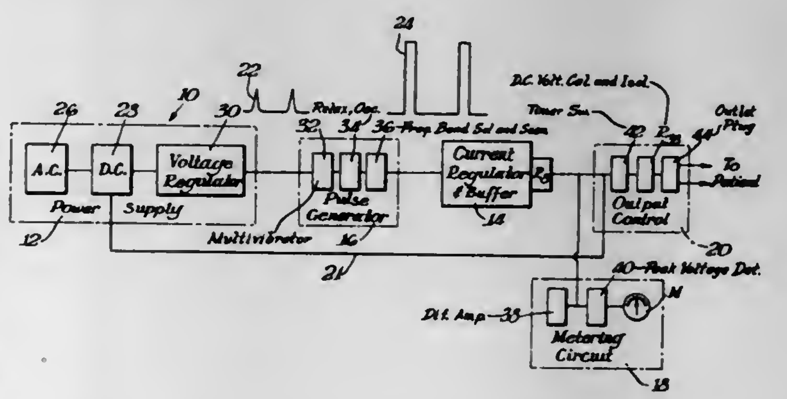


A cardiac pacer including a pulse generator having an R-C circuit for controlling the generation of stimulating pulses. An electrode surgically placed on or in the ventricle of the heart is coupled to the output of the pulse generator. A reference or indifferent electrode is subcutaneously implanted and coupled to the pacer circuits. When no cardiac electrical activity exists stimulating pulses are provided at a preset rate. The ventricular electrode is coupled to the input of a first signal responsive circuit and to the pulse generator. In response to ventricular electrical signals of either polarity, for example R-waves, the first signal responsive circuit resets the R-C circuit in the pulse generator to a predetermined level inhibiting the subsequent generation of impulses for a suitable time such as one second. Another electrode surgically placed on or in the atrium of the heart is coupled to the input of a second signal responsive circuit which includes timing means and which is connected in controlling relation to the pulse generator. In response to atrial electrical signals, known as P-waves, and in the absence of ventricular electrical signals, the second signal responsive circuit causes the pulse generator to provide time-delayed stimulating pulses synchronized with the atrial beats.

3,648,708
ELECTRICAL THERAPEUTIC DEVICE

Mehdi Haeri, 5 Deslauriers St., Chicopee, Mass.

Filed June 23, 1969, Ser. No. 835,456
Int. Cl. A61n ***1/36***
U.S. Cl. 128—422 **19 Claims**



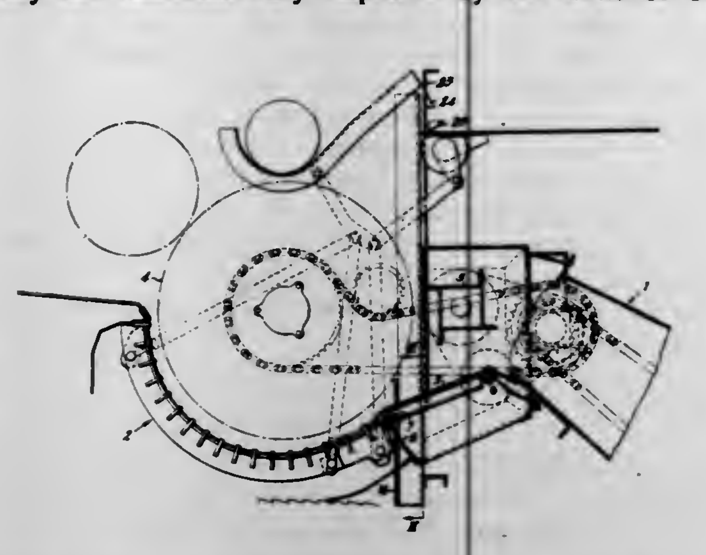
A transistorized electrical sleep-inducing device includes a current regulating buffer which protects the patient from excessive current, when operated on conventional AC power and maintains the current substantially constant regardless of variations in the patient's body resistance. The patient is also protected by sensitive fuses, an isolation transformer, careful grounding, a floating circuit and a substantial resistance connected in series with him. A peak reading volt meter precisely indicates the pulse amplitude by utilizing a peak detector circuit connected to a high input impedance, such as balanced bipolar transistors or a unipolar field effect transistor (FET) differential amplifier. A frequency band selector and scanner, connected to the pulse generator, varies the applied frequency to suit the patient's response. The output is contacted to various portions of the patient's anatomy in accordance with his particular symptoms and treatment therefor.

3,648,709
FEEDER DEVICE FOR COMBINE HARVESTERS

Frans J. De Coene, Zedelgem, Belgium, assignor to Clayson N.V., Zedelgem, Belgium

Filed July 29, 1970, Ser. No. 59,263
Claims priority, application Belgium, July 30, 1969, 49,353; July 6, 1970, 50,281
Int. Cl. A01f ***12/26***
U.S. Cl. 130—27 JT **10 Claims**

An improved feeder device for combine-harvesters of the type having a header and a straw-elevator for harvesting and conveying the harvested crops to crop handling components such as threshing and separating devices. A guide plate is provided between the discharge end of the straw-elevator and the intake portion of the threshing equipment for guiding the crop material from the straw-elevator to the threshing equipment; said guide plate being hinged to a fixed portion of the machine and supported by supporting means, which themselves are kinematically interconnected, so that, on the entrance of a stone or other foreign object towards the threshing equipment, said supporting means are automatically and simultaneously displaced by the stone or other foreign object beating on said plate so as to enable the guide plate to hinge to a position whereby a stone retarder or stone trap is formed.



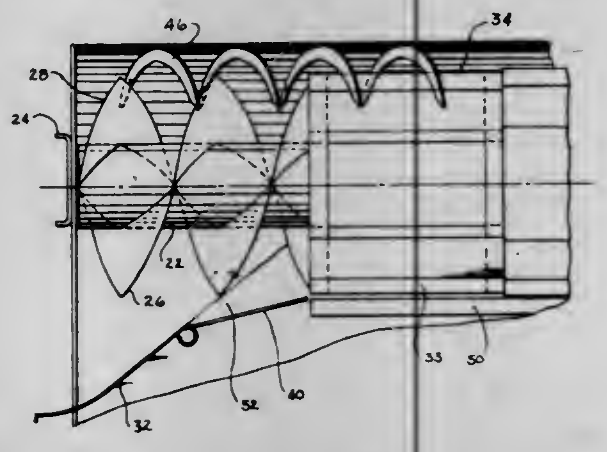
3,648,710
CROP FEEDING MEANS TO AN AXIAL FLOW TYPE THRESHING AND SEPARATING COMBINE

Edward William Rowland-Hill, Lancaster, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Continuation of application Ser. No. 790,145, Jan. 9, 1969, and a continuation of 879,214, Nov. 24, 1969. This application June 30, 1970. Ser. No. 51,254

Int. Cl. A01f *12/10*

U.S. Cl. 130—27 T **2 Claims**



An axial flow threshing and separating unit of an agricultural combine has angled transport fins mounted on the inner side of the top of the casing to move crop material carried over the top of the auger flights on the rotor in the easing into the following threshing and separating means of the unit.

3,648,711
TOBACCO SMOKE FILTER

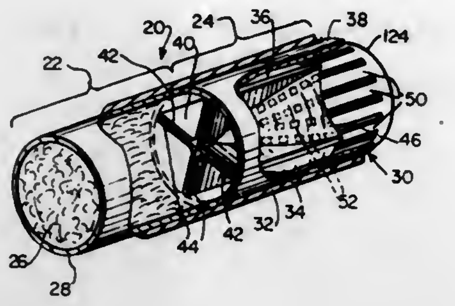
Richard M. Berger, Richmond, and Elwin W. Brooks, Mechanicsville, both of Va., assignors to American Filtrona Corporation, Richmond, Va.

Continuation-in-part of application Ser. No. 45,109, June 10, 1970, and a continuation-in-part of 727,477, May 8, 1968, now Patent No. 3,533,416, and a continuation-in-part of 820,355, Apr. 30, 1969, now Patent No. 3,599,646; said 45,109, , which is a continuation-in-part of application Ser. No. 820,355, , and a continuation-in-part of 727,477, ; said 820,355, , which is a continuation-in-part of application Ser. No. 727,477,. This application Aug. 11, 1970, Ser. No. 62,871

Int. Cl. A24d *01/04, 01/16*

U.S. Cl. 131—265 **18 Claims**

Filter means of a type which is constructed to provide elongated, high surface area, cavities defined on opposite sides of a relatively thin wall formed of filtering material with only the ends of the filter means contacting an overwrapped outer tube thereby presenting maximum available surface area of the material from which the products are formed to the smoke for filtration. The filter comprises an outer elongated member in which an inner crimped filter is disposed. The latter has major portions of the outer surface spaced from the inner surface of the outer member to define a cavity means therebetween. A further cavity means is defined interiorly of the inner member, the smoke being compelled to pass through both cavity means, with at least one of the cavities being filled with a sorbent filtering material. Bonded activated carbon is disclosed as the preferred sorbent material.



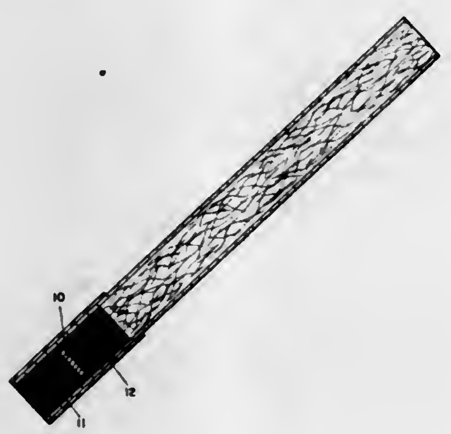
3,648,712
CIGARETTE FILTER CONSTRUCTION

Carl Dean Patterson, Kessler Air Force Base, Miss., assignor to Celanese Corporation, New York, N.Y.

Filed Jan. 29, 1970, Ser. No. 6,867

Int. Cl. A24d *01/04*

U.S. Cl. 131—10.5 **2 Claims**



A filter is described which is comprised of a high gas permeability plug in combination with a low gas permeability disc.

3,648,713
PIPELINE TRANSPORTATION

Juris Vairogs, Tulsa, Okla., assignor to Cities Service Oil Company

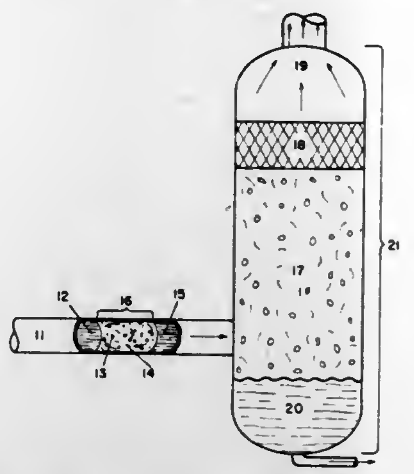
Filed Feb. 24, 1970, Ser. No. 13,344

Int. Cl. F17d *3/02*

U.S. Cl. 137—1 **14 Claims**

Carbon dioxide is injected into a surface pipeline to maintain a pressure near that required to form a two two-liquid phase hydrocarbon-carbon dioxide system. The two-liquid phase region is placed as a slug between two hydrocarbons to be transported within the pipeline. The two-liquid phase slug prevents the mixing of the hydrocarbons being pipelined. The slug material exhibits a lower viscosity than the flowing hydrocarbons so that it flows in the turbulent regime causing

a cleansing action in the pipeline and also reducing the extend of its own tailing. Upon effluence from the pipeline the carbon dioxide may be vented to the atmosphere to separate it from the hydrocarbons.



3,648,714
PROCESS AND APPARATUS FOR AUTOMATICALLY CONTROLLING A MIXTURE OF TWO FLUIDS

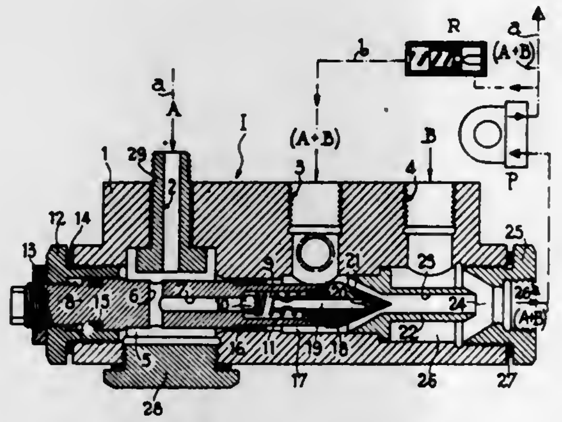
Francis Laveau, Bondy, France, assignor to Elf Union, Paris, France

Filed Oct. 22, 1970, Ser. No. 82,968

Claims priority, application France, Nov. 5, 1969, 6938011

Int. Cl. F16k *19/00*

U.S. Cl. 137—7 **9 Claims**



Process and apparatus for metering and mixing a fluid A and a fluid B under pressure and supplying the mixture to a positive displacement pump provided with a pressure limiter. The fluid A is injected under pressure in a fraction of the mixture (A+B) coming from the exhaust of the pressure limiter. The variations of the mixture (A+B) from the pressure limiter act as counterpressure on the injection of the fluid A which ensures the constancy of the proportionalities of the two fluids in the final mixture (A+B), which is obtained by the injection of the mixture A+(A+B) in the supply of the fluid B, irrespective of the flow of utilization of the final mixture.

3,648,715
COLD TEMPERATURE WATER DRAIN FOR LOCOMOTIVES

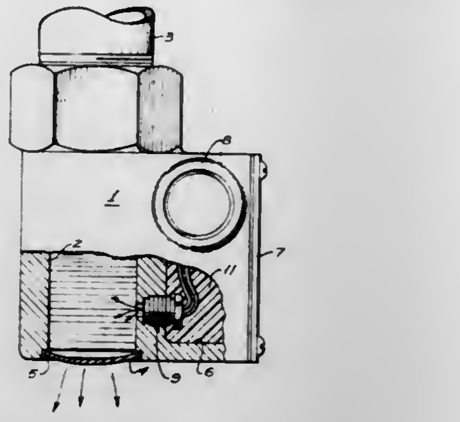
Clyde O. Boothe, Rolling Hills Estates, Calif., assignor to Farr Company, El Segundo, Calif.

Filed June 25, 1970, Ser. No. 49,827

Int. Cl. F16k *13/06*

U.S. Cl. 137—62 **4 Claims**

A water drain for locomotives in which an explosive squib adjacent a drain plug creates a pressure surge sufficient to force the drain plug free so that the water can drain from the water cooling system; the squib being actuated by a thermistor which triggers a firing circuit when the temperature drops to a preselected level.



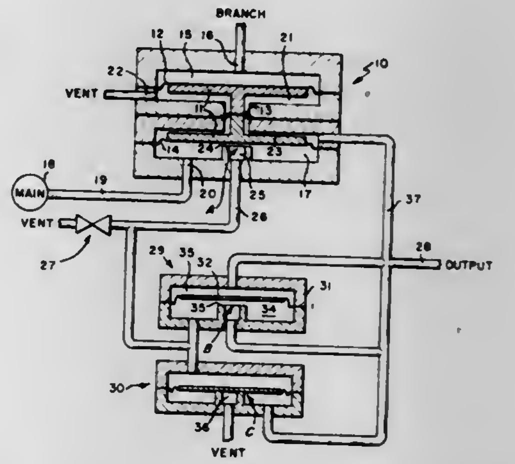
3,648,716
PRESSURE INVERTER

Frederick D. Joesting, Park Ridge, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 25, 1970, Ser. No. 66,714

Int. Cl. G05d *23/00*

U.S. Cl. 137—85 **8 Claims**



A pneumatic pressure inverter with pilot bleed utilizing diaphragm logic to augment the supply and exhaust functions whereby a fast response and a linear output is achieved. The sum of the branch pressure input and the output pressure is continuously held equal to the main pressure input.

3,648,717
PAINT SPRAY VALVES FOR PAINT SPRAY INSTALLATIONS

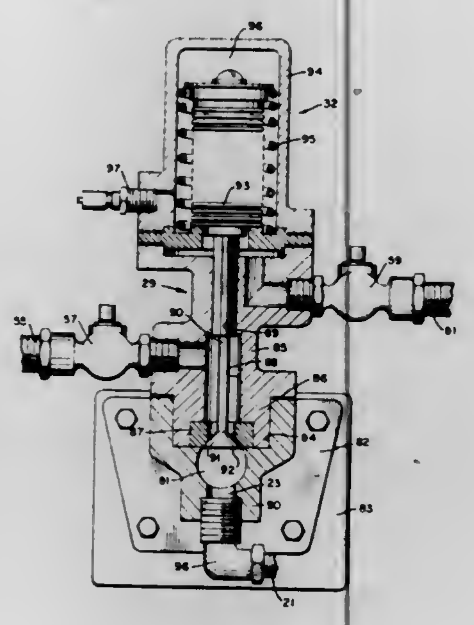
Richard F. Wiggins, Fairfield, Conn., assignor to The Gyromat Corporation, Stratfield, Conn.

Original application Oct. 20, 1967, Ser. No. 676,824, now Patent No. 3,572,366, dated Mar. 23, 1971, which is a continuation-in-part of application Ser. No. 440,736, Mar. 18, 1965, now Patent No. 3,348,774, dated Oct. 24, 1967. Divided and this application Oct. 1, 1970, Ser. No. 77,193

Int. Cl. F16k *51/00, 37/00*

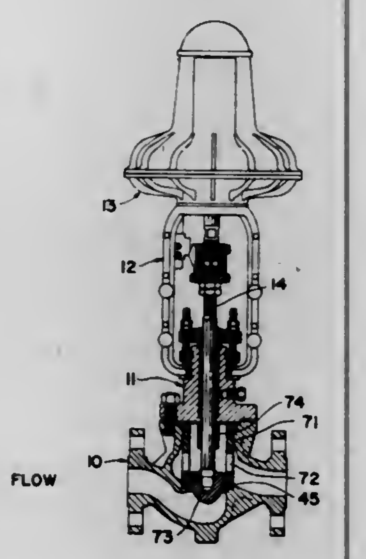
U.S. Cl. 137—240 **13 Claims**

This invention is concerned with control valves for supplying paint to paint installations utilizing a plurality of different color paints. The control valve may be adapted to various systems by utilizing a disclosed flow housing which forms an elongated flow passageway when a number of valves are assembled. The control valve may also be adapted to recirculate paint during periods of valve inactivity to prevent clogging due to the solidification of stagnant paint. The control valve of the invention includes structural innovations, such as manual means for activating a disabled valve. The invention is also directed to a system for automatically purging the installation when the paint supply to a valve is cut off.



3,648,718
VALVE STRUCTURE

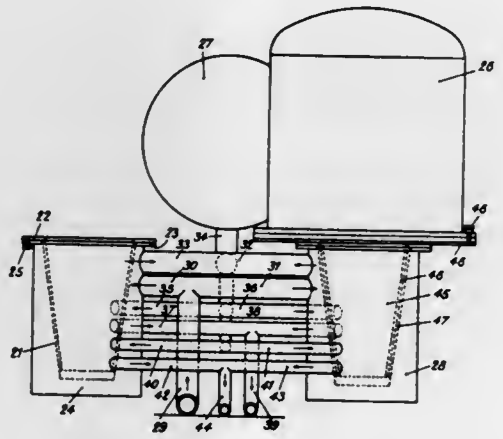
John R. Curran, Attleboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.
Filed June 1, 1970, Ser. No. 42,426
Int. Cl. F16k *39/00*
U.S. Cl. 137—269 **30 Claims**



For use in the control of flow in industrial instrumentation with respect to process or energy systems, valve aperture structure produced through CAD (Computer Aided Design), with performance support in the form and dimensioning of valve interiors; featuring case and simplicity of assembly, disassembly, and maintenance of valve structure through nested cage combinations; with valve structure lending itself to a product line of different types and sizes of valves with element interchangeability reducing the necessary number of elements; resulting in superior performance through the above and other features; sub-assemblies included are a double-cage noise reducer, a cooling system for use in bonnets, a bonnet packing renewal device, and a three-way valve body and plug combination.

3,648,719
SUBMARINE INSTALLATION

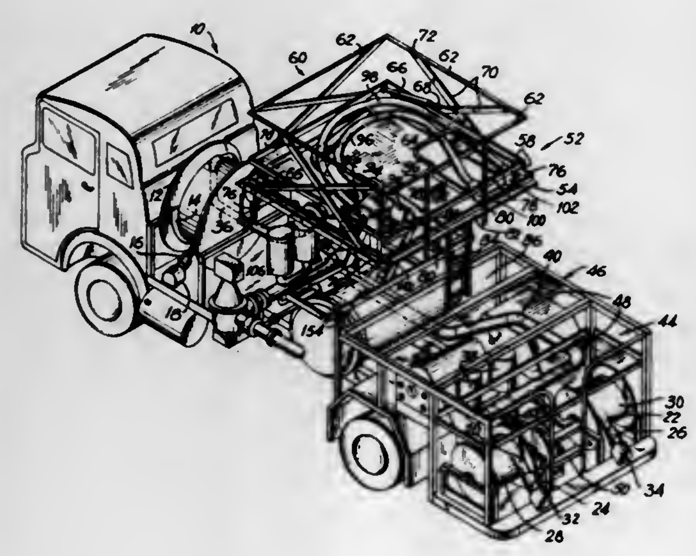
Pierre P. Orieux, Paris, France, assignor to Compagnie Francaise Des Petroles, Societe Anomyne, Paris, France
Filed Sept. 11, 1969, Ser. No. 857,091
Claims priority, application France, Sept. 26, 1968, 167632
Int. Cl. E21b *43/01*
U.S. Cl. 137—315 **4 Claims**



A submarine installation comprising a first fixed assembly containing conduits for moving a fluid to a second sealed assembly removable from the first assembly, the second sealed assembly being capable of receiving the fluid from the first assembly and performing various control operations thereon.

3,648,720
AIRCRAFT REFUELING VEHICLE

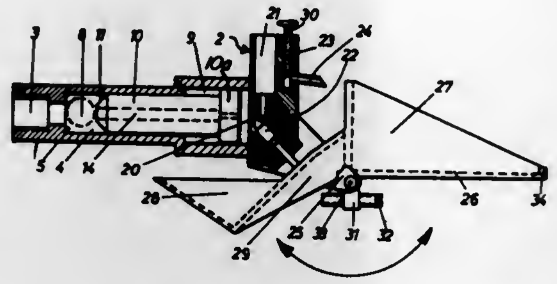
Herman Kornahrens, East Islip, N.Y., assignor to Garsite Products, Inc., Deer Park, N.Y.
Filed Feb. 26, 1970, Ser. No. 14,326
Int. Cl. B66f *9/06*
U.S. Cl. 137—351 **23 Claims**



An aircraft refueling vehicle including means for refueling various size and height aircraft from fuel hydrants or from tanks carried by said vehicle and including an interlock switching mechanism to prevent said vehicle from being moved away from said aircraft during the refueling operation or whenever the refueling apparatus thereof is not in a stored or inactivated condition, and including an adjustable high level platform.

3,648,721
CONTROL VALVE

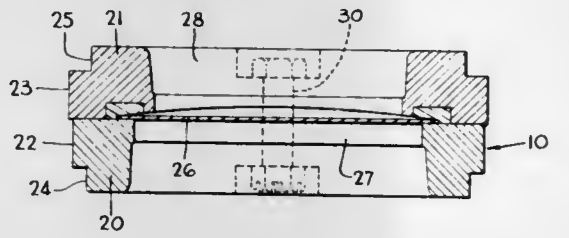
Einar Skappel, Nysetveiess Ranfoss, Mjolby, Sweden
Filed Jan. 9, 1969, Ser. No. 790,042
Claims priority, application Norway, Jan. 11, 1968, 115/68
Int. Cl. F16k *31/00*
U.S. Cl. 137—408 **3 Claims**



In a piston valve, two valve chambers are interconnected by an axial bore in the piston through which liquid flows continuously. As the liquid pressure in one chamber increases, it moves the piston and closes the valve. The closing movement is controlled in the following manner: a liquid receiving chamber receives liquid from that chamber and trickles it through a nozzle when a pilot valve is open, and is shut off from the chamber to increase the pressure therein gradually when the pilot valve is closed. A tiltable bucket is mounted to receive the trickling liquid and has a pilot valve opening cam for closing the pilot valve when the bucket has been filled with liquid trickling from the nozzle and for opening the pilot valve when the bucket is in the opening position ready to receive the liquid from the nozzle.

3,648,722
VALVE STRUCTURE ORIENTED FOR FOOLPROOF UNIDIRECTIONAL INSTALLATION

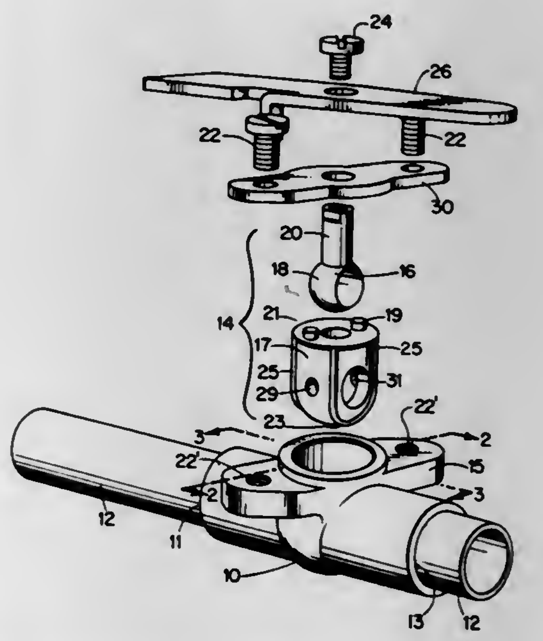
John N. Story, West Seneca; Thomas E. Mayer, Tonawanda, and George Yokota, Amherst, all of N.Y., assignors to Worthington Corporation, Harrison, N.J.
Filed Mar. 6, 1970, Ser. No. 17,164
Int. Cl. F16k *51/00*
U.S. Cl. 137—454.4 **9 Claims**



A uni-directional valve body and seat structures for receiving such body in such manner that proper directional orientation of the valve with respect to the seat structure is assured. The valve body has two axially adjacent medial cylindrical portions of different diameters. The larger of the medial cylindrical portions has an adjacent end portion of reduced diameter and the smaller of the medial cylindrical portions has an end portion of reduced diameter which is greater than the reduced diameter of the larger of the medial portions. The apparatus in which the valve body is assembled has internal cylindrical seat means having a larger entry diameter and a smaller coaxial diameter opening extending inwardly therefrom. The larger and smaller diameters in the apparatus match the diameters at either end of the valve body, depending upon the desired direction of orientation of the valve. Due to the diametral relationships of the valve body and the seat portions the wrong end of the valve body cannot be inserted into a given cylindrical seat formation.

3,648,723
VALVE

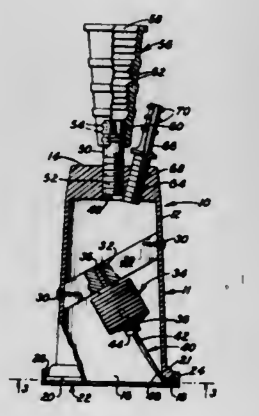
Donald R. Nelson; Robert C. Zakaitis, and Joseph V. Parent, all of Worcester, Mass., assignors to Goddard Industries, Inc., Worcester, Mass.
Filed Dec. 22, 1969, Ser. No. 886,854
Int. Cl. F16k *5/06*
U.S. Cl. 137—454.6 **6 Claims**



A valve housing is provided with open ends adapted to connect to a fluid conduit and a valve assembly receiving opening that is generally circular in cross section. The valve assembly includes a spherically shaped closure member or gate adapted to control the fluid flow in the conduit and having a hole disposed therethrough, and a seating member or jacket encapsulates the closure member and has a plurality of holes disposed therein which align with the hole in the closure member when the latter is in either an open or a closed position.

3,648,724
THERMOSTATICALLY CONTROLLED BATHROOM SAFETY APPLIANCE

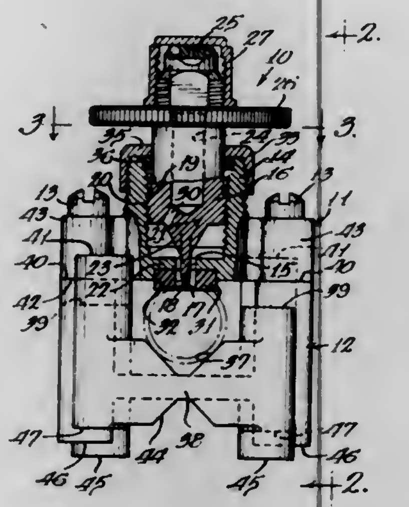
Harold B. Lloyd, 2037 S. Cedar St., Sioux City, Iowa
Filed Oct. 5, 1970, Ser. No. 78,010
Int. Cl. F16k *31/41*
U.S. Cl. 137—467 **10 Claims**



A bathroom safety appliance for use in conjunction with douche or enema means that are adapted to be connected directly to a bathroom faucet. The device includes thermostatically controlled means for dislodging a closure member to dump water passing through the device to the delivery nozzle so as to protect the user against discomfort or injury when the temperature of the water rises coactively a predetermined range.

3,648,725
PIERCING VALVE

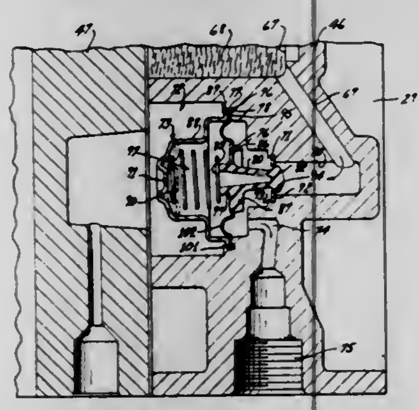
Richard V. Strybel, Elk Grove Village, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.
Filed Feb. 2, 1970, Ser. No. 7,916
Int. Cl. F16k *43/00*
U.S. Cl. 137—318 **15 Claims**



A piercing valve adapted to be secured about a duct such as a tube and provided with a piercing element arranged to be selectively forced through the wall of the tube to form a pierced opening therein. Valve means are associated with the piercing element for controlling fluid flow communication with the interior of the duct upon the piercing thereof. A clamp element is provided for association with a body member of the valve permitting facilitated connection of the valve to any one of a plurality of different size ducts.

3,648,726
PRESSURE REGULATOR CONSTRUCTION

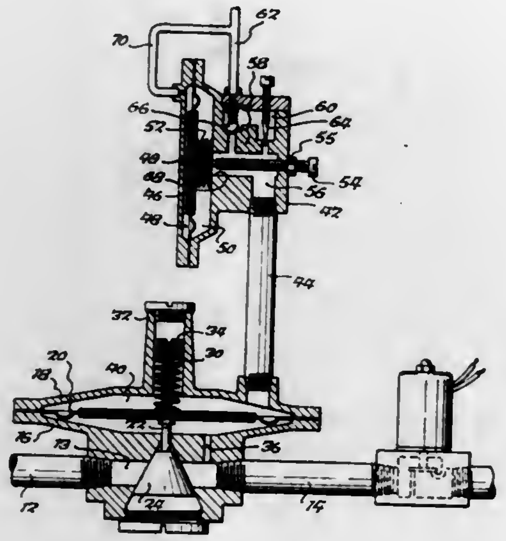
Michael J. Caparone, Arcadia, and Theodore J. Dykzeul, Rolling Hills, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.
Original application May 6, 1968, Ser. No. 752,403, now Patent No. 3,508,708, which is a division of application Ser. No. 353,924, Mar. 23, 1964, now Patent No. 3,439,699. Divided and this application Apr. 21, 1970, Ser. No. 30,551
Int. Cl. F16k *31/145*
U.S. Cl. 137—505.41 **5 Claims**



This disclosure relates to a pressure regulator formed from a one-piece flexible diaphragm and valve member structure wherein the flexible valve member is disposed spaced from one side of the flexible diaphragm so that the flexible valve member can be flexed through a valve seat of a housing to open and close the valve seat on one side thereof while the flexible diaphragm is disposed on the other side of the valve seat and can be utilized to cooperate with the housing structure carrying the valve seat to define a chamber therewith.

3,648,727
GAS PRESSURE REGULATOR

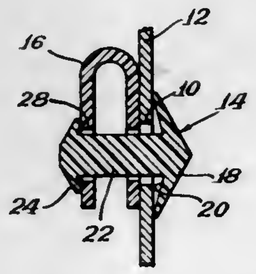
Robert T. Huyck, Kenmore, N.Y., assignor to Roberts-Gordon Appliance Corporation, Buffalo, N.Y.
Filed May 7, 1970, Ser. No. 35,528
Int. Cl. F16k *31/145*
U.S. Cl. 137—505 **9 Claims**



This discloses a gas pressure regulator having additions to enable the same to apply to a burner a combustible mixture at various rates of flow to substantially reduce the tendency to flare and to flash back in a mixing tube.

3,648,728
VALVE CONSTRUCTION

Max W. Perry, Hastings, and Norman D. Brockelsby, Grand Island, both of Nebr., assignors to Dutton-Lainson Company
Filed June 22, 1970, Ser. No. 48,253
Int. Cl. F16k *15/14*
U.S. Cl. 137—525 **6 Claims**

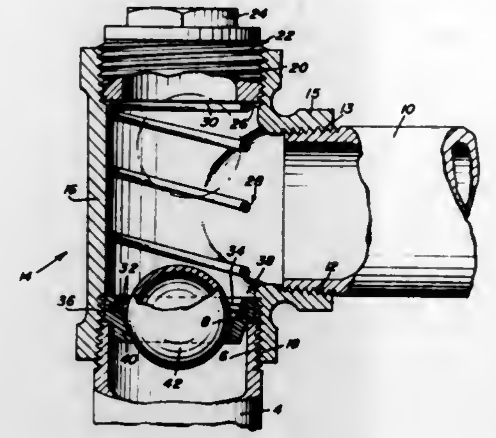


A valve construction for use as a pressure relief or check valve in fluid systems or apparatus.

3,648,729
CHECK VALVE

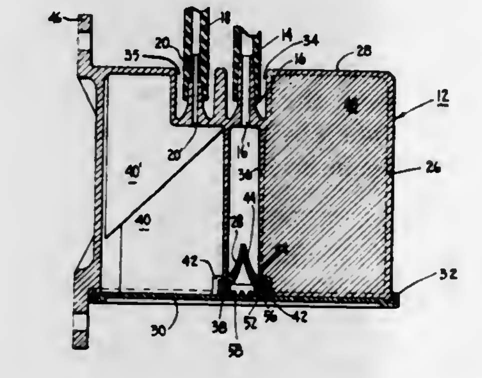
John W. Balkany, 7300 S.W. 75th Ave., Miami, Fla.
Filed Apr. 24, 1970, Ser. No. 31,571
Int. Cl. F16k *0/4*
U.S. Cl. 137—533.13 **3 Claims**

A ready-to-use valve assembly comprising three component parts, namely, a gasket ring having a valve seat, a ball check valve associatively cooperative with the seat and ring, and a coil spring carried by the ring and guidingly encaging the valve. This assembly when installed in standard T-coupling converts the same into a check valve for acceptable use in a new piping system or, alternatively, an equivalent existing system. It permits flow or fluid in one direction and prevents back-flow. Accordingly, the coupling serves not only to unite adjacent pipe sections but also serves as a check valve.



3,648,730
PRESSURIZED FLUID STORAGE TANK

William C. Riester, Williamsville, and William F. Kuebler, East Aurora, both of N.Y., assignors to Trico Products Corporation, Buffalo, N.Y.
Filed June 19, 1970, Ser. No. 47,641
Int. Cl. F16k *15/16*
U.S. Cl. 137—572 **9 Claims**

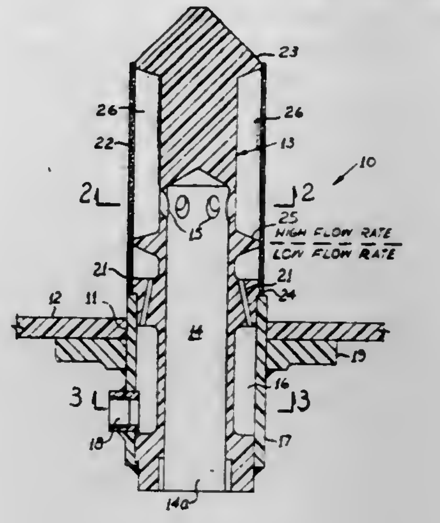


A vacuum storage container of one piece molded construction with a cover plate forming one end wall incorporates a central hollow post communicating with a vacuum inlet. A check valve disposed at the free end of the hollow post is retained in position by the cover plate and includes a radial flange with an inwardly extending flange at the free end of the radial flange overlying the end of the post to provide a double seal for the check valve. Conduits are provided intermediate the cover member and the check valve to effect communication between the vacuum inlet port and the interior of the container external to the hollow cylindrical post. An outlet port communicates with the interior of the container.

3,648,731
UNDERDRAIN

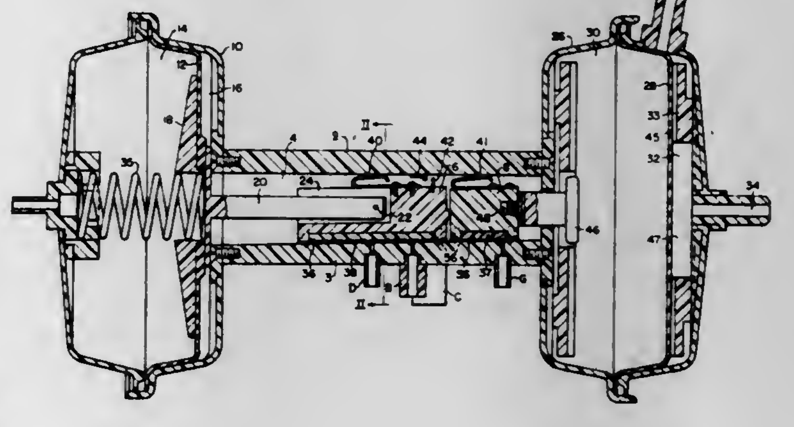
Derek Peter de Boerr, Toronto, 5 Ontario, Canada, assignor to Crane Canada Limited, Montreal, Quebec, Canada
Filed Nov. 25, 1970, Ser. No. 92,664
Claims priority, application Canada, Oct. 26, 1970, 096582
Int. Cl. E03f *3/18;* **B01d** *23/18*
U.S. Cl. 137—550 **8 Claims**

A vertically elongated body is provided at a relatively high level thereon with large openings which communicate with the upper end of central passage extending downwardly through the body to effect a high flow rate during service. Small openings at a level below the large openings communicate with an annular chamber in the lower portion of the body to effect a low flow rate during regeneration. The upper portion of the body in which the large and small openings are formed is surrounded by a tubular screen.



3,648,732
SELF-ADVANCING PROGRAMMER AND PRESSURE ACTUATED DEVICES CONTROL ARRANGEMENT

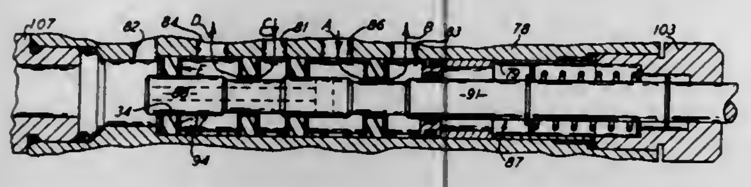
William C. Moreland, II, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 6, 1969, Ser. No. 874,598
Int. Cl. F16k *31/365;* **F25c** *1/00*
U.S. Cl. 137—624.18 **8 Claims**



A control arrangement in which pressure actuated deices are selectively actuated from a self-advancing programmer provided with higher pressure areas (typically pressure) and lower pressure areas (typically suction) selectively placed in registry with ports in communication with the pressure actuated devices. The pressure and suction areas are positionable in accordance with the position of a displaceable member separating a low pressure side space and a high pressure side space which are in normal communication with the suction areas and pressure areas, respectively. Provision is made for selectively venting, and preventing venting, of the pressure areas and suction ares in accordance with the character of the pressure condition (e.g., pressure or alternatively vacuum) to be applied to a particular device. With this arrangement shifting of the character of the pressure condition on the displaceable member takes place to correspond to the pressure condition to be applied to the particular device and the advance of the programmer occurs in accordance with the attainment of the pressure condition applied to the device. The arrangement of the invention is particularly adapted in one embodiment to control a flexible mold or bladder-type ice maker and the supply of water thereto.

3,648,733
SPOOL VALVE HAVING ADJUSTABLE SEALS

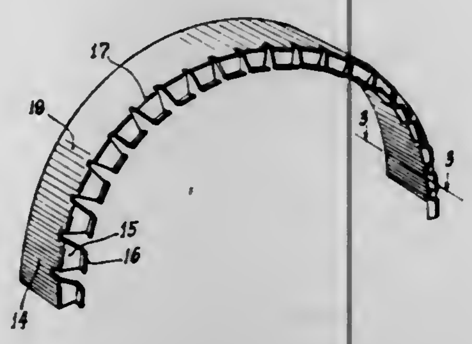
Rea I. Hahn, and Robert W. Broberg, both of Racine, Wis., assignors to Spencer Hydraulic, Inc., Racine, Wis.
Filed Jan. 22, 1970, Ser. No. 4,803
Int. Cl. F16k *3/26*
U.S. Cl. 137—625.69 **10 Claims**



A fluid flow control device including a housing having an inlet port and an outlet port and an intermediate chamber. A spool is slidably disposed in the chamber, and fluid seal rings are located in the chamber for fluid sealing with the spool. The seal ring is a resilient member which is flanked by compression members bearing inwardly on the ring to extrude the ring against the spool and against the housing wall defining the chamber, to fluid seal at those areas. The seal ring projects beyond the flanking compression members and towards the spool, and a threaded gland member acts upon the seal ring to compress it to the desired amount. Also, a check valve is operatively disposed in the housing and is actuated by the spool, and guide means are provided for acting on the spool and keeping the spool clear of the seat for the check valve so that the seat is not damaged in the movement of the spool. The spool has a taper for variable metering of fluid pressure in the release of fluid through the check valve. The entire fluid flow control device can be mounted in a plate which is serving as a mounting member with an electric motor on one side and a fluid pump on the other side of the plate.

3,648,734
PIPE COVER SPACER AND DIAMETER COMPENSATOR

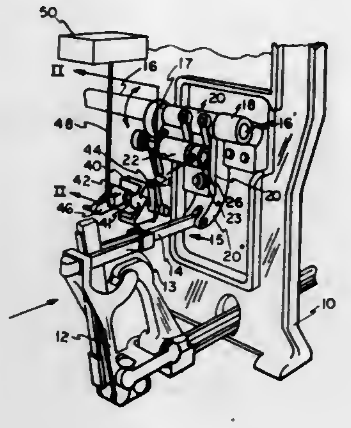
William Waite, and Victor Skuran, both of Chicago, Ill., assignors to Transco Inc., Chicago, Ill.
Filed May 25, 1970, Ser. No. 40,102
Int. Cl. F16l *9/18*
U.S. Cl. 138—113 **2 Claims**



A pipe cover spacer and diameter compensator in the form of an elongated curved bendable ribbonlike strip having a relatively flat skirt portion abutting and secured to the inside surface of the pipe cover and inwardly radially extending fingers terminating into relatively flat bendable tabs angularly extending from the fingers to yieldably bear against the surface of the pipe to resist lateral movement between the cover and the pipe and to compensate for any variation in the space between the cover and the pipe.

3,648,735
LOOM PICK CONTROL MECHANISM

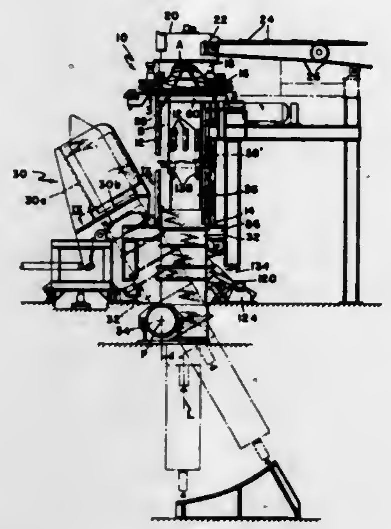
William P. Hill, Columbia, S.C., assignor to M. Lowenstein & Sons, Inc., New York, N.Y.
Filed Aug. 5, 1970, Ser. No. 61,091
Int. Cl. D03d *49/50*
U.S. Cl. 139—156 **6 Claims**



A modified picking mechanism is disclosed for interrupting actuation of a picker stick at predetermined intervals to stop the insertion of filling yarn into the fabric for a predetermined number of picks. A pick shaft is disclosed wherein a pick arm that is associated with the picker stick is journaled around a reduced diameter portion of the pick shaft for free movement thereabout. A spring biased pawl attached to the pick arm is normally presented for contact with a protuberance from the pick shaft so as to actuate the picker stick to propel the shuttle across the loom. At predetermined intervals, a box motion indicator causes an indicator rod to be raised which pivots a lever into engagement with the pawl and causes the pawl to rotate out of engaging position with the protuberance from the pick shaft. The pick shaft then reciprocates freely whereby the picker stick remains motionless and no fill yarn is inserted.

3,648,736
COIL FORMING AND TRANSFER DEVICE

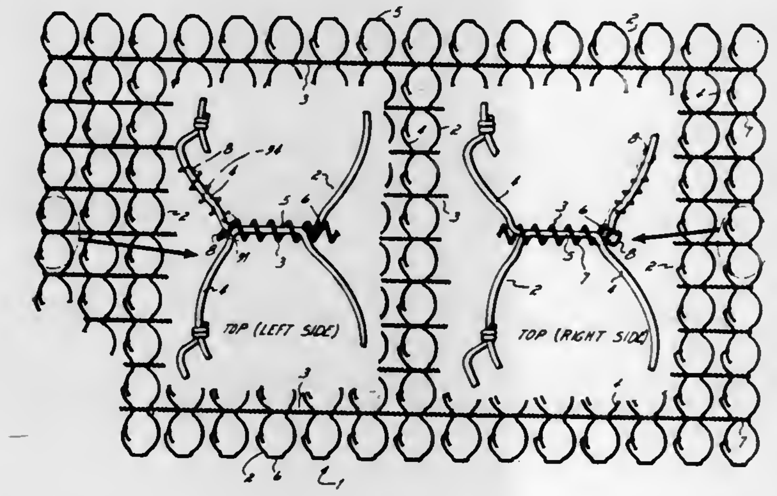
William J. Hill, Holden, and Roger Kinicutt, Jr., Worcester, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.
Filed July 9, 1970, Ser. No. 53,488
Int. Cl. B21c *47/24*
U.S. Cl. 140—1 **12 Claims**



An apparatus for gathering product rings into a cylindrical coil and for thereafter pivotally transferring the coil to an adjacent transport device. The coil is formed within an enclosure by depositing product rings over a mandrel extending vertically through a plate. Upon completion of the coil forming operation, the mandrel and plate are pivoted through a side opening in the enclosure, thereby carrying the coil to an intermediate position overlying the transport device. The mandrel and plate are then axially retracted to deposit the coil on the transport device.

3,648,737
HELICAL WIRE SHEARING AND TWISTING MECHANISM FOR SPRING MATTRESS UNITS

Thomas J. Dull, Fairfield, Ohio, assignor to Leggett and Platt, Incorporated, Carthage, Mo.
Filed Aug. 5, 1970, Ser. No. 61,309
Int. Cl. B21f *27/14, 27/16*
U.S. Cl. 140—92.7 **16 Claims**

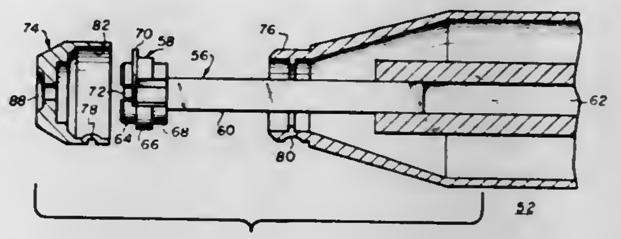


A shearing and twisting mechanism which acts upon the helical wires of a spring mattress of the type comprising transverse rows of coil springs having contiguous portions hingedly connected together by helical wires at top and bottom. The spring mattress is assembled by a machine and the shearing and twisting units of the invention are mounted in pairs at opposite ends of the assembly machine so as to act concurrently upon the leading and trailing ends of the upper and lower helicals after they are laced in position. Each shearing and twisting unit is self-contained, essentially comprising a shearing head arranged to rock in forward and reverse directions during a shearing and twisting cycle, combined with a coacting shearing knife and components driven by the rocking head for reciprocating the knife, such that, as rocking motion is imparted to the head, the end portion of the helical first is sheared by the knife and thereafter is twisted to a pigtail or loop formation encircling the terminal of the coil spring at the marginal edge portion of the mattress, whereby the terminal anchors the loop and locks the helical against endwise displacement to prevent the sheared end of the helical from penetrating or interfering with the ticking or other covering which encloses the spring mattress after it is assembled.

3,648,738
STRAP APPLYING TOOL

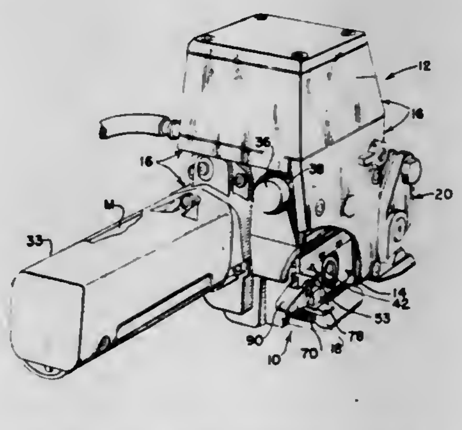
Paul Farkas, Fair Lawn, and Laszlo Hidassy, Elizabeth, both of N.J., assignors to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Sept. 25, 1970, Ser. No. 75,483
Int. Cl. B21f *9/02*
U.S. Cl. 140—93.2 **15 Claims**

The invention is directed to an improved strap tensioning and cutoff tool provided with selectively interchangeable strap receiving and cutoff assemblies releasably securable adjacent the extending nose portion thereof, each assembly being preferably arranged to accept a particular type of bundling strap, wherein a single tool may be advantageously cooperably employed with a variety of different bundling straps. Each selectively interchangeable assembly comprises a removable, slotted-head strap twisting member having suitable shear means therein and a releasable, matingly cooperable, cuplike slotted cover member encompassing the head portion of the strap twisting member, and coaxial therewith.



3,648,739
STRAP CLAMPING AND SEVERING ASSEMBLY FOR STRAPPING TOOLS

Barry R. Angarola, Schaumburg, Ill., assignor to Signode Corporation, Chicago, Ill.
Filed Apr. 1, 1970, Ser. No. 24,587
Int. Cl. B21f *9/02*
U.S. Cl. 140—93.2 **10 Claims**

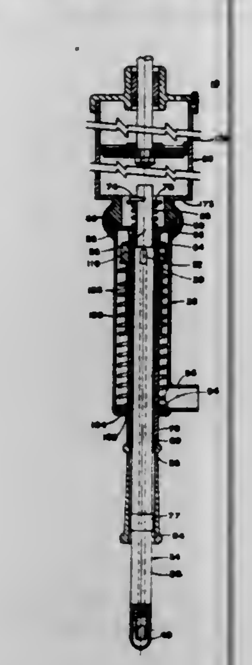


A strap clamping and severing assembly which cooperates with a movable sealing head of a strapping tool and performs the multiple functions of first clamping the free end of a length of strapping in a fixed position preparatory to creating a loop of the strapping about an article; secondly, of guiding the feed end of the loop during the tensioning operation in overlapped relation to the clamped free end; thirdly, of severing the feed end of the loop from the strapping source after the tensioning operation; and fourthly, of retaining the severed end of the strapping source in an accessible position to facilitate the next succeeding strapping operation. When used with a vibratory sealing head which effects a fusion joint on the loop overlap, the assembly vibrates in unison with the head and severs the strap directly at the edge of the sealing area to eliminate a protruding tail.

3,648,740
VACUUMIZING APPARATUS

Larry J. Pruitt, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, Scotland
Filed Dec. 3, 1970, Ser. No. 94,770
Int. Cl. B65b *31/04*
U.S. Cl. 141—8 **11 Claims**

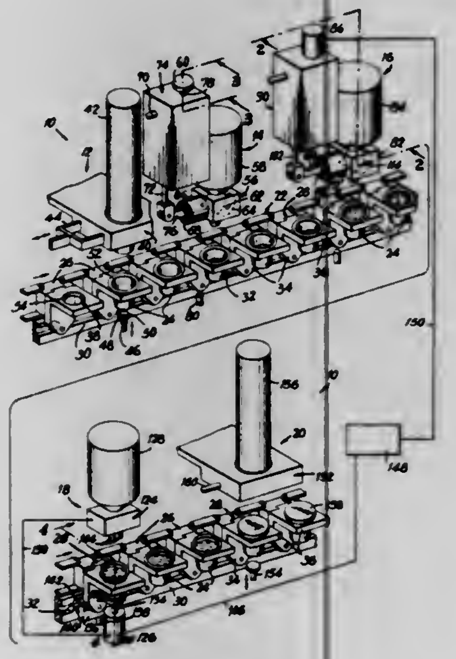
A vacuum operated device for withdrawing air from a package, lifting the package and positioning the package for closing. The device includes a reduced number of parts and has two main assemblies connected by a quick clamp. The parts may be disassembled and assembled by hand without the use of tools for cleaning. One of the assemblies includes an axial suction tube and an axial slide handle which projects below and extend into a first vacuum chamber. The other assembly includes a piston and a cylinder, an extension on the suction tube extends into the cylinder of this other assembly through the valve opening between the first vacuum chamber and the other assembly. The axial suction tube being mounted enabling its natural or free alignment during operation.



3,648,741
METHOD AND APPARATUS FOR ACCURATELY DISPENSING VISCOUS PRODUCTS INTO SUCCESSIVE CONTAINERS

William Herbert Croasdale, Morris Plains; Harlan Sumner French, Phillipsburg, both of N.J.; Clewell Stephen Hofschild, Bethlehem, Pa., and Donald Owen Johnson, Matawan, N.J., assignors to American Can Company, New York, N.Y.

Filed Apr. 23, 1970, Ser. No. 31,170
Int. Cl. B65b *3/28*
U.S. Cl. 141—9 7 Claims

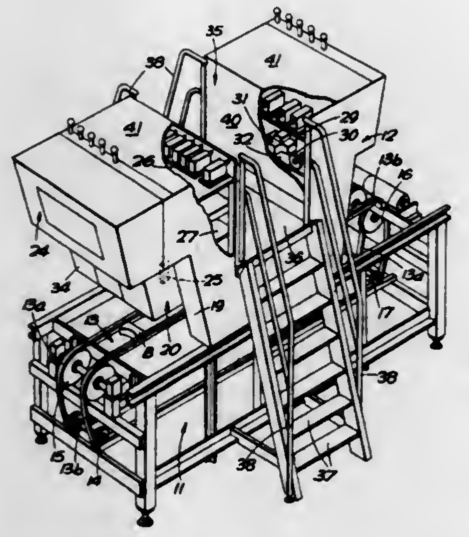


A method and apparatus for accurately dispensing nonuniform viscous food products having both liquid and solid components into successive containers wherein, initially, a manually adjustable filler dispenses approximately one-half of the desired weight of solid product into said containers, next, an automatically adjustable filler dispenses the remaining quantity of solid product into said containers to fill said containers to within a desired solid product weight range, and, finally, a weighing scale senses the total solid product weight and regulates a trim filler to dispense a final increment of liquid product, if needed, to fill said containers to within a desired total product weight range. Also, the weighing scale sends voltage signals representing the sensed solid product weights of said containers, i.e., either overweight, on-weight or underweight containers, to a trend control mechanism which, for each detected and accumulatively summed underweight or overweight signal in excess of a preselected number of accumulatively summed overweight or underweight signals, initiates the operation of a reversible stepping motor which automatically adjusts the automatic filler to dispense the correct weight of solid product. Further, a vertically reciprocable detached section of a cam track located adjacent to the weighing scale is precisely operable to move through preselected rates of acceleration and deceleration to control the placement of successive containers on and off the weighing scale in order to accomplish a high-speed weight control operation compatible with the requirements of a high-speed filling operation.

3,648,742
APPARATUS FOR WASHING AND FILLING CONTAINERS FOR LIQUIDS

Frank Beech, Bilston, England, assignor to GKN Sankey Limited, Bilston, England

Filed Oct. 17, 1969, Ser. No. 867,261
Claims priority, application Great Britain, Oct. 21, 1968, 49,889/68
Int. Cl. B67c *3/32, 1/00*
U.S. Cl. 141—92 14 Claims



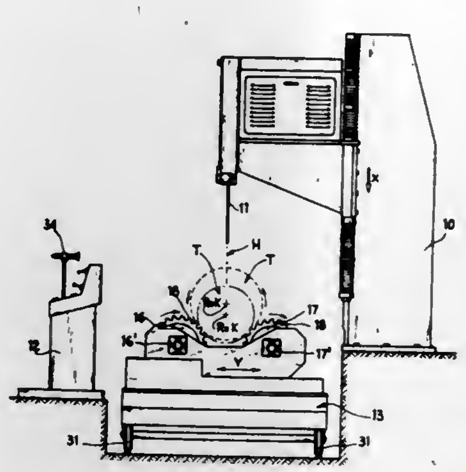
A combined washing and filling machine for beer kegs has a conveyor for conveying a succession of kegs past spaced washing and racking stations. A retractable stop is provided at each station to hold a keg in position at the station and a reject control device may prevent the stop at racking station acting as a stop when a keg is found to be unsuitable for filling. Detectors are provided on the downstream side of each station to detect a keg leaving each station.

3,648,743
EQUIPMENT FOR LONGITUDINALLY CUTTING TREE LOGS

Michele Fino, and Giorgio Giussani, both of 48, Via Prealpi, Mariano Comense, Como, Italy

Filed Jan. 14, 1970, Ser. No. 2,823
Claims priority, application Italy, Jan. 23, 1969, 11904 A/69
Int. Cl. B27b *7/00*
U.S. Cl. 143—39 9 Claims

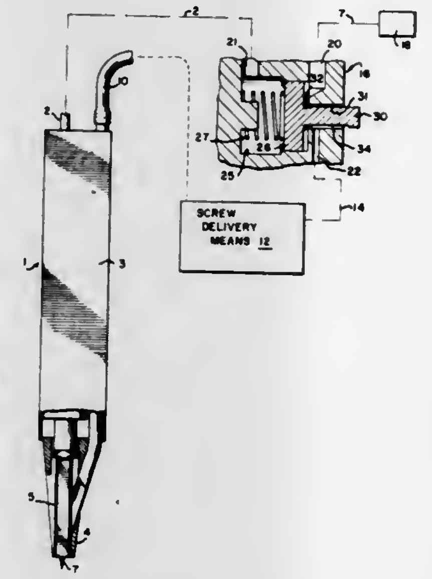
An equipment for longitudinally cutting tree logs comprising, in combination with a cutting machine tool, a log supporting carriage having means for individually displacing the log ends in order to cause the log axis to be positioned in coincidence with a predetermined line which defines a cutting tool half-plane, and means to rotate the supported log. Said combination allows to carryout a log cutting operation into three 120° ectors, two optical systems being provided for better positioning said log axis before each cutting operation.



3,648,744
FLOW SENSING VALVE

Kenneth R. Bangerter, Ithaca, N.Y., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Feb. 17, 1970, Ser. No. 12,111
Int. Cl. B25b *23/04*
U.S. Cl. 144—32 4 Claims



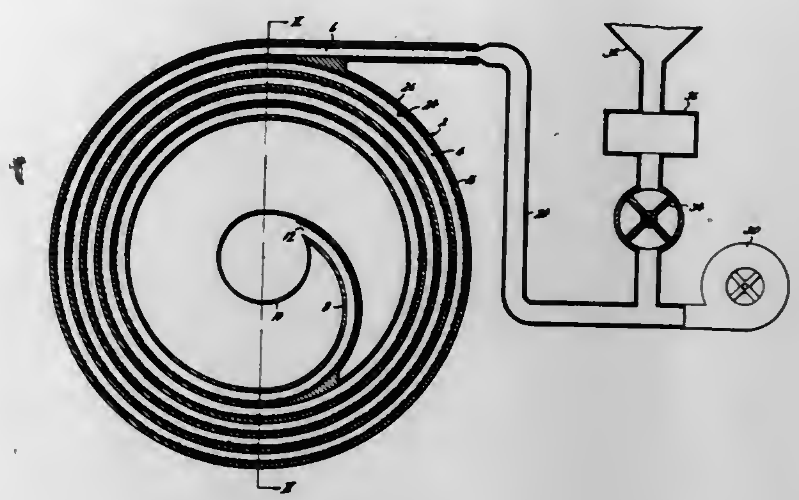
A screwdriver system of the automatic type wherein screws are individually delivered to the head of a screwdriver as they are driven. The system includes a flow responsive valve which creates a signal in response to the starting and stopping of the flow of power fluid to the screwdriver and this signal controls a screw delivery mechanism.

3,648,745
GRAIN DE-HULLING APPARATUS

Dimitri S. Stamatiou, 6708 N. Wyandotte, Kansas City, Mo.

Filed Dec. 8, 1969, Ser. No. 882,934
Int. Cl. B02b *3/00*
U.S. Cl. 146—253 3 Claims

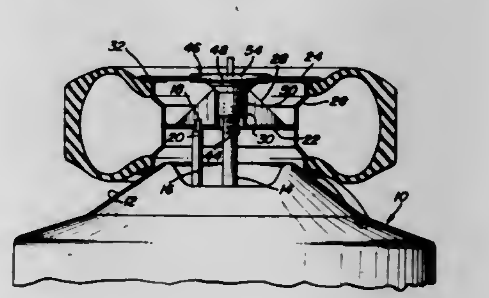
A grain de-hulling apparatus consisting of an elongated, curved passageway through which grain is propelled by a current of air, the concave internal surface of said passageway being provided with a coating of abrasive material against which said grain is urged by centrifugal force during its travel through said passageway, whereby hulls are removed from the kernels of grain by abrasive action, with a minimum of breakage or fracturing of the kernels.



3,648,746
CUSTOM WHEEL ADAPTER FOR TIRE CHANGING MACHINE

Clayton E. Beaman, 1119 W. Vance St., Wilson, N.C.

Filed Sept. 16, 1970, Ser. No. 72,751
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.24 7 Claims



A generally conical wheel holddown adapter for a tire changing machine including an internally threaded generally cylindrical sleeve extension projecting outwardly of its minor diameter end portion and a diametrically enlarged radially outwardly projecting hand wheel portion on its major diameter end portion.

ERRATUM

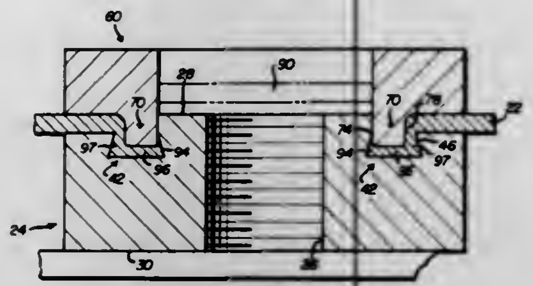
For Class 151—33 see:
Patent No. 3,648,749

3,648,747
NUT AND PANEL ASSEMBLY AND METHOD OF MAKING SAME

John H. Steward, Bloomfield Hills, Mich., assignor to Multifastener Corporation, Detroit, Mich.

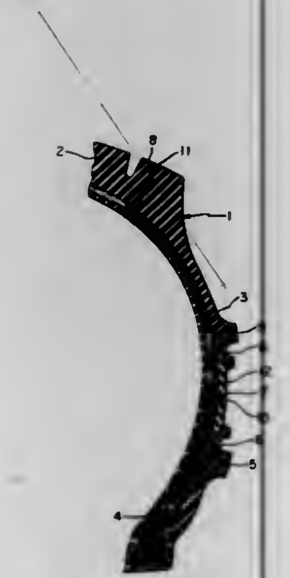
Continuation of application Ser. No. 697,269, Dec. 19, 1967, now abandoned. This application Oct. 20, 1969, Ser. No. 867,970
Int. Cl. F16b *37/04*
U.S. Cl. 151—41.73 2 Claims

A nut and panel assembly in which the nut has a pilot portion extending above outwardly directed flanges with undercut grooves in said flanges adjacent opposed sides of nut pilot portion. The assembly is produced by piercing the panel with the pilot portion of the nut and displacing the portions of the panel disposed above the undercut grooves into the grooves to fill the bottom portion of the grooves while maintaining a continuous connection between the deformed portions of the panel in the bottom of the grooves with the remainder of the panel.



3,648,748
TIRE HAVING POLYURETHANE LAMINATE THEREON

John A. Lovell, Munroe Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 18, 1969, Ser. No. 850,997
Int. Cl. B60c *13/00, 21/06*
U.S. Cl. 152—353 **10 Claims**

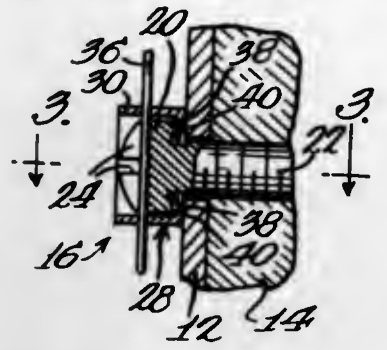


A tire and method of preparation which comprises a cured rubber tire having adhered thereto a laminate of a cured polyurethane comprising a cured reaction mixture prepared by reacting an organic polyisocyanate with a reactive hydrogen containing material having a molecular weight of from about 700 to about 5,000 and a hydroxyl functionality of greater than 2.0 up to about 3,0 selected from hydroxyl terminated polymers of the group consisting of polymers and copolymers of 1,3-diene hydrocarbons having 4 to 6 carbon atoms, copolymers of 1,3-diene hydrocarbons having 4 to 6 carbon atoms with styrene, acrylonitrile, ethyl acrylate and chlorosubstituted 1,3-diene hydrocarbons having 4 to 6 carbon atoms.

3,648,749
FASTENER ASSEMBLY WITH LOCKING CAPABILITIES

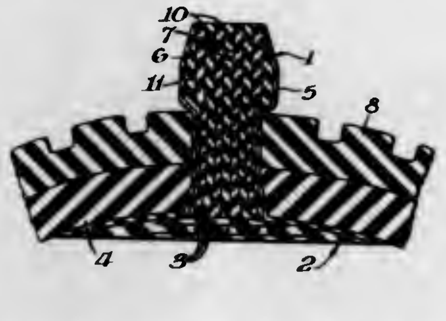
Ross B. Warren, Keene, N.H., assignor to Central Screw Company
Filed Feb. 5, 1970, Ser. No. 8,948
Int. Cl. F16b *39/02*
U.S. Cl. 151—33 **6 Claims**

A cooperating fastener and fitting used to anchor the fastener against loosening. The fastener employs a slotted head fastener, the fitting being captured in position relative to the head and having apertures aligned with the slot in the fastener head to receive a wire, rod or the like.



3,648,750
VEHICLE TIRE REPAIR BODY

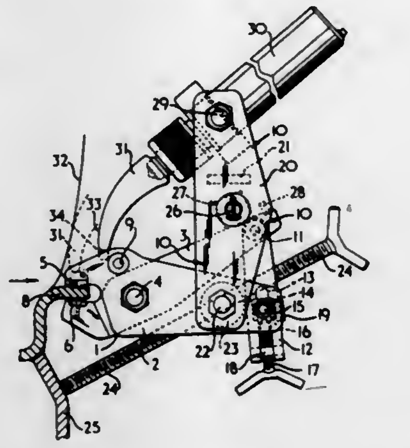
Alois Felden, Munich, Germany, assignor to Stahlgruber Otto Gruber & Company, Munich, Germany
Filed Jan. 31, 1969, Ser. No. 795,640
Claims priority, application Germany, Feb. 2, 1968, P 16 80 519.9
Int. Cl. B60c *21/02, 21/06*
U.S. Cl. 152—370 **22 Claims**



A repair body for damaged vehicle tires includes a stem portion and a patch portion. The stem is of uniform cross section over the largest part of its length and is larger than the canal-like injury which it fills. At the juncture or transition section of the stem and patch the stem is tapered or recessed. Additionally, the stem is made of a plurality of layers or varying hardness arranged spirally or concentrically about the stem axis.

3,648,751
DEVICE FOR UNSEATING TIRE BEADS FROM WHEEL RIMS

Jacques Archidoit, La Celle Saint Cloud, France, assignor to Dunlop Holdings Limited, London, England
Filed Mar. 17, 1970, Ser. No. 20,246
Claims priority, application France, Mar. 25, 1969, 6908725
Int. Cl. B60c *25/00*
U.S. Cl. 157—1.17 **8 Claims**



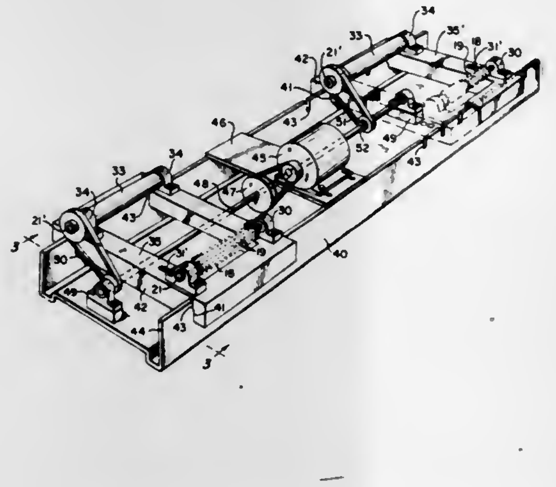
A device for unseating a tire bead from a wheel rim comprising a jack mounted on a clamp for gripping the wheel rim, the mounting of the jack on the clamp being arranged to transmit the reaction force from the jack to the clamp to tighten the grip of the clamp on the rim.

ERRATUM

For Class 157—1.24 see:
Patent No. 3,648,746

3,648,752
TIRE SLITTING MACHINE

Merle K. Benson, Freeport, Ill., assignor to Howard W. Brown, Dubuque, Iowa, a part interest
Filed Apr. 10, 1970, Ser. No. 27,232
Int. Cl. B29h *21/01*
U.S. Cl. 157—13 **13 Claims**

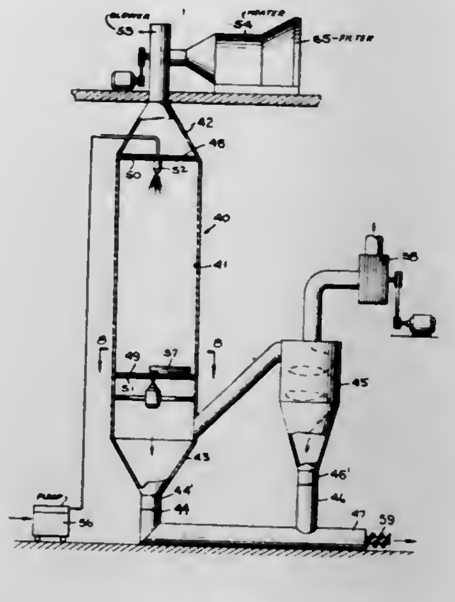


The slits for tractionizing purposes are cut in the thread portion of a rubber tire transversely thereof to a substantially uniform width and depth radially of the tire and spaced transversely and circumferentially of the tire tread, so that each slit serves as a suction cup as the slit opens upon coming in contact with the pavement under the load of the vehicle. The edges of the open slits extending transversely of the thread also give considerable added traction that is highly beneficial both in driving and in braking. These slits are produced by running the wheels of a vehicle onto cylindrical rotary cutter heads that are supported for rotation in a predetermined spaced parallel relation to cylindrical rollers to which drive is transmitted during the tractionizing operation, or two cutter heads may be used with cutter disks in staggered relation for efficient slitting of the tire tread, drive being applied to one of these two heads. The sectional construction of the cutter heads with stamped cutter disks spaced by washers on spindles is economical and enables low cost replacement of worn cutter disks, and the washers serve to limit the depth of slitting. This construction also permits placing in abutting relation several cutter disks to secure the desired width of slits, or the triangular teeth of the disks can be bent laterally on opposite directions to get a similar effect, still using the washers as spacers and to limit the depth of slitting.

3,648,753
SPRAY DRYER AIR FLOW CONTROL

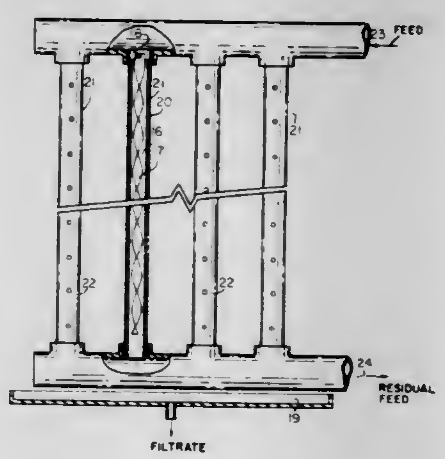
Dwight H. Bergquist, Springfield, Mo., assignor to Henningsen Foods, Inc., White Plains, N.Y.
Filed Aug. 13, 1969, Ser. No. 849,692
Int. Cl. B01d *1/16*
U.S. Cl. 159—4 **2 Claims**

An apparatus and method for providing a uniform cross-sectional air flow for the drying chambers of tunnel-type tray and spray dryers and the freezing chambers of blast freezers by placing guide members having air directing orifices positioned over their surfaces adjacent to the air inlets and outlets of said chambers. Means are provided to introduce the material to be treated and a stream of heated air into the chambers.



3,648,754
VORTEX FLOW PROCESS AND APPARATUS FOR ENHANCING INTERFACIAL SURFACE AND HEAT AND MASS TRANSFER

Hugo H. Sephton, Berkeley, Calif.
Continuation of application Ser. No. 673,075, Oct. 5, 1967, now Patent No. 3,457,982. This application July 28, 1969, Ser. No. 845,311
Int. Cl. B01d *1/22, 13/00, 21/00*
U.S. Cl. 159—13 A **10 Claims**

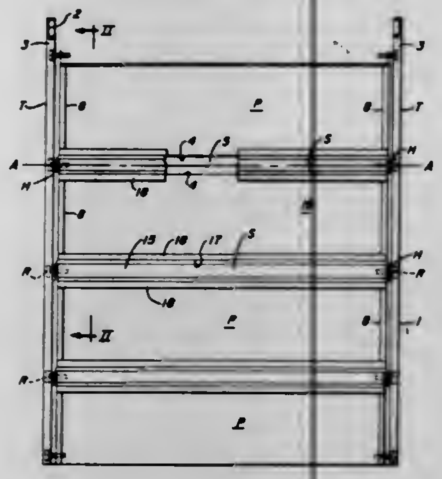


In tubular flow channels for heat or mass transfer between or with components of a fluid, a helically twisted ribbon baffle is axially disposed, anchored at the upstream end and floating within the flow channel for imposing vortex flow within a central core of the fluid passed therethrough. The flow channel wall comprises a porous filtration medium for through transmission or for retention of selected fluid components.

3,648,755
CONNECTING COVER STRIP AND HINGE FOR PLURAL PANEL DOORS

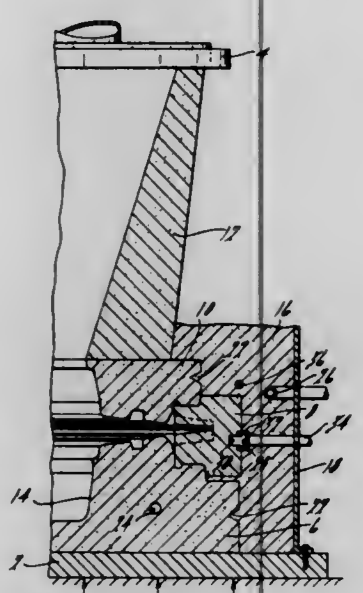
Robert E. Thiele, Murrysville, Pa., assignor to United States Steel Corporation
Filed Apr. 27, 1970, Ser. No. 31,956
Int. Cl. E05d *11/00*
U.S. Cl. 160—201 **7 Claims**

A panel door in which the plates are assembled and held in parallel side-by-side positions by hinge connections that, in addition to providing for relative pivotal movement of adjoining panels, operate to hold such panels with adjacent edges thereof in spaced relation. The spaces between adjoining panels are closed by the webs of U-shaped flexible metal strips which have their flanges connected with the adjacent edges of such adjoining panels along the length thereof, and in effect form part of the hinged connection therebetween.



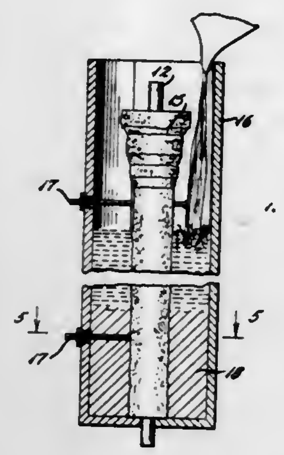
Upon relative pivotal movement of adjoining panels during movement of the door between its open and closed positions, stresses due to flexing or bending of the flanges and webs of the U-shaped strips are distributed uniformly over the metal therein. Such U-shaped hinge strips are especially suitable for panel doors in which the individual panels thereof are fabricated from sheet metal.

3,648,756
COMPOSITE MOLD AND METHOD OF MAKING SAME
Reginald J. McLaren, Southfield, Mich., assignor to Eaton Corporation
Filed May 4, 1970, Ser. No. 34,405
Int. Cl. B22c *9/12;* **B22d** *31/04*
U.S. Cl. 164—23 **13 Claims**



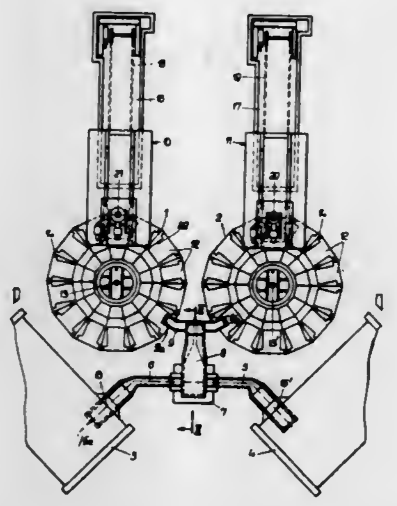
A composite refractory mold suitable for casting molten metals comprising a plurality of individual mold sections which are assembled in appropriate registry, collectively defining a mold cavity of the desired configuration, and which are maintained in appropriate aligned registration by means of a refractory potting composite encapsulating the exterior of the assembled mold sections and disposed in interlocking engagement therewith.

3,648,757
METHOD OF MAKING CENTRIFUGAL CASTING MOLD
Harold E. Willingham, Sky Drive, Anniston, Ala.
Continuation-in-part of application Ser. No. 669,048, Sept. 20, 1967, now abandoned. This application Jan. 19, 1970, Ser. No. 3,660
Int. Cl. B22c *1/00, 3/00*
U.S. Cl. 164—138 **10 Claims**



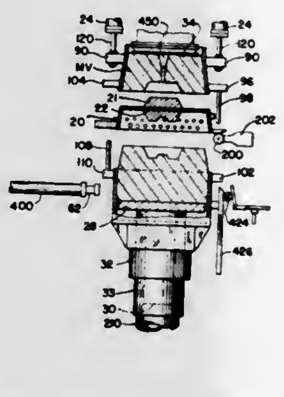
A method of making a multilayer mold for centrifugally casting generally cylindrical bodies such as iron pipe. The mold includes a tapered bore within a low-stress metal sleeve surrounded by and mechanically locked to an outer sleeve or layer constructed of a metal having high heat conducting and dissipating qualities.

3,648,758
APPARATUS FOR THE PRODUCTION OF COPPER ANODE PLATES
Otto Kreuz, and Wolfgang Hoeft, both of Duisburg, Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany
Filed Aug. 7, 1970, Ser. No. 62,006
Claims priority, application Germany, Nov. 7, 1969, P 19 56 076.0
Int. Cl. B22d *5/02, 39/00*
U.S. Cl. 164—155 **8 Claims**



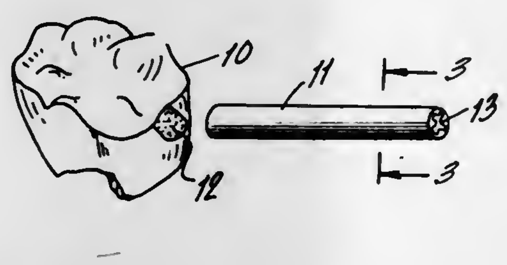
A method for the production of a large number of copper anode plates comprising using a plurality of casting wheels having filling means for a plurality of casting molds distributed around the periphery thereof, and comprising pouring dosed amounts of the melt alternately and in short intervals from a single source into at least two separately rotatable casting wheel molds in a manner such that while one casting mold is filled with melt, the other one is being turned with its associated casting wheel for orientation at a place for removal. The apparatus includes a tilting trough which is arranged between two or more casting wheels and which may be tilted to direct the casting melt into a selected one of the casting molds of the associated casting wheel. The dosed amount of melt is first weighed after it is delivered from a furnace into a dosing device which is lined with refractory material. The dosed amount is fed under pressure from the dosing device into the trough for delivery to the casting mold.

3,648,759
MACHINE FOR MAKING SAND MOLDS
Robert Lund, Elmhurst, and Vernon Koss, Niles, both of Ill., assignors to Pettibone Corporation, Chicago, Ill.
Filed Jan. 21, 1970, Ser. No. 4,606
Int. Cl. B22c *15/28*
U.S. Cl. 164—182 **5 Claims**



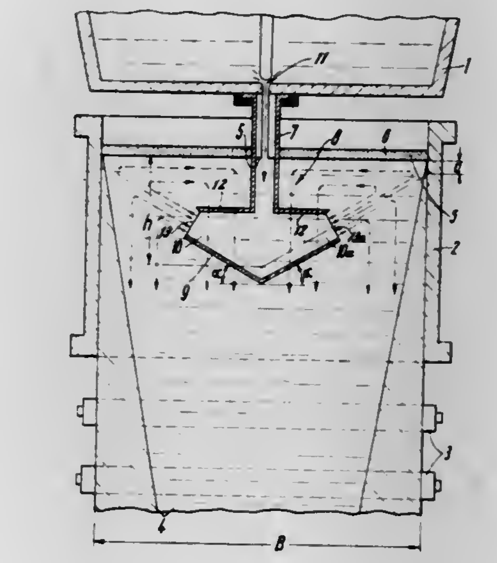
A machine for simultaneously producing cope and drag sand mold sections and embodying vertically movable flask parts including an upper part, a lower part, and an intermediate pattern part (match plate assembly). The lower and intermediate parts are brought together to define a lower pattern-enclosing flask cavity while the upper and intermediate parts are brought together to define an upper pattern-enclosing cavity. Both cavities are simultaneously filled with sand and the sand simultaneously squeezed to produce upper and lower mold sections, after which the parts are separated, the intermediate part withdrawn, the upper and lower parts moved into contiguity to unite the mold sections, and the upper and lower parts widely separated to afford clearance so that the united upper and lower mold sections may be pushed laterally from the machine.

3,648,760
PRECISION INVESTMENT CASTING APPARATUS
Abraham J. Cooper, 1 De Kalb Ave., Brooklyn, N.Y.
Filed Apr. 27, 1970, Ser. No. 31,948
Int. Cl. B22c *7/02*
U.S. Cl. 164—244 **10 Claims**



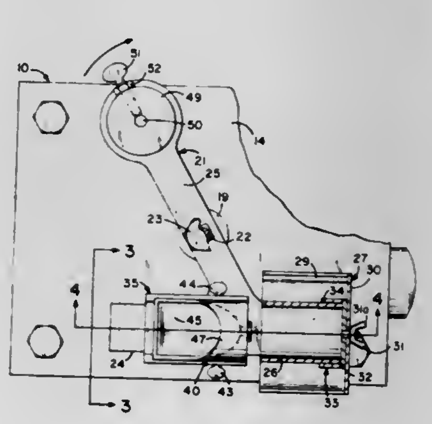
A precision investment casting tree formed of relatively high-melting point plastic material surrounded by a lower melting point wax is built up to support a plurality of small wax patterns. The tree is supported by a base and surrounded by investment material. The plastic members are hollow so that upon a first heating step the wax melts and runs out of the investment material leaving a cavity within the said material. Upon a subsequent heating step at a higher temperature the plastic melts and runs out of the investment material leaving a sprued investment material which will insure high-quality casting.

3,648,761
APPARATUS FOR DISTRIBUTING MOLTEN STEEL IN A MOLD FOR A CONTINUOUS CASTING
Georg Speith, Duisburg-Huckingen; Helmut Landgraf, Rumeln/Moers, and Herbert Forster, Dusseldorf, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
Filed July 27, 1970, Ser. No. 58,525
Claims priority, application Germany, July 29, 1969, P 19 39 170.9
Int. Cl. B22d *11/10*
U.S. Cl. 164—281 **3 Claims**



A mold for continuous casting of steel is charged through a pipe into which steel is poured. The pipe terminates in a chamber underneath the surface level of molten steel in the mold. The chamber has two upwardly and oppositely directed ducts of converging cross section but having exit openings larger than the pipe's diameter for directing branch flows toward a region that is somewhat below the surface level where meeting the sidewalls of the mold. The chamber itself provides for sudden enlargement of cross section as to down flow of steel in the pipe and the bottom operates as flow redirecting baffle.

3,648,762
CENTRIFUGAL CASTING MACHINE
William J. Hill, San Diego, Calif., assignor to International Development Corporation, San Diego, Calif.
Filed July 14, 1969, Ser. No. 841,303
Int. Cl. B22d *13/06*
U.S. Cl. 164—289 **8 Claims**

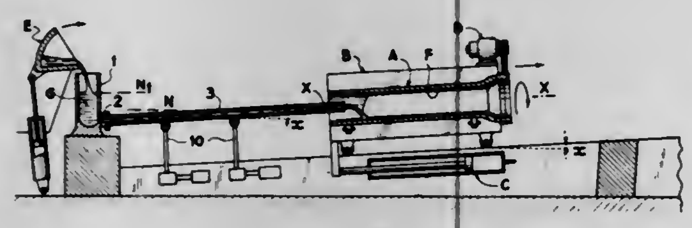


A portable, centrifugal casting machine has a drive motor and shaft that rotates a generally T-shaped rotor, the head of which is inclined relative to the stem with the trailing end of the head radially outward of the leading end thereof. A mold supporting cradle is mounted on the trailing end portion of the rotor head and a crucible, with a metal discharging outlet in the end thereof toward the cradle, is mounted for limited sliding movement along a path lengthwise of the head of the T-shaped rotor. A counterweight is mounted on the opposite end of the stem of the rotor from its head. When the motor is energized, the starting torque of the rotor drives a charge of molten metal in the crucible, by a combination of acceleration, inertia and centrifugal force, through the crucible outlet and into a mold cavity in a mold mounted on the cradle, where the metal is retained under centrifugal pressure until its sets.

3,648,763
MACHINE FOR CENTRIFUGALLY CASTING TUBULAR METAL BODIES

Eraldo Serafino Guenzi, Pont-A-Mousson, France, assignor to Centre de Recherches de Pont-A-Mousson, Pont-A-Mousson, France

Filed Oct. 21, 1969, Ser. No. 868,671
Int. Cl. B22d *13/10*
U.S. Cl. 164—301 **3 Claims**

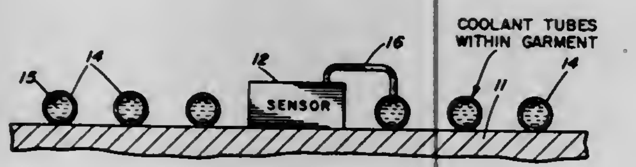


Machine for centrifugally casting tubular metal bodies in a rotary mould rotating about an axis inclined at 1 to 10 percent. The machine includes a tubular pouring conduit having an inlet and an outlet for the molten metal and upwardly inclined from the inlet to the outlet at the same angle as the mould axis. Relative movement between the pouring conduit and mould causes the outlet to pour metal into the mould from one end to the other of the latter.

3,648,764
COMFORT CONTROL SYSTEM FOR SPACE SUIT

James B. Starr, St. Paul, Minn., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 25, 1970, Ser. No. 92,622
Int. Cl. G05d *23/00*
U.S. Cl. 165—32 **2 Claims**

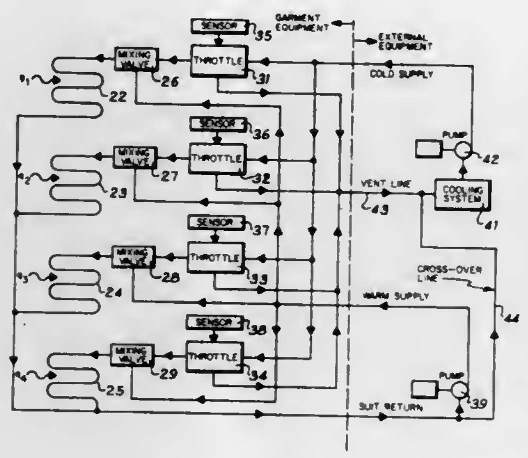


A comfort control system for a space suit having cooling passageways therein for circulating coolant. A temperature sensor is placed on an uncooled area of skin of a person wearing a space suit and a thermal path of fixed conductance is provided between the temperature sensor and one cooling passageway whereby skin temperature is reduced as said person's metabolic rate increases.

3,648,765
TEMPERATURE CONTROL SYSTEM FOR SPACE SUIT

James B. Starr, St. Paul, Minn., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 24, 1970, Ser. No. 92,469
Int. Cl. G05d *23/00*
U.S. Cl. 165—39 **2 Claims**

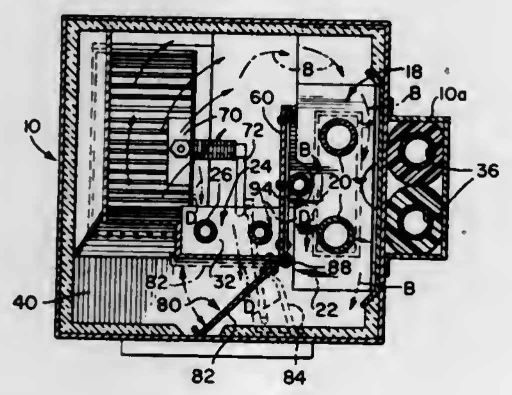


A temperature control system for a space suit having a warm fluid loop and a cold fluid loop with a mixing valve for adding fluid in the cold loop with fluid in the warm loop. A sensor is provided to control a throttle in the cold fluid loop for regulating the amount of fluid being added from the cold loop to the warm loop.

3,648,766
HEATING AND COOLING UNIT

James J. Whalen, 5528 Warwick, Chevy Chase, Md.

Filed Aug. 29, 1969, Ser. No. 854,038
Int. Cl. B60h *1/00*
U.S. Cl. 165—39 **9 Claims**



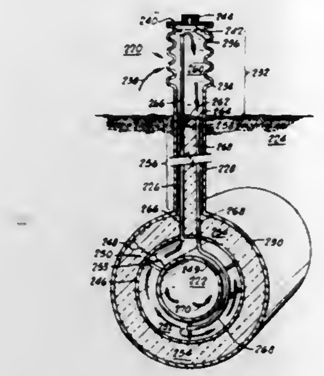
A heating and cooling unit having a fan mounted in a housing for circulating air through the housing. The air passing through the housing is selectively directed over either a heat exchanger or a riser heat exchanger in the housing in accordance with predetermined temperature requirements. Hot water is circulated through the heat exchanger and cold water through the riser heat exchanger.

3,648,767
TEMPERATURE CONTROL TUBE

Joseph C. Balch, Fairbanks, Alaska, assignor to Thermo-Dynamics, Inc., Seattle, Wash.

Original application July 26, 1967, Ser. No. 656,255, now Patent No. 3,472,314, and 865,351, Oct. 10, 1969, now abandoned. Divided and this application Mar. 18, 1970, Ser. No. 20,525
Int. Cl. F28d *15/00*
U.S. Cl. 165—106 **8 Claims**

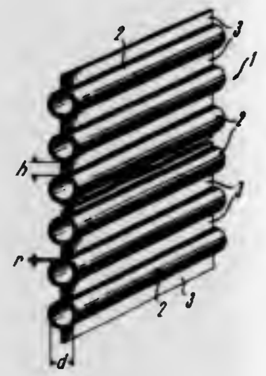
An apparatus for extraction of heat from selected matter by circulating a coolant in heat-exchanging relationship with the matter as well as to a removed region where the coolant material is cooled; it is proposed to employ enclosure shape which is divided into heat rise and cold drop sections such that a coolant filling the enclosure will maintain a circulatory, heat-exchanging flow in response to the natural heat differential existing between the matter adjacent opposite ends of the enclosure.



3,648,768
HEAT-EXCHANGER COMPONENTS

Gunter Scholl, Casa Rosina 6549, Pianezzo, Paudo, Switzerland

Filed Apr. 28, 1970, Ser. No. 32,659
Claims priority, application Germany, May 22, 1969, P 19 26 187.1; July 25, 1969, P 19 37 783.4; Sept. 25, 1969, P 19 48 407.2
Int. Cl. F28f *1/32*
U.S. Cl. 165—171 **20 Claims**



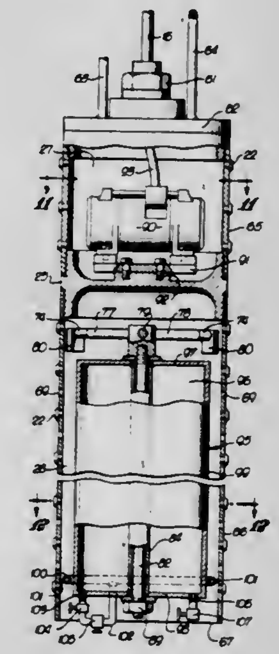
Heat-exchanger elements of plastic each of which is preferably produced in one piece by extrusion and consists of a plurality of substantially parallel tubes which are integrally secured to one another by connecting webs. A plurality of such elements may be interconnected by headers so as to form a larger heating unit.

3,648,769
WELL CLEANER

Harold T. Sawyer, Pacific Palisades, Calif., assignor to Vernon D. Beehler, Los Angeles, Calif., a part interest

Filed Sept. 4, 1970, Ser. No. 69,846
Int. Cl. E21b *43/27*
U.S. Cl. 166—177 **6 Claims**

A device for cleaning and/or disinfecting commercial wells consisting of a tubular housing smaller in diameter than the well casing and which is lowered to a location below the liquid level in the well. A resonant diaphragm partition separates the housing into an upper closed chamber and a lower open chamber. Centrally mounted on the upper portion of the diaphragm is a rotational mass which revolves at constant speed and the mass-speed relationship develops sinusoidal vibrations in the low-sonic range and substantially vertical to its diaphragm mount location. The sinusoidal force excites the diaphragm into one of its modes of natural frequency in the form of bending wave motion in the diaphragm. The force, sinusoidal in nature, thus released also excites the housing of the upper and lower chambers and longitudinal bending waves are in turn continuously developed and transmitted through the material of the housing and in a direction through the lower open end portion of the cylindrical housing. The longitudinal bending wave vibrations in the material of the cylindrical housing in turn cause compressional acoustic waves to be transmitted through the surrounding water medium at speeds approximating 4,800 feet per second from both the inner and outer surfaces of the lower open end cylindrical shell, and from the outer surface of the upper closed cylindrical shell. The direction of the released compressional sound waves is perpendicular to surfaces of the cylindrical shell and the waves are multidirectional in nature.



3,648,770
CONTROL OF WATER SOLUBILIZATION IN MICELLAR SOLUTIONS

Robert D. Sydansk, and Karl D. Dreher, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed July 9, 1970, Ser. No. 53,698
Int. Cl. E21b *43/22*
U.S. Cl. 166—252 **10 Claims**

Improved flooding of a subterranean reservoir with a micellar dispersion is effected by first analyzing the interstitial water within the reservoir for the predominant cation, then designing the micellar dispersion (contains hydrocarbon, petroleum sulfonate and water, and optionally cosurfactant) to contain a cation which has a greater affinity for the petroleum sulfonate than the cation within the interstitial water, and then injecting and displacing the micellar dispersion through the reservoir. Examples of cations useful in the micellar dispersion include Li^+, Na^+, NH_4?, K^+, Mg^{++}, Ca^{+}?, Sr^{++}, and Ba^{++}. Where the predominant cation within the interstitial water is one within the above list, then the cation to be incorporated within the micellar dispersion can be one higher in the sequence, i.e., from left to right, than the predominant cation.

3,648,771
IN SITU RECOVERY OF OIL FROM TAR SANDS USING OIL-EXTERNAL MICELLAR DISPERSIONS

Joe T. Kelly, deceased, late of Littleton, Colo. (by La Verne S. Kelly, executrix), and Fred H. Poettmann, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio
Filed Dec. 29, 1969, Ser. No. 888,898
Int. Cl. E21b *43/22, 43/24*
U.S. Cl. 166—272 **18 Claims**

Oil from subsurface tar sands having an injection means in fluid communication with a production means is recovered by injecting an oil-external micellar dispersion at a temperature above 100° . into the tar sands and displacing it toward the production means to recover hydrocarbon through the production means. The micellar dispersion can be preceded by a slug of hot water (e.g., above 100° F.) and the water can have a pH greater than about 7. Also, the water within the micellar dispersion can have a pH of about 7–14; and, preferably the dispersion is at a temperature greater than about 150° F. The micellar dispersion contains hydrocarbon, surfactant, aqueous medium, and optionally cosurfactant and/or electrolyte.

3,648,772
MISCIBLE-TYPE RECOVERY PROCESS USING FOAM AS A MOBILITY BUFFER

Robert C. Earlougher, Jr., Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio
Continuation-in-part of application Ser. No. 820,016, Apr. 28, 1969. This application Aug. 19, 1970, Ser. No. 65,335
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **26 Claims**

Crude oil is recovered from a subterranean oil-bearing formation having injection means in fluid communication with production means by injecting into the formation 1–20 percent formation pore volume of a micellar dispersion (contains hydrocarbon, surfactant, and aqueous medium) followed by 10–100 percent or more formation pore volume of foam. Drive water can be injected to displace the micellar dispersion and foam toward the production means to recover crude oil. The foam can have a mobility about equal to or less than that of the micellar dispersion. Also, a liquid mobility buffer slug can precede or follow the foam.

3,648,773
FLOODING WITH MICELLAR DISPERSIONS

William B. Gogarty, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio
Filed Mar. 16, 1970, Ser. No. 20,100
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **13 Claims**

Oil recovery from a reservoir being flooded with a micellar dispersion and wherein the reservoir contains a relatively high concentration of divalent ions, is improved by incorporating into the micellar dispersion a relatively low equivalent weight sulfonate. For example, the sulfonate can have an average equivalent weight of about 300–450. The micellar dispersion can be followed by a mobility buffer and this in turn followed by a drive material, e.g., drive water to displace the micellar dispersion and mobility buffer toward a production well where oil is recovered.

3,648,774
INCREASING THE INJECTIVITY INDEX AND PRODUCTIVITY INDEX OF WELLS

Walter B. Kirk, Robinson, Ill., assignor to Marathon Oil Company, Findlay, Ohio
Filed Mar. 19, 1970, Ser. No. 21,202
Int. Cl. E21b *43/22*
U.S. Cl. 166—305 R **14 Claims**

The injectivity index of injection wells and the productivity index of producing wells in fluid communication with a hydrocarbon-bearing formation is improved by injecting about 1–500 gallons of a micellar dispersion per vertical foot of hydrocarbon-bearing formation, thereafter injecting about 1–500 gallons of a mobility buffer per vertical foot of hydrocarbon-bearing formation, and injecting sufficient displacing fluid to displace the micellar dispersion to a radius of at least about 7.5 feet from the well bore, and thereafter injecting about 1–500 gallons of a solution capable of counteracting the decrease in permeability caused by the mobility reducing agent in the mobility buffer. For example, the micellar dispersion can be followed by a mobility buffer containing water and a partially hydrolyzed, high molecular weight polyacrylamide and this followed by 0.1–50 volumes of water per volume of mobility buffer and this, in turn, followed by about 1–500 gallons of a sodium hypochlorite solution per vertical foot of hydrocarbon-bearing formation. The displacing fluid and the mobility buffer can be substantially hydrocarbon in an "oil-wet" reservoir.

3,648,775
CHROMIC ACID INJECTION FOR WELL STIMULATION

William H. Dixon, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio
Filed July 6, 1970, Ser. No. 52,768
Int. Cl. E21b *43/27*
U.S. Cl. 166—307 **12 Claims**

The relative permeability to the flow of water in a reservoir having substantially most of the mobile oil removed therefrom is improved by contacting the reservoir with an aqueous solution of chromic acid. Such is especially useful to increase the injectivity index of stimulation wells, e.g., during a waterflooding process, or following a miscible or miscible-like flooding process. Such is very useful in reservoirs characteristic of a hydrocarbon or hydrocarbon-like coating on the reservoir rock.

3,648,776
STIMULATING PRODUCING WELLS WITH CHROMIC ACID

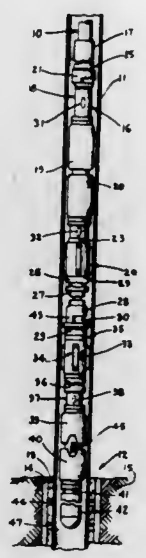
William H. Dixon, Littleton, Colo., and Marathon Oil Company, Findlay, Ohio
Filed July 6, 1970, Ser. No. 52,712
Int. Cl. E21b *43/27*
U.S. Cl. 166—307 **9 Claims**

The productivity index of a well in fluid communication with a reservoir is improved by injecting into the reservoir a displacing fluid to remove substantially all of the mobile oil from the immediate vicinity of the well bore, then injecting into the reservoir about 0.1–500 gallons of aqueous chromic acid solution per vertical foot of reservoir and thereafter permitting the well to produce. Desirably, sufficient amounts of the chromic acid solution are injected to contact the reservoir rock out to a radius of at least about 6 feet. Such a process is especially useful to increase the productivity index of reservoirs characteristic of a hydrocarbon or hydrocarbon-like coating on the reservoir rock.

3,648,777
WELL BORE CIRCULATING TOOL INCLUDING POSITIONING METHOD BY CASING ANNULUS FLUID STRETCHING TUBING STRING

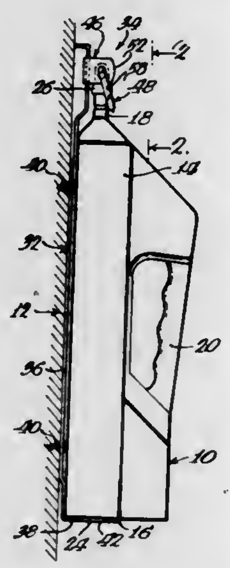
Bryant P. Arterbury, and Thomas C. Burroughs, both of Houston, Tex., assignors to Roy L. Arterbury, Houston, Tex., a part interest
Filed Apr. 4, 1969, Ser. No. 813,428
Int. Cl. E21b *21/00*
U.S. Cl. 166—312 **10 Claims**

The tool disclosed equalizes fluid pressure around an upper pair of oppositely facing, cup-type packers on an upper mandrel carried sleeve associated with a drag element assembly, and bypasses fluid pressure through a lower mandrel channel around a lower pair of oppositely facing, cup-type packers carried on a lower mandrel, the mandrels being rigidly connected, and the lower mandrel carrying a sleeve providing a circulating port and carrying a drag assembly. The mandrel may be rotated 180° with relation to sleeves to close equalizing ports and circulating ports, and then circulating fluid can be pumped down casing annulus to set second packer to stretch tubing string to place squeeze port in lower mandrel straddle casing perforations and to set squeeze packers.



3,648,778
DRY CHEMICAL FIRE EXTINGUISHER STRUCTURE

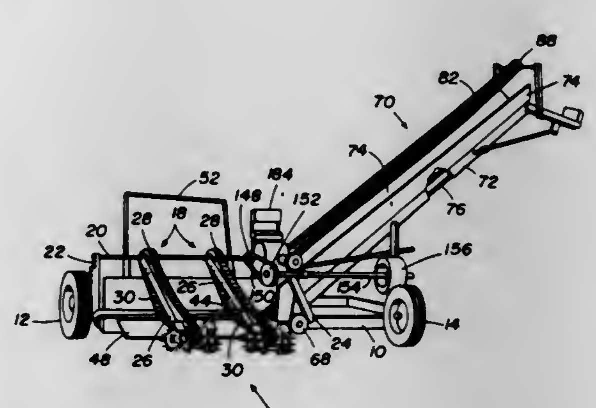
Charles K. Huthsing, Jr., 1685 Shermer Road, Northbrook, Ill.
Filed Oct. 15, 1970, Ser. No. 80,898
Int. Cl. A62c *11/00*
U.S. Cl. 169—30 **7 Claims**



A dry powder fire extinguisher container and use-ready support. The holder has a support which interfits the container base and carries a container stopper so mounted on the holder to plug the opening of the container which is resting on the support. The stopper mounting is arranged in a manner so as to lock the container in sealed readiness for use and against unintended release from the holder and to release and open the container when the container is removed from the holder for firefighting endeavor.

3,648,779
SOD ROLL FORMING MACHINE

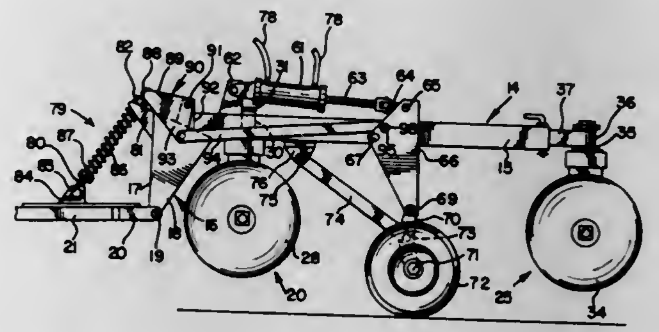
John J. Hartl, 2200 2nd St. N.W., Cedar Rapids, Iowa
Filed Mar. 11, 1970, Ser. No. 18,485
Int. Cl. A01b *45/04*
U.S. Cl. 172—19 **9 Claims**



A machine for rolling adjacent strips of precut sod into easily handled rolls and conveying the rolls to the side of the machine for discharge into a vehicle for transportation to the job site. The machine is adapted so that it can be operated in either a forward or reverse direction thus facilitating the removal of the precut sod particularly in small or enclosed fields.

3,648,780
CONTROL MECHANISM FOR DISK HARROW

Jerome L. Fueslein, Linden, and William M. Adams, Stockton, both of Calif., assignors to International Harvester Company, Chicago, Ill.
Filed June 8, 1970, Ser. No. 44,454
Int. Cl. A01b *63/22, 65/06*
U.S. Cl. 172—319 **6 Claims**

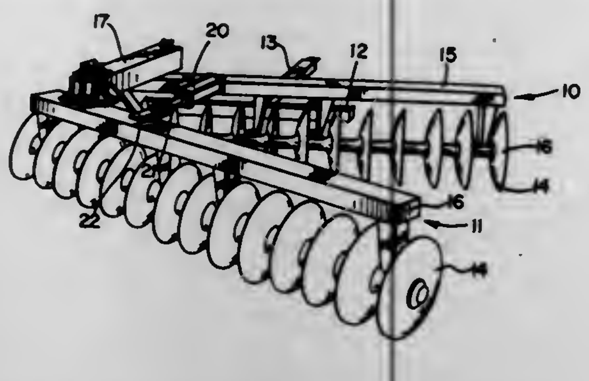


A disk harrow of the wheel-controlled-type having a pivoted hitch frame wherein the longitudinal spacing between the disk gangs is minimized by the provision of lifting mechanism which vertically moves the supporting wheels in a substantially straight line relative to the supporting frame between operating and transport positions of the implement, and wherein a connection is provided between the lifting mechanism and the hitch frame to effectively lock the hitch and gang supporting frames together in the transport position.

3,648,781
HINGE BEAM FOR DISK HARROWS

Walter Mayer, Stockton, Calif., assignor to International Harvester Company, Chicago, Ill.
Filed Jan. 6, 1970, Ser. No. 997
Int. Cl. A01b *23/06, 35/16*
U.S. Cl. 172—568 **2 Claims**

An agricultural implement having front and rear gangs of earth working tools being interconnected in such a manner that the gangs may be easily adjusted relative to each other to prevent the twisting of the gangs caused by forces acting on the gangs as the implement works the soil.



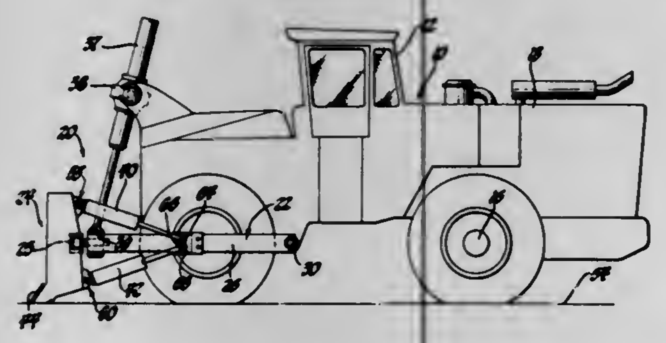
3,648,782
MULTIPURPOSE BULLDOZER ASSEMBLY

Janis Mazzarins, Macedonia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 19, 1969, Ser. No. 877,984

Int. Cl. E02f *3/76*

U.S. Cl. 172—804 **2 Claims**



A bulldozer assembly having a C-shaped frame member having a pair of rearwardly extending arms pivotally connected to a tractor for movement between a raised and lowered position. A moldboard having a cutting blade is centrally supported at the front end of the frame member by a ball joint located midway between the arms. A pair of double-acting hydraulic cylinders are attached to each arm at substantially the same point and diverge forwardly for universal pivotal attachment to the moldboard and serve to move the latter about longitudinal, vertical and horizontal axes passing through the center of the ball joint.

3,648,783
WEIGHT CONTROL SYSTEM

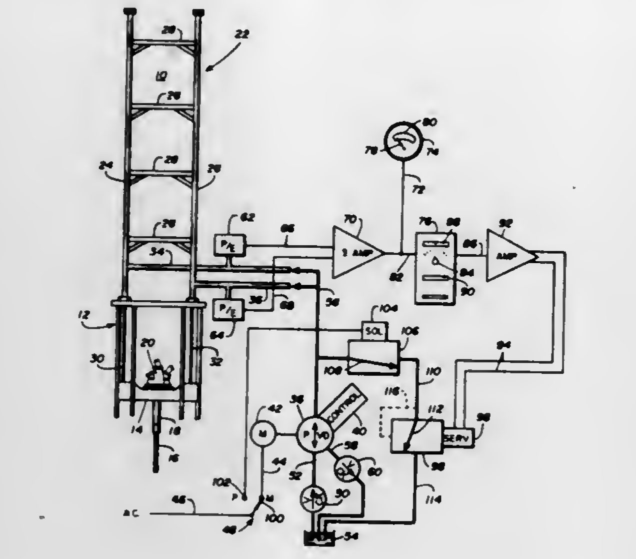
Marion D. Lackey, Dallas, Tex., assignor to Automatic Drilling Machines, Inc., Dallas, Tex.

Filed Apr. 17, 1970, Ser. No. 29,471

Int. Cl. E21b *19/08*

U.S. Cl. 173—4 **10 Claims**

A system for use in the drilling of oil wells, gas wells and the like which can be employed to maintain a relatively constant predetermined weight on the drilling tool. The system, which is preferably employed in connection with a drilling rig having a mast, a drill string supporting member which is vertically movable within the mast, and a hydraulic cylinder and piston assembly which is adapted to move the drill string supporting member within the mast, includes a transducer for converting the hydraulic pressure in the piston and cylinder assembly to an electrical signal. As the pressure in the piston and cylinder assembly is representative of the weight being supported by the mast and thus representative of the force being applied to the drill tool the signal may be compared with a second signal representing the desired weight to be applied to the drill tool and the difference used to remove hydraulic fluid from the piston and cylinder assembly through a relief valve when the weight being applied to the drilling tool is less than a desired weight. In a preferred embodiment the signal representing the difference between the actual weight being applied to the drill tool and the desired weight may be employed to control a reversible, variable displacement pump to move the drill string supporting member either upward or downward within the mast to increase or decrease the force being applied to the drill tool so that a predetermined weight is employed.



3,648,784
ROTARY IMPACT MOTOR

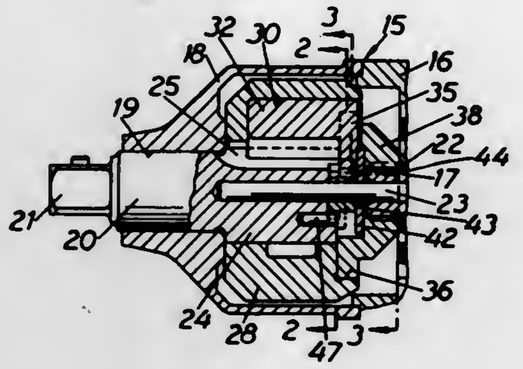
Knut Christian Schoeps, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Sept. 18, 1970, Ser. No. 73,552

Claims priority, application Sweden, Sept. 26, 1969, 13304/69

Int. Cl. B25d *15/00*

U.S. Cl. 173—93.5 **10 Claims**



In a bidirectionally operable impact motor for power driven fastener setting tools an impact dog is journaled in a hammer body pivotally about an axis spaced from but parallel with the axis of rotation of the hammer body for taking impact and release positions with respect to opposed impact surfaces on a rotatable anvil coaxial with the hammer body, one impact surface for each direction of rotation of the impact motor. A driving member rotates the hammer body via the impact dog and during rotation constantly biases the latter to the release position. A cam body is pivotally supported coaxially on the anvil between two end positions. When the direction of rotation of the impact motor is changed, the cam body is pivoted from one of the end positions to the opposite one for purposes of camming engagement with the impact dog for pivoting it to a correct impact position against the one of the impact surfaces that becomes active during the chosen direction of rotation.

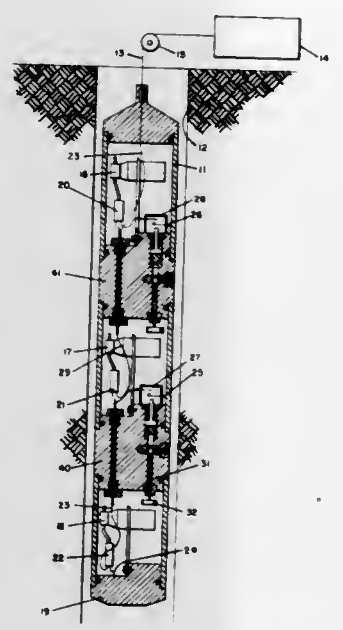
3,648,785
ELECTRO-HYDRAULICALLY CONTROLLED PERFORATOR

Harold D. Walker, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 13, 1970, Ser. No. 36,727

Int. Cl. E21b *43/116*

U.S. Cl. 175—4.54 **6 Claims**



A plurality of explosive charges are positioned in an instrument to be lowered into a well. An electrical detonation system is connected to each explosive charge. A hydraulic system controls switches in the electrical system.

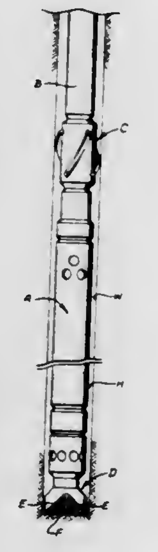
3,648,786
SUBSURFACE FLUID PRESSURE REDUCTION DRILLING APPARATUS

David V. Chenoweth, Houston, Tex., assignor to Baker Oil Tools, Inc., Commerce, Calif.

Continuation-in-part of application Ser. No. 12,614, Feb. 19, 1970. This application Apr. 12, 1971, Ser. No. 132,992

Int. Cl. E21b *5/00*

U.S. Cl. 175—56 **18 Claims**



A pulse generator adapted to be connected to a drill pipe string at its upper end and a drill bit at its lower end, the pulse generator providing an external working shock passageway between its exterior and the wall of the bore hole being drilled and an internal counterbalance shock passageway, a shuttle valve in the path of drilling fluid flowing into the generator from the drill pipe string alternately closing the inlets to the shock passageways to alternately generate a negative pressure pulse wave in each passageway and reduce the hydrostatic pressure in the external passage, which includes the bore hole region in which the bit is operating, for the purpose of increasing the drilling rate of the bit in the formation.

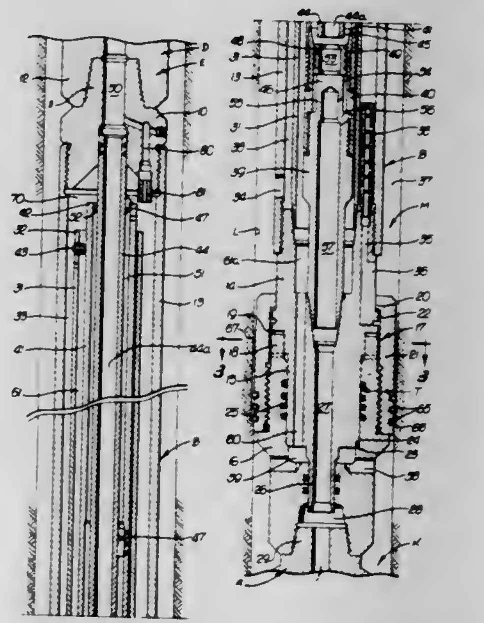
3,648,787
SUBSURFACE PRESSURE REDUCTION DRILLING APPARATUS

David V. Chenoweth, and Talmadge L. Crowe, both of Houston, Tex., assignors to Baker Oil Tools, Inc., Commerce, Calif.

Filed Feb. 19, 1970, Ser. No. 12,591

Int. Cl. F21b *5/00*

U.S. Cl. 175—56 **22 Claims**



A pulse generator adapted to be connected to a drill pipe string at its upper end and a drill bit at its lower end, drilling fluid being pumped down through the drill pipe, generator and bit, the generator embodying a pair of shock passages alternately opened and alternately closed by a shuttle valve in the path of drilling fluid flowing into the generator from the drill pipe string, closing of one of the shock passages, which includes the bore hole cavity in which the bit is operating, effecting a reduction in the hydrostatic pressure therein to increase the drilling rate of the bit in the formation.

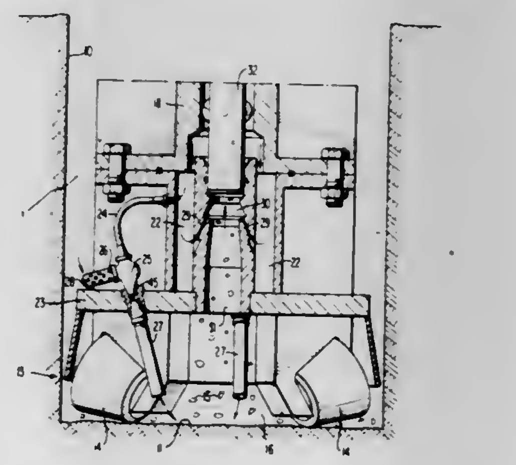
3,648,788
DRILLING APPARATUS

John R. McKinney, Gainesville, Va., assignor to McKinney Drilling Company

Filed July 6, 1970, Ser. No. 52,413

Int. Cl. E21b *21/00*

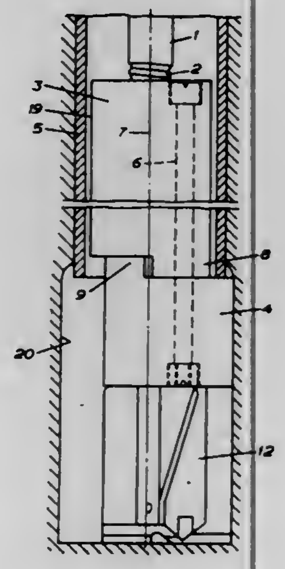
U.S. Cl. 175—205 **20 Claims**



A drilling apparatus having a drill string with drill body attached extending into the bottom of a bore hole. The drill body carries a drill bit which is cutting into a drilling face. The lower portion of the bore hole is filled with drilling fluid which is recirculated therein. Compressed gas is supplied from the surface through the drill string to a manifold in the drill body to operate two eductor systems. The first system educts drilling fluid into a plurality of airstreams and then directs jets of this mixture against the drill bit and the drilling face, and the second system removes the mixture of gas, drilling fluid and cuttings from the drilling face. Cuttings are collected in a basket annularly disposed about the drill body.

3,648,789
DRILL BIT WITH PIVOTING CUTTING PORTION

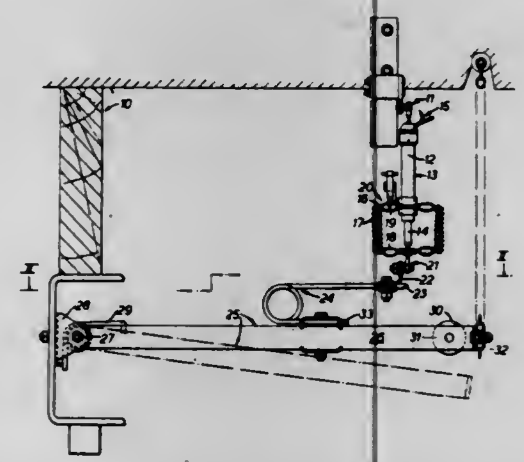
Ake Sigvard Eriksson, Huddinge, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Sept. 25, 1969, Ser. No. 860,917
Claims priority, application Sweden, Oct. 16, 1968, 13927/68
Int. Cl. F21b ***9/26***
U.S. Cl. 175—292 **10 Claims**



An adapter comprising an upper part and a lower part hingedly interconnected by a bolt disposed excentrically to a drill string axis carries a drill bit at the lower end of the lower part. The adapter and bit is carried through a tubular casing so that the bit and lower part are below the casing. The string is rotated so that the bit and lower part swings out and undercuts the casing.

3,648,790
WEIGHING APPARATUS

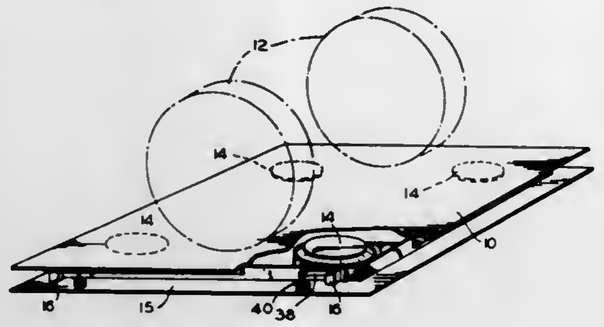
Brian L. H. Bishop, Witney, England, assignor to Smiths Industries Limited, London, England
Filed July 15, 1970, Ser. No. 54,939
Claims priority, application Great Britain, July 18, 1969, 36,212/69
Int. Cl. G01g ***19/08***
U.S. Cl. 177—137 **18 Claims**



Weighing apparatus incorporated in a vehicle to be responsive to the load on the vehicle axle(s) and to be used when the vehicle is in motion. Mechanical low-pass filtering means are provided to attenuate sudden variations of the relative displacement between the vehicle's load carrying structure and axle(s) at least when the moving vehicle is heavily loaded so that only the average value of this varying relative displacement is utilized in giving an indication of the load carried by said structure.

3,648,791
PNEUMATIC TRUCK WEIGHING SCALE WITH ISOTABLE RESERVOIRS

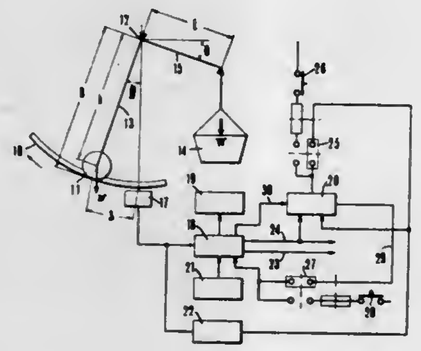
Frederick F. Van Raden, Hollsboro, Oreg., assignor to Peerless Trailer and Truck Service, Inc., Tualatine, Oreg.
Filed Jan. 21, 1971, Ser. No. 108,457
Int. Cl. G01g ***5/04***
U.S. Cl. 177—209 **5 Claims**



A scale for weighing truck axle loads and the like includes a platform supported by four self-leveling air springs with four reservoirs in parallel with the springs. After the springs have been stabilized, the reservoirs are closed off from the springs and are connected together to equalize their pressures and to an air pressure gauge which gives the weight being weighed.

3,648,792
WEIGHING DEVICE

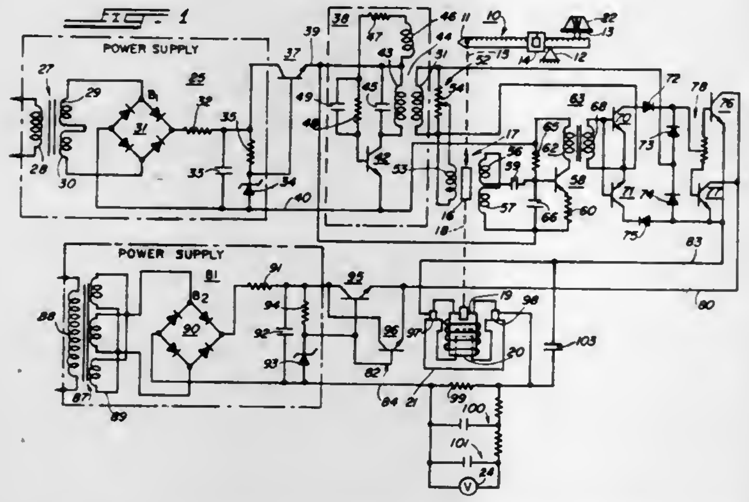
Noboru Uyama; Yoshiaki Shimada, both of Osaka; Masamichi Hino, Suita, and Rinosuke Yoneda, Koriyama, all of Japan, assignors to Kubota Tekko Kabushiki Kaisha, also known as Kubota, Ltd., Osaka, Japan
Filed Feb. 27, 1970, Ser. No. 15,115
Claims priority, application Japan, May 17, 1969, 44/38164; 44/45480; 44/45481; 44/45482
Int. Cl. G01g ***3/14***
U.S. Cl. 177—210 **4 Claims**



A weighing device for magnetically detecting the weight of an object. The device has a lever which turns to the angle where the turning force due to the weight of the object and the opposite turning force due to the weight of the balance device is balanced. A magnetic lattice is provided on one part of the cylindrical surface having its center at the fulcrum of said lever, and a magnetic signal graduation is provided by said magnetic lattice as said lever moves. A detector detects said graduation and the direction of movement of the graduation. A counting device is provided which carries out addition and subtraction by adding the positive pulses and subtracting the negative pulses depending on whether positive or negative direction of movement is detected by said detector.

3,648,793
LOAD MEASURING SYSTEM

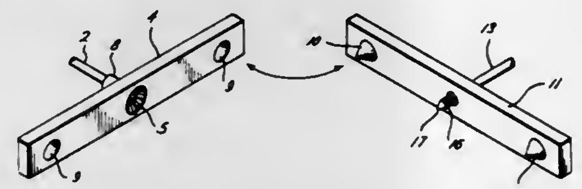
Richard D. Linville, Pleasant Valley, Iowa, assignor to National Manufacturing Company, Sterling, Ill.
Filed Feb. 9, 1971, Ser. No. 113,950
Int. Cl. G01g ***3/15, 7/02***
U.S. Cl. 177—210 **8 Claims**



A load cell includes a magnetic circuit producing a constant magnetic field and a coil which is adapted to be suspended in such field and to which the mechanical force to be measured is applied. The coil is mechanically connected to the core of a linear voltage differential transformer and is energized with a pulsating direct current having an amplitude controlled by the displacement of the transformer core from a null or balanced position. The amplitude of the coil energizing current reacts with the magnetic field to precisely counterbalance the mechanical force applied to the coil and is proportional to that force. A digital ammeter is used to measure the DC value of the energizing current and thus to provide a readout of the force being measured.

3,648,794
POWER TAKEOFF FOR OPERATION OF ACCESSORY VEHICLES

Ventis A. Clepper, Route 1, Box 182, Hockley, Tex.
Filed Feb. 16, 1970, Ser. No. 11,676
Int. Cl. B60d ***7/00***
U.S. Cl. 180—14 R **4 Claims**

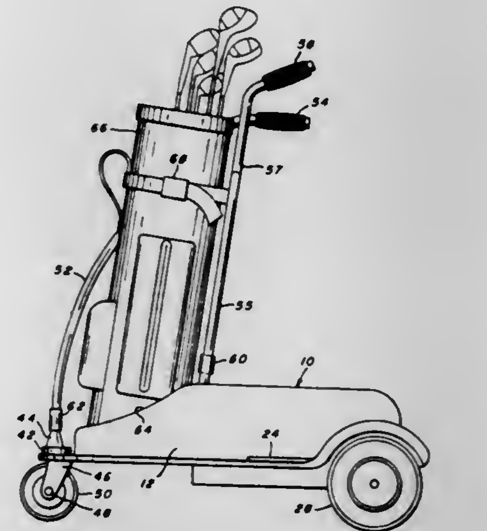


A device for transmitting power from a vehicle to accessory vehicles, such as loaders, wherein the power takeoff has a funnel gear to receive the rotatable drive shaft of the accessory vehicle, enabling the power vehicle to engage the accessory vehicle by backing into contact therewith and to be released therefrom by forward motion.

3,648,795
THREE-WHEELED ELECTRICALLY PROPELLED CART

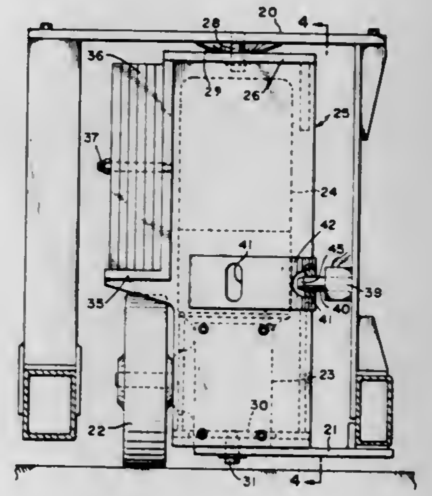
H. Douglass Moulton, 234 Foxhurst Drive, Pittsburgh, Pa.
Filed June 8, 1970, Ser. No. 44,185
Int. Cl. B62d ***61/06***
U.S. Cl. 180—27 **8 Claims**

A three-wheeled, self-propelled cart characterized in that the operator stands on the cart, straddling a drive motor for two drive wheels while holding onto an upstanding post with one hand and grasping a tongue-type steering pole with the other hand. The steering pole is connected to the third wheel and is curved outwardly and around the aforesaid post such that the operator's hands will be separated; while movement of the steering pole inwardly or outwardly will cause the third wheel to pivot about a vertical axis to steer the vehicle. A golf bag or other receptacle can be carried on the vehicle ahead of the upstanding post and is usually secured to the post by a strap or the like.



3,648,796

Reynold F. Gamundi, Lyndhurst, Ohio, assignor to Eaton Corporation, Cleveland, Ohio
Filed Dec. 22, 1969, Ser. No. 886,884
Int. Cl. B60k ***1/00;*** **B60v** ***1/14***
U.S. Cl. 180—52 **6 Claims**



In an air supported vehicle a steering and traction wheel is mounted for vertical movement so as to contact the floor in all vertical positions into which the vehicle is moved by the air support. The steering axis of the wheel is offset so that driving rotation of the wheel develops steering torque. A locking mechanism or clutch holds the wheel and its mounting against steering rotation until such rotation is required, and the wheel and its mounting may be locked in desired positions.

3,648,797

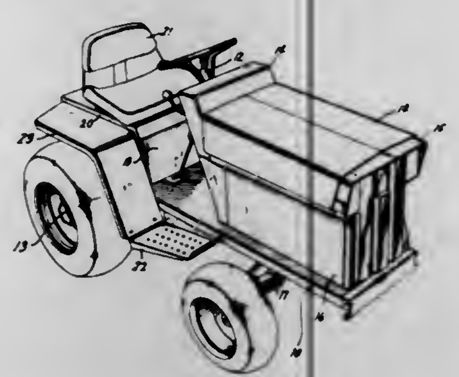
CONSTRUCTION FOR A TRACTOR

Alan F. Lukens, Schenectady; Everett S. Holden, and Chester F. Jacobson, both of Scotia, all of N.Y., assignors to General Electric Company

Filed Feb. 12, 1970, Ser. No. 10,866

Int. Cl. B62d *21/10*

U.S. Cl. 180—89 **5 Claims**



The chassis member is formed from a sheet of metallic material into a structure having an upper planar surface of elongated rectangular outline and a pair of downward extending planar side portions of elongated rectangular outline. The undercarriage assemblies are secured to the underside of the chassis member, that is both to the rectangular planar member and to the rectangular side portion. Front section and midsection members are secured to the top side of the chassis member to support the functional mechanical and electrical elements of the tractor as well as to provide a rugged structure.

3,648,798

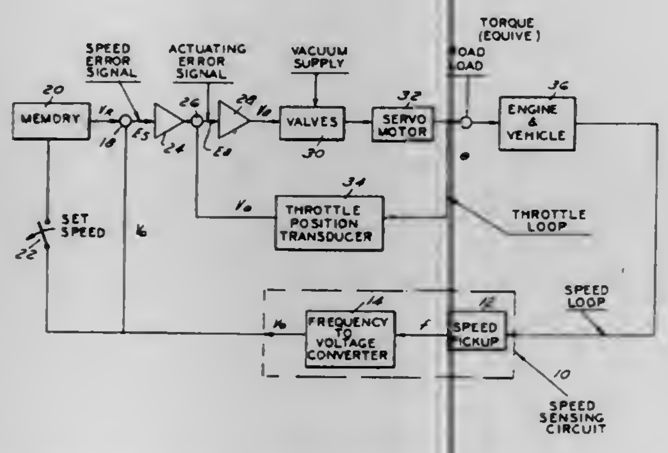
SPEED CONTROL SYSTEM FOR AN AUTOMOTIVE VEHICLE

Zbigniew J. Jania, 46125 Bloomcrest Drive, Northville, Mich.

Filed June 2, 1970, Ser. No. 42,642

Int. Cl. B60k *31/00*

U.S. Cl. 180—105 E **30 Claims**



An electronic speed control system for an automotive vehicle that is driven by a propulsive means, preferably in the form of an internal combustion engine, the speed of which is controlled by a throttle means. An electrically controlled actuating means is coupled to the throttle means for controlling its position. The speed control system includes means for generating a first signal having a magnitude proportional to vehicle speed, an amplifying means having a high input impedance terminal and a capacitor connected in series with the means for generating this signal and the high input impedance terminal of the amplifying means. Means are also provided for developing a feedback signal having a magnitude that is a function of the position of the throttle means. The amplifying means has a second input terminal connected to this feedback means and an output terminal coupled to control the actuating means. Circuit means are provided, including a switch, that directly conductively couples the output terminal of the amplifying means to the high input impedance terminal, and means are provided for closing this switch when the ignition switch of the vehicle is closed. A set speed switch under the control of the vehicle operator is employed to open this switch when the set speed switch is actuated so that a command speed signal is set across the capacitor and the amplifying means is enabled to combine the first signal, the command speed signal and the feedback signal to supply an actuating signal to the actuating means.

3,648,799

FLUID SUPPORTED LOAD SYSTEMS

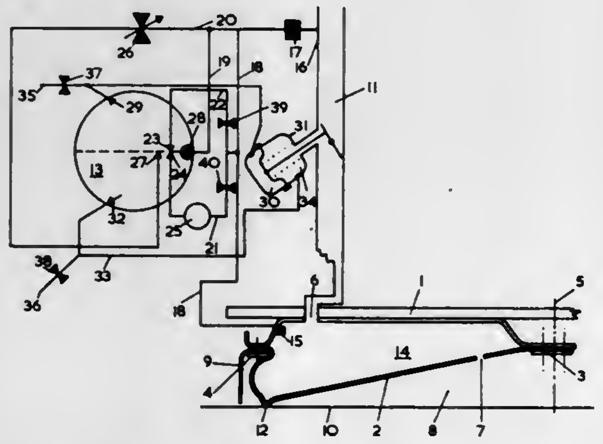
Michael A. B. Young, Wincanton, and George H. Dunsmuir, Yeovil, both of England, assignors to British Hovercraft Corporation Limited, Yeovil, Somerset, England

Filed Jan. 19, 1970, Ser. No. 3,808

Claims priority, application Great Britain, Jan. 16, 1969, 3,299/69

Int. Cl. B60v *1/00*

U.S. Cl. 180—118 **10 Claims**



A method of pressure control for fluid cushion supported load-bearing platforms, the system comprising sensors responsive to, and transmitting signals indicative of pressure fluctuations within the fluid support cushion, as a control flow to a fluidic network, the resultant output from the fluidic network being applied to a device which regulates the flow of pressurized fluid to the support cushion, thereafter providing control of the pressure therein.

3,648,800

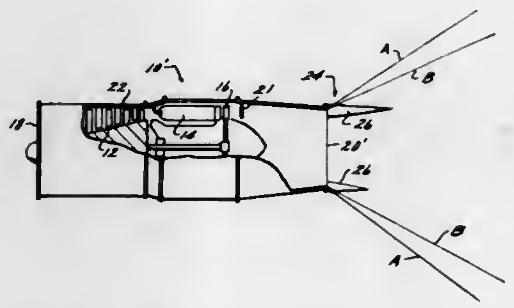
COANDA EXPANSION EXHAUST NOZZLE SUPPRESSOR

Donald J. Hoerst, Fairfield, Ohio, assignor to General Electric Company

Filed Apr. 27, 1970, Ser. No. 32,186

Int. Cl. B64d *33/06;* **F01n** *1/14, 1/16*

U.S. Cl. 181—33 HC **6 Claims**



An exhaust nozzle of an aircraft gas turbine engine is provided with a plurality of speed pods which are spaced around the periphery thereof. The pods are generally cone shaped with longer pods being positioned at the top of the nozzle in order to present an acoustic lens to the jet wake which causes the directivity of the angle of maximum noise to change with the overall result being a reduction in noise at ground level. At least one of the pods would be translatable axially in order to vary the exhaust pressure ratio of the nozzle.

3,648,801

SOUND RADIATOR

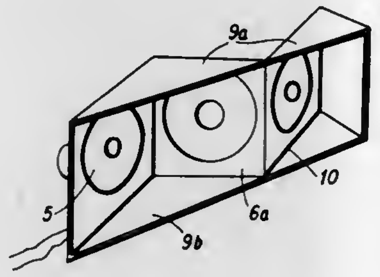
Denes Huszty, and Andræs Illenyi, both of Budapest, Hungary, assignors to Elektroakusztikai Gyar, Budapest, Hungary

Filed Feb. 25, 1970, Ser. No. 13,886

Claims priority, application Hungary, Nov. 26, 1969, EE 1750

Int. Cl. G10k *13/00;* **H04r** *1/28*

U.S. Cl. 181—31 B **2 Claims**



A series of at least three loud speakers is set one in each of at least three walls forming alternately oppositely opening dihedral angles with each other. The center-to-center distance between the loud speakers is less than 10 times the wavelength of the upper limiting frequency of the sound frequency band. The loud speakers are excited by the same signal source, and a stronger interference field is produced than if the sound emanated from a planar or spherical surface.

3,648,802

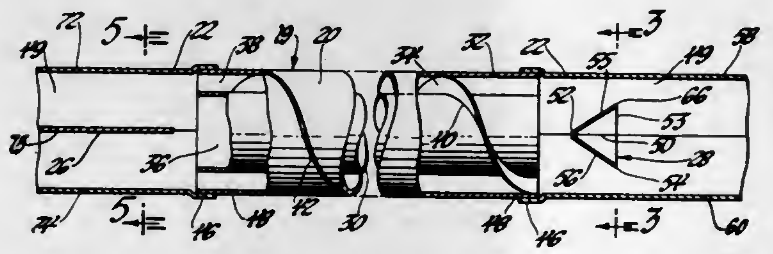
GAS FLOW BAFFLE FOR WAVE INTERFERENCE SILENCING SYSTEMS

Earl W. Pierce, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1971, Ser. No. 105,498

Int. Cl. F01n *1/12*

U.S. Cl. 181—44 **4 Claims**



A wave interference silencing system of the type having an acoustical equalization conduit downstream of an attenuating section which includes an inner axial flow path and an outer helical flow path wherein a gas flow baffle housed in the equalization conduit adjacent the end of the transitted attenuating section is positioned so as to cause turbulent interaction between the gases in the separate flow paths by establishing a barrier to continued relative circumferential gas movement thereby promoting complete mixing and stabilization of the gas stream prior to entering a succeeding attenuating section.

3,648,803

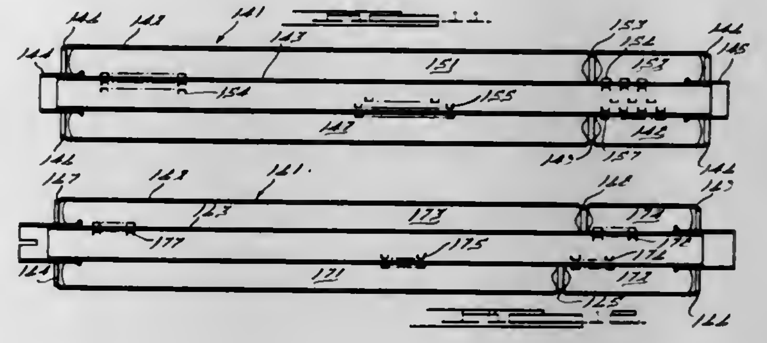
EXHAUST SYSTEM

Robert A. Heath, and Ronald J. Martoia, both of Jackson, Mich., assignors to Walker Manufacturing Company, Racine, Wis.

Continuation of application Ser. No. 531,245, Mar. 2, 1966. This application Oct. 13, 1969, Ser. No. 868,283

Int. Cl. F01n *1/02, 7/18*

U.S. Cl. 181—48 **4 Claims**



A simplified very low height sound attenuating muffler for flowing gases is formed from an outer tube shaped into an oval cross section to engage and be welded to a perforated straight-through gas flow tube and then the ends of the outer tube and selected intermediate portions are compressed into contact with each other to form closures at opposite ends of the muffler and at interior points which divide the muffler into chambers of various volumes that may be keyed to the frequencies to be attenuated.

3,648,804

NONWOVEN WICK UNIT

Ewald A. Kamp, Chicago, and Emmett J. Massey, Homewood, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 15, 1969, Ser. No. 866,748

Int. Cl. F16n *7/12*

U.S. Cl. 184—64 **14 Claims**

A nonwoven wick unit having selectively controlled liquid transfer and reservoir capacity is obtained by limiting the distance between the individual filaments of a filamentary tow, for example, by needle punching the tow. The liquid transfer properties of the unit can be further enhanced by surface treatment such as cutting the surface fibers and brushing up the cut ends.

3,648,805

AVAILABLE CAR ELEVATOR SYSTEM

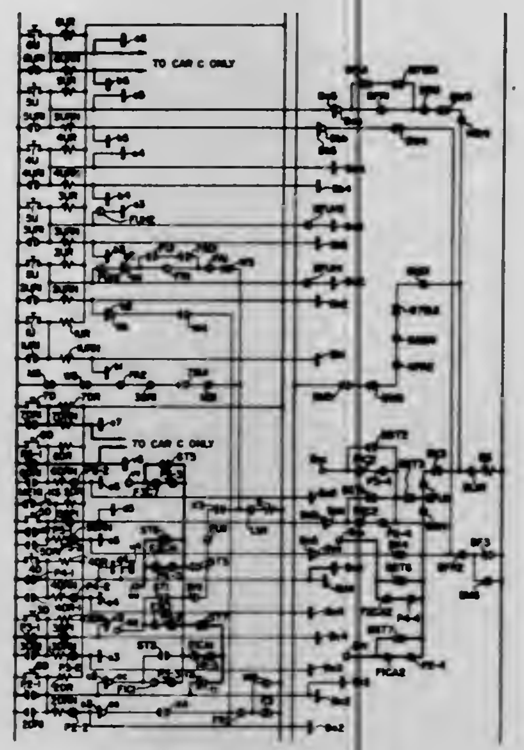
John Suozzo, Paramus, and Henry C. Savino, Hackinsack, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application Sept. 24, 1963, Ser. No. 310,991, now Patent No. 3,506,093, dated Apr. 14, 1970. Divided and this application Jan. 9, 1970, Ser. No. 1,616

Int. Cl. B66b *1/20*

U.S. Cl. 187—29 R **30 Claims**

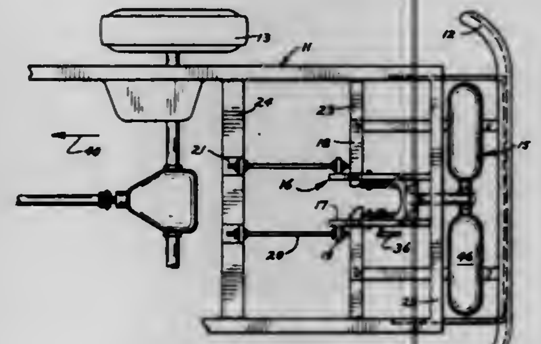
In an elevator system available cars are assigned to zones of floors. Under certain conditions the number of floors effectively in a zone is altered. During zoned heavy-up traffic operation, movement of cars to certain floors may be expedited, as to the main floor, or the down demands in any zone, or to timed-out down demands. Service may also be expedited to a heavy-traffic floor from which a loaded car has departed, or for an extension floor demand. All available cars



may be assigned to a specific floor with one car being permitted to serve other floors at intervals.

3,648,806
VEHICLE EMERGENCY STOP SYSTEM

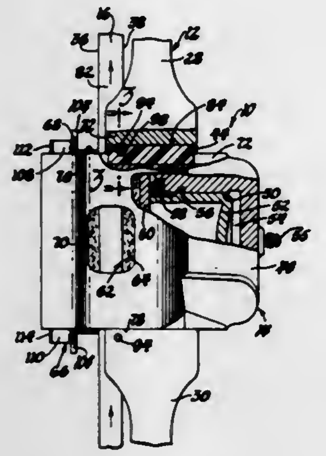
Charles Bryan Marks, 2011 Mills Cir., Las Vegas, Nev.
Filed Sept. 15, 1970, Ser. No. 72,394
Int. Cl. B60k *1/12*
U.S. Cl. 188—2 R **34 Claims**



Emergency stop apparatus for a land vehicle that includes a forwarding pointing jet nozzle, a tank connected to the nozzle for applying fluid under pressure to the nozzle, a subframe for mounting the nozzle on the vehicle frame, blocking mechanism at the forward end portion of the nozzle to selectively permit the escape of fluid from the nozzle and control mechanism for selectively operating the blocking mechanism to a fluid discharge condition. In one embodiment, the blocking mechanism includes a pivotally mounted apertured ball while in other embodiments the blocking mechanism includes a pair of jaws for releasably retaining a back up member and a resilient cup in the nozzle bore, and in a further embodiment, jaws support resilient member to prevent perforation thereof until the jaws move apart. In another embodiment a cap-cup combination is provided to control the discharge of fluid. The control mechanism of some of the embodiments includes a manually operated switch connected in series with the ignition switch and a brake operated switch for actuating an operator to move the jaws (or cap, or ball) to a nozzle member discharge condition. In some of the embodiments a governor is provided for operating a switch in the control circuit whereby the jaws or cap, or ball) are retained in a datum, non nozzle discharge condition until the vehicle has exceeded a preselected speed. Disclosed are both electrically and hydraulically actuated operators.

3,648,807
SLIDING CALIPER DISC BRAKE AND GUIDE AND RETENTION MEANS THEREFOR

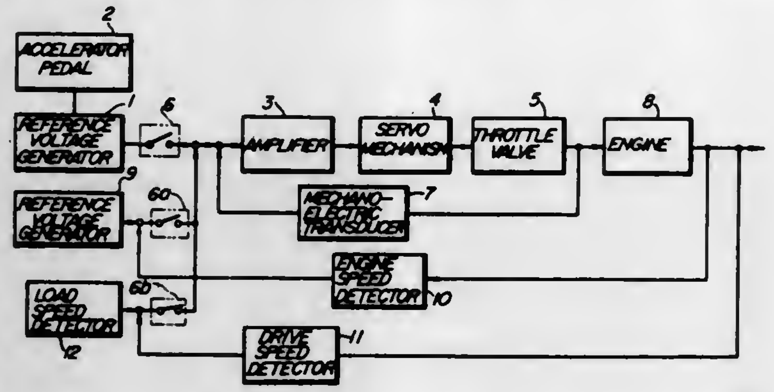
Neil M. Lottridge, and Marc F. Momsen, both of Saginaw, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 18, 1969, Ser. No. 886,172
Int. Cl. F16d *65/02*
U.S. Cl. 188—73.3 **9 Claims**



A sliding caliper disc brake in which a stationary carrier and a caliper housing have registering grooves formed in their torque-carrying abutment faces. Guide and retention means received in the grooves act as retention keys which permit sliding movement of the caliper housing relative to the carrier member and the guide and retention means. The caliper housing and the carrier member provide for guiding and retention of the brake pad assemblies in the caliper housing for sliding movement. Each guide and retention means includes a hard, resilient, low-friction plastic or plastic coated rod member and a keeper for holding the rod member in place. The guide and retention means is sufficiently resilient to permit the brake torque to be transmitted through the abutment faces while preventing radial movement of the caliper housing and undamped torque transfer.

3,648,808
THROTTLE VALVE CONTROLLER DEVICE FOR AUTOMOBILE CARBURETOR

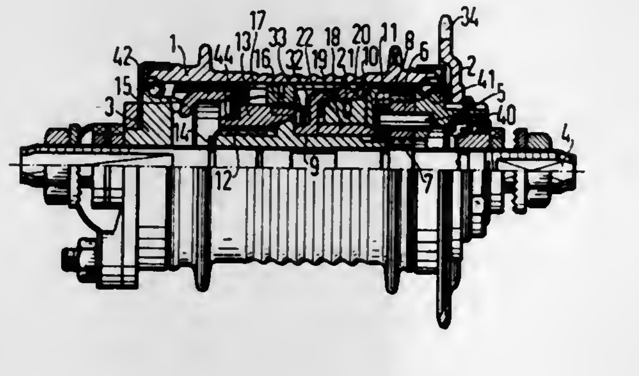
Takaaki Kato, Toyohashi-shi, Japan, assignor to Nippondenso Kabushiki Kaisha, Kariya-shi, Japan
Filed Jan. 16, 1970, Ser. No. 3,436
Claims priority, application Japan, Feb. 5, 1969, 44/8947
Int. Cl. F02d *11/10;* **B60k** *31/00, 29/00*
U.S. Cl. 192—3 R **4 Claims**



A throttle valve controller device for an automobile carburetor which basically comprises an electrical, not mechanical, connection between the accelerator pedal and the throttle valve mounted in an automobile, wherein the electrical connection is constituted by an element for generating an electric signal corresponding to the degree of depression of the accelerator pedal, an element for controlling the degree of opening of the throttle valve in accordance with the electric signal generated, a plurality of switches connected with a reference signal transmission line provided between the two elements, whereby the change-over of the switches enables another electrical signal other than the accelerator pedal signal to be supplied to the latter one of the two elements so that the degree of opening of the carburetor throttle valve can be set independently of the degree of depression of the accelerator pedal.

3,648,809
TWO SPEED BICYCLE TRANSMISSION WITH BRAKE

Hans Joachim Schwerdhofer, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany
Filed July 6, 1970, Ser. No. 52,166
Claims priority, application Germany, July 10, 1969, P 19 34 972.5
Int. Cl. B60k *29/02*
U.S. Cl. 192—6 A **3 Claims**

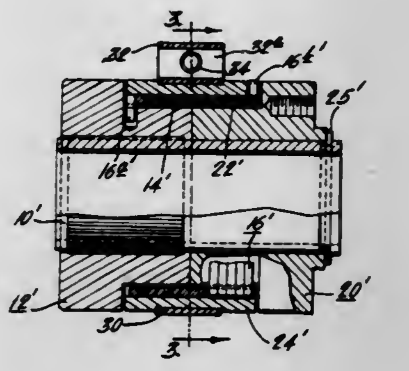


A multiple speed hub for the rear wheel of a bicycle or the like has a planetary gear transmission and pawl-and-ratchet clutches respectively coupling the planet carrier and the ring gear of the transmission to the hub shell, the planet carrier serving as the driver of the hub. The pawls on the ring gear can be disengaged from a ratchet on the hub shell by a flanged disc whose hub is rotatably mounted on the driver, and whose flanges has an internal cam face engaging the pawls. Cam lobes having each a gentle and a steep slope are provided on the cam face, and the ring is normally rotated by abutting engagement of the pawls with the steep flanks, but braked by a frictional coupling to a stationary or more slowly rotating hub element. During back pedaling, the pawls travel over the gentle flanks of the braked control disc to drop into a portion of the cam face differently spaced from the hub axis, whereby the pawls may be engaged with or disengaged from the cooperating ratchet and the hub shifted from one gear ratio to another.

3,648,810
HELICAL SPRING CLUTCH

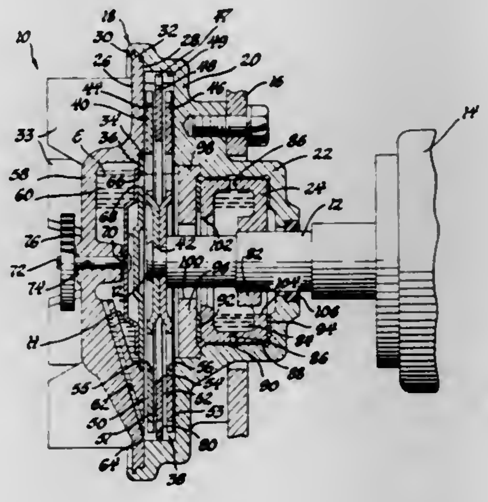
John H. Weatherby, Sewell, N.J., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.
Filed June 15, 1970, Ser. No. 46,127
Int. Cl. F16d *11/06*
U.S. Cl. 192—26 **1 Claim**

A helical clutch spring is attached at one end to an input hub and its other end to a control collar and surrounds, but is normally out of engagement with, input and output hubs. A friction member is wrapped around the collar, normally rotates with the collar, and has a shoulder which when intercepted and stopped will cause the friction member to slip and produce a drag on the collar. The drag on the collar, in turn, causes the spring to wrap down and drive the output with the input.



3,648,811
VISCOUS FLUID CLUTCH

Frank E. La Flame, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed June 18, 1970, Ser. No. 47,448
Int. Cl. F16d *35/00;* **F16c** *13/02*
U.S. Cl. 192—58 B **4 Claims**

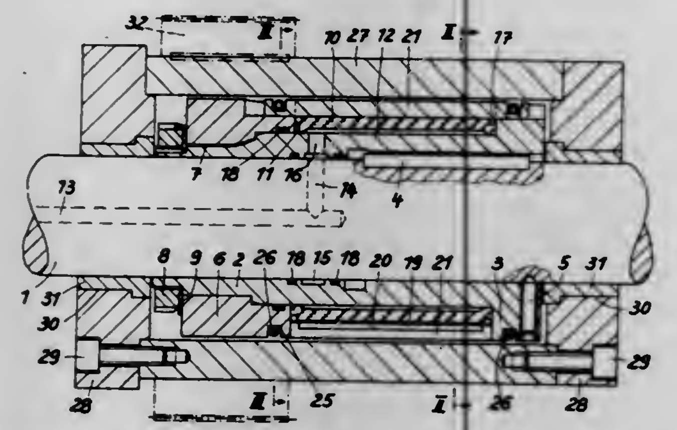


A viscous fluid clutch including relatively rotatable drive members having fluid shear spaces therebetween and which are cooperable with a fluid medium in the shear spaces to provide a shear-type fluid drive therebetween, and annular reservoir for at times storing the fluid medium, a temperature-responsive valve for controlling the flow of the fluid medium, a temperature-responsive valve for controlling the flow of the fluid medium from the annular reservoir through an inlet port to the fluid shear space, continually open outlet ports formed in one drive member and cooperating pumping members formed on the other drive member for forcing the fluid medium from the fluid shear spaces to the reservoir, and a sleeve bearing for mounting the outer drive member on a drive shaft, the sleeve bearing including a central chamber and means for permitting the same fluid medium which is used for the viscous shear drive function to enter the central chamber and be dispersed outwardly for causing the fluid medium to lubricate the outer peripheral surface and the end faces of the sleeve bearing under the action of centrifugal force.

3,648,812

FLUID OPERATED COUPLING WITH RADIALLY GUIDED FRICTION SEGMENTS

Erwin Kost, Osterath, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany
Filed June 8, 1970, Ser. No. 44,257
Claims priority, application Germany, June 11, 1969, P 19 29 521.7
Int. Cl. F16d *25/04*
U.S. Cl. 192—88 B **5 Claims**

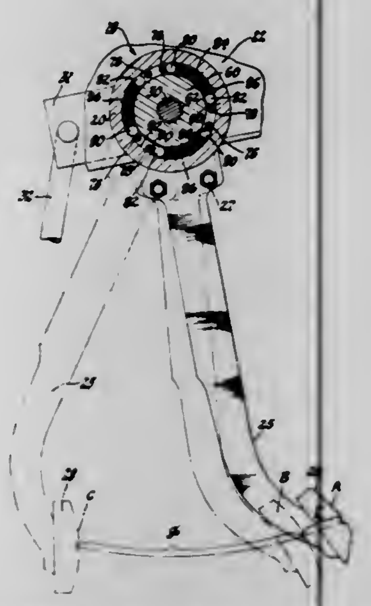


A radially adjustable friction clutch or brake that can be engaged and disengaged hydraulically between two members so mounted as to be rotatable relatively to one another, comprising a cylindrical resilient clamping sleeve extending between two coaxial cylindrical boundary pieces, and forming, with a cylindrical body which carries it, an annular chamber to be actuated by liquid under pressure, the side of the resilient clamping sleeve that faces the wall surface of one of the members to be clamped being provided with annularly arranged clamping segments separated from one another by longitudinally extending gaps.

3,648,813

AUTOMATIC CLUTCH-WEAR COMPENSATOR

Leslie K. Walters, Rochester, and Walter K. Fuelberth, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 24, 1970, Ser. No. 13,593
Int. Cl. F16d *13/60*
U.S. Cl. 192—111 A **10 Claims**

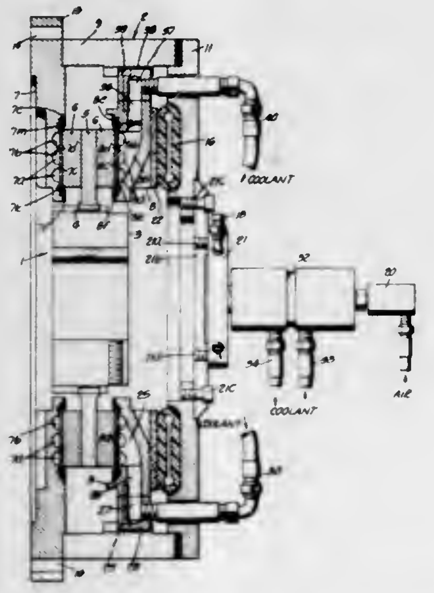


A clutch disc-wear compensator wherein an outer race member, rotatable by a clutch pedal, includes a plurality of oppositely disposed, internally formed cam surfaces which contact one set of rollers during depression of the clutch pedal and another set of rollers during retraction of the clutch pedal. The rollers become alternately wedged between the cam surfaces and an inner race which, through suitable shaft and linkage members, rotates to alternately engage and disengage the usual clutch discs. Fixed pin members are coordinated with the cam surfaces and the rollers, such that during a portion of the total rotation of the outer race resulting from each retraction of the clutch pedal, the pin members stop the rollers, freeing the inner race and permitting the inner race to be rotated independently of the outer race by the linkage from the clutch an amount commensurate with any additional movement required, as a result of wear, for the clutch discs to engage, the inner race thereby assuming a new rotary position relative to the outer race without affecting the original clutch pedal free travel or lash.

3,648,814

LIQUID COOLED CLUTCH

Charles D. Barron, Huntington Beach, Calif., assignor to Byron Jackson Inc., Long Beach, Calif.
Filed Mar. 16, 1970, Ser. No. 19,601
Int. Cl. F16d *13/72*
U.S. Cl. 192—113 B **9 Claims**

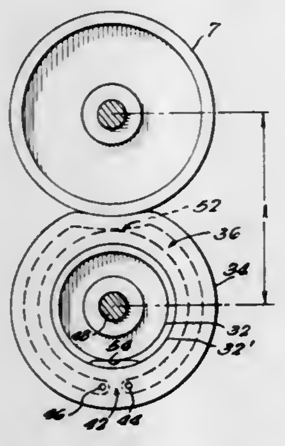


A liquid cooled clutch having a floating pressure plate and an opposed backup plate between which a relatively rotatable friction disc is gripped, both of the floating plate and the backup plate having annular coolant passages, and liquid coolant being supplied simultaneously to the coolant passages of both plates. Each of the plates has a coolant inlet communicating with the coolant passages in the plate through restricted orifices which provide sufficient differential pressure to assure distribution of the coolant and to all of the coolant passages.

3,648,815

BRAKE DEVICE

Joseph J. Wochner, Pontiac, Ill., assignor to Interlake Steel Corporation, Chicago, Ill.
Filed June 15, 1970, Ser. No. 46,313
Int. Cl. B65g *13/00, 13/075*
U.S. Cl. 193—35 A **4 Claims**

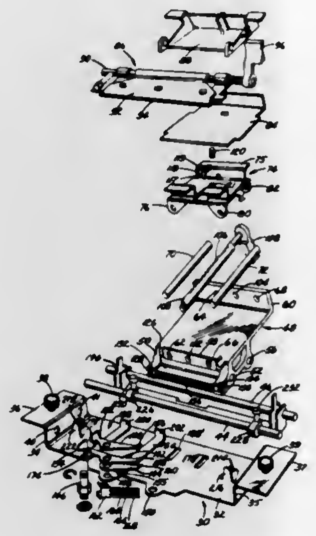


Wheel structure having an outer tire region of flexible material hollowed to define an annular dead end fluid passage containing entrapped fluid.

3,648,816

CARRIAGE FOR EMBOSSING MACHINE

George Marinoff, Mentor, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed Jan. 29, 1969, Ser. No. 794,898
Int. Cl. B41j *1/00*
U.S. Cl. 197—6.2 **4 Claims**

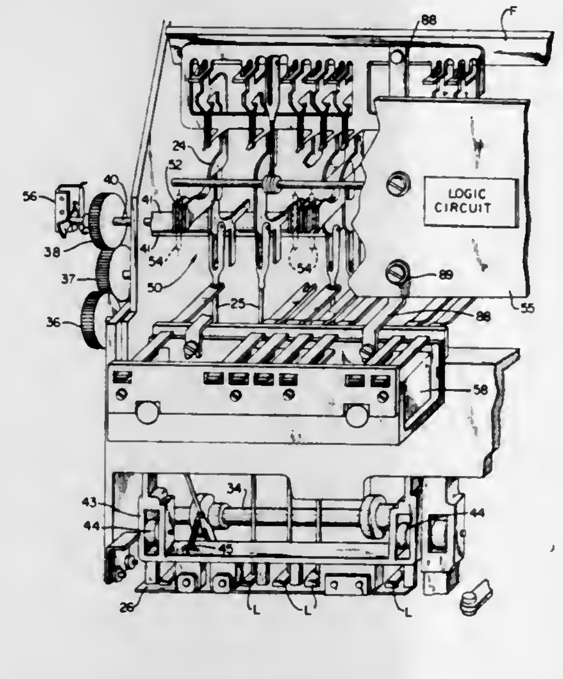


In the environment of a disc embossing machine, employing a rotary shaft to apply cam embossing pressure, a separable and reversible carriage for positioning a card to be embossed. Either cams on the shaft, or levers on the carriage frame, operate a finger-rack escapement for letter spacing. A cross slide for line spacing is registered by a rocking rack-bar and cooperating escapement fingers.

3,648,817

MAGNETIC SWITCH ASSEMBLY FOR CODING INFORMATION

Martin Siegel, San Mateo, Calif., assignor to Datel Corporation, Falls Church, Va.
Filed Jan. 21, 1969, Ser. No. 792,470
Int. Cl. B41j *5/30*
U.S. Cl. 197—19 **6 Claims**

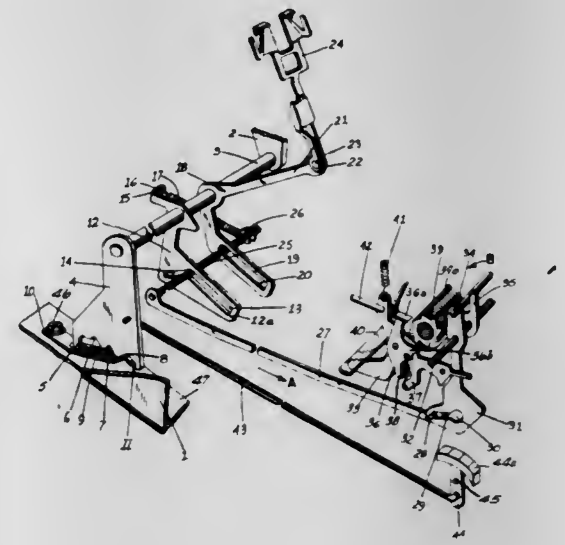


The present invention is directed to the improved mounting and disposition of a series of magnetic switching members utilized to convert the characters printed on a keyboard into coded electrical signals, generally wherein each switch is opened or closed in response to movement of each of a selected group of interposers which control printing of each character on the keyboard. Each of the magnetic switch elements is mounted on the back of a circuit board, and a magnetic switch-actuating member for each switch is releasably inserted in the slotted end of a holder which in turn is attached in close-fitting relation to an interposer so that the actuating member is securely but adjustably disposed for movement in response to movement of its interposer in closely spaced parallel relation to a switch.

3,648,818

RIBBON FORK ACTUATING AND LOCKING DEVICE

Gunter Scheinpflug, Nurnberg, Germany, assignor to Triumph Werke Nurnberg Aktiengesellschaft, Nurnberg, Germany
Filed Oct. 6, 1969, Ser. No. 864,070
Claims priority, application Germany, Oct. 17, 1968, P 18 02 751.5
Int. Cl. B41j *33/56*
U.S. Cl. 197—157 **10 Claims**



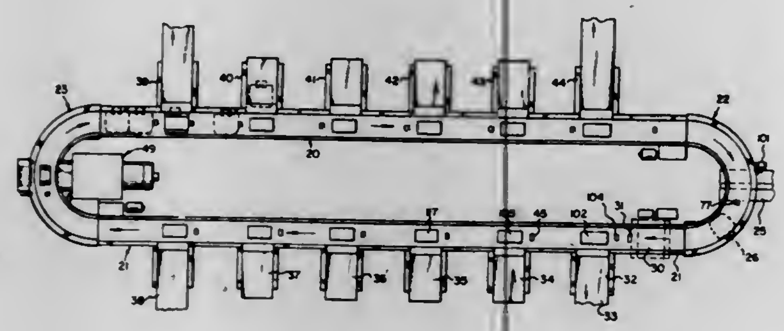
The carrier lever of the ribbon fork is mounted on a control shaft to which a control lever is secured. The carrier lever and control lever have slots through which a rod operated by the universal bar of the typewriter passes. The shape of the slots is selected so that in accordance with the set angular position of the control shaft, the ribbon fork is raised from an inoperative position to at least one operative position, and then locked when the rod passes through parallel slot portions.

3,648,819

INDUSTRIAL SYSTEM AND METHOD

Vernon G. Converse, III, Franklin; George R. Allington, Westland; Peter J. Mosher, Livonia, and Lee J. Seymour, Farmington, all of Mich., assignors to Scans Associates, Inc., Livonia, Mich.
Original application Mar. 29, 1968, Ser. No. 717,103, now Patent No. 3,527,087. Divided and this application Apr. 10, 1970, Ser. No. 24,512
Int. Cl. B23q *7/14*
U.S. Cl. 198—19 **9 Claims**

This application discloses an automation system whereby a number of different machines, test stands, and the like, previously operated as separate machines or installations, are grouped together with the aid of an accumulator conveyor system into a unitary system operating substantially as a single machine, with the operators merely loading and unloading workpieces at a predetermined place or station. The application discloses as a particular example an installation for combining into a single installation a number of test stands and machines directed to testing automobile engines, as well as operations related to such tests, such as filling the engines with oil, balancing the engines, hot-run testing the engines, removing rejected engines from the installation and directing them to repair stands and the like, and dynamometer load testing. The construction utilizes the nonpositive accumulator conveyor such as disclosed in detail in our copending application identified below. In some of its aspects the present invention relates to an improved method of automating industrial plants or portions thereof formerly composed of a large number of independent units, machines or devices, as single systems.

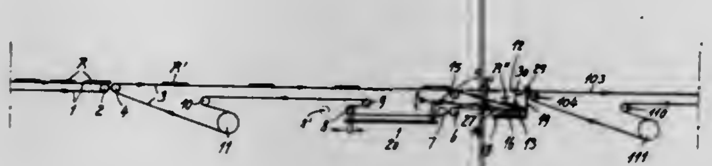


3,648,820

APPARATUS FOR FEEDING CHOCOLATE BARS AND THE LIKE TO A PACKING MACHINE

Fred Schafer, Rodenbach, and Gerhard Puderbach, Neuwied, both of Germany, assignors to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei KG, Neuwied on Rhine, Germany

Filed Jan. 29, 1970, Ser. No. 6,766
Claims priority, application Germany, Feb. 8, 1969, P 19 06 366.1
Int. Cl. B65g ***47/51***
U.S. Cl. 198—21 **5 Claims**



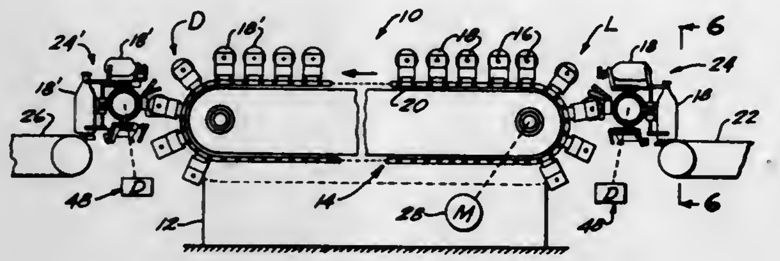
An apparatus feeds bars or slabs of chocolate or the like in longitudinal rows from a bar making machine to a packing machine by means of a longitudinal conveyor belt which receives the bars in transverse rows and a transverse conveyor belt which takes over the bars in longitudinal rows. The invention is particularly characterized in that the delivery end of the uniformly running longitudinal conveyor belt extends over the width of the uniformly running lower transverse conveyor belt and can be pivoted downwardly by an angle of about 15°. The movement of each arriving transverse row of bars is limited by a stop. The delivery end of the longitudinal conveyor belt can be automatically displaced to provide a tilting of the transverse row of bars upon the running transverse conveyor belt.

3,648,821

WORKPIECE TRANSFERRING APPARATUS

Rome R. Rudolph, Gibsonia; Carl Strutz, Jr., and Frank C. Strutz, both of Mars, all of Pa., assignors to Carl Strutz & Co., Inc., Valencia, Pa.

Filed Oct. 3, 1969, Ser. No. 863,529
Int. Cl. B65g ***47/24***
U.S. Cl. 198—33 AD **12 Claims**



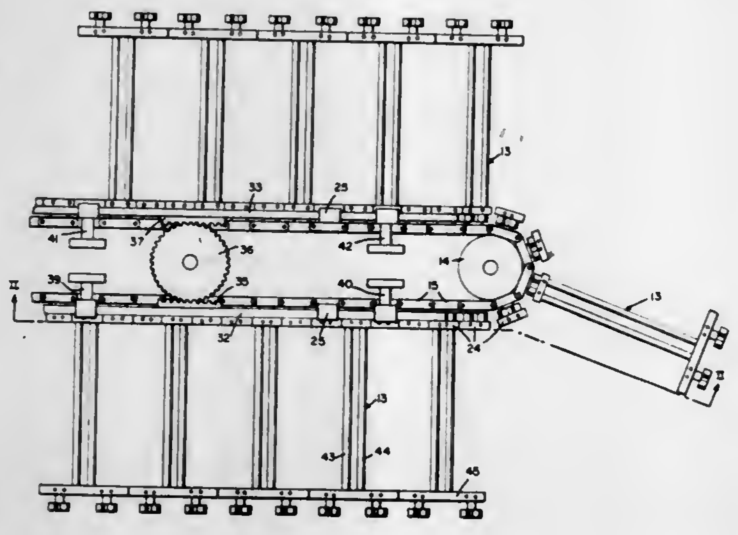
Transferring apparatus by which workpieces are transferred from a first location to a second location while simultaneously changing the orientation of the workpieces, for example, from an upright position to a horizontal position or vice versa. The apparatus employs at least one and preferably two conjugate pairs of workpiece carriers, each conjugate pair being rotatably connected to a driven shaft. The workpiece carriers of the conjugate pairs are alternately presented at the first location and then at the second location to affect transfer and reorientation of the workpieces. Although not limited thereto, the present transferring apparatus is especially suited for use at the loading end and/or the discharge end of decorating machines of the intermittent motion type.

3,648,822

CONVEYOR FOR WASHING GLASSWARE

Manning E. Cole, 72-10 112th St., Forest Hills, N.Y.

Filed Jan. 6, 1970, Ser. No. 906
Int. Cl. B65g ***17/06***
U.S. Cl. 198—131 **3 Claims**



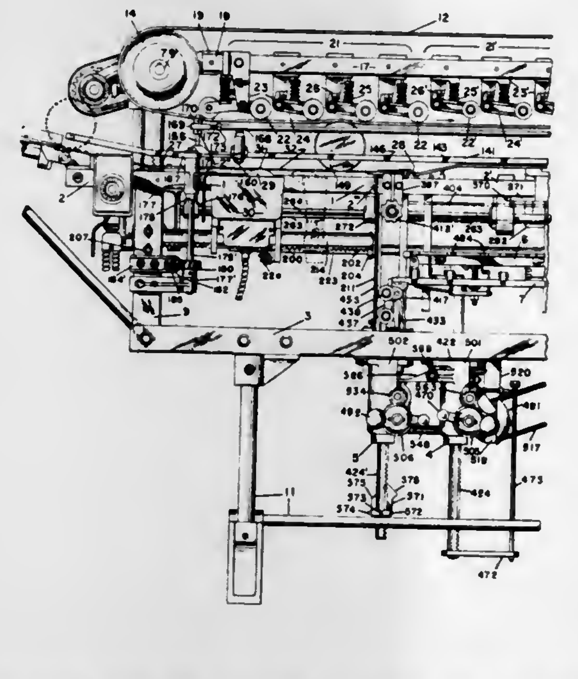
A conveyor for washing, rinsing and/or drying receptacles, particularly glassware for laboratories or manufacturers, comprises an endless horizontal chain provided with radially extending carriers for the glassware. Each carrier has two parallel bars upon which the glassware is mounted. The outer ends of the bars are connected to an elongated bracket. The ends of the bracket located beyond the bars carry two pairs of rollers mounted upon a supporting surface. The inner ends of the bars are connected to a chin link by a holder carrying a raised pair of rollers. The chain is pushed step-wise by reciprocating dogs engaging the raised rollers during their forward movement. An important feature of the present invention is that on both sides of a holder connected with bars there are roller-carrying holders connected with chain links but having no bars. Thus comparatively wide spaces are provided between adjacent pairs of bars which facilitate cleaning, centering and mounting.

3,648,823

LABELING MACHINE

Clifford H. Neer, Baltimore, Md., assignor to Burt Machine Company, Incorporated, Baltimore, Md.

Filed Dec. 28, 1966, Ser. No. 605,279
Int. Cl. B65g ***15/12***
U.S. Cl. 198—160 **7 Claims**



A labeling machine having a single narrow endless can feed belt that engages the median areas of the sidewalls of the cans mounted on respective pulley assemblies with an articulated drive and supports therefor that are adjustable to different diameter cans and supported from one side of the machine, comprises pairs of rigid vertical rack and stiffening bars positioned at opposite ends of the machine, with adjustable lower and upper sets of pressure rollers for the belt. A can runway with adjustable rigid and flexible can guides. The initial portion, at the feed end of the machine, of the can runway is in the form of a narrow can runway strip for supporting the cans from below at their median sidewall areas. This, together with the narrow feed belt engagement with the upper exposed median areas of the cans enables the cans to travel and be fed over the narrow runway strip with the greater portion of the upper and lower sidewall areas of the cans uncontacted and undisturbed beyond the median contact areas by the belt and runway strip for a desired operation thereon by the labeling machine function.

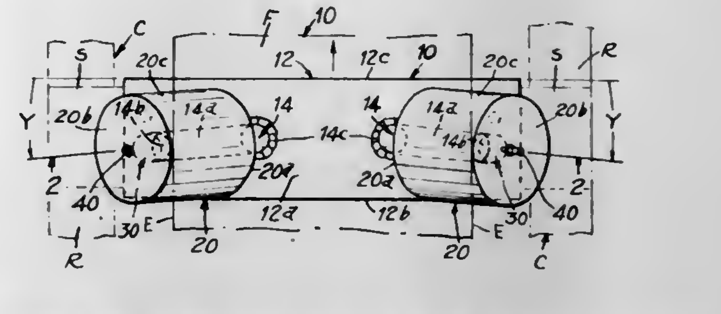
3,648,824

IDLER ROLLER DEVICE FOR TROUGHED CONVEYOR BELTS

Charles D. Speck, 205 Geneva St., St. Catharines, Ontario, Canada

Filed Sept. 4, 1970, Ser. No. 69,586
Int. Cl. B65g ***15/08***
U.S. Cl. 198—192 **10 Claims**

A pair of urethane idler rollers having center bearing holes with but one entrance journaled on, and enclosing the upper metal bearing portions of upwardly inclined shafts, each supported at one end. The shafts and rollers thereon extend upwardly and outwardly in opposite directions to engage the inclined sides of a troughed conveyor belt and skewed backwardly at a slight angle from a normal to its direction of movement. Movement of the troughed belt rotates and imposes a downward thrust on the skewed rollers to keep them from falling off, prevent the bearing surfaces from becoming exposed, and allow the belt to flex and shift relative to rollers without axially displacing the rollers.

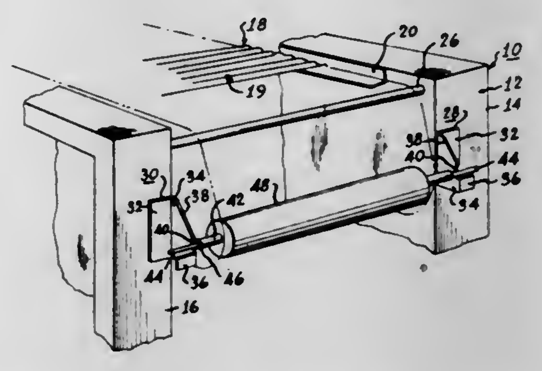


3,648,825

CONVEYOR BELT TENSIONING DEVICE FOR TUNNEL COOKER

Norman Burstein, Cherry Hill, N.J., assignor to Conveyor Heat Products Corp.

Filed June 10, 1969, Ser. No. 831,866
Int. Cl. B65g ***15/30***
U.S. Cl. 198—195 **9 Claims**



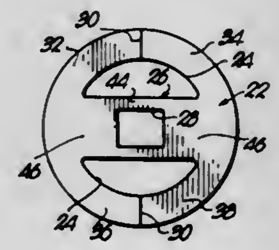
A conveyor cooker has a housing with a tunnel enclosure portion through which passes an open-work conveyor that is formed of linked bars, with one bar having a removable open link. The conveyor loop is completed by connecting the open link to the last link, and by applying tension to the conveyor loop to maintain the connection of the open link bar. A tension applying means includes a roller and shaft that engage inside of the belt and are mounted in brackets extending externally of the housing. The brackets include an inclined camming surface along which the shaft slides to apply the tension, and grooves in which the shaft seats to maintain the tension.

3,648,826

CONVEYOR-CLEANER

Dean P. Brooks, Hesston, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed May 31, 1968, Ser. No. 740,810
Int. Cl. B65g ***33/00***
U.S. Cl. 198—213 **9 Claims**

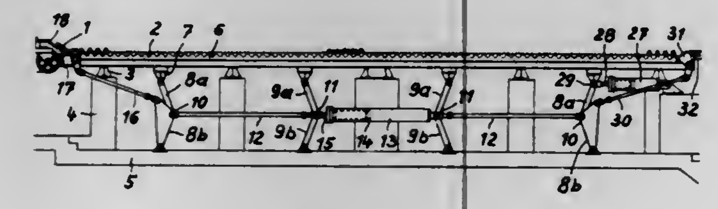


A screw apparatus adapted for use as a conveyor or as a cleaner, or both, has helical flighting coiled about a shaft, the flighting being formed by a series of separate sections, individually threaded on the shaft, the sections being stamped from sheet material and twisted to shape. Releasable attachment of the sections to the shaft through use of notched plates is such as to permit limited wobbling for enhancing the cleaning effect and discourage clogging with foreign matter.

3,648,827
COOLING BED FOR BILLETS

Karl Gipperich, Dusseldorf-Gerresheim, and Egon Sippel, Krefeld, both of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Mar. 11, 1970, Ser. No. 18,630
Claims priority, application Germany, Mar. 15, 1969, P 19 13 253.7
Int. Cl. B65g *29/04*
U.S. Cl. 198—219 **6 Claims**

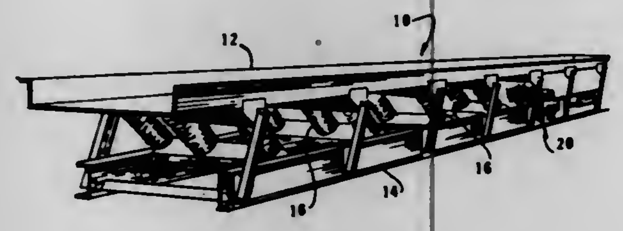


A cooling bed for billets has a fixed toothed rack, a movable toothed rack and means for upwardly displacing the movable toothed rack for a normal position below the fixed toothed rack to engage a billet portioned between first and second teeth of the first rack and displace the billet causing it to pivot about the tip of the second tooth and move between the second tooth and a third tooth, the fixed rack at least partially supporting the billet during the operation. Preferably the pitch of the teeth of the movable rack is double that of the teeth of the fixed rack.

3,648,828
VIBRATORY CONVEYOR

9920 W. Edgerton Ave. McCaffrey, Jr., and Horace McCaffrey, Jr., 9920 W. Edgerton Ave., Hales Corners, Wis.

Filed Dec. 31, 1970, Ser. No. 103,073
Int. Cl. B65g *27/00*
U.S. Cl. 198—220 BA **10 Claims**



A trough for a vibratory conveyor having a base, a number of flexible mounts to support the trough on the base, and an eccentric drive assembly to impart controlled vibratory motion to the trough, the trough being formed as a three layer laminate which includes an inner or wear surface of steel, a core of lead, and a restraining layer of steel, the three layers being completely bonded or secured to each other to provide a sound attenuated structure.

3,648,829
MOVABLE SPACER FOR THE MECHANICAL COMPOSITION OF MATRICES FOR LINECASTING MACHINES

Aldo Velo, Via Nazionale, Nave, Brescia, Italy

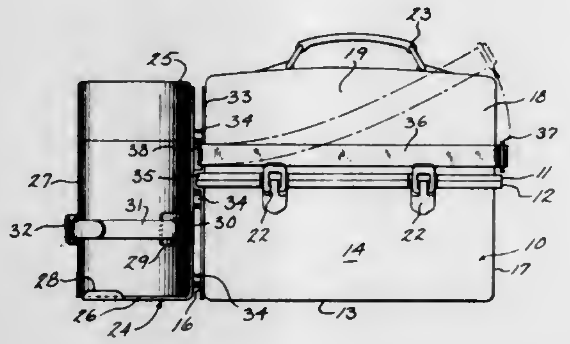
Filed Mar. 31, 1970, Ser. No. 24,203
Claims priority, application Italy, Mar. 5, 1970, 5122 A/70
Int. Cl. B41b *11/04*
U.S. Cl. 199—68 **1 Claim**

A tapered plate is provided for use in conjunction with the tapered axially movable spacer shaft and the fixedly positioned spacer head of a Linotype machine. The spacer head is protected and prevented from contacting the matrices when the shaft and the plate are assembled on opposite sides thereof. Axial movement of the assembly assures proper word-to-word spacing. The oppositely facing tapered surfaces of the assembled shaft and plate are always parallel regardless of their axial position relative to the spacer head. Means are provided for loosely coupling the plate and the spacer shaft with a permissable range of relative angular movement thereof.

3,648,830
LUNCH BOXES WITH CARRIER ATTACHMENTS

Edwin H. Graf, W187, S6876, Jewel Crest Drive, Muskego, Wis.

Filed Oct. 22, 1970, Ser. No. 83,137
Int. Cl. A45c *11/20*
U.S. Cl. 206—4 **10 Claims**

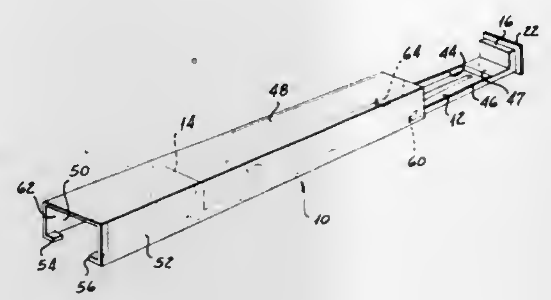


The attachment has a bottom wall for supporting a vacuum bottle and an upright wall to which a bottle may be releasably strapped. The upright wall has a transverse groove to receive the meeting external ribs of a lunch box of the type usually made of plastic and having an upwardly tapered cover. A strap connected to the upright wall slips removably over the tapered cover above the cover ribs to hold the upright wall of the attachment in position against an end wall of the lunch box.

3,648,831
DISPLAY PACKAGE FOR WATCHBANDS OR THE LIKE

Michael P. Arnone, North Bergen, N.J., assignor to Kreisler Manufacturing Corporation, North Bergen, N.J.

Filed July 18, 1969, Ser. No. 842,874
Int. Cl. B65d *1/34*
U.S. Cl. 206—45.14 **7 Claims**

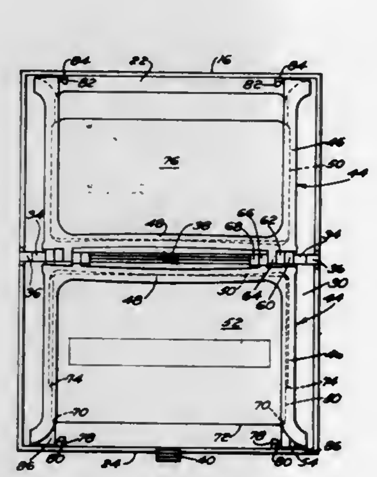


A display package for watchbands and the like in which a base has guide tracks extending along its bottom longitudinal edges for slidably receiving pairs of inwardly extending tabs formed on the lower edges of the sides of a molded transparent plastic cover adjacent the ends thereof to permit the cover to be assembled on the base by sliding it over one end wall thereof to a position at which its end butts against a peripheral flange formed on the other end wall of the base. The base carries watchband end receiving hooks the positions of which may be adjusted along the length of the base to accommodate bands of different lengths.

3,648,832
CARD CARRYING CASE

David Kirshenbaum, 15 Hemalin Road, Cranston, R.I., and Anthony J. Iorio, 126 Cottage Ave., North Providence, R.I.

Filed Aug. 21, 1970, Ser. No. 65,783
Int. Cl. A45c *11/18*
U.S. Cl. 206—39 **10 Claims**

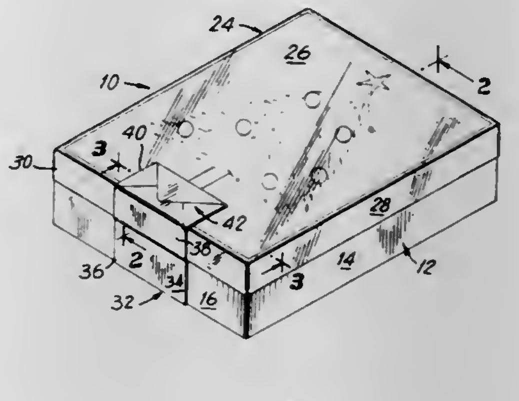


A carrying case for credit cards and the like comprising a plurality of resilient frame members pivotally mounted within the case, the resilient characteristic of the frame members causing deformation thereof when a card is not positioned therein, and abutment means in the case positioned to obstruct swinging movement of a frame member into the case if no card is positioned in said frame member, whereby the case cannot be closed unless all frame members therein have a card positioned therein.

3,648,833
PACKAGE FOR SHEET MATERIAL ARTICLES

Martin Dash, New York, N.Y., assignor to American Artists Group, Inc.

Filed May 20, 1970, Ser. No. 39,949
Int. Cl. B65d *5/66, 25/00*
U.S. Cl. 206—45.31 **5 Claims**



An article-holding device of the type used to hold sheet material articles of purposes such as storage, display or the like. The device includes a container in which a plurality of the articles are accommodated. The sheet material articles include greeting cards and envelopes therefor, in stacked relationship, with the cards and envelopes positioned in two distinct sets. The container has an open top normally closed by a transparent lid which is seated on the container. A hinge consisting in its entirety of a flexible sheet material connects the lid to the container for swinging movement with respect thereto between positions covering and uncovering the open top of the container. This hinge has imprinted thereon a replica of the envelopes positioned beneath ,he set of greeting cards in the container. In this manner, while a viewer can see the type of cards through the transparent lid, he will also be able to ascertain the nature of the envelopes.

3,648,834
METHOD OF MAKING RIGID PACKAGES FROM FLEXIBLE FILMS AND PRODUCTS PRODUCED THEREBY

Maurice J. Gifford, and Oscar E. Seiferth, both of Madison, Wis., assignors to Oscar Mayer & Co., Inc., Chicago, Ill.

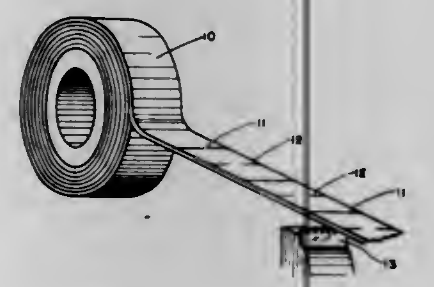
Filed July 14, 1967, Ser. No. 653,433
Int. Cl. B65d *85/00*
U.S. Cl. 206—46 R **19 Claims**

The method of forming a package from a flexible film containing a plasticizer or other constituent which is capable of being polymerized upon being irradiated from a high energy source. After enclosing a product in such a packaging film, the thus formed package is subjected to a controlled amount of irradiation from a high energy source to produce cross-linking within the plasticizer or other constituent which results in the flexible packaging film becoming rigid. An electron accelerator, such as, for example, a high voltage Van de Graaff machine, may be used for this purpose. Other suitable irradiation sources include radioactive elements such as Cobalt 60, X-ray devices, corona discharge apparatus and ultraviolet emitters. In order to avoid discoloration of such films, it is preferred that the amount of irradiation not exceed 5 megarads.

In one embodiment of the present invention, a packaging film lamination is formed by extruding a polyvinylidene chloride film and polyvinyl chloride film which, upon being extruded, are immediately received in a supercooling water bath maintained at a temperature of from approximately 30° F. to 100° F. One or both of these film contains an amount of polymerizable plasticizer ranging from approximately 10 percent to 50 percent by weight based on the combined weight of the film forming resin and plasticizer present therein. These films are then pressed together through contacting rollers to form a film lamination. A product to be packaged is then interposed between the film lamination and a base member, which can be a flexible film or rigid material. Peripheral portions of the film lamination are then contacted with said base member to completely enclose the product and crystallization of the polyvinylidene lamina then induced as, for example, by the application of heat. The package is then irradiated in accordance with this invention to rigidify the film lamination.

3,648,835
MARKING TAPE

Edgar K. Yucel, Edina, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 12, 1969, Ser. No. 875,701
Int. Cl. B44c *1/08;* **A61l** *15/06*
U.S. Cl. 206—59 C **10 Claims**

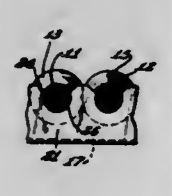


Pressure sensitive adhesive tape of the transparent type is marked with visually distinguishable light-reflecting structural markings at uniformly spaced unit intervals along its length in a roll. Light reflected from these markings as the tape is withdrawn from a roll makes the markings readily distinguishable by the naked eye from other portions of the tape not so marked. Thus, the unit interval markings permit a person to measure directly the length of a strip of tape being withdrawn from a roll as it is withdrawn.

But these markings are also such that, after the withdrawn strip of tape is applied under light finger pressure to a substrate, the special markings essentially disappear. They become essentially invisible and unnoticeable in the transparent tape on the substrate.

3,648,836
COTTON SWAB STRIP

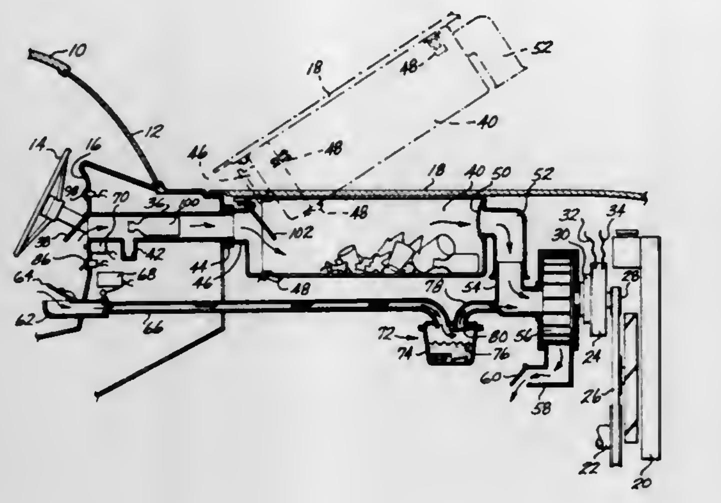
John F. Castner, Route #2, Loganville, Wis.
Filed Jan. 14, 1970, Ser. No. 2,887
Int. Cl. B65d *85/20*
U.S. Cl. 206—65 R **3 Claims**



A series of cotton-tipped applicators or swabs are releasably held in a side-by-side arrangement by a swab retaining strip having a plurality of swab retaining notches which are shaped for snap-in retention of the sticks of the swabs. The retaining strip has a pair of marginal portions which flank and are hingedly connected to an intermediate portion, the marginal portions being held at right angles to the intermediate portion when the swab sticks are supported by the retaining strip.

3,648,837
AUTOMOBILE ENGINE POWERED, LITTER EVACUATING DEVICE

David W. Ogle, Alderwood Manor, Wash., assignor to Litco Enterprises, Inc., Alderwood Manor, Wash.
Filed Aug. 21, 1970, Ser. No. 65,897
Int. Cl. B60n *3/08;* **B60s** *1/64*
U.S. Cl. 206—19.5 C **6 Claims**

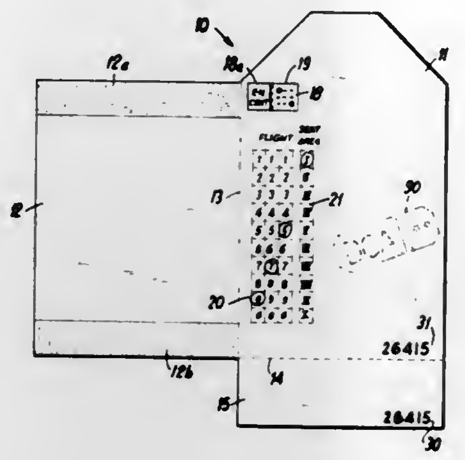


There is disclosed a litter evacuating device for an engine driven automobile. Two airtight litter receptacles are shown, each having inlet and exhaust ports. One of the receptacles is for the evacuation of miscellaneous litter, as bottles, cans, refuse, garbage, paper, and the like type of litter from occupants of the automobile, and the other receptacle is for cigarette and cigar butts and ashes. A hingedly mounted, gravity closing door is mounted on the inlet port of one of the litter receptacles and the other is spring opened. Each litter receptacle feeds through conduit means to the inlet port of an airtight litter retention chamber. Each litter retention chamber has a screened exhaust port to prevent passage of litter out of the receptacle chamber therethrough. Also, the litter retention chamber for cigarette and cigar butts is formed with a removable bottom portion and has a water well in such bottom portion to extinguish the fire from any lit cigarette or cigar butt deposited therein. In one form, the litter retention chamber is detachably carried by the hood of an automobile and is raised and lowered therewith and is also attached and detached from the remainder of the mechanism during the raising and lowering of the hood. In the other form, the litter retention device extends downwardly and the bottom thereof is pivotally mounted with a foot operated discharge lever connected therewith. A negative pressure of suction is provided on the discharge port of the litter retention chamber by an exhaust fan powered by an idler pulley; an electrically responsive, selectively operable clutch means has a driving part connected with the idler pulley and a driven part connected with the exhaust fan; and belt means connects the idler pulley with the crankshaft of the automobile engine. Also, a suction inlet conduit is provided for the attachment thereto of a vacuum-type cleaning hose so that the interior of the automobile body may be vacuumed, when desired.

3,648,838
AIRLINE BAGGAGE TRANSFER SYSTEM AND METHOD

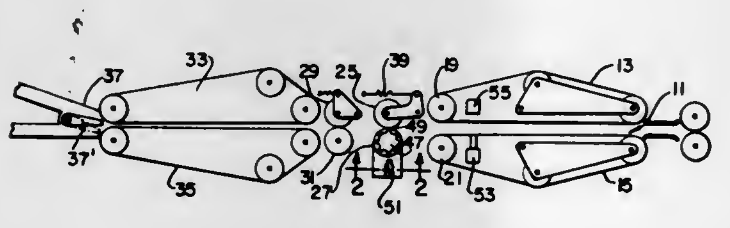
Paul Hiromura, 596 Warwick Ave., Teaneck, N.J.
Filed June 19, 1970, Ser. No. 47,756
Int. Cl. B07c *5/34*
U.S. Cl. 209—74 M **9 Claims**

A system is provided for the handling of baggage onto and from airplanes. The system relies upon a baggage tag and a baggage label, both of which are particularly arranged to present the same information in the form of code and are attached to the same piece of baggage. A series of optical readers read the tag and label and communicate the information to a data processing controller which compares the information and controls the baggage gates.



3,648,839
METHOD AND APPARATUS FOR DETECTING AND SEPARATING OUT OVERWEIGHT LETTERS

Robert S. Bradshaw, Broomall, Pa.; Donald M. Golden, Cherry Hill, N.J., and Marvin Shapiro, Philadelphia, Pa., assignors to Burroughs Corporation, Detroit, Mich.
Filed Nov. 6, 1970, Ser. No. 87,436
Int. Cl. B07c *5/20*
U.S. Cl. 209—121 **14 Claims**

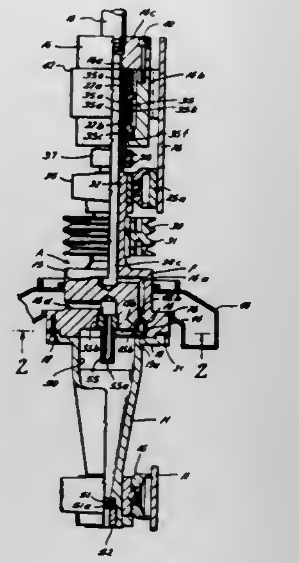


A method and apparatus for separating out overweight letters, wherein the letters are transported serially on their longitudinal edges at a controlled speed into a pinch roller pair driven by a constant torque clutch at a tangential velocity greater than the linear speed of the letters immediately prior to entry into the pinch rollers. The loss of rotational velocity of the pinch rollers caused by the mass of the slower moving letter is automatically compared against a standard loss of rotational velocity by the pinch roller pair for a letter of maximum allowable mass for a given postage, and overweight letters are automatically gated out of the transport stream.

3,648,840
ROTATING CYCLONE CENTRIFUGE

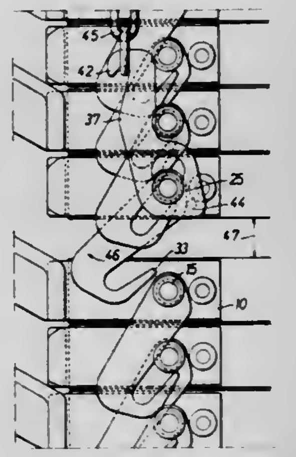
Roy A. Bobo, 6139 Bardley St., Houston, Tex.
Filed Aug. 1, 1969, Ser. No. 846,886
Int. Cl. B04c *5/00*
U.S. Cl. 209—211 **10 Claims**

A rotating cyclone centrifuge wherein a forced fluid vortex from rotation of a cyclone is combined with a free fluid vortex from a pressure drop of the fluid for effecting improved separation or classification of various mixtures and suspensions.



3,648,841
FILTER PRESS CONSTRUCTION

Alfons Schotten, and Franz Heimbach, both of Duren, Germany, assignors to Eberhard Hoesch & Sohne, Duren, Germany
Filed Apr. 20, 1970, Ser. No. 30,192
Claims priority, application Germany, Dec. 5, 1969, P 19 61 061.8
Int. Cl. B01d *25/00*
U.S. Cl. 210—224 **8 Claims**

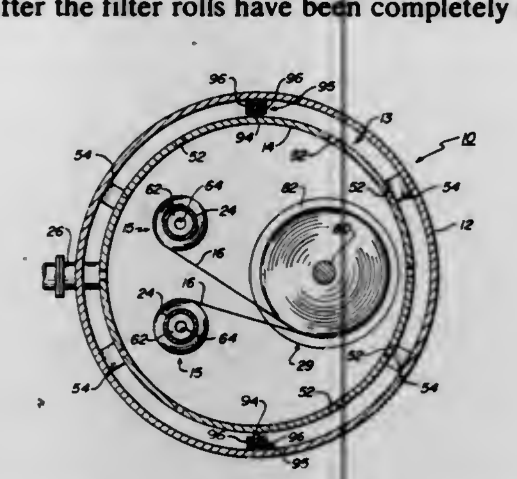


A stack of horizontally oriented vertically superposed filter plates each having a frame is arranged in a filter press. Projecting pins extend laterally from the respective frames and engaging elements are journaled on the pins and each operative to engage and maintain spaced from the respective filter plate a subjacent or superposed filter plate when the stack is vertically shifted in response to opening of the filter press.

3,648,842
FILTRATION APPARATUS

James F. Zievers, La Grange, Ill., assignor to Industrial Filter & Pump Mfg. Co., Cicero, Ill.
Filed Jan. 29, 1969, Ser. No. 794,917
Int. Cl. B01d *29/02*
U.S. Cl. 210—237 **8 Claims**

Filtration apparatus for filtering radioactive or highly toxic materials includes a filter tank and a disposable filter cartridge removably mounted in the tank and including a plurality of filter rolls and a rotatable take-up spool mounted in a perforate container. The take-up spool mates with a drive shaft in the tank and is rotated to remove the plugged outer windings or layers from the rolls to expose a fresh filtering surface. After the filter rolls have been completely unwound, the filter cartridge, including the used filter material and any filter cake which may have been deposited thereon can be removed from the tank and replaced with a fresh cartridge without exposure to the operating personnel.



3,648,843

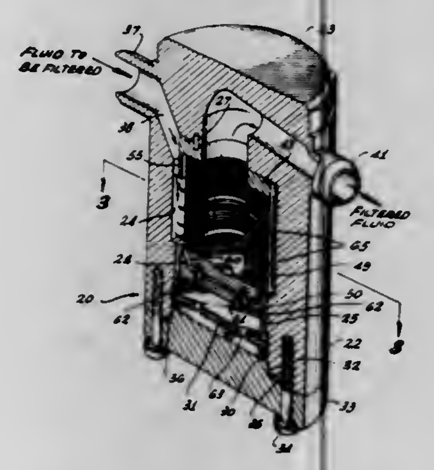
STACKED SHEET FILTER ASSEMBLY

Ronald K. Pearson, 15344 East Pentura Drive, Hancienda Hgts., Calif.

Continuation of application Ser. No. 688,938, , now abandoned , which is a continuation of application Ser. No. 562,043, , now abandoned , which is a continuation-in-part of application Ser. No. 218,642, Aug. 22, 1962, now abandoned. This application Mar. 6, 1969, Ser. No. 805,048

Int. Cl. B01d *25/18*

U.S. Cl. 210—443 **8 Claims**



A plurality of flexible metal sheets, each too thin to be self-supporting, are selectively etched so as to have projections on one surface, and such projections have roughened lateral surfaces. Such sheets are stacked and compressed to form a rigid structure, which is placed in a housing so that entering fluid must pass between the edges of the stacked sheets to reach an outlet. The roughened surfaces and projections trap undesired particles of extremely small size. Housings include threaded locking elements for the stack with passages for equalizing pressures thereon, and grooves or ribs for cooperative locking engagement with the filter elements.

3,648,844

PLASTIC FILTER LEAF WITH SEPARATOR CHANNELS

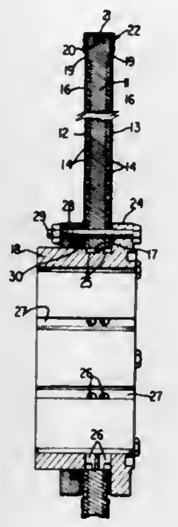
John E. Krynski, and Ernie G. Seggebruch, both of East Moline, Ill., assignors to Ametek, Inc., New York, N.Y.

Filed July 24, 1969, Ser. No. 844,574

Int. Cl. B01d *25/26*

U.S. Cl. 210—487 **3 Claims**

A filter leaf assembly is disclosed which may be used in either a horizontal rotary leaf filter or a vertical filter. The filter leaf assembly comprises a leaf member of a synthetic plastic material with both faces of the leaf member being provided with a regular pattern of closely spaced cylindrical projections. The projections are integral with the leaf member. Filter media are mounted on both faces of the leaf member over these cylindrical projections. The leaf member may be circular and mounted upon a hub having passages therein communicating with both sides of the leaf member. The leaf member may be rectangular and a hose connection attached along one edge thereof to communicate with both faces of the leaf member.



3,648,845

THIN FILM SEPARATION MEMBRANES AND PROCESSES FOR MAKING SAME

Robert L. Riley, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Interior

Filed Sept. 2, 1969, Ser. No. 854,735

Int. Cl. B01d *31/00, 13/00*

U.S. Cl. 210—490 **11 Claims**

Process for making thin film semipermeable membranes. A porous substrate having pores not greater than about 500 A. at a surface thereof is provided, as by casting from a solution of an organic polymer. A nonporous buffer layer is coated upon that surface to fill the pores, as by applying a water-soluble material, such as polyacrylic acid. The thin film semipermeable membrane is formed in situ upon the buffer layer, as by dipping the coated substrate in a dilute solution of cellulose acetate. A less than 1 weight percent solution of cellulose acetate, having an acetyl content not less than about 39.8 weight percent in chloroform may be used. After drying, the buffer layer is at least partially leached from the composite membrane. The cellulose acetate semipermeable membrane may be less than 1,000 A. in thickness.

3,648,846

PROCESS FOR MAKING FLUID FILTERS HAVING IMPROVED PROPERTIES

Marcel Clarence Sicard, Cheshire, Conn., assignor to AMF Incorporated, N.J.

Filed May 19, 1969, Ser. No. 825,964

Int. Cl. B01d *27/00*

U.S. Cl. 210—494 **6 Claims**

1. A process for making a filter cartridge comprising winding strand material in a crisscross pattern on a pervious core in a plurality of superposed layers with the strands in axially spaced relation and in substantially superposed position thereby forming circumferential series of diamond-shaped radial passages extending from the inner surface to the outer surface of said cartridge, the passages being progressively larger from said inner surface to said outer surface each of said series of diamond-shaped passages having substantially

eight such passages per inch of internal diameter of the cartridge regardless of the degree of filtration expected from said cartridge and while winding applying a quantity of fibrous material on said strands and between the layers thereof to cause the fibrous material to lie on and be axially spaced by said strands and form within the passages filtering media, said fibrous material being determined by the desired degree of filtration expected from said cartridge.

3,648,847

FILTER AID CONDITIONERS

Bernard J. Davis, Biloxi, Miss., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

Original application Jan. 7, 1969, Ser. No. 789,592, now Patent No. 3,570,669. Divided and this application June 9, 1970, Ser. No. 57,016

Int. Cl. B01d *39/00*

U.S. Cl. 210—500 **4 Claims**

This application discloses a composition comprising a mixture of an oxazoline with a filter aid and to its use in filtering apparatus. This composition facilitates the removal of suspended solids from polymers and its solutions in nonpolar solvents. The preferred oxazolines are 4,4-dihydroxy methyl or 4-monohydroxymethyl-2-alkyloxazoline, wherein the alkyl group can range from C_6 to C_{22} in length, but is preferably in the range of C_{12} to C_{16}.

3,648,848

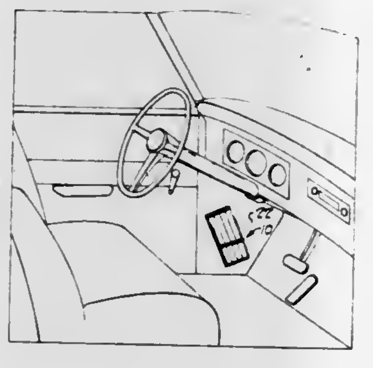
EMERGENCY FLARE HOLDER

Joseph M. Wallace, 5898 Blackwelder St., Culver City, Calif.

Filed May 4, 1970, Ser. No. 34,469

Int. Cl. A47f *5/08*

U.S. Cl. 211—88 **2 Claims**



A holder for emergency highway flares to be mounted in the driver's compartment of a vehicle is formed of sheet material bent to form a container with an open front, with sidewalls cut away at the upper end to enable the emergency highway flares mounted in the container to be grasped and taken out.

3,648,849

DESK TRAY ARRANGEMENT

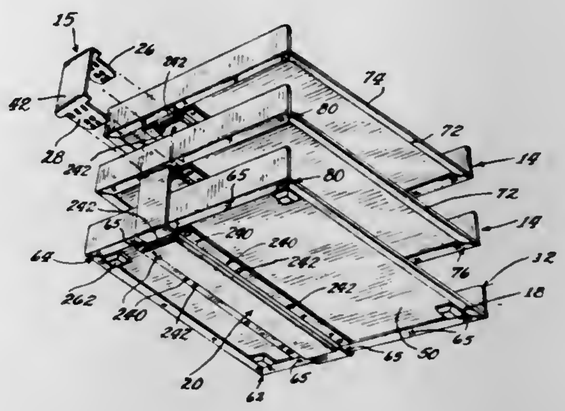
Everett K. Harris, Geneva, and Donald V. Beaver, Brookfield, both of Ill., assignors to All-Steel Equipment Inc.

Filed Feb. 13, 1970, Ser. No. 11,175

Int. Cl. A47f *3/14;* **B42f** *17/00*

U.S. Cl. 211—126 **9 Claims**

A desk tray arrangement especially adapted for tray stacking in which the individual desk trays are each in the form of a planar quadrilaterally shaped bottom plate defining front and rear side edges, a continuous rim wall formed about the side and rear edges by a one piece member having its lower edge turned inwardly and received under the side and rear edges of the bottom plate for affixing thereto as by spot welding, with the front edge of the bottom plate doubled over underneath the bottom plate, a socket forming bracket structure fixed at the undersurface of the bottom plate in defining upper and lower slots at each side of the tray, and U-shaped spacer elements adapted to be applied to either side of the trays to be stacked, with their arms frictionally received in the slot pairs adjacent same. A set of four feet each arranged for ready application to the tray that is to serve as a single unit, or as the base tray of stacked trays are associated with the tray arrangement.



3,648,850

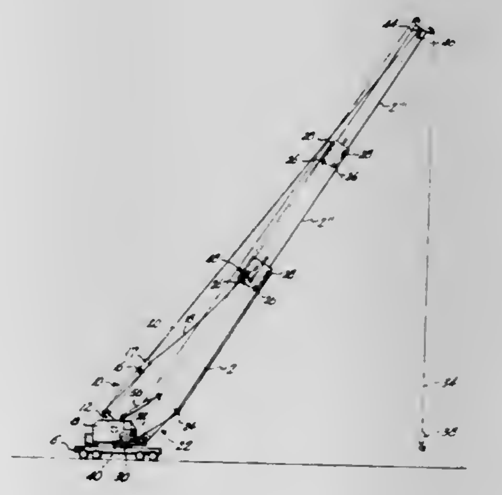
CRANE WITH TELESCOPIC BOOM

Donald J. Rochon, Monroe, and Ellsworth B. Sargent, Seattle, both of Wash., assignors to Tyee Construction Company, Kirkland, Wash.

Filed Mar. 25, 1970, Ser. No. 22,543

Int. Cl. B66c *23/06*

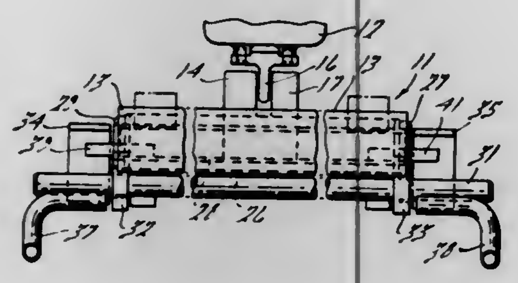
U.S. Cl. 212—55 **16 Claims**



A means and technique are disclosed whereby a crane boom or other outrigger device which is mounted on an anchorage to be pivoted into an operatively inclined position relative to the horizontal, may be comprised of a pair of elongated boom sections that are relatively reciprocably engaged to be extended and retracted in relation to one another along the length of the device while it is in the operatively inclined position thereof. According to the invention, the means for raising and lowering the device to and from the operatively inclined position thereof, and supporting it in said position, include a pair of pendants that are operatively interconnected between the anchorage and the aforesaid boom sections, and each individually operative to assume support of the device when in tension. In addition, there are control means connected to one of the pendants which are operative to shift the support of the device from the one pendant to the other, and vice versa, by altering the tension in the aforesaid one pendant so as to pivot the device either toward or away from the horizontal when the other pendant is taut.

3,648,851
COUPLER CENTERING DEVICE

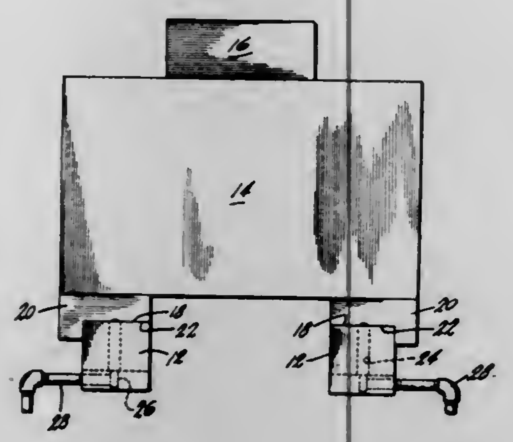
William K. MacCurdy, Detroit, Mich., assignor to Evans Products Company
Filed Dec. 30, 1969, Ser. No. 889,150
Int. Cl. B61g *7/12*
U.S. Cl. 213—20 **4 Claims**



A simplified centering device for a coupler of a railway car. The centering device embodies a single coil spring that is loaded between a pair of abutment members that engage the coupler shank for resiliently biasing the shank back to a normal, central position. A stop arrangement is additionally provided as part of the centering mechanism that can be released so that the coupler may be positioned in an off-center location if desired.

3,648,852
AIR CUSHION SUPPORT APPARATUS FOR TRANSFER STRUCTURE

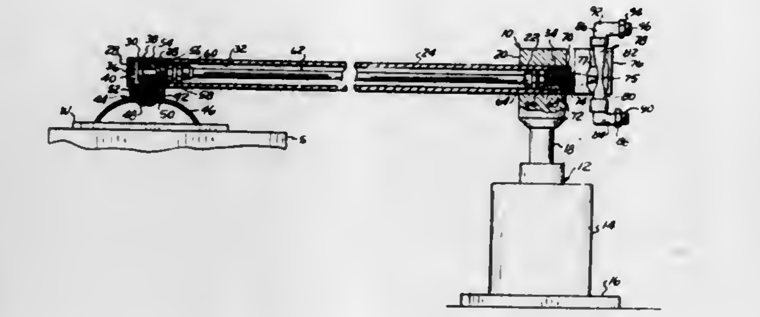
Werner Willuweit, St. Clair Shores, Mich., assignor to La Salle Machine Tool, Inc., Warren, Mich.
Filed Mar. 5, 1970, Ser. No. 16,693
Int. Cl. B65g *35/00*
U.S. Cl. 214—1 BE **1 Claim**



Apparatus comprising a pair of parallel slide rails having flat horizontal top surfaces on which workpiece carrying pallets are slidably mounted. A plurality of upright air passages terminate in discharge ports in the rail top surfaces and the ports are spaced longitudinally on the rails, a spring loaded ball valve member being disposed in each passage for movement to a seated position closing the passage. The ball valve member projects slightly above the flat slide surfaces on the rails so that when a pallet is moved horizontally on the rails, engagement of the pallet with a projecting ball valve member provides for opening of the corresponding air passage port so that air can issue therefrom and provide the desired air cushion between the pallet and the rails to facilitate horizontal movement of the pallet on the rails.

3,648,853
VACUUM WORK PICK-UP ATTACHMENT FOR WORK DEVICE

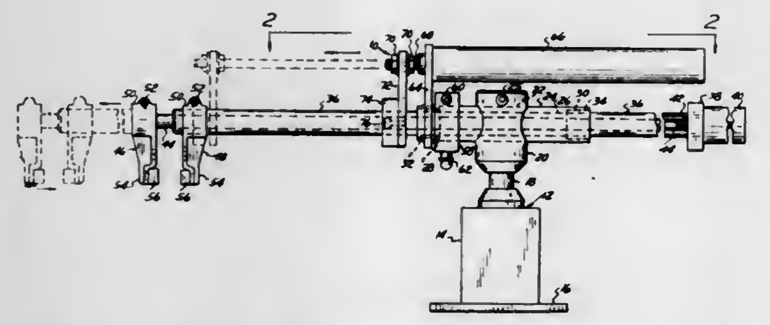
John R. Winne, Detroit, Mich., assignor to Erie Engineering Company, Troy, Mich.
Filed Apr. 3, 1970, Ser. No. 25,332
Int. Cl. B66c *1/02*
U.S. Cl. 214—1 BH **3 Claims**



A work pick-up vacuum cup on the forward end of an elongated tubular arm is connected by a pipe to the throat of a venturi tube on the rearward end of the arm. The opposite ends of the venturi tube are connected to compressed air inlet and outlet couplings which in turn are connected to flexible air hoses. The arm is mounted in and projects outward from the opposite ends of the horizontal bore of a head having a vertical socket and replaces the work-lifting arm and head on top of the vertically-reciprocating horizontally-turning lift piston rod of the Lifting and Swinging Work Transfer Device of Kirsch et al., U.S. Pat. No. 3,406,837 of Oct. 22, 1968. The air outlet coupling has an auxiliary air outlet orifice for enhancing rapid release action. In a modification (FIG. 3), the forward end of the elongated tubular arm carries a plurality of such vacuum cups similarly connected to the throat of the venturi tube.

3,648,854
REACH-EXTENSION ATTACHMENT FOR WORK TRANSFER DEVICE

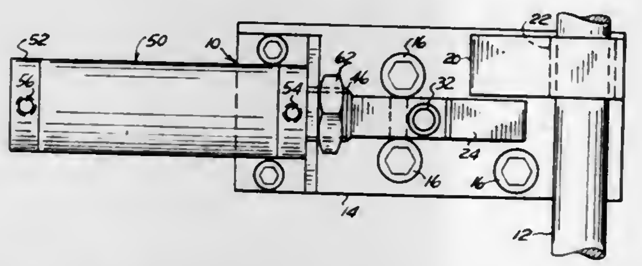
Ronald D. Potter, Waterford, Mich., assignor to Erie Engineering Company, Troy, Mich.
Filed Apr. 3, 1970, Ser. No. 25,517
Int. Cl. B66c *1/42*
U.S. Cl. 214—1 BB **4 Claims**



Replacing the workpiece-lifting arm on top of the vertically-reciprocating horizontally-turning lift piston rod of the Lifting and Swinging Work Transfer Device of Kirsch et al., U.S. Pat. No. 3,406,837 of Oct. 22, 1968, the present invention mounts a head adjustably holding a horizontal slide bearing sleeve in which is slidably mounted an elongated tubular arm. The forward end of this arm carries a stationary work-gripping jaw adjacent a movable work-gripping jaw on a piston rod extending through the arm to the piston head of a jaw-operating fluid-pressure cylinder mounted on the rearward end of the arm. Mounted on the bearing sleeve is an arm-extending fluid-pressure cylinder having a piston rod operatively connected by a drag link to the arm to advance that arm and extend the reach thereof.

3,648,855
MIDPOSITION STOP FIXTURE FOR WORK TRANSFER DEVICE

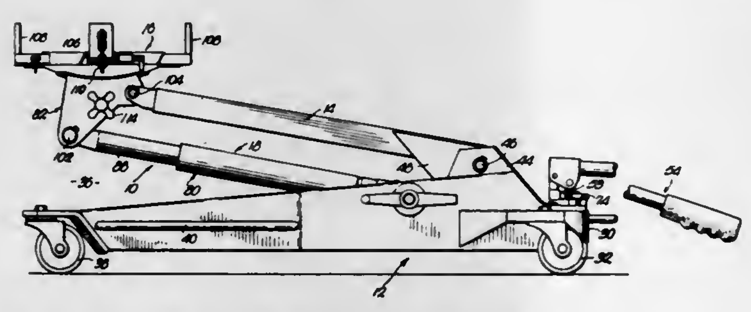
Ronald D. Potter, Waterford, Mich., assignor to Erie Engineering Company, Troy, Mich.
Filed Apr. 6, 1970, Ser. No. 25,876
Int. Cl. F64d *71/00*
U.S. Cl. 214—1 B **4 Claims**



This midposition stop fixture consists of a base carrying an abutment block containing a clearance bore through which a reciprocable control rod connected to the work transfer device can move freely, except when it is intercepted by a stop block moved to intercepting position by the piston rod of a reversible fluid pressure cylinder mounted on the base. Reversal of the cylinder retracts the stop block from its forward position covering the clearance bore in the abutment block so that the reciprocable control rod connected to the work transfer device can pass freely through the clearance bore thereof, It then permits the work-carrying arm of the work transfer device to perform a full stroke and move beneath the forming element of the served machine, such as the punch of a forming press, rather than being intercepted in midstroke by the engagement of the control rod with the stop block while the two served machines are performing operation on their respective workpieces.

3,648,856
TRANSMISSION JACK

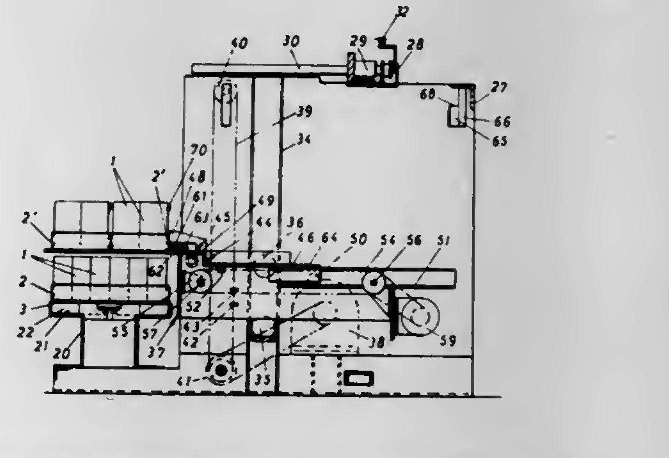
Gilbert W. Gaarder, and Elmont E. Hollingsworth, both of St. Joseph, Mo., assignors to Gray Manufacturing Company, Inc., St. Joseph, Mo.
Filed May 1, 1969, Ser. No. 820,854
Int. Cl. B66f *5/04*
U.S. Cl. 214—1 D **7 Claims**



A jack for use in handling transmissions, the jack having a wheeled base, a lift arm swingably mounted on the base, there being means for raising and lowering the lift arm and a load-receiving head at the free end of the lift arm. A leveling assembly is carried by the jack and includes a link having one end thereof coupled with the load-receiving head and the other end thereof attached to the base whereby the head may be rotated about a transverse axis, the leveling assembly being operable by gear means carried by the jack and actuatable from either side thereof. The jack is powered by a hydraulic piston and cylinder assembly carried by the base of the jack, the piston having a guide member at the outer end thereof and seated within trackways on each side of the base.

3,648,857
MACHINE FOR LOADING OBJECTS IN GROUPS ONTO PALLETS OR THE LIKE

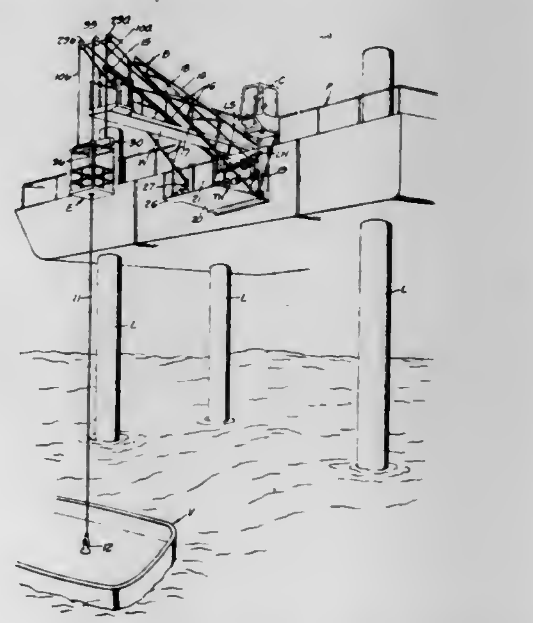
Halvor Grasvoll, Goteborg, Sweden, assignor to Gustav G. Magnusson, Vastra Frolunda and Karl I. Weiner, Goteborg, Sweden, part interest to each
Filed May 4, 1970, Ser. No. 34,056
Claims priority, application Sweden, May 19, 1969, 6587/69
Int. Cl. B65g *57/12, 57/24*
U.S. Cl. 214—6 G **5 Claims**



The machine is intended to transfer uniform objects, such as for instance milk cartons, which are arranged in groups, from a feeding conveyor via a sloping feeder belt onto rollers. Means are provided to transfer the objects from the rollers onto a vertically and horizontally displaceable loading plate. A hinged means, normally being in an inoperative, swung-down position, is provided at the discharge end of the rollers so as to be influenced by the movement of said plate into assuming a horizontal position, wherein said means serves as a stripper for depositing the objects carried by the loading plate on the pallet.

3,648,858
STABILIZED LOAD HOIST APPARATUS

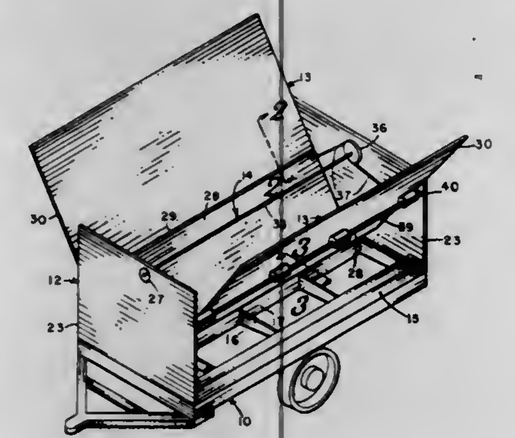
Charles D. Barron, Huntington Beach; Earl A. Peterson, Long Beach; Gary K. Stark, Buena Park, and Carl A. Wilms, La Habra, all of Calif., assignors to Byron Jackson Inc., Long Beach, Calif.
Filed May 7, 1970, Ser. No. 35,370
Int. Cl. B65g *67/58*
U.S. Cl. 214—14 **11 Claims**



Hoist apparatus for moving a load between relatively vertically movable locations, wherein the load is moved by a pair of load hoist cables, and a tension hoist cable is connected between the relatively vertically movable locations, the load hoist and the tension hoist being coupled together to cause movement of the load corresponding to the movement between the locations, the load hoist also being operable to move the load between such locations, the load being connected to the pair of load hoist cables and being guided on the tension hoist cable.

3,648,859
COMPOUND MOVABLE-SIDED TRUCK HOPPER

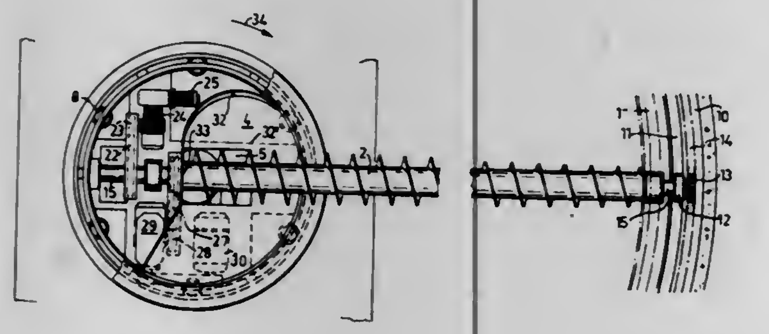
Mike E. Johnson, Rural Route 2, Garfield, Wash.
Filed Jan. 26, 1970, Ser. No. 5,512
Int. Cl. B60p *1/36*
U.S. Cl. 214—17 D **4 Claims**



A vehicular mounted hopper, for solid fungible goods, having compound hingeably communicating side-bottom elements mechanically movable during unloading from a normal rectiplanar position to variably sloping positions, to cause product thereon to move to a medially positioned conveyor for transfer. Side-bottom element motion is accomplished by cables communicating therewith and movable by winding about an elongate shaft rotatably journaled in the opposed upper medial hopper ends or by hydraulic cylinders as disclosed in a specie. An auxiliary conveyor transfers product at a distance from the hopper.

3,648,860
DEVICE FOR FEEDING MATERIAL OUT OF SILOS OR FROM STACKS

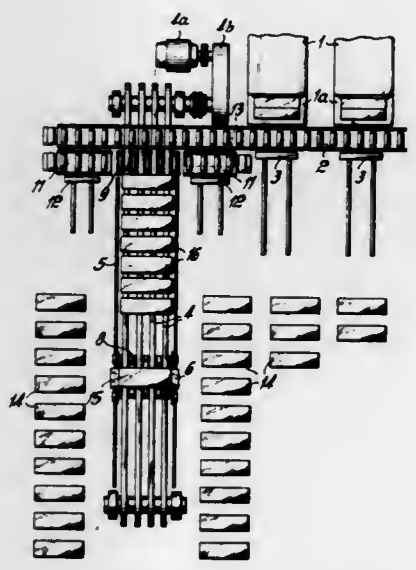
Olov Carl Gustav Wennberg, Bjurbäcksgatan 8, Karlstad, Sweden
Filed Mar. 5, 1970, Ser. No. 16,654
Claims priority, application Sweden, Mar. 13, 1969, 3459/69
Int. Cl. B65g *65/46*
U.S. Cl. 214—17 DA **4 Claims**



The invention concerns a device for feeding of material from a bottom supporting said material to a central outlet by means of a feed screw performing a wandering movement about the center of the bottom and a rotation about its own axis and in which the driving means for the screw are mounted onto a turning disk mounted in the center of the bottom and surmounted by a protecting casing. The invention intends to prevent the often occurring formation of vaults in the material. To this purpose the casing leaves a portion of the turning disk uncovered and has a feed edge extending downwards towards the disk so as to drive off the material from the outlet opening during rotation of the disk and thereby improve its uniform feed through the outlet opening.

3,648,861
DEVICE FOR TRANSPORTING SLABS IN ROLLING MILLS

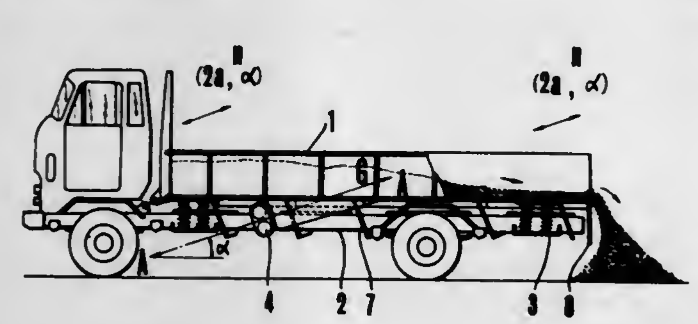
Wolfgang Fabian; Theodor Sevenich, and Klaus Kuhn, all of Dortmund, Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Germany
Filed Jan. 13, 1970, Ser. No. 2,466
Claims priority, application Germany, Jan. 15, 1969, P 19 01 851.0
Int. Cl. F27b *9/22*
U.S. Cl. 214—25 **8 Claims**



Transporting means for transporting slabs in rolling mills, especially wide strip rolling mills, from the slab storage place to the pusher furnaces, which includes slab packet conveying means extending parallel to the axes of the pusher furnaces and at a substantially right angle to the direction of movement of the furnace roller conveyor means.

3,648,862
GOODS TRANSFER DEVICE FOR MOTOR WAGON AND TRAILER VAN BASED ON VIBRATORY PRINCIPLE

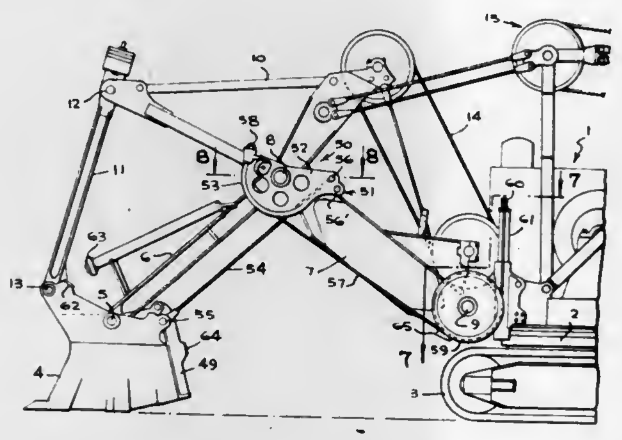
Nobuo Sugimoto, Osaka-shi, Japan, assignor to Kishaseizo Kabushiki Kaisha
Filed July 3, 1969, Ser. No. 838,886
Int. Cl. B60p *1/58*
U.S. Cl. 214—83.3 **1 Claim**



Goods transfer device for a motor wagon or trailer van which is characterized by providing on the body the motor wagon or trailer van an exciter capable of generating straight line movement for causing prescribed vibrations of the entire motor wagon or trailer van over traveling tires and suspension device, thus transferring goods in a truck body by vibration.

3,648,863
DIPPER PITCH CONTROL FOR SHOVELS

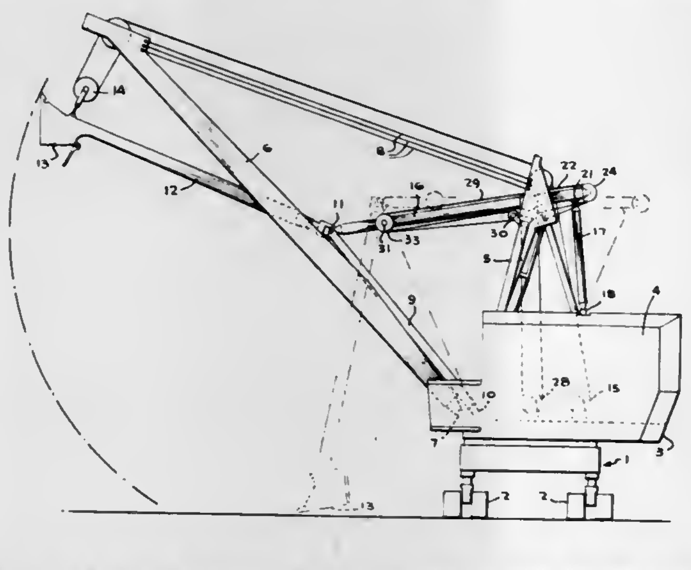
George B. Baron, 4358 Powell Road, and George J. Thompson, 1000 Marseilles Drive, both of Marion, Ohio
Filed Jan. 26, 1970, Ser. No. 5,807
Int. Cl. E02f *3/00*
U.S. Cl. 214—138 **6 Claims**



A pitch control mechanism for power shovels having a body with a stiffleg pivotally connected at its bottom to the body and a dipper handle pivotally connected to the top of the stiffleg. The dipper is pivotally connected to the dipper handle and has limited arcuate movement relative to the handle. A hoist lifts the dipper to its upward limit, if unrestrained, and raises the dipper and dipper handle. A pantograph linkage with a control to lock the linkage, controllably move it, or release it for free movement, extends from the bottom of the stiffleg to its connection with the dipper handle, and from that connection to the dipper. When the linkage is locked, the dipper angle relative to the ground remains fixed during digging and hoisting movement. When the linkage is positively moved, the dipper angle relative to the dipper handle is changed as desired. When the linkage is released, the dipper moves to its upper angle limit under pull of the hoist and the dipper operates as a fixed angle dipper, the linkage moving automatically as required by stiffleg and dipper handle movement.

3,648,864
CROWD MOUNT

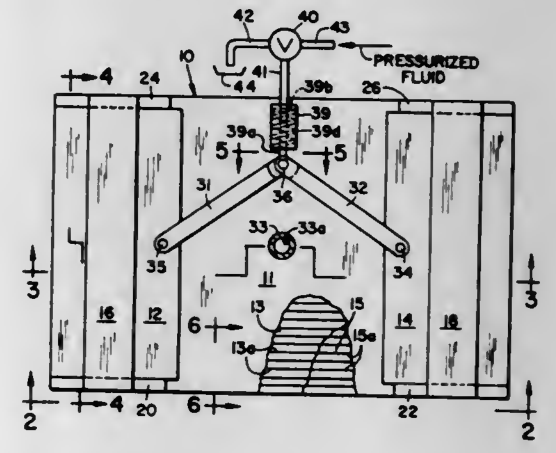
Carl E. Messenger, Jr., 1428 Lusch Road, Marion, Ohio
Filed Dec. 3, 1969, Ser. No. 881,677
Int. Cl. E02f *3/00*
U.S. Cl. 214—136 **7 Claims**



A crowd handle mount for fixed boom shovels wherein the crowd handle is attached at its front end to a pivoted stiff leg in conventional fashion, and has its back end supported on a vertical strut that is pivotally mounted at its bottom on the shovel rotating frame and pivotally connected at its top to the crowd handle, whereby the rotating frame, stiff leg, crowd handle and strut form a four bar linkage. The crowd can be moved in crowd and retract directions by rope means reeved over sheaves on the crowd handle and in the gantry, or by means of a rack on the crowd handle and a pinion mounted in the gantry.

3,648,865
ARTICLE HANDLING

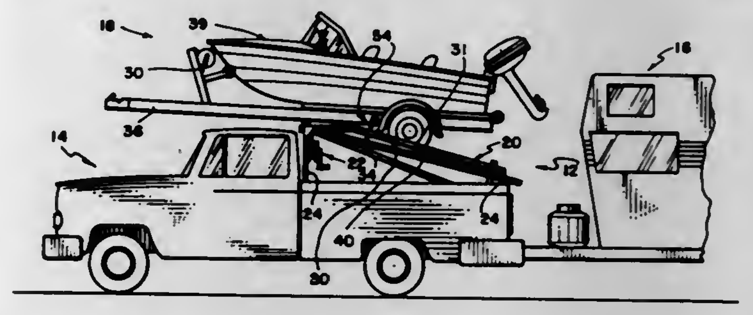
Wheeler W. Meyers, Savona, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Original application Apr. 29, 1969, Ser. No. 820,144, now Patent No. 3,556,578, dated Jan. 19, 1971. Divided and this application July 1, 1970, Ser. No. 51,521
Int. Cl. B66c *1/02*
U.S. Cl. 214—152 **4 Claims**



Handling apparatus for and method of spacing apart a plurality or multitude of similar articles, such as sticks, canes, rods, tubes or small disks or the like disposed adjacent each other on a relatively flat surface, the apparatus including a main body member embodying a vacuum chamber or cavity having an open side against which one surface of a perforated plate is disposed. A first surface of a perforated sheet or membrane of an elastic or resilient material, such as rubber, is disposed against the second surface of said plate and means are provided for stretching said membrane or sheet. Said method comprises positioning the second surface of the sheet adjacent a multitude of similar ones of said articles, supplying vacuum to said cavity or chamber to draw the articles into firm contact with such second surface of the sheet, stretching said sheet to separate or space said articles apart, and terminating said vacuum to deposit the articles in a spaced apart orientation on a generally flat surface.

3,648,866
HOIST AND FRAME FOR BOAT AND TRAILER

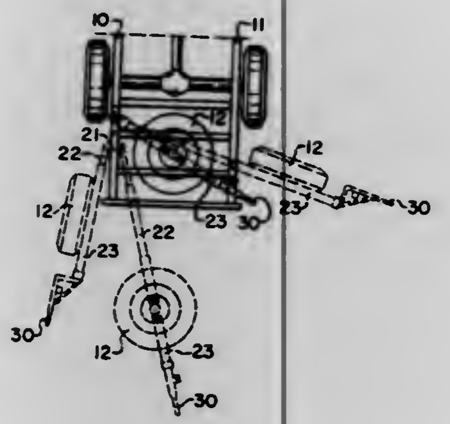
Harold M. Slown, 1648 S. Washington, Wichita, Kans.
Filed May 18, 1970, Ser. No. 38,435
Int. Cl. B60r *9/00*
U.S. Cl. 214—450 **2 Claims**



This invention is a hoist and frame for a boat and trailer including a frame mountable on the bed of a truck having a hoist and a ramp assembly temporarily mountable with the frame. More particularly the invention is a frame for carrying in mounted position on a truck a conventional boat mounted on a conventional and popular design trailer.

3,648,867
SPARE TIRE CARRIER

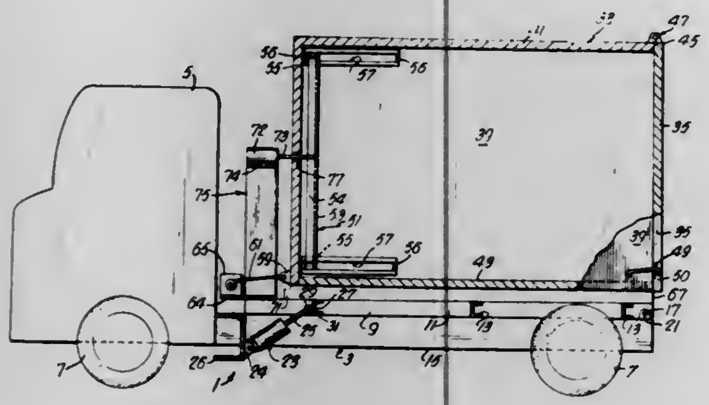
J. W. Beavers, Route 4, Box 272, Duncan, Okla.
Filed Aug. 28, 1970, Ser. No. 67,835
Int. Cl. B62d *43/00*
U.S. Cl. 214—454 **4 Claims**



A spare tire carrier for motor vehicles and the like in which the spare tire is secured to an extensible tubular telescoping section, one end of which is swiveled to the frame of the vehicle under the floor thereof and the other end of which is provided with a handle, together with means whereby the handle may be lifted by manually operable mechanism to clamp the tire tightly against the floor of the vehicle. The telescoping section has points of suspension on the frame well above the center of gravity of the tire so as to serve as a cradle tending to hold the tire in a horizontal position while the section is being collapsed or extended. The manually operable means includes an eccentric for gaining a mechanical advantage and is so designed as to pass slightly beyond dead center so as to use the weight of the tire to hold it in locked position when the tire is clamped. The carrier is adjustable vertically to accommodate various size tires.

3,648,868
CONTAINER TRANSPORTING VEHICLE

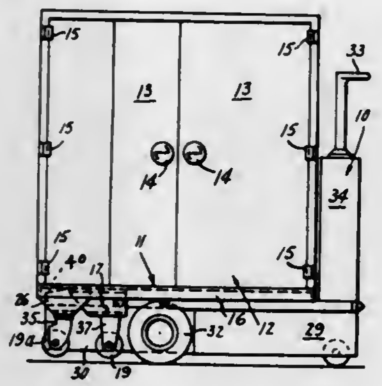
Richler Max M., St. Laurent, Quebec, Canada, assignor to Atlas Hoist & Body Incorporated, Montreal, Quebec, Canada
Filed Feb. 18, 1970, Ser. No. 12,176
Int. Cl. B60p *1/28*
U.S. Cl. 214—510 **6 Claims**



A vehicle for transporting a walled container which contains a movable platen therein. The vehicle is provided with means for moving the container relative to the vehicle, while carried thereon, to unload material from the container. The vehicle includes means for holding the platen in one position while the container is moved on the vehicle relative to the platen to assist in the unloading of the container.

3,648,869
TRANSFER CARRIAGE

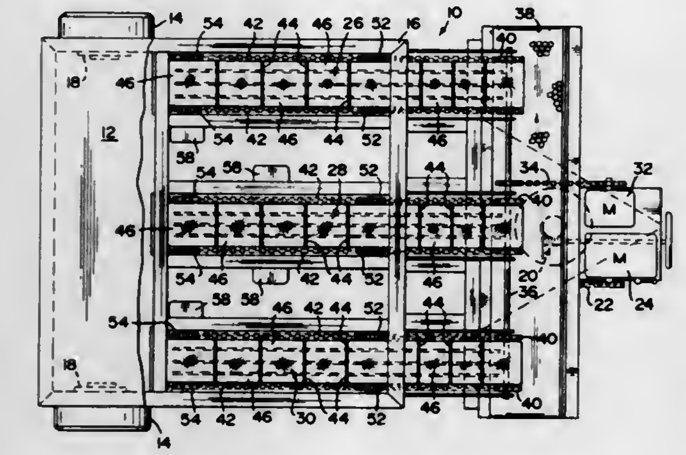
Floyd W. Christianson; William J. Oakes, and James T. Sawtelle, all of Erie, Pa., assignors to American Sterilizer Company, Erie, Pa.
Filed Nov. 24, 1969, Ser. No. 879,492
Int. Cl. B60p *3/02*
U.S. Cl. 214—515 **16 Claims**



This disclosure describes a wheeled car especially suited for transporting goods in a hospital or the like. A dolly having front and rear wheels, a cabinet supported on the dolly. The dolly is spaced above the floor so that the dolly can be moved over the car, lifting the wheels of the dolly slightly from the floor for transportation. The car is generally T-shaped having a narrow part and a wider part. The front wheels are carried on a bracket that is slidable from a forward to a rearward position and which is locked in the forward position when the dolly is on the floor. When the car moves under the dolly, the front wheels slide toward the rear of the dolly so that the front wheels of the dolly are all supported adjacent the rear wheels and all four wheels are disposed in the spaces at the sides of the narrow part of the car platform. Thus the overall width of the car, dolly and cabinet is no greater than the cabinet, yet the main part of the car platform is as wide as the bottom of the cabinet.

3,648,870
HARVESTER

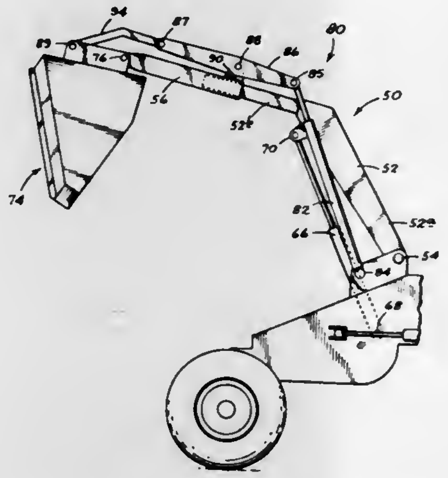
Thomas W. Dutschke, 1709 58th Ave. Drive, W., Bradenton, Fla.
Filed Apr. 24, 1970, Ser. No. 31,593
Int. Cl. B60p *1/38;* **A01d** *45/00*
U.S. Cl. 214—519 **10 Claims**



A harvesting machine which has a number of conveyors and seats for pickers. The endless conveyors are formed from a pair of endless chains which are held in a parallel, fixed relation by a plurality of transverse, perpendicular, planar ladders. Attached to the top of the ladders is a flexible apron which overlaps the adjacent ladder and forms a pouch to carry the fruit without damage. This structure also allows for the fruit to be gently lowered onto an unloading surface without damage.

3,648,871
VEHICLE LOADER

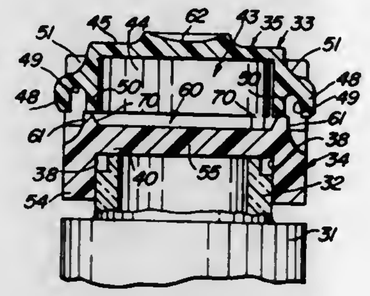
Jack D. Layton, Salem, Oreg., assignor to Layton Manufacturing Company, Salem, Oreg.
Filed Feb. 19, 1970, Ser. No. 12,723
Int. Cl. E02f *3/70*
U.S. Cl. 214—778 **8 Claims**



A vehicle loader having a pivoted boom mounted on the vehicle frame. A tippable bucket is movably mounted on the free end of the boom through a bucket support means for movement relative to the boom longitudinally of the boom. A motor is provided for moving the bucket support means. Linkage means mounted on the bucket support means and connected at its ends to the bucket and vehicle frame produces tipping movement of the bucket with movement of the bucket support means on the boom. The linkage means includes an extensible link which on extension also results in bucket tipping.

3,648,872
SAFETY CONTAINER AND CLOSURE CAP UNIT THEREFOR

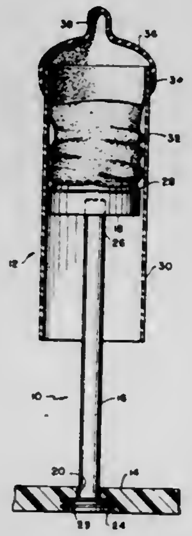
August J. Durso, 1604 Blackthorn, Glenview, Ill.; Frank C. Maurer, Skokie, and John F. McEnery, Niles, both of Ill., assignors to said Durso, by said Maurer and said McEnery
Filed Aug. 19, 1970, Ser. No. 64,972
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **28 Claims**



A safety container and closure cap unit therefor includes means for detachably latching or attaching the safety closure cap unit to the neck portion of the container body by manually inserting the safety closure cap unit on the neck portion of the container body and imparting rotational movement to the closure cap unit in the form of a partial turn or revolution without manipulation of any parts or instrumentalities in the closure cap unit or in the closure cap housing or on the container body other than the rotational movement of the closure cap unit itself. The closure cap unit may be removed from the neck portion of the container body by the simultaneous application of manual pressure on a plurality of manually operable means located at a plurality of pressure points spaced from each other on the periphery of the closure cap housing unit and simultaneously therewith imparting rotational movement in the form of a partial turn or revolution to the closure cap unit in a direction opposite to the direction of movement imparted to the closure cap unit by the said first partial turn or revolution, and then manually withdrawing the closure cap unit from the neck portion of the container body. A fluidtight seal is effected between the closure cap unit and the neck portion of the container body as the closure cap unit is thus installed upon the neck portion of the container body.

3,648,873
STRUCTURE FOR REMOVING AIR FROM A BABY NURSER

Sylvester J. Grobbel, Warren, Mich., assignor to Anthony J. Bellanca, Detroit, Mich., a part interest
Filed Sept. 5, 1969, Ser. No. 855,566
Int. Cl. A61j *9/00*
U.S. Cl. 215—11 R **4 Claims**

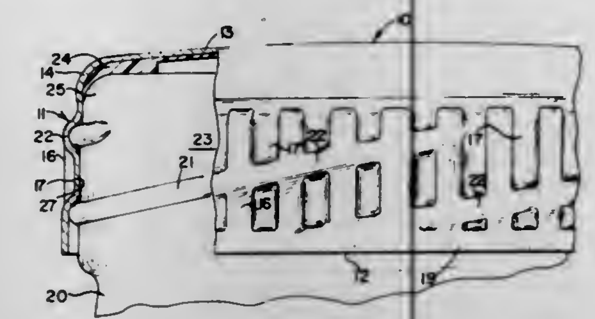


Structure for and a method of purging air from a baby nurser is disclosed including a dowel, a base on one end of the dowel and a cylindrical member on the other end of the dowel. The cylindrical member is adapted to be received in the open end of a baby nurser having a plastic baby food liner therein to apply pressure to the liner for purging the nurser of air prior to feeding a baby. The structure for purging air from a baby nurser may be dismantled for packaging and storing and is constructed to prevent pinching of the liner of the baby nurser.

3,648,874
PRESS-ON, TWIST-OFF BOTTLE CAP

Jens L. Moller, Westmont, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed July 15, 1970, Ser. No. 54,956
Int. Cl. B65d *41/20, 41/10, 41/04*
U.S. Cl. 215—42 **8 Claims**

The closure cap herein described has a generally cylindrical skirt with a circular lowermost edge. Corrugations in the form of axial ridges and flutes terminate downwardly in a plane spaced from the edge. The crests of the ridges and the cylindrical lip are elements of a common cylinder. When the cap skirt is uniformly constricted about threads of a bottle finish, material along the lines of the flutes forms female thread elements, securing the cap to the bottle. The ridges, the thread elements and the lip constitute a knurling grid which affords a comfortable, sure finger grip for twisting the cap off the bottle, with the smooth lip surface shielding the edge.



3,648,875

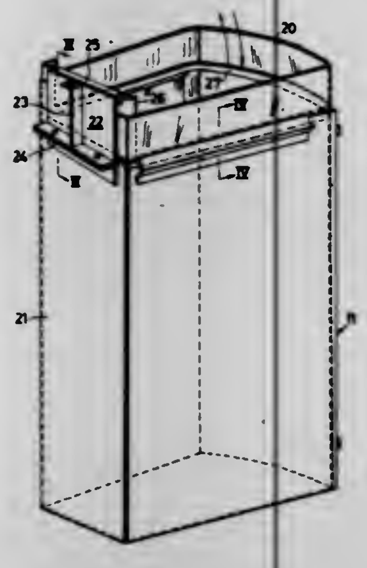
ARRANGEMENT IN INSTALLATIONS FOR COLLECTION OF GARBAGE AND OTHER REFUSE

Gunnar Arne Leonard Lundgren, Brottby, Sweden, assignor to Komprimatör AB, Vallentuna, Sweden

Filed July 23, 1970, Ser. No. 57,474

Int. Cl. B65d *25/16, 21/02*

U.S. Cl. 220—1 T **5 Claims**



An apparatus for the collection of garbage in outer receptacles having rigid sides in a truncated sector or trapezoidal cross section, arranged to detachably hold an inner bag-shaped container and locking means to hold said inner bag-shaped container within said outer receptacles, said locking means comprising an extension of the narrowmost side of said outer receptacle having a plate pivotally mounted thereon above the upper rim of said receptacle, said plate extending slightly below the upper rim of said receptacle and having legs of a certain resilience attached thereto adjacent to its lower edge and adjacent to the sides of said outer receptacle which extend substantially along at least two rims of said outer receptacle, said pivotable plate and legs when in the downwardmost position frictionally engaging said outer receptacle along at least three rims thereof.

3,648,876

PRESSURE VESSEL

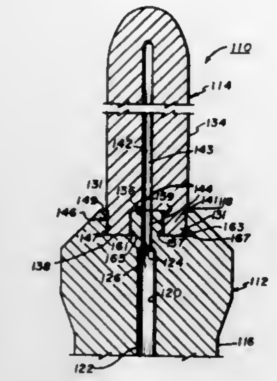
Irwin Berman, Bronx, N.Y., assignor to Foster Wheeeler Corporation, Livingston, N.J.

Filed Aug. 19, 1969, Ser. No. 851,386

Int. Cl. B65d *41/04, 53/00*

U.S. Cl. 220—3 **1 Claim**

A combined closure and vessel adapted for operation at relatively high pressures is provided with an outer fastening means and an inner means. The location of the means enables the inner means to counteract the bending moment about the outer means.



3,648,877

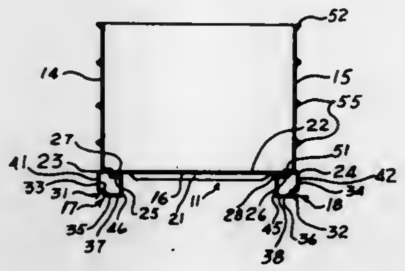
COLLAPSIBLE TOTE BOX

Kenneth W. Heft, Rome, Ill., assignor to Heft, Inc., City of Bettendorf, Iowa

Filed Aug. 24, 1970, Ser. No. 66,205

Int. Cl. B65d *7/24, 19/06*

U.S. Cl. 220—4 R **5 Claims**



A collapsible tote box having a pallet, a pair of interchangeable sidewalls, and a pair of interchangeable end walls interconnecting and locking the sidewalls and pallet, whereby the tote box is adapted to be assembled and dismantled without the need of additional parts or tools.

3,648,878

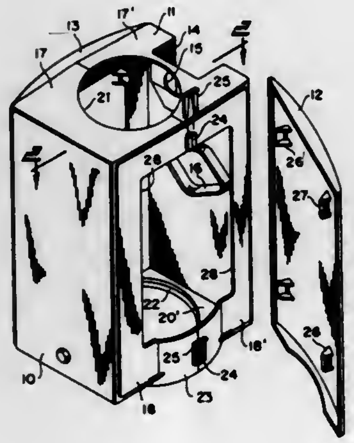
MODULAR SHELL FOR DISPOSERS AND THE LIKE

Frederick G. Mackay, Tarzana, and Jerome F. Stratman, Cypress, both of Calif., assignors to The Tappan Company, Mansfield, Ohio

Filed Jan. 5, 1970, Ser. No. 760

Int. Cl. B65d *11/18;* **H05k** *5/03*

U.S. Cl. 220—4 R **3 Claims**



The shell includes front and rear sections for assembly about the disposer and separate side panels which are applied by hand and can be selected from a series of different panels to provide variation in at least the appearance of the unit.

3,648,879

STORAGE ARRANGEMENT FOR LIQUEFIED GASES

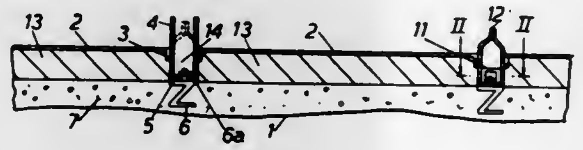
Robert Glover Jackson, Hornchurch, England, assignor to Conch International Methane Limited, Nassau, Bahamas

Filed Sept. 28, 1970, Ser. No. 76,138

Claims priority, application Great Britain, Nov. 3, 1969, 53,756/69

Int. Cl. B65d *25/18*

U.S. Cl. 220—9 LG **11 Claims**



A membrane tank for liquefied gas storage in which the tank walls are made of relatively narrow vertical strips of thin and flexible sheet material joined to vertical stiffening members which in turn are fastened to an external supporting structure. The vertical stiffening members are alike and each is channel shaped with the web of the channel attached to the supporting member by means of a bolt and slot arrangement which allow vertical thermal expansion. The sheet edges are attached to the legs of the channel members, which are then bent toward each other at the edges and welded together to form lateral expansion joints.

3,648,880

STORAGE ARRANGEMENT FOR LIQUEFIED GAS

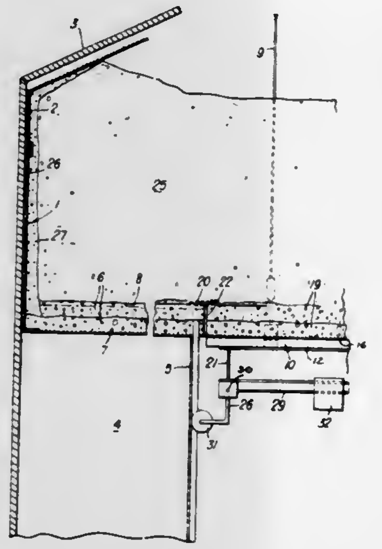
Robert G. Jackson, Hornchurch, England, assignor to Conch International Methane Limited, Nassau, Bahamas

Filed Sept. 14, 1970, Ser. No. 71,911

Claims priority, application Great Britain, Oct. 31, 1969, 53,380/69

Int. Cl. B65d *7/22*

U.S. Cl. 220—10 **11 Claims**



An insulated large-scale container for liquefied gases at cryogenic temperatures is provided with a pressure-tight roof structure from which a horizontal ceiling structure is supported on hangers, the ceiling structure comprising a number of insulated panels which are so supported on the hangers that they are free to expand and contract under large temperature variations by moving laterally relative to each other and to their hangers, the ceiling as a whole being also free to have a limited movement relative to the walls of the container.

3,648,881

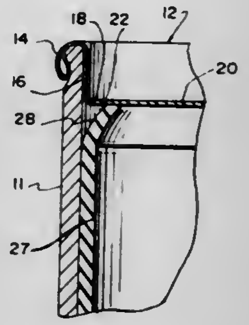
REINFORCED FIBER CONTAINER HAVING SAFETY FEATURE

Roy E. Rogers, Glendale, Mo., assignor to Container Corporation of America, Chicago, Ill.

Filed Feb. 9, 1970, Ser. No. 9,670

Int. Cl. B65d *17/24, 25/14, 25/34*

U.S. Cl. 220—54 **2 Claims**



A tubular fiber container is reinforced by a nesting tubular fiber liner. In the formation of the latter, an inturned edge or shoulder is created which protects the user from the exposed raw edge of the end closure when the central portion thereof is removed. By reason of the double wall thickness provided, the container lends itself to vacuum packaging, ordinarily not possible with fiber containers.

3,648,882

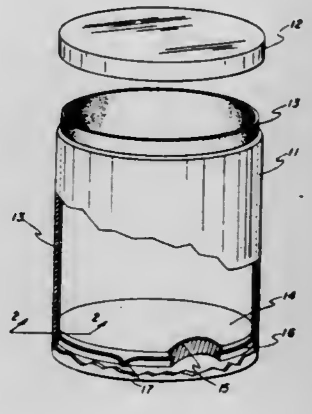
PACKAGE FOR HIGHLY VISCOUS TACKY MATERIALS

Marcus H. Shelton, Baytown, Tex., assignor to Esso Research and Engineering Company

Filed Mar. 2, 1970, Ser. No. 15,570

Int. Cl. B65d *25/14*

U.S. Cl. 220—63 **9 Claims**



A packaging container for highly viscous low molecular weight tacky polymers comprising a container having at least one removable end and a removable polymeric liner coated with a release agent.

3,648,883

TRAY

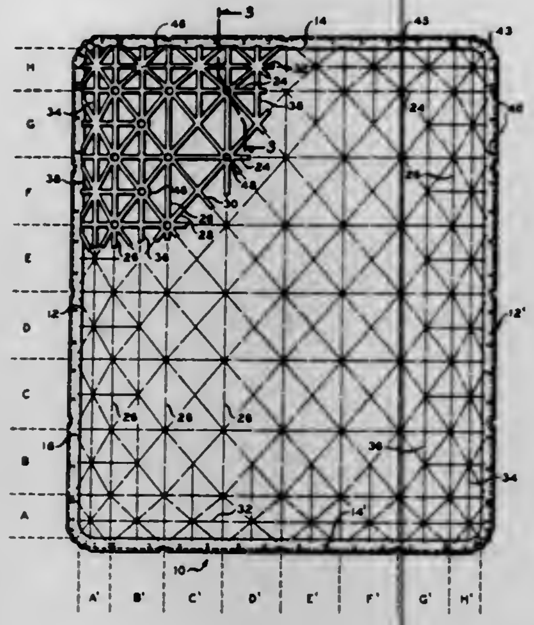
Orville J. Bridenstine, Wayzata, Minn., assignor to Phillips Petroleum Company

Filed Dec. 31, 1969, Ser. No. 889,513

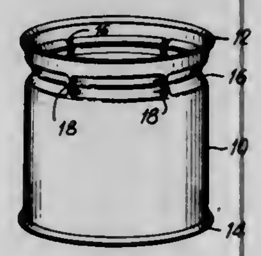
Int. Cl. B65d *7/42*

U.S. Cl. 220—66 **17 Claims**

A tray comprising upstanding side and end walls and a gridwork bottom disposed between the lower edge portions of said walls. Said gridwork bottom is comprised of intersecting struts which form rows of rectangles generally parallel with said walls. Each of said walls terminates at its upper edge to an outwardly extending turned-down flange which extends around the upper periphery of the tray. Said rows of rectangles have different dimensions which contribute to the rigidity and strength of the tray.



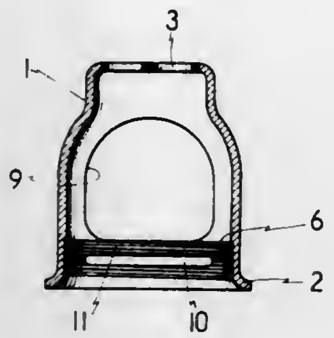
3,648,884
CONTAINER BODY HAVING REINFORCING BEAD WITH RIB
Daniel Joseph Mansolino, Cornwell Heights, Pa., assignor to American Can Company, New York, N.Y.
Filed Apr. 9, 1970, Ser. No. 26,852
Int. Cl. B65d *7/42*
U.S. Cl. 220—72 **1 Claim**



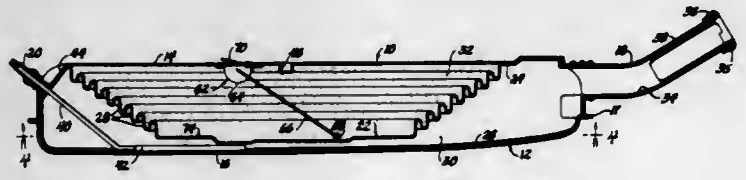
A tubular container body has a reinforcing bead indented into and circumscribing the container body wall. A plurality of generally longitudinal ribs are formed in the container body wall within the bead indentation. The ribs are formed during formation of the bead by providing a plurality of forming elements which are advanced radially inwardly to engage and indent a portion of the container body wall which defines the bead. Adjacent forming elements, in the fully advanced position of the latter, define indentations in which the aforesaid ribs are formed.

3,648,885
A CAP MEMBER FOR A HIGH-PRESSURE GAS CONTAINER
Minoru Kitsuda, No. 115 Shinshuku, Hiratsuka, Japan
Filed Apr. 10, 1970, Ser. No. 27,263
Claims priority, application Japan, Aug. 5, 1969, 44/74336
Int. Cl. B65d *25/00*
U.S. Cl. 220—85 P **8 Claims**

A cap member for a high-pressure gas container which protects the valve member attached to the gas head of the container is produced by squeezing steel plate and not by using wrought iron casting, therefore its production process becomes simple and its production cost becomes cheap. Said cap member comprises a cylindrical body, a top opening of a regular polygonal brim and a bottom opening of a round brim, a female screw on the inside of the lower part of said body, and two confronting side openings and two confronting slots on said body. When the gas container is employed, said cap member need not be dismantled from the head of the gas container. Therefore, said cap member is a protecting part for the valve member of the gas container.



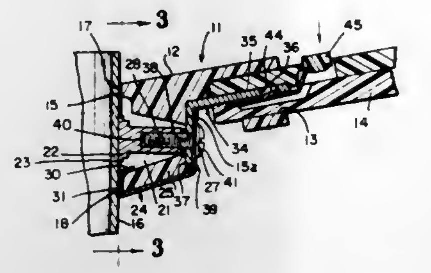
3,648,886
FUEL TANK ASSEMBLY
William L. Pringle, 999 Lakeshore Drive, Grosse Pointe Shores, Mich.
Filed May 11, 1970, Ser. No. 36,022
Int. Cl. B65d *25/14*
U.S. Cl. 220—85 B **14 Claims**



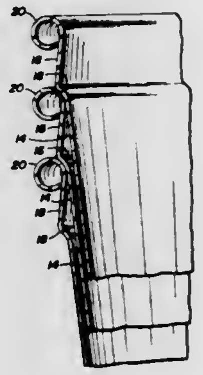
A vehicular fuel tank assembly comprising a steel outer container and a pliable inner member such as a liner or diaphragm having a plurality of circular folds in a substantially horizontal wall portion thereof to permit the center of the wall to collapse telescopically and vertically relative to the bottom of the container as fuel is exhausted from the tank assembly. This telescopic collapse provides volumetric variation in the fuel storage area and further provides variable antislosh baffling for the unused fuel. A control valve regulates air flow into and out of the exhausted space between the container and the internal member. Fuel gaging is accomplished by monitoring the displacement of the collapsible internal member portion relative to the container. The container is mounted on the vehicle to permit limited damped longitudinal displacement under abnormally high acceleration load conditions.

3,648,887
UTENSIL ADAPTER ASSEMBLY
Robert L. Hartley, 12 S. Harding Street, Indianapolis, Ind.
Filed Mar. 2, 1970, Ser. No. 15,608
Int. Cl. B65d *25/28*
U.S. Cl. 220—94 R **4 Claims**

A utensil and adapter assembly which will receive a handle and which has a flame guard fitted over its lower surface adjacent to the utensil and extending along a portion of the utensil adjacent to the lower surface of the adapter. The flame guard and the adapter are secured together and to the utensil by a fastener engaging a stud affixed to the utensil.

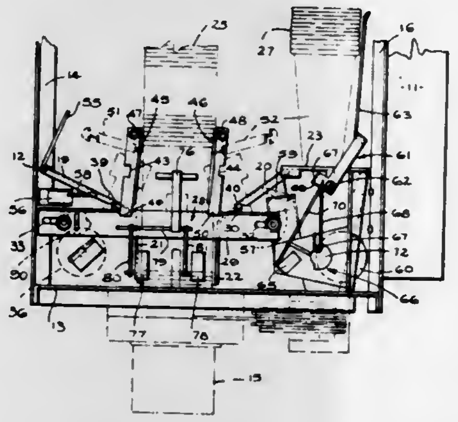


3,648,888
THIN-WALLED NESTABLE CONTAINER
George Andre Cheladze, Phoenix, Ariz., assignor to Carthage Cup Company, Carthage, Tex.
Filed Mar. 2, 1970, Ser. No. 15,675
Int. Cl. B65d *21/02*
U.S. Cl. 220—97 C **1 Claim**



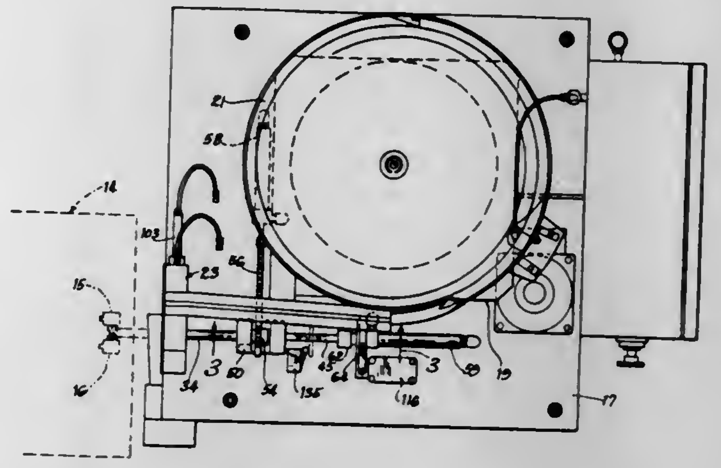
A vacuumed formed thin-walled, plastic soft drink dispensing cup is disclosed which has a stacking structure at the lip formed by a short inwardly tapered conical section disposed between a rolled lip at the upper end and an outwardly flaired section at the lower end which forms a downwardly facing annular shoulder having an arcuate cross section adapted to mate with the rolled lip of a like cup in a nested stack.

3,648,889
IMPROVEMENTS IN OR RELATING TO CUP HOLDERS FOR BEVERAGE DISPENSING MACHINES
John Alfred Greaves, Bolton, and Steven Victor Shelley, Birmingham, both of England, assignors to G. K. N. Sankey Limited, Bilston, England
Filed Apr. 20, 1970, Ser. No. 30,032
Int. Cl. G07f *11/12*
U.S. Cl. 221—11 **2 Claims**



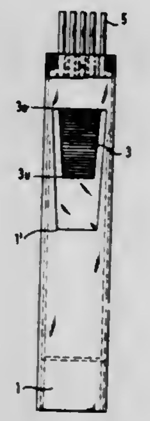
A cup holder for beverage dispensing machine includes a pair of pivotally mounted platforms for supporting cups disposed one on each side of a dispensing position. A further column of cups is supported on a fixed platform and a pusher mechanism is provided to move this column of cups into the dispensing position when the other cups have been used.

3,648,890
AUTOMATIC FEEDER AND TAPE WRAPPER
Egons Inka, Chicago, Ill., assignor to Crane Packing Company, Morton Grove, Ill.
Filed Feb. 9, 1970, Ser. No. 9,598
Int. Cl. B65h *5/00*
U.S. Cl. 221—236 **6 Claims**



An automatic workpiece feeder for a device which wraps a tape around a threaded portion of the workpiece. A vibratory feed hopper orients the workpiece correctly for acceptance by the tape wrapping device, and the oriented workpiece is conducted down a chute to the feeder. The latter engages a polygenal recess in the workpiece and holds the workpiece magnetically while it moves the workpiece into the tape wrapper, holds the piece against rotation while the tape is being wrapped around it, then withdraws the workpiece from the tape wrapper and strips the workpiece from the feeder to free the feeder for engaging the next piece. Movements of the feeder are effected by air cylinders controlled by solenoid-operated valves which are triggered by microswitches contacted sequentially by the moving parts of the feeder as each step in the operation of the feeder is concluded.

3,648,891
LEAD DISPENSER HAVING SLIDE ACTUATED COVER
Otto Katz, Schwabach, and Werner Kranich, Rosstal, both of Germany, assignors to A. W. Faber-Castell, Stein, Germany
Filed Feb. 2, 1970, Ser. No. 7,930
Int. Cl. B65d *85/28*
U.S. Cl. 221—248 **4 Claims**



A dispenser for long leads for mechanical pencils consisting of an outer casing having at least one open end, and an inner slide member which is guided by the casing and adapted to contain the leads and has a cover member pivotably connected to its open end which, when the slide member is being shifted toward the open end of the casing, is shifted outwardly of the casing and at the same time pivoted away from the then exposed parts of the leads.

3,648,892
DEVICE FOR SUPPORTING AND DISPENSING ARTICLES

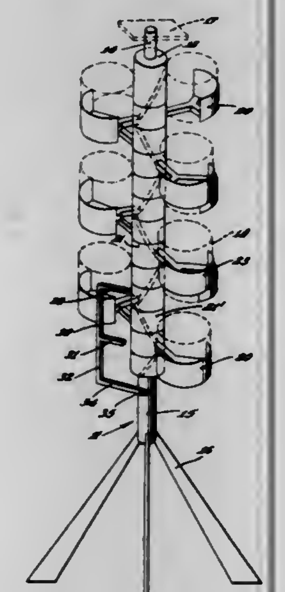
Joseph Paton Morgan, Guemes 1053, Apt. 11, San Salvador de Jujuy, Jujuy Province, Argentina

Filed June 22, 1970, Ser. No. 48,026

Claims priority, application Argentina, July 4, 1969, 222163

Int. Cl. B65g *59/00*

U.S. Cl. 221—301 **10 Claims**



A device for supporting and dispensing articles while in their original package or container characterized by a vertical column on which a plurality of platforms having compartments for the articles are disposed and moved by gravity from an upper position as the articles are dispensed. The device includes guide means which cause the platform to move along a predetermined path and abutment means which engage the lowermost platform to prevent its movement past a predetermined point until disengaged by a person removing an article from the device.

3,648,893
SAFETY CLOSURE FOR HIGH PRESSURE GAS TANKS

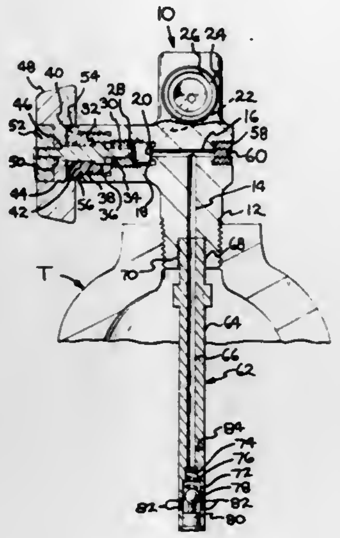
Ronald Whiting, Toledo, Ohio, assignor to Ollia B. Anderson, Toledo, Ohio, a part interest

Continuation of application Ser. No. 741,655, July 1, 1968, now abandoned. This application Apr. 1, 1971, Ser. No. 130,517

Int. Cl. F17c *13/12*

U.S. Cl. 222—3 **4 Claims**

A valve body having a tank sealing portion adapted to seal off the opening of a high pressure gas tank. The tank sealing portion has a passage therethrough communicating with an external connection, and a shut off valve positioned externally of the tank sealing portion for opening and closing the passage way leading to the external connection. An extension is provided on the opposite side of the tank sealing portion from the shut off valve which projects into the pressure chamber of the tank. The extension provides a continuation of the flow passage, and further includes a flow valve for shutting off the flow out of the valve body when tripped by a flow rate above a predetermined value. The flow valve preferably includes an annular valve seat which faces upstream relative to flow out of the tank, and a ball that is held off of the seat by a spring of predetermined strength. A bypass of limited flow capacity is provided for equalizing pressure across the valve seat at a flow rate that is a fraction of that required to close the flow valve. The inlets of the flow passage through the flow valve, and the bypass preferably open into the internal chamber of the tank a sufficient distance from the tank sealing portion of the body to prevent condensate from entering the flow passages when the tank is inverted.



3,648,894
FLUID DELIVERY SYSTEM

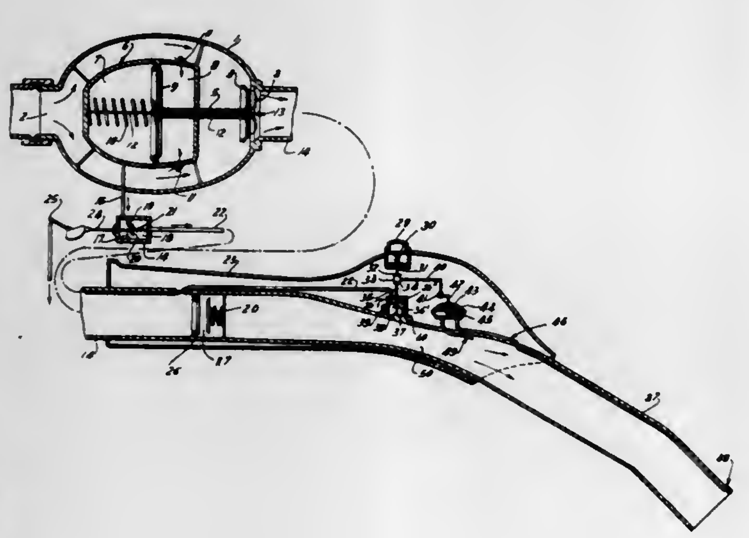
Alan George Morgan, Bromley, England, assignor to The British Petroleum Company Limited, London, England

Filed May 1, 1969, Ser. No. 820,802

Claims priority, application Great Britain, June 7, 1968, 27,149/68

Int. Cl. B67d *5/373*

U.S. Cl. 222—74 **1 Claim**



A fluid delivery system, such as a petrol pump, wherein there is a flexible hose between the pump and meter and the hosecock, has its main shut-off valve placed between the pump and the hose, a nonreturn pressure-relief valve near the hose end remote from the pump and shut-off valve, and a switch mechanism contained in the hosecock for operating the shut-off valve. Hence, whenever the flow is shut off only the back pressure of the nonreturn valve is felt within the hose, thus permitting the use of light hose and making handling easier. Desirably, the hosecock is provided also with an automatic cutoff or overfill prevention device operative to close the main shuf-off valve when the end of the hosecock dips into the fluid.

3,648,895
COLLAPSIBLE TUBE CONTAINERS

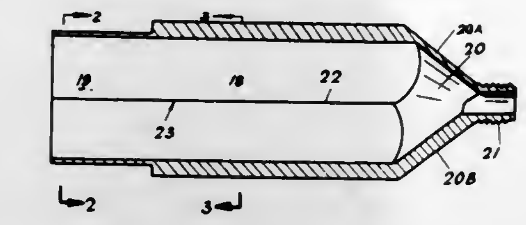
Atis Strazdins, 17 Stanbrook Avenue, Fairy Meadow, New South Wales, Australia

Filed Mar. 25, 1970, Ser. No. 22,653

Claims priority, application Australia, Mar. 28, 1969, 52713/69; Jan. 19, 1970, PA0117/70

Int. Cl. B65d *35/08*

U.S. Cl. 222—107 **8 Claims**



A collapsible tube container having an even number of longitudinally extending thinned portions along its body which form at least two pairs of hinge lines. The inner surfaces of the tube are planar so that sharp corners are formed when the tube is collapsed, leaving the planar surfaces in contact with each other so as to expel substantially all of the contents of the tube upon squeezing.

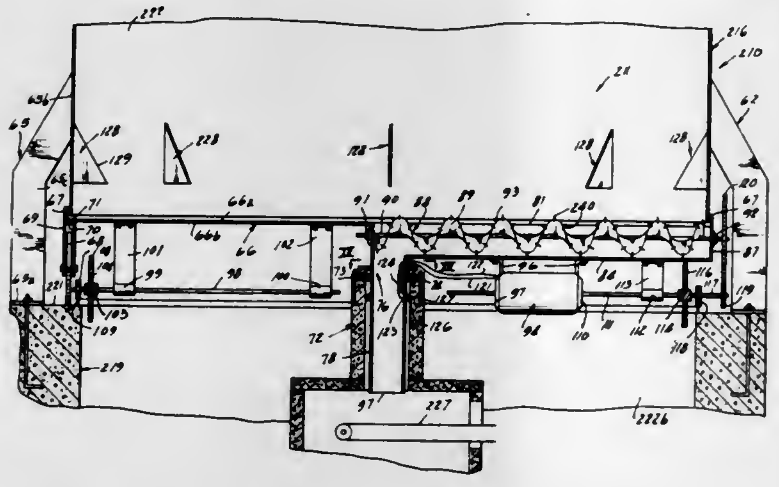
3,648,896
APPARATUS FOR STORING AND REMOVING SILAGE

George William Baltz, Route 4, Pocahontas, Ark.

Original application July 3, 1969, Ser. No. 838,840, now Patent No. 3,542,216. Divided and this application Apr. 17, 1970, Ser. No. 29,391

Int. Cl. B65g *65/46*

U.S. Cl. 222—168 **4 Claims**



A silo including an enclosed vertical sidewall, an apertured silage-supporting floor extending horizontally across the sidewall and silage-loosening means for causing the silage to drop through the floor. In one embodiment the floor comprises a plurality of spaced parallel pipes equipped with radial fingers. The pipes rotatably oscillate on fixed axes. In another embodiment the floor is centrally apertured and rotates about its center. A conveyor auger is associated with the floor to rotate therewith and to feed silage to the center aperture. In both embodiments the floor driving arrangement is outside the silage-storing zone.

3,648,897
SENSOR AND TRIGGER MECHANISM

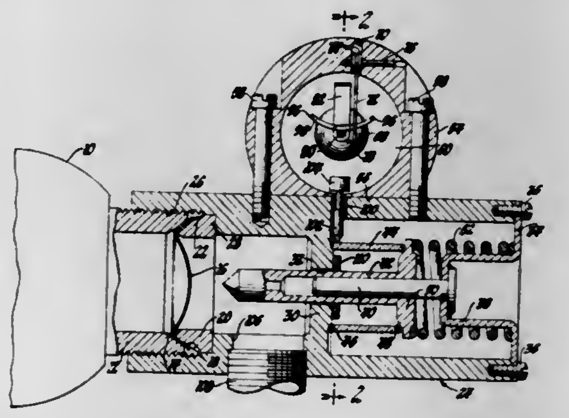
Ernst L. Ranft, Webster, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 4, 1970, Ser. No. 86,895

Int. Cl. B67b *7/24*

U.S. Cl. 222—5 **5 Claims**

A sensor and trigger mechanism includes a pressure vessel having an outlet secured to a cylindrical support member and sealed by a rupturable diaphragm. An axial guide pin on the support extends through an axial opening in an intermediate wall of the support and slidably supports a headed penetrator pin. The shank of the pin is freely received within the opening. Axially and radially tapered seats on the head of the pin and on the wall of the support seat the open ends of a hollow frangible glass cylinder. A compression spring seating between an end wall of the support and the head of the pin biases the pin toward the diaphragm and cooperates with the seats in applying a hoop stress to the glass cylinder. A ball of predetermined weight is seated on a conical pedestal and held against movement by a spring biased lever arm engaging the ball diametrically opposite the seat. The lever arm detents a torsional spring against engagement with a fragmentor pin. The fragmentor pin is slidably mounted in the wall of the support for engagement radially with the glass cylinder to fragmentize the cylinder. A felt washer seated on the intermediate wall sealingly engages the penetrator pin and provides a seal against movement of the glass fragments through the opening of the intermediate wall and also provides a resilient stop for the head of the penetrator pin after the pin penetrates the diaphragm.



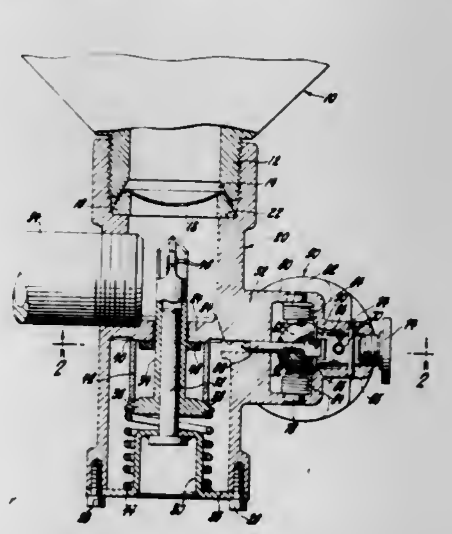
3,648,898
SENSOR AND TRIGGER MECHANISM

Edward G. Day, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 6, 1971, Ser. No. 104,255

Int. Cl. B67b *7/24*

U.S. Cl. 222—5 **3 Claims**

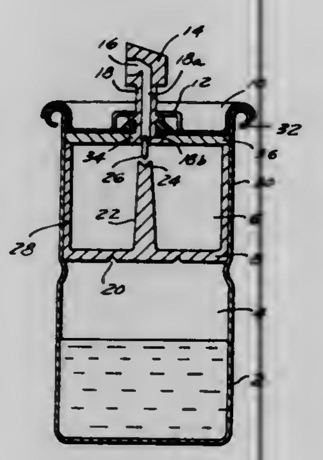


A sensor and trigger mechanism includes a pressure vessel containing fluid under pressure and having an outlet secured to a cylindrical support and sealed by a rupturable diaphragm. An axial guide pin on the support slidably mounts a headed penetrator pin. The head of the penetrator pin and the support seat the ends of a hollow frangible glass cylinder. A compression spring seating between the support and the head of the penetrator pin biases the pin toward the diaphragm. A ball of predetermined weight is seated on a pedestal and held against movement by a spring biased lever engaging the ball diametrically opposite the seat. A torsion spring is mounted on the support and includes a swingable U-shaped lever arm. The head of a fragmentor pin is slotted and receives the bight portion of the lever arm to pivotally and slidably mount the fragmentor pin on the lever arm. A pair of extensions of the lever engage the bight portion of the lever arm to either side of the head of the fragmentor pin to detent the lever arm of the torsion spring and also slidably locate the fragmentor pin on the bight portion of such arm to align the fragmentor pin with a guide on the support. When the ball moves off the seat under an acceleration pulse of predetermined amplitude and time, the lever releases the lever arm and the torsion spring drives the fragmentor pin into engagement with the glass cylinder to fragmentize such cylinder and release the penetrator pin to initiate rupture of the diaphragm.

3,648,899
METHOD AND APPARATUS FOR DYEING HAIR

Heinz Lukesch, Saseler Chaussee 163 b, 2 Hamburg-Sassel; Hans Krakowsky, Overbeckstrasse 3, 2 Hamburg 22, and Dieter Heeb, Fruchtallee 109, 2 Hamburg 19, all of Germany

Filed Sept. 11, 1969, Ser. No. 857,137
Int. Cl. B67d *5/52*
U.S. Cl. 222—82 **1 Claim**



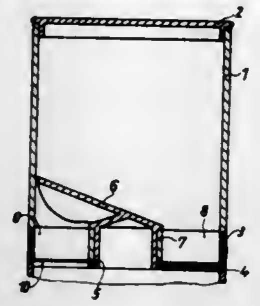
An aerosol container comprising two chambers separated from each other by a common wall and each adapted to contain a reacting agent. A valve member for the discharge of aerosol product from the container is operatively connected to one of the chambers and is adapted upon initial actuation to engage a piercing element in the chamber to break the common wall so as to allow the respective agents to react with each other and to form a homogeneous mixture in the container.

3,648,900
DOSING DEVICE

Gottfried Voigt, Nieder Eschbach, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 27, 1970, Ser. No. 23,324
Claims priority, application Germany, Apr. 24, 1969, P 19 20 840.3
Int. Cl. B56d *5/64*
U.S. Cl. 222—168.5 **5 Claims**

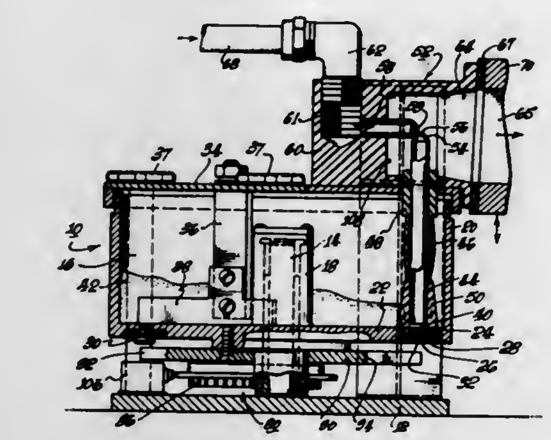
The dosing device comprises a simple substantially continuously operating construction that has a rotatable upper container unit and a lower stationary bottom dispensing unit. Radial partitions are disposed at the bottom area of the upper unit, and the outer end of each partition is connected to the inside wall of the upper unit. The lower unit is provided with a bottom plate having a discharge opening that corresponds to the area of one compartment between two partitions.



3,648,901
POWDER CLOUD XEROGRAPHIC DEVELOPMENT APPARATUS

Ronald L. Cade, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Mar. 16, 1970, Ser. No. 19,894
Int. Cl. G03g *15/08*
U.S. Cl. 222—194 **10 Claims**



A powder cloud generating apparatus suitable for use in the development of latent electrostatic images, which includes a rotating disk-like member having at least one aperture passing therethrough. Porous support means are provided beneath the apertures to retain toner material, metered into the aperture by a doctor or metering blade, within the aperture until such time as it is aspirated therefrom. Each aperture defines a unit charge of toner material which, upon entrainment in the gaseous fluid being drawn through the porous support means, can be accurately metered into the development chamber for presentation to the latent electrostatic image being held and developed therein.

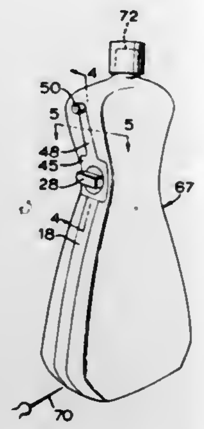
3,648,902
BLOW-MOLDED PUMP-TYPE DISPENSER

Frederick Harold Humphrey, 7 Orchard Street, Markham, Ontario, Canada

Original application May 5, 1969, Ser. No. 821,829, now Patent No. 3,575,949. Divided and this application Oct. 2, 1970, Ser. No. 77,415
Int. Cl. B65d *37/00*
U.S. Cl. 222—207 **5 Claims**

An element that can be incorporated into the side of a blow-molded bottle when the latter is blow molded, the element defining with the bottle a tube through which fluid in the bottle can be pumped to the exterior. The element includes a plate portion having two apertures, and two channel portions extending from the plate portion. The walls of each

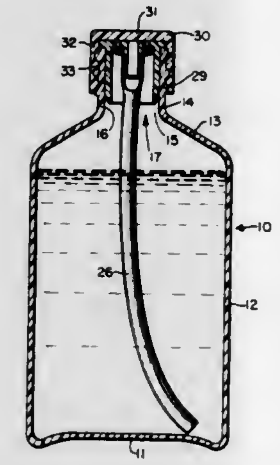
channel portion extend over the plate portion to enclose the apertures, respectively. A pump is included and is positioned against the plate portion to pump the fluid from one aperture to another and thus from one channel portion to another.



3,648,903
FLEXIBLE WALL DISPENSER WITH VALVE FOR AIR VENT

Paul A. Marchant, Kansas City, Mo., assignor to Ethyl Development Corporation, Kansas City, Mo.

Filed Apr. 29, 1970, Ser. No. 32,860
Int. Cl. B65d *37/00*
U.S. Cl. 222—212 **6 Claims**



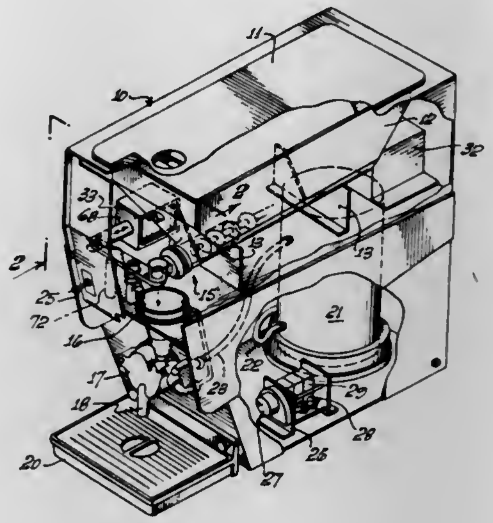
A plastic container having flexible sidewalls adapted for dispensing viscous, fluid materials. The container is provided with a generally cylindrical neck which receives a dispenser plug having a cylindrical skirt frictionally engaging the inner wall of the neck. The plug has a top wall with a central opening and a central downwardly projecting inner skirt depending from the underside of the top wall. A flexible tube is attached to the lower portion of the inner skirt and extends into the bottle. The top wall of the plug is provided with air inlet openings which are closed by a slidable check valve carried by the inner skirt. When pressure is applied to the flexible sidewalls, air flow moves the check valve into the closed position and forces the contents of the containers through the dip tube and out the central opening in the plug.

3,648,904
LIQUID DISPENSING APPARATUS

William Teige, North Hollywood, Calif., assignor to Columware, Inc., Lynwood, Calif.

Filed Mar. 18, 1970, Ser. No. 20,700
Int. Cl. B67d *5/48*
U.S. Cl. 222—380 **3 Claims**

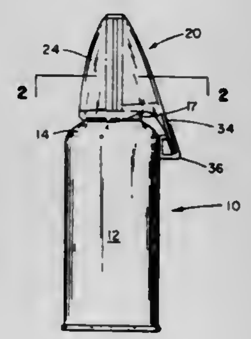
A hot chocolate drink machine using liquid chocolate for mixing with hot water and aerating. A dispenser for the liquid chocolate comprising a motor driven auger in an outlet sleeve of the liquid container and a valve mechanism for opening and closing the outlet sleeve to provide a constant measure of liquid chocolate.



3,648,905
VALVE ACTUATOR FOR PRESSURE CONTAINER

Richard M. Kauder, St. Paul, Minn., assignor to The Gillette Company, Boston, Mass.

Filed Aug. 20, 1969, Ser. No. 851,548
Int. Cl. B05b *7/32*
U.S. Cl. 222—402.21 **3 Claims**



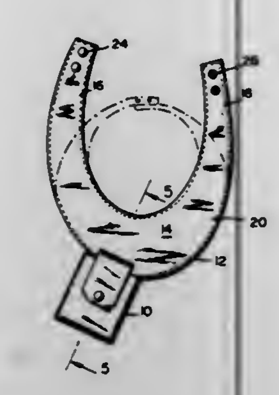
A pressure container having an outlet valve actuated by tilting the outlet nozzle is provided with a lever arm extending from the nozzle downwardly and outwardly in proximity to the container to facilitate one-hand operation and is also provided with a releasable locking member cooperating with the lever arm construction to prevent premature or accidental operation.

3,648,906
WALLET CARRYING ARTICLE

Mike Ross, 160 East 65th Street, New York, N.Y.

Filed May 27, 1970, Ser. No. 40,877
Int. Cl. A45c *1/04*
U.S. Cl. 224—5 R **6 Claims**

A shoulder strap arrangement designed to be slipped about a person's arm and over his shoulder. The strap is in the form of a loop and a means is provided to adjust the size of the loop so that it may be snugly placed about a person's arm, adjacent his arm pit. A pouch is secured to the strap and a wallet may be placed in the pouch obviating the need for carrying the wallet in a person's pants pocket or jacket pocket.

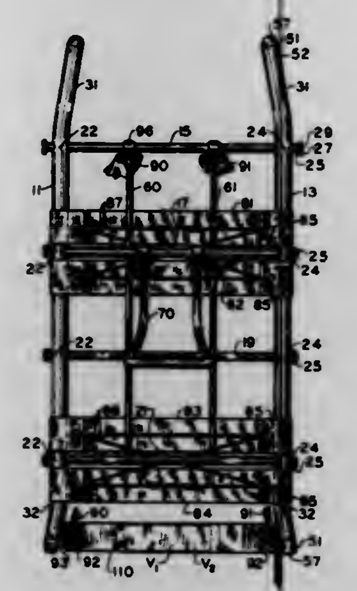


ERRATUM

For Class 224—25 see:
Patent No. 3,649,921

3,648,907
BACK PACK CARRIER SYSTEM

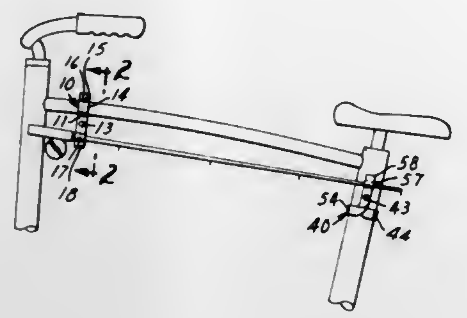
Russell H. Romney, 3259 Bon View Drive, Salt Lake City, Utah
Continuation-in-part of application Ser. No. 750,521, Aug. 6, 1968, now abandoned. This application Mar. 2, 1970, Ser. No. 15,744
Int. Cl. A45f *3/08*
U.S. Cl. 224—25 A **10 Claims**



A back pack carrier system adaptable for various loads is made up of a light tubular frame formed with transverse and upright members connected together with detachable plastic connectors and equipped with multiple self-adjusting back web strips to fit the wearer's back comfortably. A plurality of weatherproof bags equipped with laterally extending grommeted flaps are adapted to be lashed to the frame in various positions. Rearwardly extending shelf elements selectively mountable on different transverse members of the frame are provided to support the bags as needed. Lashing of the bags and other load components to the frame is facilitated by lash retaining elements in the ends of the transverse and vertical frame members.

3,648,908
FISHING ROD CARRIER FOR BICYCLES

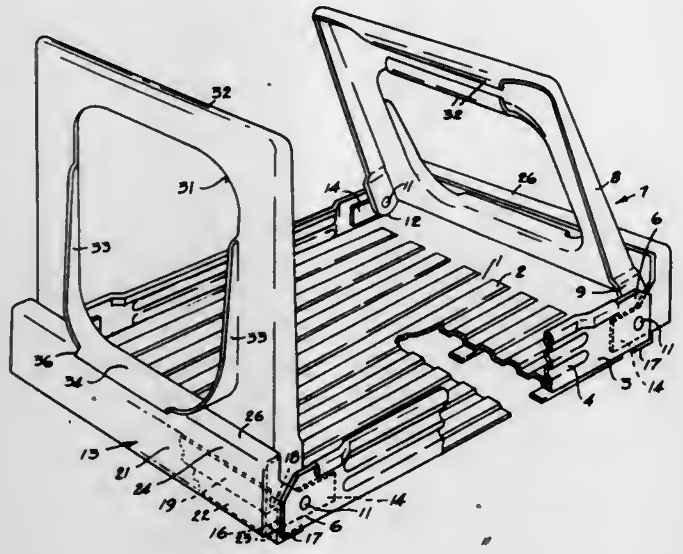
Glen M. Thompson, Route 1, Roberts, Wis.
Filed Dec. 23, 1969, Ser. No. 887,651
Int. Cl. B62j *11/00*
U.S. Cl. 224—37 **2 Claims**



A spring clamp attached to one of the bars on a bicycle frame grips a fishing rod so that it extends horizontally, parallel to the frame.

3,648,909
CARRYING TRAY

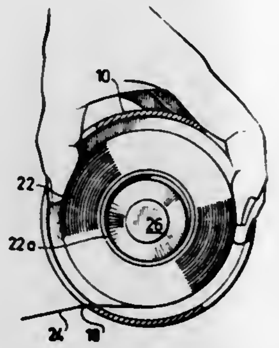
Warren R. Wisecarver, Walnut Creek, Calif., assignor to Bishop-Wisecarver Corporation, Pittsburgh, Pa.
Filed Aug. 26, 1970, Ser. No. 67,044
Int. Cl. A47g *23/06*
U.S. Cl. 224—48 R **9 Claims**



A tray with a pivot support in each corner with carrying handles on the opposite ends of the tray being foldable on said pivots to the bottom of the tray and which can be extended into upright position for carrying a loaded tray. Each end structure for the pivots forms a downwardly open nesting pocket and an upwardly extended nesting flange so formed that the trays with the folded handles can be nested one on top of the other. Each pivot is so positioned relatively to the handle and the bottom of the tray that the pivot flange of the handle bears against the bottom in the upright position. Each handle has a central opening with opposite curved edge flanges to form a grip, and in the preferred form has a bracing flange adapted to the clamp over the top nesting flange of the adjacent end member.

3,648,910
CONTAINER OR DISPENSING DEVICE FOR ROLLS OF SHEET MATERIAL, SUCH AS PAPER, METAL FOIL ETC.

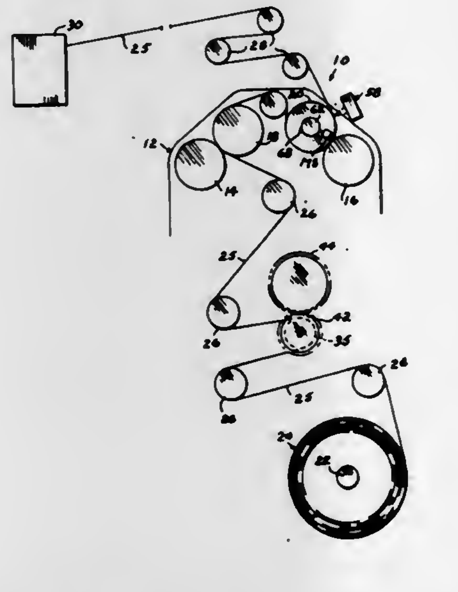
Bengt Anders Benson, Sibyllegatan 30, 114 43, and Karl Enar Hammarstrom, Heleneboregatan 38, 117 32, both of Stockholm, Sweden
Filed Oct. 29, 1969, Ser. No. 872,300
Claims priority, application Sweden, Oct. 31, 1968, 14815/68
Int. Cl. B26f *3/02*
U.S. Cl. 225—53 **18 Claims**



A container or dispenser for a roll of sheet material, such as paper, metal foil etc., is provided in the form of a cylindrical casing having diametrically opposed openings whereof at least one constitutes an opening for withdrawal of the rolled material. This opening has, in relation to the central transverse plane of the dispenser, a symmetrical T-shape, triangle shape, circular sector shape or a shape intermediate to these, with an extension along the dispenser corresponding to the width of the roll of material and a circumferen,ial extension in said central plane corresponding to about 25 to about 40 percent of the circumference of the dispenser.

3,648,911
ROTARY PRESS PREPRINTED WEB REGISTERING DEVICE

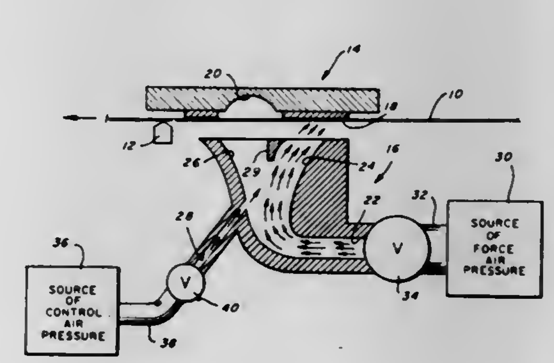
Roger K. Pekrul, Choctaw, Okla., assignor to The Oklahoma Publishing Company, Oklahoma City, Okla.
Filed Apr. 2, 1970, Ser. No. 25,142
Int. Cl. B65h *23/70*
U.S. Cl. 226—30 **1 Claim**



In a web registering device for a rotary press containing data to be printed on one side of a web having preprinted data on its opposite side, the web is entrained around a control roller mounted in the press and connected at one end by gears to a brake. An electrical circuit, including sensing means reading the position of register marks preprinted on the web and coordinated with a circuit completed by a switch closed by a cam, mounted on one end of a press cylinder, controls the position of the preprinted web with respect to the data being printed on its opposite side by operating air valves applying or releasing the brake.

3,648,912
PNEUMATIC APPARATUS FOR INCREMENTALLY ADVANCING TAPE

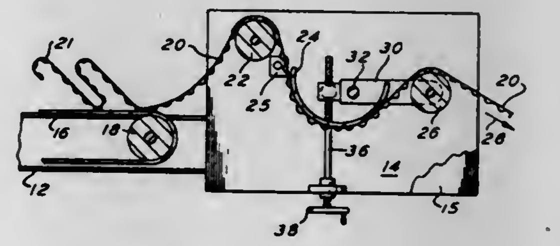
Philip E. Deck, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.
Filed Sept. 29, 1970, Ser. No. 76,403
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 **5 Claims**



A pneumatic apparatus for incrementally advancing tape including means of applying continuous force tending to advance the tape in a path across a process station, a brake block adjacent the tape path having a brake surface and a tape receiving recess adjacent the brake surface, a fluidic switch means adjacent to and spaced from the brake block with the tape path being between the switch means and the brake block, the switch means selectably directing a stream of air towards either the brake surface or the tape receiving recess to thereby force the tape into contact with the brake surface or the recess, and means of controlling the switch means to cause the air stream to be directed selectably towards the brake surface or the tape receiving recess.

3,648,913
NOISELESS PAPERBOARD GUIDE

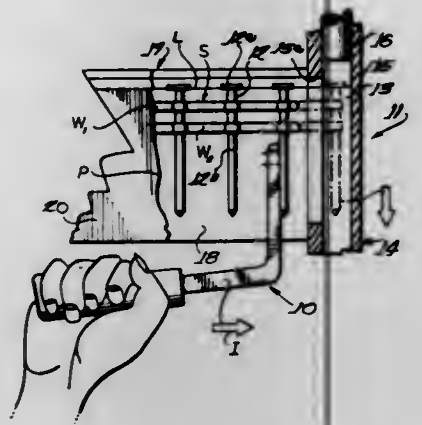
James T. Ferara, Gibbsboro, N.J., assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Sept. 10, 1970, Ser. No. 71,050
Int. Cl. B65h *27/00*
U.S. Cl. 226—189 **10 Claims**



A paperboard guide on the bridge between the single-facer and double-facer guides and tensions paperboard having a liner side and a fluted side. The fluted side of the paperboard contacts idler rollers while the liner side contacts a curved surface which may be stationary or rotatable. At least one of the rollers may be movable for the purpose of changing the amount of surface contact between the liner side of the paperboard and the curved surface to increase the tension.

3,648,914
FASTENER POSITIONING DEVICE

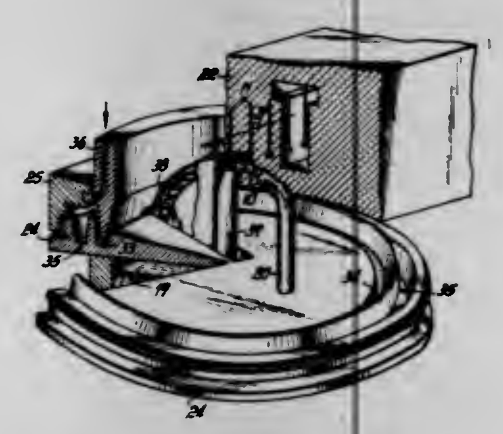
Garry P. Perkins, Cary, Ill., assignor to Spotnails, Inc., Rolling Meadows, Ill.
Filed Oct. 23, 1970, Ser. No. 83,290
Int. Cl. B25c *7/00*
U.S. Cl. 227—156 **5 Claims**



A device is provided to facilitate inserting the leading end of a flexible strip of collated fasteners into a narrow passageway, the latter forming a part of the feed mechanism for a high speed power actuated fastener-driving tool. One end of the device is adapted to extend into the passageway and to be positioned between adjacent fasteners at the leading end of the strip and to be substantially parallel to shanks of said fasteners. The one end of the device engages the shank of the leading fastener and moves same in a sidewise direction through the passageway.

3,648,915
ARRANGEMENT FOR SOLDERING A TERMINAL TO A SEMICONDUCTOR

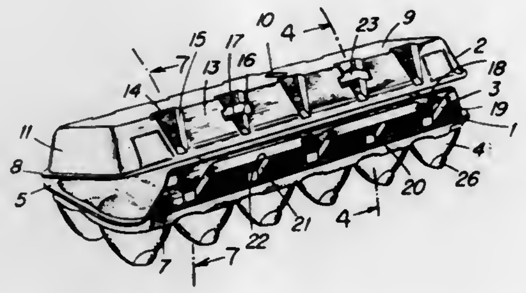
Wolfgang Leibfried, Leonberg; Guenther Schmid, Stuttgart-Moehringen; Alfred Ortlieb, Stuttgart-Vaihingen; Horst J. Hartmann, Schnait, and Eberhard Tittes, Wernau, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Original application Feb. 19, 1968, Ser. No. 706,257. Divided and this application Feb. 6, 1970, Ser. No. 9,283
Int. Cl. B23k *1/08*
U.S. Cl. 228—37 **28 Claims**



An arrangement for soldering together an electrode to a semi-conducting element. Melted solder is directed in a stream of circular cross section against one of the two parts to be joined together. Depending upon the velocity of the stream of solder, more or less solder is deposited upon the part to which the stream is applied. The joining of the elements takes place t through a second reheating process in which the deposited solder softens and joins the parts together. An automatic transport mechanism leads the parts to which the solder stream is applied into the area of the solder flow. The stream of solder emerges from a reservoir of melted solder and is returned to the latter after following a parabolic-shaped path.

3,648,916
CARTON

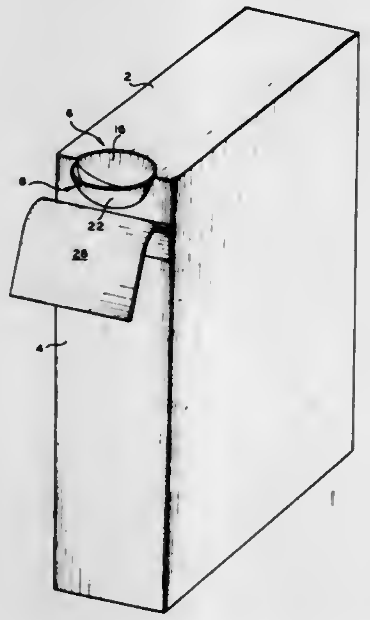
Nicholas D. Commisso, Victor, N.Y., assignor to Mobil Oil Corporation
Filed Feb. 27, 1970, Ser. No. 15,108
Int. Cl. B65d *1/26*
U.S. Cl. 229—2.5 **11 Claims**



A disposable carton formed of low cost material and adapted for the packaging of eggs and the like is formed with coacting elements of a cover and latching flap which, in combination, afford rigidity to those elements, guide the coacting elements on closure and provide for a secure latching susceptible of easy opening. Matching wedge shaped recesses are provided in cover and latching flap for guidance and rigidity. Latching is accomplished by a detent extending inwardly from the cover to engage a latching bar of the flap.

3,648,917
CLOSURE ELEMENT

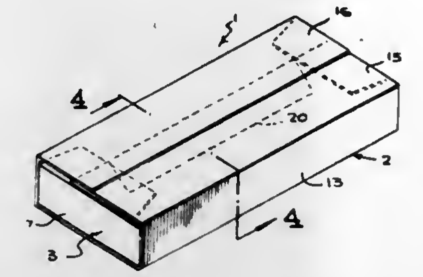
Stafford D. Collie, Glen Ellyn, Ill., assignor to Phillips Petroleum Company
Filed Apr. 23, 1970, Ser. No. 31,244
Int. Cl. B65d *39/00*
U.S. Cl. 229—7 **11 Claims**



A closure element for installation in an opening of a container and having a first and second closures members. The second closure member is flexible and movable between a closed position wherein portions of the second closure member contact and nest in portions of the first closure member and an open position wherein the second closure member is spaced from the first closure member.

3,648,918
LOCK PACKAGE

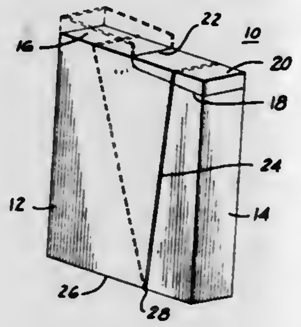
Edwin A. Van Inwagen, Elmira, N.Y., assignor to F. M. Howell & Company, Elmira, N.Y.
Filed Aug. 19, 1970, Ser. No. 65,011
Int. Cl. B65d *5/38*
U.S. Cl. 229—19 **5 Claims**



A package of a tray and enclosing sleeve wherein the tray has inturned end flaps and the sleeve has an internal, depending locking tab of a length substantially equal to the spacing between the adjacent edges of the tray end flaps to swing downwardly between the tray and flaps when the tray is inserted into the sleeve to lock the tray against removal from the sleeve. In one form, the tray is open topped and the lock can be released. In another, the tray has a closed top and the sleeve is provided with a tear strip to open the package.

3,648,919
CARTON CLOSURE

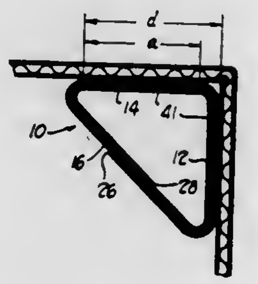
Clarence D. Anderson, 1615 Pech Road, Apt. 7-A, Houston, Tex.
Filed Jan. 26, 1970, Ser. No. 5,798
Int. Cl. B65d *5/66*
U.S. Cl. 229—44 **2 Claims**



A carton closure means is provided on a carton to allow easy, positive opening and closing of the carton.

3,648,920
TUBULAR MEMBER

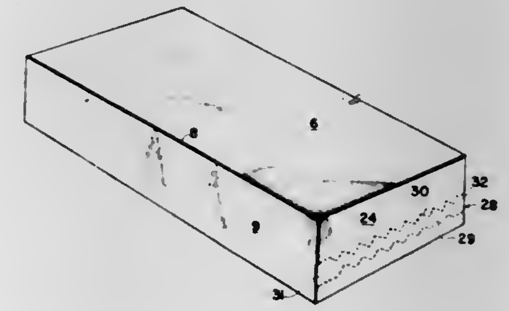
Paul W. Stump, North Olmsted, Ohio, assignor to Clevepak Corporation, Cleveland, Ohio
Filed Nov. 20, 1968, Ser. No. 777,413
Int. Cl. B65d *5/50;* **F16l** *9/16*
U.S. Cl. 229—49 **4 Claims**



A tubular member with a cross section forming a three-sided figure, especially useful as a container reinforcement. The member is convolutely wound of fiber-containing sheet material and the fibers extend predominantly longitudinally of the member. When located in a corner of a box-like container or carton, the member provides substantial area contact with the container walls while occupying little volume and imparts a high degree of cubical rigidity to the container.

3,648,921
RECLOSABLE CONTAINER

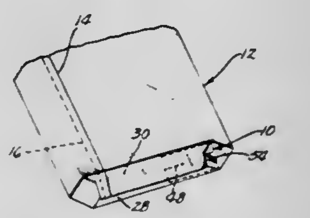
Joseph H. Lock, Mableton, Ga., assignor to The Mead Corporation
Filed July 27, 1970, Ser. No. 58,362
Int. Cl. B65d *5/54*
U.S. Cl. 229—51 TC **1 Claim**



A reclosable container is disclosed in which a composite wall comprises an outer and an inner panel disposed in flat face contacting relation to each other. The outer panel is secured in an area along a free edge thereof to the inner panel and a pair of serrated weakened severance lines are formed in the outer panel in parallel relationship to each other and to the free edge of the outer panel to define a tear strip whereby the outer panel is separated from the inner panel upon removal of the tear strip. An opening is formed in the inner panel and in coincidence with the reclosing serrations formed in the outer panel along an edge of the tear strip remote from the free edge of the outer panel.

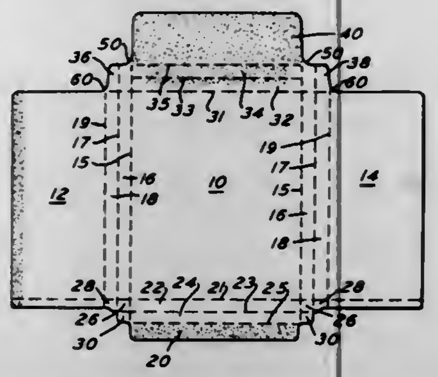
3,648,922
BAG

Leo P. Gebo, Des Moines, Iowa, assignor to Great Plains Bag Co., Des Moines, Iowa
Filed Feb. 5, 1970, Ser. No. 9,002
Int. Cl. B65d *31/14, 33/38*
U.S. Cl. 229—62.5 **5 Claims**



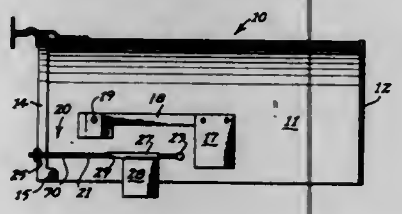
A bag device comprising side walls and opposite ends with at least one end including a closure means closing a charging and discharge opening. The closure means includes a pair of end flaps which are folded inwardly towards the opening. A pair of side flaps extend inwardly over the end flaps and the opening. A passageway extends between one of the end flaps and the side flaps which is in communication with the opening to permit insertion therein of a charging spout. A flexible sleeve is secured to the said one end flap so that when the side flaps and sleeve are longitudinally ruptured to permit the emptying of the bag, the ruptured sleeve and end flap can be folded outwardly from the opening to form a pouring spout adjacent the opening.

3,648,923
LIGHT WEIGHT EXPANSIBLE MAILING ENVELOPE
Frank L. Young, 401 Caranel Circle, Penn Valley, Pa.
Filed June 30, 1970, Ser. No. 51,269
Int. Cl. B65d *11/48*
U.S. Cl. 229—75 **2 Claims**



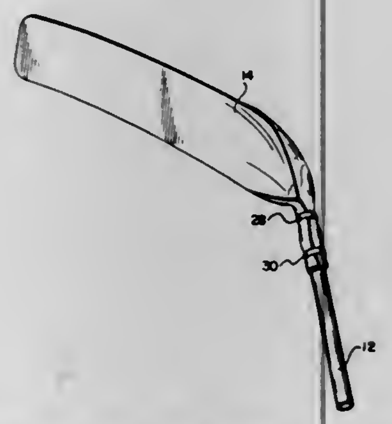
A light weight expansible mailing envelope which is fabricated from a single blank of spunbonded olefin sheet stock. All 90° inside corners at the open mouth of the envelope include radiused filets at the intersection of non-coextensive planes which the side gusset sections form with the front and back panels. Corner closure flap extensions are incorporated to increase the number of non-coextensive planes at the open end of the envelope.

3,648,924
MAILBOX SIGNAL
Homer Woodfin Burns, 725 Greymont Drive, Nashville, Tenn.
Filed Aug. 6, 1970, Ser. No. 61,549
Int. Cl. B65d *91/00*
U.S. Cl. 232—35 **1 Claim**



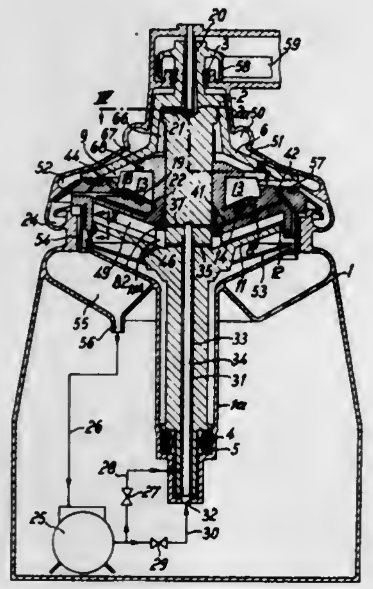
A signal device for a mailbox including a rod pivotally mounted to the mailbox at one end and supported at its forward end portion by the mailbox door in closed position, a visual signal element supported on the rod and adapted to be rotated by cooperating cam means, when the door is opened, to a depending position more visible to an observer to the rear of the mailbox.

3,648,925
ANIMAL SLAPPER
Donald E. Fryer, 3208 Oxford Drive, Bettendorf, Iowa
Filed Dec. 22, 1969, Ser. No. 887,166
Int. Cl. B68b *11/00*
U.S. Cl. 231—2 R **9 Claims**



An animal slapper including a handle portion and a slapper portion. The slapper portion is made from a flexible rubber-like material and has a generally flat rectangular or paddle-like configuration. Preferably, the slapper portion is made from one or more plies of a flexible fiber reinforced rubber or rubber-like material, e.g., a polychloroprene (Neoprene) material.

3,648,926
LIQUID-SOLID SEPARATOR
Kurt Pause, Grevenbroich, Germany, assignor to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Germany
Filed July 14, 1969, Ser. No. 841,290
Claims priority, application Germany, Nov. 29, 1968, P 18 11 601.3
Int. Cl. B04b *11/00*
U.S. Cl. 233—20 **35 Claims**

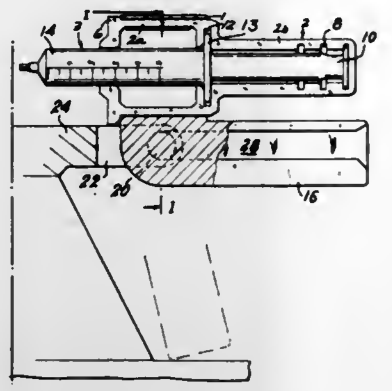


A batch centrifuge for separation of minute solid particles suspended in a liquid fraction comprises a bowl having a cover and a shell both mounted on a vertical drive shaft. The shell is moved upwardly to closed position in response to admission of a control liquid between its underside and a bottom on the shaft. The settling space of the bowl is surrounded by a ring-shaped clearance defined by the cover and shell inwardly of two ring-shaped end faces which sealingly engage each other in closed position of the shell. A sealing ring seals the clearance on admission of control liquid into an annular compartment of the shell, and the latter further supports a control valve which normally seals an outflow passage for rapid evacuation of liquid fraction when the outermost part of the settling space accumulates a cake of solid particles. The remaining liquid fraction is expelled from the cake by way of the clearance in response to retraction of the sealing ring, and the cake is caused to disintegrate and is expelled radially outwardly upon movement of the shell away from the cover.

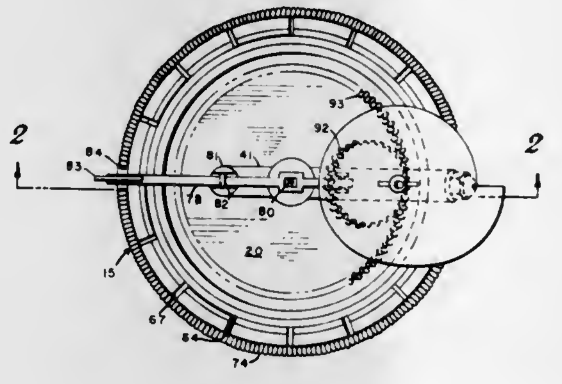
3,648,927
SYRINGE-SUPPORTING DEVICE FOR CENTRIFUGES
Lucien Abbe, 83 rue Emile Duploye, 92, Issy-les-Moulineaux, and Charles Sachs, 10 rue Erlanger, 75, both of Paris, France
Filed Jan. 5, 1971, Ser. No. 103,995
Claims priority, application France, Jan. 7, 1970, 7000354
Int. Cl. B04b *9/00*
U.S. Cl. 233—26 **4 Claims**

The syringe-supporting device for a centrifuge makes it possible to carry out centrifugation within the actual syringe which has been employed for sampling.

The device comprises a pivotal cylindrical sleeve and two identical half-shells between which the syringe is clamped. Said half-shells are provided on the one hand with a groove for locking the cylinder of the syringe in position and on the other hand with a plurality of grooves for locking the plunger of the syringe in the position corresponding to the quantity of blood taken. Said half-shells are inserted in the sleeve in oppositely facing relation so that the pivotal motion of the latter should direct the plunger towards the exterior and the orifice of the syringe towards the axis of the centrifuge.



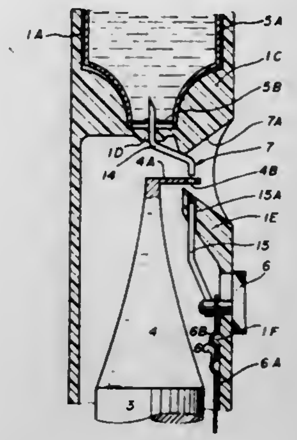
3,648,928
ADJUSTABLE COVERAGE ROTATING SPRINKLER HEAD
Robert W. Lindgren, P.O. Box 738, Soap Lake, Wash.
Filed Mar. 6, 1970, Ser. No. 17,113
Int. Cl. B05b *3/00*
U.S. Cl. 239—97 **6 Claims**



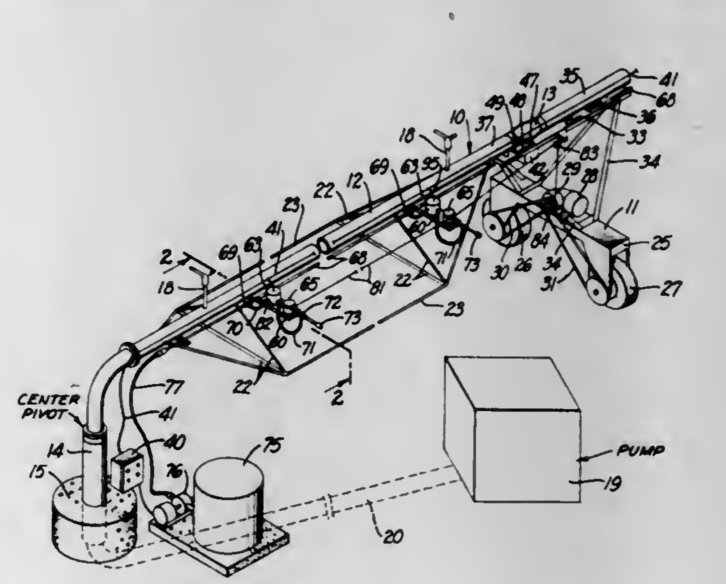
A positively driven, rotating sprinkler head having adjustable, cam controlled valving means to regulate water flow therethrough to maintain water distribution within predetermined areas not necessarily circularly symmetric. The valving cam may be manually set during operation to visually determine the periphery of the sprinkled area. A second positively driven cam is associated with the output nozzle to particularly deflect the flow of water therethrough to distribute it uniformly within the area watered.

3,648,929
ATOMIZER
Andre Corbaz, Geneva, Switzerland, assignor to Battelle Memorial Institute, Geneva, Switzerland
Filed Feb. 8, 1971, Ser. No. 113,385
Int. Cl. B05b *3/14*
U.S. Cl. 239—102 **5 Claims**

A portable, handy and autonomous atomizer operating without a propellent gas and comprising an elongated casing in which are coaxially mounted a removable liquid-containing cartridge, an electronic oscillator, a transducer, energized by the periodic signals issuing from the oscillator, for converting these signals into mechanical vibrations having a frequency at least equal to that of the signals, and an amplifier for amplifying these vibrations at one end thereof. In the casing are also provided a supply voltage source and means for feeding the liquid out of the cartridge to a portion of said one end of the amplifier thereby to form an aerosol jet, said portion projecting out of an opening in the casing wall and the discharge end of the cartridge facing said one end.



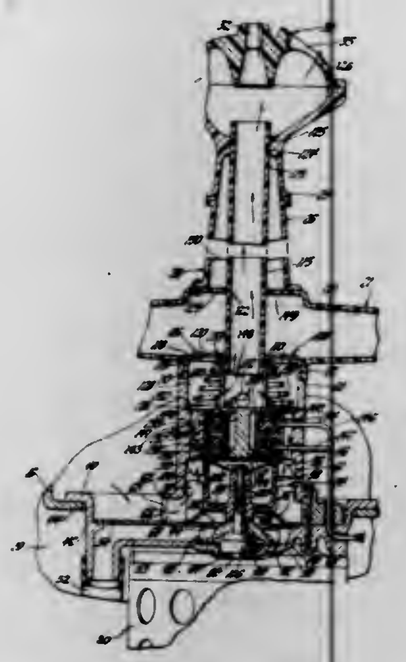
3,648,930
CHEMICAL SOLUTION SPRAY SYSTEM FOR SELF-PROPELLED SPRINKLING APPARATUS
Perry H. Brown, Pasadena, and Paul C. Kernodle, Jr., Diamond Bar, both of Calif., assignors to Irrigation and Power Equipment Inc., Greely, Colo.
Filed Oct. 8, 1970, Ser. No. 79,166
Int. Cl. B05b *9/06*
U.S. Cl. 239—156 **12 Claims**



A system for applying agricultural chemicals in small amounts over a large area. A low-capacity spray system carried on and operated by a high-capacity self-propelled sprinkling irrigation system. A group of oscillating spray arms carried on and spaced along an irrigation pipeline, the arms being oscillated and the spray being turned on by the irrigation pipeline motor control to provide spraying as the pipeline is moved.

3,648,931
DISHWASHER WITH SELECTABLE LEVELS OF WASH
James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 8, 1970, Ser. No. 70,180
Int. Cl. B05b *3/00*
U.S. Cl. 239—248 **4 Claims**

A dishwasher having an improved water circulation arrangement for use therewith including a fluid circulating pump variously connectable with a lower rotating spray arm, a vertical spray column on the spray arm and an upper spray header. The spray header is positioned on the spray column such that the spray header receives fluid by means of a vertical supply stub extending concentrically within the spray column providing fluid communication between the pump and the spray header. A three-position sleeve valve is located on the lower end of the supply tube and is operative to selectively connect the fluid flow from the pump alternatively to the combination of all three spray devices; the combination of the spray arm and the spray column, or only the upper spray header.



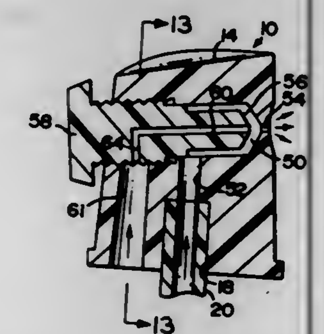
3,648,932
VALVE BUTTON WITH ASPIRATOR PASSAGEWAY

Ronald F. Ewald, Rolling Meadows, and Norman E. Platt, Fox River Grove, both of Ill., assignors to Seaquist Valve Company, Division of Pittway Corporation, Cary, Ill.

Filed Oct. 27, 1969, Ser. No. 869,521

Int. Cl. B05b *7/32*

U.S. Cl. 239—337 **6 Claims**



An aerosol valve button featuring an aspirator passageway having one end in communication with the atmosphere and its other end adjacent the button's discharge orifice. Product-flow through the discharge orifice causes an air-stream to flow in the aspirator passageway. This auxiliary air-stream reduces eddy currents and other turbulence at the discharge orifice; thus providing more efficient breakup and distribution of the sprayed aerosol product with less propellant.

3,648,933
WATERING CAN

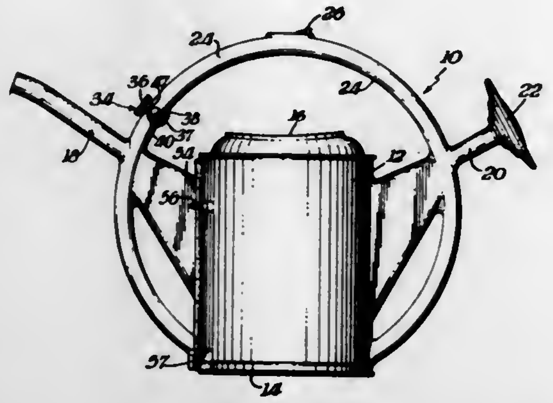
Edward C. Grotz, Wilmington, Del., assignor to Mr. Gardener Enterprises Ltd., Wilmington, Del.

Filed Mar. 4, 1971, Ser. No. 120,958

Int. Cl. A01g *25/14*

U.S. Cl. 239—377 **5 Claims**

A watering can comprising of body with two spouts, one open spout and one spout with a rosette spray head; a circular handle connecting both spouts and the lower portion of both sides of the body, the handle having a hollow section connecting the open spout with an opening in the top of the handle and means for closing the hollow connection; a mounted stirring/measuring rod; and optionally a siphon drain in the rosette spray head; provides an improved garden implement for spraying and watering which permits (a) measured mixing, in the can, of additional materials including solids, powders and other liquids; (b) solid stream or spray application of the cans contents; and optionally; (c) a no-drip rosette spray head which has a materially improved resistance to rusting in the lower section of the head caused by pooling of the spray liquid after use and the loss thereof.



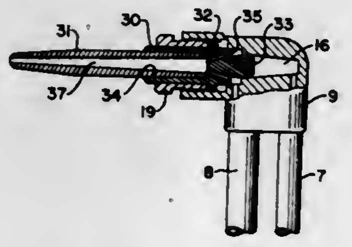
3,648,934
WELDING TIP FOR CUTTING TORCH

Herbert C. Goss, Glenshaw, Pa., assignor to Goss Gas, Inc., Glenshaw, Pa.

Filed Nov. 25, 1970, Ser. No. 92,792

Int. Cl. B05b *7/06*

U.S. Cl. 239—391 **2 Claims**



A welding tip for a cutting torch is made by forming a cylindrical head with a central stem at one end and an axial socket in the other end, and a ring of drilled passages extending from inlets around the base of the stem to the inner end of the socket. A solid rod with an inner end portion that will fit snugly in the head socket is drilled to provide it with a single passage lengthwise through it to form a nozzle. This passage is reamed to taper it from the inner end of the rod substantially to its outer end and to provide the large end of the passage with a diameter great enough to register with the inner ends of all of the head passages when the nozzle is inserted in the socket and sealed therein.

3,648,935
SPRAY APPARATUS WITH MOVABLE HEAD

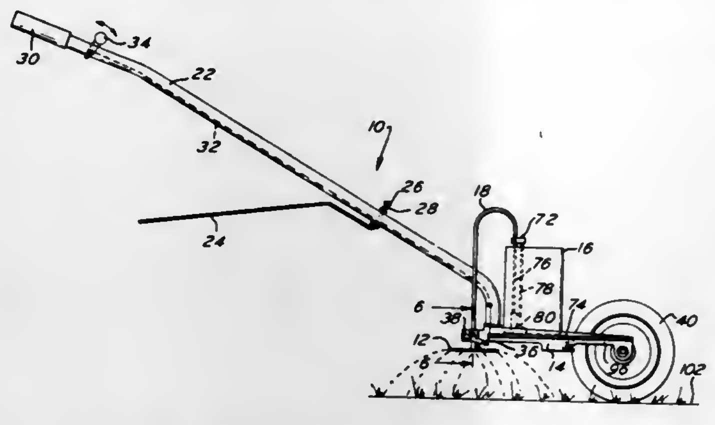
John E. Waldrum, Ambler, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Feb. 4, 1970, Ser. No. 8,581

Int. Cl. A01c *15/02*

U.S. Cl. 236—659 **9 Claims**

A spray apparatus for applying agricultural liquids, the apparatus including an oscillating or otherwise moving spray head which has many projecting fingers that are pointed at their free ends in the preferred embodiment, the spray head being generally horizontally disposed, with the liquid material being supplied onto the spray head wherein the liquid is projected by centrifugal force onto the projecting fingers and then discharged therefrom in large drops of a substantially uniform size to give a very uniform spray pattern.



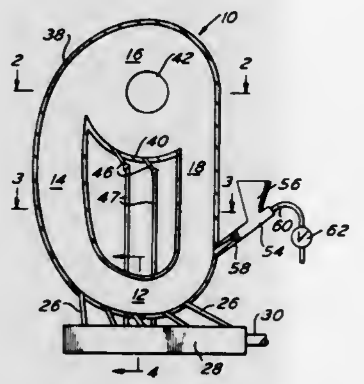
3,648,936
CONSTANT ACCELERATION FLUID ENERGY MILL

Nicholas N. Stephanoff, Haverford, Pa., assignor to Fluid Energy Processing & Equipment Co., Hatfield, Pa.

Filed Apr. 6, 1970, Ser. No. 25,962

Int. Cl. B02c *19/06*

U.S. Cl. 241—5 **9 Claims**



A fluid energy mill comprising a lower inlet section and an upper classification section connected by a vertical upstack on one side and a vertical downstack on the other side, the inlet section having tangential nozzles connected to a source of gaseous fluid pressure and a raw feed inlet, whereby the raw feed particles are entrained and centrifugally whirled around the mill by the pressure fluid. The portion of the inlet chamber adjacent the upstack, as well as the upstack itself and the portion of the classification chamber adjacent the upstack form part of an antifriction curve. The classification section is preferably generally circular and has at least one exhaust outlet in the center so that the lighter particles on the inner periphery of the centrifugal path are rotated in a helical path until exhausted through the outlet. Preferably, nozzles are provided in the classification section to project pressure fluid thereinto in a generally elliptical path.

3,648,937
METHOD OF MAKING SMALL PLASTIC PARTICLES

John E. Ehrreich, Wayland, Mass., assignor to Ercon, Inc., Cambridge, Mass.

Filed Aug. 8, 1969, Ser. No. 848,688

Int. Cl. B02c *23/06*

U.S. Cl. 241—15 **10 Claims**

A process for the comminuting of small particles of organic materials, especially polymeric materials, the process comprising the steps of dispersing a particulate material in a mass of the organic material to be comminuted, comminuting the material, and—in the more usual situation—removing the particulate material from the comminuted organic material to leave an uncontaminated particulate product.

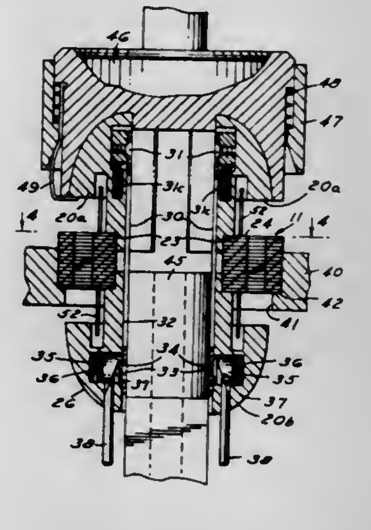
3,648,938
WINDING OF ELECTRIC MOTORS

Paul E. Dryburgh, Owosso, Mich., assignor to Universal Electric Company, Owosso, Mich.

Filed Aug. 5, 1970, Ser. No. 61,178

Int. Cl. B65h *81/06*

U.S. Cl. 242—1.1 E **18 Claims**



An apparatus for facilitating the winding of stators of electric motors comprising a pair of shroud members and interengaging means between the shroud members and the poles of the stator to support the shroud members on the stator. Each shroud member has a surface for guiding the wire as it is wound about the poles.

3,648,939
YARN STORING DEVICE

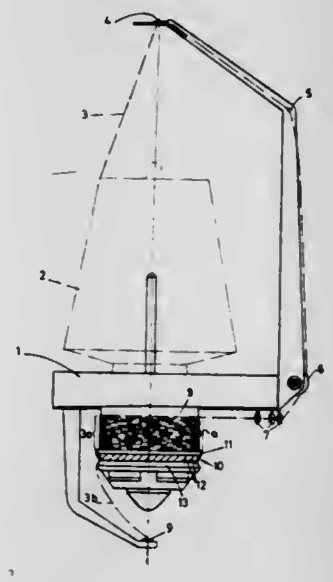
Karl Isac Joel Rosen, Villa Haga, Ulricehamn, Sweden

Filed Jan. 6, 1970, Ser. No. 884

Claims priority, application Germany, Jan. 7, 1969, 19 00 619.0

Int. Cl. B65h *51/20*

U.S. Cl. 242—47.01 **11 Claims**



A yarn storing device, wherein the yarn running off a bobbin can be wound tangentially onto a storing drum and can be axially removed therefrom under a retarding ring which surrounds the drum. The retarding ring comprises a base ring which surrounds the periphery of the drum at a distance and flexible, thin, elongated elements extending therefrom towards the surface of the drum. The flexible elements are formed by resilient fingers which are inclined inwards from the base ring along an imaginary conical surface and extend in the direction of relative rotation of the yarn during its withdrawal from the drum, overlap one another in the direction of the periphery and are supported by their free ends on a shoulder of the drums.

3,648,940

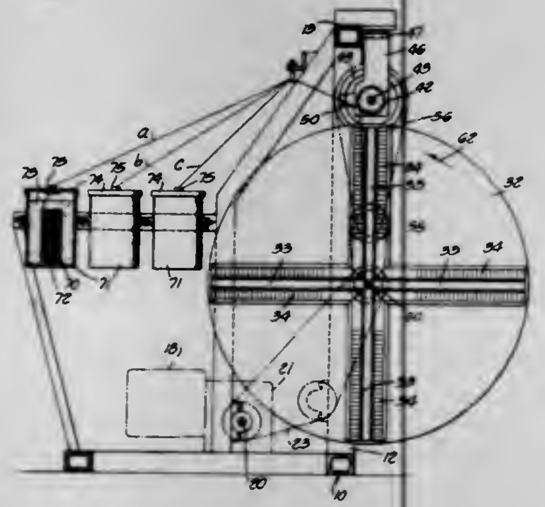
METHOD AND APPARATUS FOR FILAMENT WINDING

Diven Meredith, 87-135 Avenue 56, Thermal, Calif.

Filed Feb. 4, 1970, Ser. No. 8,488

Int. Cl. B65h *75/00, 49/04*

U.S. Cl. 242—54 R **5 Claims**



This invention concerns a method and apparatus for simultaneously winding a plurality of filaments to form a mass transfer unit. A series of filaments axially spaced along a central core member are wound upon it as it is turned about a longitudinal axis to initially secure the spaced filaments thereto. Separator blocks are then placed in position one at a time while turning the core member to clamp the filaments between the separator blocks and the core member. The core member and separator blocks continue turning while additional separator blocks are added one at a time to form a plurality of radial stacks of separator blocks so that the filaments are clamped between adjacent separator blocks in each stack. Simultaneously the filaments are fed axially so that they are wound helically on the separator blocks. One aspect of the method is to insure proper action in withdrawing each filament from its supply coil without backlash or tangling; each coil is secured in a generally upright stationary position within a container, which is then filled with discrete rounded particles to a depth to surround and submerge the supply coil, and the filament is then pulled upward off the upper end of the supply coil. Apparatus particularly adapted for carrying out this method includes a pair of axially spaced supports mounted to turn on a common axis with radial guide channels on each support for receiving and supporting one end of each of the separator blocks to form plurality of radial stacks.

3,648,941

STATIONARY PINCH PAD

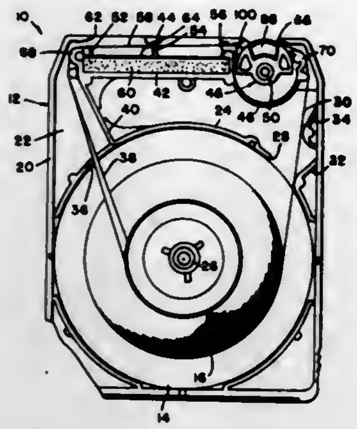
Donald D. Merry, Westland, Maine, assignor to Rozinante Electronic Corporation, Plymouth, Mich.

Filed Mar. 20, 1970, Ser. No. 21,421

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.19 A **3 Claims**

A tape cartridge having a rotatable spool with a reel ot magnetic tape in endless array is provided. The spool is mounted in a casing which includes guide means over which a loop portion of the tape is guided for transportation past a reproducing head. The drive means for the tape includes a power-driven rotating wheel and a fixed drive member or pinch pad in the casing in alignment with the driven wheel and over which the tape slides during transportation.



3,648,942

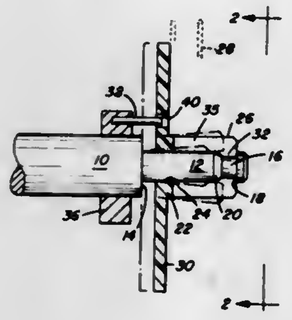
WINDING APPARATUS

John S. Lercher, and Lester C. Moore, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 2, 1970, Ser. No. 51,929

Int. Cl. B65h *17/02*

U.S. Cl. 242—68.3 **4 Claims**



A winding spindle or chuck for releasably gripping and driving a spool or reel and comprising a drive shaft having circumferential groove in the peripheral surface at the outer end thereof. A sleeve member is provided which has a centrally disposed axial opening with an inner diameter substantially equal to the diameter of the winding spindle. The sleeve member has a radially inwardly extending shoulder at the outer end and a plurality of radial slots formed along the major portion of the length thereof from the outer end thereby forming a plurality of finger members. The sleeve member is arranged to fit on said drive shaft in a first position with the inwardly extending shoulder portion of the finger members fitting in the groove with an outer diameter less than the reel center. In a second position of the sleeve, the finger members are no longer in the groove but are deflected outwardly whereby the outer diameter of said sleeve member is greater than the reel center thereby firmly holding it on the spindle. Means is provided for rotationally connecting the sleeve member to the drive shaft while permitting axial movement of the sleeve member therealong.

3,648,943

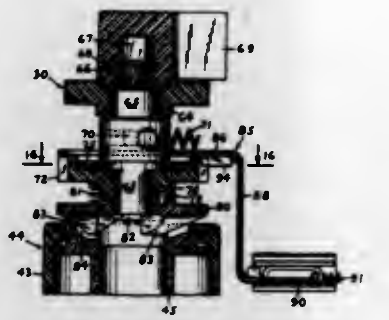
CAMERA

Vernerio J. Riogolini, Brooklyn, N.Y., assignor to Whitehouse Products, Inc., Brooklyn, N.Y.

Original application May 25, 1965, Ser. No. 458,593, now Patent No. 3,416,425, dated Dec. 17, 1968. Divided and this application Dec. 16, 1968, Ser. No. 784,069

Int. Cl. G03b *1/10*

U.S. Cl. 242—71.3 **4 Claims**



A film take-up spool driving member slidable mounted on a shaft in a film winding mechanism in photographic camera in which loading a film cartridge into the camera first slides the member out of the path of the being loaded cartridge and then permits it to be spring driven into engagement with the film take-up spool in the cartridge when the same is fully seated in the camera.

3,648,944

REEL

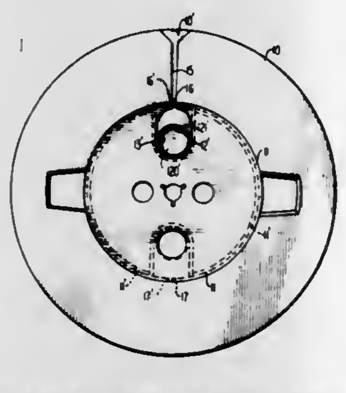
Hirotomo Fujiwara, and Takuya Arai, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kamigun, Kanagawa, Japan

Filed Jan. 9, 1970, Ser. No. 1,671

Claims priority, application Japan, Jan. 11, 1969, 44/2920

Int. Cl. B65h *75/28*

U.S. Cl. 242—74 **3 Claims**



A reel including a pair of flanges and a hub member has an axial slit on the hub periphery. A projection with a concave top surface is disposed inside the peripheral wall of the hub member. The engaging end of a magnetic tape or the like is held on the concave top surface of the projection by the finger of the operator with the tape end engaged by the slit to cause take-up of the tape on the reel during rotation of the same.

3,648,945

TAKE-UP REEL

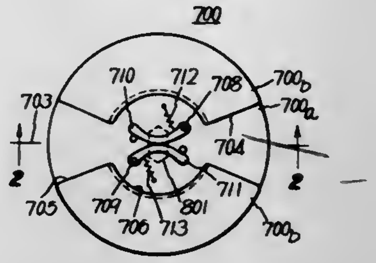
Saburo Umeda; Tokio Kizuka; Kiyoshi Iwai; Susumu Tsunoda, and Hideaki Hayashi, all of Mitaka-shi, Tokyo, Japan, assignors to Nippon Columbia Kabushikikaisha, Tokyo, Japan

Original application Jan. 18, 1968, Ser. No. 698,773, now Patent No. 3,593,944. Divided and this application July 18, 1969, Ser. No. 843,121

Int. Cl. B65h *75/28*

U.S. Cl. 242—74.2 **5 Claims**

A take-up reel which includes a pair of flanges with a hollow hub mounted between the flanges. Means are provided for clamping a magnetic tape disposed within said hub. The tape clamping means comprises a pair of clamping members which each have a roller that engage each other and with one end of each of the clamping members being pivoted to one of the pair of flanges. Springs bias each of the clamping members together such that the rollers clamp a magnetic tape to hold it.



3,648,946

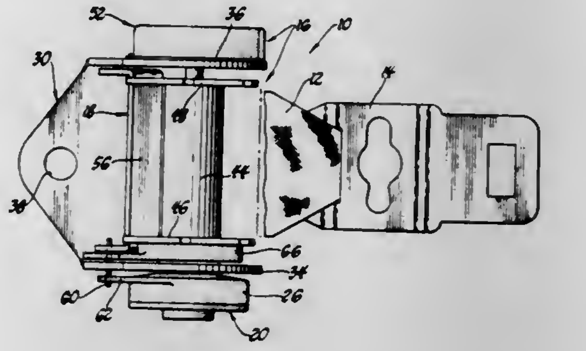
FLUID TIME DELAY AUTOMATIC RETRACTOR

Robert W. Stoffel, Ferndale, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 16, 1970, Ser. No. 29,160

Int. Cl. A62b *35/00*

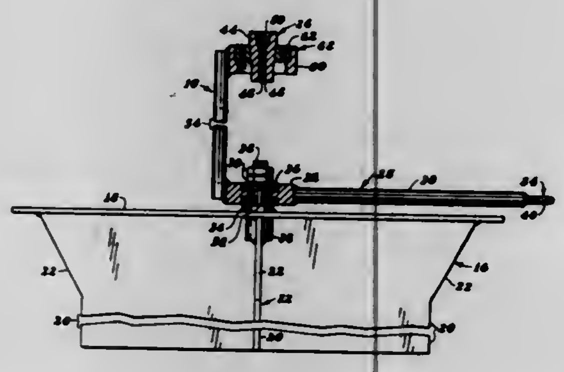
U.S. Cl. 242—107.4 **14 Claims**



A seat belt retracting assembly including a U-shaped support bracket rotatably supporting a reel on a shaft. A locking pawl is rotatably supported by a pin extending between the side walls of the bracket for moving to and from a locked position in engagement with a pair of spaced parallel platelike ratchet members defining the ends of the reel. An output impeller is disposed about the shaft exteriorly of one of the side walls of the bracket and is in sealing engagement with the shaft and defines a fluid chamber. The output impeller has an arm extending therefrom with a shoulder which engages a pin extending through the adjacent side wall from the locking pawl. An input impeller is disposed about the shaft within the fluid chamber. A spiral spring is disposed about the shaft for gripping engagement with the shaft during rotation in the extending direction but which allows the shaft to freely rotate therewithin when the shaft is rotating in the retracting direction. A coil spring is disposed about the spiral spring and engages the input impeller whereby upon initial extending rotation of the reel means, the input impeller will be rotated to react through fluid in the fluid chamber with the output impeller to hold the shoulder thereof in engagement with the extension of the locking pawl to maintain the locking pawl out of the locked position. Once the initial extending rotation of the reel means has been terminated, the wound up coil spring will unwind and continue to rotate the input impeller to continue to hold the output impeller in positive engagement with the extension of the locking pawl to prevent the locking pawl from moving into locked engagement with the ratchet members until a predetermined period has elapsed after termination of the initial extending rotation of the reel means. A clutch plate, which is in frictional engagement with one of the ratchet members and includes a slot through which the extension from the locking pawl extends, is disposed between one of the ratchet members and the adjacent side wall for maintaining the locking pawl out of the locked position until there is an additional extending rotation of the reel means in response to which the clutch plate positively moves the locking pawl to the locked position.

3,648,947
WELDING WIRE FEEDING MECHANISM

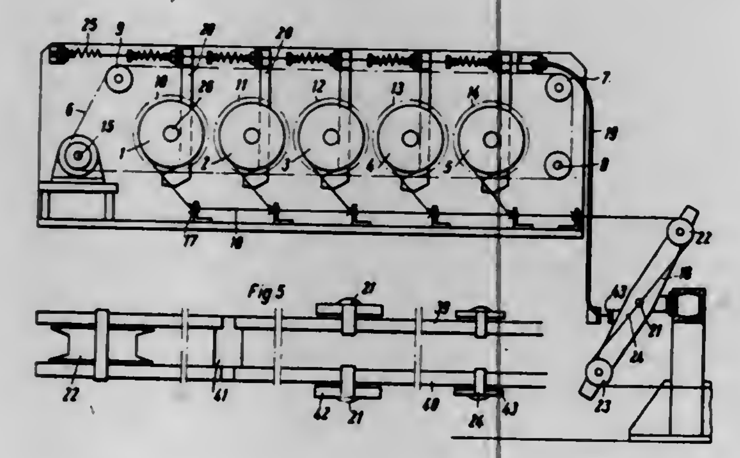
R. Leon Shelton, 11645 Kosine Lane, Loveland, Ohio
Filed July 31, 1970, Ser. No. 60,072
Int. Cl. B65h *49/00*
U.S. Cl. 242—128 **8 Claims**



Mechanism for feeding welding wire, as from a supply coil, having for the unwinding welding wire a rotatable first feed-guide for guiding the wire around the end of the supply coil, and a second feed-guide carried axially of the axis of rotation of the first feed-guide.

3,648,948
CREEL FOR ROTATABLE BOBBINS

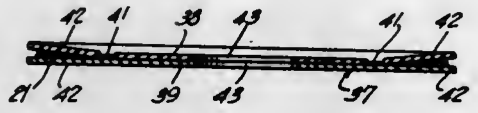
Bertrand Level, Le Vesinet, France, assignor to Plastrex-Manurhim S.A.R.L., Mulhouse-Bourtzwiller, France
Filed Sept. 22, 1969, Ser. No. 859,847
Int. Cl. B65h *59/38, 59/04*
U.S. Cl. 242—156 **9 Claims**



A creeling device having a plurality of bobbins mounted for rotation, each bobbin being under the control of its individual tension detecting means so that the bobbin is driven when the tension of its strand is too high and is retarded when the tension of its strand is too low. Means is provided for stabilizing the mechanism by selectively driving and retarding the bobbins, whereby the regeneration of tension disturbances in the system is avoided.

3,648,949
SUTURE PACKAGE

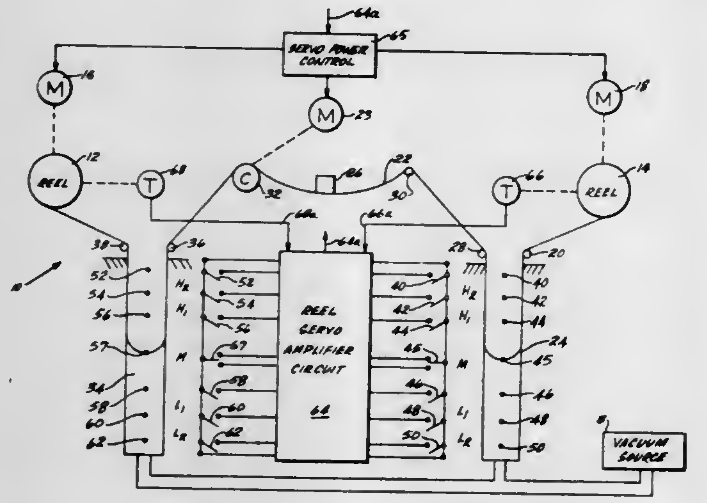
Alan Berger, Wyncote, Pa., and Alfred L. Schneider, Jr., Milford, N.J., assignors to Ethicon, Inc., Bridgewater Township, N.J.
Original application June 28, 1968, Ser. No. 740,876, now Patent No. 3,545,608, dated Dec. 8, 1970. Divided and this application Nov. 6, 1969, Ser. No. 871,800
Int. Cl. B65h *55/00*
U.S. Cl. 242—159 **3 Claims**



A sterile surgical suture package comprising an elongated suture or sutures wound upon one or more flat cylindrical reels enclosed within a correspondingly flat permanently formed compartment having fixed axial and radial dimensions greater than those of said reel, and means for retaining the reel enclosed in said package after it is partially opened while allowing the reel to rotate freely therein for dispensing the suture therefrom. The reel may be mounted on axle integral with the package for this purpose. A transverse stop also is provided to minimize the possibility of exposing the reel when the package is to be opened by stripping and to provide a fold line to position the package for dispensing after it has been opened. A special thin flat reel construction for sutures also is disclosed.

3,648,950
TAPE TRANSPORT WITH OVERSPEED LIMIT SERVO CONTROL

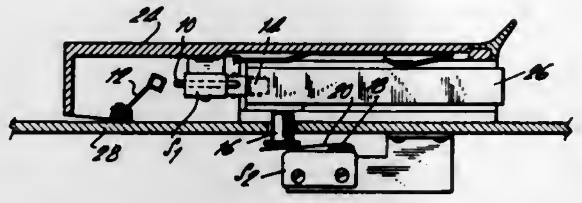
Sebastian Eric Grabl, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed Sept. 8, 1970, Ser. No. 70,408
Int. Cl. G11b *15/06, 15/58, 23/12*
U.S. Cl. 242—185 **16 Claims**



In a magnetic tape transport wherein tape is driven past an electromagnetic read or write head and onto a take-up reel through a vacuum column, a method and apparatus is disclosed for limiting overspeeding of the tape at the reel relative to the tape speed past the head by limiting the torque applied to the reel by the motor. The rotational speed of the reel is metered and a first signal indicative thereof is provided. The vacuum column is divided into regions of pre-assigned lengths with a second signal being provided which changes in amount each time the tape loop passes between a pair of adjacent regions. The motor is disabled from applying torque to the reel in each region whenever the first and second signal provided in any particular region reach a predetermined relationship.

3,648,951
SWITCHING SYSTEM FOR TAPE REWIND

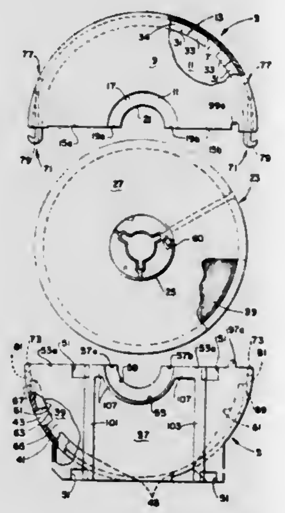
James R. Trammell, Parma Heights, Ohio, assignor to Scanfax Systems Corporation, New York, N.Y.
Filed Jan. 5, 1970, Ser. No. 767
Int. Cl. B65h *63/02, 25/32*
U.S. Cl. 242—190 **1 Claim**



A switching system for a tape rewind operation is described as including a pair of switches in a rewind motor circuit. Both switches are connected in series relationship with the motor so that the motor attains a shut off condition when either switch is in the open position.

3,648,952
CARTRIDGE

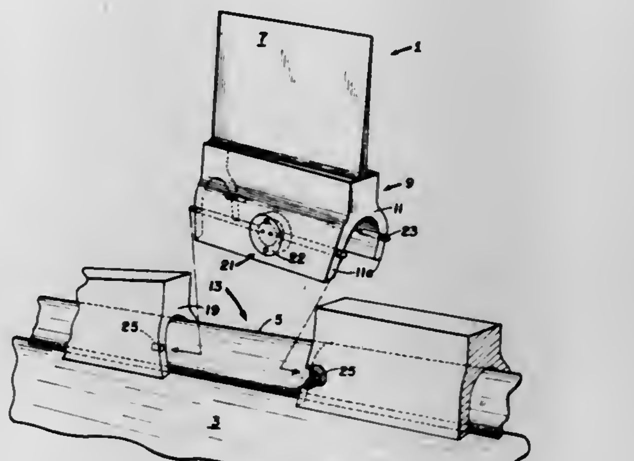
John Bundschuh, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of application Ser. No. 685,588, Nov. 24, 1967, now abandoned. This application May 23, 1968, Ser. No. 736,524
Int. Cl. G03b *23/02*
U.S. Cl. 242—197 **29 Claims**



A cartridge for receiving a reel containing motion picture film or other strip material comprises two separate cartridge parts which are latched together in such a manner that they resist inadvertent opening when the parts are subject to a separating force. Interlocking surface formations at the interface between the cartridge parts limit lateral movement along the interface between the cartridge parts. The inner surface of one of the cartridge parts contains structure which serves to centralize the reel within the cartridge and which blocks improper insertion of the reel into the cartridge. Locating means on the cartridge and on a motion picture projector assures proper positioning of the cartridge on the projector. Nibs and mating recesses are provided at the interface between the cartridge parts to prevent undesirable distortion of the cartridge sides. A retractable spindle for a projector permits mounting of a cartridge in a direction perpendicular to the axis of the spindle.

3,648,953
FIN MOUNT LATCH

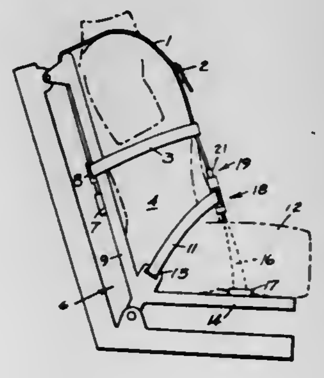
Albert S. Polk, Jr., Baltimore, Md., assignor to The Johns Hopkins University, Baltimore, Md.
Filed Dec. 30, 1969, Ser. No. 889,206
Int. Cl. F42b *15/16*
U.S. Cl. 244—3.24 **5 Claims**



The subject invention provides a latching mechanism particularly suitable for mounting a stabilizing fin on an external engine missile. Generally, the invention relates to spring-biased, cam-operated latches and more particularly to a positive-locking latch device in which a circular-band spring biases locking pins into retaining holes in a fairing or shroud for locking a fin on a missile. The latch is released by rotating a cam actuator which contacts the locking pins and withdraws them from the retaining holes, when the fin may be removed from the missile.

3,648,954
SEAT RESTRAINT AND SINGLE RELEASE FOR THE SAME

John A. Gaylord, San Rafael, and Norris N. Murray, San Bruno, both of Calif., assignors to H. Koch & Sons Inc., Corte Madera, Calif.
Filed Apr. 24, 1970, Ser. No. 31,526
Int. Cl. B64d *25/06*
U.S. Cl. 244—122 B **7 Claims**



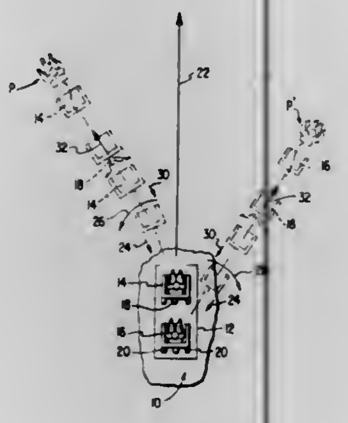
A seat restraint for ejection seats in aircraft to resist shock loads generated by ejection, including shoulder straps attached to the backrest of the seat, chest or side belts extending from the shoulder straps to the backrest of the ejection seat; lap belts and leg belts; and a single release device into which the free ends of the shoulder straps and lap belts are secured to be released by manipulation of a single handle.

3,648,955

METHOD AND MEANS FOR PRODUCING DIVERGENCE OF PLURAL EJECTION SEAT TRAJECTORIES

Fred B. Stencel, and Walter R. Peck, both of Asheville, N.C., assignors to Stencel Aero Engineering Corporation, Arden, N.C.

Filed Feb. 2, 1970, Ser. No. 7,679
Int. Cl. B64d *25/10*
U.S. Cl. 244—122 AD **10 Claims**



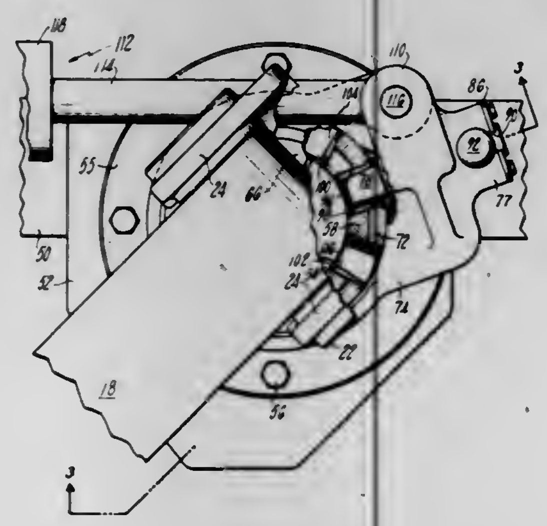
A method and means for producing divergence of the trajectories of plural ejection seats as such seats are ejected from an aircraft so that collisions will be avoided. As soon as each seat is ejected upwardly from the aircraft, a first force is applied to the seat at a point offset from the yaw axis of the seat to cause the seat to rotate about its yaw axis at a certain yaw rate. After such rotation at the yaw rate has occurred for a preselected interval of time, an opposed force is applied to terminate the seat rotation and the yaw rate so that the seat is reoriented from its initial trajectory path, but the yaw rate is substantially zero. Thus, when the occupant separates from the ejection seat, he will not be traveling with any yaw rate.

3,648,956

ROTATABLE BOOM TURRET ASSEMBLY

Loree A. D. Paulson, Longmeadow, Mass.; John A. Cahoon, Thompsonville, Conn., and James Frogameni, Springfield, Mass., assignors to Worthington Compressor and Engine International Division of Worthington Corporation, Holyoke, Mass.

Filed Aug. 6, 1970, Ser. No. 61,638
Int. Cl. F16f *13/00*
U.S. Cl. 248—2 **10 Claims**



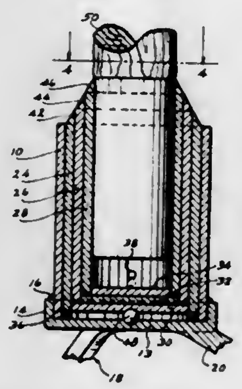
A rotatable boom turret assembly for a rock drill carrier. The turret assembly is comprised of a swiveling boom support assembly mounted to a pedestal on the drill carrier and has an indexing ring driven by a single hydraulic cylinder assembly by which the boom can be swiveled. The indexing ring has a plurality of index positions with the boom support assembly so that rotation of the boom through large angles can be accomplished with a single hydraulic cylinder assembly.

3,648,957

PIVOTABLE TREE STAND

Michael Bencriscutto, 3525 Wright Avenue, Racine, Wis.

Filed May 18, 1970, Ser. No. 38,407
Int. Cl. A47g *33/12*
U.S. Cl. 248—45 **1 Claim**



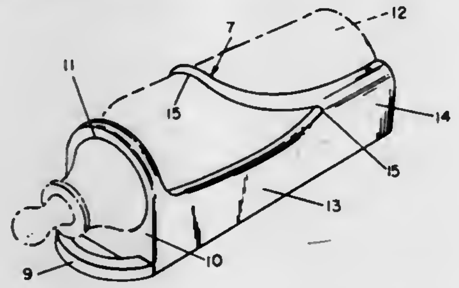
A support stand for Christmas trees or the like which permits convenient rotation of the tree relative to the stand in order to present various portions of the tree to view and for accessibility when applying ornaments thereto. Axially-telescoping sleeves are provided which permit selecting the sleeve which suits the diameter of the tree trunk. A bevelled upper cutting edge is provided on the sleeves to permit the latter to be driven upon the trunk.

3,648,958

BASKET FOR BABY BOTTLE

Nat E. Araujo, 1216 E. Dagget, Fort Worth, Tex.

Filed Aug. 5, 1970, Ser. No. 61,321
Int. Cl. A47d *15/00*
U.S. Cl. 248—105 **3 Claims**



This invention consists of a single piece of rubber or any other desired material configurated in the shape of a basket that is adapted to hold a baby bottle. The aforesaid basket has a horizontally disposed flat rectangular bottom and upwardly extending sides and a front end having a round opening therein through which is placed the neck of a baby bottle that is placed in the aforesaid basket in a horizontally disposed position. The rear end of the aforesaid basket is so constructed as to prevent the baby bottle from slipping backward out of the basket. A holding strap that is U-shaped when viewed from the top is adapted to hold the top side of the bottle in place in this novel basket.

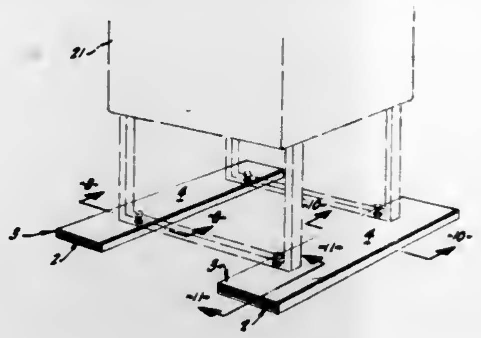
3,648,959

PAPERBOARD PANEL SUBSTITUTE FOR LUMBER

Gary L. Wagner, Covington, La., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Apr. 13, 1970, Ser. No. 27,840
Int. Cl. B65d *19/38*
U.S. Cl. 248—346 **8 Claims**

A paperboard panel substitute for lumber, particularly adapted for use as a skid for supporting an object, comprises a plurality of layers of corrugated paperboard forming an inner core, and an outer jacket of solid fiber paperboard enveloping the core and secured thereto. The solid fiber jacket is formed by folding a sheet thereof about the core and adhesively bonding the same thereto. For use as a supporting skid, the panel is pre-formed with an apertured portion to receive a fastening member adapted to be secured to an object to be supported. Such apertured portion includes a knockout section which is displaced by a head on the fastening member to form a countersunk recess and a washer therefor.

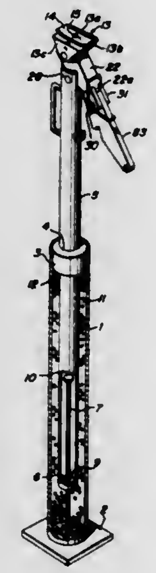


3,648,960

ADJUSTABLE VERTICAL SUPPORT

Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Company, Cincinnati, Ohio

Filed Apr. 3, 1970, Ser. No. 25,365
Int. Cl. E21b *15/18*
U.S. Cl. 248—356 **17 Claims**



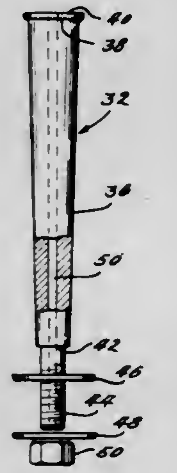
An adjustable vertical support comprising a first elongated cylindrical hollow element having a closed end and a bearing means at its other end, and a second elongated, cylindrical element of lesser diameter and slidable in the bearing means of the first cylindrical element between a retracted position wherein a portion of its length is located within the first cylindrical element and an extended position wherein a lesser portion of its length is located within the first cylindrical element. The end of the second cylindrical element, located within the first cylindrical element, is closed and slidably but captively held within the first cylindrical element. One end of the support is provided with an anvil member connected thereto by a toggle assembly. The anvil member has a bearing surface. The annular space formed between the first and second cylindrical elements, when the second cylindrical element is in its retracted position, is filled with granular or particulate load-bearing material capable of flowing in the space formed beneath the closed end of the second cylindrical element as it moves toward its extended position and supporting the closed end of the second cylindrical element at any desired vertical position within the first cylindrical element. The toggle assembly is designed to permit remote retrival of the support, even after the support has yielded somewhat but is still supporting a great weight. The toggle assembly further provides the last increment of length adjustment when setting the support in position.

3,648,961

WALL TIE FOR CONCRETE FORMS

William H. Farrow, 7915 Kingswood, Affton, Mo.

Filed Apr. 30, 1970, Ser. No. 33,309
Int. Cl. E04g *17/06*
U.S. Cl. 249—43 **6 Claims**



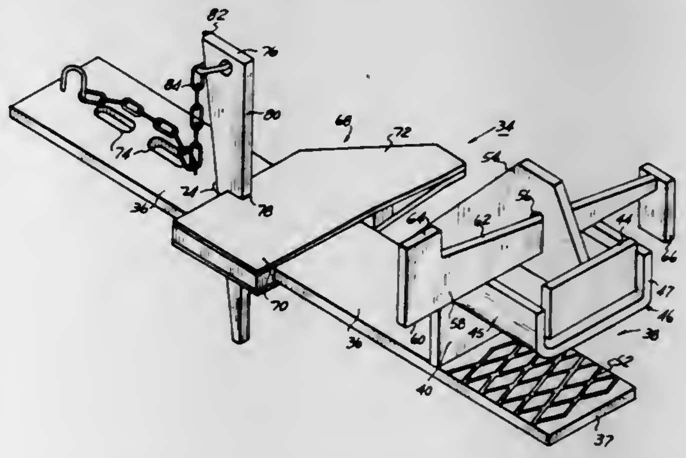
A reusable wall tie for maintaining the correct spacing between the form walls of concrete forms includes a spreader for preventing the walls from collapsing inwardly and a tie rod for preventing the walls from spreading apart. The spreader has a tapered shank and a threaded stud extending from the small end of the shank. The stud fits through a hole drilled in one of the form walls prior to the erection of the other form wall. A nut threads over the stud and temporarily secures the spreader to the form wall such that the tapered shank projects inwardly therefrom. The other form wall is positioned against the large end of the tapered shank on the spreader, and the two walls are tied together by a tie rod which extends through the spreader. After concrete is poured between the walls and allowed to set, the spreader is dislodged from the concrete by striking the stud end with a mallet.

3,648,962

CONCRETE FORM WORK CLAMP

Robert D. Farley, Roseville, Mich., assignor to Utley-James, Inc., Pontiac, Mich.

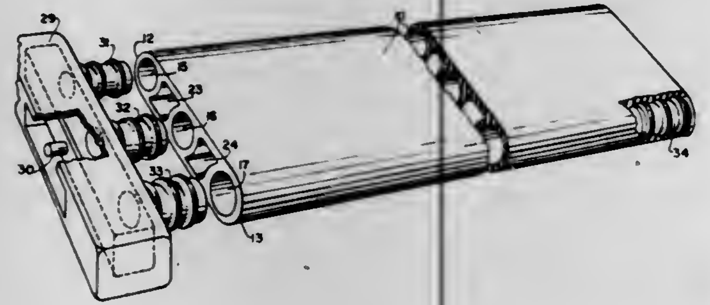
Filed Sept. 30, 1970, Ser. No. 76,668
Int. Cl. E04g *17/02*
U.S. Cl. 249—46 **8 Claims**



A clamp assembly for a concrete form such as is used in pouring concrete walls; the form includes a plurality of uprights spaced by a series of transverse struts; the uprights are connected at the rear by a number of transverse beam members overlying the rear face of the uprights; a plurality of stiffback columns are disposed rearwardly of the concrete form for flat abutment against the transverse beams across the uprights; the stiffback columns are connected to the uprights by means of one or more work clamp assemblies each of which has a plate extending horizontally between the columns and the uprights which at one end is provided with a jaw clamp adapted to be engaged with a transverse strut spacing adjacent uprights and which is clamped thereto by means of a wedge member, which has an abutment at one end engaging against the next adjacent upright; the work clamp plate is further provided with a longitudinally adjustable clamp member rearwardly of the jaw clamp for clamping engagement of the work clamp assembly against an immediately adjacent rearwardly disposed stiffback column to retain the stiffback column in aligned position against the transverse beams across the uprights so that, when the work clamp assembly is properly secured and adjusted, the uprights of the concrete form will be rigidly secured in aligned vertical position.

3,648,963
CORE FOR CASTING CONCRETE SLABS

Robert E. Smith, Dayton, Ohio, assignor to The Flexicore Co., Inc., Dayton, Ohio
Filed Aug. 17, 1970, Ser. No. 64,540
Int. Cl. B28b *7/32*
U.S. Cl. 249—65 **6 Claims**

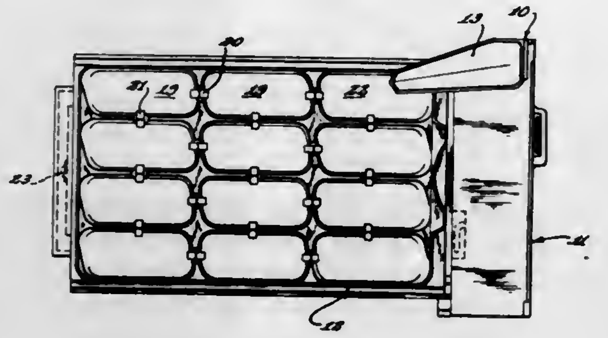


A core for providing noncylindrical passages in long concrete slabs comprise a multi-channel molding of laterally expansible material. A core of suitable length is provided with one or more cylindrical passages for receiving compressed air for lateral expansion purposes. The core section itself may be generally oval with flattened top and bottom faces. In addition to the cylindrical passages for inflation by air, one or more supplemental open air passages for the entire core length are provided. The shape, sectional area and orientation of such supplemental open air passages function to direct over-all lateral expansion of the molding, to maintain substantial congruence between the expanded and normal core shapes.

3,648,964
ICE TRAY WITH INTEGRAL TWIST RESTORING ELEMENT

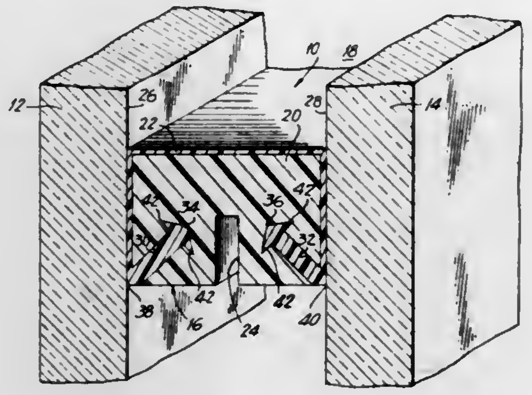
William L. Fox, Niles, Ill., assignor to Eaton Yale & Towne, Inc., Morton Grove, Ill.
Filed Feb. 12, 1970, Ser. No. 10,779
Int. Cl. B28b *7/10*
U.S. Cl. 249—69 **6 Claims**

A twist action ice tray for an automatic ice maker having a deformable plastic bin or ice cube holder which may be twisted and deformed to harvest ice cubes therefrom. The tray has relatively rigid inboard and outboard end portions which are twisted with respect to each other during ice harvest. The tray driving or twisting action occurs at the outboard end portion of the tray, while the inboard portion is restrained. To assure that the ice tray returns to a proper position after ice harvest, a biasing means is actuated during the harvest cycle which places a restoring torque on the tray. When ice harvest is completed, the restoring torque returns the tray to a proper position. The biasing or restoring torque is provided by a coil spring which is positioned centrally within a tray driving gear in the automatic ice maker. The coil spring has a pair of ends which are positioned at opposite sides of a spacer bar at the hub of the tray driving gear. The ice tray has a finger like projection which extends from the inboard end portion of the tray further inwardly to be positioned between the opposite ends of the coil spring. As the tray driving gear is rotated during ice harvest, it carries the coil spring with it. One of the legs or ends of the coil spring engages the finger like projection of the tray and is restrained from rotating with the tray driving gear. In this way the ends of the spring are spread apart as tray rotation increases and a restoring torque is exerted on the projection like finger and hence on the tray itself.



3,648,965
GASKET FOR PLASTIC CASTING

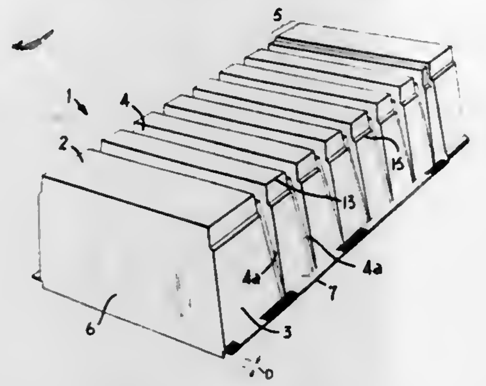
Paul R. Daddona, Greenwich, Conn., assignor to The Polycast Technology Corporation, Stamford, Conn.
Filed Aug. 24, 1970, Ser. No. 66,236
Int. Cl. B29c *1/00, 5/00*
U.S. Cl. 249—134 **12 Claims**



A gasket for use in an apparatus for casting of acrylic plastic is shown. The permanent gasket seals a casting zone defined between two mold surfaces and includes a resilient inner core of plasticized polyvinyl chloride or silicone rubber having a durometer hardness between about 60 and 90 and a protective outer sheath around the inner core comprised of a thin layer of polyethylene or nylon.

3,648,966
FORM FOR VAULTED CONCRETE CEILINGS HAVING RIBS

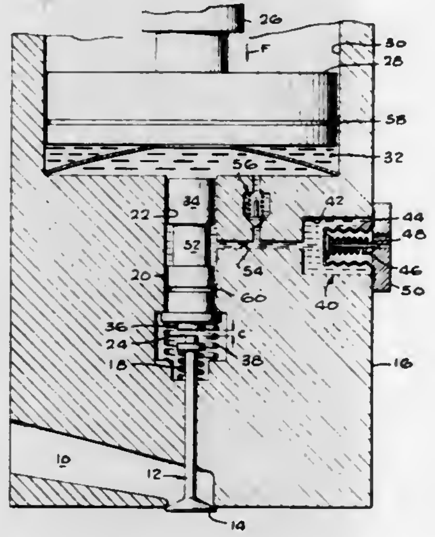
Alfred Basalla, Am Wacholderberg 23, 6241 Mammolshain, Germany
Continuation of application Ser. No. 626,588, Mar. 28, 1967, now abandoned. This application Dec. 8, 1969, Ser. No. 878,983
Claims priority, application Germany, Mar. 29, 1966, B 86410; Jan. 17, 1967, B 69390; B 69391
Int. Cl. E04g *11/40;* **B28b** *7/28*
U.S. Cl. 249—176 **7 Claims**



A form for a vaulted concrete ceiling having ribs comprises a top wall having transverse ribs, inclined side walls and an end wall. At one end of the form there is a rib-free portion in which the top wall and side walls are offset outwardly or inwardly by an amount equal to the thickness of the material. Two or more such forms are assembled in longitudinal relation with the offset end portion of one form overlapping to a greater or lesser extent the non-offset end of an adjacent form. The total length of the assembled form can be adjusted by the amount of overlap. Overlapping portions of flanges at the lower edges of the side walls are preferably provided with interengaging surfaces which resist longitudinal movement of the forms relative to one another, when they have been assembled and adjusted, to provide a form of the desired total length. The forms are also provided with longitudinally extending internal steps to facilitate stacking the forms for storage or shipping.

3,648,967
TEMPERATURE COMPENSATED HYDRAULIC VALVE

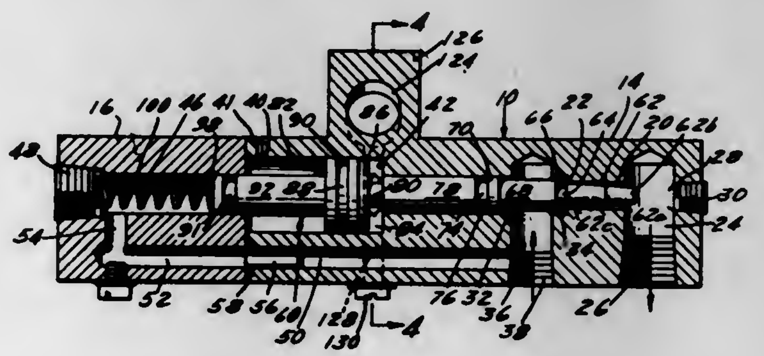
Cormac G. O'Neill, Lafayette, and Parker C. Smiley, Oakland, both of Calif., assignors to Physics International Company, San Leandro, Calif.
Filed Nov. 10, 1970, Ser. No. 88,383
Int. Cl. F16k *31/12;* **F16l** *55/04*
U.S. Cl. 251—57 **10 Claims**



A valve of the type which employs a hydraulic piston for amplifying the motion of an actuator, wherein undesirable effects of thermal expansion of the hydraulic fluid are eliminated. The valve includes an elastically expandable chamber coupled through a narrow passageway to the hydraulic cylinder for receiving fluid therefrom at a slow rate to hold the extra volume of hydraulic fluid caused by thermal expansion, and a check valve for allowing fluid to flow quickly from the chamber back to the cylinder. The narrow passageway from the hydraulic cylinder to the expandable chamber is formed by an appreciable clearance between a plunger that is moved by the hydraulic fluid and a plunger cylinder in which it slides.

3,648,968
FLUID FLOW CONTROL MECHANISM

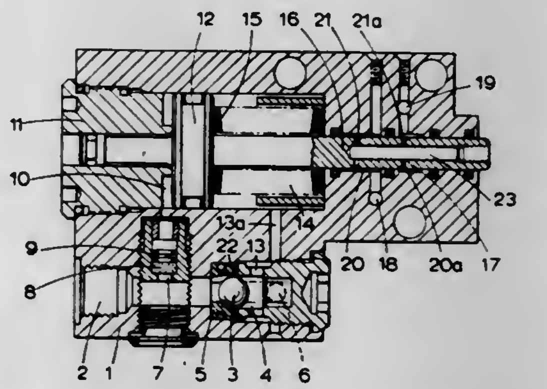
John D. Reid, Monrovia, and Arthur C. Seibel, Garden Grove, both of Calif., assignors to Hamilton Company, Whittier, Calif.
Filed Aug. 7, 1969, Ser. No. 848,208
Int. Cl. F16k *31/363, 47/04*
U.S. Cl. 251—57 **6 Claims**



A foot pedal fluid control valve having a normally closed movable valve member substantially balanced by fluid pressure with the effective pressure thereon in the closing direction sufficiently greater than the effective pressure in the opening direction to normally maintain said valve closed. The valve is connected with a pair of pistons of slightly different sized pressure areas upon which fluid pressure is exerted in opposite directions to render the valve very sensitive and responsive for very accurate control.

3,648,969
HYDRAULIC CONTROL DEVICE

Alfred Marquart, Altluenen, Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Wethmar bei Lunen, Westfalia, Germany
Filed Mar. 30, 1970, Ser. No. 23,660
Claims priority, application Germany, Apr. 3, 1969, P 19 17 237.3
Int. Cl. F16k *31/363*
U.S. Cl. 251—63 **7 Claims**

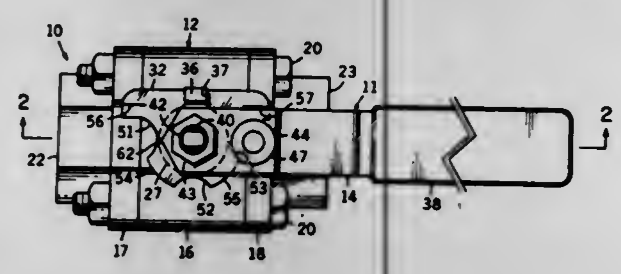


A hydraulic control device which uses throttle means preferably a one-way valve with a spring loaded ball to produce a differential pressure signal when pressure medium flows through the device. The pressure signal is used to move a piston which in turn actuates control means, such as a slide extension of the piston rod, to control the flow of pressure medium through control channels. The initiation of a working cycle effected by the flow of pressure medium through the control channels can thus be inhibited until the flow of pressure medium through the device has ceased indicating that a preceding working cycle has been completed.

3,648,970
HANDLE ASSMEBLY FOR A ROTATABLE BALL VALVE

Leonard Hartmann, Maplewood, and Joseph Sciuto, Jr., Crestwood, both of Mo., assignors to Stile-Craft Manufacturers, Inc., St. Louis, Mo.

Filed Feb. 27, 1970, Ser. No. 15,048
Int. Cl. F16k *35/06*
U.S. Cl. 251—104 **6 Claims**

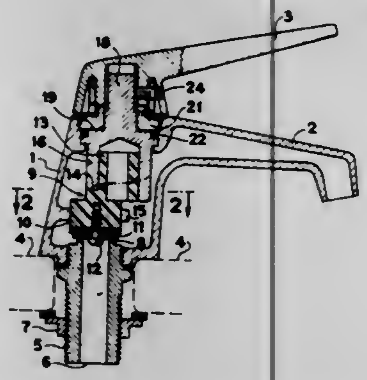


The valve includes a housing and a rotatable closure element mounted within the housing. A handle, connected to the closure element by means of a rotatable shaft mounted to the housing, provides a means of rotating the closure element to selected flow positions. The handle assembly includes a notched latch plate, locked to the housing to provide a detent element, and a spring-loaded latch pin, movably mounted to the handle. The latch pin is engageable with selected notches to latch the handle in specific positions corresponding to desired flow paths through the valve. Stop abutments on the latch plate are engageable by the handle to confine rotation of the handle to within predetermined limits.

3,648,971
TAP

Albert F. Schmidt, Paris, France, assignor to Ressorts du Nord S.A., Paris, France

Filed Apr. 16, 1970, Ser. No. 29,052
Claims priority, application France, Apr. 21, 1969, 6912390
Int. Cl. F16k *31/524*
U.S. Cl. 251—252 **4 Claims**

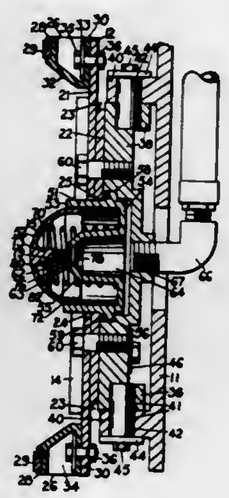


Screw-down tap in which the closing member is applied against the valve seat by rotatable actuating means having a lower helical ramp. The latter coacts with a helical ramp on the closing member. The closing member has a cylindrical stem which is parallel to the axis of the closing member and extends inside the actuating means. The helical ramp on the closing member surrounds at least a part of the stem.

3,648,972
VACUUM CONTROL VALVE

Harlan D. Olson, Portland, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed Apr. 23, 1970, Ser. No. 31,254
Int. Cl. F16k *31/44*
U.S. Cl. 251—339 **5 Claims**

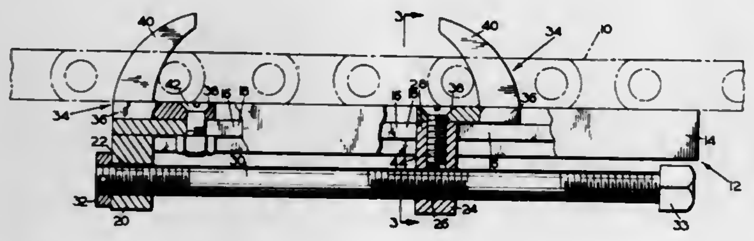


A contact-operated valve for controlling the supply of vacuum to a vacuum-operated lift plate adapted for handling load objects such as paper rolls. The valve includes a base member retained in an opening in the center of a main plate forming the back of the lift plate. The base member includes outer walls that define a cylindrical inner bore closed on one end by an end wall. The end wall includes a raised platform portion having an opening formed therein adapted to communicate with a vacuum supply line connected to the back of the lift plate. A valve seat is formed around the opening, adapted to be closed by a rubber valve member. A generally semispherical, hollow nylon ball is provided having sidewalls adapted to fit loosely within the cylindrical bore in the base member to permit airflow therearound. An elongate center post is secured to the inner periphery of the ball, adapted to extend through the opening in the platform portion. The rubber valve member is secured to the center post, and is normally biased into contact with the valve seat by a compressed spring confined between the base member and the inner periphery of the nylon ball. Contact of the curved outer surface of the ball with a load object, sufficient to overcome the spring force, moves the ball within the cylindrical bore and opens the valve.

3,648,973
CONNECTING AND TENSIONING DEVICE FOR THE IN SITU REPAIR OF BROKEN DRIVE CHAINS AND TRACKS

Buster F. Farrell, 733 N.E. Buffalo Street, Portland, Oreg.

Filed Oct. 29, 1970, Ser. No. 85,209
Int. Cl. B66f *3/08*
U.S. Cl. 254—67 **5 Claims**

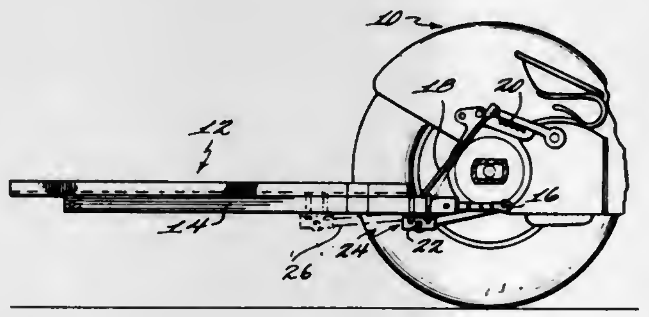


A device is provided for interconnecting in situ the links of a broken drive chain or drive track and tensioning the chain or track so that it may be repaired. The device consists of an elongated frame provided with a longitudinal guide, fixed and sliding blocks on one side, and fixed and sliding dogs on the other side. A screw interconnects the two blocks and connecting means connects the sliding dog to the sliding block. In use, the dogs are inserted through the chain or track on each side of the break while the chain or track still is mounted on its supporting frame. Application of screw pressure moves the sliding dog and tensions the chain or track so that the break may be repaired.

3,648,974
TRACTOR ATTACHMENT

Francis H. McClernon, P.O. Box 1601 SSS, Springfield, Mo.

Filed Nov. 25, 1970, Ser. No. 92,725
Int. Cl. B66f *3/00*
U.S. Cl. 254—124 **3 Claims**

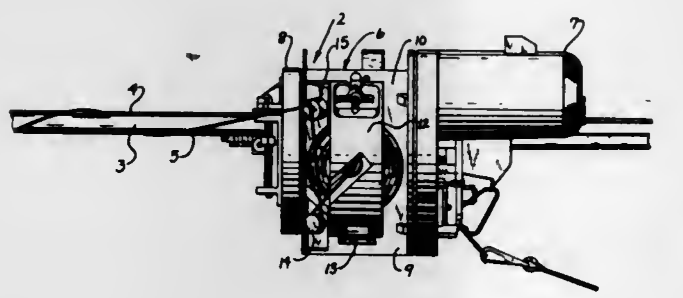


An adjustable attachment for attaching a tractor drawbar lift arm to any desired position along the rail of a lift platform attachment. An exemplary embodiment is disclosed which comprises a table member pivotally attachable to the drawbar lift arms and slidable along a platform rail together with U-shaped bolts to permit slidable engagement or to frictionally lock the table and the rail together at any desired position.

3,648,975
TAPE DISPENSING DEVICE

Dory J. Neale, Sr., 3710 Shore Acres Boulevard, St. Petersburg, Fla.

Filed Nov. 27, 1970, Ser. No. 93,244
Int. Cl. E21c *29/16*
U.S. Cl. 254—134.3CL **10 Claims**

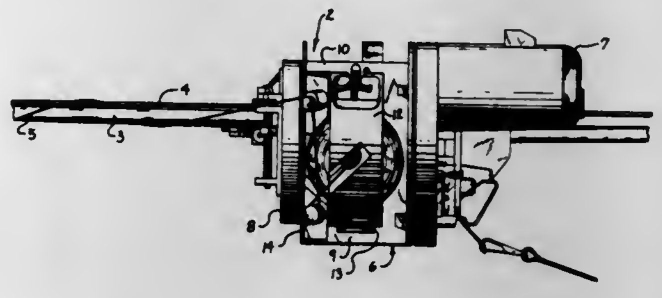


An improved tape dispensing device for use on a cable lashing machine having a structure substantially as shown and described in U.S. Pat. No. 2,663,544 issued Dec. 22, 1953 to Joseph J. Harley is disclosed and comprises a core and a roll of lashing tape thereon rotatably mounted in a compartment of the machine and a support member spaced therefrom and having spaced pins to tension the tape and guide roller to direct the tape from the device and toward a cable and supporting strand to be lashed together, as exemplary of the inventive concept.

3,648,976
WIRE DISPENSING DEVICE

Dory J. Neale, Sr., 3710 Shore Acres Boulevard, St. Petersburg, Fla.

Filed Nov. 27, 1970, Ser. No. 93,245
Int. Cl. E21c *29/16*
U.S. Cl. 254—134.3CL **10 Claims**

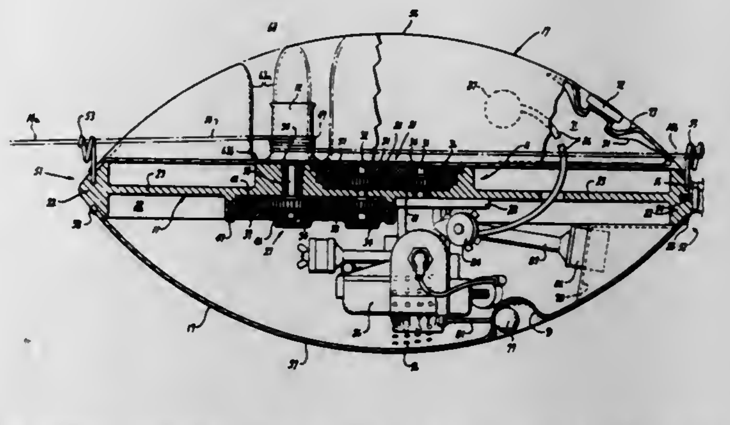


An improved wire dispensing device for use on a cable lashing machine having a structure substantially as shown and described in U.S. Pat. No. 2,663,544 issued Dec. 22, 1953 to Joseph J. Harley is disclosed and comprises a support member secured on the machine and rotatably supporting a wire cartridge and having spaced pins to tension the wire and guide rollers to direct the wire from the device and toward the cable and supporting strand to be lashed together as exemplary of the inventive concept.

3,648,977
PORTABLE PULLING DEVICE

Daniel Rohrer, Route 1, Box 207C, Hillsboro, Oreg., and Paul W. Hait, 12872 Ashley Court, Saratoga, Calif.

Filed July 14, 1969, Ser. No. 841,434
Int. Cl. B66d *3/00, 1/30*
U.S. Cl. 254—150 **15 Claims**



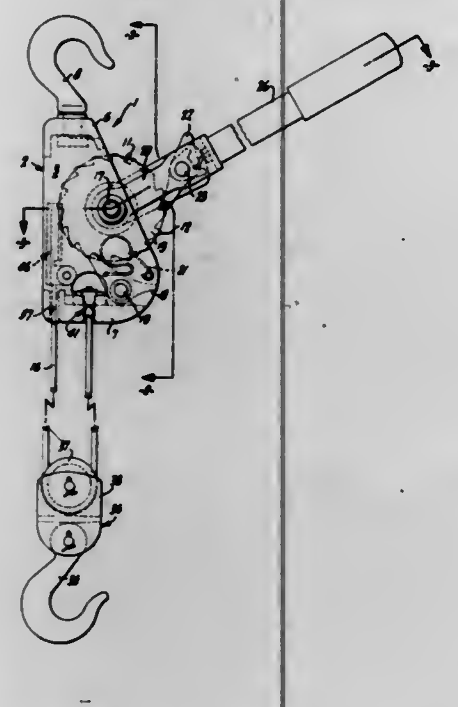
A highly portable pulling device for moving loads along a cable. The device includes a capstan around which the cable is wound for at least one turn and a gasoline engine for driving the capstan. It is housed in an ellipsoidal housing having a generally smooth outer contour to prevent snagging when the device is used in close proximity to trees, bushes, and the like.

3,648,978
CABLE HOIST

Ralph A. Ratcliff, 614 Mountain View Avenue, P.O. Box 543, Belmont, Calif.

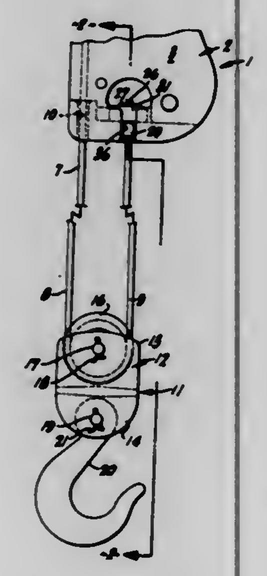
Filed Apr. 2, 1970, Ser. No. 25,190
Int. Cl. B66d *1/00*
U.S. Cl. 254—167 **11 Claims**

A load sustaining device employing a cable for supporting a load. Improved guide means is provided through which the cable passes prior to winding on a spool to insure that the cable is wound in uniform layers. The guide means is defined by a slotted pivotal guide member which is frictionally held in contact with prior layers of cable wound on the spool so that bunching is obviated. To enhance the utility of the device, it is provided with a multiposition operating lever



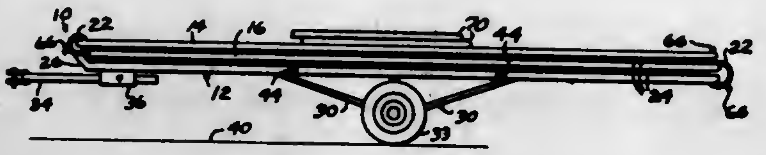
structure defined by an interengaged polygonal projection and star socket construction which is spring-held in engagement in a predetermined position selected therefor.

3,648,979
CABLE RIGGING ARRANGEMENT FOR HOIST
Ralph A. Ratcliff, 614 Mountain View Avenue, P.O. Box 543, Belmont, Calif.
Filed Apr. 2, 1970, Ser. No. 25,209
Int. Cl. B66d *1/00*
U.S. Cl. 254—167 **5 Claims**



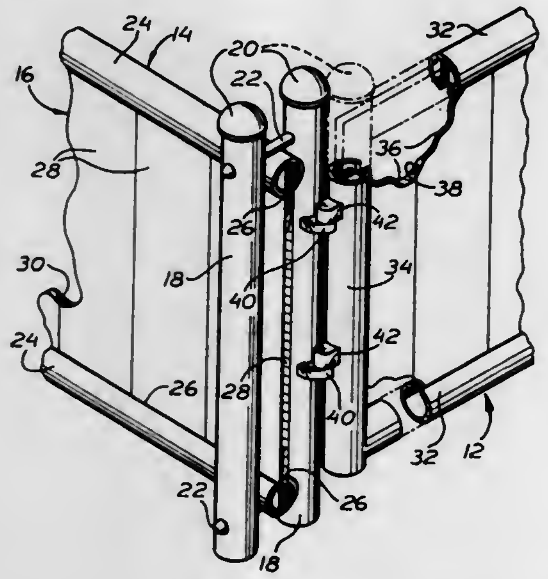
An improved system for single or double rigging a load sustaining device, such as a cable hoist, to permit selective alteration of the load capacity thereof. A load sustaining element, such as a wire cable, is operatively connected with the operating mechanism of the hoist and passes through a hook and pulley structure to be engaged with a load. The cable end is provided with a collar structure which precludes separation of the cable from the hook and pulley structure when single cable rigging is desired. The hoist housing is provided with slotted recess structure which permits easy insertion of the collar structure into the housing when double cable rigging is desired.

3,648,980
PORTABLE WINDBREAK
John D. Taylor, Route 3, P.O. Box 5, Perryton, Tex.
Filed Aug. 10, 1970, Ser. No. 62,465
Int. Cl. E01f *7/02*
U.S. Cl. 256—12.5 **4 Claims**



A portable windbreak for animals comprising a plurality of panels hingedly joined together for movement between an extended barrier forming position and a retracted folded position. Wheels, laterally connected with the center panel, render the retracted windbreak portable in trailerlike fashion by a tongue connected with one end of the center panel. Erection struts, removably connected with the center panel and a prime mover, raise the retracted windbreak from a horizontal position to a vertical edgewise wind shelter position and vice versa. Ground anchor means, connected with the windbreak, maintain it in an erected position.

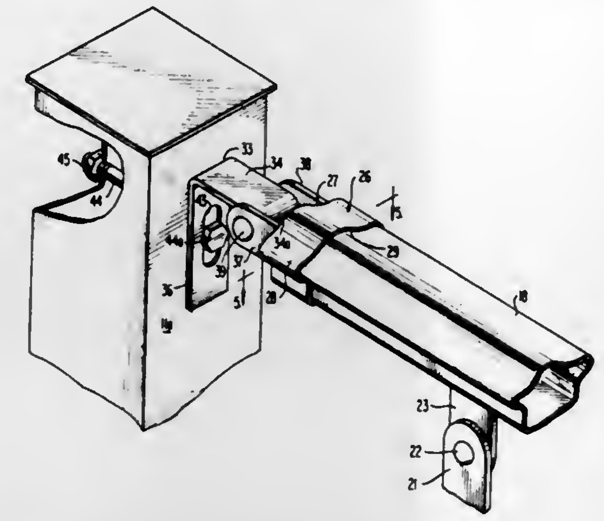
3,648,981
FENCE
John Allen, 6466 Mission Boulevard, Rubidoux, Calif.
Filed Dec. 29, 1969, Ser. No. 888,564
Int. Cl. E04h *17/16*
U.S. Cl. 256—24 **8 Claims**



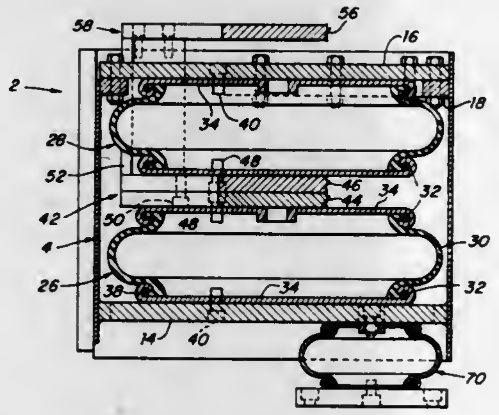
A fence with wooden panels having their upper and lower edges disposed in slotted rails supported between pairs of steel posts. The rails can be sections of channel or open seam pipe. The panels are held in place in the fence without nails, screws, bolts or other fasteners, and can be spaced apart like pickets, or have their side edges in contact for denying visual, as well as physical, access to the fenced-in area.

3,648,982
RAILING CONNECTOR
Arnold Sabel; Herman Sabel, and Leon W. Sabel, all of P.O. Box 12240, Charleston, S.C.
Filed July 6, 1970, Ser. No. 52,357
Int. Cl. E04h *17/14*
U.S. Cl. 256—65 **6 Claims**

A connector for each end of the top and bottom rails of an adjustable railing, the rails being pivotally connected to the opposite ends of a plurality of parallel pickets, which connector includes a thimble-shaped cup member which accommodates and releasably retains the end portion of the rail and to which is pivotally connected an L-shaped angle bracket having leg portions, one of which leg portions being pivotally connected to the cup member and the other leg portion arranged to be detachably secured in a vertically adjusted position to a vertical member such as a post on which the railing is mounted.



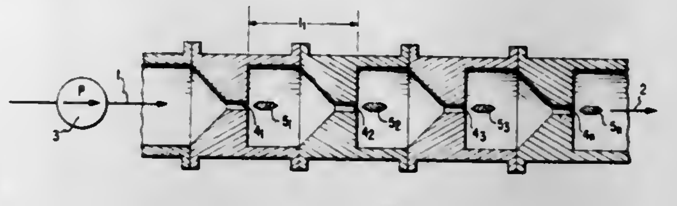
3,648,983
APPARATUS FOR FLUIDIZING MATERIALS
William B. Campbell, Columbus, Ohio, assignor to I. A. Associates, Inc., Columbus, Ohio
Filed Feb. 16, 1970, Ser. No. 11,680
Int. Cl. B01f *11/00*
U.S. Cl. 259—1 R **20 Claims**



Apparatus for vibrating viscous media, slips or fluids to render them more fluid. The apparatus has a vibrator and one or more vibration amplitude control modules each comprising a pair of resilient pressurized air bags and a yoke connected at one end to the two air bags for attachment to a body to be vibrated.

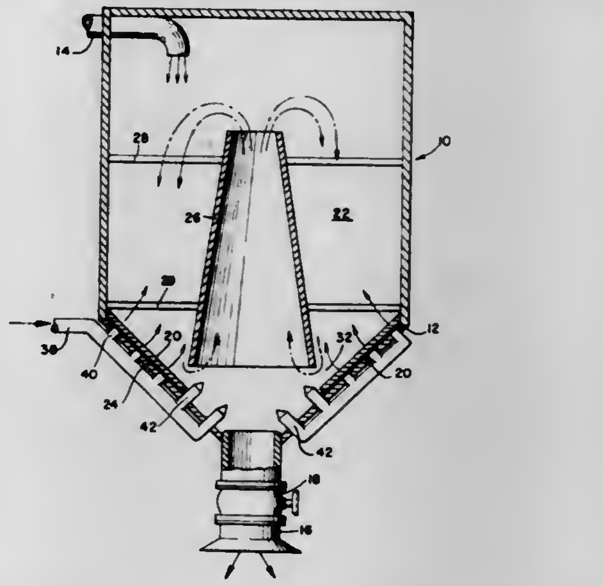
3,648,984
METHOD FOR EMULSION DISPERSING AND APPARATUS FOR THE SAME
Norihisa Mimura; Hiroshi Chikamasa; Kotaro Aso, and Takashi Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ashigara-Kamagun, Kanagawa, Japan
Filed Mar. 12, 1970, Ser. No. 18,994
Claims priority, application Japan, Mar. 17, 1969, 44/20262
Int. Cl. B01f *11/00, 5/10*
U.S. Cl. 259—4 **6 Claims**

A method for emulsion dispersing which consists of mixing the liquids to be emulsion dispersed together with a proper emulsifying agent, pressurizing the mixture through a pump and ejecting the mixture from the pump through at least three orifices arranged in series. The spacing of the orifices arranged in series is such that it takes between 1/50,000 to



1/100 seconds for the mixture ejected from one orifice to reach the next orifice.

3,648,985
BLENDING APPARATUS
David M. Matweecha, Bethlehem, Pa., assignor to Fuller Company
Filed Dec. 1, 1970, Ser. No. 94,137
Int. Cl. B01f *13/02*
U.S. Cl. 259—4 **10 Claims**

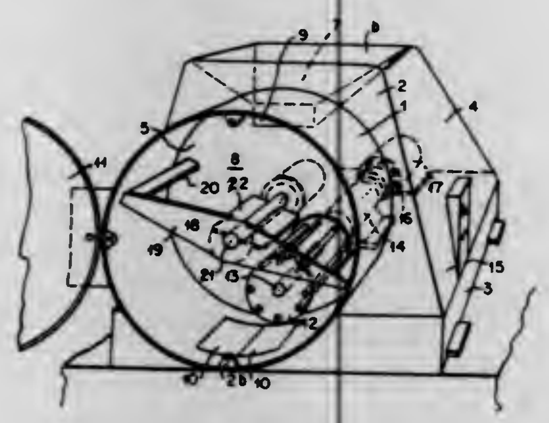


A blending apparatus for mixing dry pulverulent materials which includes a vessel having a gas permeable divider means mounted therein dividing the vessel into a material chamber and a plenum chamber. The vessel includes a material inlet and material outlet. A hollow, open-ended blending column is mounted in the material chamber. Gas under pressure is supplied to the plenum chamber and passes through the gas permeable divider to aerate material in the material chamber. Gas at an increased velocity is supplied to the bottom of the column to circulate material in the material chamber upwardly through the column to thereby blend the material. The column is tapered so that material flowing through that column continuously increases in velocity.

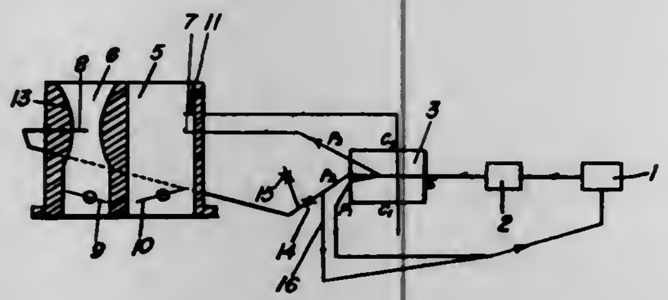
3,648,986
METHOD AND APPARATUS FOR MIXING MATERIALS
Wolfgang Sohn, Langst-Kierst, and Hans Wicher, Dusseldorf, both of Germany, assignors to Hermann Sohn KG Maschinenfabrik, Dusseldorf, Germany
Filed Sept. 28, 1970, Ser. No. 75,885
Claims priority, application Germany, Sept. 30, 1969, P 19 49 298.9
Int. Cl. B01f *7/00*
U.S. Cl. 259—104 **11 Claims**

Dry to pasty materials are mixed in a preferably cylindrical container with the aid of a mixing rotor which, like the container, has a horizontal axis and is eccentrically journaled in the container. The rotor cooperates with a mass-shifter device likewise rotatable about a horizontal axis for passing the material batchwise and intermittently to the mixing rotor.

Each time, a portion of material located close to the peripheral wall of the container on one side of the rotor is moved by the mass-shifter device into the active mixing range of the rotor, the quantity of material thus mixed after each shifting action is piled up on top of the main heap of material located unilaterally in the container on the other side of the rotor.



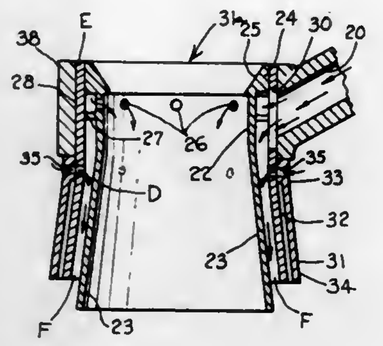
3,648,987
FLUIDIC TWO-STAGE CARBURETOR
Toshinori Arikawa, Oaza Magakusa, Japan, assignor to Aisan Kogyo Company, Limited, Chita-gun, Aichi Pref., Japan
Filed Jan. 27, 1970, Ser. No. 6,147
Claims priority, application Japan, Apr. 7, 1969, 44/27137
Int. Cl. F02m *69/04*
U.S. Cl. 261—23 A **6 Claims**



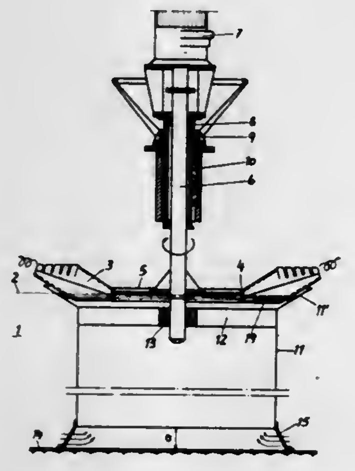
The disclosure describes a two-stage carburetor including pure fluid amplifier control elements. The carburetor provides control of fuel flow for idling, normal driving conditions, and for transient conditions, such as acceleration and deceleration. All control signals are derived from nozzles located in the mixing chambers upstream of the throttle valves. During idling and for low-speed operation, all fuel enters the mixing chamber at, or upstream of, a Venturi throat to provide better atomization of the fuel and mixing with the air.

3,648,988
CARBURETING DEVICE
Oliver D. Dibert, 5 Woodmont Circle, Greenville, S.C.
Filed July 6, 1970, Ser. No. 52,268
Int. Cl. F02m *7/02*
U.S. Cl. 261—78 R **7 Claims**

A double venturi device for supplying petrol to the throat of a carburetor for efficiently causing the petrol to vaporize. A portion of the petrol entering the double venturi passes through an inner venturi, while the remainder flows through a passageway between an inner and outer venturi.



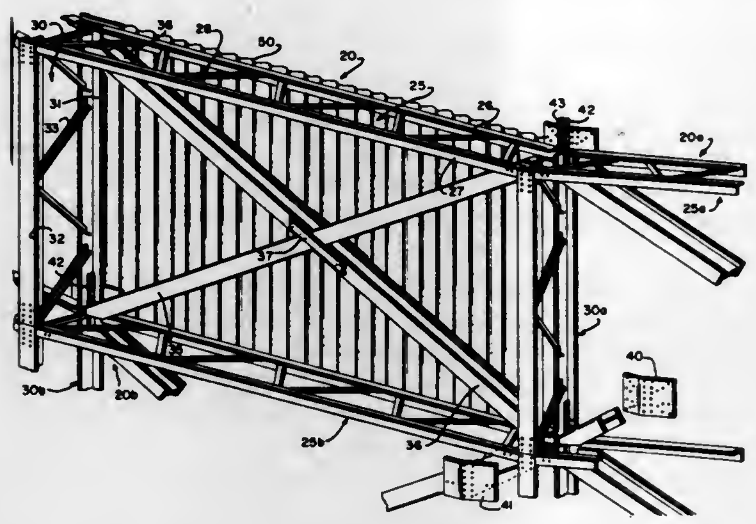
3,648,989
APPARATUS FOR THE AERATION OF LIQUIDS
Bernhard Friebe, Erpener Weg 1, 4503 Dissen T. W., Germany
Filed July 24, 1969, Ser. No. 844,304
Int. Cl. B01d *7/00*
U.S. Cl. 261—91 **9 Claims**



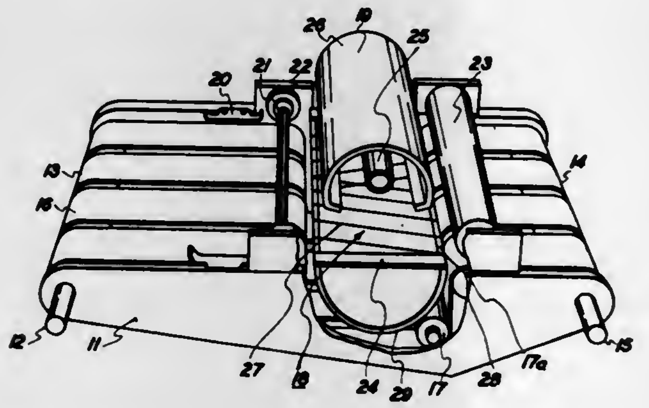
An aeration unit is described to accelerate the process of biological purification in an activated sludge plant. The aeration unit includes an impeller provided with scoops oriented in a selected inclination relative to the direction of rotation of the impeller to effect an aeration and mixing of effluent and accelerate the biological purification of the effluent.

3,648,990
COOLING TOWER
Robert J. Stoker, 413 March Boulevard, Phillipsburg, N.J., and James E. Hanley, II, 2122 Westgate Drive, Bethlehem, Pa.
Filed Nov. 5, 1968, Ser. No. 773,531
Int. Cl. B01f *3/04*
U.S. Cl. 261—109 **6 Claims**

A cooling tower construction particularly useful in natural draft cooling towers. The fill assembly is conventional and may be arranged for either cross flow or counterflow. A plurality of similarly shaped prefabricated modular units are secured to each other to form the stack. The modular units are sufficiently strong to support the stack. The sides of the stack are closed by corrugated sheets of plastic or other materials.



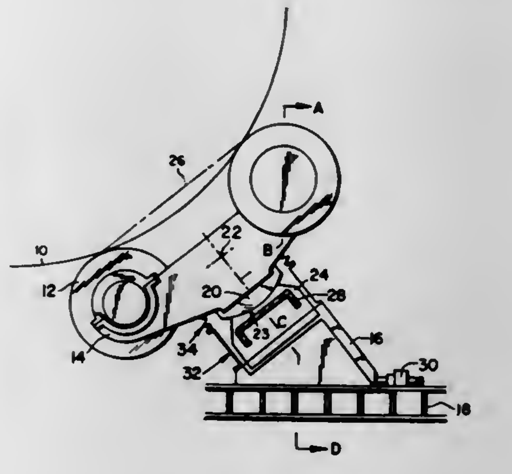
3,648,991
METHOD AND APPARATUS FOR SELECTIVE FUSING
Stewart W. Volkers, Williamson, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Aug. 19, 1969, Ser. No. 851,403
Int. Cl. G03g *13/20, 15/20*
U.S. Cl. 263—6 E **11 Claims**



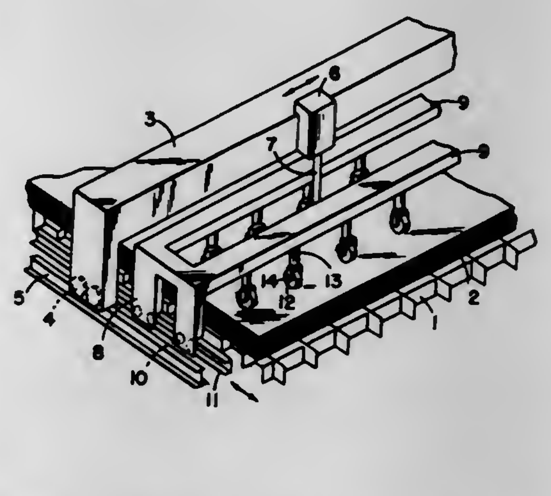
A method and apparatus for selectively fusing a toner image configuration to a support material while not effecting fusing of randomly deposited toner in non-image areas. The fuser utilizes a heat source which creates a sufficient amount of heat in the dense toner image areas on the support material to cause toner to permanently adhere thereto. The unbonded toner in the non-image areas may then be readily removed after fusing to produce a high quality reproduction. The fusing method and apparatus of the invention utilizes a series of diagonally oriented parallel wires to support the support material during fusing to minimize uneven heat conduction from the support material.

3,648,992
SUPPORT FOR ROTARY FURNACES
Rene Durinck, and Bernard Boussekey, both of Lille, France, assignors to Fives Lille-Cail, Paris, France
Filed Apr. 13, 1970, Ser. No. 27,485
Claims priority, application France, Apr. 14, 1969, 6911386
Int. Cl. F27g *7/00;* **F16c** *13/04*
U.S. Cl. 263—33 R **2 Claims**

Two symmetrically arranged pairs of rollers support the rotating surface of a rotary furnace, and each pair of rollers is supported on the respective ends of a beam. The beam is pivoted about an axis parallel to the axes of the rollers on a bearing with a cylindrical gliding surface whose axis is perpendicular to the plane passing through the axis of the rotating surface of the furnace and the pivoting axis of the beam. A support for the bearing has a cylindrical gliding surface complementary to the gliding surface of the bearing.



3,648,993
WORK PIECE PRESSING DEVICE IN AUTOMATIC STACK GAS CUTTING
Masataro Muto, and Masaaki Yagasaki, both of Nagasaki City, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed June 30, 1970, Ser. No. 51,307
Int. Cl. B23k *7/02*
U.S. Cl. 266—23 K **6 Claims**



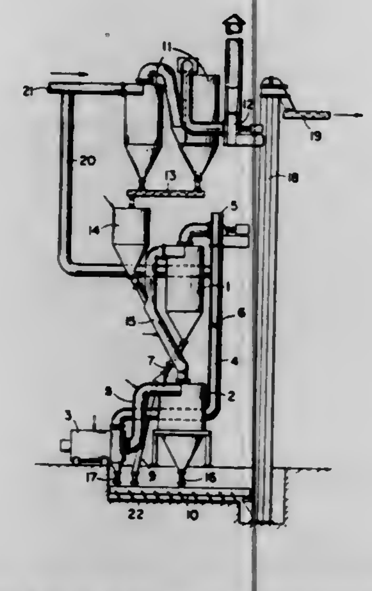
A support for a cutting torch is mounted on rails extending along opposite sides of a support for a stack of metal plates to be cut, and a mounting member for the torch is displaceable longitudinally of the support so that the torch may be moved both longitudinally and laterally of the stack of metal sheets. A second pair of rails extend along opposite sides of the support for the stack, and receive rollers mounting a pair of mounting structures extending in spaced, parallel and interconnected relation across the stack of sheets on opposite sides of the torch. The supporting structures have hydraulic jacks extending downwardly therefrom at equally spaced intervals therealong, and each hydraulic jack has a roller at its free end engageable with the top sheet of the stack so that the sheets of the stack may be compressed. Feelers are provided before and behind each roller to detect cuts in the stacked sheets so that the pressing rollers, when arriving at a cut, may be released from the stack temporarily and then reengaged with the stack. The rail supporting the rollers for the supporting structures of the hydraulic jacks are designed to limit upward movement of these rollers to thus absorb the reaction forces when the hydraulic jacks press the pressing rollers against the stack.

3,648,994

PROCESS FOR CALCINING GYPSUM IN A CURRENT OF HEATING GAS

Karl Remmers, Dusseldorf-Benrath, Germany; Gerhard Bertoldi, Graz; Karl Leitner, and Erich Eigner, both of Radenthein, all of Austria, assignors to Rheinstahl Strico GmbH, Hilden, Rhineland, Germany

Filed Aug. 6, 1970, Ser. No. 61,743
Claims priority, application Germany, Aug. 6, 1969, P 19 40 007.8
Int. Cl. C04b *11/02*
U.S. Cl. 263—53 A **23 Claims**



A process for calcining gypsum in a current of heating gas in a cyclone plant which comprises in combination the steps of:

a. Introducing said heating gas into the calcining zone at a temperature higher than that of the calcined goods at their discharge, by the smallest possible difference;

b. Maintaining the goods to be calcined in the current of heating gas for a short and adjustable time; and

c. Adjusting the relative moisture content of the heating gas in dependence on the operating temperature.

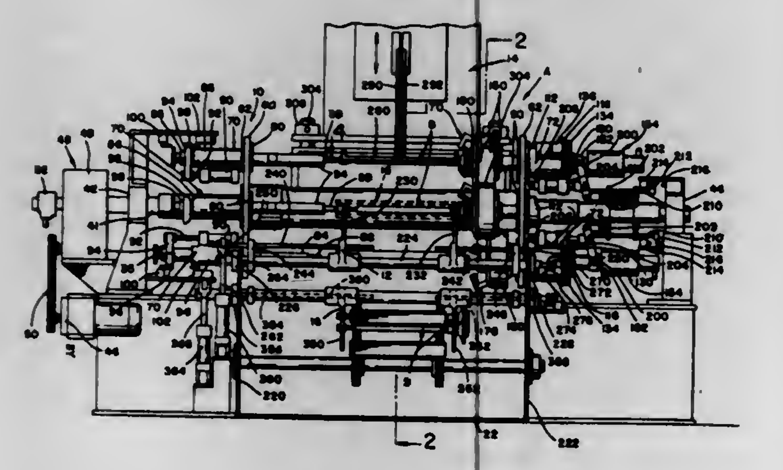
Many different phases and modifications of calcined gypsum can so be made of highest, uniform quality.

3,648,995

APPARATUS FOR INDUCTIVELY HEATING AN ELONGATED WORKPIECE

Richard F. Seyfried, Parma Heights, and Norbert R. Balzer, Parma, both of Ohio, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Dec. 12, 1969, Ser. No. 884,492
Int. Cl. C21d *1/66*
U.S. Cl. 266—4 E **5 Claims**



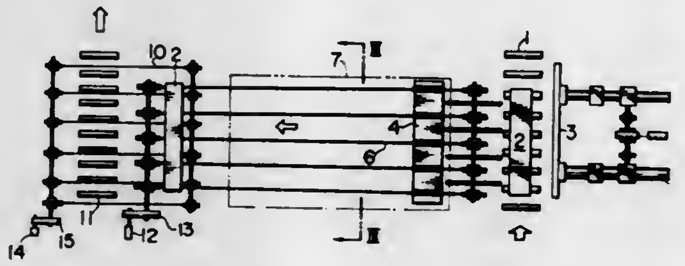
An apparatus for inductively heating an elongated workpiece preparatory to quench hardening, employing means for conveying the workpiece along a path, a single turn inductor positioned adjacent this path for inductively heating the elongated workpiece, as a unit, while it is being rotated, means for shifting the induction heating means away from the workpiece to clear the workpiece for movement along the path, and means for subsequently quench hardening the workpiece.

3,648,996

APPARATUS FOR COOLING HIGH TEMPERATURE METAL PLATES

Toshiya Yonezawa; Katsuya Kogumasaka, and Katsuhiro Kinoshita, all of Kitakyushu, Japan, assignors to Nip**pon Steel Corporation, Tokyo, Japan**

Filed Jan. 16, 1970, Ser. No. 3,464
Claims priority, application Japan, Jan. 20, 1969, 44/4338
Int. Cl. C21d *1/62*
U.S. Cl. 266—6 S **7 Claims**



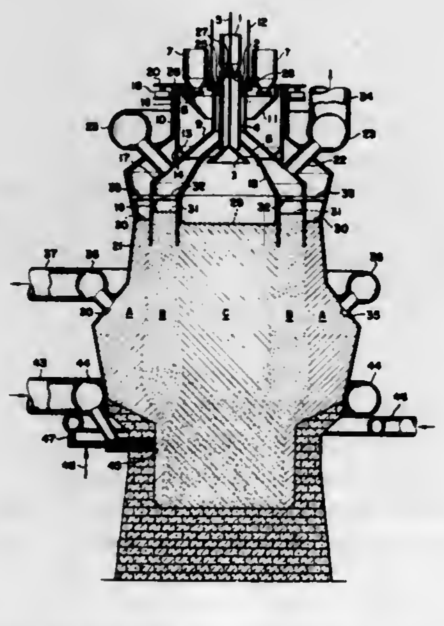
An apparatus for cooling high-temperature thick steel plates comprising a transmission unit consisting of endless conveyors running rectangularly across the rolling or operation line, a unit for loading high-temperature thick steel plates onto said transmission unit and a cooling water jetting unit provided at said transmission unit to have jets directed to the upper and bottom surfaces of the high-temperature thick steel plates.

3,648,997

APPARATUS FOR THE PRODUCTION OF IRON

Tatsuro Kanokogi, Kyoto, Japan, assignor to Sumitomo Metal Industries Ltd., Kitahama, Higashi-ku, Osaka-shi, Japan

Original application May 14, 1968, Ser. No. 729,048, now Patent No. 3,594,154. Divided and this application Aug. 17, 1970, Ser. No. 64,255
Int. Cl. F27b *1/20*
U.S. Cl. 266—27 **2 Claims**



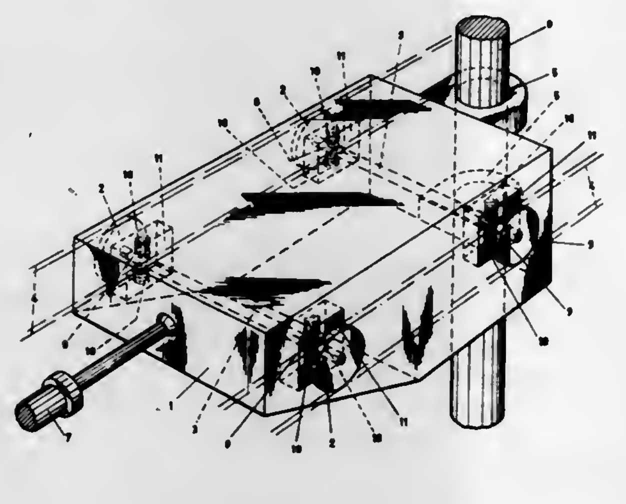
An improved apparatus for the production of iron comprises a smelting shaft furnace, a pair of inner and outer annular partition walls extending concentrically from the top of the furnace to a point below the stock line, whereby a central columnar fuel zone, an annular ore zone and an annular furnace wall fuel zone are formed, respectively, inside the inner annular partition wall, between the inner and outer partition wall and outside the outer annular partition wall. Two separate inlets are provided.

3,648,998

SPUD LORRY FOR A FLOATING DREDGER

Cornelis van der Gaag, 2 Vrijenbanschekade, Delft, Netherlands

Filed Mar. 30, 1970, Ser. No. 23,805
Claims priority, application Netherlands, Apr. 3, 1969, 69.05248
Int. Cl. F16f *3/00, 15/00*
U.S. Cl. 267—150 **4 Claims**



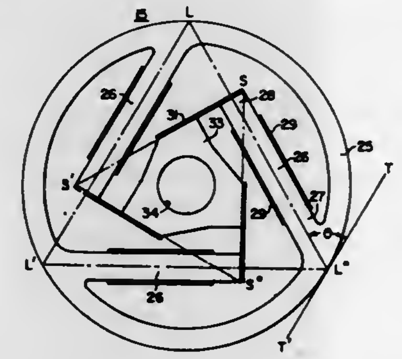
A spud lorry for a floating dredger has wheel shafts whose bearings are spring mounted each by a pair of vertically aligned springs disposed one above and one below the shaft.

3,648,999

SUSPENSION SPRING

James A. Bauer, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 19, 1969, Ser. No. 886,694
Int. Cl. F16f *1/34*
U.S. Cl. 267—160 **9 Claims**



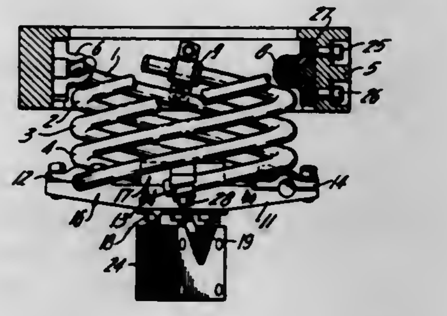
This invention provides a spring which may be used to seismically support a movable shaft. The spring comprises an outer mounting ring and a concentric inner mounting plate connected to each other by a plurality of links having outer and inner hinge sections, pairs of reinforcing flanges, and linking flanges. The plurality of equally spaced links projects into the mounting ring at equal angles. The outer hinge portions of the links connect the links to the mounting ring. A pair of reinforcing flanges increases the natural frequency of the spring. At the end of the reinforcing flanges are the inner hinge portions of the links connecting the links to the linking flanges; the linking flanges connect the links to the center mounting plates and are integral therewith. The reinforcing and linking flanges are in planes normal to the planes containing the center mounting plate, the links, and the ring insuring a rectilinear spring deflection characteristic.

3,649,000

HELICAL COIL SPRING ARRANGEMENT

Jacques J. Desy, Bearsville, N.Y., assignor to Rotron Incorporated, Woodstock, N.Y.

Filed Jan. 20, 1970, Ser. No. 4,191
Int. Cl. F16f *1/12*
U.S. Cl. 267—179 **10 Claims**



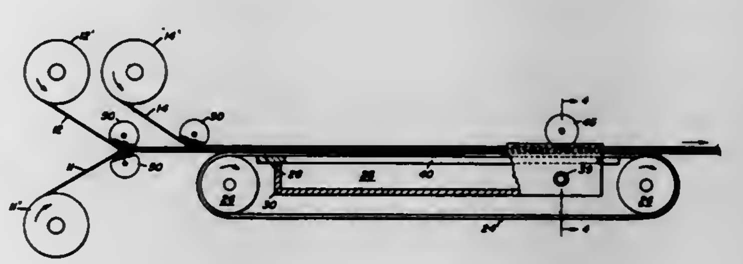
A coil spring arrangement comprising a plurality of helical coil springs and means for holding the springs in position. The springs are fixed on a common axis by at least one set of interconnected clamps arranged substantially on a common plane transverse to the common axis. Each of these clamps are provided with jaws forming an opening which follows the helical path of the particular coil spring to be gripped and means for tightening the jaws on this coil spring.

3,649,001

METHOD FOR HOLDING A MULTILAYER ASSEMBLY OF MATERIALS AND PARTS IN ALIGNMENT

Stanley R. Schieven, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 15, 1969, Ser. No. 841,888
Int. Cl. B65h
U.S. Cl. 270—52 **6 Claims**



To hold a plurality of sheets in a given superposed relationship on a conveyor by vacuum all but the uppermost sheet is provided with openings through which the vacuum can be transmitted to the uppermost sheet.

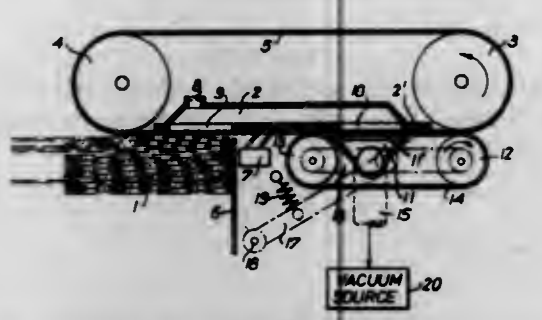
3,649,002

SUCTION BELT SEPARATOR FOR FLAT ITEMS

Gisbert Burkhardt, Reichenau, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Feb. 2, 1970, Ser. No. 7,965
Claims priority, application Germany, Jan. 31, 1969, P 19 04 705.3
Int. Cl. B65h *3/12*
U.S. Cl. 271—26 R **4 Claims**

A suction belt separator in which the passage between a suction opening for removing items from a stack and the vacuum source extends across the conveying path followed by separated items so that an item intersecting the passage blocks it and interrupts the suction at the suction opening, the suction opening also being in permanent communication with the atmosphere through a small throttle opening.



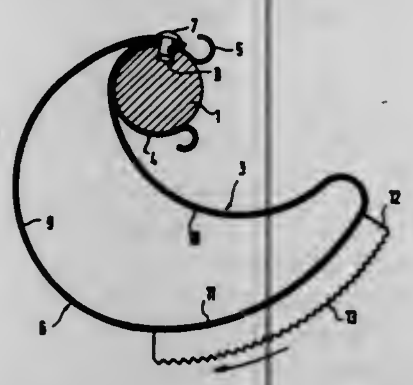
3,649,003
SHEET FEEDING MECHANISM FOR A SMALL DUPLICATING MACHINE

Rudolf Muller, St. Georgen; Heinz Joachim Schinke, Unterkirnach, and Hermann Raible, St. Georgen, all of Germany, assignors to Math. Bauerle GmbH, St. Georgen, Germany

Filed June 29, 1970, Ser. No. 50,438

Int. Cl. B65h *3/06*

U.S. Cl. 271—36 **9 Claims**



The sheet feeding mechanism for a small offset duplicating machine has a sheet engaging element axially adjustable on a continuously rotating drive shaft. The engaging part of the element has an exposed face arcuately convex about the axis of rotation and two terminal sections offset from the exposed face in opposite circumferential directions. Two carrier parts of the element respectively connect the terminal sections to the shaft. One of the two carrier parts is sufficiently resilient to permit some radial movement of the associated terminal section under the deforming pressure of a sheet engaged by the exposed face, while the other carrier part is rigid enough to prevent circumferential movement of the entire face.

3,649,004
SHEET CARRIER MECHANISM FOR PICTURE TELEGRAPHY APPARATUS

Werner Fels, and Klaus Andree, both of Kiel, Germany, assignors to Dr.-Ing. Rudolf Hell

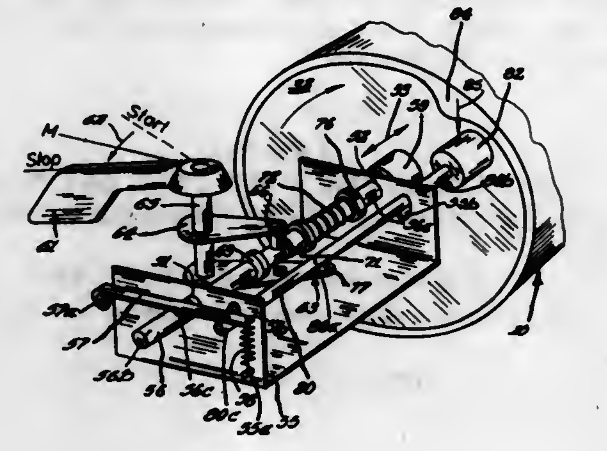
Filed Mar. 19, 1970, Ser. No. 20,979

Claims priority, application Germany, Mar. 19, 1969, G 69 11 033

Int. Cl. B65h *5/14*

U.S. Cl. 271—51 **10 Claims**

A mechanism for the efficient and safe mounting of a sheet being used as a transmitting original or a recording carrier in a picture telegraphy apparatus comprises a cylindrical drum mounted on a continuously rotating driving shaft having a sheet material gripping means on the outer surface of the drum adapted to hold an edge of the sheet material, said gripping means being operated by a single control means associated with the drum and the gripping means whereby a single movement of a control lever on the control means disengages the drum from the drive shaft, stops and locks the drum while disengaging the gripping means from a sheet of material to be held by the drum. After replacement of the sheet a reverse single movement of the control lever engages the sheet material and starts the rotation of the drum.



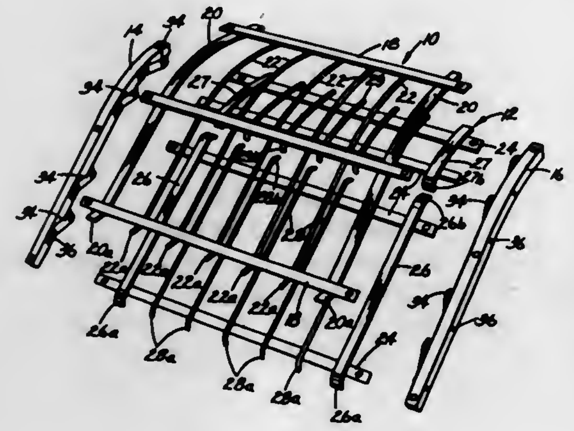
3,649,005
SHEET ALIGNING DEVICE

Donald J. Miller, Lakewood, and Raymond J. Schmidlin, Lyndhurst, both of Ohio, assignors to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed May 18, 1970, Ser. No. 38,027

Int. Cl. B65h *9/04*

U.S. Cl. 271—59 **6 Claims**



A device for aligning sheets having straight edges is provided which includes a structural frame member adapted to receive the sheet. A plurality of biasing means are provided along each edge of the frame which are yieldable to the pressure of the sheet but will straighten and center the sheet when the sheet is unrestrained and free to move in the frame.

3,649,006
IMPROVED SHEET HANDLING APPARATUS

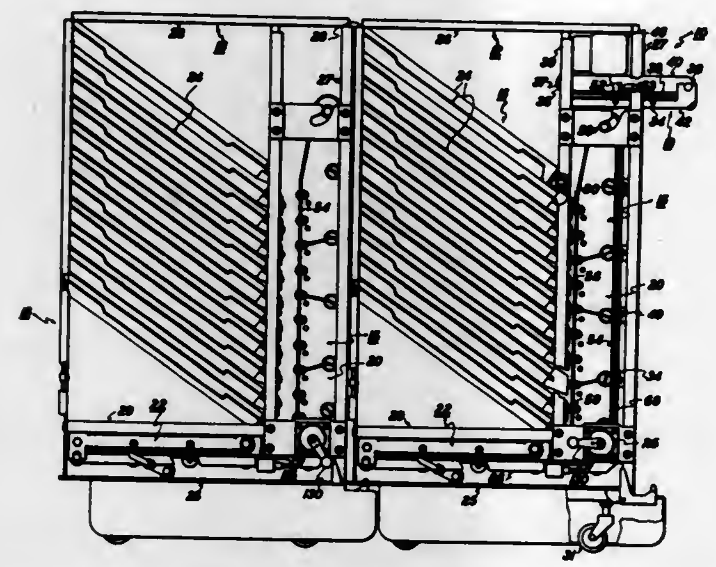
Richard C. Schenk, West Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Feb. 9, 1970, Ser. No. 9,800

Int. Cl. B65h *29/58, 31/24*

U.S. Cl. 271—64 **4 Claims**

An improved sheet transport mechanism to facilitate the removal of jams occurring along the sheet transport path of a sorting apparatus. The sorting apparatus comprises one or more modules having a plurality of trays for storing sheet material and deflector members associated with each of the trays when actuated to route the sheet material from the transport mechanism into a corresponding tray. The improvement resides in mounting the transport mechanism in such a manner as to enable camming the transport mechanism away from the trays and also in a direction away from the movement of the sheet material into the trays. Cam plate members are located at the top and bottom portions of the transport mechanism and camming members are located in the lower plates on an axis eccentric that of the camming members, the transport mechanism is displaced away from the trays and in a direction against the movement of the sheet material into the trays to facilitate the removal of the jam occurring in the movement of the sheet material along the sheet path.



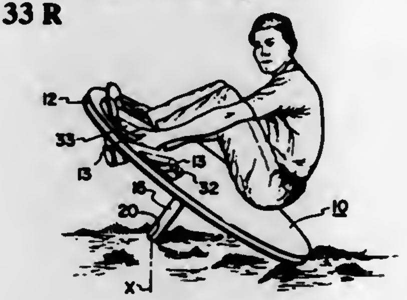
3,649,007
WHEEL-TYPE EXERCISE DEVICE

Ross T. Thomas, 1507 Lincoln Avenue, Corona, Calif.

Filed Mar. 12, 1970, Ser. No. 18,969

Int. Cl. A63g *11/12*

U.S. Cl. 272—33 R **2 Claims**



The present invention comprises an exerciser device taking the form of an annular tilted platform or support having a central stub shaft or the like. The platform is provided with means for enabling hand and foot placement, this so that the user, by shifting his weight, may revolve the device about an axis disposed proximate the point of contact of the stub shaft with its support plane. The stub shaft may be supported and/or journaled by appropriate means when desired.

3,649,008
HAND AND WRIST EXERCISER DEVICE

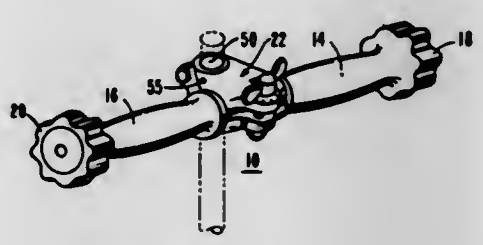
Harold Zinken, Fresno; Kenneth A. Gustafson, Villa Park, and Chuck M. Coker, Huntington Beach, all of Calif., assignors to Whittaker Corporation

Filed Feb. 9, 1970, Ser. No. 9,155

Int. Cl. A63b *21/00*

U.S. Cl. 272—67 **4 Claims**

An improved exercise device is provided for exercising the wrist, hand and forearm, which device comprises a pair of spaced handles containing knobs on lateral ends thereof, a connector between the handles adapted to connect the handles to a vertically standing pipe in a gym apparatus, the handle means being disposed around a horizontally extending shaft through the connector, a printer and dial arrangement and means for tightening the connector means around the shaft in a controlled manner utilizing means indicating the extent of adjustment thereof i.e., a measure of the increase or decrease in resistance to turning of the handles relative to the connector means.



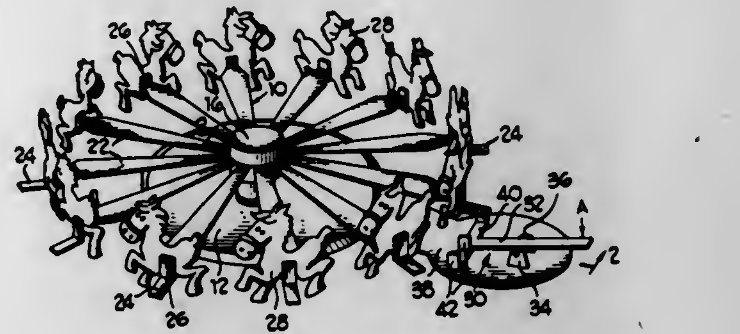
3,649,009
SKILL TYPE GAME

Jeffrey Dale Breslow, Chicago, Ill., assignor to Marvin Glass & Associates

Filed Jan. 19, 1970, Ser. No. 3,631

Int. Cl. A63f *9/00*

U.S. Cl. 273—1 R **9 Claims**



A skill type game having a carrousel in the form of a spoked wheel mounted on a base support for rotation relative thereto about a central vertical axis. The outer ends of the spokes of the carrousel terminate in finger-like portions extending radially outwardly from the vertical axis. A lever type catch member is disposed adjacent the outer periphery of the rotatable carrousel and is movable by a player of the game from an inoperative position to a "catch" position in an attempt to catch any or selected ones of the finger-like portions at the ends of the spokes of the carrousel. Character members may be removably mounted on the spokes of the carrousel to provide means for scoring the game or the like.

3,649,010
ARM WRESTLING APPARATUS

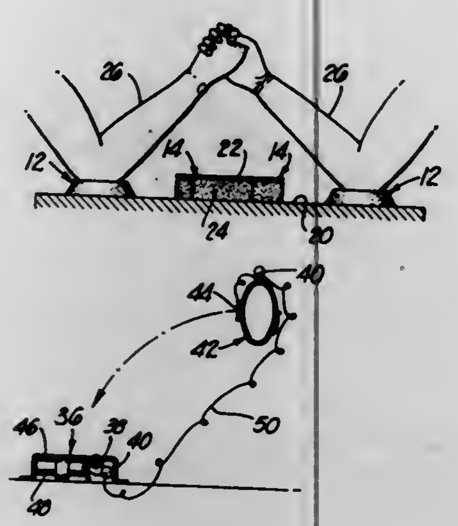
Lawrence W. Jeffrey, 19302 Greenhaven, Covina, Calif., and Robert D. Jeffrey, 7121 Lowell Avenue, Glendora, Calif.

Filed Sept. 5, 1969, Ser. No. 855,507

Int. Cl. A63b *71/06*

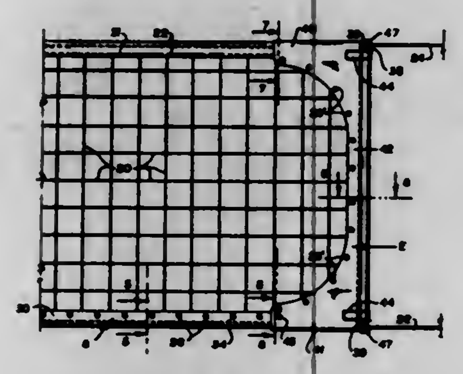
U.S. Cl. 273—1 E **6 Claims**

Game apparatus for signaling the winner of an arm wrestling match. The game apparatus has cups for receiving the contestants' elbows, wrist bands to be worn by the contestants, scoring members to be placed at either side of the line of centers of the elbow cups against which a contestant, to win, must force his opponent's wrist band, and signaling devices for indicating contact of the contestants' wrist bands with their respective scoring members.



3,649,011
NET SHEATH

Paul J. Barnes, 780 E. Baptist Assembly Road, Colorado Springs, Colo.
Filed Feb. 13, 1970, Ser. No. 11,111
Int. Cl. A63b ***61/00***
U.S. Cl. 273—29 B **7 Claims**

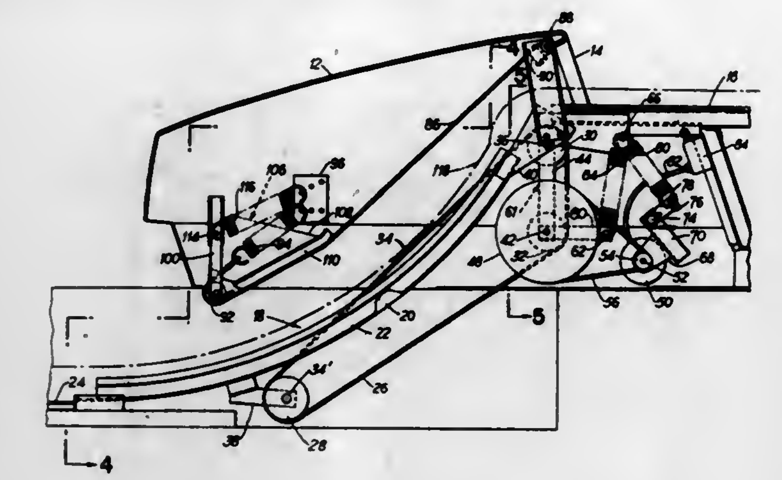


A sheath for a standard game net to reinforce the lower edge of the net. The sheath is formed as a folded web of cloth adapted to be fitted about the lower cord of a game net with the folds being held together by snaps. The sheath includes a passageway wherein a cable is threaded for stretching the net. The sheath structure includes further, a pocketlike cover for each end of this net and a spacer bar in this pocket adapted to be secured to the standard upper cable of the net and the lower cable of the sheath to hold the cables in a proper spaced-apart position.

3,649,012
BOWLING BALL RETURN AND STORAGE SYSTEM

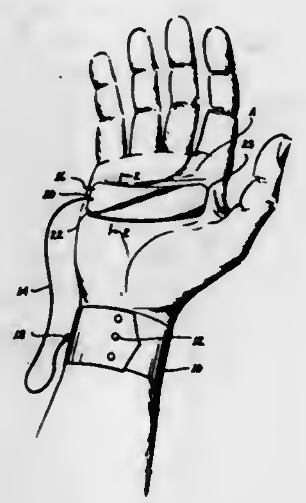
John Zuercher, York, Pa., assignor to AMF Incorporated
Filed May 28, 1970, Ser. No. 41,220
Int. Cl. A63d ***5/02***
U.S. Cl. 273—49 **4 Claims**

Ball handling apparatus, comprising a ball track, a conveyor belt mounted adjacent the ball track and operable to engage balls traveling therealong, means for driving said conveyor belt at a predetermined speed, and a pressure plate and strip spaced from said track for engaging balls traveling therealong in cooperation with said conveyor belt and decelerating them to the speed of the conveyor belt.



3,649,013
BOWLER'S TRAINING METHOD

James A. Foster, 801 East Southern Avenue, Phoenix, Ariz.
Filed July 23, 1970, Ser. No. 57,611
Int. Cl. A63b ***69/00***
U.S. Cl. 273—54 B **1 Claim**

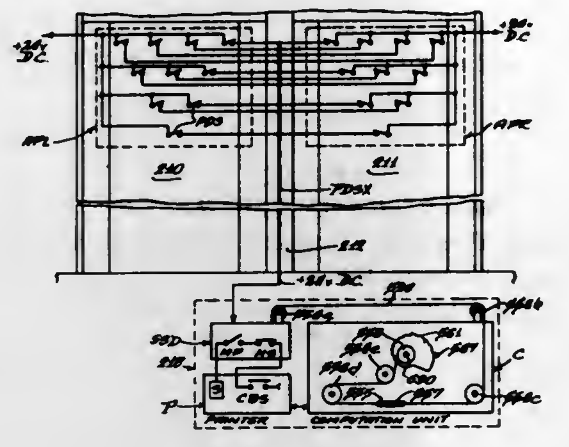


A bowler's training device and method comprising a wrist band having a flexible cord or equivalent means connected to a flexible palm-engaging member adapted to be disposed between a bowling ball and a person's palm when the ball is delivered, whereby a person may immediately close the hand to grip the palm-engaging member as the ball is delivered, thus causing the bowler to attain the proper follow-through action or lift recognized to be essential to gain effective control of the ball.

3,649,014
SPLIT DETECTING AND SCORING SYSTEM

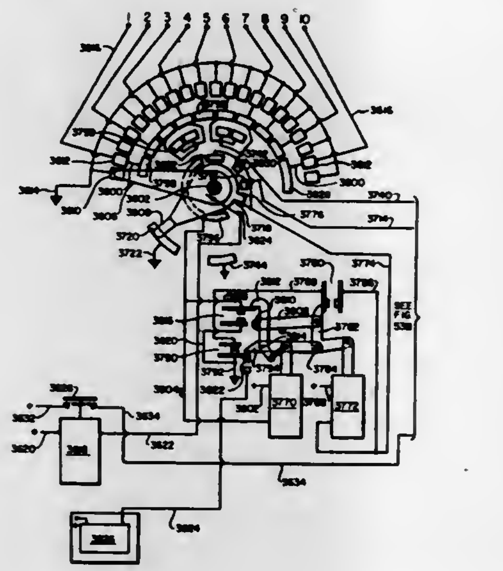
Paul R. Hoffman, Grand Haven, Mich., assignor to Brusnwick Corporation
Filed Oct. 14, 1965, Ser. No. 495,780
Int. Cl. A63d ***5/04***
U.S. Cl. 273—54 **12 Claims**

The present invention relates to apparatus useful in the scoring of bowling games. Further, the invention relates to scoring systems including a device for providing a pin count from pinfall information and also relates to scoring systems capable of providing a determination of pin-standing combinations normally classified as "splits."



3,649,015
SPLIT DETECTION SYSTEM

Eugene E. Reynolds, Orangeburg, S.C., assignor to Brunswick Corporation
Original application Mar. 21, 1966, Ser. No. 536,151, now Patent No. 3,488,055, Continuation of application Ser. No. 243,525, Dec. 10, 1962, now abandoned. Divided and this application Mar. 14, 1969, Ser. No. 807,207
Int. Cl. A63d ***5/04***
U.S. Cl. 273—54 **17 Claims**

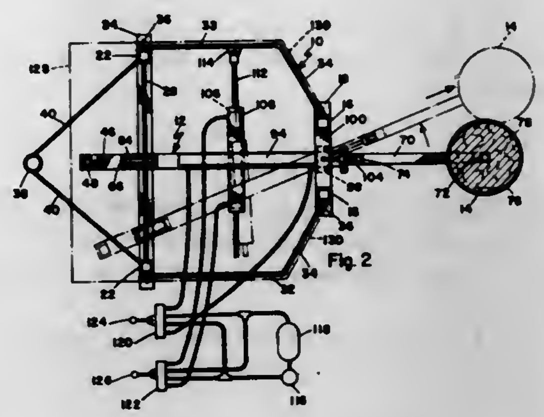


This invention relates to a split detecting apparatus for bowling games including means for detecting the presence or absence of standing pins at each pin spot, means responsive to the detecting means for determining whether the standing pin arrangement constitutes a split, and means responsive to the determining means for indicating the existence of a split. In the preferred embodiment, the split detecting system is used in conjunction with a bowling score computer and means are provided whereby the split indication is printed on a score sheet.

3,649,016
FOOTBALL BLOCKING TRAINER

Robert E. Kelley, Jr., 1008 Nolbey Drive, Cardiff, Calif.
Filed June 3, 1970, Ser. No. 43,035
Int. Cl. A63b ***67/00***
U.S. Cl. 273—55 R **7 Claims**

A machine for training football players in blocking, with a padded blocking dummy which is movable to simulate an opponent who is dodging. The dummy is mounted on a frame and can be extended, retracted and swung to either side in any combination of moves under the complete control of an operator. The machine is self-contained and the moving mechanical parts are enclosed to avoid injury to players.



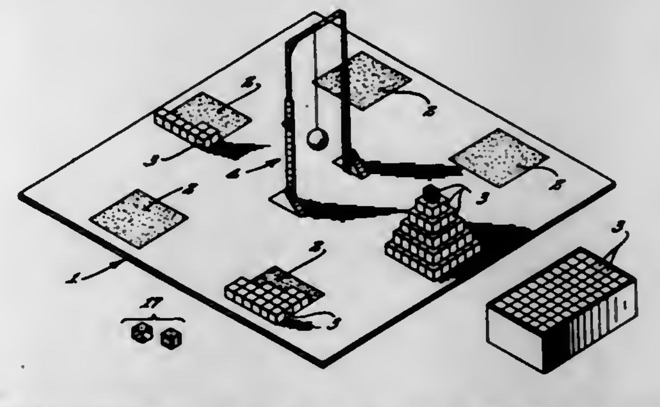
3,649,017
SIMULATED BASEBALL GAME

James W. Kirkpatrick, 1931 E. Meats Street, Apt. 72, Orange, Calif.
Filed Mar. 9, 1970, Ser. No. 17,480
Int. Cl. A63f ***7/06, 9/04***
U.S. Cl. 273—90 **2 Claims**

A simulated baseball game having a gameboard with a baseball diamond, a scoreboard, an outs indication, and an inning indication thereon. An area is provided for placing a many sided playing piece which is struck by a bat, moved, and upon the cessation of movement of the playing piece, the side that is up is read to obtain the next play of the game. The playing piece has nine sides each bearing play indicating indicia, and when it comes to rest on one side, two other sides are equally uppermost opposite the side on which it comes to rest. Indicia are provided on the end of the playing piece to determine which of the two uppermost sides is to be read.

3,649,018
BLOCK ASSEMBLY GAME

Danny J. Beam, P.O. Box 64, Lockport, Ill.
Filed Dec. 10, 1969, Ser. No. 883,967
Int. Cl. A63f ***3/00***
U.S. Cl. 273—95 A **14 Claims**

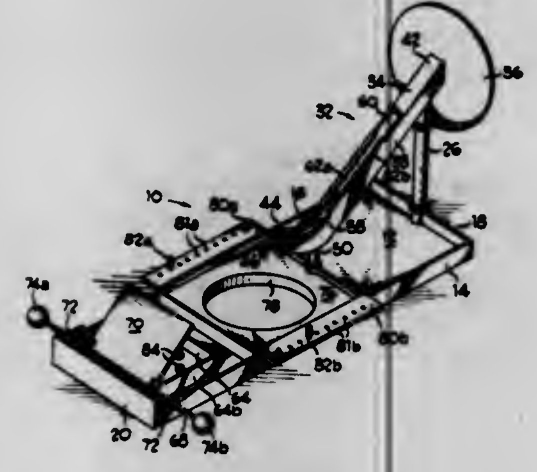


A game in which each player seeks to be the first to build an assembly of a plurality of blocks, in accordance with player-actuated means such as a pair of dice or a spinner, by means of which the player may have the opportunity to add a number of blocks to the assembly as specified by said means or to endeavor to displace blocks in the opponent's assembly by means of a swingable object suspended on a support member movable relative to the block assemblies of the respective players.

3,649,019
GRAVITY PROJECTED BALL GAME WITH MANUALLY MANEUVERABLE TARGET OPENING

Gordon A. Barlow, Evanston, Ind., assignor to Marvin Glass & Associates

Filed Feb. 24, 1970, Ser. No. 13,495
Int. Cl. A63f *7/02*
U.S. Cl. 273—101 **5 Claims**

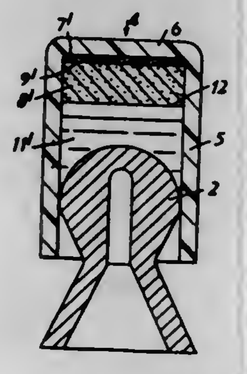


A game device of the type including a chute-like element for launching a ball-like missile into a path of flight and a selectively closable aperture for receiving a ball-like missile, characterized by the provision of a masking means at the upper or depositing end of the chute-like element and the provision of missiles of different color, whereby a player manipulating the closable aperture may request the launching of the missile of a certain color and will be unable to determine such color until shortly before, or at the time that the missile is launched out of the end of the chute.

3,649,020
AIR-GUN PROJECTILES

Ronald Gibson Hall, 34 Leverstock Green Road, Hemel Hempstead, England

Filed Sept. 23, 1969, Ser. No. 860,313
Claims priority, application Great Britain, Feb. 11, 1969, 7,431/69
Int. Cl. F42b *11/18, 11/24*
U.S. Cl. 273—106 E **7 Claims**

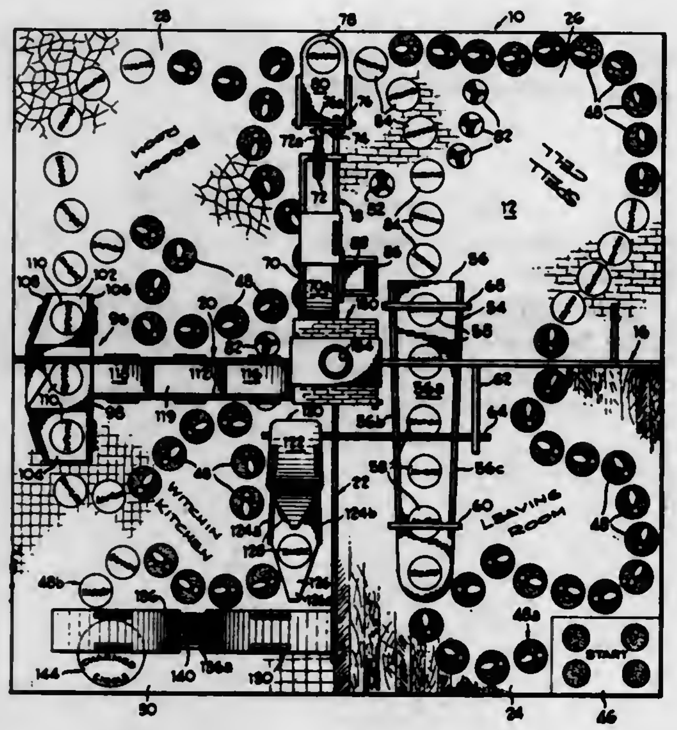


An airgun projectile. A conventional airgun slug having a forward nose portion and a skirt portion flaring outwardly and rearwardly from a reduced diameter central portion is placed within the cylindrical bore of an impact-yielding cap. The cap has a circular front wall end and a rearwardly extending cylindrical skirt. The cap skirt is snugly received over the slug nose portion, and the external diameter of the cap skirt is substantially equal to the diameter of the slug skirt at its widest joint. Disposed within a hollow defined by the slug nose, cap front wall, and cap skirt is an indicator comprising a flash producing powder and Amorce mixture, and/or a solvent-based paint.

3,649,021
BOARD GAME APPARATUS

Geoffrey Hayes, Prestbury, England, assignor to Marvin Glass & Associates, Chicago, Ill.

Filed July 29, 1970, Ser. No. 59,093
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 G **15 Claims**



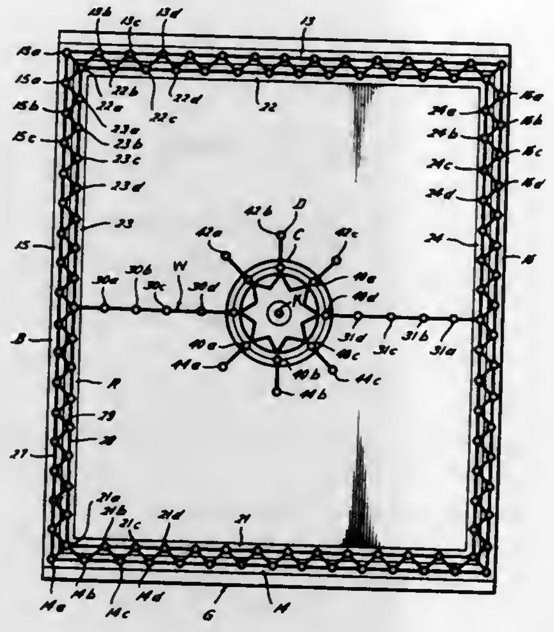
A game device of the type involving random chance advancement and possible retrograde movement of playing pieces, characterized by the provisions of a game board having upstanding partitions defining different playing area compartments with openings in the partitions defining paths of advancement for playing pieces between the compartments and a tower structure positioned medially of the partitions with openings in the tower structure directed toward the several partitions and a random directing device for directing a ball element dropped into the tower outwardly of one of the openings towards the path of travel of the playing piece through the partitions with structure directing a ball element to one of a plurality of hazard devices which may be occupied by the game pieces so that a game piece occupying a particular hazard element to which the ball element is directed will be displaced.

3,649,022
BOARD GAME APPARATUS

Ralph N. Clark, Jr., P.O. Box 4, Sugarland, Tex.

Filed Nov. 7, 1969, Ser. No. 874,779
Int. Cl. A63f *3/02*
U.S. Cl. 273—134 AD **6 Claims**

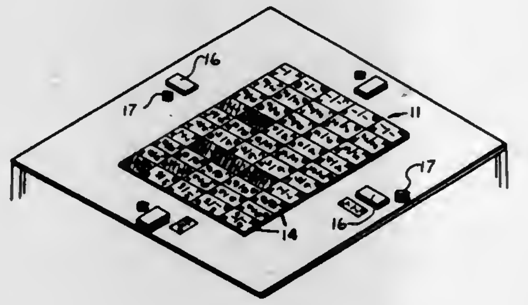
A game apparatus comprising a playing board having a plurality of paths of playing positions associated with markings of different colors and arranged thereon with groups of major and minor playing pieces for each opponent, each group being visually distinguishable from the other groups for movement on the playing board according to a specific rule of play and according to a roll of three dice, two of which are colored to correspond to the markings of various paths of playing positions on the board with the third die having its respective sides numbered from one to six in the usual manner. The playing positions are arranged in parallel peripheral paths connected by a transverse path which includes a central circular group of positions.



3,649,023
METHOD OF PLAYING A GAME WHEREIN CARDS COVER BOARD SECTIONS

Wilhelmina Schohn, 231 North Kenilworth Avenue, Oak Park, Ill.

Filed May 28, 1968, Ser. No. 732,722
Int. Cl. A63f *9/14*
U.S. Cl. 273—135 B **1 Claim**

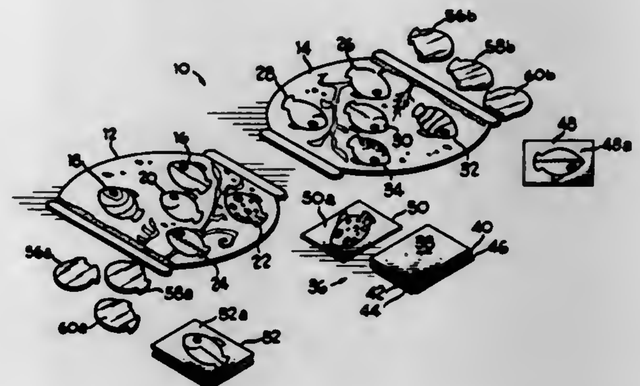


A novel parlor game, equipment upon which and with which such game is played, and methods for playing same are described. The equipment includes a playing board, the playing surface of which is subdivided vertically and horizontally into a plurality of sections, and a plurality of separately identifiable but identically marked card packs, each containing one card corresponding to each of said sections plus "-wild" cards and "special" cards. Cards are drawn from the card packs and placed on corresponding sections of the board. The winner is the first player to place five of his own cards in a contiguous horizontal, vertical, or oblique row or to place one of his own cards in each of the four corners. The "wild" cards may occupy any board section and the "special" cards may replace an opponent's card on a given board section.

3,649,024
BOARD GAME APPARATUS

Allison Katzman, Chicago, Ill., assignor to Marvin Glass & Associates

Filed Sept. 9, 1970, Ser. No. 70,773
Int. Cl. A63f *3/00*
U.S. Cl. 273—135 AC **5 Claims**

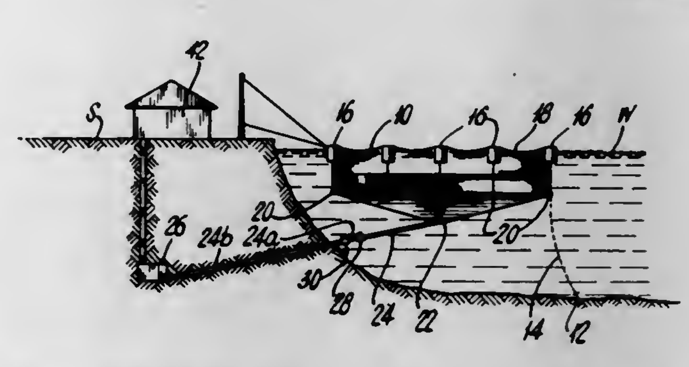


A color transformation recognition game characterized by the provision of a game board with figures thereon, having different color patterns, and plural game cards each showing a desired color pattern for one of the several figures of the game board. Color filter means are provided for superposing on one of the figures of the game board to achieve the desired color pattern of one of the several game cards.

3,649,025
WATERFRONT DRIVING RANGE

Charles Garland, 116 Crownpoint Road, Williamsburg, Va.

Filed Sept. 23, 1970, Ser. No. 74,581
Int. Cl. A63b *67/02, 69/36*
U.S. Cl. 273—176 A **10 Claims**



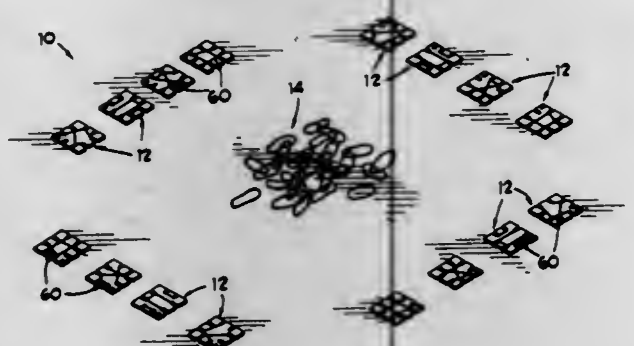
A driving range for golf or other games employing aerial projectile in which an open mesh net is waterborne, anchored in position, and extends from the shoreline and out the required distance on the water to form a driving range. The installation additionally includes a multiplicity of balls, or other projectiles, and a recovery unit that recovers the balls that fall through the net and into a funnel-shaped portion thereof and conducts the balls back to the land based portion of the driving range. The recovery unit includes a submerged ball return conduit connected to the funnel shaped portion. Spaced valves in the conduit form a compartment which may evacuated by air pressure. Golf balls roll down the conduit by gravity to a recovery chamber and are lifted to a land-based station by a conveyor.

3,649,026
PUZZLE-TYPE GAME

Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates

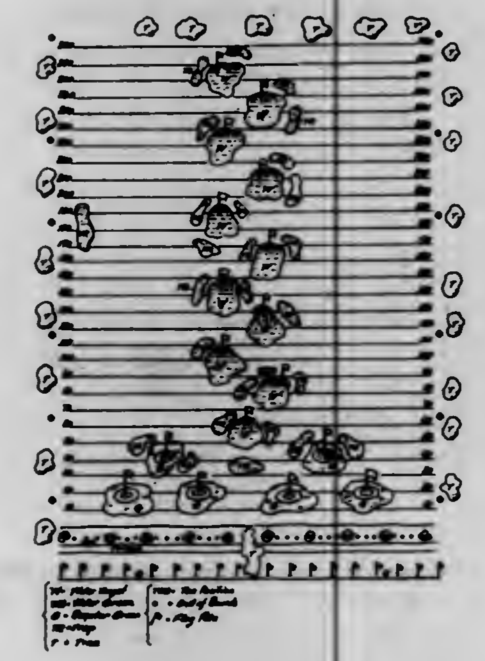
Filed Mar. 12, 1970, Ser. No. 18,858
Int. Cl. A63f *9/00*
U.S. Cl. 273—159 **5 Claims**

A game characterized by the provision of plural playing tiles for each player with peripheral notches in the playing tiles and grooves in the faces of the playing tiles and a plurality of preferably resilient endless strands, such as rubber bands, the object of the game being for each player to wrap the rubber bands about the tiles in the pattern indicated by the grooves on the opposed faces of the tiles without repeating any pattern.



3,649,027
GOLF COURSE

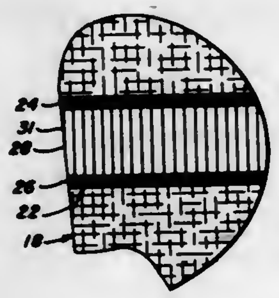
Theodore L. Vallas, 3202 Vista Way, Oceanside, Calif.
Filed Dec. 4, 1968, Ser. No. 781,022
Int. Cl. A63b *67/02, 69/36*
U.S. Cl. 273—176 A **1 Claim**



A golf course of the "target-golf"-type includes three different groups of targets, all of which are approximately the same size. The targets of the first group each have a target surface comparable to a conventional closely cropped grass golf green and are located relatively close to the tee positions to provide targets for chipping and approach shots. The targets of the second group each include a target surface which is defined by a uniformly sized central area of water surrounded by a surface having the characteristics of a conventional closely cropped grass golf green. The targets of the second group are located more remote from the tee positions than the targets of the first group. The targets of the third group each include a target surface defined by water alone and are located more remote from the tee positions than the second group of targets. Putting greens are located rearward of the tee positions. Between every other tee position there is a trap and, alternately, a rough area. The putting greens and tee positions may be protected from the weather by an enclosure including an air screen through which golf balls are driven into the fairway area.

3,649,028
LUMINESCENT GOLF SWING TRAINING DEVICE

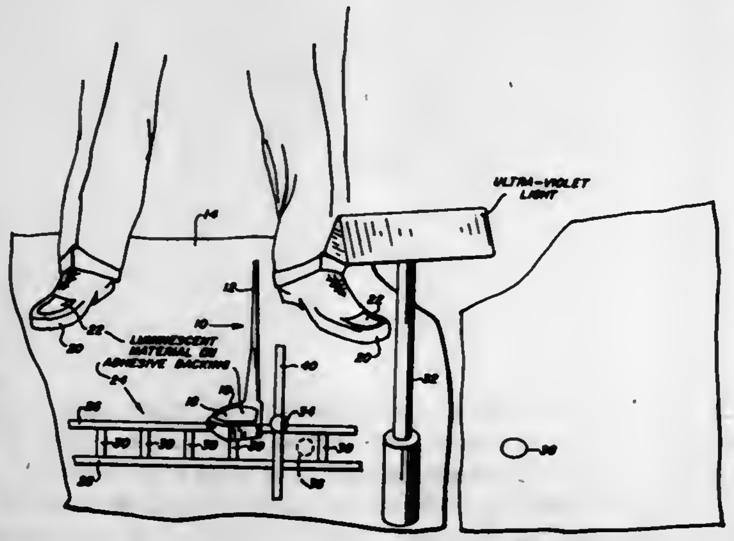
Eugene N. Worrell, 1511 Clinton Road, Glenshaw, Pa.
Filed Apr. 7, 1970, Ser. No. 26,328
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 A **8 Claims**



Golf practicing apparatus characterized in the use of adjacent strips of luminescent or light-emitting material on the upper surface of a golf club in a manner such that when the club is swung through an arc, a visible trace pattern is emitted by the luminescent or light-emitting material which enables an observer to make a rapid and accurate determination as to the disposition of the golf club head throughout its arcuate path of travel. The pattern comprises three adjacent stripes of outer black stripes and an intermediate stripe of red. Luminescent reference guide stripes in the path of travel of the club are also provided one of which stripes is tangential to the path of travel of the club and the other of which guide stripes is perpendicular thereto and at a point of impact of a golf ball. Another form of the invention includes stripes of a luminescent chemical that are covered with a cover that is ruptured prior to use so that airborne oxygen reacts with the chemical to yield a distinctively colored light pattern when the club is swung through an arc.

3,649,029
GOLF PRACTICE APPARATUS

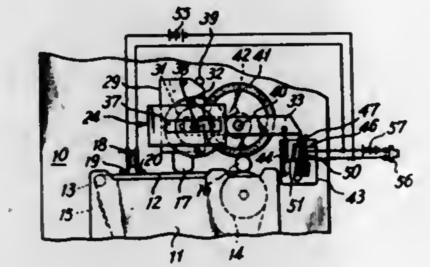
Eugene N. Worrell, 1511 Clinton Road, Glenshaw, Pa.
Filed July 9, 1969, Ser. No. 840,178
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 C **9 Claims**



Golf practice apparatus for use in improving the golfing techniques of a golfer is disclosed. The apparatus includes luminescent material, preferably disposed on a decal secured to the head of a golf club, and a practice mat having luminescent material disposed thereon either in the form of a decal or imprinted thereon. The luminescent material on the club head permits visual observation of the movement of the club head during the execution of a swing of the golf club and the luminescent material on the base mat provides an indication of the desired path of travel over which the club head should travel when the golfer executes a correct swing. The luminescent material, preferably emits radiation in the visible range of the spectrum when ultra-violet radiation is impinged thereon and an ultra-violet lamp is provided for producing ultra-violet radiation for impingement on the material such that visual observation of the material can be had in an environment substantially devoid of light whereby a user of the apparatus can concentrate on the arc of his swing and correct any tendency on his part to swing the golf club in a path other than the desired path. The luminescent material may be characterized by a pair of parallel strips extending longitudinally on opposite sides of a putting target which lines are spaced apart by the length of a putter head, parallel cross strips therebetween, as well as by a cross strip as a heel position marker to improve the golfer's stance. The luminescent material may also be applied to the toe portions of a golfer's shoes as well as his glove or gloves. The luminescent material may be applied as pressure-sensitive adhesive.

3,649,030
APPARATUS FOR SHIFTING MAGNETIC HEAD IN MULTI-TRACK TAPE PLAYER

Itsuki Ban, 829, Higashi-Oizumimachi, Tokyo-to, Japan
Filed Apr. 15, 1970, Ser. No. 28,869
Claims priority, application Japan, Apr. 17, 1969, 44/34688
Int. Cl. G11b *21/08*
U.S. Cl. 274—4 A **7 Claims**

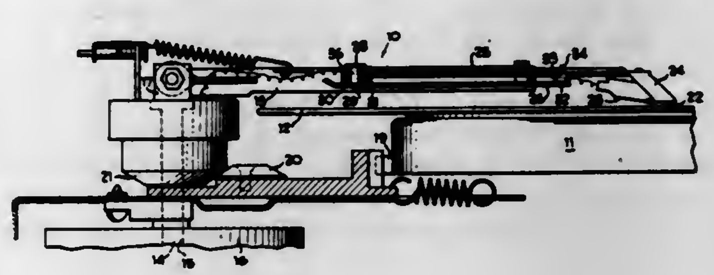


An apparatus for shifting a magnetic head in multi-track tape player comprising a support member supporting a magnetic head; cam means moving the support member for positioning the magnetic head in opposition to a plurality of discrete and separate record-tracks on the tape; cam driving means including an eccentric frictional wheel rotatably driven upon abutment against a capstan for running the tape, a movable lever member supporting the wheel, and a reduction device transferring rotation of the wheel to the cam member upon reduction thereof; and lock means locking the lever member for maintaining the frictional wheel in the position where the wheel is not rotated by the capstan whereby whenever the lock means disengages the lever member the frictional wheel is rotated through a turn and the cam means is also rotated through a predetermined angle while the magnetic head is moved by one step.

3,649,031
TONE ARM ASSEMBLY

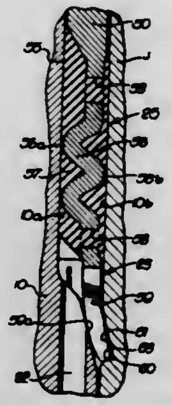
Lee H. Templin, Elgin, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Feb. 2, 1970, Ser. No. 7,667
Int. Cl. G11b *17/06*
U.S. Cl. 274—23 R **4 Claims**

A pickup arm or tone arm assembly is constructed in a manner which permits limited lateral movement of the stylus while maintaining the position of the tone arm base fixed. An articulated linkage between the base and the stylus includes a locator which repositions the stylus with respect to the base each time that the base is lifted to retract the stylus from engagement with the record.



3,649,032
APPARATUS FOR SEALING AN ANNULAR SPACE

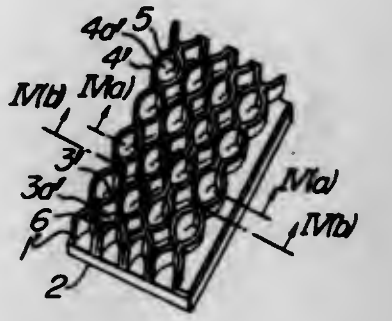
Bobby H. Nelson, Houston, Tex., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.
Original application Nov. 1, 1968, Ser. No. 772,521, now Patent No. 3,561,527, dated Feb. 9, 1971. Divided and this application June 22, 1970, Ser. No. 47,982
Int. Cl. F16j *15/12*
U.S. Cl. 277—235 **8 Claims**



Sealing apparatus for sealing the annular space between an inner member and an outer member. A malleable metallic seal ring is disposed between these members, including an axial undulation providing an inner annular crest and an outer annular crest. An axial force imposed on the ring shortens its length, deforming the inner crest into sealing engagement with the inner member and the outer crest into sealing engagement with the outer member.

3,649,033
HONEYCOMB ROTOR-SEALING DEVICE AND METHOD OF MANUFACTURE

Yasuo Kondo, Toyokawa, Japan, assignor to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Oct. 20, 1970, Ser. No. 82,349
Claims priority, application Japan, Dec. 24, 1969, 44/104591
Int. Cl. F16j *15/28, 15/44*
U.S. Cl. 277—96 **7 Claims**

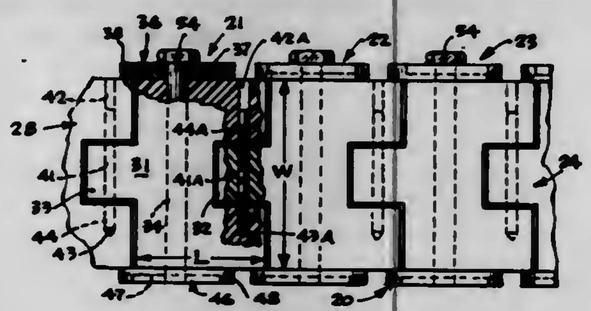


A method of manufacturing a honeycomb rotor-sealing device, which is to be applied to a space between a rotor means and a stationary casing means surrounding said rotor means and open cells of which are adapted to face on the periphery of said rotor means for preventing fluid from passing therethrough, including steps of forming a thin sheet of metal or the like into an embossed sheet as to provide a plurality of cells adjacently arranged and open at each side thereof, fixing said embossed sheet on to a supporting plate at one side thereof and cutting a surface portion thereof away from said embossed sheet for providing an increased number of open cells over at the side opposite to that at which said embossed sheet is fixed on to said supporting plate.

3,649,034
MODULAR INTERWALL SEAL UNIT

Bruce G. Barton, Livonia, Mich., assignor to Thunderline Corporation, Wayne, Mich.

Filed Sept. 15, 1970, Ser. No. 72,440
Int. Cl. F16j *15/10*
U.S. Cl. 277—104 **14 Claims**

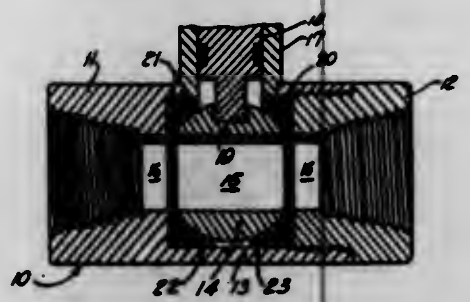


An annular shock-absorbing seal assembly, formed from a plurality of interconnected modular seal units; each modular seal unit includes a resilient elastomer seal block and two pressure plates, joined by a bolt that extends through the block, one plate being mounted on each face of the seal block. The seal assembly is initially held together by releasable connector means, independent of the pressure plates and bolts, which may comprise separate connector pins, interfitting lugs and sockets on the seal blocks, or a continuous wire or rope. The assembly can be lengthened to fit a variety of different size conduits by adding additional modular units.

3,649,035
A SELAING MEANS FOR A BALL VALVE

William J. Graham, Metairie, La., assignor to Texaco Inc., New York, N.Y.

Original application June 24, 1968, Ser. No. 739,469, now Patent No. 3,549,122, dated Dec. 22, 1970. Divided and this application Dec. 30, 1969, Ser. No. 1,913
Int. Cl. F16j *15/00;* **F16r** *5/20*
U.S. Cl. 277—231 **2 Claims**

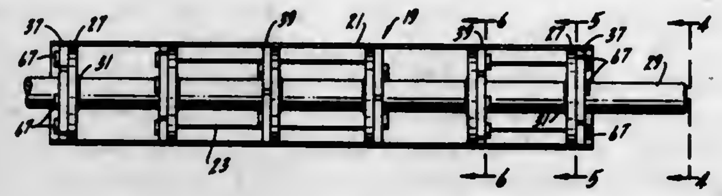


A ball valve wherein a rotatable ball controls the rate of fluid flow therethrough and is engaged by a sealing means which includes annular members of different materials and rigidity adjacently spaced to each other and engaging the ball.

3,649,036
EXPANDABLE ARBOR ASSEMBLY

Edward F. Harz, Geneva, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Nov. 12, 1970, Ser. No. 88,828
Int. Cl. B24d *9/02*
U.S. Cl. 279—2 **16 Claims**

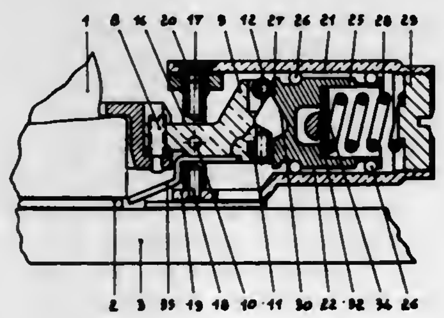


An expandable arbor for supporting abrasive coated sleeves. The arbor has an exterior slotted shell which is expanded by expander elements located in the shell and supported on an axially extending shaft. The expander elements have outwardly movable fingers formed around the peripheries thereof and which engage the shell to expand the shell into contact with the abrasive coated sleeves. The fingers are expanded by threaded members having inclined conical head surfaces which engage complementary surfaces of the expander element fingers. Aligned passages are provided in the expander elements and the supports to permit access to the expander elements from the ends of the shell.

3,649,037
DEVICE FOR RELEASABLY ATTACHING SKI BOOTS TO SKIS

Marcel Vouthier, Cluses, France, assignor to Carpano & Pons, Cluses, France

Filed Feb. 10, 1970, Ser. No. 9,923
Claims priority, application France, Feb. 12, 1969, 6903231
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **15 Claims**



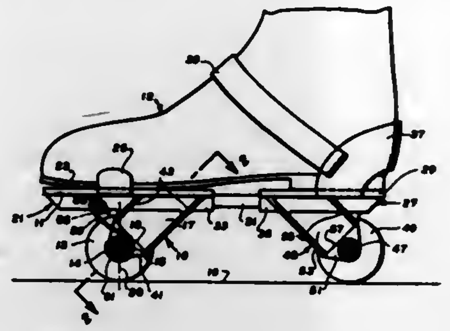
A ski safety device for releasably attaching ski boots to skis comprises boot heel gripping means on one end of a lever mounted for both vertical and horizontal pivotal movement in relation to the plane of the ski. A continuous pressure is applied against the other end of the lever so that the gripping means is normally maintained in a boot gripping position but can be knocked horizontally or vertically to a boot freeing position.

3,649,038
STEERABLE ROLLER SKATE

Otto Huckenbeck, Eberbachstrasse 67a, 7571 Haueneberstein, Germany

Filed Apr. 8, 1970, Ser. No. 26,635
Int. Cl. A63c *17/02, 17/04*
U.S. Cl. 280—11.28 **13 Claims**

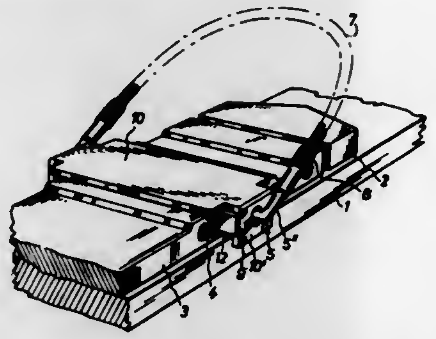
A steerable roller skate is described in which a web depends from the baseplate and is attached to an axle housing by an inclined hinge. The web and the axle housing are of unitary integral construction and the hinge consists of a flexible portion of the web. The web is rigid with respect to the baseplate to enable an axle supported by the axle housing to be steered by tilting the baseplate.



3,649,039
LONGITUDINALLY ADJUSTABLE HEEL LOCKING DEVICE ON A SKI-BINDING

Ernst Gertsch, Wengen, and Ulrich Gertsch, Interlaken, both of Switzerland, assignors to Gertsch, A.G., Wengen, Lauterbrunnen, Switzerland

Filed Jan. 23, 1970, Ser. No. 5,185
Claims priority, application Switzerland, May 2, 1969, 6724/69
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 P **4 Claims**

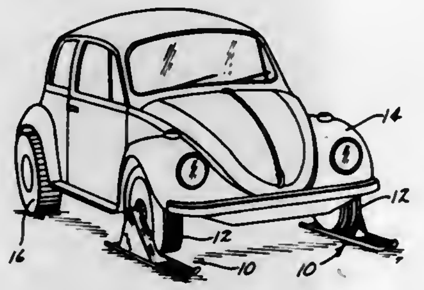


A conventional release plate of a safety ski-binding is provided with a plurality of longitudinally spaced transverse bores. A flexible heel locking member forming a loop around the heel of the ski-boot has its two ends at either side of said release plate provided with a locking bolt bent at right angles. The ends of the two locking bolts can be introduced from both sides into one or the other of said transverse bores in the release plate and are releasingly secured therein by means of bayonet union means.

3,649,040
SKI ASSEMBLY FOR AUTOMOTIVE VEHICLES

Roy C. Snider, Jr., Ames, Iowa, assignor to Joseph Ducharme

Filed Jan. 12, 1970, Ser. No. 2,047
Int. Cl. B62m *27/00;* **B62b** *17/02*
U.S. Cl. 280—14 **9 Claims**

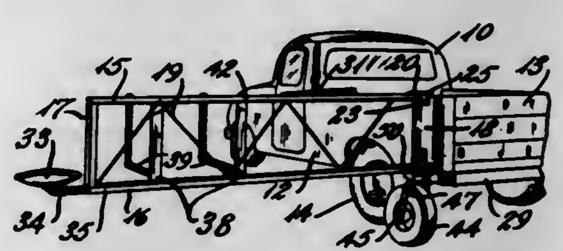


A ski assembly detachably connected to each of the front wheels of an automobile wherein a ski mounting hub is carried on the bolts connecting the front wheels to the front wheel brake drums. A hollow sleeve extends outwardly and is telescopically received in a sleeve carried on an upstanding support triangular in shape having a ski runner at the bottom thereof. The two telescoping sleeves have adjacent end plates which are bolted together such that the ski unit may be removed from the wheel by removal of the one bolt connecting the sleeves together leaving the ski mounting hub on the vehicle's front wheel. A second set of threaded nuts secure the ski mounting hub to the wheel studs and against the threaded nuts holding the wheel on the brake drum.

3,649,041
VEHICLE-ATTACHABLE CARRIER FOR A WORKMAN AND A SUPPLY OF IRRIGATION TUBES

Teodoso Cervantez, Hereford, Tex., assignor to J. B. Haile, Hereford, Tex., a part interest

Filed Mar. 19, 1970, Ser. No. 21,004
Int. Cl. A01d *67/04*
U.S. Cl. 280—32.5 **3 Claims**

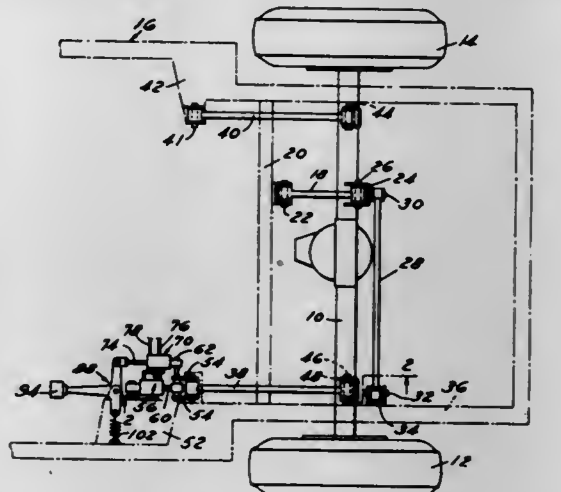


The invention is a vehicle-attachable carrier for an operator or workman and a supply of irrigation siphoning tubes frequently set and reset in an irrigation ditch for supplying water from the ditch to adjacent farmland. The device is a generally rectangular frame or rack supported at one end on a vehicle such as a pickup truck or on a three-point hitch of a tractor or the like with at least a portion of the device swingable over a ditch when in use or retracted when not in use to a position close to the vehicle for transportation purposes, the carrier having a seat for a workman and accessible to said seat a supply of irrigation tubes which the workman can apply when the rack is in its extended operative position.

3,649,042
VEHICLE SUSPENSION HAVING AUTOMATIC CORRECTIVE STEERING

William D. Allison, Grosse Pointe Farms, Mich., assignor to Ford Motor Company, Dearborn, Mich.

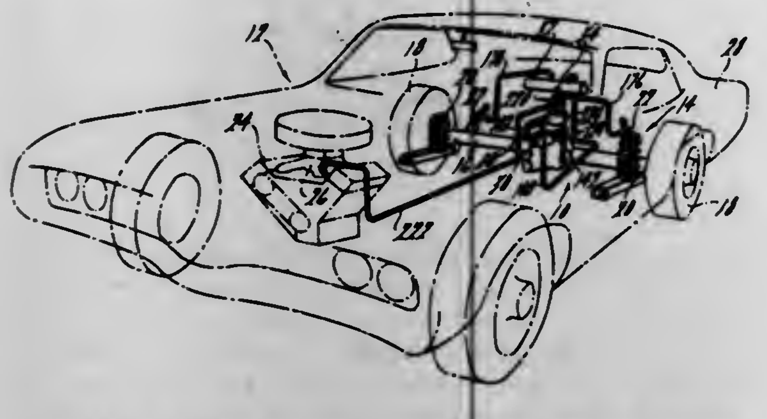
Continuation of application Ser. No. 740,358, June 26, 1968, now abandoned. This application Aug. 5, 1970, Ser. No. 61,124
Int. Cl. B62d *15/00*
U.S. Cl. 280—112 A **15 Claims**



The rear suspension system for a motor vehicle having a pair of wheels mounted at the outer ends of a rigid axle housing and a pair of suspension arms arranged to position the axle housing with respect to the vehicle frame. The first arm has a fixed pivot on the frame while the second arm is supported from the frame by a bell crank shaped shackle. A control device is constructed to pivot the bell crank and cause the second arm to move longitudinally whereby the axle housing is angularly displaced to assume a corrective steering position. The control device contains an inertia element and is constructed to move the axle housing to an understeer position in response to a centrifugal force.

3,649,043
VEHICLE LEVELING SYSTEM

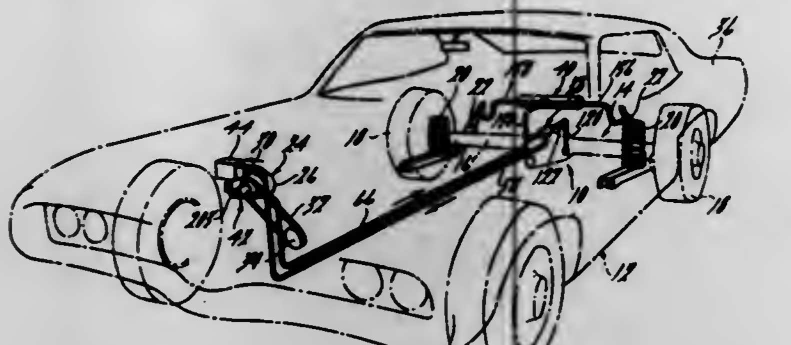
William W. Higginbotham, Monroe, and Charles L. Branaham, La Salle, both of Mich., assignors to Monroe Auto Equipment Co., Monroe, Mich.
Filed Mar. 23, 1970, Ser. No. 21,895
Int. Cl. B60g *21/06*
U.S. Cl. 280—124 F **34 Claims**



A vehicle leveling system comprising a pair of fluid actuatable leveling devices for controlling the relative attitude between sprung and unsprung portions of a vehicle; a fluid reservoir for supplying actuating fluid to the leveling devices and fluid passage defining means for transmitting the fluid between the source thereof and the devices; pumping means including a vacuum operated hydraulic pump; fluid accumulator means for receiving fluid from the source thereof and transmitting the same to the leveling devices, and valve means actuatable in response to predetermined relative movement between the sprung and unsprung portions of the vehicle for controlling the flow of actuating fluid to the leveling devices.

3,649,044
VEHICLE LEVELING SYSTEM

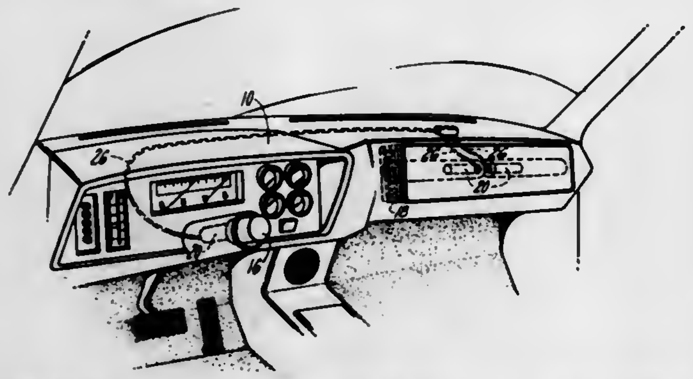
William W. Higginbotham, Monroe, Mich., assignor to Monroe Auto Equipment Co., Monroe, Mich.
Filed Mar. 23, 1970, Ser. No. 21,894
Int. Cl. B60g *17/00*
U.S. Cl. 280—124 F **35 Claims**



A vehicle leveling system comprising a pair of fluid actuatable leveling devices for controlling the relative attitude between sprung and unsprung portions of a vehicle; a fluid reservoir for supplying actuating fluid to the leveling devices and fluid passage defining means for transmitting the fluid between the source thereof and the devices; pumping means including a hydraulic pump operable in response to energization of the means on the associated vehicle for producing electrical energy, such as the generator, alternator or the like; fluid accumulator means for receiving fluid from the source thereof and transmitting the same to the leveling devices, and valve means actuatable in response to predetermined relative movement between the sprung and unsprung portions of the vehicle for controlling the flow of actuating fluid through the fluid passage means extending between the fluid source and the leveling devices.

3,649,045
FLUID SUPPLY DEVICE FOR VEHICLE SAFETY SYSTEM

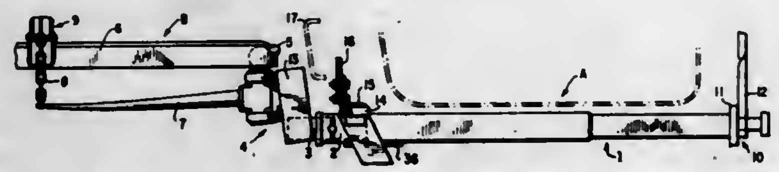
William M. Smith, Simsbury, and Francis N. Wrobel, Wethersfield, both of Conn., assignors to The Ensign-Bickford Company, Simsbury, Conn.
Filed Jan. 27, 1970, Ser. No. 6,163
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **12 Claims**



A multistage pyrotechnic gas generator for deploying a passenger confinement of a vehicle safety system comprises a support member having an ignition inlet and first and second stage compartments mounted on the support and having separate gas outlets, the first and second stage compartments containing gas-generating pyrotechnic material. The gas-generating pyrotechnic material in each stage comprises distinct primary and secondary pyrotechnic charges ignitable sequentially. The primary pyrotechnic charge of the first stage is in communication with the ignition inlet while the secondary pyrotechnic charge of each stage is disposed between the primary charge and the gas outlet for ignition by the primary charge. The pyrotechnic material used in the secondary charge of each stage has a cooling effect on the temperature of the gas generated by the primary charge and gas generation is controlled by the inclusion of time delay lines between the primary charges of adjacent stages to assure sequenced ignition of the gas-generating stages.

3,649,046
LOAD TRANSFERRING TRAILER HITCH AND TOW BAR

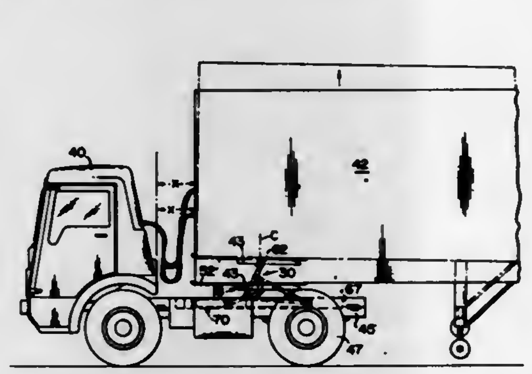
Martin H. Mathisen, Sun Valley, Calif., assignor to Eaz-Lift Spring Corporation, Sun Valley, Calif.
Filed Feb. 10, 1970, Ser. No. 10,201
Int. Cl. B62d *53/00*
U.S. Cl. 280—406 A **15 Claims**



A load transferring trailer hitch has a head assembly secured to the towing vehicle, the head assembly comprising a pair of trunnion members which pivot about axes which are perpendicular to top and bottom walls. Each trunnion member has a socket at right angles to the pivot axis which receives an end of a spring rod, the other end of each spring rod being secured under tension to a frame member of a trailer tongue. The ball portion of a ball and socket hitch connection is adapted to be secured to an inclined boss formed on each of the walls. The hitch is adapted to be used on towing vehicles of widely different road clearance by inverting the head assembly and securing the ball to whichever boss is on top. Due to the inclination of the bosses, the trunnion sockets and the spring rods are inclined downwardly to provide clearance for tensioning no matter which head plate is uppermost. End pins of the trunnions are completely enclosed in the head assembly in order to confine lubricants. The spring members are interlocked with the trunnions so as to be interchangeable and useable with either side up. The head assembly may be secured to the towing vehicle by a tow bar which is easily attached to and detached from the towing vehicle by a spring plate at one end and a key at the other end thus permitting relative twisting between the towing vehicle and the head assembly.

3,649,047
ELEVATABLE FIFTH WHEEL

Ronald S. Plantan, Wickliffe, Ohio, assignor to White Motor Corporation, Cleveland, Ohio
Filed July 24, 1970, Ser. No. 57,994
Int. Cl. B62d *53/08*
U.S. Cl. 280—425 R **14 Claims**

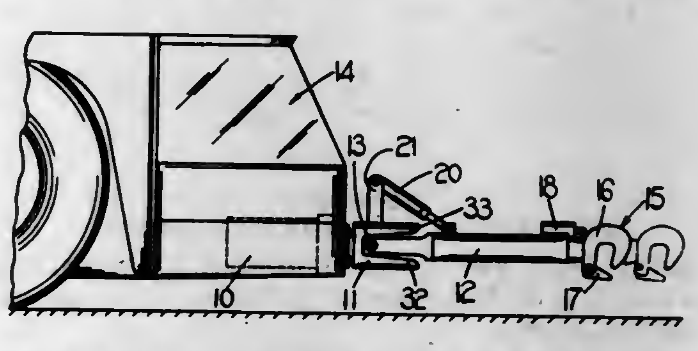


A tractor-trailer fifth wheel is vertically elevatable on a direct acting mechanical movement comprising two links pivotally connected together adjacent their inner ends. The two links also pivot about their outer ends which are longitudinally spaced in the tractor frame. The outer end of one link is linearly movable relative to the outer end of the other link which is stationary. The latter mentioned link rotates about its stationary end. The other link rotates about and moves longitudinally with its outer end, both links hinging upwardly at their inner ends in consequence of longitudinal movement of the one link. The fifth wheel is pivotally mounted on the inner end of the rotational and longitudinally movable link which inner end undergoes a compound nearly straight-line vertical movement owing to the combined movement of the two links.

3,649,048
TOW-BAR ASSEMBLY

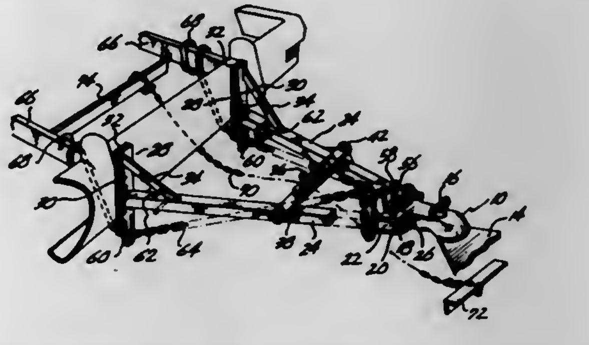
Philip Garnett, Mirfield, England, assignor to Hunslet (Holdings) Limited, Leeds, England
Filed Feb. 10, 1970, Ser. No. 10,131
Claims priority, application Great Britain, Feb. 18, 1969, 8,610/69
Int. Cl. B60d *1/04*
U.S. Cl. 280—477 **11 Claims**

A tow-bar assembly comprising a fluid-pressure actuated piston and cylinder unit, a mounting bracket and a tow-bar in which the piston or cylinder of the piston and cylinder unit and one end of the tow-bar are connected to the mounting bracket. The connection between the tow-bar and the mounting bracket is such as to permit the tow-bar to pivot relative to the bracket in horizontal and vertical planes. A further fluid-pressure actuated piston and cylinder unit may also be provided for raising and lowering the other end of the tow-bar as may be required when connecting the assembly between two vehicles.



3,649,049
THREE POINT TOW BAR

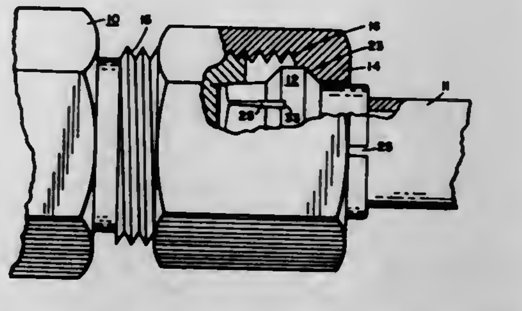
Charles L. Woodke, III, 7241 South Tacoma Way, Tacoma, Wash.
Filed Apr. 6, 1970, Ser. No. 25,872
Int. Cl. B60d *1/14, 1/16*
U.S. Cl. 280—502 **10 Claims**



A pair of elongated arms diverge apart as they extend rearwardly from separate points of connection to a coupler head. Bumper pads at the rear ends of the arms contact the front bumper of a vehicle to be towed. The coupler head is secured to a trailer hitch on a towing vehicle. Two chain side parts are wrapped around and hooked onto two laterally spaced bumper brackets at the front of the rear vehicle. These chain side parts converge together as they extend forwardly. At the coupler head the two chain side parts are connected to a single draw bolt which is shortenable for the purpose of removing slack from the two chain side parts.

3,649,050
TUBE FITTING CONNECTION

George V. Woodling, 22077 West Lake Road, Rocky River, Ohio
Filed June 15, 1970, Ser. No. 46,339
Int. Cl. F16l *25/00*
U.S. Cl. 285—12 **9 Claims**



A double-ended sleeve for a tube fitting whereby the ends may be selectively interchangeable as a means for effecting a self-flare connection at the end of the tube to seal fluid pressure and as a means for effecting a collet-grip connection around the tube in advance of the self-flare connection to absorb tube vibrations. Both ends of the sleeve are of like construction and each end comprises a discontinuous annular body having at least slot means extending longitudinally thereof. Intermediate the two ends of the sleeve, is a continuous annular body portion having opposed clamping shoulders adapted for selectable engagement by the nut.

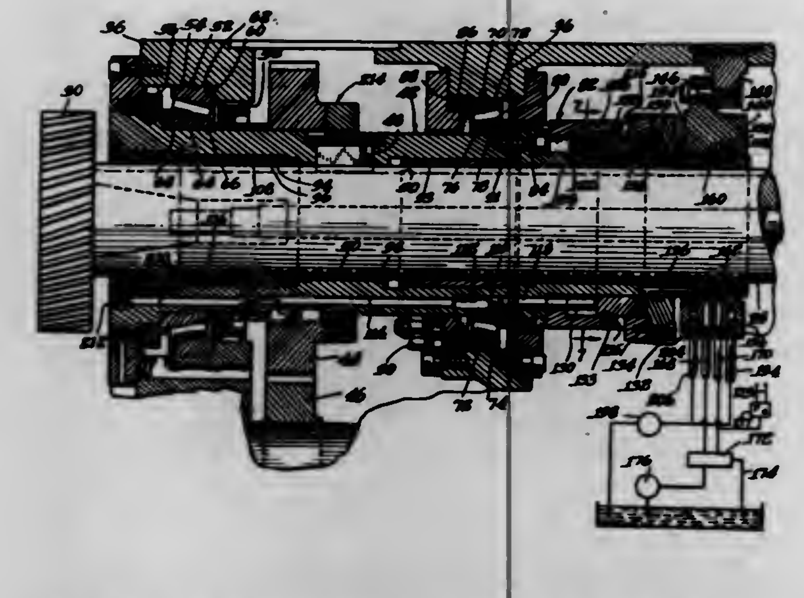
3,649,051
COLLECTOR RING ARRANGEMENT

Gordon H. Jones, Van Dyne, and Steven E. Klabunde, Fond Du Lac, both of Wis., assignors to Giddings & Lewis, Inc., Fond du Lac, Wis.

Original application July 12, 1968, Ser. No. 744,572, now Patent No. 3,516,328. Divided and this application Oct. 10, 1969, Ser. No. 870,460

Int. Cl. F16l *39/00*

U.S. Cl. 285—61 **2 Claims**



A machine tool comprising a machining spindle adjustably extensible longitudinally within a rotary support sleeve and releasably clamped to the sleeve by a clamping bushing applied by high pressure hydraulic energizing means positioned on the spindle sleeve in such manner that application of the camping bushing does not change the load on precision bearing means used to support and precisely locate the sleeve radially and axially and does not apply significant axial stress to the structure that functions to determine the axial position of the spindle to the end that the spindle is clamped for rotation precisely in the exact axial position desired. The clamping bushing has an axial position proximate a precision bearing that locates the sleeve and spindle axially with precision and the high fluid pressure clamp energizing structure that rotates with the sleeve and energizes the clamp hydraulically is situated on the sleeve so that the portion of the sleeve that determines axially location of the spindle is effectively isolated from significant axial stresses incident to clamping of the spindle. High pressure clamp energizing means rotatable with the sleeve is energized by fluid under relatively low pressure fed to the rotary sleeve assembly by a fluid supply collar which permits high speed rotation of the sleeve without wear or deterioration of the structure.

3,649,052
BAYONETTE LOCK COUPLING

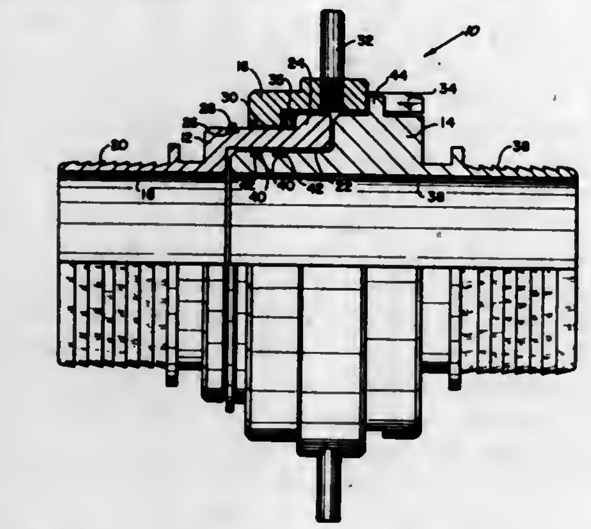
Clifford H. Snyder, Jr., 173 Rosemont Drive, Coraopolis, Pa.

Filed June 3, 1970, Ser. No. 42,937

Int. Cl. F16l *35/00*

U.S. Cl. 285—38 **3 Claims**

A full swiveling coupling which is locked by means of a bayonette lock on a collar is provided. The bayonette lock permits coupling of the housing and the nipple by a simple fractional turn of the collar over the nipple. A radial seal is provided between the nipple and the housing. The collar which holds a portion of the bayonette coupling device is spring biased to facilitate locking.



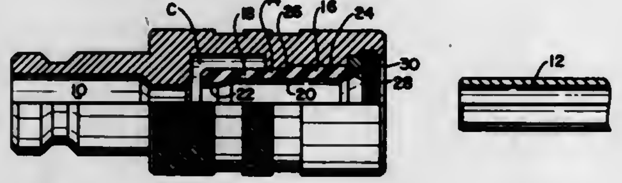
3,649,053
TUBING COUPLING

Clifford H. Synder, Jr., 173 Rosemont Drive, Coraopolis, Pa.

Filed June 15, 1970, Ser. No. 46,104

Int. Cl. A16l *17/00*

U.S. Cl. 285—110 **7 Claims**



A coupling is provided which sealingly connects a section of smooth cylindrical tubing to a fluid passage. The coupling includes a rigid housing and a deformable sleeve which is secured within the housing. The deformable sleeve has a free end portion which is in fluid communication with line fluid through the coupling. The end of the sleeve has an annular sealing portion which creates an initial seal against the outer surface of the tubing. The line fluid then deforms the sleeve within the housing to securely grasp the outer surface of the tubing and form a solid seal with the tubing.

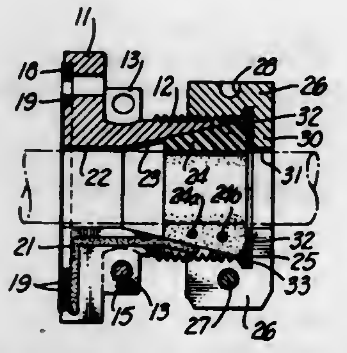
3,649,054
CABLE FITTING FOR SHIP BULKHEADS

Warren G. McClenan, 831 South Main Street, Burbank, Calif.

Filed Dec. 3, 1970, Ser. No. 94,851

Int. Cl. F16l *5/00*

U.S. Cl. 285—158 **6 Claims**



A cable fitting for ship bulkheads which can be installed after the cable is already in place and testing of the cable connections completed. All parts of the fitting are split diametrically and fitted around the cable from the outside. A housing has a base which is secured to the bulkhead. The cable extends through adjacent circular and frustoconical openings in the housings. A frustoconical compression gland is mounted in the frustoconical opening in the housing. A nut is tightened on the housing to compress the gland inwardly into engagement with the cable. A loosely mounted washer in the nut prevents twisting of the gland. Sealing means are provided in all portions of the fitting.

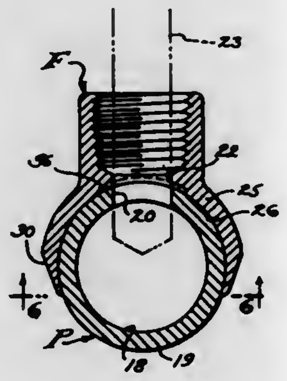
3,649,055
CLAMP FITTING WITH SEAL FOR PLASTIC PIPE

Norman P. Nilsen, P. O. Box 33, Phelan, Calif.

Continuation of application Ser. No. 787,108, Dec. 26, 1968, now abandoned. This application June 29, 1970, Ser. No. 56,095

Int. Cl. F16l *5/00*

U.S. Cl. 285—197 **10 Claims**



A fitting and pipe combination, wherein fittings are applicable directly to the side walls of and over openings through pipe and especially plastic pipe and the like, either for mending the same or for establishing a lateral fluid connection. The fitting provided is a saddle-shaped element which more than half way embraces the tubular pipe body so as to pressure itself onto the pipe. And, fluid adhesive and/or fluidized fitting and pipe material is hydraulically pressured into a channel seal that encompasses the openings through the pipe and fitting, to subsequently solidify and bond the fitting to the pipe, and so as to establish a strong and durable leak-proof joinder.

3,649,056
TURNING JOINT FOR PIPES

Josef Frohlich, Dusseldorf-Rath, Germany, and Jacob Leguyt, Dordrecht, Netherlands, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

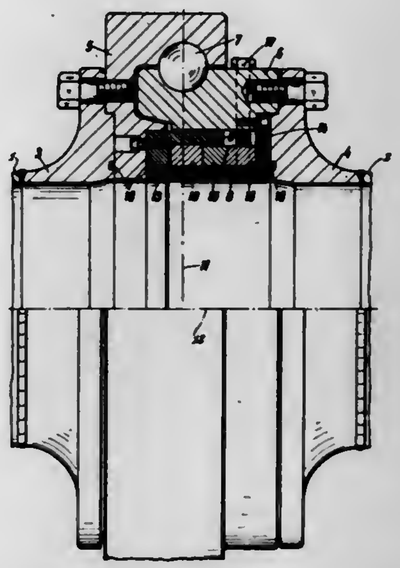
Filed Sept. 28, 1970, Ser. No. 75,912

Claims priority, application Germany, Sept. 30, 1969, P 19 50 324.3

Int. Cl. F16l *27/08*

U.S. Cl. 285—276 **2 Claims**

Two pipe ends are interconnected through ball bearings having their two races connected respectively to two telescoped retaining rings. A sealing ring is disposed and retained between these rings in the center plane of the bearings. The sealing ring has smaller diameter than the bearings.



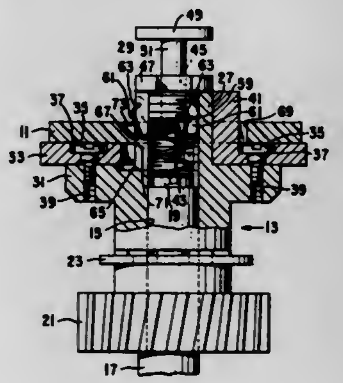
3,649,057
EASY PATTERN DISC REMOVAL DEVICES

John A. Urciola, South Bound Brook, N.J., assignor to The Singer Company, New York, N.Y.

Filed Sept. 10, 1970, Ser. No. 71,169

Int. Cl. F16d *1/06*

U.S. Cl. 287—53 R **3 Claims**



In a cam controlled, needle jogging ornamental stitch sewing machine, a cam removal mechanism is provided for elevating a seated pattern cam from the interior portion of the sewing machine, to an accessible position. A trifurcated, resilient, bowed retaining means is slidable within an axial bore in a central hub and operatively connected to a spring biased plunger. When the pattern cam is in the seated position, the retaining means overlies the pattern cam. When the plunger is depressed, the retaining means is pushed below the seated cam until it underlies the cam, whereupon the spring biased plunger is released and the retaining means raises upwardly carrying the cam with it.

3,649,058
TORQUE TRANSMITTING COUPLING

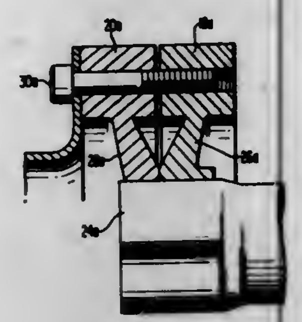
James H. Anderson, York, Pa., assignor to Coupling Corporation of America, New Hope, Va.

Filed Mar. 31, 1970, Ser. No. 24,174

Int. Cl. F16d *1/04*

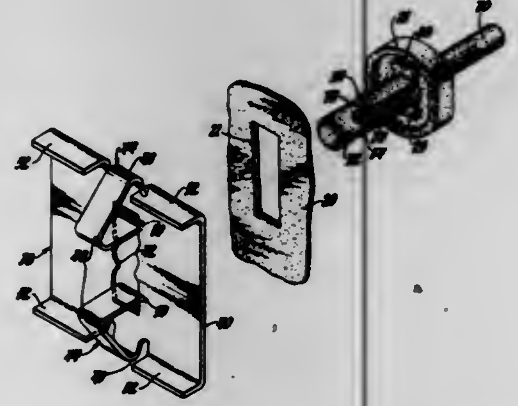
U.S. Cl. 287—129 **5 Claims**

A specialized form of splined coupling is disclosed in which the mating surfaces are lobed. The configuration of the lobes is such that their radius varies continuously from a minimum to a maximum and back to the minimum. There are at least two such lobes on each shaft preferably occupying the entire periphery thereof and preferably spaced from each other around the periphery of the shaft by (360/N)° where N equals the number of lobes.



3,649,059
REINFORCEMENT CLIP

John W. Davidson, 416 S. Main Street, Lewisburg, Ohio
Filed Nov. 28, 1969, Ser. No. 880,775
Int. Cl. F16b *5/07*
U.S. Cl. 287—189.35 **2 Claims**

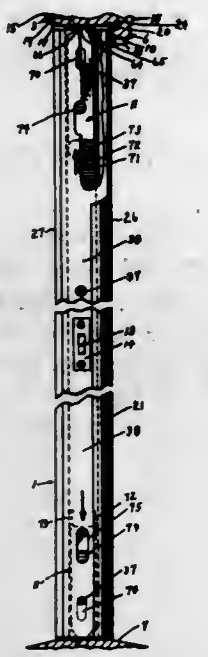


In the preferred form a reinforcement clip is composed of a small sheet of spring metal having a substantially flat central rectangular portion provided with an aperture. Spring arms extend from the center of opposite edges in the form of three-fourths of a triangular loop with the ends of the arms extending through the aperture and provided with outturned projecting ends adapted to engage the opposite ends in the opening of the sheet to be reinforced. The aperture of the clip receives a peg provided with a wire locking arrangement. The edges of the clip along side the spring arms are bent to form reinforcing flanges.

3,649,060
COMBINED ASTRAGAL AND FLUSH BOLT STRUCTURE

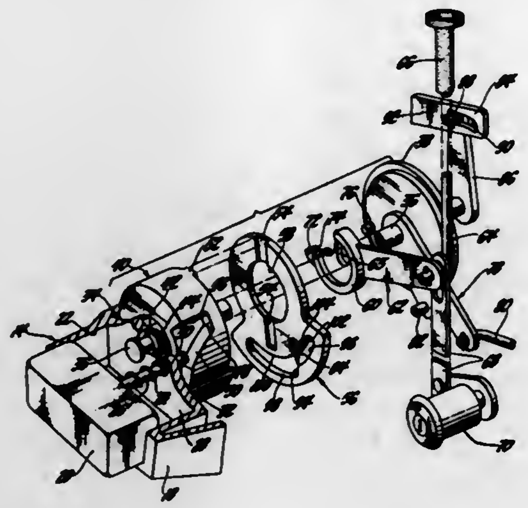
Robert O. Ruff, Cincinnati, Ohio, assignor to The Steelcraft Manufacturing Company, Cincinnati, Ohio
Filed Dec. 19, 1969, Ser. No. 886,479
Int. Cl. E05c *1/16, 7/04, 9/04*
U.S. Cl. 292—42 **10 Claims**

A combined astragal and flush bolt arrangement for a pair of doors in which upper and lower flush bolts are arranged to lock the inactive door in a closed position within its door frame, the active door being latched by a conventional lock to the inactive door for normal service. The astragal is generally T-shaped in cross section, comprising a longitudinal mounting rail secured to the free edge of the inactive door and having a right angular head rail which provides a stop against which the active door seats in its closed position. The longitudinal mounting rail includes an internal slideway, the flush bolts being slidably confined within upper and lower portions of the slideway and having outer end portions arranged to project outwardly beyond the rail into the keepers of the header and sill of the door frame.



3,649,061
VEHICLE BODY DOOR LOCK

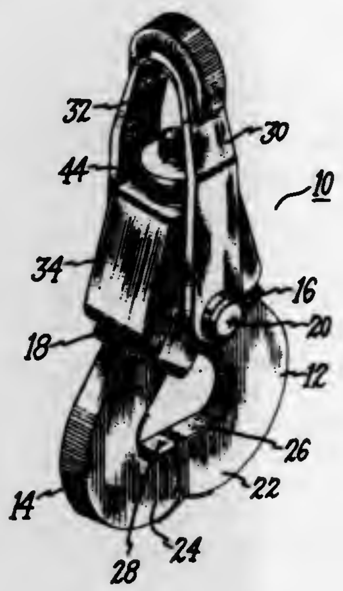
Barthold F. Meyer, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 16, 1970, Ser. No. 81,368
Int. Cl. E05b *3/00*
U.S. Cl. 292—336.3 **8 Claims**



A vehicle body door lock includes a conventional push button outside door handle assembly and a conventional bolt and detent. The control system for the detent is located entirely within the handle and includes a rotatable drum having a cam surface engageable by the push rod to rotate the drum against a spring bias. A shift cam is slidable diametrically of the drum and rotatable therewith. Sliding movement of the cam is effected by a shift lever connected to the garnish button and key cylinder. An unlatching arm is connected to the detent and includes a pin received within a contoured and shouldered slot of the shift cam. The pin freewheels within the slot when the shift lever slides the shift cam relative to the drum to uncoupled position. This disconnects the push button and unlatching arm. The pin engages a shoulder of the slot to rotate the unlatching arm with the shift cam and drum and release the detent when the shift cam is moved to coupled position relative to the drum. The pin can also engage a contoured edge of the slot or freewheel within the slot to respectively automatically undog or keyless lock.

3,649,062
LOCKING TONGS

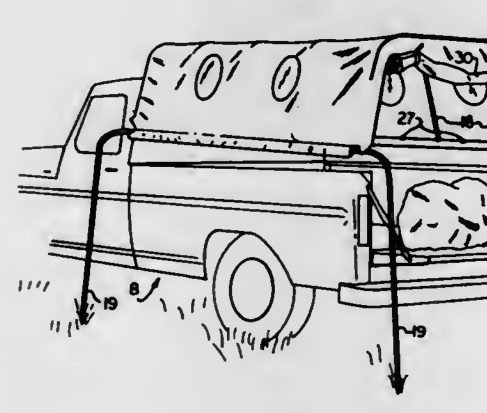
Norman S. Young, Jr., P.O. Box 54, Malden Bridge, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,169
Int. Cl. B66c *1/44*
U.S. Cl. 294—106 **5 Claims**



Tongs for lifting heavy members such as structural steel, wheels, pipes and the like. The tongs are provided with a pair of opposed arms which are pivoted at one end about a shaft member. The opposite ends of the arms provide a gripping means for lifting members. The shaft member is provided with a bail member which may be secured to a crane or similar device to lift the tongs. A threaded member is also pivotally mounted on the shaft between the arms and carries a locking member which is movable on the threaded member and has sides which engage the exterior of the arms to lock them in lifting engagement with an object to be lifted. A nut is provided on the threaded member and may be threaded into contact with the locking member to hold it in a locked position.

3,649,063
CAMPING SHELTER EMPLOYING CAMPER SHELL AS TOP PORTION

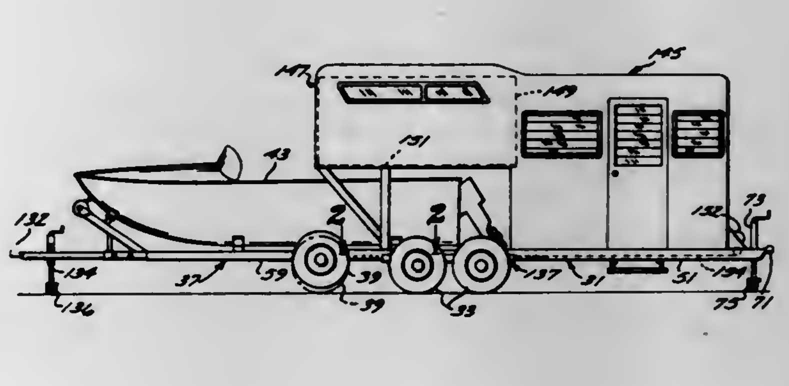
Turner Stark, 534 Guava Avenue, Chula Vista, Calif.
Filed June 29, 1970, Ser. No. 50,588
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 R **6 Claims**



A plurality of support legs are removably connected to a camper shell mounted on a pickup truck. The legs are slightly longer than the distance from the camper shell to the ground, and are shaped to permit the truck to be driven from beneath the camper shell when the latter is supported on the legs. A canvas wall enclosure in the nature of an open top tent has its otherwise open upper end releasably attached coextensively to the sides and ends of the leg-supported camper shell. The lower end of the wall enclosure is somewhat larger than its upper end, and is pegged in outstretched condition to the ground so that the combined camper shell and enclosure form a camping shelter.

3,649,064
COMBINATION HOUSE AND AUXILIARY TRAILER APPARATUS

Sherman H. Bledsoe, 2606 Rosewood Avenue, Apt. 4, Santa Ana, Calif.
Filed Sept. 8, 1969, Ser. No. 855,906
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 B **15 Claims**

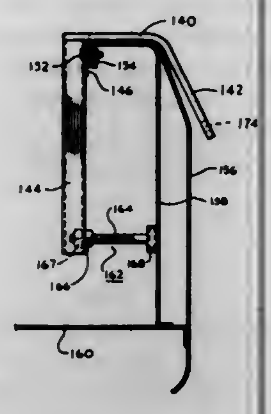


A combination house and auxiliary trailer including a house trailer for mounting an enclosure and supported on a pair of wheels and including a forwardly projecting tongue for connection with a towing vehicle. An auxiliary trailer includes a pair of raisable support wheels and elevating means for raising them from a ground engaging position to a ground clearing position and, further, includes a rearwardly projecting tongue for connection with a towing vehicle. Support means is provided for engaging the front extremity of the auxiliary trailer with the rear extremity of the house trailer to support such auxiliary trailer cantileverally therefrom whereby the two trailers may be coupled together and the raisable wheels of the auxiliary trailer raised to their ground clearing position and the trailers towed as a unit. Alternatively, the raisable wheels may be lowered to their ground engaging position and the trailers uncoupled to be towed independently of one another. The enclosure may include an extendable portion which may be selectively extended when the trailers are separated to occupy the space occupied by the auxiliary trailer when the trailers are coupled together to thereby provide an enlarged enclosure for use as living quarters.

3,649,065
CAMPER ANCHORING DEVICE

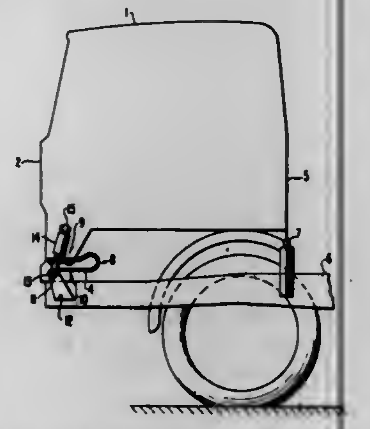
Herbert D. Stutz, 3424 Valley View Drive, Elkhart, Ind.
Continuation-in-part of application Ser. No. 667,139, Sept. 12, 1967, now abandoned , which is a continuation-in-part of application Ser. No. 563,478, July 7, 1966, now Patent No. 3,356,408. This application Dec. 30, 1969, Ser. No. 889,219
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 MC **4 Claims**

A device for anchoring a camper to the bed of a pickup truck consisting of a fixture secured to the bed along the inside of and projecting outwardly from the top of the bed side and having a post extending vertically downwardly inside the bed. A fixture is attached to the lower end of the post for engaging either the bottom or side of the bed. A turnbuckle construction is used to attach the fixture to the camper and to secure the camper firmly in place on the truck bed.



3,649,066
SPRING ARRANGEMENT FOR FIXED AND TILTABLE DRIVER CABS

Adolf Steiner, Gerlingen, and Hans Rinnergschwentner, Rotenfels, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Feb. 6, 1970, Ser. No. 9,178
Claims priority, application Germany, Feb. 8, 1969, P 19 06 337.7
Int. Cl. B62d *33/06*
U.S. Cl. 296—35 R 9 Claims

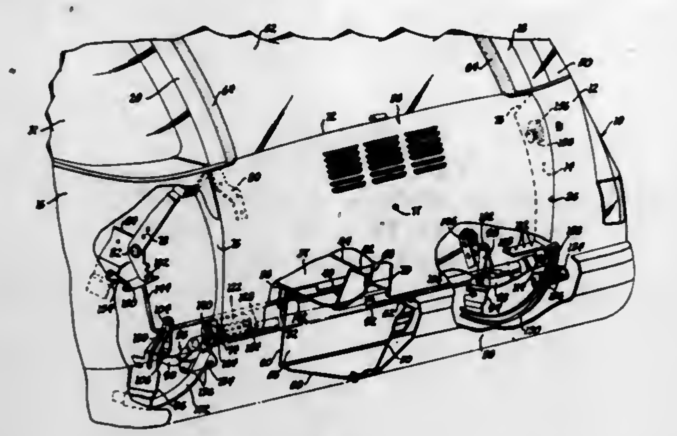


A spring system for fixed and tiltable driver cabs in which springs preferably extending in the vehicle longitudinal direction are provided between the front edge of the driver cab and the vehicle frame while a mounting support of the driver cab equalizing any twisting of the vehicle frame is provided at or near the rear edge of the driver cab. The springs may be constructed as hair-pin-shaped, flat springs whose upper leg portion is connected with the driver cab.

3,649,067
CLOSURE MOUNTING MEANS

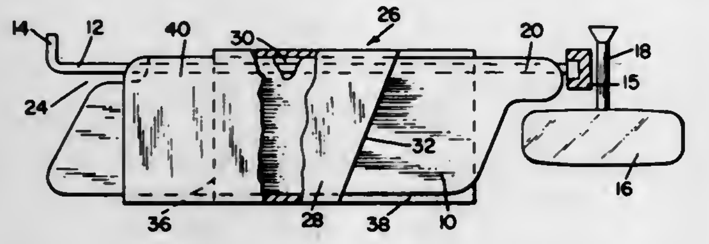
James C. Louton, Jr., Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 16, 1970, Ser. No. 72,750
Int. Cl. B60j *5/10*
U.S. Cl. 296—50 5 Claims

A closure is supported on a vehicle body asymmetrically with respect to the center of gravity of the closure for bodily shiftable movement in a path between open and closed positions relative to an opening in the vehicle body and movement synchronizing means indirectly rigidify the support means by maintaining the closure in a predetermined attitude, the movement synchronizing means including a planar rigid frame, a pair of idler arms each pivotally supported on the vehicle body and pivotally attached to the rigid frame at opposite ends of one edge thereof, and means pivotally connecting a parallel edge of the rigid frame to the closure adjacent an edge of the latter parallel to the aforementioned edge of the rigid frame.



3,649,068
ADJUSTABLE SLEEVE FOR SUN VISORS

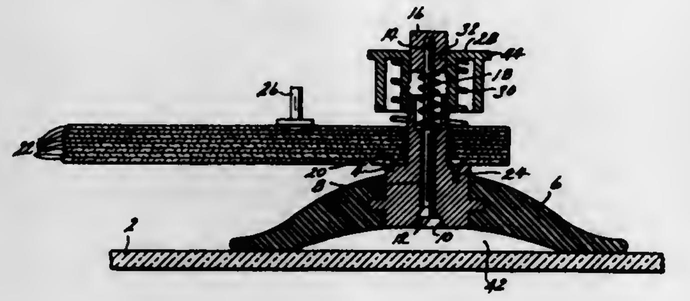
John J. Moynihan, 440 East 79th Street, New York, N.Y.
Filed Jan. 8, 1970, Ser. No. 1,491
Int. Cl. B60j *3/02*
U.S. Cl. 296—97 C 5 Claims



In combination with a conventional sun visor for a vehicle, a sleeve mounted thereon for longitudinal adjustment with respect thereto, said sleeve having opposite sides cut out at opposite ends thereof to accommodate the hanger bracket for the sun visor and also to avoid interference with the mirror or other obstacle at the opposite ends of adjustment of the sleeve with respect to the visor.

3,649,069
GLARE SHIELD FOR AUTOMOBILES

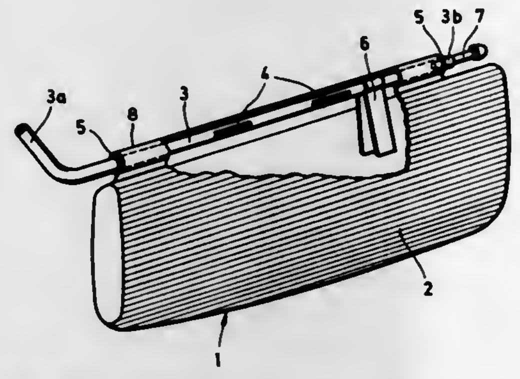
Andrew H. Zip, 1103 South 23rd St., St. Joseph, Mo.
Filed June 3, 1970, Ser. No. 43,137
Int. Cl. B60j *3/02*
U.S. Cl. 296—97 D 2 Claims



A glare shield for automobiles consisting of a spindle having a suction cup at one end thereof for mounting it on an automobile windshield or window glass at right angles to the glass surface, a series of segmentally shaped planar vanes pivoted on said spindle for movement from an angularly aligned, overlapping position to an angularly spread, fan-like position, a mechanism frictionally resisting pivotal movement of said vanes, and devices operable to pivot said vanes, adjust said friction mechanism and release said suction cup, all of said devices being operable by a motorist from a single position of his hand.

3,649,070
SUN VISOR

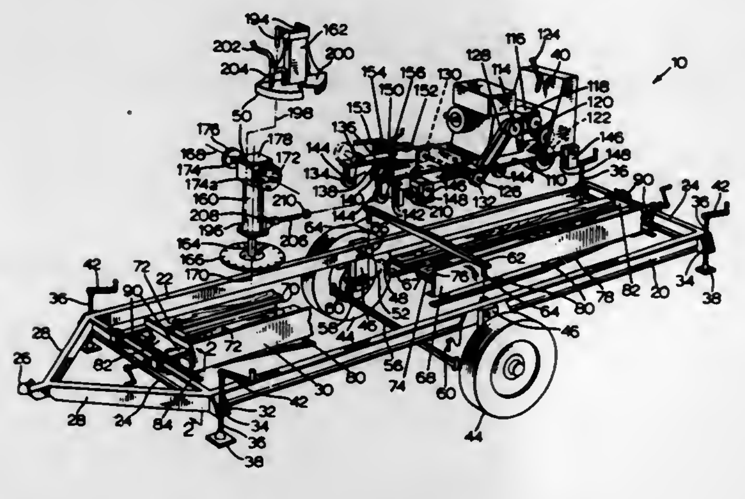
Ekkehard Hoyer, Wolfsburg, Germany, assignor to Volkswagenwerk Akt.
Filed June 30, 1969, Ser. No. 837,593
Int. Cl. B60j *3/00*
U.S. Cl. 296—97 H 1 Claim



A hollow sun visor mounted on a tube-shaped holder having holes therein communicating with the interior of the visor through which a plastic material may be forced through the holder into the interior of the visor.

3,649,071
METHOD AND APPARATUS FOR CUTTING CURBSTONES AND THE LIKE

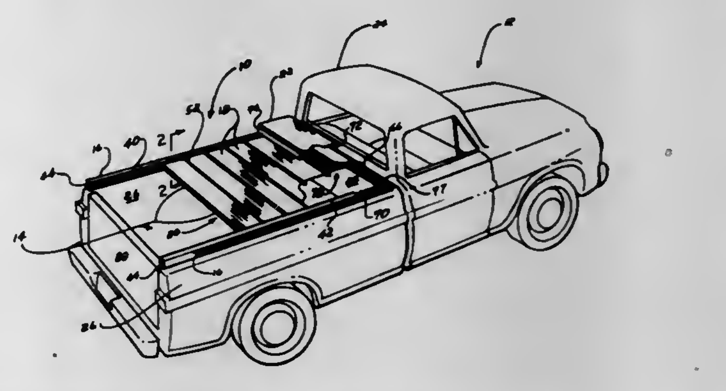
Donald E. Graff, 122 Fenmar Drive, Weston, Ontario, Canada
Filed Mar. 13, 1970, Ser. No. 19,234
Int. Cl. E01c *23/09*
U.S. Cl. 299—41 6 Claims



A method and apparatus for cutting curbstones and the like, the apparatus comprising a frame mounted on wheels to be movable and having support jacks for supporting the frame in a fixed position when the wheels are elevated, the frame having a guide track and drive system supporting a rotary cutter blade. The rotary cutter blade is mounted on a shaft to rotate in a horizontal plane and the shaft is pivotable to move the cutter blade from the horizontal plane to an obliquely disposed plane. The cutter blade drive mechanism is movable on the frame in a controlled path for movement longitudinally of the frame and movement transversely of the frame. In the method of forming a drive-in ramp, the frame is moved to an operative position relative to the curbstone and secured in the required position by the jacking devices. The cutter blade is rotatably driven and moved tranversely of the frame to form a substantially horizontal transverse cut into the width of the curbstone and then the blade is driven longitudinally of the frame to form a longitudinally extending cut in the curbstone. Obliquely disposed end cuts are formed by disposing the cutter blade in the oblique position and guiding the blade transversely of the frame.

3,649,072
PICKUP BED COVER

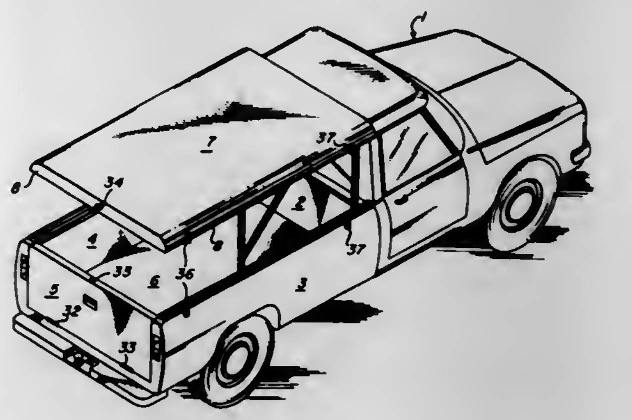
Floyd R. Cross, P.O. Box 464, La Veta, Colo.
Filed Oct. 22, 1970, Ser. No. 83,065
Int. Cl. B60j *7/10*
U.S. Cl. 296—137 B 10 Claims



This invention relates to a slidable telescopic cover for the bed of pickup trucks and the like characterized by a pair of opposed parallel inwardly facing tracks that retain the opposite extremities of a series of transversely extending interlocking rectangular slat-forming panels that are movable forward longitudinally from an essentially planar cover-forming relation into a stacked relation as they emerge from the front ends of the tracks into a roofed housing therefor.

3,649,073
RETRACTABLE VEHICLE COVER

James R. Whittemore, 1114 Clancy, N.E., Albuquerque, N. Mex.
Filed Nov. 2, 1970, Ser. No. 85,990
Int. Cl. B60j *7/08*
U.S. Cl. 296—137 B 3 Claims



In order to protect items being carried in a vehicle open-topped compartment, such as a pickup truck bed, a trailer, or a towed boat, against pilferage and weather, a close fitting cover is provided which utilizes a mechanism which permits translation of the cover between an upper, open position, and a lower closed position. The mechanism includes mirror image components on each side of the vehicle for coupling the compartment and cover. The mechanism includes a first inverted "U" frame member pivotally secured at its lower ends to forward mounted brackets within the compartment and a second inverted "U" frame member disposed somewhat aft of the center of the compartment and pivotally secured at its lower ends to a second set of brackets. Rollers arranged at the top of the inverted "U" frame members roll fore and aft in channels within the cover and provide vertical support for the cover. Fore and aft links are hingedly secured to the frame members at their upper crossmembers to constrain the legs of the frame members to remain parallel. A pair of guide links are pivotally fixed at their lower ends to the legs of the rearmost frame member at a point above the lower pivot points of the frame member and are pivotally fixed at their upper ends to the cover at a fore and aft position intermediate the corresponding positions of the bracket pairs. A pair of tension springs are fixed between the legs of the forward frame member and the fore and aft links to provide a counterbalance effect.

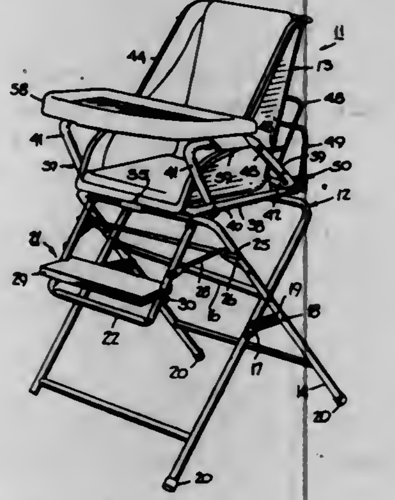
3,649,074
BABY SEAT AND COLLAPSIBLE SUPPORT FRAME

Quentin H. McDonald, Scarsdale, N.Y.; Richard L. Panicci, Westfield, Mass.; Roger M. Cassavant, Thompsonville, Conn., and Ralph M. Nowak, Wilbraham, Mass., assignors to Quentin H. McDonald, Scarsdale, N.Y.

Continuation-in-part of application Ser. No. 730,737, May 21, 1968, now abandoned. This application Jan. 10, 1969, Ser. No. 804,341

Int. Cl. A47c *13/00*

U.S. Cl. 297—153 **26 Claims**



The baby seat is supported on the collapsible support frame by an interlocking relationship. The baby seat when not supported on the support frame has a pivotal extension bar at the rear which increases the support base area for the seat. The seat is adjustable into a number of inclined positions.

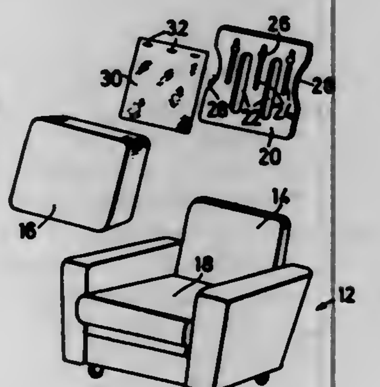
3,649,075
PROTECTIVE DEVICE FOR UPHOLSTERED FURNITURE

Kurt Ulrich Kalkowski, Am Bleiberg 3, 5351 Kommern, Germany

Filed May 24, 1971, Ser. No. 146,061

Int. Cl. A47c *31/10*

U.S. Cl. 297—219 **10 Claims**



A protective device is provided for use with upholstered seating furniture having a seat, a back and a removably back cushion. The device comprises a retaining plate having a protective flap attached thereto by adjustable retaining means. The plate is positioned between the back cushion and the back of, for example, an arm chair and the flap may overlay the upper region of the back cushion or may be tucked behind the cushion out of sight.

3,649,076
INERTIA SAFETY BELTS

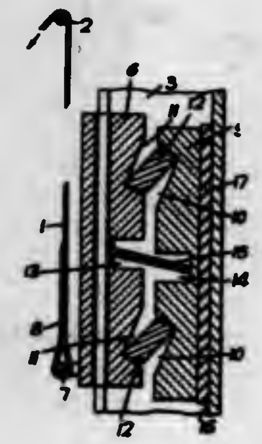
Minden Vaughan Blake, Carnaton, Woodlands Road East, Virginia Water, England

Filed July 22, 1970, Ser. No. 57,110

Claims priority, application Great Britain, July 28, 1969. 37,740/69

Int. Cl. A62b *35/60*

U.S. Cl. 297—386 **3 Claims**



One end of a safety belt is attached to a slider which can move vertically up and down a box-section guideway. In each of several cavities formed by opposed recesses in the slider and an adjacent bar is a diamond-shaped tooth. The slider and the bar are held together by a spring. When the slider is jerked upwards the parallel motion linkage formed by the teeth causes the assembly of slider and bar to separate and jam in the guideway.

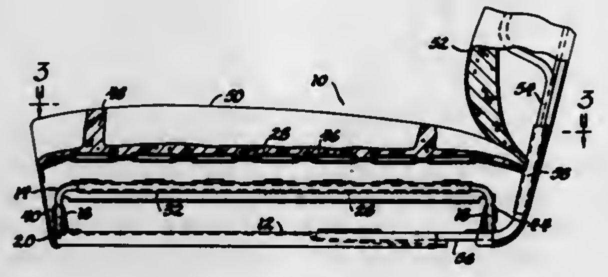
3,649,077
SEAT ASSEMBLY

Hyland C. Flint, 3551 Walnut Lake Road, Orchard Lake, Mich.

Continuation-in-part of application Ser. No. 12,600, Feb. 19, 1970, now abandoned. This application Apr. 6, 1970, Ser. No. 25,902

Int. Cl. A47c *7/02*

U.S. Cl. 297—456 **45 Claims**



A peripherally resilient spring seat assembly having a load responsive spring quality and including a unitary or composite border structure of U-shaped end segments and parallel side segments. The end segments are joined to a support base at the bight portions thereof. Sinuous wire springs are connected between the side segments. The border structure may be used in a single occupant or multiple occupant seat design either as the seat, backrest, or both.

3,649,078
STEERABLE GUIDE RAIL FOR LONGWALL MINING APPARATUS

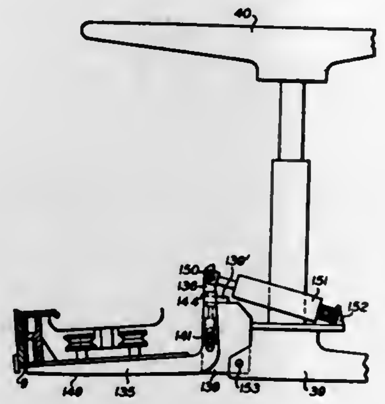
Konrad Grebe, and Gudrun Winterhoff, both of Wuppertal-Elberfeld, Germany, assignors to said Grebe, by said Winterhoff

Filed Feb. 2, 1970, Ser. No. 12,882

Claims priority, application Germany, Feb. 5, 1969, P 19 05 615.6

Int. Cl. E21c *25/56*

U.S. Cl. 299—32 **5 Claims**



Apparatus for the mechanical extraction of coal and other minerals wherein plates which connect a guide rail to the seam floor cap or beam of a self-advancing roof support system are provided on the waste side with an angled-off portion which points towards the seam roof.

ERRATUM

For Class 299—41 see:
Patent No. 3,649,071

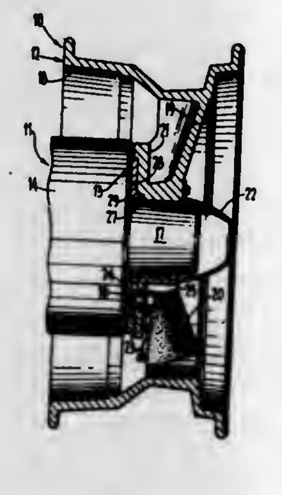
3,649,079
AUTOMOTIVE WHEEL STRUCTURE

Frank F. English, Walnut Creek, Calif., assignor to International Mfg. Co., Inc., Benicia, Calif.

Continuation-in-part of application Ser. No. 783,046, Dec. 11, 1968, now abandoned. This application Feb. 19, 1971, Ser. No. 116,817

Int. Cl. B60b *3/16*

U.S. Cl. 301—9 DN **11 Claims**



A wheel structure adapted to be mounted upon the drum and axle assembly of an automobile or the like and having a generally universal mounting arrangement so as to accommodate a variety of drum and axle assemblies having lug bolts thereabout describing circles of different diameter. The wheel structure includes a locator plate provided with alignment means adapted to establish a predetermined axially centered orientation between it and such drum and axle assembly upon which it is mounted, and the wheel structure further includes a wheel that defines with the locator plate centering structure by means of which the wheel has enforced thereon a condition of coaxiality with the axis of rotation defined by such drum and axle assembly prior to the installation of the lug nuts on the lug bolts.

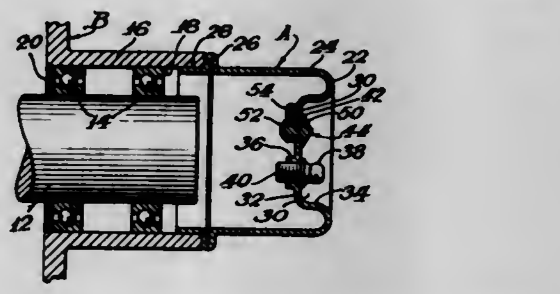
3,649,080
HUB CAP CONSTRUCTION

Anthony W. Molinare, Wilmette, Ill., assignor to Dutton-Lainson Company

Filed June 22, 1970, Ser. No. 48,205

Int. Cl. B60b *27/00*

U.S. Cl. 301—108 R **1 Claim**



A hub cap construction for attachment to a hub of a wheel of a boat trailer for enclosing the end of the axle and bearing assemblies and adapted to contain lubricant for the axle and bearing assemblies.

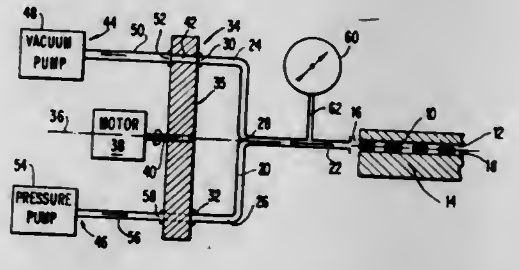
3,649,081
FLUID VIBRATION TRANSPORT SYSTEM

Robert Allen Johnson, Greeley, Colo.; Erwin H. Richards, So. Burlington, and Roy H. A. Watson, Burlington, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 22, 1971, Ser. No. 108,815

Int. Cl. B65g *53/00*

U.S. Cl. 302—2 R **16 Claims**



An article is moved selectively in either direction along a generally fluid confined transport path by alternately applying vacuum pressure fluid pulses and positive pressure fluid pulses of different amplitude and/or duration, preferably to the same side of the confined article.

3,649,082
MULTIPLE SOURCE MATERIAL DISTRIBUTING SYSTEM

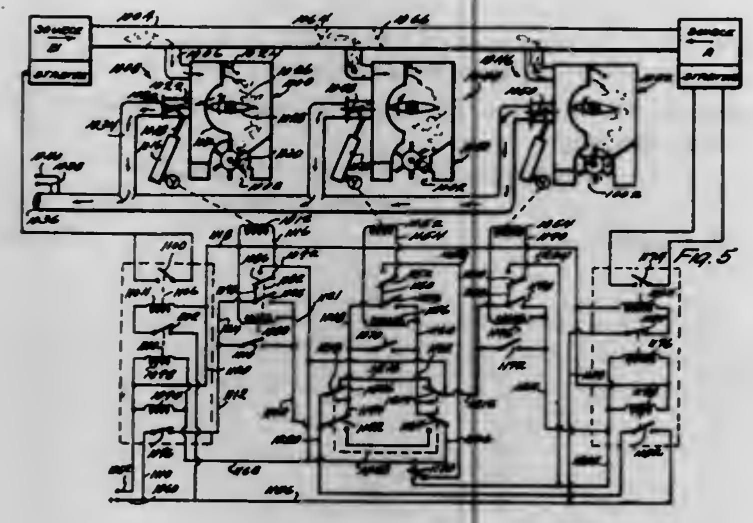
Cecil S. Wise, Dallas, N.C., assignor to Fiber Controls Corporation, Gastonia, N.C.

Continuation of application Ser. No. 694,268, Dec. 28, 1967, now abandoned , Continuation-in-part of application Ser. No. 538,437, Mar. 3, 1966, now abandoned , Continuation-in-part of application Ser. No. 444,885, Mar. 2, 1965, now abandoned , Continuation-in-part of application Ser. No. 217,154, Aug. 15, 1962, now abandoned , Continuation-in-part of application Ser. No. 561,575, June 29, 1966, now abandoned. This application Jan. 26, 1970, Ser. No. 5,981

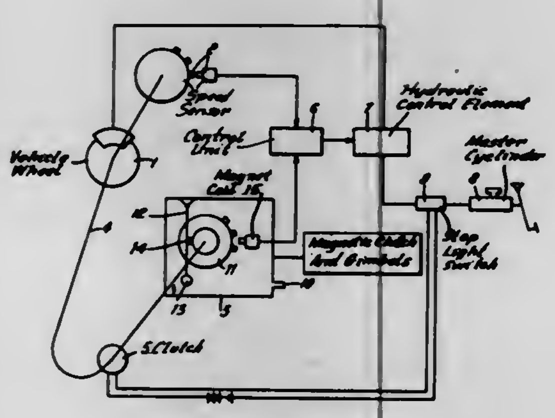
Int. Cl. B65g *53/04, 53/36*

U.S. Cl. 302—27 **43 Claims**

Method and apparatus for distributing material from a plurality of sources to a plurality of stations via a conveyor which connects at least one of these stations to each of the sources, the disclosed in conjunction with the selection by a variety of types of switches of a desired number of the stations to be fed by the sources, respectively, in such a manner that only one source can be used at a time to feed a given station.



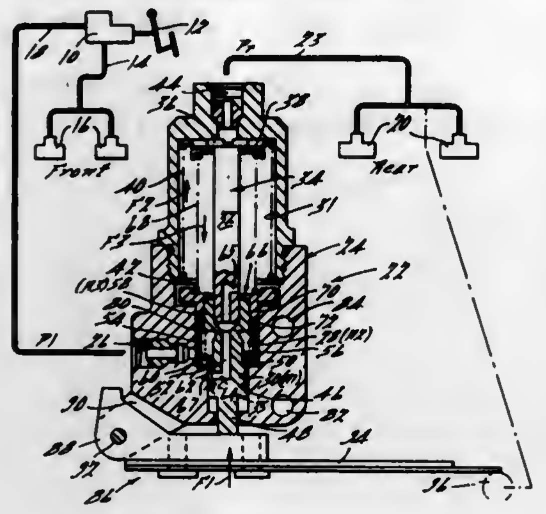
3,649,083
ANTISKID DEVICE, assignor to Otto Depenheuer, Bad Homburg, Germany and International Telephone and Telegraph Corporation, New York, N.Y.
Filed Apr. 23, 1970, Ser. No. 31,163
Claims priority, application Germany, May 13, 1969, P 19 24 346.0
Int. Cl. B60t *8/08, 8/10*
U.S. Cl. 303—21 B **14 Claims**



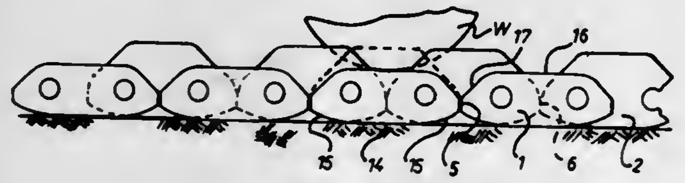
An antiskid brake system in which the difference between vehicle speed and the wheel speed is measured and optimum slippage maintained. The vehicle speed signal is generated by a flywheel which initially rotates at a speed corresponding to the wheel speed and is braked by an inert friction block mass which is forced against the fly wheel by the action of a pendulum as a function of actual vehicle deceleration.

3,649,084
LOAD CONTROLLED BRAKE PROPORTIONING VALVE
William Stelzer, Milford, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Oct. 13, 1969, Ser. No. 865,572
Int. Cl. B60t *8/26*
U.S. Cl. 303—22 R **22 Claims**

A proportioning valve which is operable to provide proportioning between inlet and outlet pressures at a first ratio (other than 1:1) and subsequently at a preselected pressure to proportion at a second different ratio with the valve being adaptable to be sensitive to load, i.e., the weight carried by the rear axle.



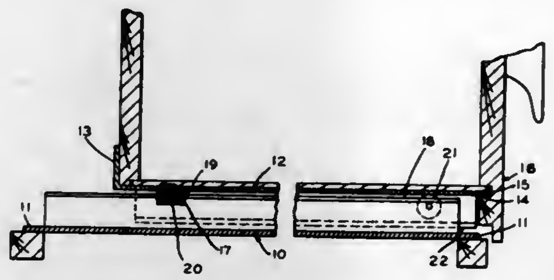
3,649,085
GROUND-ENGAGING TRACK FOR TRACKED VEHICLES
Edouard Martin Comellas, 40 de la Fonderie Street, Cap de la Madeleine, Quebec, Canada
Filed Feb. 19, 1970, Ser. No. 12,815
Int. Cl. B62d *55/20*
U.S. Cl. 305—38 **6 Claims**



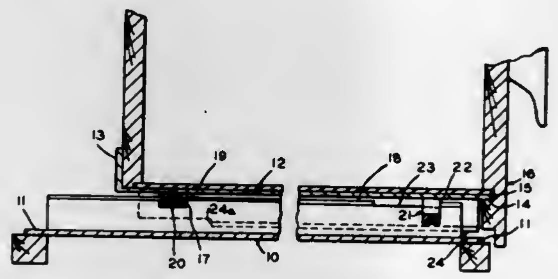
An all-purpose endless track for tracked vehicles, for travelling over hard as well as soft surfaces without damaging either. The ground-engaging surface of the track is substantially flat and smooth with no pavement damaging projecting cleats or the like bosses. This ground-engaging surface is provided with recesses arranged in longitudinal rows, the recesses of any given row being staggered relative to the recesses of an adjacent row, whereby the ground material will enter these recesses under the vehicle weight and load, resulting in considerably diminished damage to soft soil and while achieving improved draw bar pull of the vehicle. The staggered arrangement of the recesses prevents lateral slipping of the track and the increased thickness of the track sides increase the flotation of the track.

3,649,086
DRAWER GUIDE
Kenneth G. Vance, Fort Wayne, Ind., assignor to Winzeler Stamping Company, Montpelier, Ohio
Filed Nov. 27, 1970, Ser. No. 93,228
Int. Cl. F16c *29/00*
U.S. Cl. 308—3.6 **3 Claims**

A drawer guide which provides noiseless, low friction operation of a drawer comprises a channel-shaped base member which is adapted to a fixed in an article of furniture to extend centrally and longitudinally of a drawer in order to support the drawer. An inverted channel-shaped slide member is adapted to be fixed to the bottom of a drawer, and one of such members telescopes within the other. A block of a durable low friction material extends centrally inside the outer member. The inner member has side walls terminating in in-turned flanges which extend into a groove on both sides of such block, and is also provided with ears of a durable low friction material which extend laterally from the side walls of the inner member and also extend vertically beyond such in-turned flanges into engagement with the outer member. Such ears are located adjacent to one end of the assembly and such block is located adjacent to the other end so that the drawer when closed is centrally supported at one end by the ears and at the other end by the block.



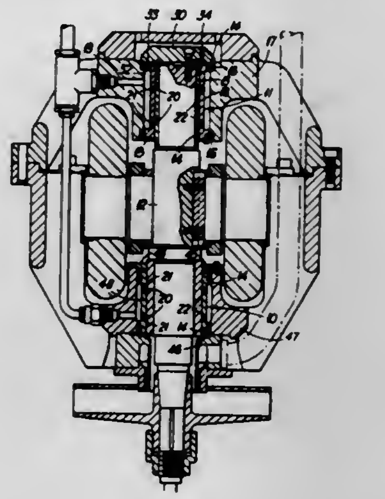
3,649,087
COMBINATION DRAWER GUIDE AND SAFETY STOP
Paul P. Thomas, Montpelier, Ohio, assignor to Winzeler Stamping Company, Montpelier, Ohio
Filed Nov. 27, 1970, Ser. No. 93,054
Int. Cl. F16c *29/00*
U.S. Cl. 308—3.6 **4 Claims**



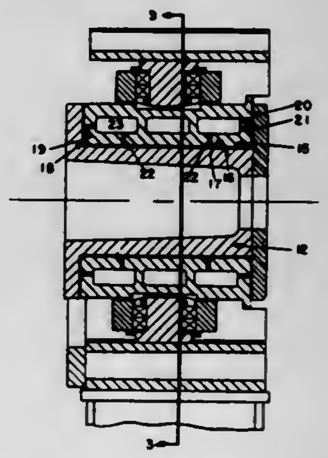
A channel-shaped base member is adapted to be fixed in an article of furniture to extend centrally and longitudinally of a drawer in order to support the drawer, and an inverted channel-shaped slide member is adapted to be fixed to the bottom of a drawer. One of these members telescopes within the other, and a block of durable low friction material extends centrally inside the outer telescoping member. The inner member has side walls terminating in in-turned flanges which extend into a groove on both sides of such block. A structure of durable low friction material extends transversely across the inner member in the path of such block, to cooperate with the block in providing a safety stop. This structure also has portions which extend laterally beyond the side walls of the inner member, and vertically beyond the in-turned flanges into engagement with the outer member. Such structure is located adjacent to one end of the assembly and the block is located adjacent to the other end. The in-turned flanges have portions cut out immediately inward from such structure, so that the block is disengaged from such flanges as it contacts such structure.

3,649,088
BEARINGS
John Kerr, Glasgow, Scotland, assignor to Henry Balfour & Company Limited, Leven, Scotland
Filed Dec. 28, 1970, Ser. No. 101,513
Claims priority, application Great Britain, Jan. 1, 1970, 501/70
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **13 Claims**

A bearing for a shaft is designed such that relative deflections between the shaft and bearing axis may be accommodated and includes a bush in which the shaft rotates the bush being resiliently mounted in a bearing mounting by resilient means located adjacent the ends of the bush, one end of the bush having a flange fixed thereto, a bearing land on the flange co-operating with a corresponding land on a collar of the shaft. Passages each including a restriction are formed through the bush and its flange and are supplied with gas at above ambient pressure.



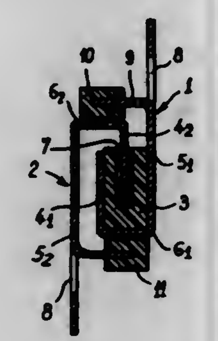
3,649,089
FLUID BEARING STRUCTURE
Anton Bouvier, Allison Park, Pa., assignor to Owens-Illinois, Inc.
Filed May 25, 1970, Ser. No. 39,971
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **3 Claims**



A fluid bearing construction comprising of a base, a stator and a rotor. The rotor is rotatably mounted in the stator by spaced fluid bearings comprising restrictors between complementary surfaces of the rotor and stator to which fluid under pressure is supplied so that a thin film of fluid flows between the surfaces of the stator and rotor. Means are provided for mounting the stator in the base about angularly spaced axes which intersect the axis of the stator so that the stator is free to move about the angular spaced axes with respect to the base.

3,649,090
DEVICES FOR GUIDING MOVABLE ASSEMBLIES
Christian Dutot, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt, France and Automobiles Peugeot, Paris, France
Filed May 5, 1970, Ser. No. 34,832
Claims priority, application France, May 8, 1969, 6914744
Int. Cl. F16c *29/00*
U.S. Cl. 308—36 **4 Claims**

Device for guiding an assembly displaceable along a plane or a curved surface, which comprises complementary movable elements, that is, a supporting element associated with a fixed support and a supported element associated with the movable assembly, characterized in that the supporting and supported elements consist both of metal sections, advantageously of same and consist cross-sectional contour, each element having formed in its portion parallel to the axis of movement a plurality of punched openings each forming a lug extending at right angles to said opening and bearing on one portion of the complementary element constituting a slideway, said lugs being so disposed that said elements are in constant bearing engagement irrespective of their relative longitudinal positions, the supporting element comprising a flexible channel constituting a friction race.



3,649,091
METHOD AND APPARATUS FOR SECURING A ROLLING MILL TABLE BEARING

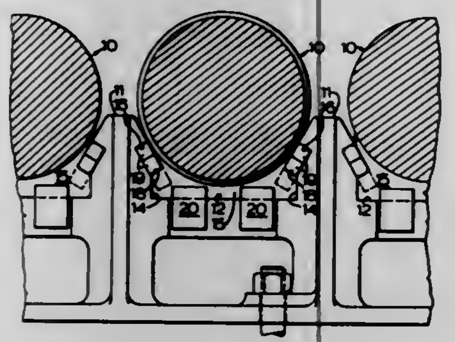
John Frederick Barry Wood, Burlington, Vt., assignor to Dominion Engineering Works Limited, Montreal, Canada

Filed Feb. 18, 1970, Ser. No. 12,403

Claims priority, application Canada, Apr. 23, 1969, 49,483

Int. Cl. F16c *13/00*

U.S. Cl. 308—15 **4 Claims**



The present disclosure relates to a method and apparatus for securing the bearing housing of a rolling mill table. The disclosure includes a bearing housing having a downwardly extending foot which is received in a recess of the table frame. Into the recess there is received a locking wedge for maintaining the housing in a positive locked engagement with the frame. In addition the housing is provided with short sided arms of great stiffness and strength, yet allowing the rolls of the table to be spaced close together.

3,649,092
MEANS FOR MOUNTING SELF-ALIGNING BEARING

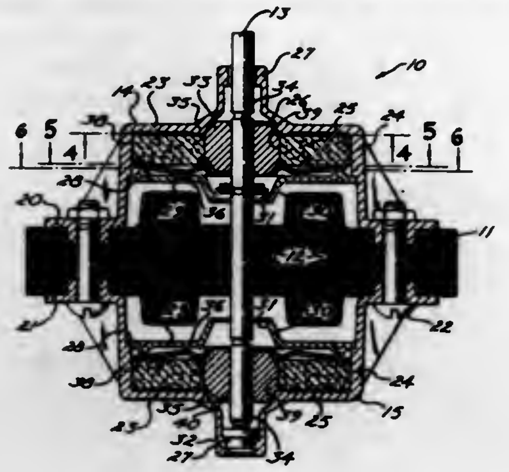
Howard R. Coleman, Elyria, Ohio, assignor to The General Industries Company, Elyria, Ohio

Filed Jan. 19, 1970, Ser. No. 3,874

Int. Cl. F16c *23/00*

U.S. Cl. 308—72 **6 Claims**

There is disclosed herein a spherical type bearing seated at one end on a fixed seat and at the other end on a free-floating seat, the free-floating seat having resilient, radially projecting legs, and there being means to tension the legs to bias the last mentioned seat against the bearing.



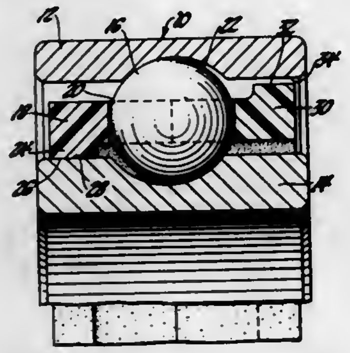
3,649,093
ANTIFRICTION BEARING WITH A DUAL CONTROL SEPARATOR

John B. Muratore, Castalia, and Paul E. Peterson, Norwalk, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1970, Ser. No. 62,582

Int. Cl. F16c *33/00,*

U.S. Cl. 308—193 **4 Claims**



An antifriction bearing is provided with a separator having a first control surface for guiding the separator from the inner race at low speeds and temperatures and a second control surface for guiding the separator from the outer race at high temperatures and speeds.

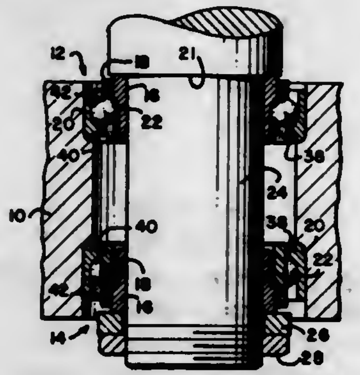
3,649,094
ANTIFRICTION BEARING AND CAGE

Elmore J. Russell, New Hartford, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Dec. 22, 1969, Ser. No. 887,036

Int. Cl. F16c *33/38*

U.S. Cl. 308—201 **12 Claims**



A bearing cage is provided for use with rolling members, an inner race, and an outer race. The cage is flexible both radially and circumferentially. Restraining means such as projections on the flexible cage or an annular member on the

cage are provided to prevent axial movement of the cage with respect to the race when the cage is snapped into place on the race.

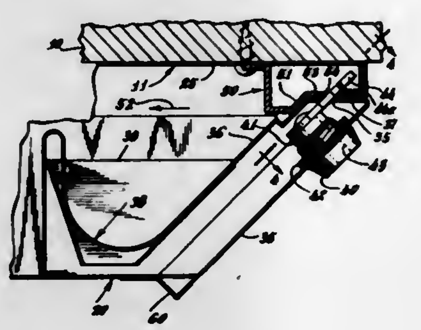
3,649,095
PILFER-PROOF DESK AND WORK TABLE DRAWER

Fred Gunzburg, Bayside, N.Y., assignor to Art-Lloyd Metal Products Corp., Brooklyn, N.Y.

Filed Sept. 21, 1970, Ser. No. 73,774

Int. Cl. A47b *88/00*

U.S. Cl. 312—333 **10 Claims**



A drawer assembly is fastened to the underside of a desk or table by screws or other means that are not accessible when the drawer of the assembly is therewithin. The drawer itself is locked to the assembly by a bolt that enters a strike and cams the drawer against a stop when an attempt is made to jimmy the bolt out of the strike.

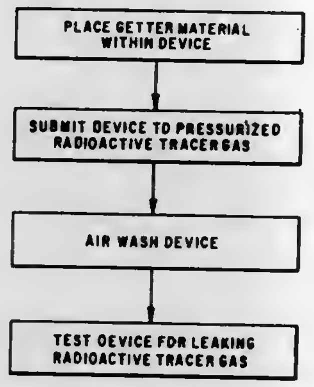
3,649,096
METHOD FOR MAKING HERMETICALLY SEALED ENVELOPES

Randall D. Clark, Dallas; Charles V. Cornman, Richardson, and Ralph E. McCullough, Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Original application Oct. 11, 1965, Ser. No. 494,508, now abandoned. Divided and this application Mar. 18, 1968, Ser. No. 731,353

Int. Cl. H01j *7/18, 17/26*

U.S. Cl. 316—25 **5 Claims**


PLACE GETTER MATERIAL WITHIN DEVICE
SUBMIT DEVICE TO PRESSURIZED RADIOACTIVE TRACER GAS
AIR WASH DEVICE
TEST DEVICE FOR LEAKING RADIOACTIVE TRACER GAS

A method for fabricating hermetically sealed packages comprising placing a getter material within and hermetically sealing the package, subjecting the package to radioactive tracer gas, air washing, and finally leak testing to determine any package leakage.

3,649,097
MICROSCOPE

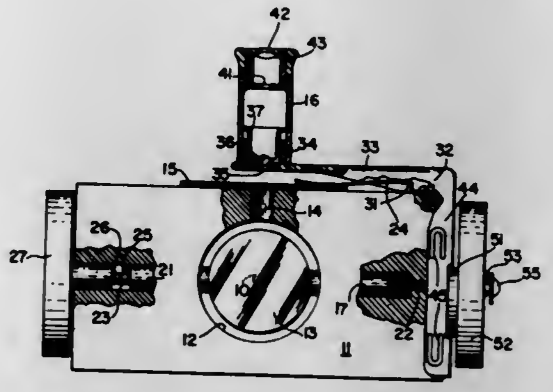
Gilbert Davidson, Newton; John B. Orfei, North Revere, and John Walters, Lexington, all of Mass., assignors to American Science & Engineering Inc., Cambridge, Mass.

Filed Mar. 23, 1970, Ser. No. 21,701

Int. Cl. G02b *21/00*

U.S. Cl. 350—84 **5 Claims**

A microscope includes a block formed with a large opening accommodating a mirror pivotally mounted about an axis orthogonal to the axis of a small opening formed in the block that intersects with the large opening so that the mirror may reflect light into the small opening. A compound lens is supported above and coaxial with the small opening and is carried by the normally horizontal leg of a generally L-shaped member having its normally leg formed with a channel that rides vertically along one side of the block to permit axial displacement of the compound lens. This normally vertical leg is formed with an opening for receiving a cam cap attached to a wheel that is rotatably secured to the block to help hold the L-shaped member in position and controllably position it vertically as the wheel is rotated to permit focusing of the compound lens along a slide plane adjacent to the top of the opening. A slide support helps keep a slide in position in the slide plane between the small opening and the lens means.



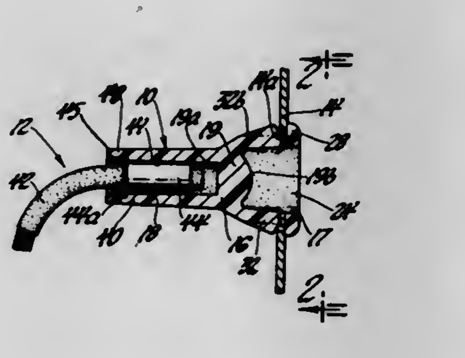
3,649,098
SELF-RETAINING FIBER OPTIC LENS

Lyle B. Suverison, Fowler, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 30, 1970, Ser. No. 59,639

Int. Cl. G04b *5/14*

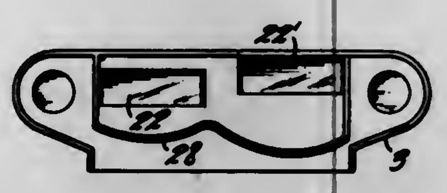
U.S. Cl. 350—96 B **5 Claims**



In a preferred form, this disclosure relates to a lens structure of a fiber optic assembly and which is adapted to be detachably connected to an apertured panel. The lens structure comprises a unitary body having forward and rearward socket portions having a common bottom wall which defines a lens portion for concentrating light being transmitted through a fiber optic bundle which is detachably connected via an end connector to the rearward socket portion. The forward socket portion has a side wall defining an axially extending recess through which the lens can be viewed and which includes a pair of deflectable fingers which cooperate with a flange on the side wall to detachably connect the lens structure to the apertured panel.

3,649,099
STEREOSCOPE EXHIBITING A PANORAME EFFECT

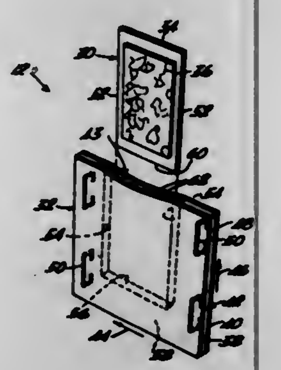
Hideto Furuoka, Tokyo, Japan, assignor to Kabushiki Kaisha Gakushu Kenkyusha, Tokyo, Japan
Filed Oct. 3, 1969, Ser. No. 863,570
Claims priority, application Japan, Oct. 3, 1968, 43/71477
Int. Cl. G02b *27/02, 27/24*
U.S. Cl. 350—135 **14 Claims**



A stereoscope is provided with means for advancing a film having a pair of stereoscopic images of a photographed field thereon and an optical system for continuously viewing the photographed field as the film is advanced through the stereoscope. The film has elongated stereoscopic images thereon and as the film is advanced through the stereoscope, different portions of the photographed field are made visible to the viewer thereby exhibiting a panoramic effect.

3,649,100
SLIDE PROJECTOR POLARIZING SLIDE UNIT

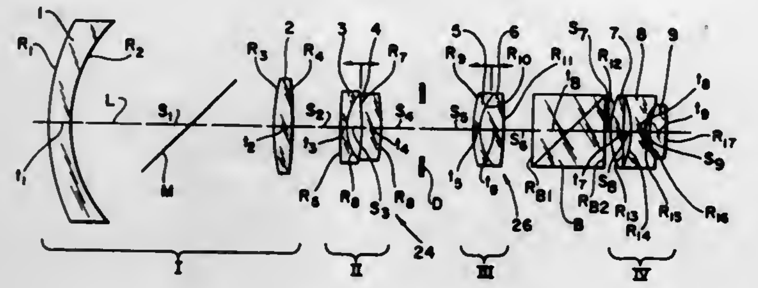
Paul W. Kirst, 6010 S. W. 95th Ct., Miami, Fla.
Filed Mar. 11, 1970, Ser. No. 18,572
Int. Cl. G02b *27/28*
U.S. Cl. 350—147 **10 Claims**



A polarizing slide unit of conventional 35 mm. photographic slide proportions or other standard slide proportions adapted to be handled or projected by a conventional diascope or slide projector. The polarizing slide unit includes a polarizing light mount assembly of hollow construction having slot or pocket means adapted to removably receive a rock thin section or the like and which may be of standard or conventional microscope slide proportions. The polarizing mount assembly removably supports a rock section slide specimen in sandwich fashion between two polarizing filter panes positioned relative to one another with mutually crossed polarizing axes. The slide unit combination of the rock specimen thin section and the polarizing mount assembly is adapted to be positioned in the light system of a conventional slide projector and to project a polarized light image of the thin section specimen on a projection screen surface.

3,649,101
ZOOM LENS

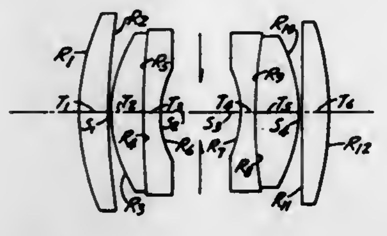
Kimball Straw, and William H. Price, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 8, 1970, Ser. No. 70,170
Int. Cl. G02b *15/16*
U.S. Cl. 350—184 **1 Claim**



A foldable zoom lens system including a simple triplet fixed portion and a zoom portion that includes a reversed-telephoto front objective with a mirror between the negative and positive components of this objective; a movable zooming component; and a compensating component. Another mirror is located between the zoom portion and the fixed portion to provide a compact zoom system that is folded twice. The front objective includes a fixed first component and a second component which is movable for focusing the lens for various subject distances.

3,649,102
HIGH RESOLUTION SIX ELEMENT OBJECTIVE LENS

Lawrence H. Conrad, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 11, 1971, Ser. No. 105,459
Int. Cl. G02b *9/42*
U.S. Cl. 350—222 **1 Claim**

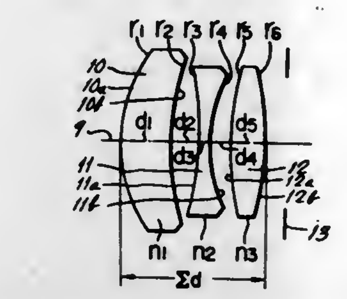


A six element *f*/4.5 24X magnification Double Gauss objective lens comprising from front to rear a positive meniscus lens element, a cemented doublet consisting of a positive meniscus lens and a negative meniscus lens element, a second cemented doublet consisting of a biconcave lens element and a biconvex lens element, and a plano-convex lens element.

3,649,103
PHOTOGRAPHIC LENS SYSTEM

Hajime Kamimura, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Apr. 15, 1970, Ser. No. 28,695
Claims priority, application Japan, Apr. 17, 1969, 44/29923
Int. Cl. G02b *9/16, 9/08*
U.S. Cl. 350—226 **3 Claims**

A photographic lens system in which a stop may be positioned in an image space adjacent to the last refracting surface of the system. Three individual lenses are included, i.e., a positive single meniscus lens with its convex surface toward



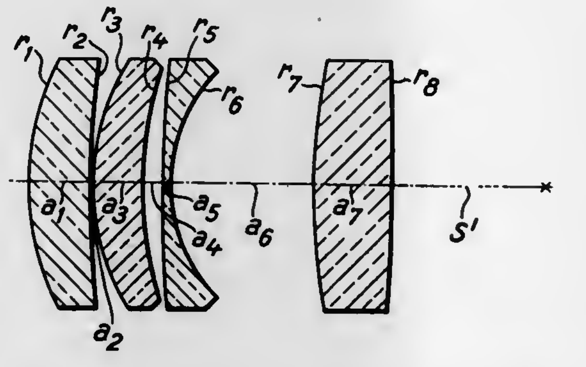
an object, a biconcave lens and a biconvex lens. The following relations are satisfied:

$$\begin{array}{llcll}
0.3f & <\Sigma & d & < & 0.35f \\
0.105f & < & d_1 & < & 0.110f \\
0.8f & < & |r_2| & < & 1.0f \\
0.55f & < & |r_6| & < & 0.65f \\
1.65 & < & n_1 & & \\
1.65 & < & n_3 & &
\end{array}$$

where f = the focal length of the lens system; ρ = the total thickness or dimension along the optical axis of the system; d_1 = the thickness of the first or positive single meniscus lens; r_2 = he radius of curvature of the concave surface of the first lens; r_6 = the radius of curvature of the last refracting surface of the system; n_1 = the index of refraction of the first lens (for the *d* lines of helium); and n_3 = the index of refraction of the third or biconvex lens (for the *d* lines of helium).

3,649,104
FOUR COMPONENT OBJECTIVE

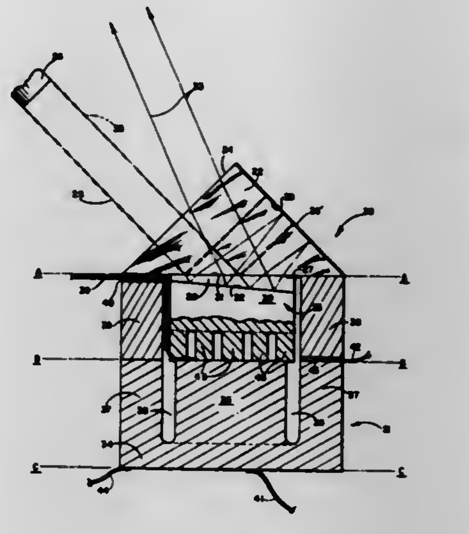
Garry Edwards; Walter Mandler, and Erich Wagner, all of Midland, Ontario, Canada, assignors to Ernst Leitz GmbH, Wetzlar, Germany
Filed July 30, 1970, Ser. No. 59,544
Claims priority, application Germany, Aug. 1, 1969, P 19 39 099.9
Int. Cl. G02b *9/56*
U.S. Cl. 350—223 **19 Claims**



A four component objective for picture taking and projection comprises convex front surfaces on the first, second, and fourth component lenses in the direction of light travel. The refractive power ϕ_{11} of the first surface of the first lens ranges between 1.5 and 2.0 while the refractive power ϕ_{21} of the first surface of the second lens and ϕ_{22} of the second surface of the second lens range from 1.4 to 2.4 and from −2.0 to −1.0 respectively. The refractive power ϕ_{32} of the second surface of the third lens lies between −3.7 and −2.5.

3,649,105
OPTICAL SHUTTER

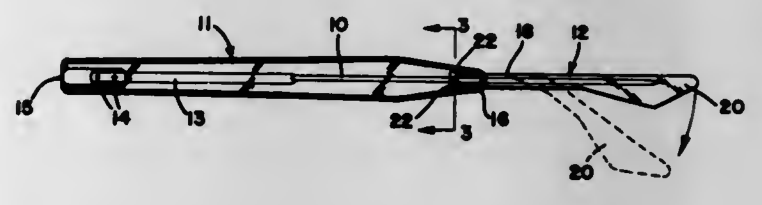
Robert L. Treuthart, Villa Park, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.
Filed Feb. 21, 1968, Ser. No. 707,925
Int. Cl. G02f *1/34*
U.S. Cl. 350—285 **20 Claims**



A wedge of transparent material having first and second angularly displaced faces is positioned in a controllable manner with respect to a right angle prism with one of the faces of the wedge parallel to the hypotenuse face of the prism. A piezoelectric element is positioned to drive the wedge relative to the prism between a first position wherein the wedge and prism are in near optical contact and a second position wherein the wedge and prism are spaced by a distance of about one wavelength of the light incident upon the prism so as to switch the optical path of the incident light beam from a condition of transmission to a condition of transmission to a condition of reflection at the hypotenuse face.

3,649,106
MANUALLY FORMABLE SPECTACLE TEMPLE

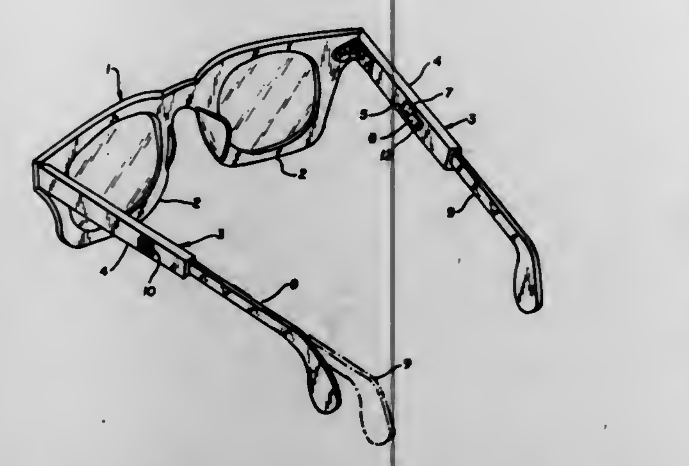
Jack B. Hirschmann, Jr., Bourne, Mass., assignor to H. L. Bouton Company, Inc., Buzzards Bay, Mass.
Filed July 2, 1970, Ser. No. 51,941
Int. Cl. G02c *5/18, 5/16*
U.S. Cl. 351—117 **11 Claims**



A reinforced spectacle temple includes a reinforcing wire enclosed within front a rear sections of plastic of relatively different properties. The front section is hard and resistant to deformation, while the rear section is soft and readily formable manually with the wire to fit the ear and head of the wearer. The two plastic sections are mechanically interlocked, and the rear section may be rotated on the reinforcing wire to accommodate the slope of the portion of the wearer's head with which it is in engagement.

3,649,107
ADJUSTABLE TEMPLES FOR SPECTACLES

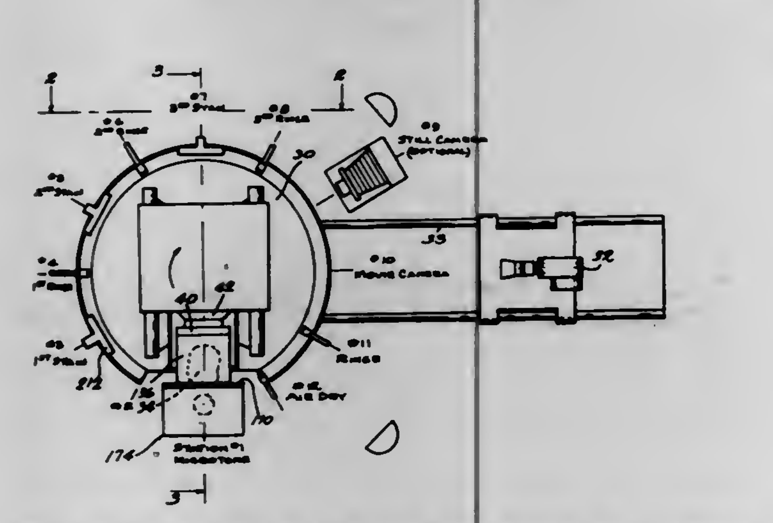
George R. Hoffmaster, and Jack M. Prins, both of Reading, Pa., assignors to ESB Incorporated, Philadelphia, Pa.
Filed Apr. 13, 1970, Ser. No. 27,778
Int. Cl. G02c *5/20*
U.S. Cl. 351—118 **1 Claim**



The invention relates to means for adjusting the length of spectacle temples. The forward portion of each temple is of rectangular tubular construction into which portion the rear portion of the temple is adapted to slide to selective positions held by a short spring anchored intermediate said forward portion. The spring engages selective spaced slots of the rear portion. A window is provided on the forward portion to view a scale on the rear portion which indicates the overall length of the spectacle temples.

3,649,108
SERIAL SECTION PHOTOGRAPHY OF ORGANIC MATERIAL

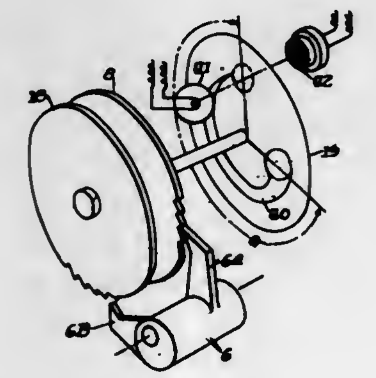
Robert H. Ahrens, Milwaukee; John A. Bartlett, Pewaukee; James S. Roberts, Brookfield; Pieter W. Schipper, Elm Grove, all of Wis., and Roy Mills, Cardiff, Calif., assignors to Milwaukee Chaplet & Mfg. Company, Inc., Milwaukee, Wis.
Filed Nov. 13, 1969, Ser. No. 876,329
Int. Cl. G03b *41/00*
U.S. Cl. 352—84 **11 Claims**



Successive sections are taken from animal or botanical material embedded in a supporting block. The block is then indexed rotatably step by step. In the several indexed positions of the block, the work surface from which the section has been removed is washed and stained and photographed and the block is advanced radially toward the knife for further sectioning and for staining and photographing each newly exposed surface. In each cycle the block is raised for indexing and lowered to engage matched face splines for precision registration with the camera. Preferably automatic exposure of a small predetermined number of frames of motion picture film follows each sectioning and staining of the work, whereby the resulting film not only records the successive exposed surfaces but may be projected to give the impression that the observer is actually moving through the work, thus permitting the investigator to trace selected elements (vascularity, neural bundles, anatomical structure, etc.) through an organ or other specimen while maintaining visual positional reference to other anatomical features.

3,649,109
AUTOMATIC PHOTOGRAPHING DEVICE FOR CINE CAMERA

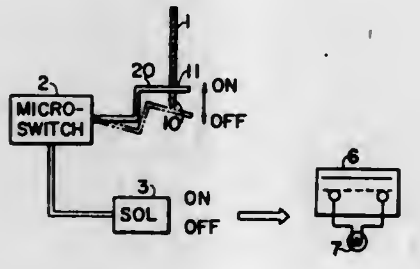
Tadao Isono, and Ikuji Katoh, both of Tokyo, Japan, assignors to Nihon Eigakikai Kabushika Kaisha (Japan Cine Equipment Mfg. Co., Ltd.), Tokyo-to, Japan
Filed May 11, 1970, Ser. No. 36,197
Claims priority, application Japan, May 16, 1969, 44/37750
Int. Cl. G03b *21/36*
U.S. Cl. 352—91 **3 Claims**



A movie camera including fade-in, fade-out, and lap dissolve capabilities. To effect fade-out and fade-in exposure, a secondary light sensor is provided in the automatic exposure control circuit and a variable intensity light source acts on the secondary sensor. Suitable mechanisms are provided to permit film reversal and thus allow the superimposition of a fade-in over a fade-out sequence to effect a lap dissolve.

3,649,110
PROJECTION LAMP DE-ENERGIZING DEVICE

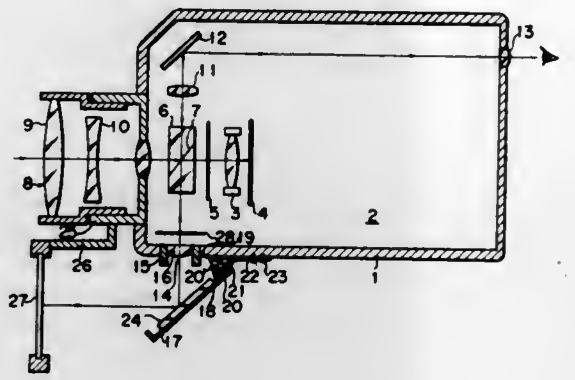
Sho Takahama, Hyogo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 10, 1970, Ser. No. 10,175
Claims priority, application Japan, May 2, 1969, 44/34294
Int. Cl. G03b *21/50*
U.S. Cl. 352—92 **4 Claims**



A manually operated switch which energizes the projection lamp, is mechanically latched in lamp energized position by a pivotable lever which is spring biased into latched position but is unlatched by a solenoid electrically coupled to a microswitch which senses a notch within the edge of a motion picture film or the lack of presence of the same, to deenergize the projection lamp automatically by unlatching the manually operable switch.

3,649,111
SUB-STANDARD MOTION PICTURE CAMERA

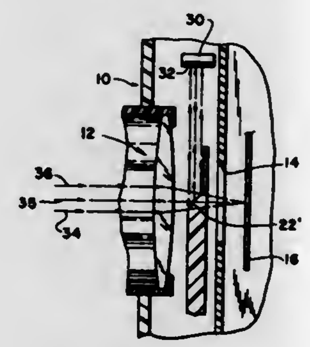
Katsuto Miyoshi, and Kohji Ichie, both of Nagoya, Japan, assignors to Elmo Company Limited, Nagoya, Japan
Filed July 23, 1970, Ser. No. 57,241
Claims priority, application Japan, Aug. 21, 1969, 44/65663
Int. Cl. G03b *21/32*
U.S. Cl. 352—90 **2 Claims**



A sub-standard motion picture camera has two selectively operable lens systems, one of which is a main lens system for obtaining a normal shot, and the other is an auxiliary lens system for obtaining a closeup shot or tilting. To provide the auxiliary lens system, the camera has in its housing an opening or a light opening within which an auxiliary lens is disposed, the opening being closed or opened properly to render the auxiliary lens system operative or inoperative.

3,649,112
CAMERA EXPOSURE CONTROL

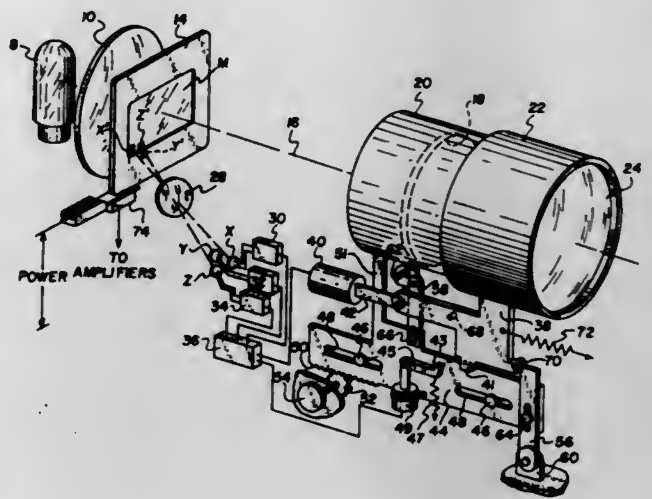
William T. Sherwood, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 4, 1970, Ser. No. 69,858
Int. Cl. G03b *19/18*
U.S. Cl. 352—141 **6 Claims**



A motion picture camera includes a rotating shutter having a mirror surface for folding the light path while the shutter is closed to direct light to a photosensitive surface on a photoresponsive member. In order to maximize the amount of light from the central area on the object which is directed to the photosensitive surface of the photoresponsive member and to minimize the amount of light from the peripheral areas of the object directed to the photosensitive surface, means are provided for moving the primary image plane in a direction further from the objective when the light is directed towards the photoresponsive member. This may be accomplished by forming the mirror reflecting surface with a convex shape.

3,649,113
PROJECTOR MECHANISM FOR MAINTAINING THE FILM AREA PROJECTED ON A SCREEN PREFERABLY IN FOCUS AND OF A PREDETERMINED SIZE

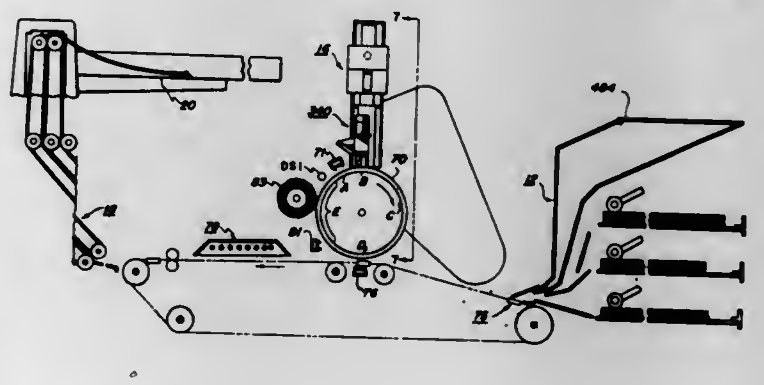
Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 4, 1969, Ser. No. 882,173
Int. Cl. G03b *3/10*
U.S. Cl. 353—101 **9 Claims**



A projector having mechanism including a zoom lens for automatically maintaining the projected film area visible on a viewing plane such as a screen or the like preferably in focus and of a predetermined size regardless of the size of the illumination transmitting area of the film positioned at the projection station. A sensing mechanism senses the size of the illumination transmitting area of the film at the projection station, and produces a signal output corresponding thereto for controlling an adjusting mechanism for automatically adjusting the zoom lens to maintain the projected film area visible on the screen preferably in focus and of a predetermined size.

3,649,114
MULTIPLE OUTPUT ELECTROSTATIC RECORDING SYSTEM

John J. Vlach, Penfield; James B. Baker, Canandaigua; Edward H. Burnham; Edward J. Lavander, both of Rochester, and Gary L. Schluntz, Penfield, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed May 14, 1969, Ser. No. 824,541
Int. Cl. G03g *15/20*
U.S. Cl. 355—3 **7 Claims**



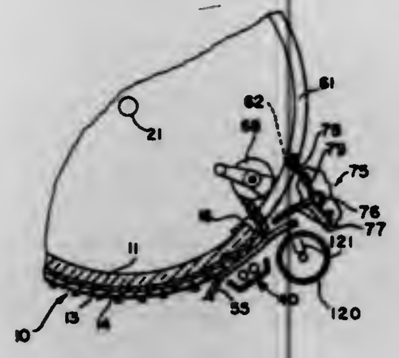
An improved xerographic copying/duplicating system arranged in conjunction with an improved aperture card handling and projection system which are controlled by an improved control circuit and drive system such that high-quality copies of film images are reproduced on copy sheet of varied size and at varied rates. Charging rates and exposure intensities and times are varied according to recording speeds in response to control signals.

3,649,115

PICK OFF MEANS FOR AN ELECTROSTATIC REPRODUCTION DEVICE

Howard T. Hodges, deceased, late of Perinton, N.Y. (by Claire F. Hodges, executrix), assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 26, 1969, Ser. No. 861,508
Int. Cl. G03g *15/00*
U.S. Cl. 355—11 **6 Claims**



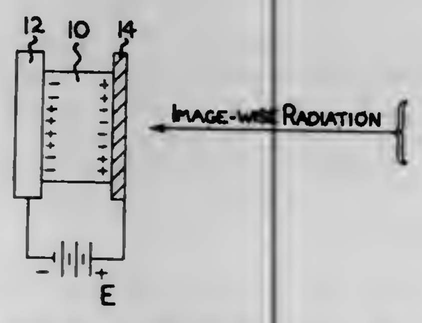
An electrophotographic apparatus of the type having a photoconductor section supported around a portion of an imaging drum periphery is provided with a recess adjacent the leading edge of the photoconductive section. Copy sheets are fed into transfer contact with the section with a leading portion extending over the recess and a deflector is moved into and out of the recess to pick off the copy sheet. Alternative separating structure is provided to urge the copy sheet away from the pickoff member to avoid damage to the copy sheet image.

3,649,116

DISCONTINUOUS ELECTRODE FOR ELECTROPHOTOGRAPHY

Maclin S. Hall, Okemos, Mich., assignor to Owens-Illinois, Inc.

Filed July 19, 1968, Ser. No. 746,192
Int. Cl. G03g *15/02*
U.S. Cl. 355—12 **2 Claims**



A persistent internal polarization (PIP) electrophotography printing system comprising at least one electrode of a discontinuous configuration, such as a foraminous conductive mesh, in combination with a PIP layer such that an electric field may be simultaneously applied to the PIP layer while permitting light radiation to reach the PIP layer. In the specific practice, the electrode is positioned adjacent to the surface of the PIP layer which is to be toned; that is, the top surface.

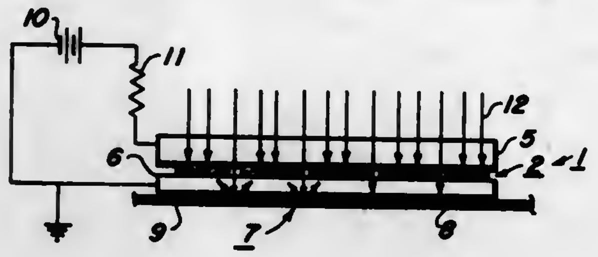
3,649,117

IMAGING PROCESS

John W. Weigl, West Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Jan. 2, 1970, Ser. No. 92
Int. Cl. G03g *13/00*
U.S. Cl. 355—17 **11 Claims**

A contact reflex manifold imaging process is provided wherein a manifold set comprising an electrically photosensitive imaging layer in a screen pattern releasably resides on a transparent donor sheet and is in contact with a transparent receiver sheet. A master to be copied is placed in contact with one side of the manifold set and is exposed to electromagnetic radiation to which the imaging layer is sensitive by passing the electromagnetic radiation through the manifold set while the imaging layer is subjected to an electric field. Upon separation of the manifold set while under a field and after the exposure, a positive image is observed on one of the donor and receiver sheets and a negative image is observed on the other sheet.

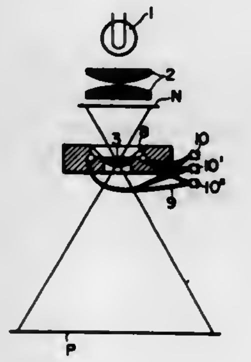


3,649,118

COLOR PHOTOGRAPHY PRINTING APPARATUS

Akira Yano; Tsutomu Kimura, both of Kanagawa, and Mikio Utsugi, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 22, 1970, Ser. No. 30,720
Claims priority, application Japan, Apr. 23, 1969, 44/31406
Int. Cl. G03b *27/74*
U.S. Cl. 355—38 **5 Claims**



A color photography printing apparatus has optical fiber bundles arranged in the vicinity of the optical path of the printing apparatus for focusing the image of the negative film onto a photographic paper. One end of the bundles faces the optical path, and the other end thereof is divided into three divisional bundles which are respectively connected with light detectors for three colors. The focusing dispersed light is detected by the light detectors in three colors with the printing light value controlled to provide a balanced color printing.

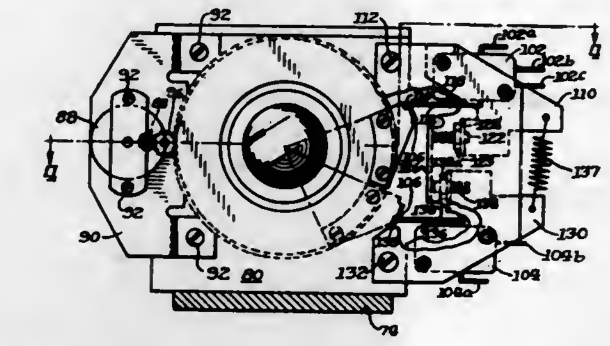
3,649,119

AUTOMATIC IMAGE ROTATOR FOR MICRO-IMAGE READER-PRINTER

Chester S. Rempala, and Robert W. Murre, both of Chicago, Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Mar. 11, 1970, Ser. No. 18,429
Int. Cl. G03b *27/70*
U.S. Cl. 355—45 **6 Claims**

Apparatus for automatically rotating an enlarged microfilm image through an angle of 90° from a first orientation as projected onto a projection screen to a second orientation as projected onto the image plane of a printout station. The image rotating apparatus includes a motor driven prism controlled by a pair of electrical switches actuated by a member secured to the prism carrier which defines limit positions of the prism to automatically effect reorientation of the projected image responsive to actuation of the printing cycle mechanism.

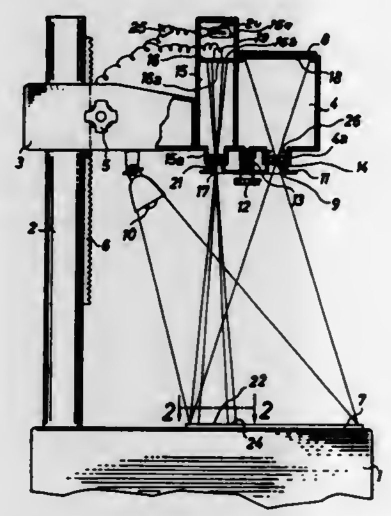


3,649,120

MICROFILM COPYING CAMERA

Joseph Pfeifer, Unterhaching, and Horst Bickl, Munich, both of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Filed Apr. 6, 1970, Ser. No. 26,040
Claims priority, application Germany, Apr. 5, 1969, P 19 17 698.8
Int. Cl. G03b *27/76*
U.S. Cl. 355—68 **10 Claims**



A microfilm copying camera of the step-by-step type which permits adjustment of the ratio of the size of the picture to be taken (the copy) to the size of the picture to be copied (the master or original). The camera is provided with a light source of controllable intensity for illuminating the entire master; the light source is controlled by a photometer mounted on the camera and scanning a small test area of the master. The camera has an adjustable lens board, whereby the size of the copy may be varied. The photometer has a light sensitive element mounted in the plane of the camera film, and a lens which scans the test area which is mounted on the camera lens board and has a focal length equal to the focal length of the camera lens. The camera may have a shutter mechanism with a fixed opening and a constant exposure time, the only variable in the taking of the picture then being the variable illumination provided by the controlled light source.

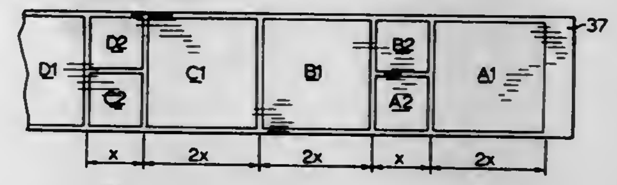
3,649,121

MASS PRODUCTION PHOTOGRAPHIC PRINTING METHOD

Lewis Cohen, 205 The Bridle Path, Don Mills, Ontario, Canada

Filed Sept. 22, 1969, Ser. No. 859,898
Int. Cl. G03b *27/44*
U.S. Cl. 355—77 **1 Claim**

A mass production photographic printing method for producing a strip containing a plurality of large and small prints, with one large print and one small print made simultaneously from each negative. The prints are arranged on the strip so that for every two regular sized prints, there is a space of predetermined size, with two wallet sized prints substantially filling such space. The strip is cut after printing so that each regular sized print has one wallet sized print associated with it.

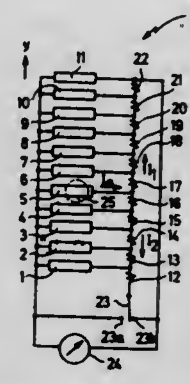


3,649,122

METHOD AND APPARATUS FOR MEASURING THE POSITION COORDINATES OF ONE POINT IN RELATION TO A REFERENCE POINT

Eberhard Holtz, Aachen, Germany, assignor to Carl Zeiss-Stiftung, Wuerttemberg, Germany

Filed Mar. 27, 1970, Ser. No. 23,415
Claims priority, application Germany, Mar. 28, 1969, P 19 15 935.4
Int. Cl. G01g *11/26*
U.S. Cl. 356—4 **11 Claims**



In a method and apparatus for measuring the vertical position of a point relative to a reference point spaced laterally therefrom, a laser beam is directed horizontally from the reference point to impinge upon a receiver at the other point. The receiver consists of a vertical line of separate, adjacent photoelectric units each of which is narrower than the laser beam in the vertical direction. The photoelectric units are connected in parallel with an identical ohmic resistor connected between similar poles of each adjacent pair of photoelectric units forming a chain of series connected resistors. A switch and a current measuring device are connected in circuit with the photoelectric units and resistor chain so that the total current emanating from the illuminated photoelectric units, and the partial current flowing between the illuminated photoelectric elements and one end of the resistance chain, are measured alternately. The ratio of the two current measurements gives the position of the point at which the axis of the laser beam impinges upon the line of photoelectric units relative to the length of the line of units. The laser beam may be modulated, and in each photoelectric unit the laser beam received thereby may be divided with each division focused at an aperture through which it passed to a photocell, for reducing the effect of interference.

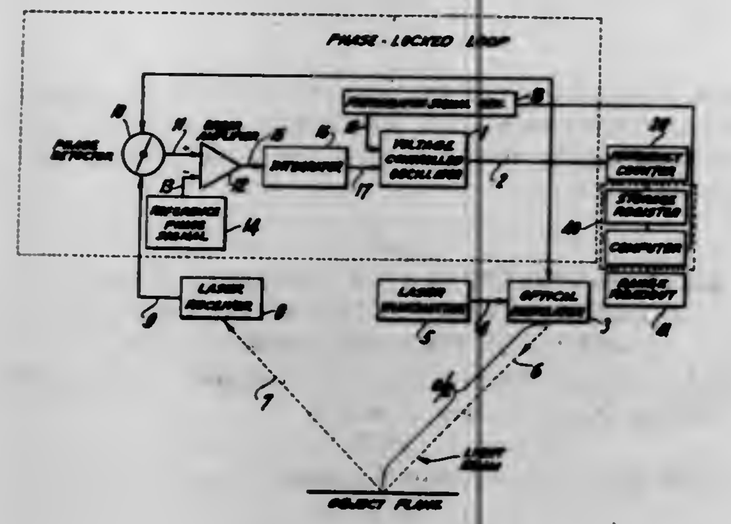
3,649,123

VARIABLE FREQUENCY PHASE MATCHING DISTANCE MEASURING AND POSITIONING DEVICE

Edward M. Ulicki, East Paterson, N.J., assignor to Holobeam, Inc., Paramus, N.J.

Filed Apr. 16, 1969, Ser. No. 816,592
Int. Cl. G01c *3/08*
U.S. Cl. 356—5 **4 Claims**

The invention is a laser driven distance measuring device, the output of which can be used to precisely control the distance between objects. Interrogating signals, modulated by a control signal, are beamed towards an object and the phase of reflected portions of these signals compared with that of the modulating control signal. The frequency of the transmitted signals is varied until a desired phase match between the transmitted and received signals is achieved. The distance to an object is determined mathematically from the value of two adjacent frequencies at which the designated phase relationship is observed to occur. By measuring the change in frequency of the modulating control signal necessary to effect the desired phase match with a reference frequency, a control signal is generated which can be utilized to adjust the distance measured.



3,649,124
FOREGROUND OBJECT LOCATING DEVICE

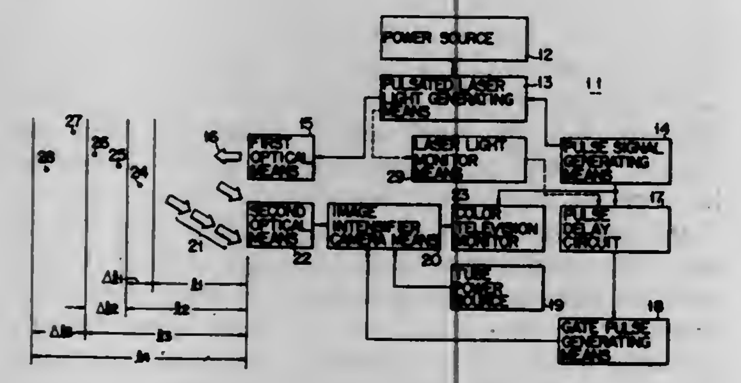
Takashi Takaoka, Kawasaki-shi; Seiichi Ohkoshi, Yokohama-shi, and Yoichi Unno, Kamakura-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 1, 1969, Ser. No. 881,218

Claims priority, application Japan, Dec. 5, 1968, 43/88808

Int. Cl. G01c *3/08*

U.S. Cl. 356—5 **9 Claims**


POWER SOURCE
PULSATED LASER LIGHT GENERATING MEANS
FIRST OPTICAL MEANS
LASER LIGHT MONITOR MEANS
PULSE SIGNAL GENERATING MEANS
SECOND OPTICAL MEANS
IMAGE INTENSIFIER CAMERA MEANS
COLOR TELEVISION MONITOR
PULSE DELAY CIRCUIT
TUBE POWER SOURCE
GATE PULSE GENERATING MEANS
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A foreground object locating device comprising a laser light generator for projecting in a desired forward direction a laser light consisting of a series of pulses having a preset repetitive period, and a color television mechanism for receiving optical images focused on optical lens in response to a pulsated echo laser light reflected from various objects present in the direction in which the pulsated laser light is initially projected by the laser light generator and displaying on the screen video images corresponding to the optical images in different colors distinguishing the video images of the previously classified distance zones.

3,649,125
DIRECTION SENSING METHOD AND APPARATUS FOR LASER DOPPLER VELOCITY MEASUREMENTS

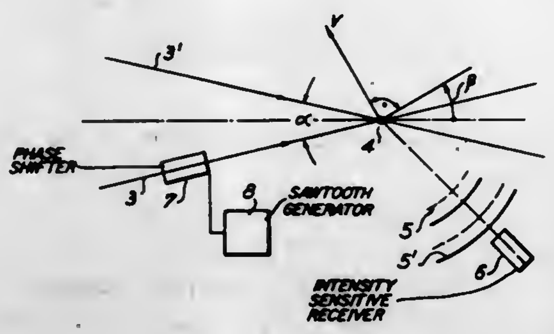
Bernhard Lehmann, Berlin, Germany, assignor to Licentia Patentverwaltungs GmbH, Frankfurt, Germany

Filed Aug. 18, 1969, Ser. No. 850,935

Claims priority, application Germany, Aug. 17, 1968, P 17 98 076.6

Int. Cl. G01p *3/36*

U.S. Cl. 356—28 **14 Claims**



Two beat frequencies due to doppler measurement of the velocity component of a moving object are produced and the difference in their frequencies compared to determine the direction of object movement along the path of the velocity component. One beat frequency is provided by producing first and second radiant energy energy fields whose frequency difference is a function of the sign of the velocity component. The other beat frequency is provided by periodically shifting the phase of one of the radiant energy fields variably with respect to time. The radiant energy fields are produced by a laser device and the phase shift is effected by applying a sawtooth charging voltage to a Pockels cell interposed in the path of one of the laser beams.

3,649,126
SLIT EXPOSURE DEVICE FOR A REPRODUCTION APPARATUS

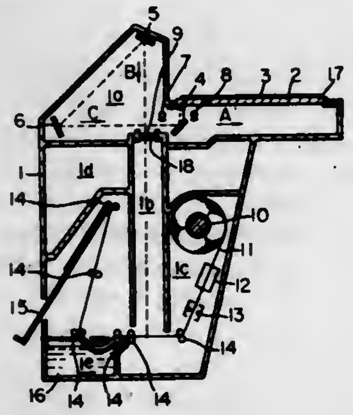
Yutaka Koizumi, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Sept. 5, 1968, Ser. No. 757,537

Claims priority, application Japan, Sept. 20, 1967, 42/60357

Int. Cl. G03b *27/16, 27/30*

U.S. Cl. 355—65 **7 Claims**



An optical scanning and reflecting system is disclosed for use in a document copying apparatus in which photosensitive paper is exposed by the image of an original document. Light from the original document is reflected by three moving mirrors through a fixed lens and is projected through a slit upon photosensitive paper which is moved in coordination with the movement of the three reflecting mirrors. Two mirrors move in a plane parallel to the original document and the third mirror moves perpendicular thereto.

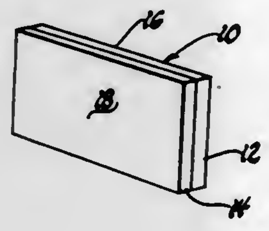
3,649,127
HOLOGRAPHIC INTERFEROMETRIC METHOD OF DETECTING ANOMALIES IN LAMINATE STRUCTURE BY REINFORCING ONE LAYER

Leonard A. Kersch, and Gordon M. Brown, both of Ann Arbor, Mich., assignors to GC Optronics, Inc., Ann Arbor, Mich.

Filed Apr. 20, 1970, Ser. No. 30,022

Int. Cl. G01b *7/02*

U.S. Cl. 356—109 **9 Claims**



To analyze the continuity of the adhesive bond between two layers of a laminated structure one of the layers is reinforced by coating its outer side with a substance which forms a stiffening layer and which may be removed in a nondestructive manner. The structure is then stressed, as by heating it, and the resulting deformation is measured by a holographic interferometry. Discontinuities in the pattern of deformation reveal discontinuities in the bond.

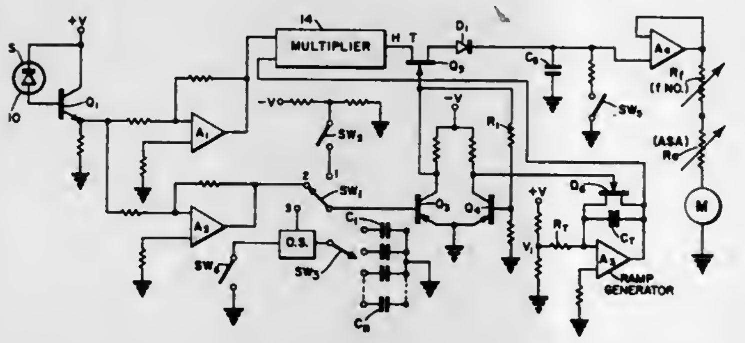
3,649,128
SYSTEM FOR DETERMINING THE PROPER EXPOSURE FOR A PHOTOGRAPHIC SURFACE

Stanley Rothschild, 10913 Lombardy Road, and Bernard Goldberg, 805 Lombardy Center, both of Silver Spring, Md.

Filed Nov. 27, 1970, Ser. No. 92,978

Int. Cl. G01j *1/46, 1/44*

U.S. Cl. 356—215 **10 Claims**



A system for determining the proper exposure for a photographic surface comprising a light sensing means for sensing the intensity of incoming illumination and converting the same to an electrical signal. Means for providing a time output signal representative of illumination conditions, and a multiplier in the circuit for multiplying the time and light signals. A read out unit is incorporated into the system for determining the proper exposure setting based on the ASA film speed used.

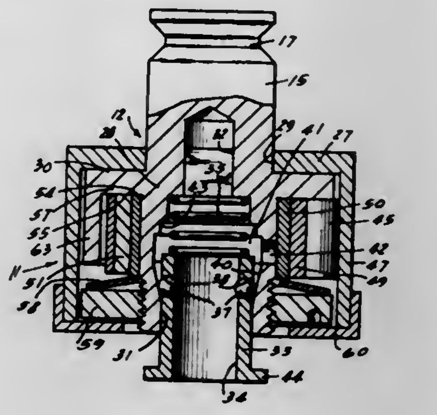
3,649,129
TORQUE RESETABLE OVERLOAD RELEASING CLUTCH FOR TOOL HOLDERS AND THE LIKE

John L. King, Jr., Frankenmuth, Mich., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Jan. 19, 1970, Ser. No. 3,845

Int. Cl. B23g *1/00, 1/16, 1/18*

U.S. Cl. 408—139 **13 Claims**



Apparatus such as a tool driver liable to excessive torque in operation comprises first and second portions in concentric relatively rotatable assembly having respective confronting relative rotatably movable areas or races with at least one wedgingly coactive roller clutch element normally biased to effect corotation of the portions in response to rotary movement of one of the portions, and torque-sensitive over-load releasing means operative in response to torque resistance including a friction clutch connecting one of said areas to its portion of the apparatus and means on the same portion of the apparatus operative when the friction clutch slips due to overload torque resistance to release said roller clutch element to permit one of said portions to rotate relative to the other of said portions.

3,649,130
BLOWER

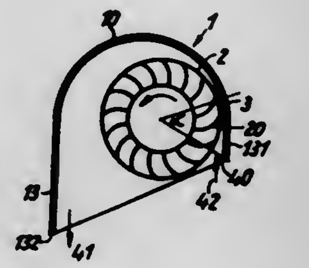
Heinrich Moller, Kelkheim, Taunus, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 9, 1970, Ser. No. 1,649

Claims priority, application Luxembourg, Jan. 14, 1969, 57,778

Int. Cl. F04d *5/00*

U.S. Cl. 415—54 **8 Claims**



A transverse current blower having a casing, the internal surface thereof, together with a fan wheel asymmetrically arranged therein define a passage that includes an air intake and air discharge portions and a portion of minimum width therebetween. Both the intake and exhaust portions are in spiral form increasing in width from the portion of minimum width.

3,649,131

SELF-PRIMING LATERAL CHANNEL CENTRIFUGAL PUMP

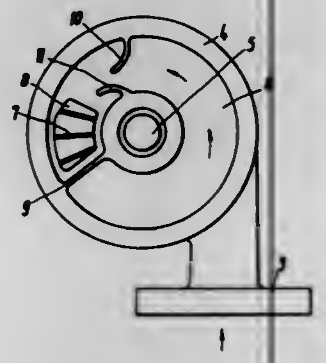
Walter Hagemann, Itzehoe-Nordoe, Holstein, Germany, assignor to Siemen & Hinsch MBH, Itzehoe, Holstein, Germany

Filed July 2, 1970, Ser. No. 51,918

Claims priority, application Germany, July 5, 1969, P 19 34 168.5

Int. Cl. F04d *29/40, 1/00*

U.S. Cl. 415—182 **5 Claims**



A self-priming lateral channel centrifugal pump having a pair of ribs formed in the suction chamber to enhance the self-priming features of the pump. The fluid traverses a substantial portion of the suction chamber before porting to the impeller, and the ribs are located just in advance of the impeller port. One of the ribs extends radially inwardly of the suction chamber and the other radially outwardly from the inner region of the chamber. The ribs are circumferentially spaced and both extend the entire axial width of the suction chamber and about half the radial depth of the chamber.

3,649,132

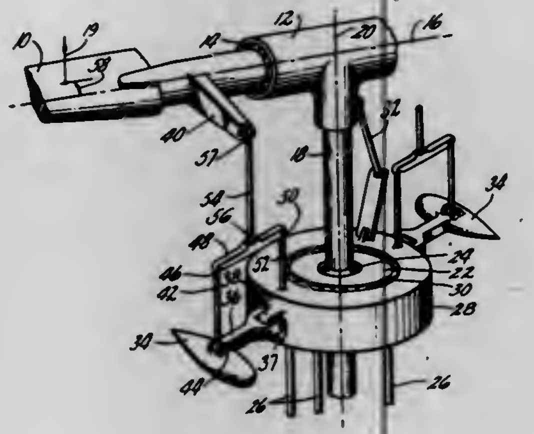
VIBRATION CONTROL FOR ROTORS

Peter J. Arcidiacono, East Hampton, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 2, 1970, Ser. No. 15,407

Int. Cl. B64c *27/72*

U.S. Cl. 416—18 **4 Claims**



A helicopter rotor has weights, one for each blade, mounted on arms which are pivoted remote from the axis of rotation of the rotor. The weights are connected through adjustable linkage mechanism with their respective blade horns in such manner that the system including all moving parts involved in the blade pitch motion can be turned to a desired frequency which is equal to the basic frequency of the blade vibration due to forward flight of the helicopter. When the tuned system is excited by aerodynamic vibratory forces at the tuned frequency, a pitch vibration of the blade results which leads to the generation of additional aerodynamic forces tending to cancel the original vibrational forces.

3,649,133

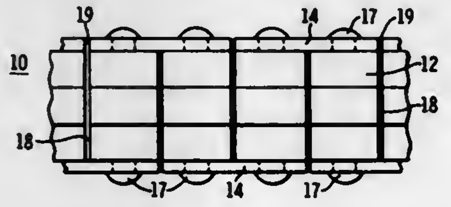
ROTOR BLADE COUPLER ARRANGEMENT

John T. Wagner, Lansdowne, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 10, 1970, Ser. No. 71,177

Int. Cl. F01d *5/10, 5/22*

U.S. Cl. 416—190 **16 Claims**



Rotor blade vibrations in an axial flow elastic fluid machine are controlled by mechanically connecting all the blades in an annular row of blades. The blades are connected by means of links secured to the upstream face and the downstream face of each blade by rivets projecting from the faces. Each link is connected to two blades to alternately connect the blades in pairs, but the links are so staggered that each blade is connected to the adjacent blade on one side by a link on the upstream face and to the adjacent blade on the other side by a link on the downstream face, thereby forming a chain completely around the row of blades.

3,649,134

CONTROL APPARATUS FOR LIMITING THE POWER RECEIVED BY A PLURALITY OF ADJUSTABLE HYDRAULIC PUMPS

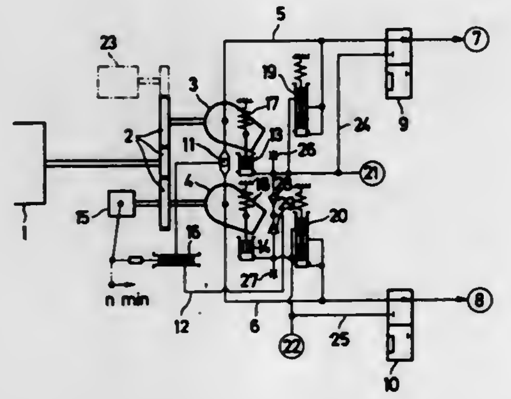
Ludwig Wagenseil, Vohringen, Germany, assignor to Constantin Rauch, Ulm Donau, Germany

Filed July 2, 1970, Ser. No. 51,858

Claims priority, application Germany, July 4, 1969, P 19 33 951.6

Int. Cl. F04b *49/00, 23/04, 41/06*

U.S. Cl. 417—213 **4 Claims**



Two pumps are driven by a prime mover and their delivery rate is controlled by a centrifugal governor which controls a valve. Upon a decrease in speed, the valve opens and the highest output pressure from the pumps is applied via individual nonreturn valves to actuate biased pistons for adjusting the pump rates.

3,649,135

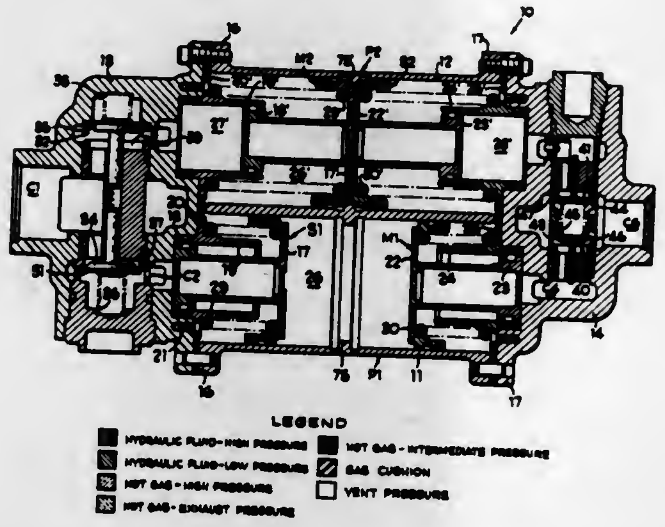
GAS-DRIVEN HYDRAULIC POWER CONVERTING PUMP

David C. Marsh, Chagrin Falls, Ohio, and Prabhakar B. R. Rao, Muncie, Ind., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 16, 1970, Ser. No. 19,893

Int. Cl. F04b *31/00, 17/00, 35/00;* **F01l** *25/02*

U.S. Cl. 417—340 **16 Claims**



A free piston pump using a resilient pressurized gas for driving a liquid pump. The pump is a double cylinder type with the cylinders operating out of phase with each cylinder including two opposed pistons of different areas and driven in the power stroke by a gas supply pressure and returned by springs. A common control valve is connected to and simultaneously controls both cylinders by admitting gas to and between the larger area pistons and thereby actuating the smaller area pistons, coupled thereto, for pumping liquid. An arrangement is provided to cushion the pistons and control valve spool.

3,649,136

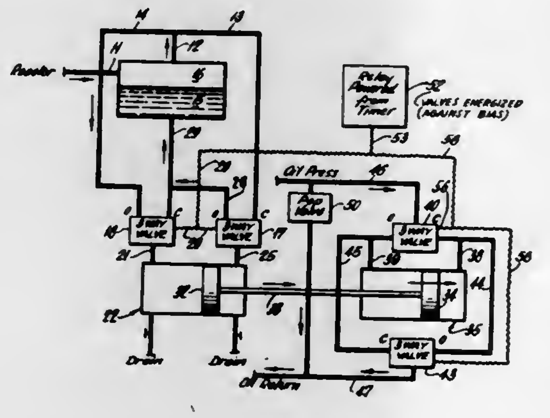
LOW DIFFERENTIAL PRESSURE GAS FLOW SYSTEM

Louis E. Ruidisch, Fishkill, N.Y., assignor to Texaco, Inc., New York, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,187

Int. Cl. F04b *17/00, 35/00;* **F01l** *25/02*

U.S. Cl. 417—404 **3 Claims**



A low differential pressure, gas flow system particularly for laboratory uses. It has a cylinder and piston connected at the ends of the cylinder to give double acting pumping of a gas for circulation to and from a reactor at accurate and surge-free rates. The piston is driven by a power cylinder and piston and there are valves actuated in synchronism with the power strokes to switch the end connections of the cylinder for the gas pumping action, without pressure surges.

3,649,137

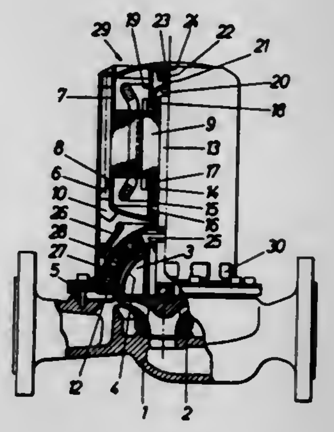
CENTRIFUGAL PUMP WITH MAGNETIC COUPLING

Nikolaus Laing, 7141 Aldingen near Stuttgart, Hofener 3537, Germany

Filed Nov. 30, 1970, Ser. No. 93,826

Int. Cl. F04b *17/00, 35/04;* **H02k** *5/10, 49/00;* **H02p** *15/00*

U.S. Cl. 417—420 **28 Claims**



A motor driven centrifugal pump with magnetic transmission comprising a permanent magnetic pole ring and a soft iron magnetic pole ring whereby means are provided for reducing the magnetic flux which determines the torque and which flows through the two pole rings.

3,649,138

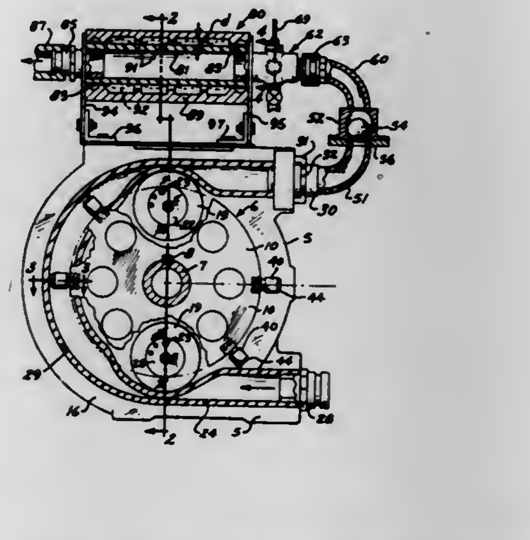
PUMP APPARATUS FOR SLURRY AND OTHER VISCOUS LIQUIDS

Robert B. Clay, Bountiful, and William A. Doering, Salt Lake City, both of Utah, assignors to Ireco Chemicals

Filed Mar. 4, 1970, Ser. No. 16,359

Int. Cl. F04b *43/12*

U.S. Cl. 417—477 **6 Claims**



A peristaltic pump is operated by squeezing rollers pressing on an elastic tube supported inside a semicylindrical chamber. The collapsed tube is reopened by traveling side rollers which press the tube transversely. This expedites refilling and increases pump capacity. A surge chamber consisting of an elastic hollow cylinder housed inside a tubular housing provided with inwardly projecting annular ribs smooths out both minor and major surges in flow of the viscous material.

3,649,139

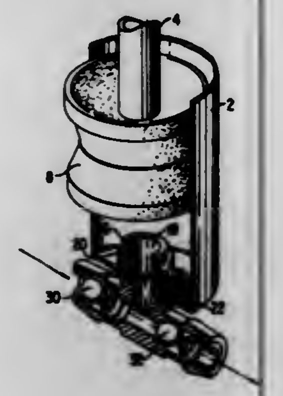
APPARATUS FOR REMOVING CRANKCASE OIL

Courtenay M. Thompson, 3354 Burke Road No. 124, Pasadena, Tex.

Filed Sept. 24, 1970, Ser. No. 75,159

Int. Cl. F04b *21/02, 39/10*

U.S. Cl. 417—568 **3 Claims**



A hand-operated piston pump having a T-connection at the base thereof in fluid communication with the pump, the T-connection having alternately acting freely movable double check valves. Flexible tubing is connected to each lateral end of the T-connection. One tube has a terminal end which is sufficiently rigid to permit insertion into the dip stick opening in the crankcase of an internal combustion engine for draining the lubricating oil from the crankcase.

3,649,140

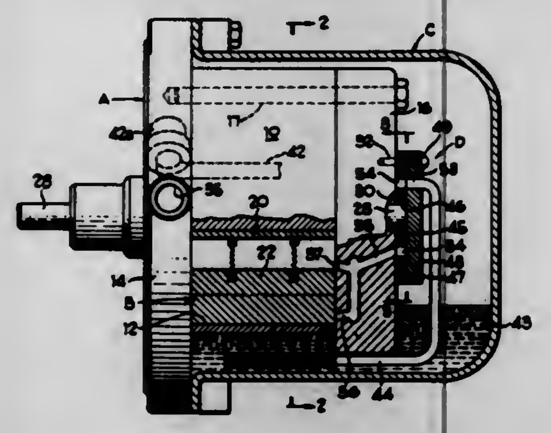
OIL METERING SYSTEM FOR ROTARY COMPRESSOR

Lester E. Harlin, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 11, 1970, Ser. No. 36,161

Int. Cl. F01c *21/04;* **F04c** *29/02, 29/04*

U.S. Cl. 418—87 **3 Claims**



An oil metering system for a rotary compressor of the sliding vane type in which a valve assembly continuously meters oil flow into the compressor during its operation and is effective to prohibit oil flow into the compressor during its "off" cycle, thereby preventing reverse rotation of the compressor rotor previously caused by balancing or equalizing of the inlet and outlet pressures internally of the compressor.

3,649,141

ROTARY PUMP WITH INTEGRAL ROTOR CONSTRUCTION

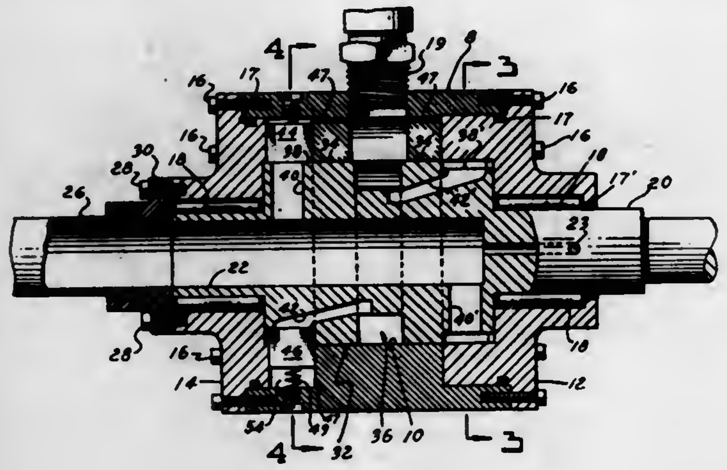
Charles E. Belcher, 811 Silver Street, Agawam, Mass.

Filed Oct. 14, 1970, Ser. No. 80,591

Int. Cl. F01c *11/00;* **F03c** *3/00*

U.S. Cl. 418—186 **5 Claims**

A rotary pump of unitary rotor construction disposed within a housing having a cylindrical inner surface. A tubular shaft extends from one end of the rotor and supplies fluid to the axis of the rotor. A pair of axially spaced cylindrical disks concentric with the shaft form with the inner wall of the housing a pump discharge chamber. A pair of cylindrical pumping cams eccentrically formed on the shaft are disposed outwardly of said cylindrical disks with the eccentricity or high point of one cam being diametrically opposite the high point of the other. A pair of radially movable gate members urged into engagement with diametrically opposed surfaces of each of said cams define with the outer surface of the cam, the housing and concentric disks four separate fluid chambers, one on each side of said gates. The gates engaged with one cam lie in a plane approximately perpendicular to a plane containing the gates engaged with the other cam. A suction port extends radially from the bore of the tubular shaft to the outer surface of each cam and a pressure or discharge port extends axially from the outer surface of each cam into communication with the annular discharge chamber disposed intermediate said cams. The suction and pressure ports of each cam are located on opposite sides of its high point and located diametrically opposite the suction and discharge ports respectively of the other cam.



3,649,142

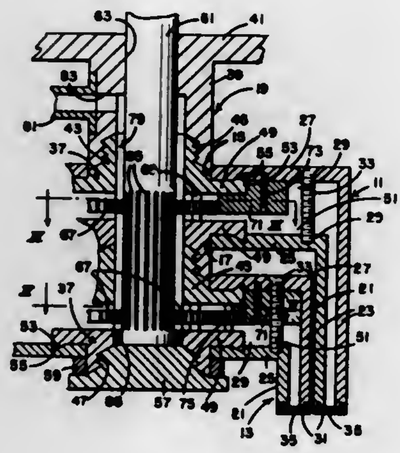
APPARATUS FOR EXTRUDING NET-LIKE STRUCTURES

Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Oct. 29, 1969, Ser. No. 872,006

Int. Cl. B29f *3/00*

U.S. Cl. 425—109 **5 Claims**



Apparatus for making tubular net-like structures which includes a pair of cup-shaped extrusion members mounted in nested but spaced-apart relationship on a fixed support, which extends axially therethrough and through which flowable strand-forming material is delivered into the extrusion members, and means for relatively rotating the extrusion members.

3,649,143

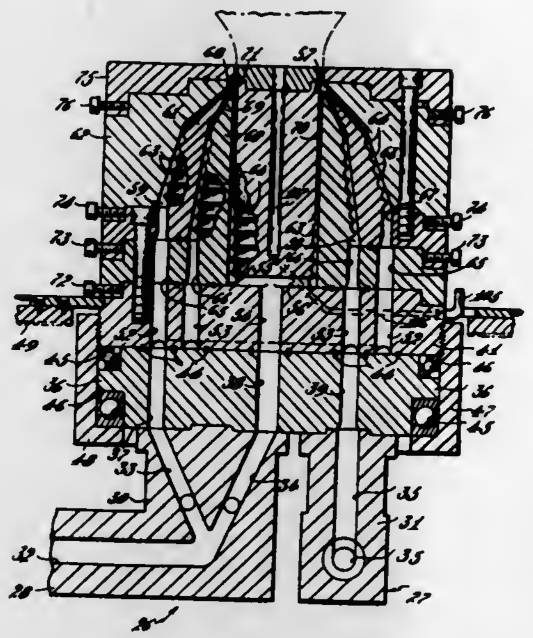
COMPOSITE TUBULAR FILM APPARATUS

Edward G. Papesh, Palmer, and Edward F. Papesh, Wilbraham, both of Mass., assignors to Pierson Industries, Inc., Boston, Mass.

Filed May 1, 1969, Ser. No. 820,946

Int. Cl. B29d *23/04*

U.S. Cl. 425—114 **30 Claims**



Blown tubular die apparatus for extruding laminated film. Die holder and head relatively rotatively engaging at a transverse interface. Manifold connectible to different extruder supplies and for selective ordering of the lamination materials.

Nested mandrels providing spiral homogenizing chambers exiting to a common, internal extrusion orifice. Means for relatively rotating the die head and holder, for centering the mandrels, and for sizing the extrusion.

3,649,144

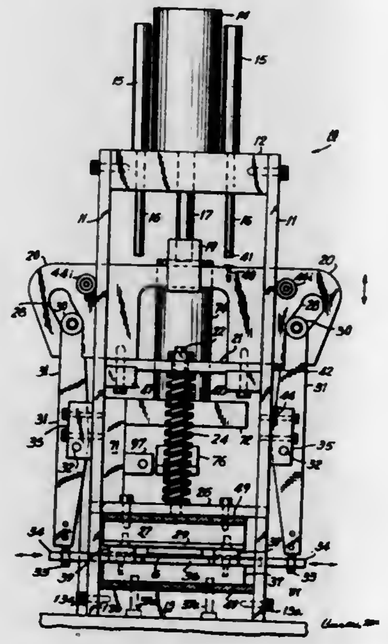
DEVICE FOR FORMING BELT LOOP BLANKS

Louis William Breck, Jr., 8 Joe Turner Court, El Paso, Tex.

Filed Oct. 26, 1970, Ser. No. 83,823

Int. Cl. B29c *19/02, 17/04*

U.S. Cl. 425—136 **19 Claims**



A machine has been provided for automatically hot crimping a fabric tube or string containing thermoplastic material either as part of the fabric or as thermoplastic insert in said tube; from this tube the belt loop blanks are formed by crimping appropriate length of the tube. The machine which accomplishes this is comprised of a heated top die member vertically reciprocating in a guide means therefor; a heated, stationary bottom die member; a pair of crimping die members horizontally and each to the other oppositely reciprocating and operatively engaged with said bottom die member means for urging downwardly said top die members operatively interconnected to said means for urging downwardly said top die member; means for retracting upwardly said top die member; means for retracting upwardly said top die member including means for limiting upward retraction thereof; means for limiting upward retraction thereof; means for withdrawing outwardly said crimping die members operatively interconnected to the means for retracting upwardly said top die member; means for feeding said tube into a crimping position, said means for feeding being operatively interconnected with said means for retracting upwardly said die; means for severing a crimped belt loop blank said means for severing being operatively interconnectable with means for feeding said string; and, means for automatically cycling said machine including means for monitoring the proper operation thereof.

3,649,145

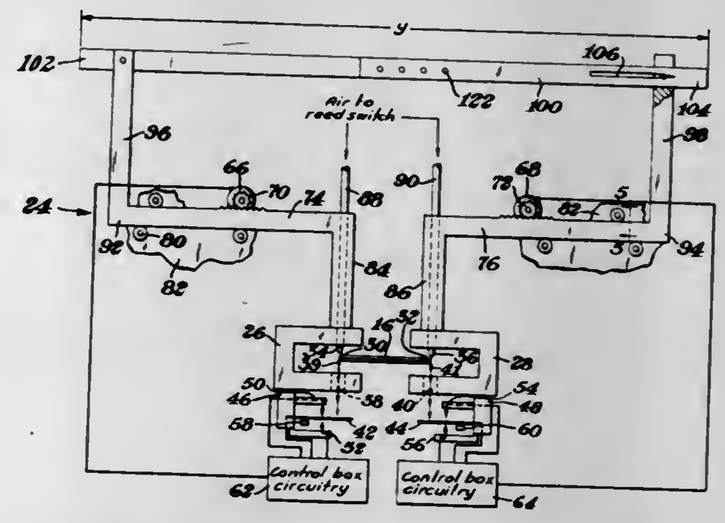
FILM WIDTH CONTROLLER

Harold L. Hearns, and Raymond D. Behr, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 10, 1969, Ser. No. 815,157

Int. Cl. B29d *7/02*

U.S. Cl. 425—140 **1 Claim**



A device for automatically controlling and correcting the size of film produced by what is generally designated as the "bubble" process. The device basically comprises a flow block plate valve mechanism which blocks, partially blocks, or permits free flow of air into the bubble responsive to the movement of opposed film edge followers sensing film width deviations. The edge followers operate without the need for a fixed reference point, and by employing pneumatic means whereby contact and bruising of the film edges by such followers is avoided.

3,649,146

APPARATUS FOR FORMING MOLD MATERIAL

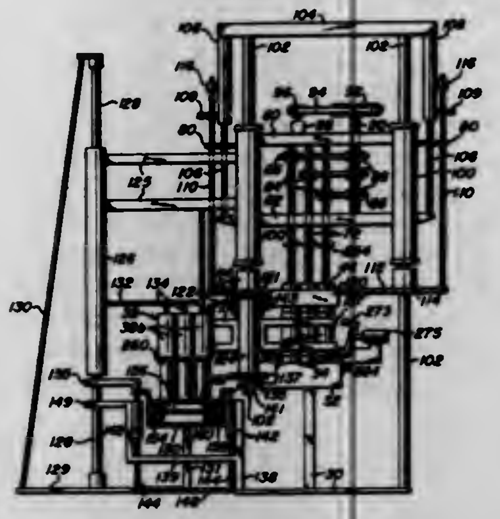
Jesse C. Moore, Fort Recovery, Ohio, assignor to Norman H. Kuhlman, St. Marys, Ohio, a part interest

Original application Jan. 6, 1966, Ser. No. 519,179, now Patent No. 3,483,600. Divided and this application Dec. 4, 1969, Ser. No. 882,031

Int. Cl. B28b *21/26*

U.S. Cl. 425—162 **1 Claim**

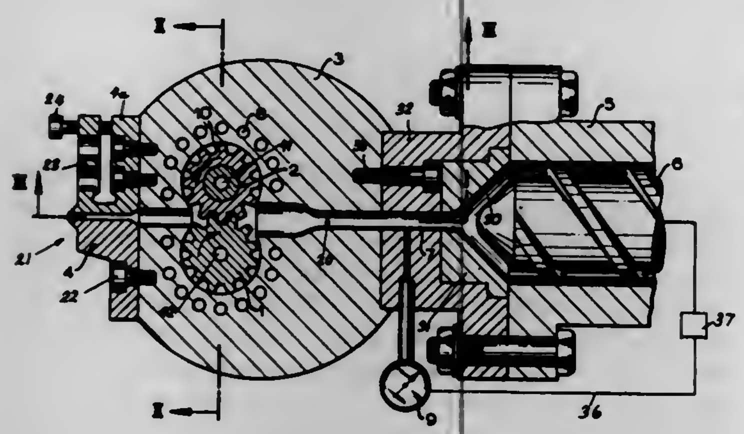
Apparatus for automatic high speed seriatim production of bodies of molded material. Feeder means discharge mold material into one or more cavity members while packer means operate upon the mold material within the cavity members. The cavity members are moved to a discharge position after mold material has been formed therein. Ejector means operate to move the molded material from the cavity members to receive means while other cavity members are receiving mold material and while the packer means are moving with respect to the cavity members which are receiving mold material. The receiver means are moved to a position adjacent the mold cavity members as molded material begins to move from the mold cavity members. The receiver means and the ejector means then move together as molded material is moved by the ejector means from the mold cavity members. Items of the molded material are automatically arranged in closely spaced seriatim relationship upon the receiver means for movement from the apparatus.



3,649,147
EXTRUDER NOZZLE FOR PRODUCING PLASTIC FOILS

Rudolf Paul Fritsch, Stuttgart-Weilimdorf, Germany, assignor to Werner & Pfleideser, Stuttgart-Feuerbach, Germany

Filed Oct. 18, 1968, Ser. No. 768,824
Claims priority, application Germany, Oct. 24, 1967, W 45036
Int. Cl. B29f *3/06*
U.S. Cl. 425—170 **5 Claims**

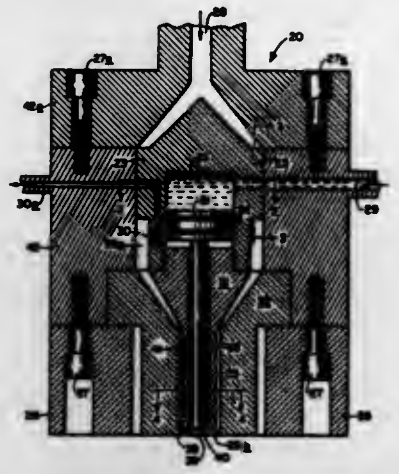


A nozzle for producing foils from plastic material, preferably thermoplastic synthetic plastic material, has a flow passage lengthwise of the casing of the nozzle. The passage defines at one end a wide exit slit and at the other end a feed port of annular configuration. Meshing gears of a gear pump interposed intermediate the exit slit and the feed port drive the plastic material through the flow passage and toward the exit slit. The widths of the slit, the gears and the flow passage are such that the flow of plastic material between the gears and the exit slit is of substantially uniform width whereby a substantially uniform gauge and strength characteristics of the foil across its width are obtained.

3,649,148
APPARATUS FOR PARISON EXTRUSION

Robert E. Waltman; John B. Coast, and Gary A. Hinz, all of Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 695,636, Jan. 4, 1968, now abandoned. This application Dec. 24, 1969, Ser. No. 887,939
Int. Cl. B29d *23/03, 23/04*
U.S. Cl. 425—192 **17 Claims**

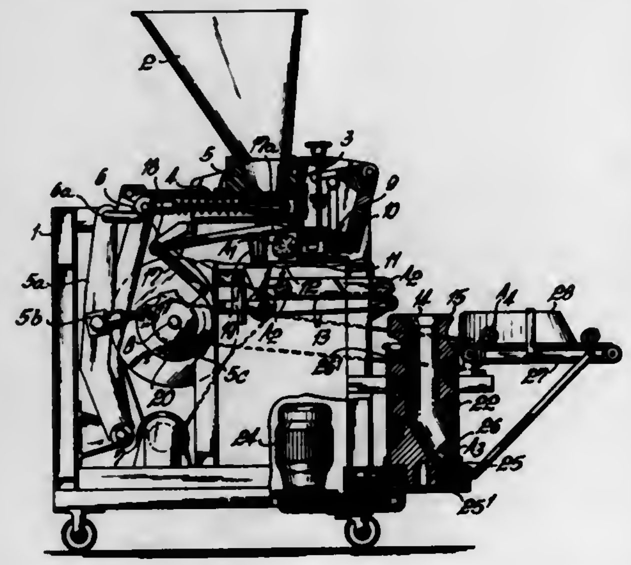


A process and apparatus for programming the wall thickness of thermoplastic parison extrusions for subsequent conversion to blow-molded plastic articles. The apparatus for forming the parison includes a mandrel or core pin and a die assembly wherein the mandrel is made from a material having predictable and repeatable elastic properties and has enclosed therein a piston and piston rod. The piston rod extends the full length of the mandrel and is connected to the piston on the rod's opposite end. The piston is contained in a chamber that is connected to a hydraulic fluid source. The wall thickness of the formed parison is changed by varying the size of the extrusion orifice through expansion or contraction of the mandrel produced by the application or release of hydraulic pressure on the top of the piston. The die assembly is particularly suited for extrusion of parisons from heat sensitive thermoplastic material such as polyvinyl chloride since no sliding surfaces are utilized which are known to trap and cause degradation of heat sensitive thermal plastics.

3,649,149
DOUGH HANDLING AND SHAPING APPARATUS

Kate Kemper, Longestrasse 8-10, Neuenkirchen Ueber Gutersloh, Germany

Filed Nov. 4, 1969, Ser. No. 873,960
Claims priority, application Germany, Nov. 7, 1968, P 18 07 400.5; Mar. 11, 1969, P 19 12 206.6; Sept. 16, 1969, P 19 46 703.9
Int. Cl. A21c *5/00, 11/10*
U.S. Cl. 425—241 **13 Claims**



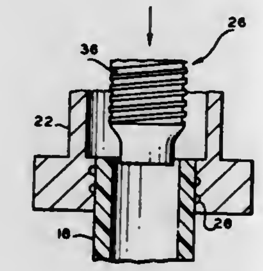
The invention deals with a certain bakery machine or system, which tends to fully automate treatment and delivery of dough or like mass, its measuring and dividing into dough pieces or portions, successively, and conditioning the same in view of their weight, dimensions and consistency so that variegated plastic or dough products may be directed and fed into associated kneader or rounder devices, preferably at one and the same time and in a most economical, hygienic and speedy manner for subsequent delivery into bakery ovens or like treatment equipment.

More specifically, the invention envisions the sensing of the locations of the dough pieces, the influences on the uniformity of shape, density and fermentation of such individualized bakery products, in particular of rolls, buns and the like, the coordination of various operations of a combined dough dividing and kneading machinery and other advantages and capabilities of the latter inherently possessed by the present invention.

3,649,150
STELLITE NECK FORMING PLUG FOR BLOW MOLDING ORIENTED ARTICLES

Dixie E. Gilbert, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Nov. 26, 1969, Ser. No. 880,326
Int. Cl. B29c *17/07, 1/04*
U.S. Cl. 425—297 **6 Claims**

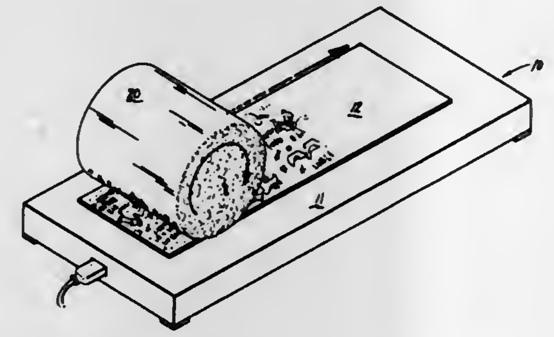


Jaw means for grasping an open end of a tubular parison and a Stellite neck forming plug movable axially so as to enter the parison and force the parison out into conformity with a molding zone of the jaw means. Means are provided for moving the plug and for forming and blow molding the parison. The plug has a first section of reduced diameter and a second adjacent section of larger diameter.

3,649,151
APPARATUS FOR DECORATING CANDLES

Mitzi R. Mathews, Portola Valley, Calif., assignor to Bluegate Candle Company, Montara, Calif.

Filed Sept. 4, 1969, Ser. No. 855,198
Int. Cl. B29c *21/00*
U.S. Cl. 425—385 **3 Claims**

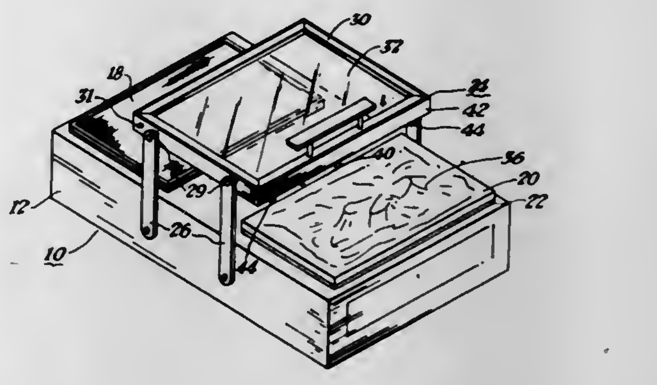


A planar mold plate having an embossing surface comprising a raised negative image is used for decorating a candle. The mold plate has a plurality of drain passages therethrough to conduct away wax melted from the candle side wall. A hot plate supports and heats the mold plate to candle wax melting temperature so that a candle rolled across the embossing surface receives a decorative image on its side wall.

3,649,152
VACUUM FORMING MACHINE

John W. Knack, Sr., Southfield, Mich., assignor to Academic Dimension Systems, Inc., Southfield, Mich.

Filed July 9, 1970, Ser. No. 53,511
Int. Cl. B29c *17/00*
U.S. Cl. 425—388 **7 Claims**

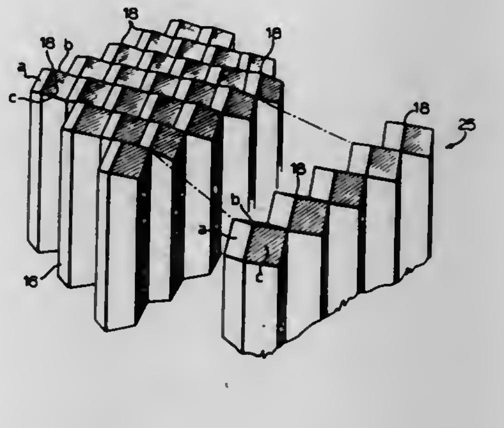


A vacuum forming machine comprises a base structure, a porous plate spacedly mounted on the base structure, and a blower mounted on the base for drawing air through the porous plate. A clamping frame for plastic sheets conforms closely to the perimetric contour of the porous plate. The frame is pivoted for movement to a heating element on the base and to the porous plate, which is then inserted through an opening in the frame. A leveling arrangement is mounted on the frame and/or the porous plate, for spacing the frame from the base and for aligning the frame with the adjacent edge of the porous plate.

3,649,153
FACETED CORE

Peter E. Brudy, 224 California Avenue, Windsor 11, Ontario, Canada

Filed Nov. 4, 1969, Ser. No. 873,935
Claims priority, application Great Britain, Nov. 4, 1969, 32,187/69
Int. Cl. B29c *1/00*
U.S. Cl. 425—469 **6 Claims**



A plate element constructed to simulate a plurality of hexagonal pins aligned so that their center lines are in a common plane and such that adjacent pins abut at a common face. The edge of the plate element normal to the hexagonal pins is cut to exhibit three, mutually perpendicular, square, optical facets for each hexagonal pin. The facets in each group of three are parallel, respectively with the facets in every other group of three.

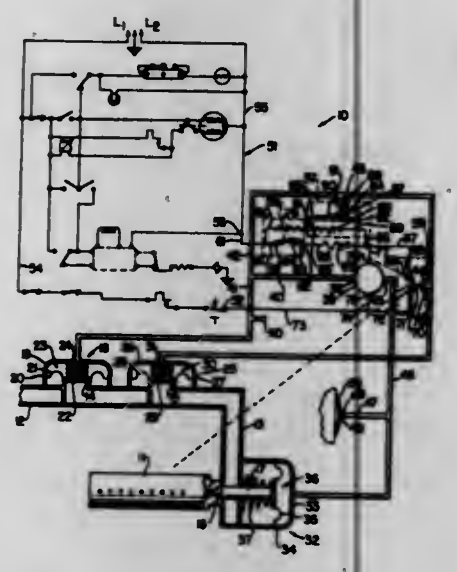
3,649,154
PNEUMATIC CONTROL SYSTEM AND METHOD

Reed A. Palmer, and Raymond J. Fox, both of Glendale, Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Continuation of application Ser. No. 772,642, Nov. 1, 1968, now abandoned. This application July 27, 1970, Ser. No. 64,079

Int. Cl. F23n *5/22*

U.S. Cl. 431—6 **20 Claims**



This disclosure relates to a pneumatic control system for a fuel burning apparatus wherein the pneumatic source for actuating an actuator to interconnect the fuel source to the burner means is only created after an electrical ignition means for the burner means has reached ignition temperature. In addition, the conduit means leading from the pneumatic source to the pneumatically operated actuator means has an opening means therein which is only closed after the ignition means reaches its ignition temperature.

3,649,155
CONTROL SYSTEM FOR A MULTIPLICITY OF MUFFLE BURNERS

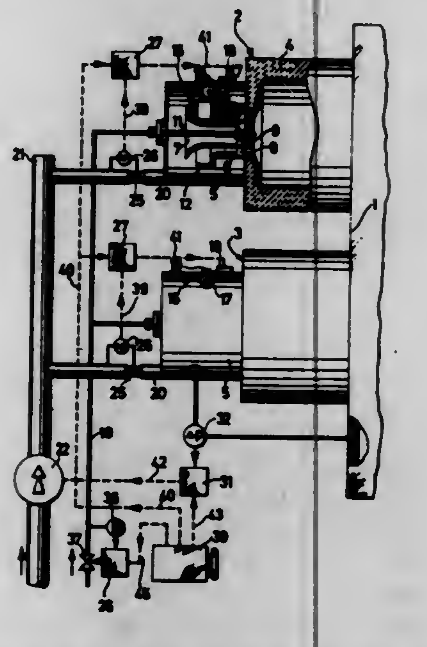
Harendra Nath Sharan, Seuzach, Zurich, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Nov. 16, 1970, Ser. No. 89,563

Claims priority, application Switzerland, Nov. 17, 1969, 17026/69

Int. Cl. F23n

U.S. Cl. 431—19 **6 Claims**



The air flows through the outer annular ducts of the muffle burners and are controlled via the slidable sleeves which are moved in accordance with the load as measured in the air header and a preset value of the load. Also, should the differential pressure change between a point upstream of the swirl means in the inner duct and a point downstream of the swirl means, a controller changes the blower speed to compensate for the change in differential pressure.

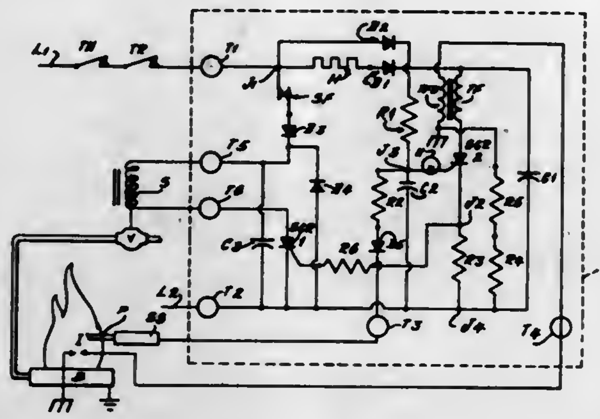
3,649,156
FLUID FUEL BURNER CONTROL SYSTEM

Leonard E. Conner, St. Louis, Mo., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Nov. 13, 1969, Ser. No. 876,472

Int. Cl. F23n *5/00*

U.S. Cl. 431—78 **5 Claims**



Fluid fuel burner control system utilizing solid state components, and in which the several components, with their interconnecting circuitry, can be compactly mounted upon a panel or in a box, and installed in any desired location with a limited number of terminals for accommodating single conductors leading to the respective legs of an alternating current source of electrical energy, the fuel valve, an igniter and a flame sensor, which may be located remotely from the compact control panel or close to it, as desired. The circuitry of the system places the operation of the fuel valve under the control of an igniter circuit transformer and places the energization of the igniter circuit transformer under the control of a flame sensor, while the usual safety switch is responsive only to current which traverses the primary of the transformer which energizes the igniter, and the interruption of current flow through the transformer depends upon the electrical conductivity of flame at the burner.

3,649,157
GAS MANTLE

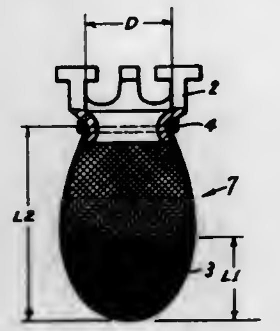
Friedrich W. Klauer, Bachstelzenweg 15, and Fritz W. Mewes, Braunlager Strasse 24, both of Berlin, Germany

Filed June 12, 1970, Ser. No. 45,627

Claims priority, application Germany, June 13, 1969, P 19 30 249.9; June 26, 1969, P 19 33 209.9; Oct. 10, 1969, P 19 52 178.9

Int. Cl. F21h *1/02*

U.S. Cl. 431—100 **19 Claims**



A gas mantle for illumination purposes for gases having a calorific content higher than about 7,000 (K.cal.)/Nm³.

CHEMICAL

3,649,158
PROCESS FOR DYEING LOCKS OF HUMAN HAIR WITH TETRAGOLIUM SALTS

Gregoire Kalopissis, Paris, and Andree Bugaut, Boulogne, both of France, assignors to Societe Anonyme dite: L'Oreal

Filed Aug. 5, 1968, Ser. No. 749,958

Claims priority, application Luxembourg, Aug. 8, 1967, 54,267; Dec. 4, 1967, 55,016

Int. Cl. D06p *3/04, 3/08*

U.S. Cl. 8—10 **6 Claims**

A process and composition for dyeing keratinic fibers, particularly, human hair, in which tetrazolium salts are applied to the fibers in a colorless oxidized state and reduced to colored insoluble formazanes by reducing agents. The reducing agents are used so that the keratinic bonds are not disrupted and can be used at the same time that a permanent wave process is applied. Also, various shades can be obtained using leuco derivative dyes which become oxidized when functioning as reducing agents.

3,649,159
HAIR COLORING METHOD USING A PEROXYDIPHOSPHATE OXIDANT

Bernard Cohen, and Paul Raimond Mucenieks, both of Trenton, N.J., assignors to FMC Corporation, New York, N.Y.

Filed June 3, 1968, Ser. No. 733,830

Int. Cl. A61k *7/12*

U.S. Cl. 8—10.2 **6 Claims**

Hair and other keratinous substances are colored or dyed by being contacted with a mixture containing, as essential ingredients, an "oxidation dye" and either an ammonium or an alkali metal peroxydiphosphate; said "oxidation dye" is oxidized and condensed to a colored or natural appearing, substantially water-insoluble state in-situ and remains fixed within said hair or keratinous substance.

3,649,160
DYEING HUMAN HAIR WITH OXIDATION BASES AND AN INDOLINE COUPLER

Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne sur Seine, and Hubert Gaston-Breton, Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed May 8, 1969, Ser. No. 823,168

Claims priority, application France, May 17, 1968, 56102

Int. Cl. A61k *7/12*

U.S. Cl. 8—10.2 **4 Claims**

Keratinic fiber dye compositions comprising a para or ortho diamino or amino-hydroxy aromatic or heterocyclic oxidation dye and an indoline derivative coupling agent; and the process of dyeing human hair with this composition and an oxidizing agent.

3,649,161
METHOD FOR ONE-BATH DYEING OF BLENDS CONSISTING OF SYNTHETIC AND CELLULOSE FIBERS

Hans-Ulrich Von der Eltz, Frankfurt am Main, and Richard Gross, Munich, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft volmals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Mar. 28, 1969, Ser. No. 811,632

Claims priority, application Germany, Apr. 2, 1968, P 17 69 091.4

Int. Cl. D06p *3/82*

U.S. Cl. 8—21 **3 Claims**

Process for simultaneously dyeing by the one-bath method with dispersion and reactive dyestuffs blends of synthetic and cellulose fibers in an alkaline medium by the thermosol process, wherein as dispersion dyestuff a 1,4-diamino-2-alkylsulfonyl-anthraquinone in which the amino group in 4-position is substituted by a phenyl radical is used.

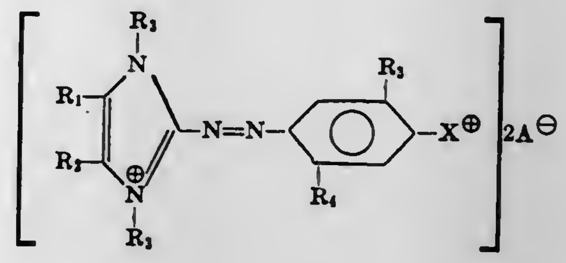
3,649,162
BISCATIONIC MONOAZO DYES FOR ACID-MODIFIED NYLON

Daniel Shaw James, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 27, 1970, Ser. No. 58,706

U.S. Cl. 8—41 B **4 Claims**

Red to rubine biscationic monoazo dyes having the formula



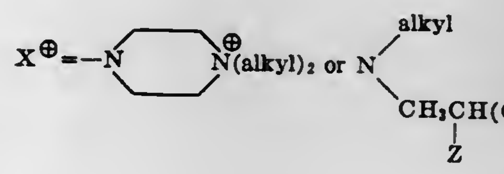
wherein

R_1 and R_2=H, alkyl or phenyl

R_3=alkyl or benzyl

R_4 x H,alkyl,alkoxy,Cl,NHCOalkyl or $NHCOC_6H_5$

R_5=Cl, alkyl or alkoxy



wherein

n=O or l

Z=H when n=O

Z=OH when n=1

$$Y^{\oplus}=\overset{\oplus}{N}R_6R_7R_8 \text{ or } NHCOCH_2\overset{\oplus}{N}R_6R_7R_8$$

wherein

R_6=alkyl

R_7=alkyl or hydroxyalkyl

R_8=alkyl, hydroxyalkyl or benzyl or

R_7 and R_8 together are piperidino or pyrrolidino

R_6, R_7 and R_8 together or pyridinium

A^- is anion and

alkyl=one to four carbon atoms

are useful for dyeing nylon styling yarns, have bright shades with good buildup and lightfastness on acid-modified nylon with negligible affinity for unmodified nylons when dyed thereon at a pH of from about 6 to about 6.5.

3,649,163

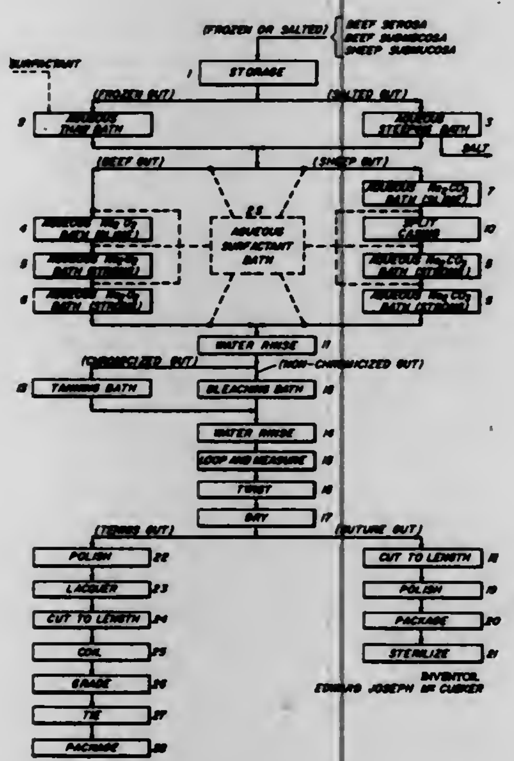
METHOD FOR REMOVING NONCOLLAGENOUS MATTER FROM MAMMALIAN GUT

Edward Joseph McCusker, Danbury, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 25, 1968, Ser. No. 715,744

Int. Cl. A61l *17/00;* **A63b** *51/02;* **D01f** *5/00*

U.S. Cl. 8—94.11 **1 Claim**



Gut strands used to manufacture sutures, tennis racquet stringing and such are treated at least once with an aqueous nonionic surfactant solution consisting essentially of from about 0.2 to about 5 percent surfactant to remove a portion of the noncollagenous matter therefrom. Subsequent treatment of the gut with aqueous alkaline solutions removes the remaining portion of the noncollagenous matter to produce a collagen strand substantially free from noncollagenous matter (i.e., fats and noncollagenous protein). Strands so treated are of light color and high strength. Such strands may be uniformly tanned. The strands resist undesirable color intensification at elevated temperatures and do not discolor suture tubing fluids.

3,649,164

ACTIVATION OF HYDROGEN PEROXIDE BLEACH SOLUTIONS WITH PEROXYDIPHOSPHATE

Robert E. Yelin; Leonard A. Sitver, both of Willingboro, and Ralph F. Villiers, Trenton, all of N.J., assignors to FMC Corporation, New York, N.Y.

Filed Aug. 21, 1970, Ser. No. 66,056

Int. Cl. D06l *3/02*

U.S. Cl. 8—111 **3 Claims**

Bleaching of textile fabrics with aqueous alkaline hydrogen peroxide is improved by the addition to the bleach liquor of small amounts of peroxydiphosphate.

3,649,165

SOIL-RELEASE CHARACTERISTICS OF TEXTILE MATERIALS

Grady L. Cotton, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Aug. 4, 1966, Ser. No. 570,154. The portion of the term **of the patent subsequent to Apr. 9, 1985, has been disclaimed.**

Int. Cl. D06m *9/14, 15/14, 13/38*

U.S. Cl. 8—115.5 **12 Claims**

The soil-release properties imparted to textile materials through treatment with a copolymer containing acidic groups are enhanced by utilizing an ethoxylated alkyl phenol in conjunction with the copolymer. Conventional cross-linking agents and modifying resins may also be used.

3,649,166

STERILE DRYCLEANING COMPOSITION AND METHOD FOR STERILIZING FABRICS

Paul A. Wolf, and Francis J. Bobalek, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 29, 1969, Ser. No. 888,885

Int. Cl. D06l *1/04*

U.S. Cl. 8—142 **3 Claims**

A method for sterilizing drycleaning fluids and fabrics cleaned therein which consists of incorporating into the drycleaning fluid from 0.005 to about 1.0 percent by weight (50 to 10,000 p.p.m.) of 2,2-dibromo-2-cyanoacetamide.

3,649,167

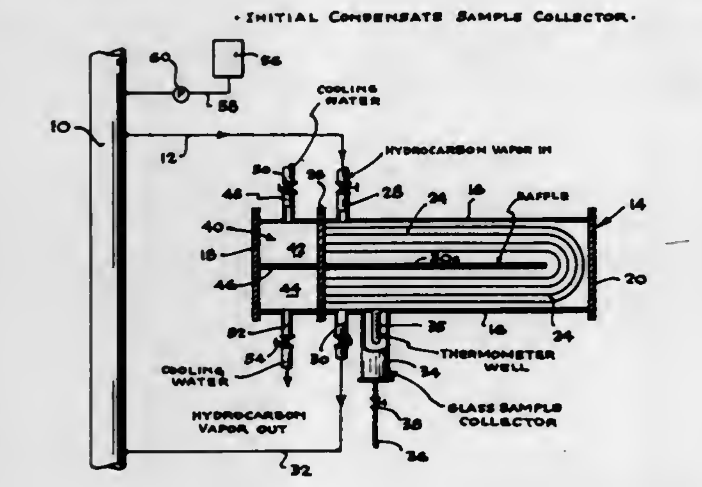
CORROSION INHIBITION

Roy D. Sawyer, Toledo, Ohio, assignor to Nalco Chemical Company, Chicago, Ill.

Filed Mar. 3, 1970, Ser. No. 16,058

Int. Cl. C23f *14/02*

U.S. Cl. 21—2.5 **4 Claims**



An improved method and apparatus for protecting refinery equipment subject to condensate corrosion. Neutralizing inhibitors, such as morpholine, are added to refinery systems based on the pH of the initial condensate which is determined by using a special heat exchange technique.

3,649,168

PROCESS FOR PRODUCING BASIC ZIRCONIUM SULFATE AND ZIRCONIA FROM SODIUM SILICOZIRCONATE

Bernard H. P. Fehr, and Joseph Gascon, both of Thann, France, assignors to Fabriques De Produits Chimiques De Thann Et De Mulhouse, Thann (Haut Rhine), France

Continuation-in-part of application Ser. No. 649,062, May 25, 1967, now Patent No. 3,445,199, which is a continuation-in-part of application Ser. No. 381,149, July 8, 1964. This application Sept. 5, 1968, Ser. No. 757,752. The portion of the term of this patent subsequent to May 20, 1986, has been disclaimed.

Int. Cl. C22b *59/00*

U.S. Cl. 23—18 **6 Claims**

Sodium silicozirconate is treated with dilute hydrochloric acid at a temperature of 20°–60° C., the concentration of the acid being subject to specified maxima (varying with temperature) to give a stable colloidal silica solution, and precipitating zirconium sulphate therefrom in a known way.

3,649,169

TREATMENT OF GASES

Thomas Nicklin, Middleton, Manchester, and Frederick Farrington, Sale, both of England, assignors to The Gas Council, London, England

Filed June 4, 1969, Ser. No. 830,511

Int. Cl. B01d *53/34*

U.S. Cl. 23—25 **4 Claims**

Removal of organic sulphur compounds, carbon disulphide and carbon oxysulfide, from inorganic gases, such as air, or exhaust gases, polluted therewith, is effected by contacting a mixture of steam and the gases to be treated with a catalyst comprising uranium oxide, and, preferably a carrier such as alumina.

3,649,170

PROCESS FOR THE PRODUCTION OF HYDROXYLAMMONIUM SALTS

Heinz Heine, and Rudolf Gerken, both of Farbenfabriken Bayer AG, Krefled-Uerdingen, Germany

Continuation of application Ser. No. 607,882, Jan. 9, 1967, now abandoned. This application Jan. 21, 1970, Ser. No. 4,448

Claims priority, application Germany, Jan. 21, 1966, F 48222

Int. Cl. C01b *21/14*

U.S. Cl. 23—50 **4 Claims**

Process for the production of hydroxylammonium salts by reduction of nitric oxide with hydrogen in dilute mineral acid solution in the presence of noble-metal catalysts and modifiers such as formic acid, water-soluble formates, oxalic acid, chloral hydrate or carbon monoxide.

3,649,171

PREPARATION OF ALKALI METAL TETRATITANATE

David P. Fields, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 18, 1970, Ser. No. 12,431

Int. Cl. C01g *23/00*

U.S. Cl. 23—51 **5 Claims**

Alkali metal titanates are produced substantially exclusively in the tetratitanate form in a process in which mineral rutile is the titanium dioxide source by particular control of reaction parameters including particle size of reaction mixture components to influence the titanate form obtained.

3,649,172

ZINC BORATE OF LOW HYDRATION AND METHOD FOR PREPARING SAME

Nelson P. Nies, Laguna Beach, and Richard W. Hulbert, Anaheim, both of Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Continuation-in-part of application Ser. No. 648,968, June 26, 1967, now Patent No. 3,549,316. This application Dec. 21, 1970, Ser. No. 100,526

Int. Cl. C01b *25/00*

U.S. Cl. 23—59 **11 Claims**

Crystalline zinc borate having the composition $2ZnO\cdot 3B_2O_3\cdot 3.3$–$3.7\ H_2O$ and its preparation by reaction of alkali metal borate with a zinc salt in an aqueous solution.

3,649,173

STABILIZED AMMONIUM NITRATE

Rolf Falck-Muss, Arzew, Algeria; Daniel J. Newman, Jackson Heights, N.Y., and Sydney Atkin, Springfield, N.J., assignors to Chemical Construction Corporation, New York, N.Y.

Filed Jan. 22, 1970, Ser. No. 5,119

Int. Cl. C01c *1/18*

U.S. Cl. 23—103 **9 Claims**

Solid ammonium nitrate particles are stabilized against thermal shock and cracking at phase transition temperatures by the inclusion of small but effective amounts of silicofluoride compound, a phosphate compound and a sulfate compound in combination, within the solid ammonium nitrate particles.

3,649,174

PROCESS FOR PREPARING ANTIMONY PHOSPHATE

Sixdeniel Faria, Towanda, Pa., assignor to Sylvania Electric Products Inc.

Filed Sept. 26, 1969, Ser. No. 861,493

Int. Cl. C01b *25/00, 25/16, 25/26*

U.S. Cl. 23—105 **8 Claims**

Anhydrous antimony orthophosphate is prepared by reacting antimony oxide and concentrated hydrochloric acid, under controlled temperature conditions, and slowly adding to the reactant solution a water soluble orthophosphate source in sufficient concentration to precipitate antimony phosphate. After digesting for about 1 hour, the solid antimony phosphate is removed and washed with dilute phosphoric acid, followed by deionized water. Especially preferred as a water soluble othophosphate source is diammonium hydrogen phosphate.

3,649,175

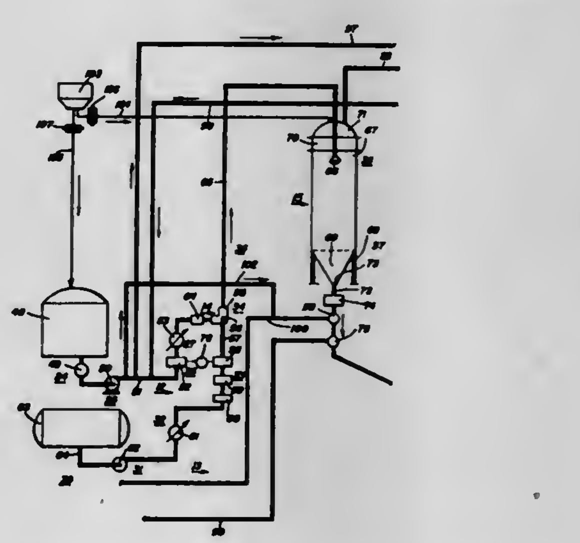
TREATMENT OF PHOSPHORIC ACID, PROCESS, APPARATUS AND PRODUCT

Casimer C. Legal, Jr., Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of application Ser. No. 355,908, Mar. 30, 1964, now abandoned , Continuation-in-part of application Ser. No. 483,742, Aug. 30, 1965, now abandoned. This application Oct. 20, 1966, Ser. No. 588,034

Int. Cl. C01b *25/28, 25/38, 25/22*

U.S. Cl. 23—107 **6 Claims**



A process for preparing an ammonium polyphosphate product which involves heating an aqueous solution of phosphoric acid to a temperature of about 200°–400° ., combining the acid with ammonia under autogenous reaction conditions to produce ammonium phosphate-polyphosphate reaction mixture having a temperature of about 350°–600° F., and subsequently cooling the reaction mixture by rapid dehydration thereof.

3,649,176

METHOD FOR PREPARING COPPER-EXCHANGED TYPE X ZEOLITE

Donald H. Rosback, Elmhurst, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 13, 1969, Ser. No. 865,979

Int. Cl. C01b *33/28*

U.S. Cl. 23—111 **6 Claims**

Copper-exchanged Type X zeolite is prepared by ion-exchanging a sodium form Type X zeolite with an aqueous copper salt solution to effect replacement of at least a portion of the sodium cations with copper cations, heating the zeolite to effect at least partial dehydration, and thereafter contacting the zeolite with a mixture comprising a cuprous salt and a hydrocarbon capable of forming a soluble complex with the cuprous salt and of passing within the pore openings of the zeolite. The product is particularly useful in the selective separation of olefinic hydrocarbons from saturated hydrocarbons.

3,649,177
METHOD FOR PREPARING COPPER-EXCHANGED TYPE Y ZEOLITE

Donald H. Rosback, Elmhurst, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Oct. 13, 1969, Ser. No. 865,980
Int. Cl. C01b *33/28*
U.S. Cl. 23—111 **6 Claims**

Copper-exchanged Type Y zeolite is prepared by contacting a sodium Type Y zeolite with an aqueous copper salt solution to effect ion exchange of a portion of the sodium cations with copper cations, heating the zeolite to effect at least a partial dehydration of the zeolite, and thereafter contacting the zeolite with a mixture comprising a cuprous salt and a hydrocarbon capable of forming a soluble complex with the cuprous salt and passing the pore openings of the zeolite. The product is particularly useful in the selective separation of olefinic hydrocarbons from saturated hydrocarbons.

3,649,178
SYNTHESIS OF SODIUM ZEOLITE W-Z

Rong Wang, and Jacob Michael Zielonka, both of Los Angeles, Calif., assignors to American Cyanamid Company, Stamford, Conn.
Filed Apr. 17, 1969, Ser. No. 817,167
Int. Cl. C01b *33/28*
U.S. Cl. 23—113 **4 Claims**

Sodium Zeolite W–Z and a process for making sodium Zeolite W–Z having the chemical formula:

$$1.0 \pm Na_2O \cdot Al_2O_3 \cdot 5.75 \pm 0.55\, SiO_2 \cdot YH_2O$$

wherein Y is a number from 0 to 7 which comprises mixing sodium hydroxide, a source of silica, a source of alumina and water in the following mole ratios:

Na_2O/SiO_2	0.8 to 1.9
SiO_2/Al_2O_3	10.0 to 35.0
H_2O/Na_2O	100.0 to 160.0

to obtain a gel-form mixture, digesting the gel mixture for a period of time from 12 to 200 hours, heating the digested mixture at a temperature of from 50° to 150° C. for from 1 to 5 days and recovering sodium Zeolite W-Z. Sodium Zeolite W-Z can be ion-exchanged to obtain a crystalline aluminosilicate having catalytic activity for use in hydrocarbon conversion processes.

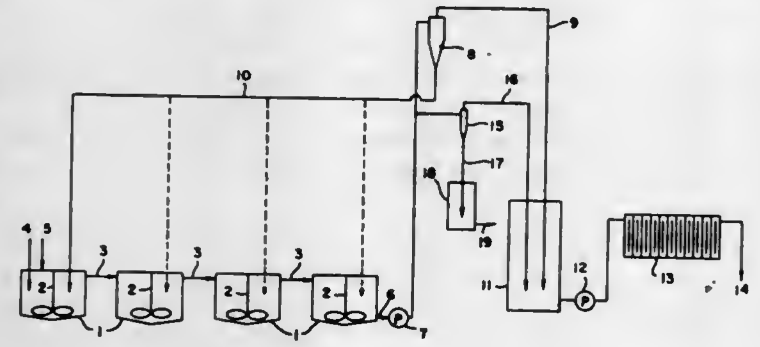
3,649,179
PROCESS FOR THE REMOVAL OF UNREACTED AMMONIA

Yoneichi Ikeda; Michio Hattori, and Yutaka Kiyomiya, all of Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan
Filed Nov. 8, 1968, Ser. No. 774,446
Claims priority, application Japan, Nov. 13, 1967, 42/72588
Int. Cl. C01c *1/12*
U.S. Cl. 23—119 **6 Claims**

Unreacted ammonia resulting from the reaction producing acrylonitrile by the so-called ammoxidation of propylene is removed by cooling the reaction product by direct contact with quenching water while adding an acid to remove or recover the unreacted ammonia in the form of a salt thereof. The cooling is effected stepwise in two or more stages, thereby to increase the concentration of the ammonium salt solution withdrawn out of the system at the first cooling stage, and considerably reduce the cost of the recovery of the ammonium salt.

3,649,180
PURIFICATION OF ZINC SULPHATE SOLUTION

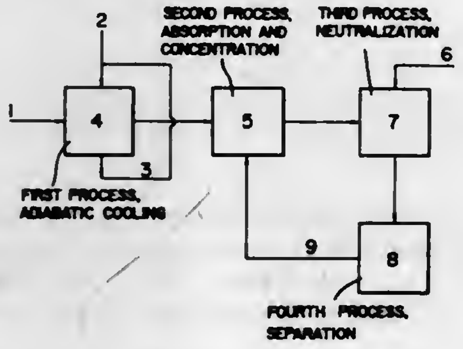
Donald Roderick McKay, Rossland, and Louis Landucci, Trail, both of British Columbia, Canada, assignors to Cominco Ltd., Montreal, Quebec, Canada
Filed Mar. 26, 1970, Ser. No. 22,836
Claims priority, application Canada, Dec. 31, 1969, 71,251
Int. Cl. C01g *9/06*
U.S. Cl. 23—125 **9 Claims**



A process for continuously purifying a flowing zinc sulphate solution in the treatment of zinc-bearing ores in the recovery of zinc, wherein zinc dust is added to the flowing solution which is agitated to effect a precipitating reaction between the zinc dust and cations of impurity metals more noble than zinc. The treated solution is then passed through a cyclone to reactivate unconsumed zinc, with the resulting overflow stream containing purified zinc sulfate solution and finely divided precipitated impurities for subsequent separation, and an underflow stream containing suspended solids comprising reactivated zinc dust and agglomerates, which underflow stream is recycled to the zinc sulfate solution being agitated to effect the precipitating reaction. The process requires relatively less zinc dust than previous purification processes and avoids buildup of solids in the apparatus.

3,649,181
PROCESS FOR PRODUCTION OF SODIUM SULFITE

Hiroshi Shibata, and Tomijiro Morita, both of Iwaki-shi, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Dec. 16, 1969, Ser. No. 885,493
Claims priority, application Japan, Dec. 18, 1968, 43/92816
Int. Cl. C01d *5/14, 5/00*
U.S. Cl. 23—129 **2 Claims**


2
SECOND PROCESS, ABSORPTION AND CONCENTRATION
THIRD PROCESS, NEUTRALIZATION
6
1
4
5
7
3
FIRST PROCESS, ADIABATIC COOLING
9
8
FOURTH PROCESS, SEPARATION

Production of anhydrous sodium sulfite by contact reaction between combustion exhaust gas containing a small amount of sulfurous acid gas with sodium sulfite containing solution.

3,649,182
REDUCTION OF PYROSULFITE

Leo A. Miller; James A. Taylor, and Thomas M. Willard, all of Lakeland, Fla., assignors to Wellman-Lord, Inc.
Filed Dec. 24, 1968, Ser. No. 786,756
Int. Cl. C01b *17/28, 17/50*
U.S. Cl. 23—137 **10 Claims**

A process for treating metal pyrosulfites such as potassium, cesium, and rubidium pyrosulfites to obtain SO_2 therefrom is disclosed. The pyrosulfite is reduced with a reducing agent such as hydrogen while in physical admixture with an inert, inorganic, refractory, particulate solid, a eutectic mixture of which with the desired metal sulfide has a melting point greater than the reduction zone temperatures, preferably greater than 1,650° F. Advantageously, the refractory solid for the reduction zone mixture is provided by introducing to the zone a pelletized admixture of the metal pyrosulfite with a hydrate of the refractory solid which, upon being heated to the reduction zone temperatures, will release water of hydration and be converted in situ to the refractory solid. Especially preferred is the use of pelletized admixtures of hydrous aluminum oxide and the metal pyrosulfite, the hydrous aluminum oxide being converted to alumina with the release of water when subjected to the reduction zone temperatures. The process can be employed with particular advantage where the pyrosulfite is obtained as a result of reacting SO_2-containing gases with an aqueous absorbing solution of the corresponding metal sulfite to produce a spent absorbing solution containing dissolved metal bisulfite, and then recovering the metal bisulfite therefrom in the form of the corresponding metal pyrosulfite (e.g., by cooling the spent absorbing solution to crystallize out the pyrosulfite). The metal sulfide product obtained can be dissolved in water and the resulting solution treated with CO_2 to provide hydrogen sulfide and the corresponding metal carbonate (which can be recycled to the SO_2 absorption reaction). The H_2S from the latter step may be mixed with the SO_2 obtained from the reducing step and the mixture subjected to the Claus reaction to produce elemental sulfur and water.

3,649,183
TREATMENT OF THIOSULFATE-CONTAINING AQUEOUS SOLUTIONS WITH CARBON MONOXIDE

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Dec. 17, 1969, Ser. No. 886,036
Int. Cl. C01b *17/16, 17/20, 17/28*
U.S. Cl. 23—137 **15 Claims**

A water-soluble thiosulfate compound is reduced by contacting an aqueous solution of the thiosulfate compound with carbon monoxide at reduction conditions including a temperature of about 125° to about 350° C. and a pressure sufficient to maintain at least a part of the solution in the liquid phase. The principal utility of this treatment procedure is associated with the regeneration of aqueous streams produced in a process for scrubbing sulfur dioxide from a flue gas. Key features of this method are its high activity for converting thiosulfate and its high selectivity for sulfide with attendant minimization of undesired sulfate byproducts.

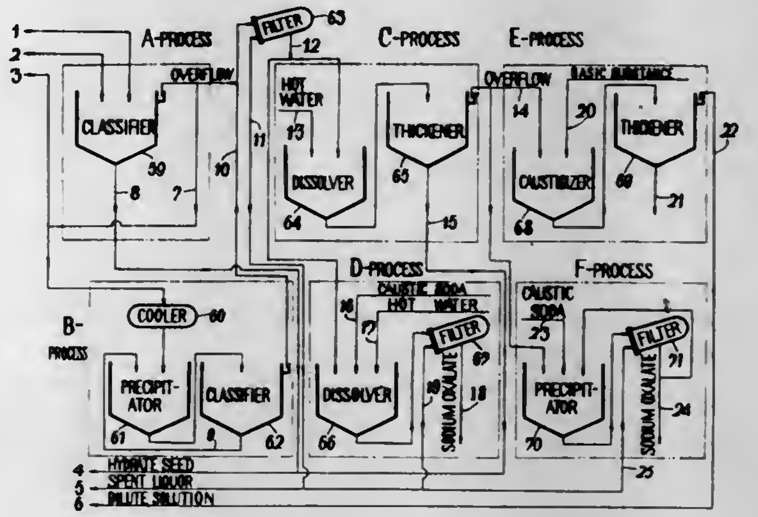
3,649,184
PRECIPITATION OF ALUMINA HYDRATE

Richard H. Featherston, Corpus Christi, Tex., assignor to Reynolds Metals Company, Richmond, Va.
Continuation-in-part of application Ser. No. 513,518, Dec., 1965, now abandoned, Continuation-in-part of application Ser. No. 574,342, Aug. 23, 1966, now abandoned. This application May 29, 1969, Ser. No. 830,927
Int. Cl. C01s *7/14*
U.S. Cl. 23—143 **7 Claims**

Production of alumina hydrate by a method which includes continuously introducing aluminate liquor and seed slurry into the first of a plurality of precipitation stages, each stage containing aluminate liquor lower in ratio of alumina to caustic soda concentration than the preceding stage but higher in ratio than the succeeding stage, maintaining in each stage a quiescent region for the separation of fine alumina hydrate particles, continuously transferring aluminate liquor and entrained fine alumina hydrate particles from said quiescent region of each stage to the succeeding stage, periodically withdrawing from a given stage a slurry containing precipitated alumina hydrate accumulated in that stage and recycling the remainder of the slurry after separation and recovery of the desired alumina hydrate product; to produce low-soda alumina hydrate the aluminate liquor and seed slurry are introduced into the first precipitation stage at a temperature between about 190° and about 200° F.

3,649,185
METHOD FOR REMOVING IMPURITIES IN THE BAYER PROCESS

Chosei Sato; Akihisa Furukawa, and Yoichi Sano, all of, Yokohama, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 21, 1968, Ser. No. 754,176
Claims priority, application Japan, Aug. 23, 1967, 42/53888
Int. Cl. C01f *7/14, 7/02;* **B01d** *21/00*
U.S. Cl. 23—143 **4 Claims**

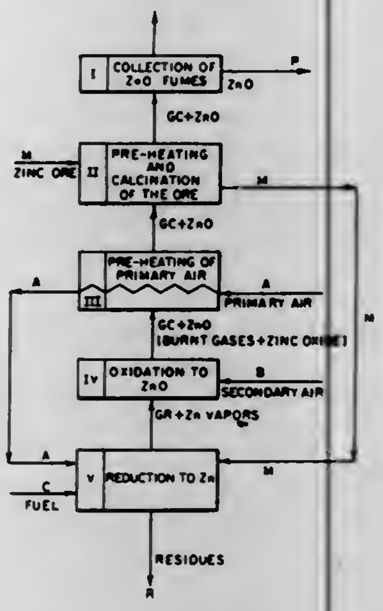


Improvement in the Bayer process wherein a first cycle, alumina hydrate is precipitated from an alumina pregnant caustic liquor which liquor also contains an oxalate impurity. The precipitation of the alumina hydrate is favored and the precipitation of the oxalate in the liquor is inhibited by selectively controlling the temperature of the liquor as a function of the concentration of the oxalate contaminating impurity in the liquor.

3,649,186
CONTINUOUS PROCESS FOR OBTAINING HIGH-GRADE ZINC OXIDE FROM ZINC-CONTAINING MINERALS

Umberto Colombo, Novara; Giovanni Scacciati, Torino; Giuseppe Sironi, Novara, and Amos Vaschetti, Torino, all of Italy, assignors to Montecatini Edison S.p.A. and Montiponi E Montevecchio S.p.A., Milan, Italy, part interest to each
Filed Jan. 25, 1968, Ser. No. 700,498
Claims priority, application Italy, Aug. 1, 1967, 19,081 A/67
Int. Cl. C01g *9/02;* **B01d** *51/00, 59/28*
U.S. Cl. 23—148 **6 Claims**

A continuous process for obtaining zinc oxide of a grade higher than 75 percent from oxidized zinciferous ores, which comprises: Preheating the zinc-containing mineral and calcining it at temperatures above 800° C. (preferably at 900°–1,000° .) by the combustion products of the gases leaving the reducing reactor. Treating the calcined ore in a fluidized bed at a temperature of from 1,000 to 1,200° C. with reducing gases obtained by direct injection of a hydrocarbon fuel and of an amount of air less than stoichiometric into the fluid bed and discharging the zinc-free residues. Burning the reducing gas of the reduction stage containing the metallic zinc vapors with air to produce a burnt gas containing CO_2, H_2O and ZnO. Using the burnt gas to preheat the air necessary for the partial combustion of the fuel by indirect heat exchange and the incoming zinciferous ore by direct heat exchange. Subjecting the off gases, after having released part of their heat to the air and to the ore, to separation in order to recover the zinc oxide.


I COLLECTION OF ZnO FUMES
P
ZnO
GC+ZnO
M
ZINC ORE
II PRE-HEATING AND CALCINATION OF THE ORE
M
GC+ZnO
PRE-HEATING OF PRIMARY AIR
A
III
PRIMARY AIR
GC+ZnO (BURNT GASES+ZINC OXIDE)
IV OXIDATION TO ZnO
SECONDARY AIR
GR+Zn VAPORS
A
C
FUEL
V REDUCTION TO Zn
RESIDUES
R

3,649,187
CORROSION RESISTANT APPARATUS

Arthur Orman Fisher, Richmond Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 9, 1970, Ser. No. 9,762

Int. Cl. C01b *17/48*

U.S. Cl. 23—167 **13 Claims**

Apparatus fabricated from an alloy comprising copper in the amount of from about 1 to about 10 percent by weight, chromium in the amount of from about 15 to about 35 percent by weight beryllium in the amount of from about 0.1 to about 0.5 percent by weight and nickel in the amount of from about 55 to about 84 percent by weight has high-corrosion resistance when used in contact with sulfuric acid in concentrations of from about 50 to about 90 percent by weight. The apparatus is particularly useful in a process for removal of sulfur dioxide from flue gas and its conversion to sulfuric acid. Example of the apparatus include mist eliminators, wire mesh, piping, tubing, liners, wire bracing, rods, trays, wire screens, reinforcing members, support members, diaphragms and other apparatus being wholly or partly, relatively thin in cross section and having relatively large surface areas exposed to, or subject to exposure to, sulfuric acid in concentrations from about 50 percent to about 90 percent by weight.

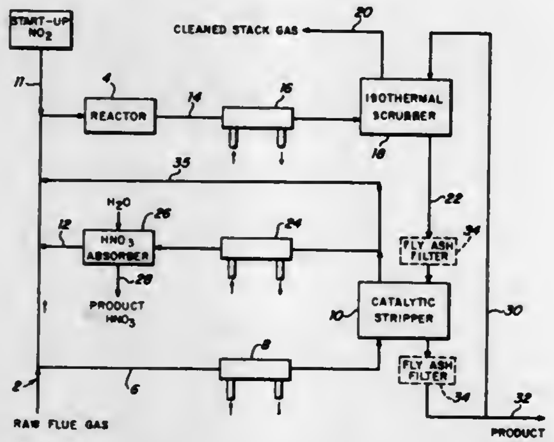
3,649,188
METHOD OF CONVERTING SULFUR DIOXIDE TO SULFURIC ACID

Bertram Keilin, Newtonville, and Arthur L. Walitt, West Concord, both of Mass., assignors to The United States of America as represented by the Secretary of Health, Education and Welfare

Filed Mar. 24, 1970, Ser. No. 22,246

Int. Cl. C01b *17/82*

U.S. Cl. 23—167 **24 Claims**



A modification of the Lead Chamber Process for producing sulfuric acid from gas streams containing sulfur dioxide. The process involves oxidizing the SO_2 content of the gas stream with NO_2 to form SO_3 which is contacted with water vapor to form sulfuric acid, scrubbing the gas stream with sulfuric acid, catalytically oxidizing the nitrogen oxide-bearing sulfuric acid (nitrose) to convert the nitrogen oxides to NO_2 recycling the NO_2 produced by the catalytic oxidation for use in oxidizing additional SO_2, separating sulfuric acid from the catalytic oxidation stage, and recycling part of the separated sulfuric acid to the gas scrubbing stage while recovering the remainder as product. The feed gas stream may be an industrial flue gas or an off-gas from a sulfur or pyrites burner.

3,649,189
PREPARATION OF FINELY PARTICULATE SILICON OXIDES

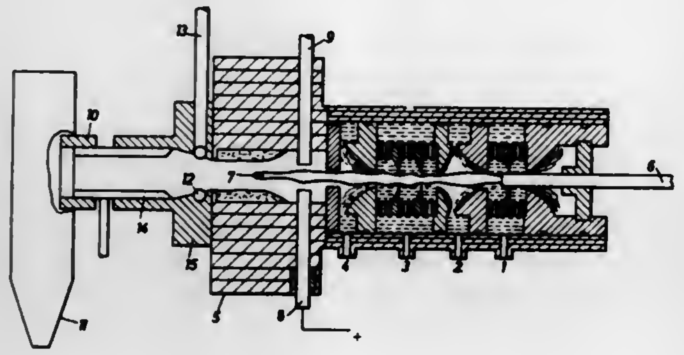
Tibor Kugler, Sins, and Jakob Silbiger, Basel, both of Switzerland, assignors to Lonza Ltd., Gampel (Canton of Valais), Switzerland

Filed Mar. 12, 1970, Ser. No. 18,902

Claims priority, application Switzerland, Mar. 31, 1969, 4826/69

Int. Cl. C01b *33/00, 33/18*

U.S. Cl. 23—182 V **3 Claims**



Finely particulate silicon oxides are produced from coarse particulate silicon dioxide using a liquid stabilized plasma burner. Hydrocarbons are used as the stabilizing liquid, and the coarse particulate silicon dioxide is reduced by the hydrocarbon plasma jet leaving the plasma burner, and a part of the hydrocarbon which is evaporated and decomposed in the arc zone is withdrawn together with the liquid hydrocarbon stabilizing medium, which is recycled, separated from the liquid, and used as carrier gas for feeding the coarse particulate silicon dioxide. Finely particulate silicon monoxide is initially formed, and may be recovered as such, or oxidized at the anode of the plasma burner to silicon dioxide.

3,649,190
PROCESS FOR THE RECOVERY OF AMMONIA, SULFUR DIOXIDE, CARBON DIOXIDE AND HYDROGEN SULFIDE FROM GAS STREAMS AND FROM AMMONIUM SULFITES, SULFIDES AND CARBONATES

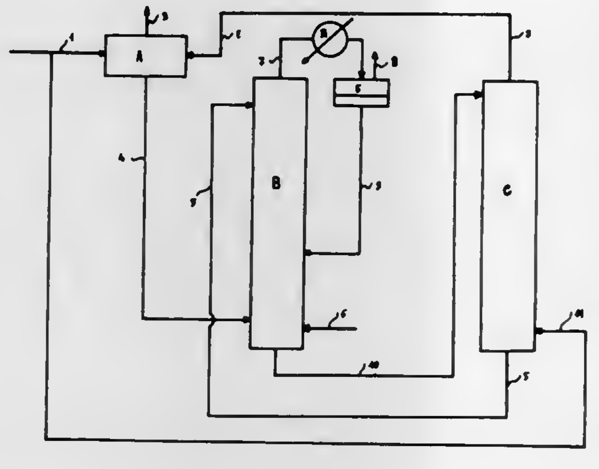
Andre Deschamps, Chatou, and Philippe Renault, Noisy le Roi, both of France, assignors to Institut Francais Dy Petrole Des Carburants Et Lubrifiants, Rueil Malmaison, France

Filed Mar. 20, 1969, Ser. No. 808,804

Claims priority, application France, Mar. 24, 1968, 146618

Int. Cl. C01c *1/00;* C01b *31/20, 17/48*

U.S. Cl. 23—193 **15 Claims**



A process for separating volatile bases (B′), e.g., NH_3 and weak volatile acids (A′H), e.g., H_2S from their salts or the liquid or gaseous dissociation products thereof, comprising, in a first step, contacting these salts or dissociation compounds with a nonvolatile AH acid, e.g., benzoic acid, in the presence of at least one liquid phase, at such a temperature and pressure that the volatile acid (A′H) is evolved in the form of a gas which is practically free of base (B′) and acid (AH), and then, in a second step, increasing the temperature or reducing the pressure to liberate the volatile base (B′) and regenerate the acid (AH), said liquid phase containing an alcohol having from six to 50 carbon atoms per molecule, an ester or ester of said alcohol, a polyalcohol having from two to 50 carbon atoms and two to 10 OH groups per molecule, an ester, ester or ester-ester of said polyalcohol, or a compound of the formula:

$$R_1-O-(R_2-O)_n-R_3$$

in which each of R_1 and R_3 represents a hydrogen atom, a monovalent hydrocarbon radical having one to 20 carbon atoms or a monovalent radical R′ CO in which R′ is a monovalent hydrocarbon radical having two to 20 carbon atoms, R_2 is a bivalent hydrocarbon radical having two to 10 carbon atoms and n is an integer from two to 50, the acid (AH) having under normal atmospheric pressure a boiling or sublimating point at least 50° C. higher than that of the acid (A′H).

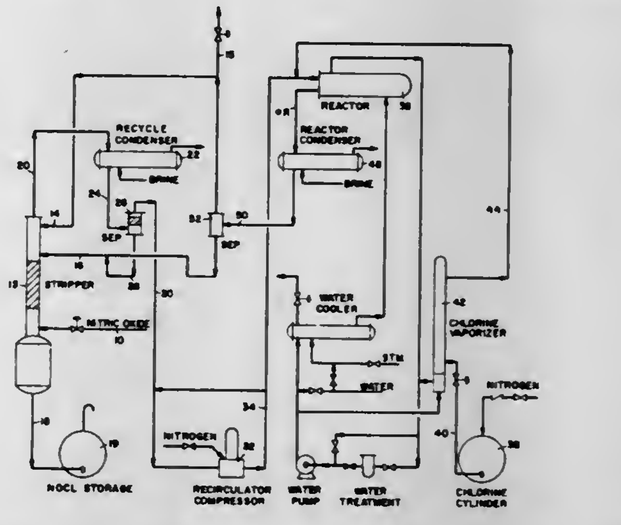
3,649,191
PROCESS FOR MANUFACTURE OF NITROSYL CHLORIDE

James H. Trask, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 12, 1969, Ser. No. 884,426

Int. Cl. C01b *21/00, 21/52*

U.S. Cl. 23—203 N **10 Claims**



A process for manufacture of nitrosyl chloride from chlorine and nitric oxide is provided. The reaction takes place with the reactants being in the gas phase and under conditions of turbulent gas flow. A molar excess of nitric oxide is employed.

3,649,192
METHOD OF MANUFACTURING SEMICONDUCTOR COMPOUNDS

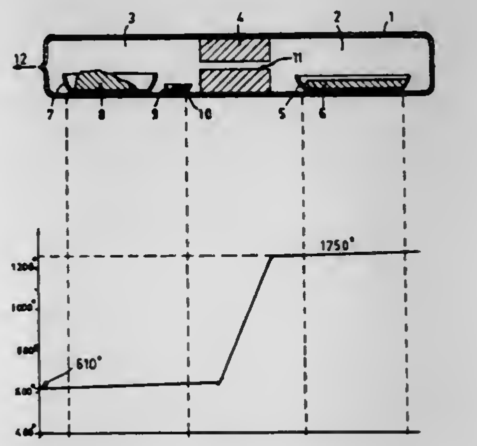
Emile Deyris, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 21, 1969, Ser. No. 809,133

Claims priority, application France, Mar. 22, 1968, 145048

Int. Cl. C01b *27/00;* B01d *9/00;* B01j *17/00*

U.S. Cl. 23—204 R **3 Claims**



A method of making III–V semiconductor compounds in which a quantity of boron oxide is added to the reactants in a closed vessel to inhibit reactions with the material of the vessel, e.g., silicon dioxide.

3,649,193
METHOD OF FORMING AND REGULARLY GROWING A SEMICONDUCTOR COMPOUND

Emile Deyris, Samson-Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

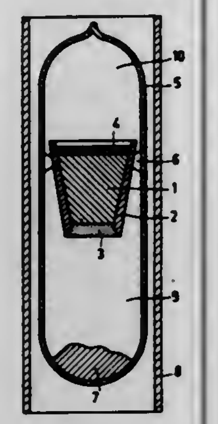
Filed Mar. 21, 1969, Ser. No. 809,300

Claims priority, application France, Mar. 22, 1968, 145047

Int. Cl. C01b *27/00;* B01d *9/00*

U.S. Cl. 23—204 R **2 Claims**

A method of producing a III–V semiconductor compound in which one of the elements is placed in a porous container within a reaction vessel and brought into a liquid state while the other element, also present in the reaction vessel, is volatilized and diffuses into the liquid element. The surface



of the liquid element is covered with a layer of boron oxide to prevent contamination of the semiconductor compound by the material of the reaction vessel, e.g., silicon dioxide.

3,649,194
STABILIZATION OF ACIDIFIED HYDROGEN PEROXIDE SOLUTIONS

James Oliver Glanville, Roanoke, Va., assignor to FMC Corporation, New York, N.Y.

Filed Oct. 28, 1969, Ser. No. 871,938

Int. Cl. C01b *15/02*

U.S. Cl. 23—207.5 **3 Claims**

Metal cleaning and pickling solutions containing acidified hydrogen peroxide and ions of the metal being etched are stabilized against decomposition of the hydrogen peroxide at elevated temperatures by the addition of an organic hydroxy compound of the class consisting of phenol; paramethoxy phenol, allyl alcohol, crotyl alcohol, and cis-1,4-but-2-enediol.

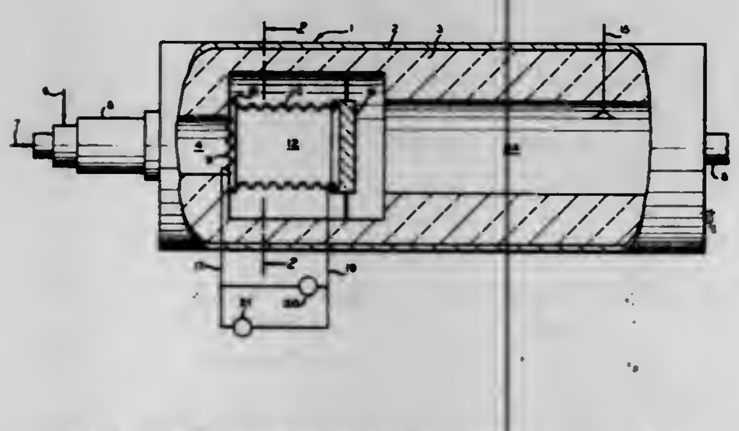
3,649,195
RECOVERY OF ELECTRICAL ENERGY IN CARBON BLACK PRODUCTION

Charles F. Cook; Elliott P. Doane, and Marvin M. Johnson, all of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed May 29, 1969, Ser. No. 829,047

Int. Cl. C09c *1/50;* **H02n** *11/00*

U.S. Cl. 23—209.4 **9 Claims**



A method and apparatus for electrical energy extraction from the smoke of a carbon black reactor prior to quench by establishing electrodes within the reaction zone and establishing electron flow therebetween, the power being recovered through an external electrical circuit.

3,649,196
PREPARATION OF CARBON PAPER

Edward Reinauer Degginger, Convent Station, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 768,494, Oct. 17, 1968, now Patent No. 3,542,582. This application Dec. 18, 1968, Ser. No. 784,947

Int. Cl. C01b *31/02, 31/07*

U.S. Cl. 23—209.4 **5 Claims**

A process for preparing fibrous carbonaceous cloth mats or paper comprising the steps of impregnating a fibrous cellulosic substrate with an aqueous solution containing borate and polyvinyl alcohol, allowing the aqueous component of said solution to evaporate from said impregnated cellulosic substrate, and then carbonizing said substrate.

3,649,197
PREPARATION OF ALKYL HALIDES AND SULFUR FROM HYDROGEN SULFIDE, ALCOHOLS AND HALIDES

Kang Yang; James D. Reedy, both of Ponca City, and Jimmy H. Stanton, Lawton, all of Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Sept. 19, 1969, Ser. No. 859,583

Int. Cl. C07c *17/16*

U.S. Cl. 23—224 **9 Claims**

Alkyl halides and sulfur are formed and recovered by reacting hydrogen sulfide, bromine or iodine and ethyl or methyl alcohol in the presence of an acid and an alkali metal halide.

3,649,198
DIAGNOSTIC METHOD FOR THE DETERMINATION OF URIC ACID IN BLOOD

Robert L. Rush, Springvalley, N.Y., assignor to Chas. Pfizer & Co., Inc., New York, N.Y.

Filed May 19, 1970, Ser. No. 38,907

Int. Cl. G01n *33/16, 31/22, 21/24*

U.S. Cl. 23—230 B **2 Claims**

A diagnostic method for the determination of uric acid in the blood of humans by detecting the color change of a copper neocuproine complex in the presence of N-ethylmaleimide.

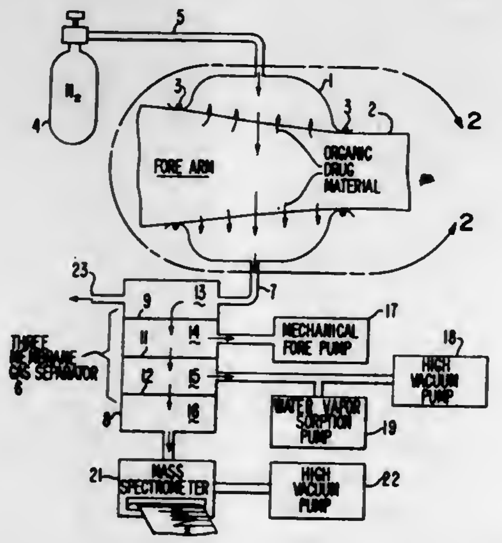
3,649,199
METHOD FOR DETECTING TRACE QUANTITIES OF AN ORGANIC DRUG MATERIAL IN A LIVING ANIMAL

Duane P. Littlejohn, Santa Clara, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 26, 1970, Ser. No. 22,940

Int. Cl. G01n *33/16*

U.S. Cl. 23—230 B **10 Claims**



A method for detecting trace quantities of organic drug material in a living animal under observation wherein samples of gaseous material effusing from the animal either by way of breath, through the skin or from a blood stream are passed through a three-stage membrane gas separator to enrich the concentration of the organic drug material in the gaseous sample. The enriched sample gas output of the membrane separator is fed to a gas analyzer such as a mass spectrometer for detecting the organic drug material, if any, in the sample gas under analysis. The detection of trace quantities of drugs may be employed for monitoring the rate of metabolism and for ascertaining the various metabolites produced by metabolism of drugs in the body.

3,649,200
METHOD FOR ANALYSIS OF LARGE POLYMER MOLECULES

John C. Moore, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 26, 1969, Ser. No. 880,121

Int. Cl. G01n *11/06, 15/00*

U.S. Cl. 23—230 R **6 Claims**

Method of gel permeation chromatography, especially relating to the analysis of polymers. The method comprises introducing a sample of a dilute solution of the polymer into a chromatographic column and measuring the volume and concentration of the eluate. The sample volume must be of a size sufficient to produce a rise in concentration of polymer in the eluate of from zero to that of the sample. The molecular size distribution of the polymer may then be determined from the measurements taken.

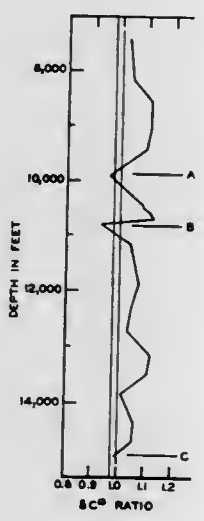
3,649,201
RESERVOIR ANALYSIS

Richard S. Scalan, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Oct. 27, 1967, Ser. No. 678,643

Int. Cl. G01n *33/24*

U.S. Cl. 23—230 EP **3 Claims**



The inneity of mobile organic reservoir fluids, i.e., their origin or lack of origin in the particular source rocks associated with a reservoir formation, is determined by isolating these mobile organics from relatively immobile organics and inorganic carbonaceous matter and determining the relative concentrations of carbon–12 and carbon–13 isotopes therein, isolating the relatively immobile indigenous organic matter from the relatively mobile organics and inorganic carbonaceous matter and evaluating the relative magnitudes; i.e., concentrations, of the carbon–13 and carbon–12 isotopes of this material and establishing the correspondence or lack of correspondence between the ratios, differences or other relevant comparisons of the carbon–13 and carbon–12 isotopes of each respective material. Correspondence between these values for the mobile and immobile organic materials illustrates a high degree of probability that the relatively mobile organic matter has the same origin as the indigenous organic material and, therefore, is itself indigenous to the parent formation.

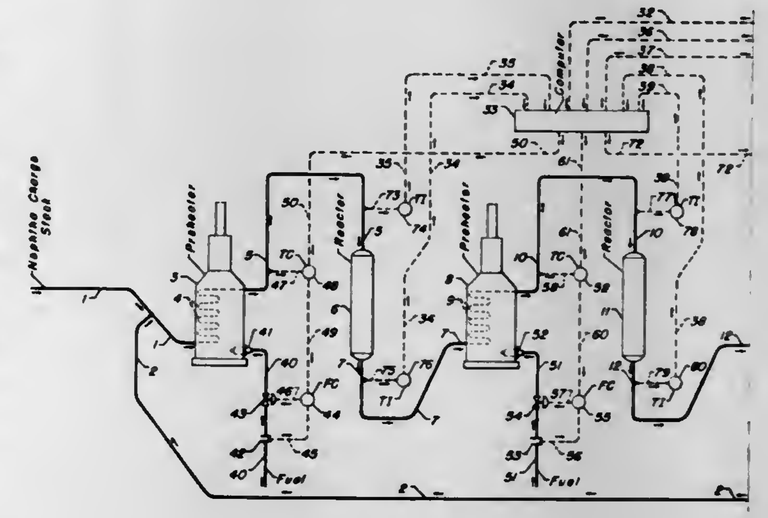
3,649,202
CONTROL OF REACTION ZONE SEVERITY BY RESPONSE TO OCTANE NUMBER OF EFFLUENT LIQUID PHASE

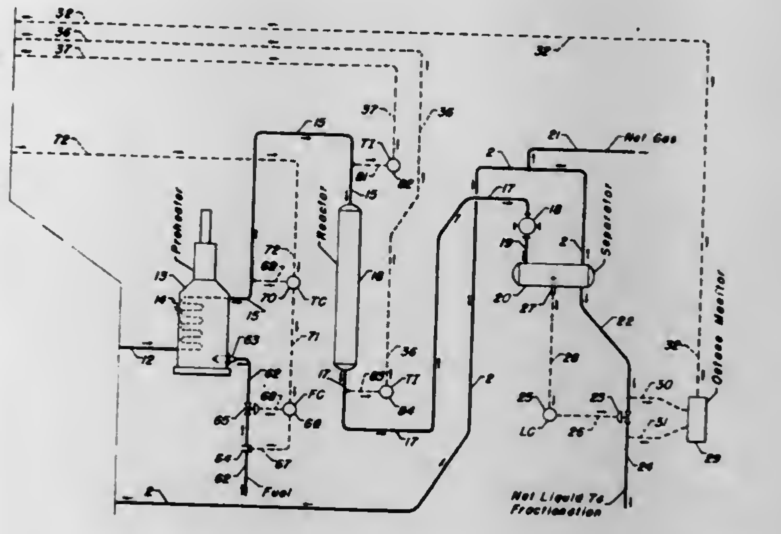
Walter A. Bajek, Lombard, and James H. McLaughlin, La Grange, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 22, 1969, Ser. No. 868,462

Int. Cl. B01j *9/04;* **C10g** *35/04;* **G01n** *33/00*

U.S. Cl. 23—253 A **19 Claims**

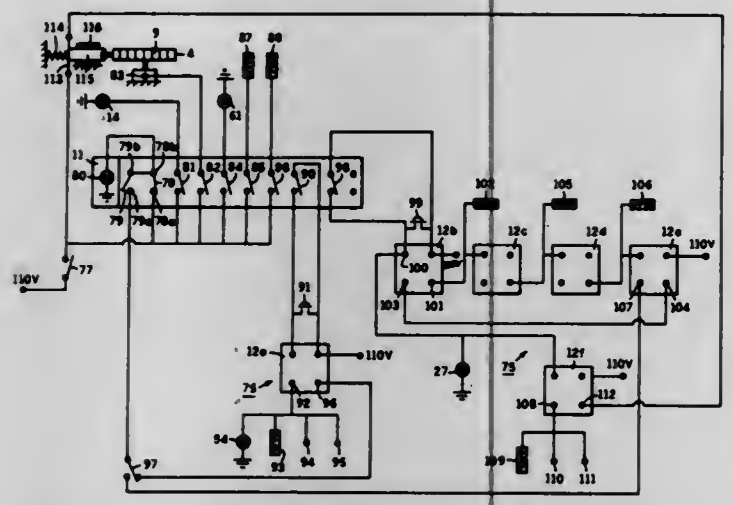




An improved control system for adjusting and controlling reaction zone severity in a continuous flow hydrocarbon conversion process, wherein a hydrocarbon charge stock is passed through a reaction zone at conversion conditions comprising elevated temperature and pressure, and the resulting product effluent is separated into a vapor phase and into a liquid phase comprising gasoline boiling range hydrocarbon constituents. A sample of liquid phase effluent is continuously passed without intervening depressurization from the phase separator into a hydrocarbon analyzer which measures the octane number of the liquid phase sample. The octane measurement is effected by an analyzer comprising a stabilized cool flame generator with a servo-positioned flame front which provides a real time output signal indicative of sample octane number. The analyzer output signal is received by a computer which is operatively responsive to said analyzer output signal, and which develops a computer output signal which is a function of sample octane number and severity of conversion conditions within the reaction zone. The control system provides improved operation in a hydrocarbon conversion process comprising a plurality of conversion zones whereby conversion conditions within each zone may be independently adjusted in a manner sufficient to maintain the octane number of the separator liquid phase at a constant predetermined level.

3,649,203
AUTOMATIC ANALYZER

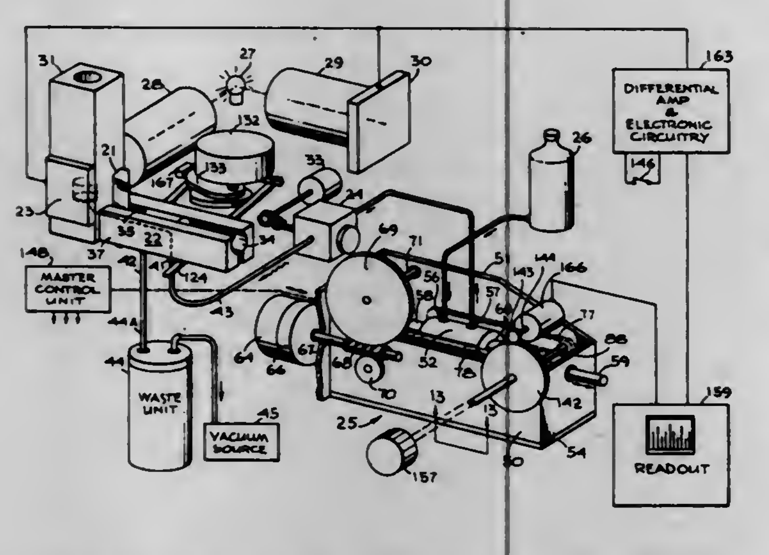
Eugene Louis Schneider, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.
Filed Nov. 22, 1968, Ser. No. 778,048
Int. Cl. G01n *31/04, 31/08*
U.S. Cl. 23—253 R **12 Claims**



An amino acid analyzer having an ion exchange column through which buffer reagents are passed is provided with circuitry means for automatically effecting the various steps of the analysis. The circuitry means being effective to allow continuous automatic supply of samples to the ion exchange column and also to automatically control the elution process, permits uninterrupted continuous operation of the analyzer without the necessity of operator attention. A central timer mechanism effects actuation of a sample supply system to place the sample on the ion exchange column and thereafter the central timer mechanism sequentially activates other timers to automatically control the eluting process. During the eluting process the analysis is carried out in the conventional manner, i.e., using a ninhydrin system and a colorimeter. The colorimeter detects the concentration of amino acids present in the column effluent and sends electrical signals to a recorder mechanism to record or plot the quantity of specific amino acids present in the sample.

3,649,204
METERING PUMP FOR ANALYTICAL SAMPLES

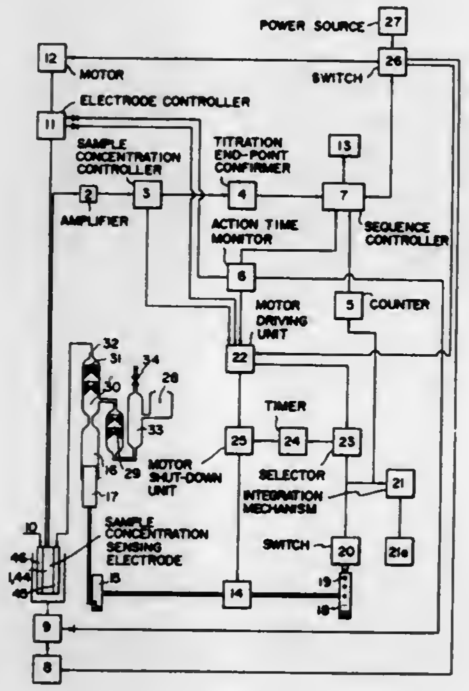
Andrew F. Farr, South Gate, Calif., assignor to Farr Devices Inc., Southgate, Calif.
Filed Sept. 18, 1968, Ser. No. 760,431
Int. Cl. G01n *1/14;* **F04b** *3/00*
U.S. Cl. 23—259 **3 Claims**



A compact instrument for measuring the hemoglobin content of whole blood, particularly arranged for the rapid analysis of a minute sample of a patient's blood supplied, immediately after collection, by a doctor in his own office. The instrument is so arranged that it may be fully automated, to make the hemoglobin determination after a blood sample has been delivered to it, and to provide an analysis for the doctor's use within a few minutes. The instrument utilizes a pump which delivers to and mixes with the blood sample in a photometer examination cell, an accurately and continuously measured amount of an aqueous reagent, until the volume of reagent added causes the sample to match photometrically a standard sample. The hemoglobin content is directly shown in appropriate units on a meter or readout device at the completion of a cycle. In the fully automated form of the device, a complete analysis cycle leaves the instrument cleaned out and ready to make another analysis upon reception of another blood sample.

3,649,205
TITRATION AUTOMATON

Tadashi Shirakawa; Tohru Inagaki; Tadao Suzuki, all of Tokyo, and Koji Ogawa, Kanagawa, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Continuation-in-part of application Ser. No. 654,452, July 19, 1967, now abandoned. This application Apr. 8, 1970, Ser. No. 26,795
Claims priority, application Japan, July 23, 1966, 41/48248
Int. Cl. B01k *3/00;* **G01n** *27/56, 31/16*
U.S. Cl. 23—253 R **7 Claims**

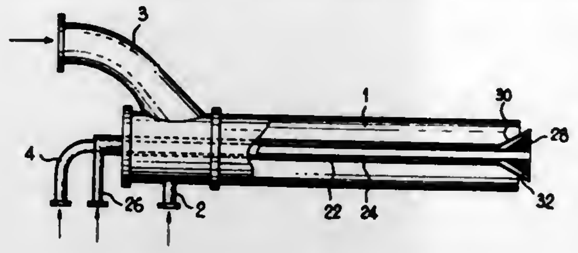


An automatically operated titration system, or titration automaton, is provided for performing neutralization titrations, oxidation or reduction titrations, and for automatically recording the results thereof. Titration takes place in a rough stage followed by one or more progressively slower fine stages. A monitor is included to shut off the apparatus if any of the automated operations exceeds its preset maximum time.

3,649,206
APPARATUS FOR CRACKING AND BURNING HYDROCARBONS

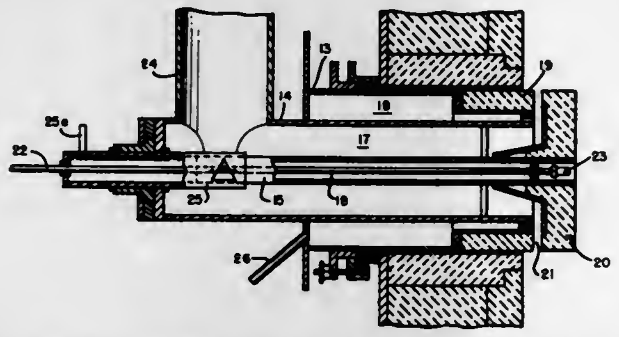
Alix Ivernel, Paris, France, assignor to L'Air Liquide Societe, Anonyme Pour L'Etude et Exploitation des Procedes Georges Claude, Paris, France
Filed June 1, 1970, Ser. No. 42,259
Int. Cl. B01j *1/00;* **C09c** *1/48*
U.S. Cl. 23—259.5 **5 Claims**

A device for cracking and burning hydrocarbons, comprising a chamber for mixing fuel gas and combustion-supporting gas, a baffle member in the outlet orifice of the chamber, a conduit extending through the central zone of the baffle member and terminating on the side opposite to the mixing chamber and being supplied with hydrocarbons, and means for supplying oxygen or superoxygenated air to the periphery of the baffle member.



3,649,207
APPARATUS FOR PRODUCING CARBON BLACK

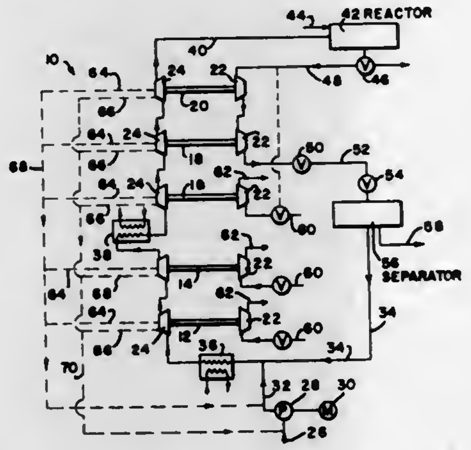
Fletcher A. Hinson, Jr., Portland, Tex., assignor to Ashland Oil & Refining Company, Houston, Tex.
Filed Aug. 5, 1969, Ser. No. 847,680
Int. Cl. C09c *1/50*
U.S. Cl. 23—259.5 **3 Claims**



A carbon black reactor adapted for producing fine control of the "structure" of the carbon black produced thereby by controlling the amount of axial gas which is fed with the hydrocarbon feedstock into the reaction zone of the reactor. In one embodiment, a controlled amount of process air is admitted into an annular conduit surrounding the feedstock inlet pipe through fine adjustment of the rotational position of an apertured surrounding sleeve. In another embodiment, a control valve adjusts the amount of axial air which is admitted with the feedstock.

3,649,208
FLUID COMPRESSOR SYSTEM

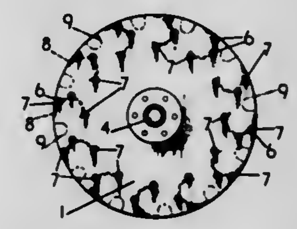
Hanns Hornschuch, Easton, Pa., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed Sept. 25, 1969, Ser. No. 861,026
Int. Cl. B01j *1/00;* **C08d** *3/08;* **F01k** *25/02*
U.S. Cl. 23—260 **5 Claims**



A system for compressing a fluid, such as ethylene monomer and adding a constituent to same to produce a product therefrom, for instance: a polymerized product, such as polyethylene. The system sets forth the use of plural stages of centrifugal compressors requiring a given amount of horsepower for the driving thereof, and only some of the required horsepower is externally supplied. Some of the energy stored in the fluid, through the compressing thereof and the introduction of heat thereto, is deployed in the system to drive some of the compressor stages.

3,649,209
TREATMENT OF SOLIDS WITH LIQUIDS

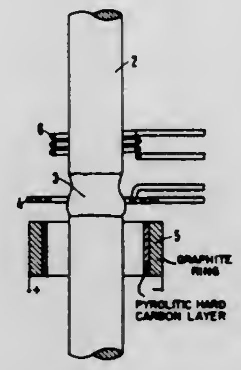
John Coleby, Buckley, Wales, England, assignor to R. Graesser Limited, Chester, England
Filed Mar. 14, 1969, Ser. No. 807,376
Int. Cl. B01d *11/02*
U.S. Cl. 23—270 **4 Claims**



A method for the treatment of a granular, crystalline or powdered solid with a liquid comprising the steps of introducing a phase including the solid and a phase including the liquid into a closed, fixed container, passing the phases through mixing zones in the container with one phase lying on the other phase, displacing, in the mixing zones, portions of each phase into the other phase by means of receptacles rotating in said container, and removing the phases from the container.

3,649,210
APPARATUS FOR CRUCIBLE-FREE ZONE-MELTING OF CRYSTALLINE MATERIALS

Wolfgang Keller, Pretzfeld, Germany, assignor to Siemens-Schuckertwerke Aktiengesellschaft, Berlin, Germany
Continuation of application Ser. No. 564,232, July 11, 1966, now abandoned. This application June 20, 1969, Ser. No. 838,026
Int. Cl. B01j *17/10*
U.S. Cl. 23—273 SP **6 Claims**



Apparatus for crucible-free zone melting a rod-shaped member of crystalline material includes at least one heating device for heating a first portion of the rod-shaped member to the melting point thereof so as to form a melting zone therein, and another heating device for afterheating a second portion of the rod-shaped member directly adjacent to the melting zone and recrystallized therefrom, the other heating device comprising a ring-shaped heat radiator surrounding the portion of the rod-shaped member adjacent the melting zone, the radiator being heatable to a temperature nearly equal to the melting temperature of the crystalline material.

3,649,211

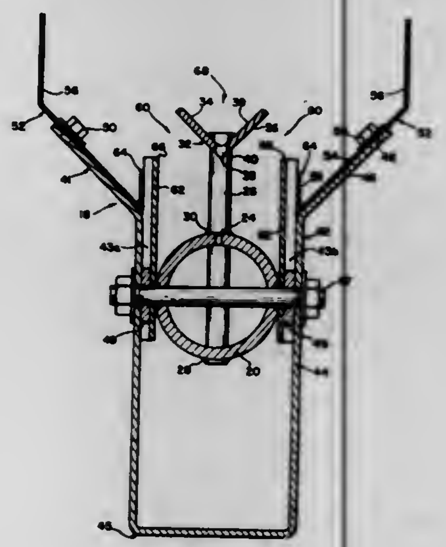
AIR AUGMENTED DUCT BURNER

Ralph B. Vosper, San Jose, Calif., assignor to Coen Company, Burlingame, Calif.

Filed Feb. 5, 1970, Ser. No. 8,867

Int. Cl. F23c *9/04*; F23m *9/02*

U.S. Cl. 23—277 C **4 Claims**



A burner assembly for placement in a gas stream having an insufficient oxygen content to enable the ignition of fuel injected into the gas stream. An auxiliary air duct is placed adjacent the burner and a passageway that is separated from the gas stream is formed between the burner and the air duct to supply the burner with sufficient oxygen and permit ignition of the fuel.

3,649,212

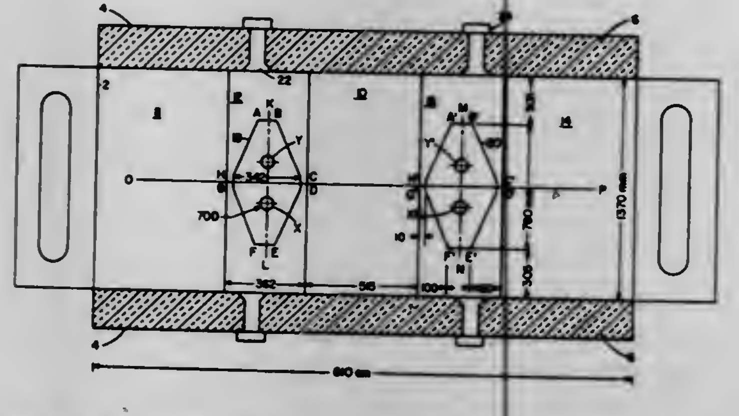
PYROLYSIS FURNACE AND BAFFLE MEANS

Thaddeus J. Oleszko, Neuoetting, and Lynn P. Walker, Burghauser, both of Germany, assignors to Marathon Oil Company, Findlay, Ohio

Filed Dec. 29, 1969, Ser. No. 888,683

Int. Cl. C07c *11/24*; B01j *6/00*

U.S. Cl. 23—277 R **5 Claims**



A pyrolysis furnace such as a Wulff furnace having an octagonal baffle in each of the combustion chambers, located so that the longitudinal axis of the baffle is between the fuel inlets of the combustion chamber and the center refractory mass which separates two combustion chambers.

3,649,213

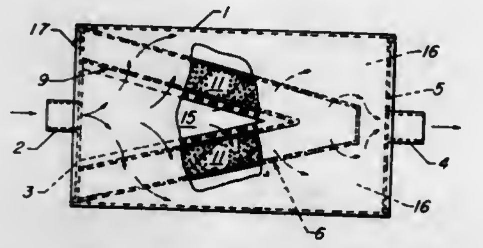
CATALYTIC CONVERTER-MUFFLER

Ted V. De Palma, Roselle, and Martin W. Perga, Hoffman Estates, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 19, 1970, Ser. No. 3,594

Int. Cl. F01n *3/16*

U.S. Cl. 23—288 F **3 Claims**



A catalytic converter-muffler device having a V-shaped bed configuration providing optimum gas flow characteristics and minimization of differential expansion problems from high-temperature conditions. A preferred unit has an oval outer chamber, a catalyst reservoir section, and curved sidewalls for the internal catalyst retaining screens so as to preclude buckling which occurs with flat plate members.

3,649,214

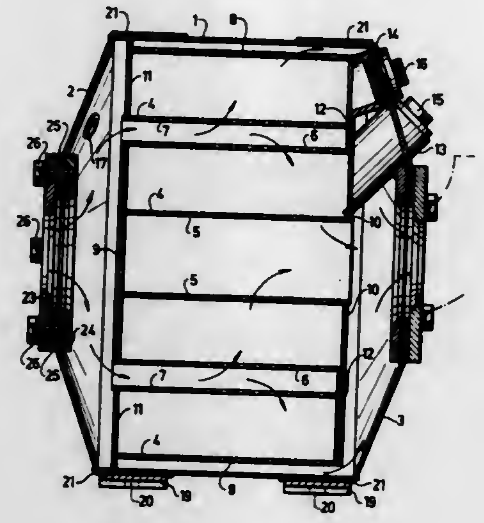
APPARATUS FOR CATALYTIC CONVERSION OF EXHAUST GAS

Sune Torsten Henriksson, Kvartsvagen 9; Ragnar Ludvig Muotka, Kyrkogatan 44, both of Kiruna, and Lars E. Landeborg, Per Albin Hanssons vag 52 B, Malmo, all of Sweden

Filed May 1, 1969, Ser. No. 821,014

Int. Cl. B01j *9/04*; F16r *27/08*

U.S. Cl. 23—288 F **7 Claims**



A casing having a gas inlet opening and a gas outlet opening formed in the walls thereof and at least one container for catalytic material having perforated walls and disposed in the casing between the inlet and outlet openings, each of said openings is connected to an exhaust gas system by means of a pair of opposing flanges which are disposed each on one side of the edge portion of said wall defining the opening in question, a sealing material is provided between the flanges and also extends outwardly between one of the flanges and the edge portion, and tightening means is provided for pressing the flanges against the intermediate sealing material.

3,649,215

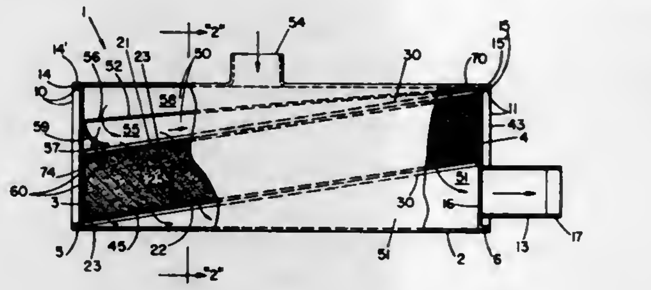
CATALYTIC EXHAUST CONVERTER CONSTRUCTION

Martin W. Perga, Hoffman Estabes; Ted V. De Palma; LeRoy E. Fessler, both of Roselle, and Albert J. Brons, Villa Park, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 18, 1969, Ser. No. 858,920

Int. Cl. B01j *9/04*; F23g *7/06*

U.S. Cl. 23—288 F **6 Claims**



A catalytic converter for treating engine exhaust gases which encompasses a catalyst retaining bed that comprises two perforate plates supported slidably by grooved supporting pieces. In a preferred arrangement the convert has a top inlet, thus permitting under-the-hood or engine compartment installation. A special baffle plate in the inlet manifold section in conjunction with a tilted catalyst bed establishes uniform distribution of exhaust gases through the catalyst particles.

3,649,216

CATHODE LUMINESCENT PHOSPHOR RECLAMATION

Michael J. Hammond, and Raymond F. Herner, both of Towanda, Pa., assignors to Sylvania Electric Products, Inc.

Filed May 28, 1970, Ser. No. 41,592

Int. Cl. B01d *21/01, 9/00*; C01f *17/00*

U.S. Cl. 23—299 **9 Claims**

Cathode luminescent phosphors can be reclaimed from dilute solutions by adding to the solution controlled amounts of a soluble aluminum ion source, agitating the solution, separating the phosphor from the solution by conventional means, washing the phosphor, and finally drying the phosphor.

3,649,217

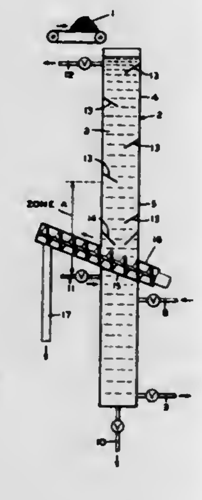
SULFUR EXTRACTION

John H. Bailey, Houston, Tex., assignor to Allied Chemical Corporation, New York, N.Y.

Filed May 21, 1970, Ser. No. 39,400

Int. Cl. C01b *17/08, 17/14*

U.S. Cl. 23—308 S **5 Claims**



Sulfur extraction including provision of means for bringing molten sulfur separated from ore in close proximity to form large droplets for separation.

3,649,218

METHOD FOR PREPARING METERED LIQUID SAMPLE DILUTIONS

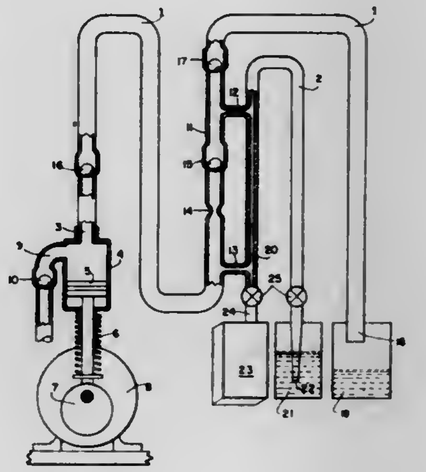
Jacques A. Pontigny, Montmorency, France, assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed May 7, 1969, Ser. No. 822,488

Claims priority, application France, May 8, 1968, 150945

Int. Cl. B01d *11/04, 59/36*

U.S. Cl. 23—309 **5 Claims**



Disclosed is a diluting method and apparatus which pumps a metered volume of a diluent into a conduit system, one portion of which includes a metered capillary tube bypass, into which is separately drawn concentrate. Once the system portions are filled with diluent and concentrate, a metered pumping of diluent forces diluent through the capillary bypass and forces the concentrate to mix with the diluent. The volume of mixed dilution thereby forced from the system equals the volume of the metered diluent. The structural arrangement includes valves which coact to obviate the need for between dilution rinsing of the system.

3,649,219

EXTRACTION OF ALKALI, ALKALINE EARTH AND LEAD HALIDES AND CHLORATES USING AN ACID-AMINE MIXED-EXTRACTANT

Scott Lynn, and Robert K. Charlesworth, both of Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 605,568, Dec. 29, 1966, now abandoned. This application May 7, 1969, Ser. No. 822,701

Int. Cl. B01d *11/04*; C01d *3/18*; C01f *5/26*

U.S. Cl. 23—312 AH **13 Claims**

The invention is a novel process for extracting salts from their aqueous solutions for contacting an aqueous salt solution with a substantially water-immiscible solution of an organic acid and an organic base. The resulting salt-containing organic extract is separated from the salt-depleted aqueous raffinate and the salt in turn usually stripped from the extract. Conveniently, water can be used as the stripping agent.

3,649,220

RECOVERY OF ZINC AND NICKEL FROM WASTE PHOSPHATE LIQUOR

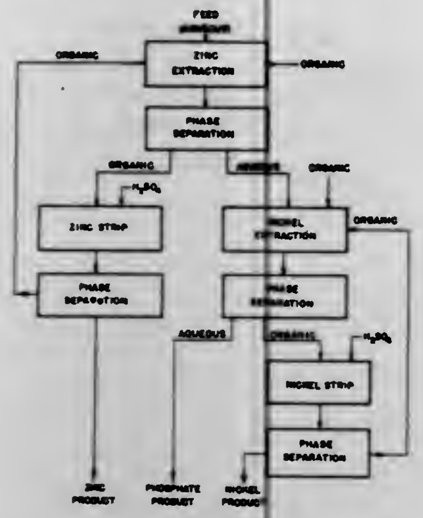
Howard E. Powell, and Lawrence L. Smith, both of Rolla, Mo., assignors to The United States of America as represented the Secretary of the Interior

Filed Dec. 23, 1969, Ser. No. 887,689

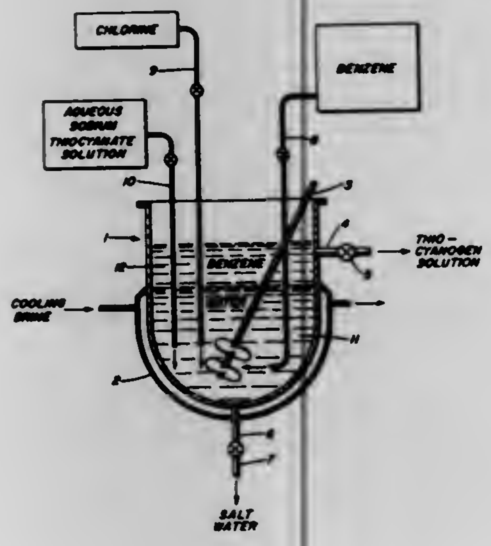
Int. Cl. B01d *11/04*; C01g *9/00, 53/00*

U.S. Cl. 23—312 R **4 Claims**

Zinc and nickel are recovered from waste phosphate liquor by solvent extraction. Zinc is first extracted with di-2-ethylhexyl phosphoric acid in an organic diluent. Nickel is then extracted from the raffinate of the zinc extraction with dinonyl naphthalene sulfonic acid in an organic diluent.



3,649,221
PRODUCTION OF THIOCYANOGEN
Richard Parke Welcher, Old Greenwich, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Filed May 15, 1968, Ser. No. 729,338
Int. Cl. C01b *21/54, 31/00*
U.S. Cl. 23—357 **9 Claims**



Thiocyanogen is generated by introducing a halogen into an aqueous solution of a water-soluble thiocyanate salt having a water-insoluble liquid organic thiocyanogen-solvent admixed therewith, thereby extracting the thiocyanogen into the organic solvent phase as it is formed.

3,649,222
PREPARATION OF SULFUR CHLORIDE PENTAFLUORIDE
Carl J. Schack, Chatsworth, and Richard D. Wilson, Canoga, both of Calif., assignors to North American Rockwell Corporation
Filed Dec. 23, 1968, Ser. No. 785,999
Int. Cl. C01b *17/45, 7/00*
U.S. Cl. 23—367 **2 Claims**

A novel and an improved method for preparing sulfur chloride pentafluoride from chlorine monofluoride and sulfur tetrafluoride by carrying out the reaction in the presence of cesium fluoride at ambient temperatures.

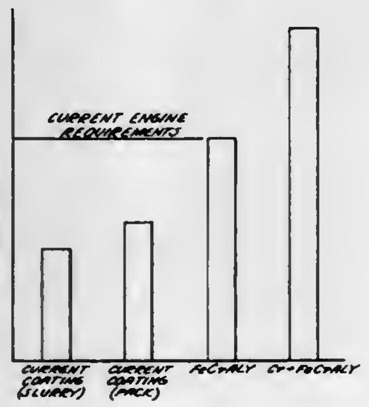
3,649,223
PROCESS FOR RECOVERY OF SOLUBLE ALKALI METAL HYDRIDES FROM INSOLUBLE ALKALI METAL ALUMINUM HEXAHYDRIDES
Jawad H. Murib, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.
Filed Aug. 7, 1968, Ser. No. 750,742
Int. Cl. C01b *6/24, 6/32, 6/04*
U.S. Cl. 23—365 **10 Claims**

A process is provided for recovering soluble alkali metal hydride values from insoluble alkali metal aluminum hexahydrides, in the form of the soluble alkali metal aluminum tetrahydrides, by reaction with an oxygen ether. The formation of the tetrahydride is accompanied by liberation of alkali metal hydride, as a valuable product.

3,649,224
METHOD OF MAKING NONSAG FILAMENTS FOR ELECTRIC LAMPS
Warren A. Anderson; Wilfrid G. Matheson, both of Marblehead, and Lester W. Strock, Salem, all of Mass., assignors to Sylvania Electric Products Inc.
Filed Apr. 18, 1968, Ser. No. 722,214
Int. Cl. C22c *1/08, 27/00*
U.S. Cl. 29—182.5 **7 Claims**

A tungsten wire, previously drawn to a predetermined diameter, is stretched at a stress between its elastic limit and about 95 percent of its ultimate tensile strength, thereby imparting a permanent elongation to the wire. The stressed wire is then coiled into filaments which, on recrystallization, have improved nonsag properties.

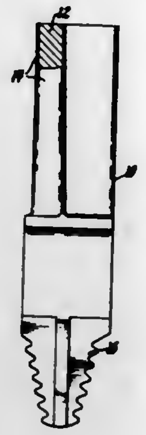
3,649,225
COMPOSITE COATING FOR THE SUPERALLOYS
Alfred E. Simmons, Jr., East Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Nov. 17, 1969, Ser. No. 877,321
Int. Cl. B32b *15/00*
U.S. Cl. 29—194 **4 Claims**



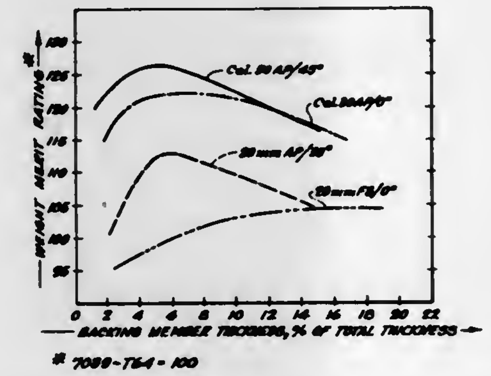
Improved operating lifetimes are provided for the superalloys through use of a composite coating comprising a chromium or chromium-rich interlayer adjacent the superalloy substrate surface and an oxidation-resistant outer layer comprising an alloy of iron, cobalt and/or nickel alloyed with selected amounts of chromium, aluminum and yttrium.

3,649,226
OXIDATION-SULFIDATION RESISTANT ARTICLES
Fred E. Lynch, Indianapolis, and Berl L. Carlton, Franklin, both of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 1, 1969, Ser. No. 812,267
Int. Cl. B32b *15/00*
U.S. Cl. 29—197 **4 Claims**

High-temperature nickel and cobalt base alloy articles such as turbine buckets are provided with improved oxidation and sulfidation resistance by the provision of a diffused aluminum and manganese layer in the surface of the article. The invention herein described was made in the course of work under a contract or subcontract thereunder with the Department of the Air Force.



3,649,227
ALUMINUM COMPOSITE
Maurice C. Fetzer, Walnut Creek; John D. Sprowl, Pleasanton, and William R. Mohondro, Dublin, all of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Jan. 26, 1970, Ser. No. 5,860
Int. Cl. B32b *15/00*
U.S. Cl. 29—197.5 **6 Claims**



An aluminum composite having improved penetration and spall resistances comprising a high-strength aluminum frontal member having a tensile strength between 65,000 and 90,000 p.s.i. and an aluminum backing member having a tensile strength between about 45,000 and 70,000 p.s.i. The backing member must have a thickness between about 4 and 20 percent of the total composite thickness and have a tensile strength of at least 2,000 p.s.i., preferably 7,000 p.s.i., less than the frontal member.

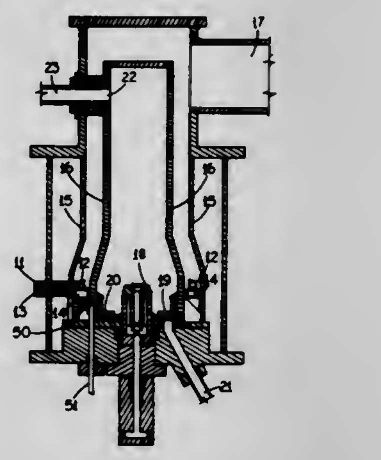
3,649,228
USES OF ARYL-SUBSTITUTED POLYALKYLENE POLYMERS
Robin A. McLaren, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.
Filed Feb. 20, 1970, Ser. No. 13,200
Int. Cl. C10l *1/16, 1/18*
U.S. Cl. 44—62 **14 Claims**

Aromatic-substituted polyalkylene polymers prepared for example by reacting (1) halogenated polyalkylene polymers, such as halogenated polyolefins, etc., with (2) alkylatable aromatic compounds such as benzene, naphthalene, substituted derivatives thereof, etc., to yield aromatic-substituted polyalkylene polymers. These products are useful as pour depressants for fuels, wax crystallization regulators, etc.

3,649,229
LIQUID HYDROCARBON FUELS CONTAINING HIGH MOLECULAR WEIGHT MANNICH BASES
Ferdinand P. Otto, Woodbury, N.J., assignor to Mobil Oil Corporation
Filed Dec. 17, 1969, Ser. No. 885,995
Int. Cl. C10l *1/22*
U.S. Cl. 44—73 **10 Claims**

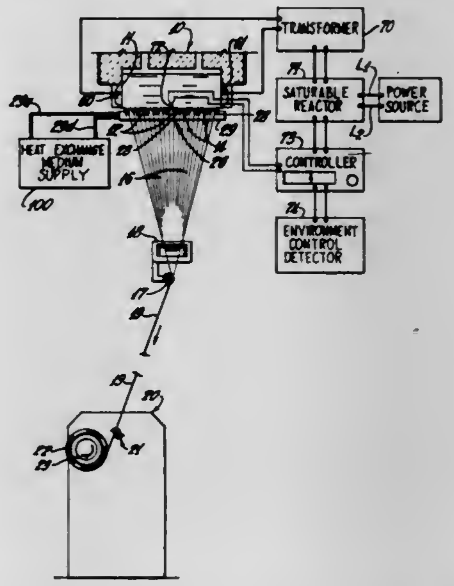
Reaction products obtained from high molecular weight alkyl-substituted hydroxyaromatic compounds, amines and aldehydes are detergency improvers for liquid hydrocarbon fuels.

3,649,230
OIL VAPORIZER
Alexander G. Moore, 700 St. George Street, Moncton, New Brunswick, Canada
Filed Aug. 18, 1969, Ser. No. 843,030
Claims priority, application Canada, Apr. 21, 1969, 49,333
Int. Cl. F02m *21/02, 31/00*
U.S. Cl. 48—102 R **9 Claims**



A fuel oil vaporizer for separating the volatile components from the nonvolatile components and feeding the volatile components to the inlet manifold of a diesel engine thus permitting the use of low-grade fuel oils in diesel engines.

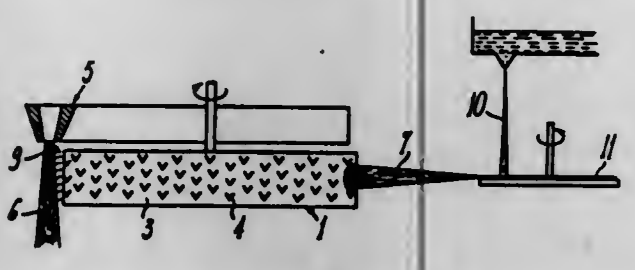
3,649,231
METHOD AND APPARATUS FOR PRODUCING FIBERS WITH ENVIRONMENTAL CONTROL
William C. Trethewey, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation
Continuation of application Ser. No. 760,465, Sept. 18, 1968, now abandoned. This application Oct. 19, 1970, Ser. No. 82,078
Int. Cl. C03b *27/04*
U.S. Cl. 65—2 **20 Claims**



In a specific embodiment described herein there is disclosed a novel method and apparatus for producing glass fibers which includes the steps of issuing a stream of molten glass, attenuating the stream into a fiber, supplying heat to the feeder, regulating the amount of heat supplied to the feeder to maintain the molten glass at a desired temperature, and controlling the environment in a zone adjacent the stream and feeder to assist in fiber formation. A predetermined change in the effectiveness of the environmental control is detected and the effect of the regulation of heat supplied to the heater is modified to change the total amount of heat supplied in response to the detection of the predetermined change in the environmental control.

3,649,232
METHOD AND APPARATUS FOR PRODUCTION OF FIBERS FROM THERMOPLASTIC MATERIALS, PARTICULARLY GLASS FIBERS

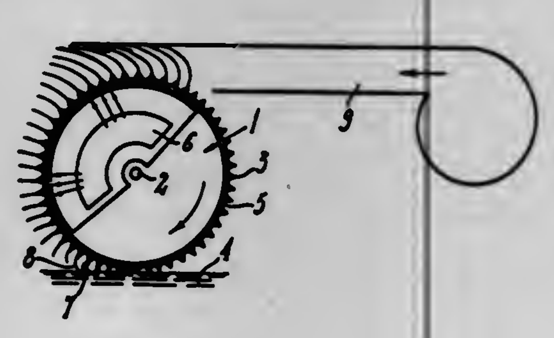
Jean Battigelli, Rantigny (Oise), France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France
Filed Mar. 12, 1969, Ser. No. 806,564
Claims priority, application France, Mar. 14, 1968, 143718; July 10, 1968, 158651
Int. Cl. C03b *37/04*
U.S. Cl. 65—6 **29 Claims**



The production of fibers from thermoplastic materials, particularly glass fibers, by projecting or applying a layer of the material from one or more streams in a viscous state, onto the external surface of a rapidly moving or rotating body, which is provided with priming points for starting the emission for individual fibers from the layer of the material by centrifugal force, until the fibers are in condition to be subjected to attenuating forces produced mechanically or by attenuating gaseous blasts. The priming points for the fibers may be provided mechanically by roughenings, ridges, snagging or hooking points, etc.; thermally by forming a plurality of points of different heat gradients; or pneumatically by forming orifices in the external wall of the moving body, through which gas under pressure is blown to start the formation of the filaments from the layer of viscous material.

3,649,233
METHOD OF AND APPARATUS FOR THE PRODUCTION OF GLASS OR OTHER FIBERS FROM THERMOPLASTIC MATERIALS

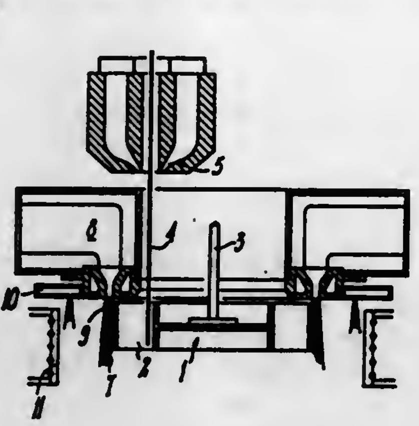
Jean A. Battigelli, Rantigny, France, assignor to Compagnie De Saint-Gobain, Neuilly-sur-Seine, France
Filed Mar. 19, 1969, Ser. No. 808,563
Claims priority, application France, Mar. 21, 1968, 144723
Int. Cl. C03b *37/04*
U.S. Cl. 65—6 **24 Claims**



The production of fibers from thermoplastic materials, and especially glass fibers from molten vitreous material, by fixing droplets of the material onto sharp points of a horizontally rotating hollow drum, and drawing out the droplets into the form of filaments which are then subjected to a gaseous blast emanating from the interior of the drum or tangentially to the latter to attenuate them into fibrous form, for eventual removal.

3,649,234
METHOD AND APPARATUS FOR PRODUCTION OF FIBERS FROM THERMOPLASTIC MATERIALS, SUCH AS GLASS, ROCK, SLAG OR THE LIKE

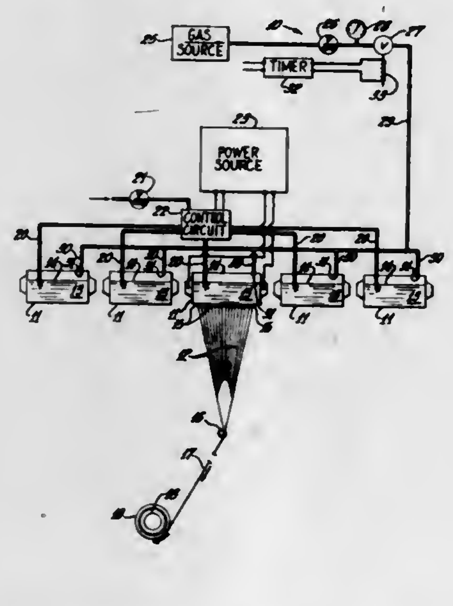
Maurice Charpentier, Rantigny, France, assignor to Compagnie De Saint-Gobain
Filed June 10, 1969, Ser. No. 831,913
Claims priority, application France, June 20, 1968, 155753
Int. Cl. C03b *37/04*
U.S. Cl. 65—6 **19 Claims**



The production of fibers from thermoplastic material, particularly vitreous material in a fluent viscous state, by successively intercepting one or more traveling streams of the material by a series of blades or vanes extending radially from a rotary body. The intercepted segments of the streams are flattened on the blades in sheet form, and are projected from channels formed at the ends of the blades, by centrifugal force, in the form of filaments which are then drawn out into fibers.

3,649,235
APPARATUS FOR DISSIPATING FOAM ON MOLTEN GLASS

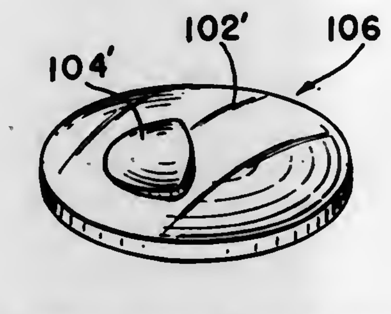
Jesse L. Harris, Anderson, S.C., assignor to Owens-Corning Fiberglas Corporation
Filed Jan. 15, 1970, Ser. No. 3,124
Int. Cl. C03b *37/02*
U.S. Cl. 65—11 R **4 Claims**



A method and apparatus for dissipating foam from the surface of a pool of molten material, such as glass. A pulse of compressed gas is periodically directed at the surface of the pool of molten material. The pulse of gas is periodically supplied at a frequency rate, at a pressure and for a time interval sufficient to keep the surface substantially free of foam. The gas is supplied through a valve that may be periodically opened and closed. This invention may be used in conjunction with a bubble-type depth gauge.

3,649,236
MANUFACTURE OF MULTIFOCAL OPHTHALMIC LENS MOLDS

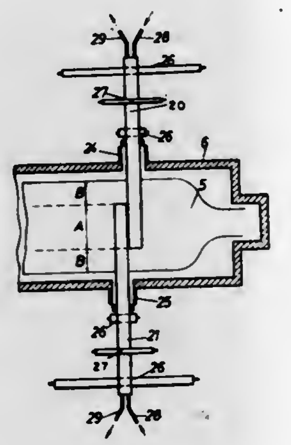
Charles H. Rosenbauer, Irondequoit, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Continuation-in-part of application Ser. No. 661,608, Aug. 18, 1967, now abandoned , and a continuation-in-part of 820,582, Apr. 30, 1969, now abandoned. This application Mar. 5, 1970, Ser. No. 16,664
Int. Cl. C03c *15/00;* **C03b** *11/08,*
U.S. Cl. 65—31 **9 Claims**



A method of manufacture of molds for casting finished multifocal plastic ophthalmic lenses of the type wherein the corrections for the near field of vision are provided on the convex surface of the finished lens.

3,649,237
FLOAT GLASS APPARATUS WITH ADJUSTABLE COOLING MEANS

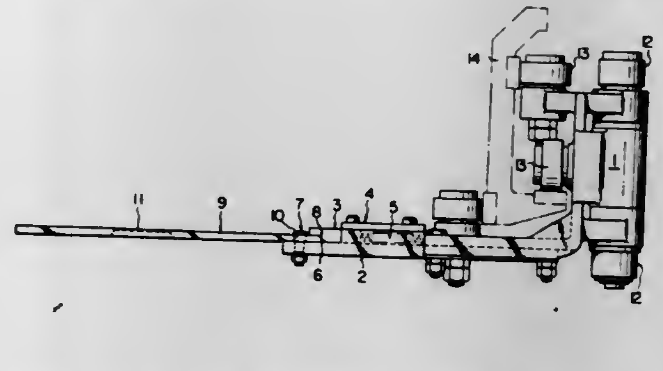
Franz Classen, Porz, Grengel; Karl Kaes, Portz-Wahn; Gunter Labrot, Porz, and Heinz Pape, Porz-Grengel, all of Germany, assignors to Erste Deutsche Floatglas GmbH & Co. OHG, Porz b/Cologne, Germany
Filed Dec. 4, 1968, Ser. No. 781,044
Claims priority, application Germany, Dec. 4, 1967, F 35311
Int. Cl. C03b *18/02*
U.S. Cl. 65—162 **10 Claims**



Float glassmaking apparatus comprises a chamber containing a bath of molten tin. The chamber has glass inlet and outlet openings, and heating and cooling elements having each a coolant flow circuit therein are disposed lengthwise of the glass flow path through the chamber. These elements are arranged in pairs staggered lengthwise of the chamber with the elements of each pair passing into the chamber through gastight joints in opposite sidewalls of the chamber. The elements are adjustable transversely of the chamber and are pivoted for rotation about horizontal and/or vertical axes outside the chamber. The elements are insulated on the upper surface thereof facing the roof of the chamber and have axially extending fins on the lower sides thereof. Temperature measuring means are provided to control drive means for adjustment of the transverse position of the elements.

3,649,238
GLASS BULB BLOWING MACHINE

Noboru Inoue, Funabashi-shi, and Makoto Wada, Kawasaki-shi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha a/k/a Tokyo Shibaura Electric Co., Ltd., Kanagawa-ken, Japan
Filed July 23, 1969, Ser. No. 844,036
Claims priority, application Japan, July 31, 1968, 43/65061
Int. Cl. C03b *9/00*
U.S. Cl. 65—172 **10 Claims**



A glass-bulb-blowing machine including a plurality of interconnected orifice plate supporting link units, comprising a baseplate. Each orifice plate is removably connected to one end of the baseplate by means of a projection and opening connection and locked in position by means of a sliding member.

The sliding member is mounted on the one end of the baseplate and springs urge it into locking engagement with the orifice plate.

3,649,239
LIQUID FERTILIZER COMPOSITIONS

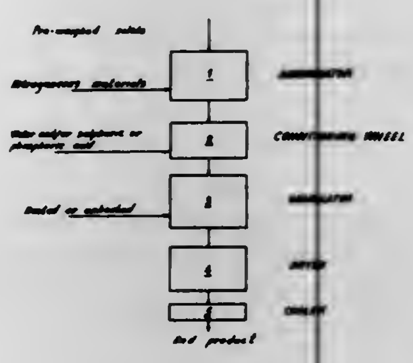
Allen F. Mitchell, Wanganui, New Zealand, assignor to Galdonost Dynamics (N.Z.) Limited, Wanganui, New Zealand
Filed July 23, 1969, Ser. No. 844,192
Claims priority, application New Zealand, July 24, 1968, 153,269
Int. Cl. C05f *11/00;* **A01g** *7/00*
U.S. Cl. 71—23 **15 Claims**

Fertilizer compositions are prepared from a solution of a soluble alginate and soluble fertilizer chemicals and/or insoluble fertilizer chemicals in emulsion form. Such compositions rely on the gelling action of alginic acid; the gel when formed holds the fertilizer chemicals inside its mass and releases them slowly to the soil.

3,649,240
PROCESS FOR THE PRODUCTION OF GRANULATED MATERIALS

Camillien Bolduc, 320 Thomas Pepin Street, Boucherville, Quebec, Canada
Continuation-in-part of Ser. No. 614,189, Feb. 6, 1967.
Filed Aug. 17, 1970, Ser. No. 64,510
Int. Cl. C05b *19/00*
U.S. Cl. 71—64 DA **3 Claims**

One or more ingredients which could be agglomerated and preferably enter into the composition of a fertilizer mixture are subjected to the action of positive external forces, such as shearing, smearing and pressing in order to superficially treat the surface thereof. The solid particles are mixed with a liquid phase such as water, nitrogeneous, phosphatic and potassic solutions and acids prior to the above treatment.



Thereafter the mixture so treated is granulated, dried and cooled to give a homogeneous and uniform composition.

3,649,241

1-(P-CUMYL)-3,3-DIMETHYLUREAS AS SELECTIVE HERBICIDE

David J. Fitzgerald, Wilmington, Del., and Edward J. Soboczenski, Chadds Ford, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 22, 1969, Ser. No. 843,795

Int. Cl. A01n *9/20*

U.S. Cl. 71—120 **4 Claims**

This invention relates to the use of 1-(p-cumyl)-3,3-dimethylurea for the control of undesired vegetation in rice.

3,649,242

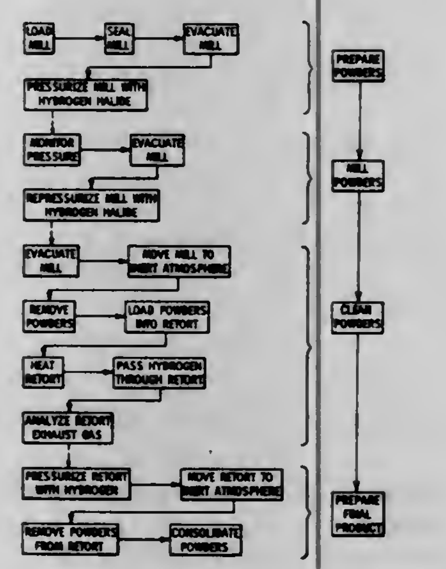
METHOD FOR PRODUCING DISPERSION-STRENGTHENED ALLOYS BY CONVERTING METAL TO A HALIDE, COMMINUTING, REDUCING THE METAL HALIDE TO THE METAL AND SINTERING

Alan Arias, Cleveland, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Nov. 26, 1969, Ser. No. 880,271

Int. Cl. B22f *1/00*

U.S. Cl. 75—0.5 BB **10 Claims**


LOAD MILL
SEAL MILL
EVACUATE MILL
PRESSURIZE MILL WITH HYDROGEN HALIDE
MONITOR PRESSURE
EVACUATE MILL
REPRESSURIZE MILL WITH HYDROGEN HALIDE
EVACUATE MILL
MOVE MILL TO INERT ATMOSPHERE
REMOVE POWDERS
LOAD POWDERS INTO RETORT
HEAT RETORT
PASS HYDROGEN THROUGH RETORT
ANALYZE RETORT EXHAUST GAS
PRESSURIZE RETORT WITH HYDROGEN
MOVE RETORT TO INERT ATMOSPHERE
REMOVE POWDERS FROM RETORT
CONSOLIDATE POWDERS
PREPARE POWDERS
MILL POWDERS
CLEAN POWDERS
PREPARE FINAL PRODUCT

Grinding mixtures of powdered metals and inert fillers or dispersoids to submicron-sized powders in a gastight mill filled with a hydrogen halide under pressure. The powders are cleaned in hydrogen and compacted.

3,649,243

BENEFICIATING IRON-CONTAINING TITANIFEROUS MATERIAL

Frank Ronald Williams, Yarm; Jack Whitehead, Acklam; Jefferson Marshall, Stockton-on-Tees; Alan Conners, Balcombe, and Derek Vernon Gooden, Horsham, all of England, assignors to British Titan Products Company Limited, Billingham, Teesside, England

Filed July 31, 1970, Ser. No. 60,122

Claims priority, application Great Britain, July 31, 1969, 38,478/69

Int. Cl. C22b *3/00, 53/00*

U.S. Cl. 75—1 **17 Claims**

A process for the beneficiation of iron-containing titaniferous material by a preliminary oxidation and reduction before leaching with aqueous hydrochloric acid wherein the leaching is carried out in two stages, in one stage with acid containing dissolved titanium and in the other stage with fresh acid.

3,649,244

METHOD OF SINTERING OF MINERAL SULPHIDES

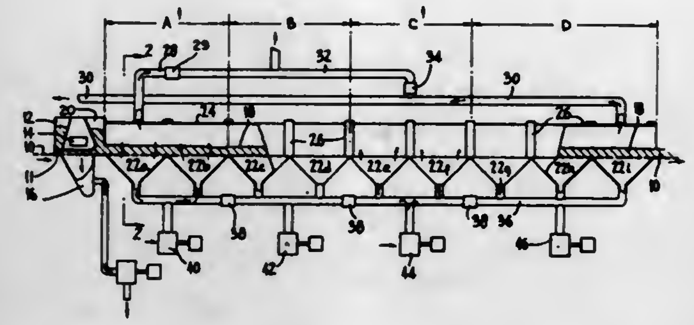
Brian Charles Cunningham, Port Pirie, South Australia, Australia, assignor to The Broken Hill Associated Smelters Proprietary Limited, Melbourne, Victoria, Australia

Filed Feb. 16, 1970, Ser. No. 11,436

Claims priority, application Canada, Feb. 18, 1969, 50694/69

Int. Cl. C21b *1/18*

U.S. Cl. 75—5 **8 Claims**



This invention relates to the sintering of sulphide minerals, e.g., lead sulphide, as a bed incorporating the same is conveyed substantially horizontally, e.g., in a sintering machine of the Dwight Lloyd-type, to a discharge position at which the sinter is delivered to sinter breaking means.

According to the invention, the said bed is ignited at the bottom and then moves through three successive zones below a gas collecting enclosure.

In the first of said zones, an updraught of air is passed through the bed so that the flame front moves upwardly therethrough substantially to its upper surface.

In the second or intermediate zone, there is little, if any, flow of air through the bed while in the third zone, air is again passed upwardly through the bed thereby to cool the sinter.

It is found that, during the interruption of the draught as the bed passes through the intermediate zone, the hot sinter tends to collapse to some extent so that it becomes more dense while still retaining its cellular structure. Also, there is an increased tendency for the molten metal to concentrate in the lower part of the bed.

The strength of the sinter is increased by this method and may be broken into smaller pieces without the production of excessive fines and with reduced degradation during subsequent handling and transport. Also, it has been found practicable to include in the charge mixture, various materials, e.g., plant residues which have previously presented difficulties.

According to a modification, gases from the said enclosure are withdrawn downwardly through the bed as it passes through the said second or intermediate zone.

3,649,245

PROCESS FOR THE PURIFICATION OF PYRITE CINDERS FROM NONFERROUS METALS, FROM ARSENIC AND FROM SULFUR

Umberto Colombo; Giuseppe Sironi; Bruno Viviani, and Ariano Colombini, all of Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed July 24, 1969, Ser. No. 844,600

Claims priority, application Italy, July 26, 1968, 19452/68

Int. Cl. C22b *1/08, 1/10*

U.S. Cl. 75—9 **8 Claims**

A process for the purification of pyrite and pyrrhotite cinders from nonferrous metals, from arsenic and from sulfur. The process is characteristic in that the reduction of the hematite to magnetite is carried out in a fluid bed by direct injection of a hydrocarbon fuel and air in deficiency, at 850°–950πζ c. and with contact times from 15 to 45 minutes, up to a degree of reduction equal to from 10–90 percent, and in the presence of small quantities of HCl. The chlorination and reoxidation of the thus produced hot cinders is carried out in a fluid bed reactor with air and a chlorinating agent, at temperatures of from 650°–1,000° C., preferably at 850°–950πζ c. with contact time from 20 to 150 minutes, and that the gases leaving the reactor contain less than 0.5 percent by volume of free oxygen.

3,649,246

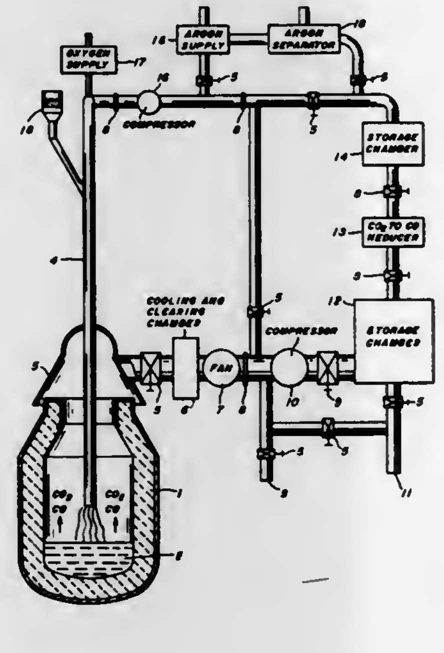
DECARBURIZING MOLTEN STEEL

James C. Fulton, and Sundaresan Ramachandran, both of Natrona Heights, Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Aug. 29, 1969, Ser. No. 854,226

Int. Cl. C21c *5/28*

U.S. Cl. 75—60 **10 Claims**



The application describes a method for decarburizing molten steel. It comprises the steps of introducing oxygen and recirculated diluent gas into a vessel containing a liquid bath of metal, in a manner which precipitates a reaction between carbon within the metal and oxygen. The diluent gas is carbon monoxide or a mixture of carbon monoxide and carbon dioxide. It is obtained by collecting and treating the gas which exits from the vessel.

3,649,247

MELTING FINELY DIVIDED ALUMINUM SCRAP

Kenneth J. Brondyke, Oakmont, and Paul D. Hess, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed May 27, 1969, Ser. No. 828,339

Int. Cl. C22b *21/00*

U.S. Cl. 75—68 **4 Claims**

In melting finely divided aluminum and aluminum alloy metal such as scrap, melt losses can be substantially reduced if the flux is combined with the metal pieces before they are melted.

3,649,248

PROCESS FOR PRODUCING A CALCIUM FERRITE FOR MAKING STEELS

Akitoshi Ishimitsu; Takeo Furui; Katsuhiko Sato, and Yasumasa Sawamura, all of Kitakyushu, Japan, assignors to Yawata Iron & Steel Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1968, Ser. No. 771,020

Int. Cl. C22b *9/10*

U.S. Cl. 75—94 5 Claims

A process for producing a calcium ferrite for making steels by mixing an iron powder ore and a limestone powder so that the mol ratio of CaO/Fe_2O_3 is 0.5 to 6, granulating the mixture, then covering the granules with the limestone powder and firing them at a temperature above 1,100° C.

3,649,249

CONTINUOUS CASTING SLAG AND METHOD OF MAKING

James W. Halley, Chesterton, Ind.; Donald E. Grimes, Lansing, Ill.; Norman T. Mills, Highland, Ind., and Krishna Rao Yalamanchili, New York, N.Y., assignors to Inland Steel Company, Chicago, Ill.

Continuation-in-part of Ser. No. 7,464, Feb. 2, 1970.

Filed July 6, 1970, Ser. No. 52,750

Int. Cl. C22b *9/12, 9/10;* **B23k** *35/34*

U.S. Cl. 75—96 **9 Claims**

A synthetic slag composition for continuous casting of steel which has in combination chemical and thermal stability, plastic deformation point, flowidity and solubility for alumina properties which make the slag composition particularly suitable for producing high-quality continuous castings substantially free of surface defects from steels containing aluminum.

3,649,250

SILVER RECOVERY PROCESS

Adrian C. Dorenfeld, and Gust Bitsianes, both of Minneapolis, Minn., assignors to Minerals Technology Corporation, Minneapolis, Minn.

Filed May 12, 1969, Ser. No. 823,983

Int. Cl. C22b *11/08*

U.S. Cl. 75—107 **13 Claims**

Silver is recovered from silver-containing scrap paper (e.g., scrap thermographic office copy paper) by a process which involves conditioning the silver-containing paper (e.g., with hot dilute aqueous sodium hydroxide) to thereby convert the silver in the paper from its usual organic acid salt form (e.g., silver behenate) into a different form of silver (e.g., converted into silver metal or some silver oxide) which is more readily converted into silver cyanide than is the organic acid salt of silver, and simultaneously or subsequently treating the new silver form with a silver-cyanide forming reagent (e.g., a dilute aqueous sodium cyanide solution) to thereby form silver cyanide. Metallic silver can then be recovered from the resulting silver cyanide solution by standard processing (e.g., zinc dust precipitation in the Merrill-Crowe process) as known in the art.

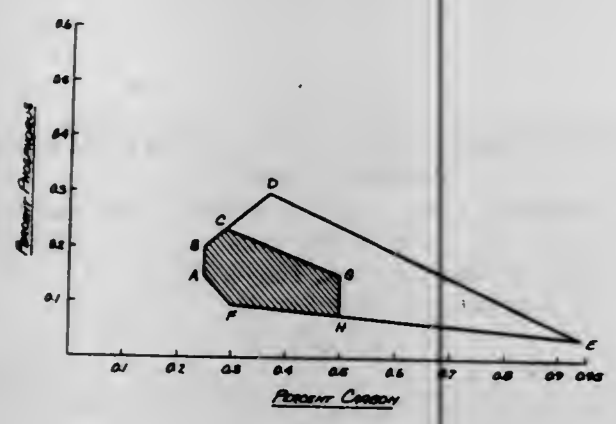
3,649,251
AUSTENITIC STAINLESS STEELS ADAPTED FOR EXHAUST VALVE APPLICATIONS

Floyd G. Larson, Jr., Ringwood, N.J., and John J. de Barbadillo, II, Suffern, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Mar. 25, 1970, Ser. No. 22,631

Int. Cl. C22c *39/20, 39/14*

U.S. Cl. 75—128 P **15 Claims**



Austenitic stainless steels containing chromium, nickel, carbon and phosphorus in controlled amounts offer a combination of corrosion resistance, hardness, strength, fabricability, etc., which render them particularly suitable as exhaust valve steels.

3,649,252
STEELS RESISTANT TO STRESS CORROSION CRACKING

Henry William Kirkby, 17 Furniss Avenue, Totley Rise, Sheffield, and John Edmund Truman, 14 Park Avenue, Chapeltown, both of England

Filed Aug. 15, 1968, Ser. No. 752,771

Claims priority, application Great Britain, Aug. 16, 1967, 37,795/67

Int. Cl. C22c *39/20*

U.S. Cl. 75—128 G **4 Claims**

A chromium steel having good resistance to stress corrosion cracking comprises by weight from 0.01 to 0.2 percent carbon, from 0.01 to 2.0 percent silicon, from 0.01 to 4.0 percent manganese, from 1.0 to 5.0 percent nickel, from 12.0 to 20.0 percent chromium, from 0.5 to 2.5 percent molybdenum, from 0.1 to 2.0 percent niobium, 0.01 to 0.1 percent nitrogen and iron the balance apart from normal impurities.

3,649,253
DEOXIDATION OF ALUMINUM-KILLED MOLTEN STEEL

Franz Kaess, Traunstein, Upper Bavaria, Germany, assignor to Suddeutsche Kalkstickstoff-Werke Aktiengesellschaft, Trostberg, Upper Bavaria, Germany

Filed Oct. 8, 1969, Ser. No. 864,881

Claims priority, application Germany, Oct. 14, 1968, P 18 02 991.9

Int. Cl. C21c *7/06, 7/08*

U.S. Cl. 75—129 **9 Claims**

When aluminum-killed molten steel is deoxidized with an alloy consisting of 15–30 percent barium and/or strontium, 5–30 percent calcium, 40–60 percent silicon and/or aluminum, the balance of not more than 20 percent consisting of iron, manganese, and other impurities, the slabs, billets, and the like produced by continuous casting contain aluminum oxide as randomly distributed practically spherical inclusions. Accumulation of slag inclusions near the skin and the resulting defects in subsequent hot working are avoided, and the need for trimming or dressing the castings is reduced to a minimum.

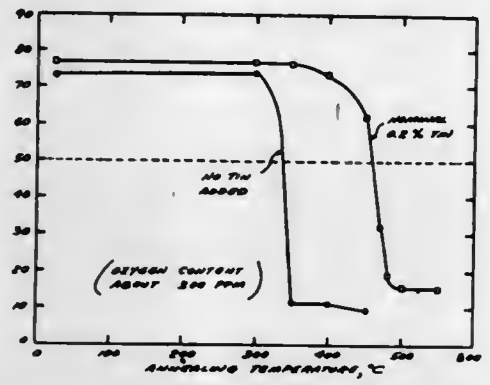
3,649,254
ARTICLE OF MANUFACTURE AND PROCESS OF MAKING IT

Italo S. Servi, 3 Angier Road, Lexington, Mass.

Continuation-in-part of application Ser. No. 511,494, Dec. 3, 1965, now abandoned. This application Mar. 6, 1969, Ser. No. 835,828

Int. Cl. C22c *9/02*

U.S. Cl. 75—154 **3 Claims**



Oxygen-bearing copper alloys containing small amounts of tin have been found to provide an alloy of unexpectedly high softening temperatures. With these alloys it is not necessary to deoxidize the copper beyond a nominal oxygen content in the preparation of the high softening temperature oxygen-bearing copper alloys.

3,649,255
CORROSION-RESISTANT NICKEL-MOLYBDENUM ALLOYS

Gunes M. Ecer, Pittsburgh, Pa., assignor to Cyclops Corporation, Universal Cyclops Specialty Steel Div., Pittsburgh, Pa.

Filed May 25, 1970, Ser. No. 40,460

Int. Cl. C22c *19/00*

U.S. Cl. 75—170 **2 Claims**

Nickel-molybdenum alloys having increased corrosion resistance and resistance to impact at room temperature and below resulting from a critical control of the amounts of carbon, silicon, vanadium, boron and zirconium without creating vanadium stabilization. The carbon and silicon are maintained in negligible amounts and the vanadium, boron and zirconium are closely controlled.

3,649,256
FULLY DENSE CONSOLIDATED-POWDER SUPERALLOYS

Stewart G. Fletcher, Latrobe, Pa., assignor to Latrobe Steel Company, Latrobe, Pa.

Filed Feb. 16, 1970, Ser. No. 11,859

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 **6 Claims**

Superalloys formed of consolidated powder, which are fully dense and have a composition by weight consisting essentially of about 0.70 to 1.2 percent carbon, about 18 to 24 percent chromium, about 7 to 12 percent tungsten, about 3 to 11 percent tantalum, about 0.05 to 2.5 percent zirconium, and the balance cobalt together with minor alloying ingredients and incidental impurities, are characterized by being readily workable as compared to conventional casting alloys of the same chemical composition which are too brittle and have too little ductility to hot work.

3,649,257
FULLY DENSE CONSOLIDATED-POWDER SUPERALLOYS

Stewart G. Fletcher, Latrobe, Pa., assignor to Latrobe Steel Company, Latrobe, Pa.

Filed Feb. 18, 1970, Ser. No. 12,422

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 **4 Claims**

Superalloys formed of consolidated powder, which are fully dense and have a composition by weight consisting essentially of about 0.01 to 0.5 percent carbon, about 5 to 30 percent cobalt, about 6 to 12 percent chromium, about 4 to 9 percent aluminum, about 0.5 to 6.5 percent titanium, about 8 to 12 percent aluminum plus titanium, about 1 to 8 percent molybdenum, and the balance nickel together with minor alloying ingredients and incidental impurities, are characterized by being readily workable as compared to conventional casting alloys of the same chemical composition which are too brittle and have too little ductility to hot work.

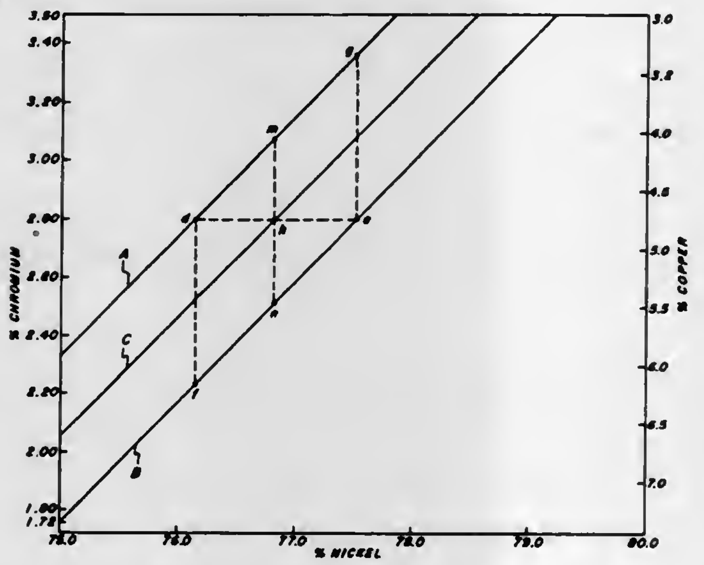
3,649,258
NICKEL ALLOY

Robert C. Zukas, Natrona Heights, and Robert C. McMath, Vandegrift, both of Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Mar. 2, 1970, Ser. No. 15,703

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 **4 Claims**



A nickel alloy of improved premeability having about 75 to 80 percent nickel, about 1.75 to 3.5 percent chromium, about 3 to 7 percent copper, a critical maximum sulfur limit of less than 0.003 percent and the balance iron. The nickel and chromium contents in the alloy are present in balanced combinations which have been found to provide unexpectedly superior magnetic properties.

3,649,259
TITANIUM ALLOY

George H. Heitman, Shrewsbury, Mass., assignor to Wyman-Gordon Company, Grafton, Mass.

Filed June 2, 1969, Ser. No. 829,725

Int. Cl. C22c *15/00*

U.S. Cl. 75—175.5 **4 Claims**

This invention relates to a titanium alloy and, more particularly, to such an alloy having strength and fracture toughness, even when hot, formed by virtue of the use of aluminum, vanadium, zirconium, and cobalt.

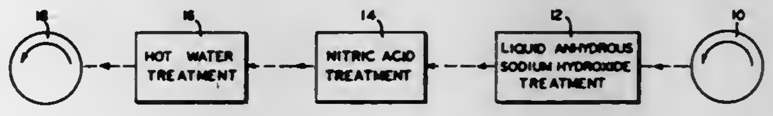
3,649,260
PROCESS FOR MAKING REFRACTORY METAL MATERIAL

David M. Denniston, Towanda; David A. Shanks, Granville Summit, and Neville H. Simpson, Towanda, all of Pa., assignors to Sylvania Electric Products Inc.

Filed Feb. 27, 1970, Ser. No. 14,932

Int. Cl. B22f *3/24*

U.S. Cl. 75—211 **7 Claims**



An improved process for making refractory metal material is disclosed wherein in the process of manufacturing the material, the additional steps of treating the material in a liquid anhydrous sodium hydroxide bath, in a nitric acid bath, and finally in a hot water bath for specified periods of time are incorporated into the process.

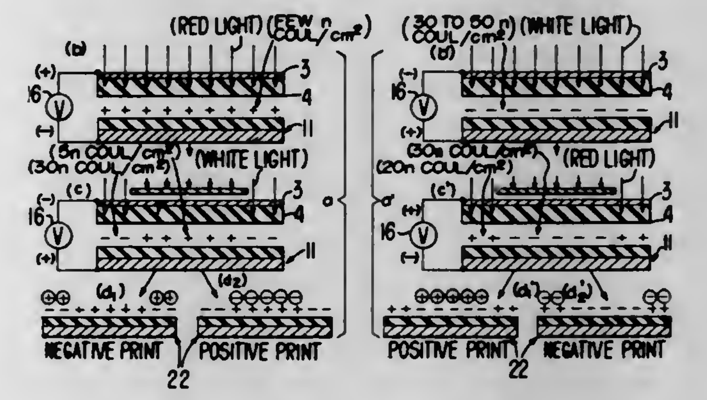
3,649,261
METHOD FOR INCREASING THE CONTRAST OF ELECTROPHOTOGRAPHIC PRINTS

John A. Dahlquist, and Guy A. Marlor, both of Palo Alto, Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed July 7, 1969, Ser. No. 839,344

Int. Cl. G03g *13/22*

U.S. Cl. 96—1 R **2 Claims**



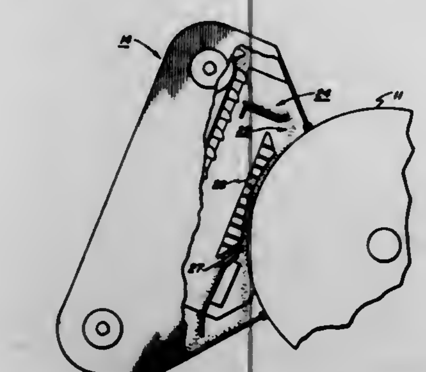
A method for producing electrophotographic prints having increased contrast is disclosed. In the method, the dielectric charge retentive surface of an electrophotographic recording medium, such as dielectric coated conductive paper, is uniformly charged with charge of a first polarity. A photoconductive member disposed overlaying the charged surface area of the recording medium is illuminated with a photon image to be printed. An electrical potential is applied across the charged dielectric surface of the recording medium and the photoconductive member to withdraw charge from the charged surface of the recording medium in accordance with the conductive pattern in the photoconductor produced by illumination of the photoconductor with the photon image. The amplitude of and/or the time that the potential is applied across the charge retentive surface to withdraw the charge is proportioned to withdraw more charge from the light areas of the image than was originally deposited by the charging step. In this manner, the light areas of the charge image on the recording medium are thereby charged with an opposite polarity to the charge remaining on the dark portion of the photon image. The resultant composite charge image on the recording medium, which contains a charge image pattern of opposite polarities, is then exposed to charged toner particles of a given polarity to develop the composite charge image pattern. Increased contrast is obtained because the toner particles are attracted to the charge image pattern of one polarity and repelled from the charge image pattern of the other polarity.

3,649,262

SIMULTANEOUS DEVELOPMENT-CLEANING OF THE SAME AREA OF AN ELECTROSTATOGRAPHIC IMAGE SUPPORT SURFACE

Ronald L. Cade, Fairport, and Stewart William Volkers, Williamson, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Dec. 31, 1968, Ser. No. 789,031
Int. Cl. G03g *13/08, 13/16*
U.S. Cl. 96—1.4 **25 Claims**



A system for removing residual toner images from electrostatographic image support surfaces and simultaneously developing an undeveloped electrostatic latent image on essentially the same area of said surface, including development-cleaning a xerographic plate, for example, by cascading developer along the image support surface of the plate.

3,649,263

AERYL TERPOLYMERS AS BINDERS FOR ELECTROPHOTOGRAPHIC COMPOSITIONS

Kazuo Tubuko; Nario Yamaguchi, and Sakae Shimizu, all of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Dec. 11, 1968, Ser. No. 783,118
Claims priority, application Japan, Dec. 18, 1967, 42/80667
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.5 **5 Claims**

An electrophotographic copying material comprising a support and a photoconductive layer formed on one surface of said support, said photoconductive layer being formed in such a way that a photoconductive layer-forming solution—which is prepared by dispersing a photoconductive substance in an aqueous emulsion containing an acryl resin emulsified in water with an emulsifier consisting of an acidic compound and a volatile basic compound—is coated onto one surface of said support and then dried.

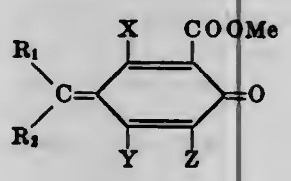
3,649,264

OPTICALLY SENSITIZED PHOTOCONDUCTIVE RECORDING ELEMENTS

Karel E. Verhille, Mortsel-Antwerpen, and Theofiel Hubert Ghys, Kontich, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Continuation of application Ser. No. 628,550, Apr. 5, 1967, now abandoned. This application July 6, 1970, Ser. No. 56,134
Int. Cl. G03g *7/00;* **H01l** *13/00*
U.S. Cl. 96—1.7 **4 Claims**

Diarylmethane dyestuffs of the general formula



wherein:
Me is a cation selected from the group consisting of H, an onium group, or the cation of a metal salt,
each of R_1 and R_2 is an aromatic radial free of sulphonic acid groups, at least one of R_1 and R_2 being substituted by at least one ortho- and para-directing substituent selected from the group consisting of alkyl, halogen, amino, hydroxyl, and alkoxy groups, and
each of X, Y and Z is hydrogen or one of said ortho- and para-directing substituents, at least one of them being different from hydrogen, or
Y and Z together are the atoms necessary to close a condensed ring system,
are effective sensitizing dyes for sensitizing photoconductive zinc oxide when applied from an aqueous coating medium. Preferably, the coating medium also contains a water-soluble binder for the zinc oxide.

3,649,265

DIFFUSION TRANSFER SYSTEM COMPRISING DYE DEVELOPERS, A PYRAZOLONE AND AN ONIUM COMPOUND

Paul Harold Stewart, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 6, 1970, Ser. No. 35,290
Int. Cl. G03c *7/00, 5/54, 5/30*
U.S. Cl. 96—3 **18 Claims**

Improved color separation is achieved in color diffusion transfer systems such as multicolor dye developer systems by processing exposed photosensitive elements in the presence of a 5-pyrazolone unsubstituted in the 4-position in combination with an onium compound.

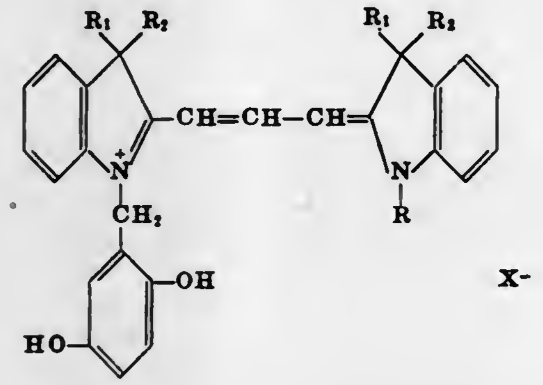
3,649,266

MAGENTA DYE DEVELOPER AND TRANSFER SYSTEM EMPLOYING SAME

Derek D. Chapman, and Leslie G. S. Brooker, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 18, 1970, Ser. No. 38,510
Int. Cl. G03c *7/00, 5/54, 1/40*
U.S. Cl. 96—3 **19 Claims**

Substituted 1-(dihydroxybenzyl)indocarbocyanine magenta dye developers having the general formula



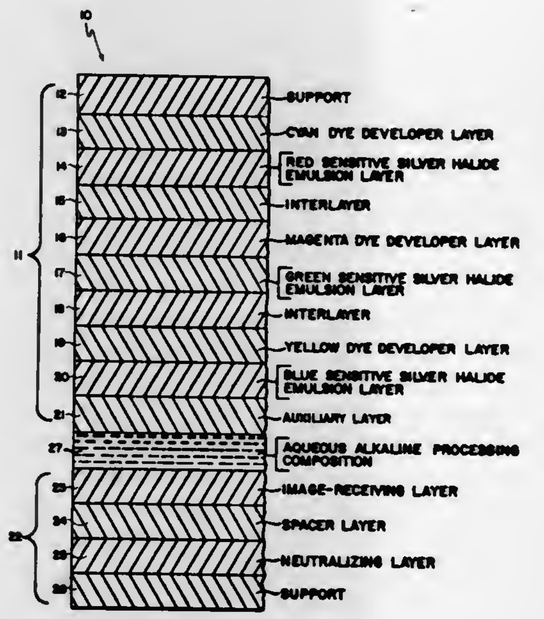
wherein R represents a hydrogen atom, an alkyl group, or an aryl group, R_1 and R_2 represent alkyl groups or when taken together constitute the number of carbon atoms necessary to form a carbocyclic ring having five, six or seven members and X represents an acid anion, provide improved dye hue and reduced color contamination in diffusion transfer systems.

3,649,267

PHOTOGRAPHIC DIFFUSION-TRANSFER PRODUCTS COMPRISING DIVALENT METAL-COMPLEXED ANTIFOGGANT PRECURSORS AND PROCESSES FOR THEIR USE

David P. Carlson, Westboro, and Jerome L. Reid, Natick, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 756,884, Sept. 3, 1968, now abandoned. This application Sept. 15, 1970, Ser. No. 72,264
Int. Cl. G03c *5/54, 1/34, 7/00*
U.S. Cl. 96—3 **31 Claims**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SUPPORT
CYAN DYE DEVELOPER LAYER
RED SENSITIVE SILVER HALIDE EMULSION LAYER
INTERLAYER
MAGENTA DYE DEVELOPER LAYER
GREEN SENSITIVE SILVER HALIDE EMULSION LAYER
INTERLAYER
YELLOW DYE DEVELOPER LAYER
BLUE SENSITIVE SILVER HALIDE EMULSION LAYER
AUXILIARY LAYER
AQUEOUS ALKALINE PROCESSING COMPOSITION
IMAGE-RECEIVING LAYER
SPACER LAYER
NEUTRALIZING LAYER
SUPPORT

Metal-complexed antifoggant precursors of the formula A—X—A, wherein each A is an antifoggant nucleus resultant from the deprotonization of the antifoggant A—H, and X is a divalent metal, provide substantially no antifoggant functionality on photographic systems in which they are contained until cleavage of the antifoggant nuclei from the complex is accomplished.

3,649,268

PROCESS FOR FORMING IMAGES BY PHOTOHARDENING AND APPLYING A COLORANT

Victor F. H. Chu, Chalfonte, Wilmington, Del., and Abraham B. Cohen, Springfield, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 5, 1969, Ser. No. 796,890
Int. Cl. G03c *5/04*
U.S. Cl. 96—27 R **10 Claims**

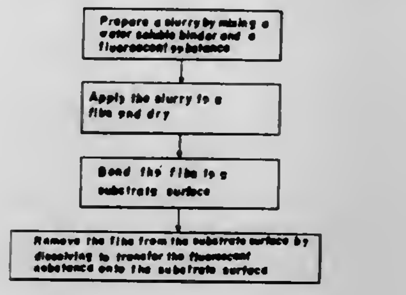
An image reproduction process in which an element having a removable support and a photohardenable layer is (1) laminated to a suitable receptor, (2) imagewise exposed through the support to actinic radiation which selectively raises the stick temperature of those areas receiving the radiation, (3) the support stripped from the layer, and (4) the outer surface of the layer treated (e.g., dusted) with material which adheres only to the underexposed areas of the layer to read-out the image. By repeating the laminating, exposing with separate color separation records, stripping and treating steps in sequence, a multicolor image can be obtained. The receptor may be plastic, metal, ceramic, glass, etc. The process is useful for color proofing.

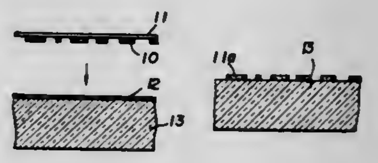
3,649,269

METHOD OF FORMING FLUORESCENT SCREENS

Tsutomu Kubota, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation of application Ser. No. 451,479, Apr. 28, 1965, now abandoned. This application Dec. 11, 1969, Ser. No. 880,497
Claims priority, application Japan, Apr. 30, 1964, 39/24243
Int. Cl. H01j *9/22, 29/22;* **G03c** *11/12*
U.S. Cl. 96—28 **4 Claims**


Prepare a slurry by mixing a water soluble binder and a fluorescent substance
Apply the slurry to a film and dry
Bond the film to a substrate surface
Remove the film from the substrate surface by dissolving to transfer the fluorescent substance onto the substrate surface



A method of forming a fluorescent screen on the surface of a substrate, comprising the steps of: applying a layer of a fluorescent substance and a resin binder onto one side of a film sheet which is soluble in a first solvent but insoluble in a second solvent in which said binder is soluble so as to form a fluorescent film assembly, coating a resin binder onto the substrate surface and contacting said one side of said fluorescent film assembly thereto to cause it to adhere to the substrate and bonding said one side of said film sheet to said substrate surface by means of said resin binder which is soluble also in said second solvent so that said layer of fluorescent substance on said fluorescent film assembly adheres to said substrate surface, and, then, removing said film sheet by dissolving it in said first solvent.

3,649,270

NEGATIVE IMAGE SILVER TRANSFER DEVELOPMENT

Ralph Kingsley Blake, Westfield, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 21, 1969, Ser. No. 826,679
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 **4 Claims**

A gelatino-silver halide emulsion layer containing fogged silver halide crystals which have been treated with 5-nitrobenzimidazole is exposed to actinic radiation and processed by silver diffusion transfer development to give a negative image of an original on a receptor layer. Useful negative radiographic images can be obtained by the process.

3,649,271

PREPARATION PLATE WITH SILVER HALIDE OF PLANOGRAPHIC EMULSION COMPRISING HYDROPHOBIC THERMOPLASTIC POLYMER PARTICLES

Marcel Nicolas Vrancken, Hove, and Daniel Alois Claeys, Mortsel, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed Oct. 24, 1967, Ser. No. 677,766
Claims priority, application Great Britain, Oct. 24, 1966, 47,625/66
Int. Cl. G03t *7/02*
U.S. Cl. 96—33 **14 Claims**

An improvement on U.S. Pat. No. 3,476,937 wherein the recording material contains, in addition to a continuous phase of hydrophilic binder and a dispersion phase of thermoplastic hydrophobic particles in a weight ratio relative to the binder of at least 1:1, a light-sensitive silver halide and a developing agent for such halide present in the surface layer and/or in an adjacent underlying layer so that exposure and photographic development by means of an alkaline solution produces a silver image in heat-conductive relationship with the thermoplastic particles and subsequent uniform exposure by the developed silver image, the heat generated in the silver image by such absorption rendering the areas of the surface layer in heat-conductive relationship therewith relatively less hydrophilic.

3,649,272
POSITIVE METAL IMAGE-FORMING ELEMENT AND PROCESS

Paul B. Gilman, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 18, 1969, Ser. No. 834,533

Int. Cl. G03c *5/00*

U.S. Cl. 96—36 **16 Claims**

This invention relates to photographic processes for the formation of positive, metal, nonsilver halide photographic images and to photographic elements for carrying out these processes. A photographic element having a metal, e.g., silver, surface or a surface having thereon nonsilver halide nuclei, e.g., silver particles, and a photoreactive composition comprising a spectral sensitizing dye, a mercaptan and an α, β unsaturated monomer, adsorbed to said surface or nuclei which inhibits the removal of said metal or nuclei by chemical solvents or bleaching agents is featured in the present process. Upon imagewise exposure of said element to light, the inhibiting effect of the photoreactive composition is destroyed; and subsequent treatment with a bleaching agent removes the exposed metal surface or nonsilver halide nuclei, resulting in the formation of a direct positive metal photographic image or an active site capable of physical development to a negative metal photographic image.

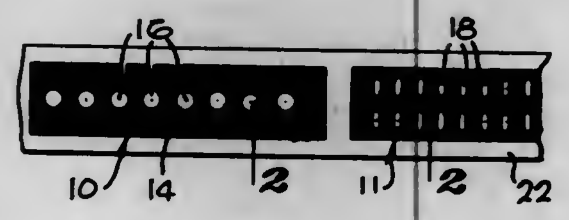
3,649,273
PRINTED CIRCUIT PROCESS AND ARTICLES

Genevieve Gayle Miller, Los Angeles, Calif., assignor to Bishop Graphics, Inc., North Hollywood, Calif.

Filed June 9, 1969, Ser. No. 831,381

Int. Cl. G03c *5/00, 5/04*

U.S. Cl. 96—36.2 **8 Claims**



Printed circuit process and articles for manually producing a modifiable pattern mask structure for use in standard printed circuit board exposure and etching techniques. Flexible pattern members comprise a thin flexible base sheet with opaque patterns having transparent pattern openings therein printed on the sheet in negative form, i.e., transparent pattern openings surrounded by an opaque background. The pattern member is provided on its undersurface with a pressure-sensitive adhesive. Pattern members are arranged according to circuit design requirements on a thin transparent substrate. Interconnecting circuit lines are marked as with white chalk on the opaque patterns of the pattern members to usually establish conductor paths. Conductor path patterns are formed by cutting through the pattern members along the edges of the chalk marks and peeling off the cut path portions of the pattern members from the substrate, the resulting article constituting a pattern mask for direct use in conventional circuit board printing. The pattern on the pattern mask can be directly modified subsequently to change or correct the circuit design.

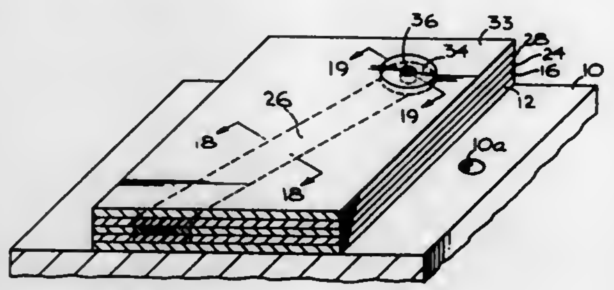
3,649,274
COAXIAL CIRCUIT CONSTRUCTION METHOD

Robert B. Older, Woodland Hills, and Charles W. Smith, Canoga Park, both of Calif., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Sept. 18, 1969, Ser. No. 858,923

Int. Cl. G03c *5/00*

U.S. Cl. 96—36.2 **4 Claims**



A coaxial circuit construction method in which a coaxial structure is fabricated by successively applying layers of metal and photopolymer material, the photopolymer layers being photographically processed to form patterns which provide the required insulation, and the metal layers being formed by up-plating and precision grinding.

3,649,275
PHOTOGRAPHIC ELEMENTS AND PROCESSES

James G. McNally, Jr., Pittsford, and Charles A. Goffe, Brockport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 2, 1969, Ser. No. 854,719

Int. Cl. G03c *5/24*

U.S. Cl. 96—48 PD **25 Claims**

Novel photographic elements and processes are described. Active sites for physical development are created by the action of a sensitizing compound on a reducible metal salt.

3,649,276
COLOR PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIALS CONTAINING P-AMINDIENZOYL ACETANILIDE COLOR COUPLERS

Kazuya Sano; Yukio Yokota; Yasushi Oishi, and Kiyoshi Nakazyoo, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

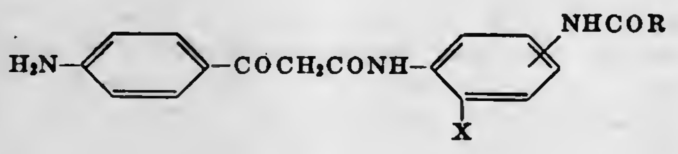
Filed Aug. 8, 1969, Ser. No. 848,601

Claims priority, application Japan, Aug. 10, 1968, 43/56965

Int. Cl. G03c *7/00*

U.S. Cl. 96—55 **23 Claims**

A light-sensitive material for producing a colored image comprising a support and a silver halide emulsion layer thereon containing a yellow-forming coupler having the formula



wherein *X* represents a halogen atom, —COR represents an acyl group containing nine to 28 carbon atoms, and said —NHCOR group is located at the 4- or 5-position of an anilide ring.

3,649,277
WATER-WASHING ACCELERATING COMPOSITION FOR SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT SENSITIVE ELEMENTS

Haruo Shibaoka, and Shunichiro Tsuchida, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd, Kanagawa, Japan

Filed Oct. 2, 1968, Ser. No. 764,614

Claims priority, application Japan, Oct. 2, 1967, 42/63360

Int. Cl. G03c *7/00*

U.S. Cl. 96—56 **3 Claims**

A water-washing accelerator for silver halide color photographic light-sensitive elements which comprises an aqueous solution containing at least one of the following: acetic acid, propionic acid, butyric acid, itaconic acid, citraconic acid, aconitic acid, phthalic acid, and derivatives thereof. A process for accelerating the removal of chemicals remaining in a color photographic light-sensitive element comprises processing the element after fixing in the presence of one of the above members or the derivatives thereof.

3,649,278
PROCESS FOR FORMING A PHOTOGRAPHIC IMAGE

Masakuni Iwama; Tamotsu Kojima; Mitsuto Fujiwhara, and Kenro Sakamoto, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd.

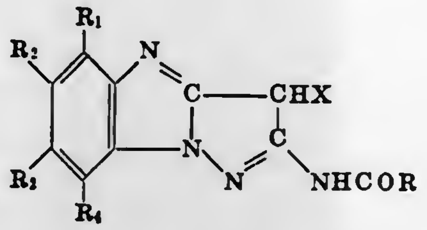
Filed Oct. 22, 1968, Ser. No. 769,700

Claims priority, application Japan, Oct. 28, 1967, 42/69263

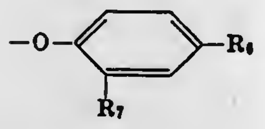
Int. Cl. G03c *5/38, 1/40, 1/50*

U.S. Cl. 96—56.5 **9 Claims**

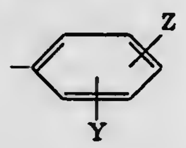
A color photographic material comprising at least one layer of a photographic emulsion is exposed to an image. The exposed material is treated with a color developing solution. The photographic emulsion or developing solution contains a color coupler. The color coupler has the general formula



wherein R_1 to R_4 individually mean hydrogen atoms, halogen atoms, lower alkyl groups, lower alkoxy groups, aryl groups, sulfonic groups, sulfonate groups, sulfamide groups, —NHCOR′ groups or —COOR″ groups; X is hydrogen atom, a halogen atom, sulfonic group, a sulfonate group or an arylazo group; each of R, R′ and R″ is an aliphatic hydrocarbon radical having up to 20 carbon atoms which may be substituted in the α- or β-position of the carbonyl group thereof with sulfonic group, a sulfonate group, a $—COOR_5$ group or a



group, or is an aralkyl group or a



group, where Y and Z individually mean hydrogen atoms, halogen atoms, lower alkyl groups, lower alkoxy groups, —NHCOR′ groups or —COOR″ groups, and X and Z cannot be —NHCOR′ groups at the same time; and each of R_5, R_6 and R_7 is hydrogen atom or an alkyl group having one to 18 carbon atoms. Magenta colored photographic images are obtained which are less absorbing of light in the blue region and exhibit no loss of sensitivity.

3,649,279
PHOTOGRAPHIC COMPOSITIONS WITH A THIOSEMICARBAZONE SOLUBILIZING AGENT

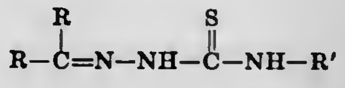
Grant M. Haist, and Wilbert J. Humphlett, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 15, 1970, Ser. No. 3,174

Int. Cl. G03c *5/38*

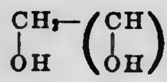
U.S. Cl. 96—61 **13 Claims**

The present invention relates to novel silver halide solubilizing agents having the formula:



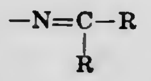
$$R-\overset{\overset{\displaystyle R}{|}}{C}=N-NH-\overset{\overset{\displaystyle S}{\|}}{C}-NH-R'$$

wherein R is a substituent selected from the group consisting of hydrogen, substituted and unsubstituted alkyl, aryl, and heterocyclic radicals, and radicals derived from polyhydroxy aldehydes, said radicals having the formula:



$$\underset{\underset{\displaystyle OH}{|}}{CH_2}-\left(\underset{\underset{\displaystyle OH}{|}}{CH}\right)_x-$$

wherein *x* is an inter 1 to 4; wherein R′ is a substituent selected from the group consisting of R and radicals having the formula:



$$—N=\underset{\underset{\displaystyle R}{|}}{C}-R$$

and wherein at least 1 of said R substituents defined above contains a hydroxyl group, i.e., —OH. Also disclosed are photographic compositions, such as monobaths, containing said silver halide solubilizing agents and photographic processes using said composition.

3,649,280
PHOTOGRAPHIC ELEMENTS AND COMPOSITIONS

James R. King, and Grant M. Haist, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 29, 1968, Ser. No. 780,232

Int. Cl. G03c *5/30*

U.S. Cl. 96—66 T **5 Claims**

A thermolabile photographic developing agent precursor which is a reaction product of an acidic silver halide developing agent, such as ascorbic acid or a hydroxy tetronic acid, with a labile organic base, such as urea, an amide or guanidine, is useful in photographic elements and/or compositions in dry processing. These developing agent precursors are activated by heat and/or alkali.

3,649,281
PHOTOGRAPHIC PROCESSING FOR PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE ELEMENTS

Haruhiko Iwano, and Isao Shimamura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

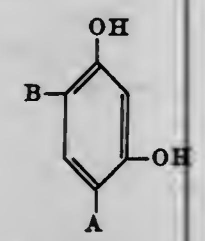
Filed Oct. 4, 1968, Ser. No. 765,032

Claims priority, application Japan, Oct. 4, 1967, 42/63936

Int. Cl. G03c *5/30*

U.S. Cl. 96—66.5 **4 Claims**

In photographic processings for photographic silver halide light-sensitive elements which include a prehardening step and development step, an improvement which comprises processing the light-sensitive element between the prehardening step and the development step in an aqueous solution containing a resorcinol derivative represented by the following general formula:



The moieties A and B are defined in the specification.

3,649,282
FLUID CONTAINERS HAVING AN INNER ACID REACTING LAYER

John E. Campbell, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 15, 1970, Ser. No. 28,786

Int. Cl. G03c *1/48*

U.S. Cl. 96—76 **13 Claims**

A rupturable, single use-fluid container adapted to retain a photographic composition is composed of a plurality of layers including a layer of metal foil, particularly aluminum foil, and a layer containing an acid-reacting reagent.

3,649,283
PROCESS FOR APPLYING PHOTORESIST

Carl W. Christensen, and Calvin M. Isaacson, both of Beverly, Mass., assignors to Shipley Company, Inc., Newton, Mass.

Continuation-in-part of application Ser. No. 823,052, May 8, 1969. This application Oct. 29, 1969, Ser. No. 872,133

Int. Cl. G03c *1/86*

U.S. Cl. 96—85 **15 Claims**

This invention is for a process for applying a smooth uniform layer of a photoresist to a base material. In the process, a laminate is provided comprising a layer of light-sensitive photoresist, a permeable backing layer and an intermediate layer displaced between the light-sensitive photoresist layer and the backing layer, the intermediate layer being soluble or degradable in water or developer for the light-exposed photoresist of the laminate. In use, this laminate with the light-sensitive photoresist layer face downward is adhered to a base material and washed with a solvent for the intermediate layer. The solvent permeates and undercuts the backing layer thereby solvating the intermediate layer, and breaking the bond between the backing layer and the light-sensitive layer. The backing layer may then be peeled from the photoresist layer. If the backing layer transmits light, the composite comprising the base material and the laminate may be exposed prior to the washing step and the washing step may be performed with a developer for the light-exposed light-sensitive photoresist layer. A preferred backing layer is clay filled paper having a smooth, glazed surface. An adhering agent may be applied over the photoresist layer if desired.

3,649,284
FURFURVYLIDENE-LOWER HALOALKANE PHOTOSENSITIVE COMPOSITION CONTAINING ARYLAMINO DISULFIDE

Lawrence Price, Old Orchard Beach, Maine, assignor to Scott Paper Company, Delaware County, Pa.

Filed Nov. 17, 1970, Ser. No. 90,433

Int. Cl. G03c *1/52*

U.S. Cl. 96—90 **6 Claims**

A heat-developable photographic plate comprising, on a support, a layer of a light-transmitting binder containing a furfurylidene compound, a photosensitive lower haloalkane, a brominated primary aromatic amine and an arylamino disulfide.

3,649,285
LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS CONTAINING CYAN COUPLER

Masakuni Iwama; Toshihiko Yamamoto; Keiji Kasai; Yoshinobu Nakagawa, and Takaya Endo, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd.

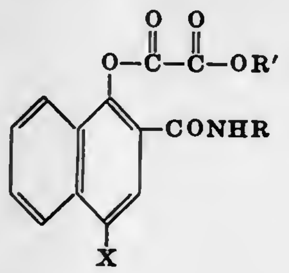
Filed July 13, 1970, Ser. No. 54,625

Claims priority, application Japan, July 16, 1969, 44/55733

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **2 Claims**

A coupler having the formula



wherein R is an aryl or aralkyl group or unsaturated aliphatic hydrocarbon residue having one to 22 carbon atoms, R′ is an aliphatic residue having one to six carbon atoms, and X is hydrogen or halogen is incorporated within a light-sensitive silver halide color photographic emulsion. A composition useful for forming a cyan-colored photographic image is produced. Deposition of the coupler in the emulsion is substantially reduced. The color formation rate of the coupler is close to that of other magenta and yellow couplers. This enables the three colors to be readily balanced in speed. A finely grained color image is obtained upon color development.

3,649,286
PROCESS FOR SPECTRALLY SENSITIZING PHOTOGRAPHIC SILVER HALIDE EMULSIONS

Roberta A. Ogilvie, Lexington, Mass., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 23, 1968, Ser. No. 761,841

Int. Cl. G03c *1/08, 5/26*

U.S. Cl. 96—120 **14 Claims**

A process for spectrally sensitizing photographic silver halide which comprises: adsorbing a photographic spectral sensitizing dye onto finely divided silica particles; and adding the dyed silica particles to a liquid photographic silver halide emulsion.

3,649,287
METHOD OF INCORPORATING PHOTOGRAPHIC INGREDIENTS INTO A PHOTOGRAPHIC COLLOID

Alfons Jozef De Pauw, Edegem, and Jan Albert Carpentier, Walem, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Continuation-in-part of application Ser. No. 511,969, Dec. 6, 1965, now abandoned. This application Dec. 31, 1969, Ser. No. 889,722

Claims priority, application Great Britain, Jan. 25, 1965, 3,150/65

Int. Cl. G03c *1/00, 1/38*

U.S. Cl. 96—114.6 **2 Claims**

A method of incorporating a slightly water-soluble photographic ingredient containing a water-solubilizing group into an aqueous medium containing dissolved gelatin.

The method comprises the steps of

1. Dissolving the photographic ingredient in a photographically inert organic liquid consisting essentially of

tetrahydrothiophene-1,1-dioxide, N-methyl-2-pyrrolidinone, ethylene glycol, glycerol, acetonitrile or formamide,

2. Forming a dispersion of the photographic ingredient by mixing the solution obtained with an aqueous solution of a hydrophilic photographically inert colloid miscible with gelatin more particularly a colloid of the following classes A to C, i.e.,
   - A. Water-soluble, natural colloid substances selected from the group of agar-agar, alginates, amulose and amylopectine,
   - B. Water-soluble modified natural colloid substances selected from the group of:
     - a. non-ionic starches
     - b. anionic starches
     - c. water-soluble alginic acid derivatives
     - d. non-ionic cellulose gums
     - e. anionic cellulose gums
   - C. Synthetic water-soluble resins selected from the group consisting of vinyl polymers containing vinyl alcohol, N-vinylpyrrolidinone, vinyl methyl ether, acrylic acid and salts thereof, methacrylic acid groups and salts thereof, maleic acid salts thereof or acrylamide units, maleic anhydride, water-soluble polymers containing alkylene oxide units, water-soluble prepolycondensates and polycondensates that are miscible with gelatin and selected from the group consisting of water-soluble urea-formaldehyde, water-soluble melamine formaldehyde, water-soluble guanamine-formaldehyde, water-soluble alkyd and water-soluble polyester resins, and

3. Homogeneously distributing the obtained dispersion into a gelatin solution or photographic gelatino silver halide emulsion.

3,649,288
SUPERSENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION

Keisuke Shiba; Masanao Hinata; Akira Sato, and Hiroshi Misu, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

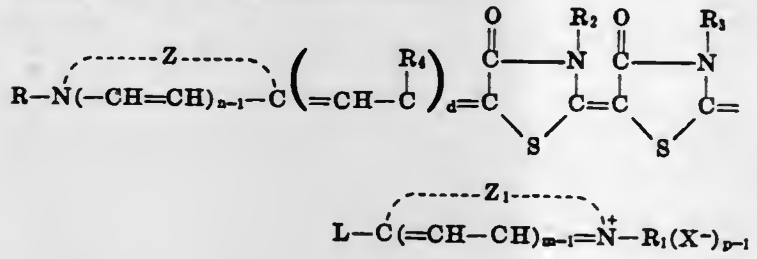
Filed July 21, 1970, Ser. No. 56,959

Claims priority, application Japan, July 21, 1969, 44/57545

Int. Cl. G03c *1/22, 1/28*

U.S. Cl. 96—122 **16 Claims**

A supersensitized silver halide emulsion comprising a sensitizing dye of the general formula [I]



[I]

wherein R, R_1, R_2 and R_3, which may be same or different, each represents a group of the alkyl series, i.e., an alkyl, a substituted alkyl, or an allyl aralkyl group; L represents a monomethyne group or aliphatic hydrocarbon chain which may combine with the N-atom in the heterocyclic ring containing Z_1 to form a ring; R_4 represents a hydrogen atom or an alkyl or an aryl group *m*, *n* and *p* each represents 1 or 2 and *d* represents 0, 1 or 2; X^- represents an anion and forms an intramolecular salt when *p* is 1; and Z and Z_1, which may be same or different, each represents the nonmetallic atomic groups necessary to complete a 5- or 6-membered heterocyclic nucleus and a polycyclic aromatic sulfo compound of the general forumla [II]

$$DSO_3M \qquad [II]$$

wherein M represents a hydrogen atom or a cation forming a water-soluble salt of a compound represented by said formula [II], and D represents a polycyclic aromatic radical, is disclosed.

3,649,289
PHOTOGRAPHIC MATERIALS

Gary L. Hiller, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 21, 1968, Ser. No. 769,393

Int. Cl. G03c *1/10*

U.S. Cl. 96—123 **9 Claims**

Photographic silver halide emulsions are spectrally sensitized with the combination of complex merocyanine dye, sulfonated polynuclear aromatic compound and reducing agent.

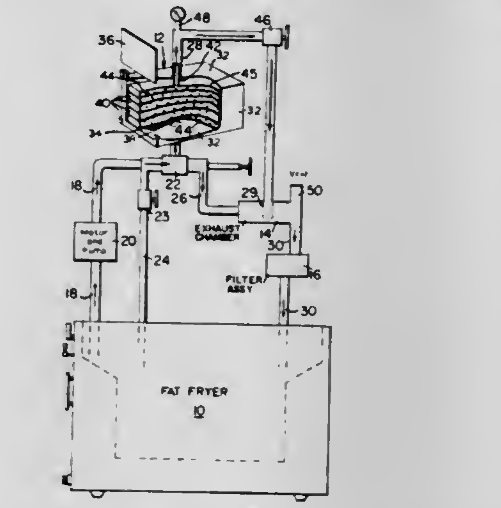
3,649,290
COOKING FOOD UNDER PRESSURE

Raymond H. Angold, 179 Fairway Hill Crescent, Kingston, Ontario, Canada

Continuation-in-part of application Ser. No. 750,671, June 20, 1968, now abandoned. This application July 28, 1970, Ser. No. 58,951

Int. Cl. A22c *21/00, 25/00;* **A23l** *1/00*

U.S. Cl. 99—1 **3 Claims**



A process for preparing and cooking food is described wherein the cooking is by pressure cooking in a liquid under pressure greater than atmospheric. The food to be cooked is placed into a pressurizable chamber that is substantially empty of any cooking liquid. Hot cooking oil or other cooking liquid is then pumped under pressure into the chamber to immerse and effect cooking of the food. After a predetermined time interval substantially all of the cooking liquid is drained from the cooking chamber, and the cooked food removed therefrom. Preferably, hot cooking liquid is circulated through the chamber continuously during cooking. A process for preparing food that is being precooked by pressure cooking in a cooking oil or fat under pressure is also described, especially for food such as chicken, fish or the like.

3,649,291
PROCESS FOR THE PREPARATION OF GRANULAR, WATER-SOLUBLE, LIVESTOCK FORAGE

Gerrit J. Van Elten, Voorthuizen, Netherlands, assignor to Welvo N. V., Tromplaan, Voorthuizen, Netherlands

Filed June 26, 1967, Ser. No. 648,591

Claims priority, application Netherlands, June 24, 1966, 6608867

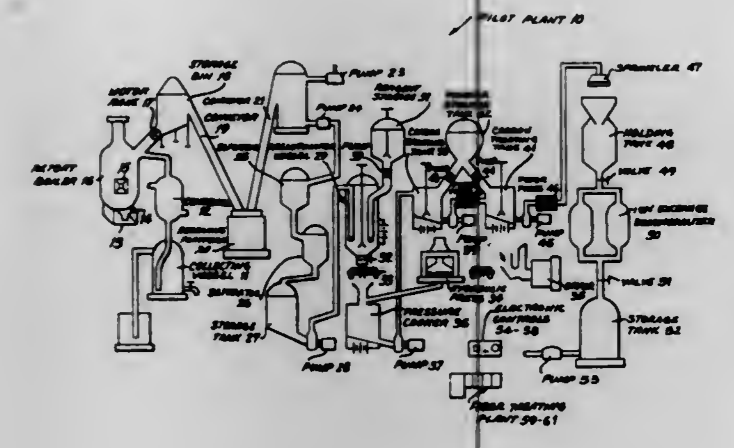
Int. Cl. A23k *1/00;* **A23c** *1/04*

U.S. Cl. 99—2 **3 Claims**

Skim milk powder and fats are separately propelled upwardly from a central bottom inlet substantially vertically by a current of air whose moisture, temperature and velocity are controlled and thence outwardly and downwardly in a surrounding airstream of lesser velocity. The milk powder and fats are brought into intimate contact while in said airstreams whereby a granular, water-soluble product suitable for livestock forage is obtained.

3,649,292
RECOVERY OF PRODUCTS FROM PLANTAIN WASTES IN GHANA

Babington A. Quame, 235 East 18th St., New York, N.Y.
Filed Oct. 24, 1968, Ser. No. 770,333
Int. Cl. A23k *1/18*
U.S. Cl. 99—4 **1 Claim**



The invention relates to an overall method of producing valuable products from plantain so that material which normally constitutes a considerable amount of waste is put to economic utility. According to the invention there is obtained from what was hitherto waste a series of valuable products, including fiber, amorphous carbon, inorganic salts, an edible flour and a powder that can be used either as poultry feed or as fertilizer.

3,649,293
A METHOD FOR PRODUCING A BAY PROTEIN PRODUCT

Ralph A. Hoer, and Francis E. Calvert, both of St. Louis, Mo., assignors to Ralston Purina Company, St. Louis, Mo.
Filed May 3, 1968, Ser. No. 726,573
Int. Cl. A23j *1/14*
U.S. Cl. 99—17 **4 Claims**

Producing a soy protein product by forming an aqueous slurry of defatted soy material to dissolve protein and carbohydrate materials out of the cellular or fibrous portion of the defatted soybean material, precipitating the protein on and into the surfaces of the cellular portion of the soybean material, separating this protein-coated solid material from the liquid carbohydrate portion, forming a second aqueous slurry with protein-coated solid material and instanteously heating at a temperature of from about 220° F. to about 400° F. under pressure, releasing the pressure on this slurry to flush off the indesirable flavor, and then drying the protein-coated cellular material.

3,649,294
PROCESS FOR DEHYDRATING DEFATTING AND DEODORIZING ANIMAL TISSUE

Henricus A. C. Thijssen, Son, Netherlands, assignor to Continental Engineering, Ingenieursbureau voor de Procesindustrie N.V., Amsterdam, Netherlands
Filed Nov. 5, 1969, Ser. No. 874,214
Claims priority, application Netherlands, Nov. 6, 1968, 68.15777
Int. Cl. A23j *1/04*
U.S. Cl. 99—18 **7 Claims**

A process for dehydrating, defatting and deodorizing animal tissue, comprising the steps of comminuting animal tissue, such as whole fishes, diluting or not diluting the resulting tissue suspension with water or a volatile organic solvent, contacting the resulting tissue suspension in countercurrent relation with vapors of the same volatile organic solvent so as to effect an evaporation-extraction process in which a major part of water from the suspension is evaporated and drawn off with the solvent vapors and a major part of fats and odors, if present, is extracted simultaneously by liquid solvent, separating the resulting substantially dehydrated tissue suspension into a fat-containing solvent fraction and a protein-containing solids fraction, and, if desired, subjecting the resulting solids to an additional extraction with fresh liquid solvent. The end product is a protein concentrate suitable for human consumption or animal feed. The vapors drawn off from the evaporation-extraction process are subjected to rectifying distillation and solvent vapors freed from absorbed water are recycled to the evaporation-extraction process. A further part of solvent vapors feed from absorbed water may be used after condensation as a solvent for additional extraction of solids. The fat-containing solvent fractions from main extraction and additional extraction are distilled and this distillation may be combined with the rectifying distillation of water-enriched solvent vapors, said second solvent fraction thereby serving as a reflux liquid for that rectifying distillation.

3,649,295
HUMANIZED FAT COMPOSITIONS AND INFANT FORMULAS THEREOF

Finn W. Bernhart, Radnor, Pa., assignor to American Home Products Corporation, New York, N.Y.
Filed June 1, 1970, Ser. No. 42,550
Int. Cl. A23c *21/00;* **A23d** *5/00*
U.S. Cl. 99—57 **12 Claims**

Edible, highly assimilable, fat compositions of oleic oil; coconut or babassu oil; oleo oil; and, optionally, a seed oil and/or soy lecithin. Also disclosed are infant formulas incorporating said edible, highly assimilable, fat composition.

3,649,296
STABILIZED ROASTED COFFEE AROMA

Herman H. Friedman, Bayside, N.Y., and Donald K. Pennelle, Las Vegas, Nev., assignors to General Foods Corporation, White Plains, N.Y.
Filed Jan. 19, 1970, Ser. No. 4,105
Int. Cl. A23f *1/08*
U.S. Cl. 99—71 **9 Claims**

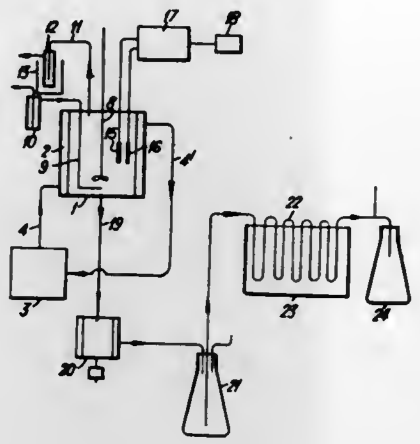
The aroma of roasted coffee is stabilized and intensified by solvent extracting an aqueous mixture of the aroma with a low-temperature boiling fluorinated hydrocarbon solvent. The roasted coffee aroma-containing solvent is emulsified with an edible oil, after which substantially all of the solvent is separated as a vapor prior to, or concurrently with combining the residual stabilized coffee aroma-oil emulsion with soluble coffee solids.

3,649,297
IMPROVEMENTS RELATING TO FERMENTATION OF TEA

David J. Millin, Reading, England, assignor to Tenco Brooke Bond Limited, London, England
Filed Jan. 21, 1969, Ser. No. 792,255
Claims priority, application Great Britain, Jan. 23, 1968, 3,625/68
Int. Cl. A23f *3/02*
U.S. Cl. 99—77 **13 Claims**

An instant tea composition is produced by a process which comprises disintegrating green leaf, mixing the disintegrated leaf with water in a fermentation vessel having an inlet for introducing gas into the resulting suspension, introducing an oxygen-containing gas into the suspension at a controlled

rate of flow, allowing fermentation to take place while controlling the concentration of dissolved oxygen, eliminating further enzyme activity upon completion of the desired fermentation and drying and resulting liquor.



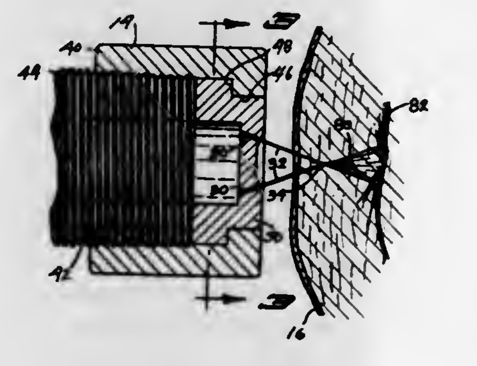
3,649,298
CARBONATION CONCENTRATES FOR BEVERAGES AND PROCESS OF PRODUCING CARBONATED BEVERAGES

Maurice M. Kreevoy, and Dolores E. Popowitz, both of Minneapolis, Minn., assignors to General Mills, Inc.
Filed Apr. 16, 1970, Ser. No. 29,292
Int. Cl. A23l *1/00, 1/26*
U.S. Cl. 99—78 **8 Claims**

Disodium salts of N-carboxy amino acids are added to beverage concentrates which contain N-carboxy amino anhydrides that release carbon dioxide when the concentrate is added to water. The concentrate can also include an inorganic carbonating system comprising a carbonate or bicarbonate and a water soluble acid. Additives such as flavoring, sweetening, and coloring agents can also be included in the concentrate.

3,649,299
METHOD OF LIMITING THE DEPTH OF PENETRATION OF TENDERIZING AND/OR FLAVORING LIQUIDS INTO MEAT

Jeffrey John Sholl, 2735 A N. Nathan Ln., Plymouth, Minn.
Filed Mar. 17, 1970, Ser. No. 646
Int. Cl. A22c *18/00*
U.S. Cl. 99—107 **4 Claims**



The depth to which injected liquids penetrate animal tissue is limited by injecting the liquid in a plurality of streams with the axes of streams positioned to intersect at a focal point located within the tissue or at the surface of the tissue. The impact of the streams against one another causes a dissipation of energy and spreading out of the liquid in the streams thereby reducing further penetration.

3,649,300
METHOD OF PREPARING A MEAT PRODUCT HAVING A TEXTURE SIMILAR TO THAT OF A PRIMAL CUT AND HIGH POLYUNSATURATED FAT CONTENT

Floyd C. Olson, and Everett Podebradsky, both of Madison, Wis., assignors to Oscar Mayer & Company, Inc., Chicago, Ill.
Filed Mar. 12, 1969, Ser. No. 806,671
Int. Cl. A22c *18/00*
U.S. Cl. 99—107 **8 Claims**

Primal cuts of meat are fabricated from coarse-sized pieces of lean uncooked muscle meat by mixing the same in the presence of vegetable oil having a polyunsaturated fat content exceeding its saturated fat content, the amount of vegetable oil being sufficient so that the overall polyunsaturated fat content of the final product at least equals the saturated fat content thereof. Usually a small amount of seasoning such as ordinary salt, and preferably antioxidant treated salt, may be incorporated. Desirably, a small percentage of an edible polyphosphate is also incorporated in the mixture. The mixing of ingredients is continued until sufficient exudate is emitted from the pieces of meat to bind the same together. The mixed mass is formed into one or more bodies of predetermined cross section and then, either cooked directly, or frozen for subsequent cooking. Roasts, chops and other primal cuts characterized by higher than normal polyunsaturated fat content may be fabricated from pieces of whole muscle meat in accordance with this procedure.

This invention relates, generally, to innovations and improvements in fabricating bodies of meat having textures similar to those of primal cuts and characterized by substantially higher than normal content of polyunsaturated fat.

3,649,301
A PROCESS FOR PREPARING A SAUSAGE MEAT EMULSION

Harry C. Stump, Palatine, and Paul L. Ford, Flossmoor, both of Ill., assignors to Armour and Company, Chicago, Ill.
Filed Mar. 14, 1969, Ser. No. 807,421
Int. Cl. A22c *11/00*
U.S. Cl. 99—109 **7 Claims**

A method for manufacturing sausage in which the broth produced in the high-temperature wet-rendering of animal fat is combined with raw meat materials to form a sausage emulsion.

3,649,302
PROCESS OF PRODUCING A READY-TO-SPREAD FROSTING

Elmer E. Daggy, Tenafly, and Daniel Melnick, West Englewood, both of N.J., assignors to CPC International Inc.
Filed Nov. 10, 1969, Ser. No. 875,549
Int. Cl. A23g *3/00*
U.S. Cl. 99—139 **15 Claims**

Process for producing a light bodied, ambient temperature storable, ready-to-spread frosting, by turbulently mixing, at a temperature of 70°–120° F., a comminuted sugar phase with an emulsion wherein an edible glyceridic oil, having a melting point in excess of 90° F. and less than 120° F., is dispersed into an aqueous phase and said emulsion has from 1 part to 2.5 parts of the aqueous phase for each part of the specified glyceridic oil phase, the parts figures being by weight, and has from about 1.5 to 5.5 percent by weight, based on the emulsion, of a cold water swellable polysaccharide, and aerating the resulting mixture to form the prepared frosting.

3,649,303
TAMALE MANUFACTURE

Lewis J. Hayhurst, Glenview; William L. Avery, Oak Forest, and Clarence B. Geis, Chicago, all of Ill., assignors to Swift & Company, Chicago, Ill.

Filed Dec. 23, 1968, Ser. No. 786,363

Int. Cl. A23b *1/00;* **A23l** *3/10*

U.S. Cl. 99—182 5 Claims

Concentric layered food products, such as tamales, are produced by enwrapping the product with a protective edible collagen material, and then subjecting the enwrapped product to a cooking process whereby the edible collagen material is consumed.

3,649,304
REFRIGERATED SOLID BATTER

Isaac N. Fehr, Jr.; Trebor B. Morris; John J. Russ; Richard C. Bingham; Jose M. Rubi; James C. Patton, and Sidney E. Cannon, all of Dallas, Tex., assignors to Campbell Taggart, Inc., Dallas, Tex.

Filed Sept. 6, 1968, Ser. No. 757,993

Int. Cl. A21d *13/08, 8/00*

U.S. Cl. 99—192 BB 15 Claims

A refrigerated solid batter for making flour based products, such as cakes, cookies, muffins, bread and the like, and the process for making same generally consisting of mixing gelatin or other stabilizing agent of similar characteristics with fluid and dry ingredients to which is added chemical leaveners, such as a basic and an acid leavener, mixing same in liquid state before solidification of the stabilizer, sealing the batter in a container and refrigerating the same at a temperature below the melting point of the stabilizer to solidify same for marketing same as a refrigerated product.

3,649,305
PROCESS FOR PREPARING FROZEN FRENCH FRIED POTATO SEGMENTS

Curtis J. Wilder, Portland, Oreg., assignor to Lamb-Weston, Inc., Portland, Oreg.

Filed Mar. 25, 1969, Ser. No. 810,328

Int. Cl. A23b *7/03, 7/04;* **A23L** *1/12*

U.S. Cl. 99—207 4 Claims

A process for preparing frozen french fried potatoes which when finish fried closely resemble french fried potatoes prepared directly from fresh potatoes, in which potatoes are peeled, trimmed, cut into french fry sized strips, washed, dehydrated without prior blanching to remove a substantial amount of moisture, blanched in steam, partially fried, and then frozen.

3,649,306
COOKING OF FOOD MORSELS

James McNair Dalgleish, Warwick, England, assignor to Golden Wonder Limited, Northants, England

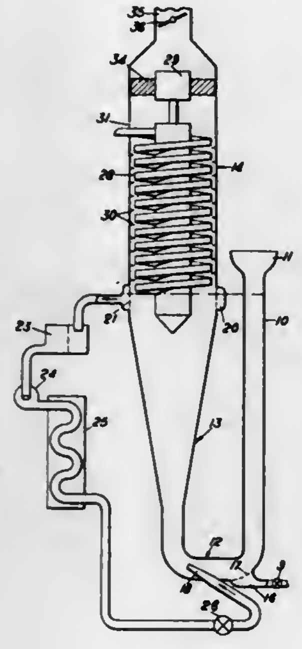
Filed July 28, 1969, Ser. No. 845,390

Claims priority, application Great Britain, Aug. 8, 1968, 37,985/68

Int. Cl. B65d *9/00*

U.S. Cl. 99—246 18 Claims

Surface water is removed from morsels of water-impregnated food (e.g., washed raw potato slices) before subsequent dehydration and cooking bypassing the morsels downwards through cold oil and draining off the separated water.



3,649,307
BINDER FOR ZINC-RICH PAINT

Aaron Oken, Kennett Square, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 715,559, Mar. 25, 1968, now abandoned , and a continuation-in-part of 460,516, June 1, 1965, now abandoned. This application Feb. 11, 1969, Ser. No. 800,361

Int. Cl. C09d *5/10*

U.S. Cl. 106—1 6 Claims

Compositions identical to those obtained by treating ethyl polysilicate with boric acid, in an organic solvent for the boric acid, at reflux temperature.

The compositions are useful as binders for zinc-rich paints.

3,649,308
STABILIZED ELECTROLESS PLATING SOLUTIONS

Michael Gulla, Newton, and Oleh B. Dutkwych, Meefield, both of Mass., assignors to Shipley Company, Inc., Newton, Mass.

Continuation-in-part of application Ser. No. 785,350, Dec. 19, 1968. This application May 21, 1970, Ser. No. 39,503

Int. Cl. C23c *3/02*

U.S. Cl. 106—1 20 Claims

An electroless plating solution is characterized by the addition of a small but effective amount of a covalent mercury compound to increase bath stability. It is known in the art that solutions for electroless plating are unstable and tend to decompose with use. It is also known that decomposition can be retarded and the useful life of a plating solution increased by the addition of various additives, frequently catalytic poisons, in very small concentrations. In accordance with the present invention, it has been found that the stability of an electroless plating solution can be substantially increased by the addition of a covalent mercury compound alone as a primary stabilizer, or preferably, by the addition of the mercury compound as a secondary stabilizer in combination with a prior art stabilizer as primary stabilizer. The combination of stabilizers provides a synergism with stability substantially improved over that obtainable with either component of the combination alone.

3,649,309
DARK FORSTERITE CERAMIC COMPOSITION

Harold Notarius, Livingston, N.J., assignor to RCA Corporation

Filed Sept. 16, 1970, Ser. No. 72,823

Int. Cl. C04b *33/00, 33/26*

U.S. Cl. 106—39 R 2 Claims

The composition comprises a primary phase of forsterite ceramic to which chromic oxide and cobaltic oxide are added in substantially equal amounts to darken the composition while not significantly changing the physical properties thereof.

3,649,310
DENSE, SUBMICRON GRAIN ALN-SIC BODIES

Paul C. Yates, 2120 Shipley Road, Oak Lane Manor, Wilmington, Del.

Filed Oct. 25, 1968, Ser. No. 770,790

Int. Cl. C04b *35/14*

U.S; Cl. 106—44 11 Claims

Compositions consisting essentially of a dense solid body comprising silicon carbide and aluminum nitride, and optionally other refractory materials, and processes for making same, are disclosed. These bodies are submicron grain particles homogeneously interspersed and bonded to one another in which the individual components retain their identity and X-ray diffraction patterns. The compositions are useful as abrasive grits, heating elements, cutting tools, and the like.

3,649,311
COLORLESS HEAT-ABSORBING GLASS

Roger J. Araujo, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed June 5, 1969, Ser. No. 830,653

Int. Cl. C03c *3/04*

U.S. Cl. 106—54 2 Claims

This invention relates to the production of glasses in the alkali metal aluminoborosilicate composition field containing reduced iron and chloride which are colorless, transparent, and strongly absorbing of radiation wave lengths longer than 0.7 microns. More particularly, this invention relates to glasses consisting essentially, by weight on the oxide basis, of about 3–12% R_2, 3–10% Al_2O_3, 18–30% B_2O_3, 45–65% SiO_2, 0.3–1% FeO, and 0.5–5% Cl, wherein R_2O consists of 0–5% Li_20, 2–12% Na_20, and 0–10% K_20.

3,649,312
TRANSITION METAL BORIDE COMPOSITIONS

Donald Stibbs, Dorking, Surrey, England, assignor to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Dec. 17, 1969, Ser. No. 885,959

Claims priority, application Great Britain, Dec. 20, 1968, 60,780/68

Int. Cl. C04b *35/58*

U.S. Cl. 106—55 8 Claims

Boron nitride in an amount of at least 0.5 percent by weight is added to transition metal borides containing a small amount of elemental boron. When the mixture is compacted by heat and pressure, a hard sintered body having a high resistance to cracking is obtained.

3,649,313
REFRACTORY MORTAR

Robert E. Fisher, Clarendon Hills, Ill., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 17, 1969, Ser. No. 885,988

Int. Cl. C04b *35/52*

U.S. Cl. 106—56 4 Claims

A refractory mortar for refractory brick in metallurgical process ladles containing materials with a high alumina content, graphite, a phosphate binder, methyl cellulose and water.

3,649,314
REFRACTORY COMPOSITIONS CONTAINING CARBON

Derek Patrick James, Reigate, England, assignor to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Dec. 29, 1969, Ser. No. 888,942

Claims priority, application Great Britain, Jan. 9, 1969, 1,439/69

Int. Cl. C04b *35/52, 35/58*

U.S. Cl. 106—56 9 Claims

Refractory compositions based on aluminum nitride, boron nitride, and at least one refractory boride, nitride, carbide or silicide. A small amount of carbon, such as about 0.5 to 3 percent by weight, is added to the composition before hot-pressing. The resultant hot-pressed bodies have improved properties especially in the length of their life when used as aluminum-vaporizing crucibles.

3,649,315
METHOD OF MANUFACTURING LOW DENSITY INSULATING REFRACTORIES

Alfred E. Booth, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed May 27, 1969, Ser. No. 828,318

Int. Cl. C04b *21/02*

U.S. Cl. 106—67 8 Claims

Mineral wool, aluminum powder, hydrated lime, and plastic refractory clay are dry blended to form a homogenous mix, the homogenous mix blended with water and cast in molds, the molded mix vibrated and allowed to expand and set after which the molded article is dried and fired. In forming insulating refractories for higher temperature use requirements, pyrophyllite or alumina may be substituted for some of the refractory clay.

3,649,316
EXTRA HIGH EARLY-STRENGTH PORTLAND CEMENT

Tatujiro Uno, Kanagawa, and Masatoshi Mochizuki, Tokyo, both of Japan, assignors to Onoda Cement Company, Limited, Onoda, Yamaguchi Prefecture, Japan

Filed July 15, 1969, Ser. No. 841,794

Claims priority, application Japan, July 20, 1968, 43/51340

Int. Cl. C04b *7/02, 7/48*

U.S. Cl. 106—89 4 Claims

This invention is to provide Portland cement having extra high 1-day compressive strength composition of which is: the particular lime saturation degree = 0.95–1.03, Cr_20_3 content = 1.2–2.6 percent by weight and (Al_20_3+Fe_20_3 content = 7.0–8.6 percent by weight, weight ratio of Al_20_3/Fe_20_3 being 1.65±0.50.

3,649,317
SHRINKAGE COMPENSATING CEMENT

Theodore M. Houseknecht, Emmaus, Pa., assignor to Fuller Company

Filed Nov. 12, 1970, Ser. No. 89,040

Int. Cl. C04b *13/22*

U.S. Cl. 106—90 10 Claims

A shrinkage compensating cement which includes a composition of Portland cement and a reactive compound which expand upon contact with water. The reactive compound is coated with an alkali soluble, water insoluble material in order to delay the time within which the reactive compound will expand. Quicklime or Plaster of Paris are examples of reactive compounds which may be used.

3,649,318

METHOD OF PREPARING CONCRETES OF STABLE ALUMINOUS CEMENTS

Paul Stiglitz, La Violette, France, assignor to Societe Anonyme: Ciments Lafarge, Paris, France

Filed July 24, 1968, Ser. No. 747,192

Claims priority, application France, July 31, 1967, 166375

Int. Cl. C04b *7/32*

U.S. Cl. 106—104 **3 Claims**

A method for preparing stable concrete from aluminous cements is disclosed. This is accomplished by controlling the water/cement ratio between 0.25 and 0.4 when the cement is mixed with water. This ratio insures use of the water for hydration of the binding paste into cubic aluminate.

3,649,319

BONDED PLASTER OF PARIS BANDAGE

David F. Smith, 120 Grove St., Bay Head, N.J.

Filed June 1, 1970, Ser. No. 42,446

Int. Cl. C04b *11/16;* **A61f** *13/04;* **A61l** *15/07*

U.S. Cl. 106—111 **12 Claims**

The product yielded by polymerization and hydrolysis of monomeric vinyl acetate provides improved bonding of plaster of Paris bandages to yield fast-setting bandages with low-plaster loss that make high-strength, moisture-resistant casts.

3,649,320

COUPLING AGENT COPOLYMERS OF AMINE SILICATES AND ORGANOFUNCTIONAL SILANES

Paul C. Yates, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 16, 1970, Ser. No. 11,772

Int. Cl. C09k *3/00*

U.S. Cl. 106—287 **5 Claims**

Coupling agent formulations comprising compatible mixtures of an organofunctional silane and an amine silicate and reinforcing fillers treated with such formulations.

3,649,321

TREATMENT OF PIGMENTS

George G. Durrant, Healing, and Peter L. Cowe, Cleethorpes, both of England, assignors to La Porte Industries Limited, London, England

Filed Jan. 9, 1970, Ser. No. 1,895

Claims priority, application Great Britain, Jan. 14, 1969, 2,154/69

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 **9 Claims**

Titanium dioxide particles having improved resistance to "dusting" prepared by providing a coating on the particles of a mixture of at least one ester and at least one silicone.

3,649,322

TITANIUM DIOXIDE PIGMENT COMPOSITION AND A METHOD FOR MAKING THE SAME

Warren M. Foss, 227 Woodbridge Ave., Metuchen, N.J.

Continuation-in-part of application Ser. No. 839,088, July 3, 1969. This application Apr. 20, 1970, Ser. No. 30,219

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 **13 Claims**

An aluminum silicate encapsulated pigmentary titanium dioxide combining both high tinting strength and durability in coating compositions and in particular thermosetting and thermoplastic acrylic coating compositions is prepared by coprecipitating hydrous silicon oxide with hydrous aluminum oxide onto titanium dioxide in aqueous slurry in a manner to form a dense skin coating of aluminum silicate, optionally applying a sponge coating of aluminum oxide and thereafter finishing the silicate coated pigment by washing, drying and milling.

3,649,323

TITANIUM DIOXIDE PIGMENTS

George Ryburn Roe, 134 Ridge Drive, Amherst, Va.; Gerard Martin Sheehan, 2424 Mimosa Drive, Lynchburg, Va., and Donald Edward Knapp, 2607 Westhaven Pl., Lynchburg, Va.

Filed Sept. 12, 1969, Ser. No. 857,583

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 **5 Claims**

Titanium dioxide pigment of improved water dispersibility and stable viscosity when incorporated into an aqueous system, particularly an aqueous system of high calcium and magnesium ion content, resulting from the presence of a normal, nonvolatile, polyhydric alcohol in combination with an alkanolamine. The polyhydric alcohol is represented by sorbitol and mannitol, while the amine is represented by triethanolamine.

3,649,324

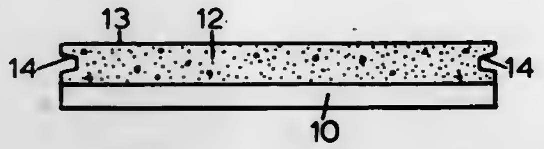
METHOD OF MAKING COATED PANELS

Harold J. W. Payne, Rabymere, Wirral, England, assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed Sept. 30, 1969, Ser. No. 862,424

Int. Cl. B44c *1/08, 1/14*

U.S. Cl. 117—9 **8 Claims**



A method for applying a coating or rigid, closed cell polymeric foam to a substrate. A first coating of the foam is applied and cured exothermically. The residual heat of the cured first coating initiates the curing of the next succeeding coating.

3,649,325

COATING POROUS SUBSTRATES WITH SOLID RUBBER FOAM

Hans Affeldt, Bergen-Enkheim, Germany, assignor to Metallgesellschaft A.G., Frankfurt, Germany

Filed Sept. 22, 1969, Ser. No. 860,060

Claims priority, application Germany, Sept. 25, 1968, P 17 85 441.0

Int. Cl. B44d *1/14, 1/44*

U.S. Cl. 117—11 **16 Claims**

A method of coating porous substrates with solid rubber foam, which includes the steps of (1) applying to the substrate a thin layer of latex foam, (2) compressing the foam to destroy its foam structure, (3) applying a thicker second layer of latex foam atop the compressed thin latex layer, (4) solidifying the two layers and (5) drying and curing the solidified layers.

3,649,326

COATED ARTICLE AND METHOD OF FORMING THE SAME

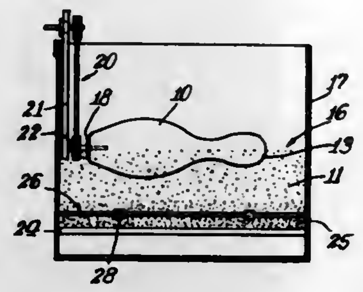
William J. Cole, and Edward R. Olshaske, both of Muskegon, Mich., assignors to Brunswick Corporation

Filed Mar. 27, 1969, Ser. No. 811,083

Int. Cl. B05b *5/02;* **B44d** *1/095*

U.S. Cl. 117—17 **3 Claims**

A coated article such as a bowling pin and method of forming such a coated article. The article may comprise an extended life bowling pin having portions of different wear susceptibility wherein those portions having greatest wear susceptibility are provided with thickest coating portions. The method comprehends an electrostatic retention of the coating forming material delivered to the article body from a charged cloud thereof. The cloud formation and electrostatic potential are coordinated to effect the desired coating thickness control. The coating material is fused subsequent to the deposition to form a variable depth coating having an external configuration accurately defining the coated article.



3,649,327

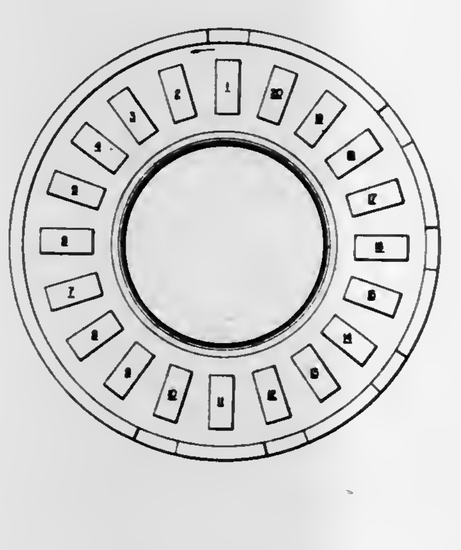
ENDLESS FURNACE AND THE METHOD OF UTILIZING SAME FOR DRY PROCESS, VITREOUS ENAMELING

Henry A. Gornall, Lyndhurst, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Filed Aug. 27, 1969, Ser. No. 853,336

Int. Cl. B44d *1/46, 1/094*

U.S. Cl. 117—23 **2 Claims**



A method for enamel coating metal objects by the dry or powdered process which comprises heating the metal object to a temperature of about 1,700°-1,800° F., uniformly distributing enamel powder over the surface of the object, and fusing the powder coating on the metal object; particularly wherein an endless enameling furnace is employed having an inner and outer periphery, and a plurality of ports positioned along said outer periphery to permit entry and removal of a workpiece to be placed in said furnace; whereby in the steps of the method above described, a relatively cold metal object is first introduced into the heated environment of the endless furnace, progressively advanced within the endless furnace while its temperature is elevated to that of the environment within the furnace, temporarily removed from the furnace through one of the ports in the outer periphery thereof to receive a coating of dry enamel powder, then reintroduced into the heated environment of the furnace and again progressively advanced therein whereby the said enamel coating is fused on the metal object, temporarily removed to receive a second coating of dry enamel powder, reintroduced into the heated environment of the furnace to fuse the second enamel coating on the metal object, and finally removed from the endless furnace and permitted to cool.

3,649,328

PROCESS FOR FORMING LUMINESCENT SCREENS

Donald A. Neis, Lombard, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 22, 1970, Ser. No. 48,463

Int. Cl. H01j *31/12*

U.S. Cl. 117—33.5 CS **12 Claims**

A fine grain low-noise luminescent screen suitable for use in high-resolution image display devices such as cathode-ray tubes, photodisplay tubes, flying spot scanners, etc., is formed on an internal surface of a transparent image display panel by settling agglomerating particles from a carrier solution to form a coating having crevices and spaces between adjacent particle agglomerates and then combining a decanting and rotating process whereby rotational movement of the panel causes the solution to wash the entire surface of the coating throughout the decanting process to deposit finer individual particles in these crevices and spaces whereby the undesirable wave patterns normally obtained during decanting are eliminated and a coating of much improved surface smoothness and uniformity of thickness and density is obtained.

3,649,329

PHOSPHOR COATING FOR ARC DISCHARGE LAMPS

Fred R. Taubner, Danvers, Mass., and Charles F. Chenot, Towanda, Pa., assignors to Sylvania Electric Products Inc.

Filed June 30, 1969, Ser. No. 837,939

Int. Cl. H01k *1/28*

U.S. Cl. 117—33.5 L **7 Claims**

A small quantity of benzoic acid is added to a phosphor coating suspension in order to prevent a loss in brightness of lamps made therefrom.

3,649,330

COMPOSITION CONTAINING METAL SALTS AND METHOD OF UTILIZING THE SAME TO CONTROL RESIN DEPOSITION

Arthur Herbert Drelich, Plainfield, N.J., assignor to Johnson & Johnson

Continuation-in-part of application Ser. No. 618,317, Feb. 24, 1967, now abandoned. This application Feb. 18, 1969, Ser. No. 800,265

Int. Cl. B41m *7/00;* **B44d** *1/092*

U.S. Cl. 117—38 **13 Claims**

A new composition of an emulsion polymerized resin and certain metal salts, wherein the metal ion has a valence of at least 3; and a method of controlling resin deposition on materials by pretreating the materials whereby they have an alkaline condition and by applying the new composition to the material under alkaline conditions.

3,649,331

METHOD OF TREATING CELLULOSE SPONGES AND RESULTING PRODUCTS

Lowell E. Peterson, Minneapolis, Minn., and Lyle F. Elmquist, North St. Paul, Minn., assignors to General Mills, Inc.

Filed May 10, 1968, Ser. No. 728,166

Int. Cl. C08b *9/00, 29/38*

U.S. Cl. 117—37 R **9 Claims**

A portion of at least one of the surfaces of a dry, compressed, regenerated cellulose sponge is treated with a liquid cellulose degrading substance to render the said treated portion incapable of expanding to its normal volume.

3,649,332

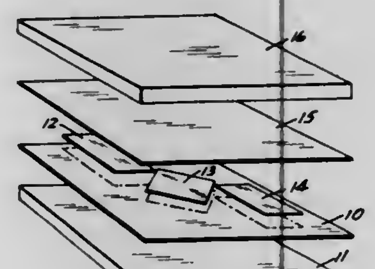
COLOR PRINTING

Douglas H. Dybvig, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 24, 1969, Ser. No. 869,008

Int. Cl. B41m *5/00*

U.S. Cl. 117—38 **6 Claims**



Porous intermediates printed with color transfer images serve as barriers during heat transfer of dye simultaneously from imaged intermediate and overlying dye transfer source sheet to provide brilliantly colored image and background areas on receptor sheet or film.

3,649,333

FABRIC FINISHING METHOD AND FABRIC

Remus F. Caroselli, Cumberland; Vincenzo Mastrianni, Cranston, both of R.I., and David W. Boyes, Bedford, Va., assignors to Owens-Corning Fiberglas Corporation

Filed June 18, 1968, Ser. No. 737,857

Int. Cl. C03c *25/00;* **B05c** *11/10*

U.S. Cl. 117—45 **18 Claims**

A fabric finishing process comprising passing fabric, composed of textured and untextured yarns, through multiple finish solutions, each having at least a different color or tone thereto, so that the amount of absorption of each finish by the yarns is a function of the surface area of the yarns, to produce a novel, decorative fabric having varying colors and tones.

3,649,334

NONBLOCKING ADHERENT CELLULOSE FILM

James Thomas Chamness, Richmond, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 20, 1968, Ser. No. 753,903

Int. Cl. B44d *1/44*

U.S. Cl. 117—62.2 **7 Claims**

A cellulosic film impregnated with a cationic amide formaldehyde resin such as melamine formaldehyde or urea formaldehyde and a polyalkyleneimine to prevent blocking of the cellulosic material when rolled on a mill roll and improve the adhesive qualities of the cellulosic material to various coating compositions such as vinylidene chloride polymers or polyethylene.

3,649,335

SILICA/ELASTOMER COMPOSITES AND METHOD OF PRODUCING SAME

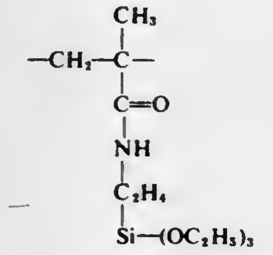
John B. Wiggill, Orange, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 17, 1969, Ser. No. 858,879

Int. Cl. C03c *25/02;* **B32b** *17/04, 17/10*

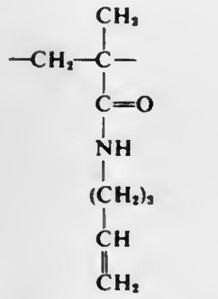
U.S. Cl. 117—62.1 **5 Claims**

A silica/elastomer composite produced by reacting an ethylene or propylene containing copolymer having units such as



$$-CH_2-\overset{CH_3}{\underset{|}{\overset{|}{C}}}-C(=O)-NH-C_2H_4-Si-(OC_2H_5)_3$$

and units such as



$$-CH_2-\overset{CH_3}{\underset{|}{\overset{|}{C}}}-C(=O)-NH-(CH_2)_3-CH=CH_2$$

with a silica substrate by hydrolysis of the silane group, and then polymerizing the allyl group to an elastomer.

3,649,336

PLURAL COATED SHEET MATERIAL

August Jean Van Paesschen, Antwerpen; Lucien Janbaptist Van Gossum, Kontich, and Jan Jozef Priem, Berchen, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed Sept. 27, 1968, Ser. No. 763,382

Claims priority, application Great Britain, Sept. 28, 1967, 44,114/67

Int. Cl. B32b *23/08, 27/08;* **G03c** *1/80*

U.S. Cl. 117—83 **18 Claims**

Improved adherence is obtained for sheet material having a hydrophobic film support or base, such as a hydrophobic cellulose ester or polyester, by the combination of a vinyl polymer subbing layer arranged directly on the hydrophobic support, the subbing layer being formed of a copolymer containing at least 45 percent by weight of vinylidene chloride and/or vinyl chloride monomer along with a minor amount of a hydrophilic vinyl monomer with the balance being constituted by any other vinyl monomer, and superimposed upon the vinyl subbing layer a layer containing a mixture of gelatin with a copolymer of butadiene and a vinyl monomer containing 30–70 percent by weight of butadiene, the ratio of the gelatin to the butadiene copolymer being in the range of 1:3 to 2:1 by weight. An additional layer can be applied over the gelatin/copolymer layer and constituted by such ingredients as are desirable for the particular utility of the resultant sheet material, such as light-sensitive silver halide emulsion photographic layers, electrophotographic layers containing finely divided photoconductive material such as zinc oxide or some other photosensitive semiconductive material, matte layers containing pigment, diffusion transfer layers containing development nuclei and so on. Alternatively, the ingredients appropriate to some particular ultimate utility can be incorporated into the gelatin/butadiene copolymer layer directly.

3,649,337

UNSATURATED POLYESTER AND EPOXY-FUNCTIONAL GRADED-RUBBER PAINT AND PROCESS II

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1970, Ser. No. 100,460

Int. Cl. C08g *45/14, 45/04;* **C08f** *15/00*

U.S. Cl. 117—93.31 **15 Claims**

A radiation-curable paint which on a pigment and particulate filler-free basis consists essentially of vinyl monomers and a unique, alpha-beta olefinically unsaturated, rubber-comprising resin formed by reacting a monohydroxy, monocarboxy terminated polyester with an acyl chloride to provide alpha-beta olefinic unsaturation and reacting the resultant alpha-beta olefinically unsaturated, monocarboxy terminated polyester with an epoxy-functional, graded-rubber particle. The dispersion is applied to substrates as a paint film and cured thereon by exposure to ionizing radiation, e.g., an electron beam.

3,649,338

GLASS FIBER REINFORCED THERMO-SETTING RESIN COATING AND A METHOD FOR PRODUCING THE SAME

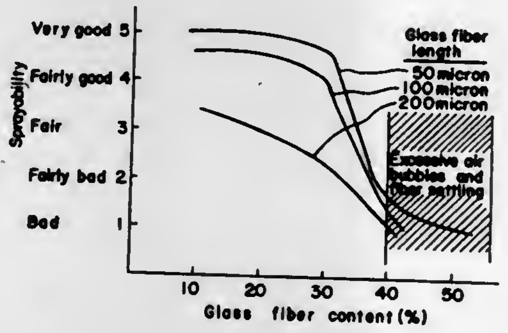
Masuo Ishida, Kobe, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Filed Sept. 2, 1969, Ser. No. 854,638

Claims priority, application Japan, Sept. 13, 1968, 43/65512

Int. Cl. B44d *1/08;* **B05b** *13/06*

U.S. Cl. 117—97 **13 Claims**



A glass fiber reinforced thermosetting resin coating on substrate surface, such as the inner surface of a steel pipe, which coating consists of thermosetting resin and a reinforcing amount of glass fibers of sprayable length, and a method of forming such glass fiber reinforced thermosetting resin coating by spraying.

3,649,339

APPARATUS AND METHOD FOR SECURING A HIGH VACUUM FOR PARTICLE COATING PROCESS

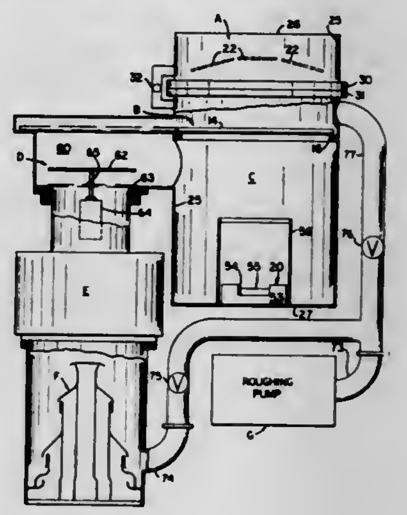
Eugene C. Smith, 26950 Moody Ct., Los Altos Hills, Calif.

Filed Sept. 5, 1969, Ser. No. 855,517

Int. Cl. C23c *13/00*

U.S. Cl. 117—106 R **9 Claims**

A vacuum coating apparatus is provided with valves wherein the volumes containing the coating material emitter and high-vacuum pump can be isolated from the substrate table to preserve the high vacuum of the system. A wide-throated valve between the coating material emitter and the substrate table permits vacuum sealing of the coating material emitter and high-vacuum pump when the substrate is replaced, throttling of the gases within the volume of the system containing the substrate table to reduce the roughing cycle required to attain the requisite high vacuum, and complete opening between the coating emitter apparatus and substrate table to provide an unobstructed particle path for efficient high-vacuum coating.



3,649,340

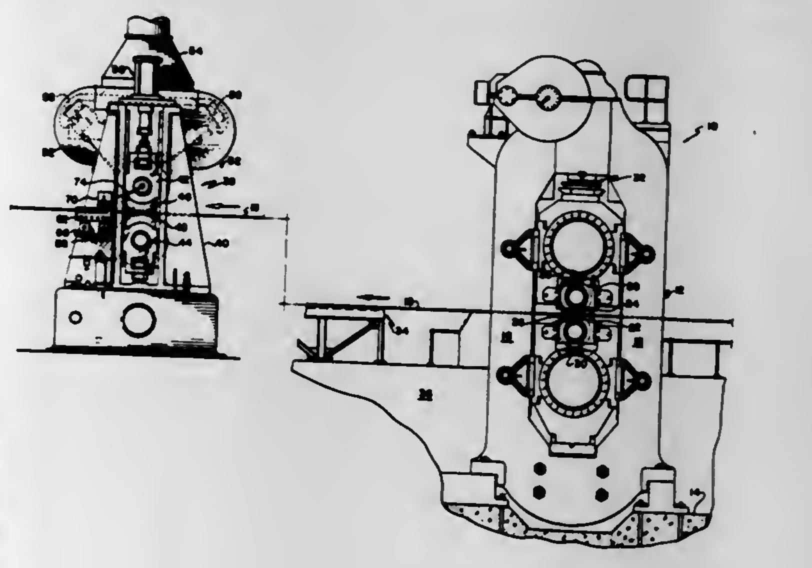
WEB COATING CONTROL

Henry J. Mozzi, Jr., Chicago, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Original application July 10, 1968, Ser. No. 743,728, now Patent No. 3,590,778, dated July 6, 1971. Divided and this application July 23, 1970, Ser. No. 57,584

Int. Cl. B44d *1/02, 1/34, 5/08*

U.S. Cl. 117—111 D **3 Claims**



The following specification describes a method for applying a uniform oil coating of selected thickness to a steel web moving at variable speed past an absorbent roll, which coats the web with oil. The roll travels the same distance as the web and drives a counter for counting a predetermined number of web lengths irrespective of web speed. A selected quantity of oil is sprayed on the roll under control of a timer after a predetermined number of web lengths are counted to ensure that the quantity of oil sprayed corresponds to a predetermined web length for providing a uniform oil coat of selected thickness irrespective of web speed.

3,649,341

METHOD FOR MANUFACTURING PARTIALLY ACYLATED REGENERATED CELLULOSE FOIL OR FIBER

Viljo Tammela, Helsinki, and Olli Turunen, Porvoo; both of Finland, assignors to Neste Oy, Helsinki, Finland

Filed Nov. 14, 1968, Ser. No. 775,952

Claims priority, application Finland, Nov. 17, 1967, 3106/67

Int. Cl. B44d *51/2;* **D06m** *13/20*

U.S. Cl. 117—118 **1 Claim**

Partly acetylated regenerated cellulose films or fibers are manufactured by first swelling them in a concentrated and water-free acetic acid solution of an alkali metal acetate at a temperature ranging between 50° and 140° C. Immediately thereafter and without drying the swelled films or fibers are esterified by an acetic acid anhydride solution containing alkali metal acetate at a temperature ranging between 100° and 170° C.

3,649,342

PRODUCT FOR FABRICATION OF DENSE CERAMIC ARMORPLATE AND LIKE

Howard J. Bartlett, Chippawa, Ontario, Canada, assignor to Norton Company, Worcester, Mass.

Filed Oct. 30, 1967, Ser. No. 681,606

Int. Cl. C04b *41/04*

U.S. Cl. 117—123 A **4 Claims**

A product and method for producing a dense hard ceramic body formed by impregnating a high melting point matrix with a ceramic infiltrant having a lower melting point whereby various ceramic shapes may be cold formed and then impregnated to produce hard, wear resistant bodies having a density up to the theoretical density for the ultimate product.

3,649,343

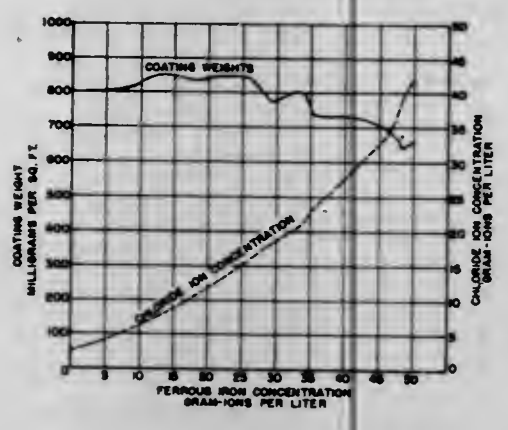
CHLORIDE CONCENTRATION CONTROL IN IMMERSION COPPER COATING

Stuart Reed, Warminster, and Louis Schiffman, Abington, both of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Filed Oct. 8, 1970, Ser. No. 79,101

Int. Cl. C23c *3/00*

U.S. Cl. 117—130 E **1 Claim**



The bath life of an aqueous acidic copper coating solution is increased by maintaining chloride ion concentration within critical limits during operation of the coating process.

3,649,344

TEXTILE FINISHING PROCESS AND PRODUCTS PRODUCED THEREBY

Orville R. Crabtree, and Manuel A. Thomas, both of Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 3, 1969, Ser. No. 788,941

Int. Cl. D06m *15/42, 15/72*

U.S. Cl. 117—135.5 **15 Claims**

Process, and the resulting products, for producing water-resistant textile fabrics having excellent breathability and aesthetics which adapt the fabrics for use in rainwear products, and wherein a textile fabric is coated with an aqueous dispersion containing one or more water-insoluble, film-forming, solvent-swellable polymers and a sufficient amount of a water-immiscible organic solvent to swell the polymer and increase the viscosity of the dispersion. The coated fabric is dried, impregnated with a water-repellent compound, and treated to cure the coating and the impregnant on the fabric.

3,649,345

METHOD OF COATING DENTURES TO PROVIDE A POLISHED SURFACE

Roberto Tolosa, 1318 East 4th Ave., Hialeah, Fla.

Filed Apr. 1, 1969, Ser. No. 812,295

Int. Cl. A61c *13/00;* **B44d** *1/06, 5/00*

U.S. Cl. 117—138.8UA **9 Claims**

A method of treating the surfaces of preformed artificial prostheses, such as dentures, to produce thereon a finish coating and polish of pleasing appearance and improved smoothness and fit, which involves maintaining for a limited time contact between the surfaces and a heated liquid comprising a monomer of methyl methacrylate and, if desired, certain other additives.

3,649,346

ANTISOIL COATING-CONTAINING SHAPED ARTICLES

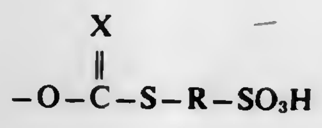
Douglas J. Bridgeford, Champaign; Albin F. Turbak, and Noel I. Burke, both of Danville, all of Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed Sept. 10, 1969, Ser. No. 856,798

Int. Cl. B44d *5/00;* **D06m** *15/04*

U.S. Cl. 117—138.8 F **37 Claims**

Polymeric alcohol derivatives consisting of polymeric alcohol sulfonic acids containing S-xanthogenate ester substituents of the general formula



$$-O-\overset{\overset{\displaystyle X}{\|}}{C}-S-R-SO_3H$$

and salts of said polymeric alcohol sulfonic acids prepared by reaction of a sultone, e.g., 1,3-propane sultone, with the free acid form or a salt of a polymeric alcohol xanthogenate ester, e.g., cellulose xanthate. The novel omegasulfonated polymeric alcohol derivatives have physical and chemical properties, e.g., solubility, viscosity, reactivity with cross-linking agents, and an anionic character, adapting them for advantageous use in a wide range of applications. The derivatives find particular utility as antistatic and antisoiling agents which are effective when applied to a wide range of soil receptive substrates, e.g., natural and synthetic textiles.

3,649,347

SHAPED STRUCTURES HAVING A SELF-ADHERENT COATING OF A WATER-INSOLUBLE IONIZABLE SALT OF A COLLAGEN

Orlando A. Battista, Yardley, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Continuation of application Ser. No. 553,295, May 27, 1966, now abandoned , which is a continuation-in-part of application Ser. No. 436,371, Mar. 1, 1965, now abandoned. This application Apr. 27, 1970, Ser. No. 32,437

Int. Cl. D21h *1/34*

U.S. Cl. 117—144 **8 Claims**

Structures having a self-adherent coating of a water-insoluble, ionizable salt of collagen deposited thereon from an aqueous dispersion of the salt. The base material may be a solid mineral or organic shaped structure and includes, for example, mineral and organic fibers and fibrous and non-fibrous sheets and films.

3,649,348

PAPER FRICTIONIZING

Peter H. Vossos, Lisle, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed July 24, 1969, Ser. No. 844,641

Int. Cl. D21l *1/10*

U.S. Cl. 117—152 **2 Claims**

A paper composition having excellent antiskid properties consisting of paper coated with large particle diameter colloidal silica sol. The particle diameters used must be at least 60 millimicrons.

3,649,349

SILOXANE PAPER RELEASE COATINGS

Maurice E. Grenoble, Ballston Lake, N.Y., assignor to General Electric Company

Original application Dec. 13, 1968, Ser. No. 783,773, now Patent No. 3,579,469, dated May 18, 1971. Divided and this application June 1, 1970, Ser. No. 54,061

Int. Cl. D21h *1/40*

U.S. Cl. 117—155 R **4 Claims**

A paper release coating composition contains a silanol-terminated polysiloxane gum, a silane of the formula $HSiX_3$, where X is a hydrolyzable radical, a metal salt and an organic solvent. A surface of a sheet of paper is coated with the composition, the solvent is evaporated, and the silanol-terminated polysiloxane is cross-linked by reaction with the silane in the presence of moisture at an elevated temperature. The coated paper produced is useful as a backing sheet for bumper stickers.

3,649,350

ELECTROLESS COPPER PLATING

Maynard C. Agens, Burnt Hills, N.Y., assignor to General Electric Company

Filed June 29, 1970, Ser. No. 50,996

Int. Cl. C23c *3/02*

U.S. Cl. 117—160 R **10 Claims**

Known electroless copper plating solutions comprising basic aqueous solutions of a cupric ion source, a complexing agent for cupric ion and a reducing agent for reducing cupric ion to copper metal, which are normally stabilized by aeration, are further stabilized by incorporation of certain water-soluble salts of hydroxy aliphatic hydrocarbon sulfonic acids. An improved quality of copper deposit is obtained from these stabilized baths.

3,649,351

METHOD OF PRODUCING EPITACTIC LAYERS OF ELECTRICAL-INSULATION MATERIAL ON A CARRIER BODY OF SEMICONDUCTOR MATERIAL

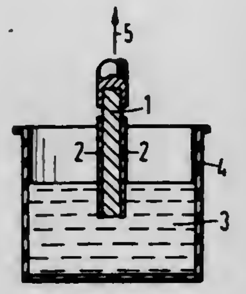
Josef Grabmaier, Unterhaching, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Sept. 25, 1969, Ser. No. 860,943

Claims priority, application Germany, Sept. 30, 1969, P 17 89 064.1

Int. Cl. B44d *1/18;* **H01l** *7/40*

U.S. Cl. 117—201 **3 Claims**



A method of producing integrated semiconductor circuits, on electrically insulated foreign substrates, whereby the connection between the semiconductor material and the foreign substrate is effected through an epitactic growth process. The semiconductor crystal wafer, which is provided for the subsequently produced circuit, is used as the original substrate body for an epitactic coating, and the insulating layer, which defines the foreign substrate, is epitactically deposited thereupon.

3,649,352

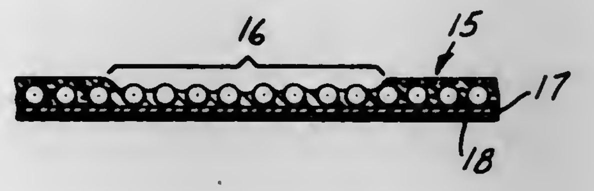
HEAT-SENSITIVE RETROREFLECTING MATERIALS

Calice G. Courneya, Alexandria, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 9, 1970, Ser. No. 53,386

Int. Cl. B44c *1/18*

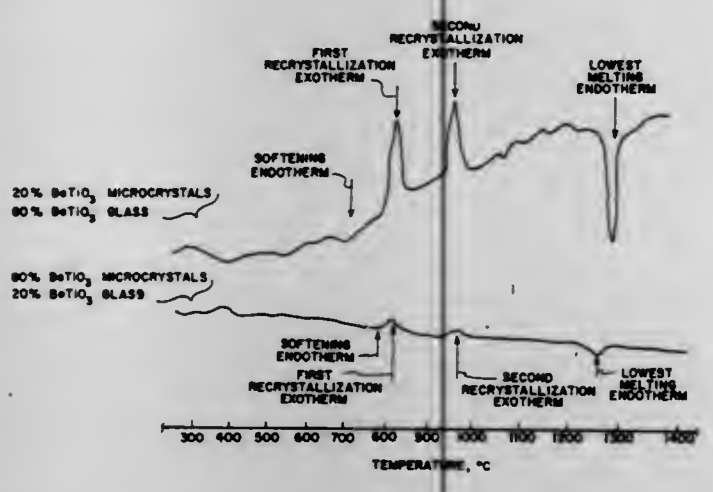
U.S. Cl. 117—201 **8 Claims**



An article useful as a label or thermal telltale which becomes visibly retroreflective in response to simple heating, provided by retroreflective elements masked with a heat-sensitive light-obscuring layer which is removed from the retroreflective elements by heating. A liquid-coating composition is also provided for preparing the article.

3,649,353
SCREENED CIRCUIT CAPACITORS

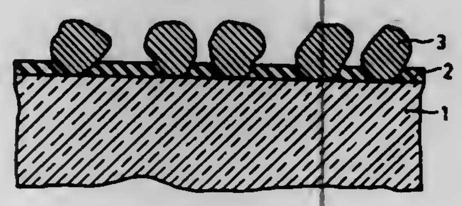
Donald R. Ulrich, Liverpool, N.Y., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Feb. 5, 1969, Ser. No. 796,685
Int. Cl. B44d *1/18;* **H01g** *13/00*
U.S. Cl. 117—212 **7 Claims**



This invention relates to material compositions suitable for dense high-dielectric thick films which can be deposited and processed in place, to recrystallization techniques to yield high-dielectric films and to methods of making screenable dielectric thick films.

3,649,354
METHOD OF PRODUCING LAYERS OF GRAINS PARTICULARLY MONOLAYERS OF GRAINS EMBEDDED IN A FILLER

Ties Siebolt Te Velde, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 11, 1967, Ser. No. 629,999
Claims priority, application Netherlands, Apr. 14, 1966, 6604960
Int. Cl. C23b *5/50, 5/64*
U.S. Cl. 117—217 **7 Claims**

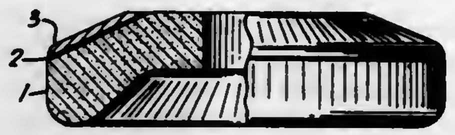


A method of manufacturing an electrical device in which a liquid electrically insulating filler substance is applied to a layer of electrically active grains which filler is allowed to contract thus exposing the peaks of the grains after which it is allowed to harden. The filler is preferably a resin hardenable by polymerization or by polycondensation in a liquid solution with a volatile solvent, for example polyurethane.

3,649,355
PROCESS FOR PRODUCTION OF ROTARY ANODES FOR ROENTGEN TUBES

Walter Hennig, Reutte, Austria, assignor to Schwarzopf Development Corporation, New York, N.Y.
Filed Aug. 12, 1969, Ser. No. 849,444
Claims priority, application Austria, Aug. 12, 1968, 7861/68
Int. Cl. H01j *1/05, 35/08*
U.S. Cl. 117—217 **12 Claims**

A process is described for imparting resistance to rotary anodes for X-ray tubes by spraying a graphite base with tungsten or a tungsten alloy, followed by depositing an outer coating of tungsten or an alloy thereof from the gaseous phase.



3,649,356
ELECTRICAL INSULATING-LAYER PROCESS

Lewis O. Mullen, and Donald B. Sullivan, both of Boulder, Colo., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Dec. 31, 1969, Ser. No. 889,682
Int. Cl. B44d *1/14, 1/18*
U.S. Cl. 117—217 **17 Claims**

A first electrical conductor body is cooled to below 100° K. in a vacuum chamber. The chamber is then pressurized with oxygen and after a period of time a glow discharge is established in the chamber. After a time the glow discharge is terminated, the chamber is evacuated and a second electrical conductor material is deposited on the first body. Both bodies are then heated to ambient temperature.

As optional steps the first conductor may be heated to below 0° C. and recooled to below 100° K. before depositing the second conductor body.

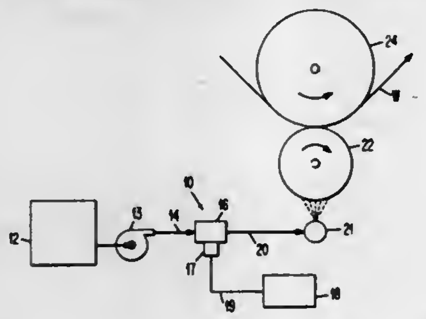
3,649,357
PRODUCTION OF COLORED IMAGES ON PAPER BASES

Gerald T. Davis, and Robert A. Fetters, both of Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio
Continuation-in-part of application Ser. No. 610,766, Jan. 23, 1967. This application Oct. 29, 1970, Ser. No. 85,249
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 **7 Claims**

Colored images are formed on paper bases by contacting the latter at the points where said image is desired with a colorless dye dissolved in a carrier fluid, the surface of said paper base being coated with a uniform, discontinuous coating of an essentially solid, water-insoluble, fusible phenol-formaldehyde condensation polymer at the rate of 0.01 to 0.2 lb. per 1,300 square feet of surface.

3,649,358
METHOD FOR REDUCING THE VISCOSITY OF NON-NEWTONIAN LIQUIDS BY THE USE OF ULTRASONICS

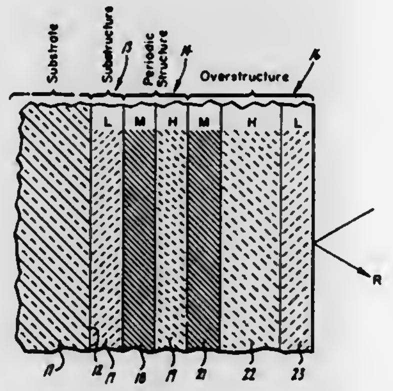
Harold Kenneth Johnston II, Northglenn, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 23, 1968, Ser. No. 786,491
Int. Cl. H01f *41/14;* **B05b** *17/06*
U.S. Cl. 117—235 **5 Claims**



This invention is concerned with the controlled reduction in viscosity of a non-Newtonian liquid such as magnetizable inks by placing the liquid in a treatment chamber with one or more transducer elements coupled thereto for imparting ultrasonic vibrations to the liquid, and to a continous process for subjecting the liquid to ultrasonic vibrations as a preliminary to dispensing the liquid through a spray bar or applicator in coating operations and applying the non-Newtonian liquid at reduced viscosity to the surface to be coated, such as, the substrate of a magnetic tape.

3,649,359
MULTILAYER FILTER WITH METAL DIELECTRIC PERIOD

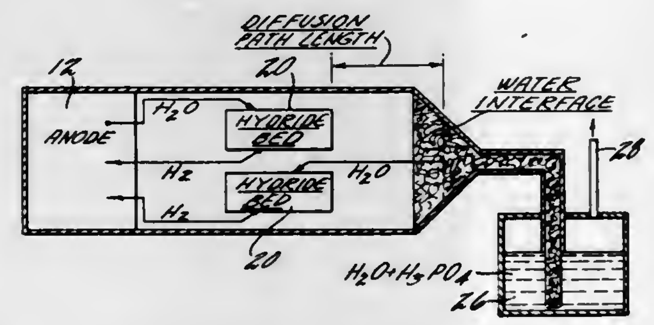
Joseph H. Apfel, Santa Rosa, and Robert M. Gelber, Rohnert Park, Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.
Filed Oct. 27, 1969, Ser. No. 869,737
Int. Cl. B44d *5/06;* **G02b** *1/10*
U.S. Cl. 117—33.3 **13 Claims**



A multilayer filter with attenuation and a very low reflectance in the visible region having a substantially transparent substrate with a multilayer coating deposited thereon. The multilayer coating is comprised of a periodic structure and may include a substructure and an overstructure. The periodic structure has at least one metal dielectric period. The substructure and overstructure are such that the addition or subtraction of metal dielectric periods to the periodic structure does not change the magnitude and the phase of the reflectance from the filter but only modifies the transmittance of the filter.

3,649,360
COMBINED WATER REMOVAL AND HYDROGEN GENERATION FUEL CELL POWERPLANT

David P. Bloomfield, West Hartford, and William J. Olsson, Glastonbury, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Jan. 16, 1970, Ser. No. 3,409
Int. Cl. H01m *27/14*
U.S. Cl. 136—86 C **9 Claims**



The disclosure concerns a fuel cell and a metal hydride bed within a casing. The fuel cell requires hydrogen for the fuel at the anode. Water vapor, the byproduct of the electrochemical reaction, may be evolved through the anode and diffused to the metal hydride bed within the casing where the water vapor and metal hydride react to generate hydrogen. Hydrogen diffuses to the anode. This self-contained system requires no external controlling devices or moving parts. A feature of this system lies in the provision of supplementary water vapor through a specially tapered wick connected to an external water reservoir.

3,649,361
ELECTROCHEMICAL CELL WITH MANGANESE OXIDE CATALYST AND METHOD OF GENERATING ELECTRICAL ENERGY

John Paynter, Burnt Hills, and John R. Morgan, Schenectady, N.Y., assignors to General Electric Company
Filed Oct. 23, 1968, Ser. No. 769,817
Int. Cl. H01m *27/04*
U.S. Cl. 136—86 D **7 Claims**

An electrochemical cell is described which includes a gas diffusion cathode, an alkaline electrolyte and operates at room temperature. The electrochemical cell has an improved gas diffusion cathode which comprises a finely divided, electrically conductive carbon powder and a base metal catalyst of a manganese oxide, or a manganese oxide with one or more other base metal catalysts. Such a cell provides performance approaching that of a cell including a gas diffusion cathode with a platinum catalyst. A method of generating electrical energy from such a cell is also described.

3,649,362
PRIMARY BATTERY

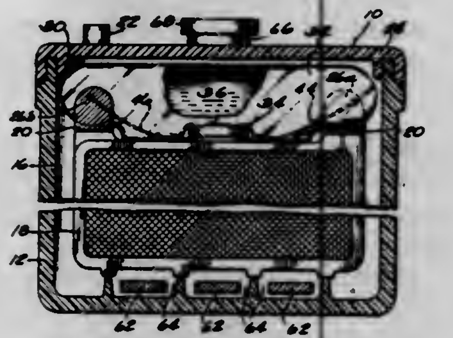
Einar V. Steffensen, Belleville, John Orshich, East Orange, and John Steffensen, West Caldwell, N.J., assignors to McGraw-Edison Company, Elgin, Ill.
Continuation-in-part of application Ser. No. 433,393, Feb. 17, 1965. This application Sept. 26, 1967, Ser. No. 670,536
Int. Cl. H01m *17/02*
U.S. Cl. 136—102 **7 Claims**

The invention resides in providing in an alkaline-zinc-anode primary cell an agent which regenerates the electrolyte by causing the zinc reaction end products to crystallize out as zinc-hydroxide when the electrolyte becomes saturated with zincate during discharge of the cell. Further, the invention resides in providing a fibrous mass below the electrodes having a large surface area onto which the crystals of zinc hydroxide grow in preference to forming onto the electrodes. In this way the zinc reaction end products are kept from coating or clogging the electrodes and from interfering with the continuing operation of the cell. The crystallizing agent may be any compound or compounds which function to release sulphide or silicate ions to the electrolyte and may be selected from the group consisting of the silicates of potassium and sodium, sulphur in its precipitated or sublimed forms, thiourea (NH_2CSNH_2) and the sulphides of calcium, zinc (precipated form), potassium, sodium, strontium, antimony, mercury, barium, aluminum, and phosphorus. The action of the sulphide ion crystallizing agents is improved by adding a small amount of zinc oxide especially as to air depolarized cells which are to have good life on open circuit. The fibrous mass may be of glass wool, cotton linters, shredded or loosely folded kraft paper, polyethylene fibers, asbestos wool, steel wool or nylon fibers.

3,649,363
WATER ACTIVATABLE BATTERY

Clarence Kopperl Morehouse, Mequon, and Robert F. Amlie, Milwaukee, Wis., assignors to Globe-Union Inc.
Filed Sept. 2, 1970, Ser. No. 68,954
Int. Cl. H01m *21/14*
U.S. Cl. 136—114 **12 Claims**

A water-activatable storage battery with each cell having a container storing a measured amount of concentrated electrolyte positioned above the battery elements, a container-opening assembly, which includes an electrical heating element electrically connected between the positive and negative plates of the battery element and positioned in contact with the electrolyte container, and a small quantity of a water-soluble, electrolytic material. Upon addition of water into the cell, the electrolytic material is dissolved therein to form an electrolytic solution which, along with the battery plates, acts as a voltaic cell to energize the heating element, which in turn melts a discharge opening into the electrolyte container thereby allowing the concentrated electrolyte to drain therefrom and activate the battery.



3,649,364

METHOD FOR PRODUCING A MATERIAL FOR USE IN THE MANUFACTURE OF OXYGEN ELECTRODES FOR USE IN FUEL CELLS

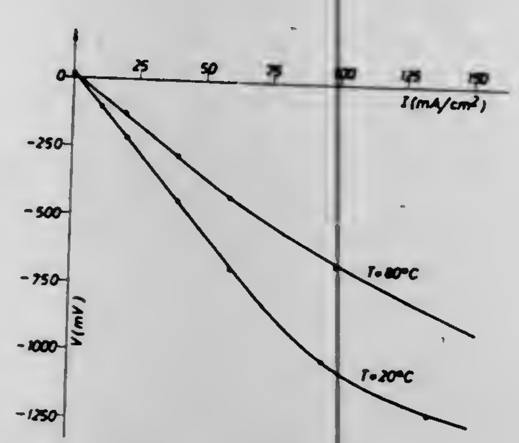
Robert Bonnefille, Issy-les-Moulineaux, Jean Francois Rialland, Paris, and Jack Robert, Palaiseau, Essonne, France, assignors to Etablissement Public: Agence Nationale de Valorisation de la Recherche "Anvar," Puteaux, France

Filed Jan. 26, 1970, Ser. No. 5,607

Claims priority, application France, Jan. 27, 1969, 6901569

Int. Cl. H01m *13/08;* **C22f** *1/00*

U.S. Cl. 136—120 FC **5 Claims**



A method for transforming liquid metals or alloys such as an amalgam of indium into a powdery material includes the steps of rabbling or stirring the liquid metal or alloy in an oxygen atmosphere to form a viscous foam, and introducing the foam thus formed into water which is brought to boil where the gas is rapidly released to transform the liquid metal or alloy into finely divided particles. Next, the particles are filtered and dried. The resultant material is suitable for use when compressed and disposed in a stainless steel container as an oxygen electrode for a fuel cell.

3,649,365

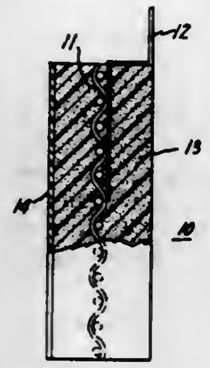
METHOD OF FORMING A CATALYST, CATALYST COATED POWDER AND ELECTRODE

John Paynter, Burnt Hills, and John R. Morgan, Schenectady, N.Y., assignors to General Electric Company

Filed May 29, 1968, Ser. No. 733,032

Int. Cl. H01m *13/04*

U.S. Cl. 136—120 FC **3 Claims**



Methods are described for forming high surface area catalysts by thermal decomposition of a mixture of one thermally decomposable silver salt and one thermally decomposable nickel salt. Electrodes can be made from these catalysts. Methods are also described for forming high surface area catalysts, supported catalysts and electrodes by mixing metallic salts of silver acetate and nickel acetate with an organic solvent or an organic solvent and aqueous solvent to form a solution. The solution is evaporated and the mixed salts are decomposed thermally to produce a high surface area catalyst from which electrodes can be formed.

Additionally, the solution can be applied to finely divided powder or to at least a portion of a porous substrate after which the solvent is evaporated. After thermal decomposition of the mixed metallic salts, there are formed supported catalysts and electrodes, respectively. The resulting high surface area catalysts, supported catalysts and electrodes are considerably less expensive than platinum catalysts.

3,649,366

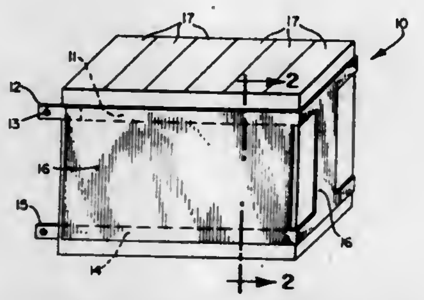
STORAGE BATTERY AND HEATER THEREFOR

Howard J. Jordan, Cleveland, and Roger S. Niebes, Mentor, Ohio, assignors to ESB Incorporated

Filed Feb. 19, 1970, Ser. No. 12,680

Int. Cl. H01m *45/02*

U.S. Cl. 136—161 **13 Claims**



A storage battery whose container has heating elements formed on the external surfaces thereof. The heating elements are constructed and arranged for operation either from the vehicle power supply or from an external source.

3,649,367

ELECTRICAL GENERATOR

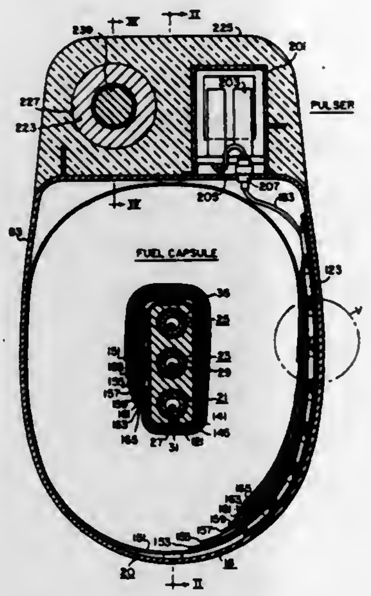
David L. Purdy, Indiana, Pa., assignor to Nuclear Materials and Equipment Corporation, Apollo, Pa.

Continuation of application Ser. No. 554,874, June 2, 1966. This application Apr. 14, 1969, Ser. No. 817,271

Int. Cl. H01v *1/30, 1/32*

U.S. Cl. 136—202 **22 Claims**

A heart pacer is disclosed which has a long life (10 or 11 years) as compared to prior-art pacers (2 or 3 years). This pacer includes an evacuated container within which there is a long-life radioactive heat source. A thermoelectric tape is wrapped around the source and has its hot junction at the source and its cold junction at the wall of the container. The tape includes a gettering heat shield which prevents heat from radiating from the source (hot junction) to the container (cold junction) and also maintains the vacuum within the container. The wall of the container is composed of titanium which is compatible with human tissue and is not rejected by the body.



3,649,368

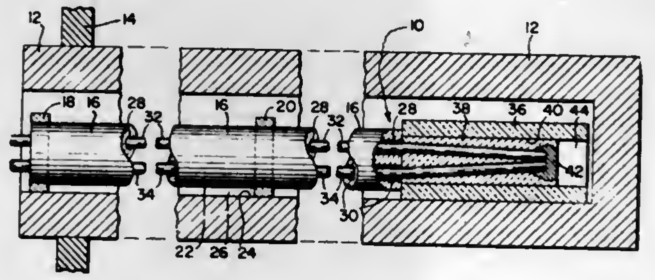
MEASURING APPARATUS

Joseph D. Sine, Sellersville, Pa., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Dec. 18, 1968, Ser. No. 784,588

Int. Cl. H01v *1/04*

U.S. Cl. 136—232 **7 Claims**



To enable a thermocouple-current transmitter to provide an accurate temperature measurement under varying high temperature conditions there is disclosed herein an apparatus which will prevent leakage of current from its thermocouple element through an associated protecting well to ground.

3,649,369

METHOD FOR MAKING N-TYPE LAYERS IN GALLIUM ARSENIDE AT ROOM TEMPERATURES

Robert G. Hunsperger, Malibu, and Ogden J. Marsh, Woodland Hills, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

No Drawing. Filed Mar. 9, 1970, Ser. No. 17,956

Int. Cl. H01l *7/54*

U.S. Cl. 148—1.5 **4 Claims**

A method for making an N-type layer in a gallium arsenide substrate is described. Sulphur ions are implanted into the gallium arsenide substrate at room temperature. A sheet resistance in the range 10^3 to 10^5 ohms per square may be achieved by implanting a dose of between 10^{14} and 10^{16} sulphur ions per cm.^{2}.

3,649,370

PROCESS FOR IMPROVING THE WEAR RESISTANCE OF STEEL SHOT

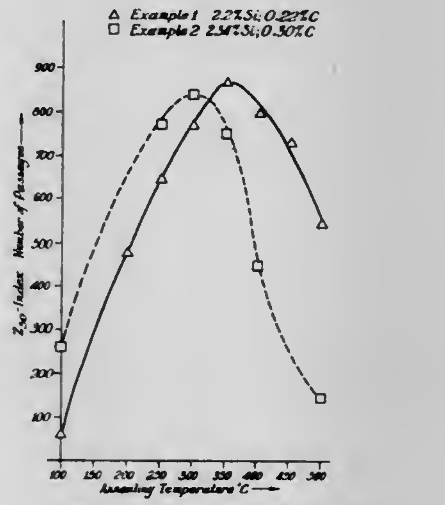
Friedrich Wilhelm Dorn, Hurth, near Cologne, Klaus Frank, Hermulheim, near Cologne, Dietrich Gleisberg, Hurth, near Cologne, Joachim Kandler, Lechenich, and Hans Dieter Thiel, Hurth, near Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

Filed July 18, 1969, Ser. No. 842,876

Claims priority, application Germany, July 30, 1968, P 17 58 724.5

Int. Cl. B22d *25/02;* **C21d** *1/26*

U.S. Cl. 148—3 **2 Claims**



Influence of annealing temperature upon the wear resistance (Z_{50}-Index) of steel shot produced according to Example 1 and Example 2 (Annealing period 2 hours)

Production of steel shot of improved wear resistance which is (a) suitable for use as a blasting agent in surface treatment, (b) formed of particles characterized by solidity, freedom from strains, smoothness, roundness and freedom from superficial cracks, and a particle size between 0.01 and 3.0 mm., and (c) contain between 1.1 and 3.3 weight percent silicon, between 0.05 and 0.4 weight percent carbon, between 0.1 and 0.8 weight percent manganese, between 0 and 1.0 weight percent of one or more customary steel-accompanying materials, the balance being iron. The improved steel shot is produced by heating it for a period of between about 1 and 5 hours to temperatures between 200 and 500° C.

3,649,371

COATINGS FOR STEEL

Singkata Tongyai, Warrington, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Aug. 8, 1969, Ser. No. 848,689

Int. Cl. C23f *7/20*

U.S. Cl. 148—6.14 A **2 Claims**

A ferrous oxalate coating on ferrous metal results from contacting the metal with an aqueous solution of ferrous oxalate, ferric ion, fluoride ion, oxalic acid at a pH of 0–2.5 and a temperature of 130° to about 190° F. A mixture for preparing and replenishing the bath consists of oxalic acid, ferric sulfate and alkali metal bifluorides.

3,649,372

REAGENT FOR FORMING AN INSULATING COATING ON THE SURFACE OF ELECTRICAL STEEL SHEETS

Mitsuo Imai, Hiroshi Shimanaka, and Toshio Irie, Ashiya, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

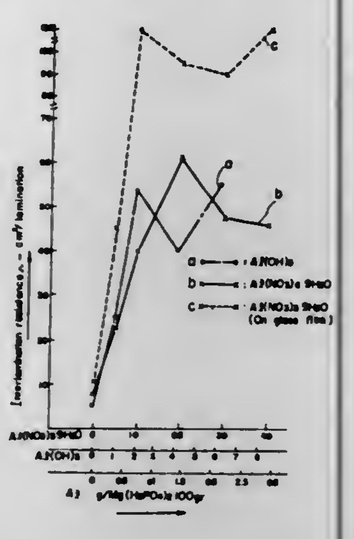
Filed Apr. 16, 1969, Ser. No. 816,677

Claims priority, application Japan, Oct. 28, 1968, 43/78,036

Int. Cl. C23f *7/08, 7/26*

U.S. Cl. 148—6.16 **9 Claims**

Reagent for forming an insulating coating on the surface of electrical steel sheets is disclosed wherein aluminum nitrate and/or amorphous aluminum hydroxide are/is incorporated into an aqueous solution of phosphate compounds in an amount of 0.4–2.1 parts by weight based



on aluminum. The aqueous solution of phosphate compounds includes 100 parts by weight of monobasic magnesium phosphate and 5 to 30 parts by weight of chromic anhydride.

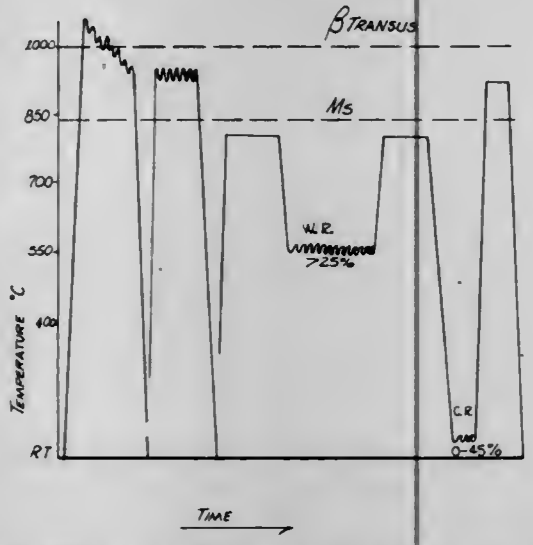
3,649,373
PASSIVATING AGENT FOR PROTECTING THE SURFACES OF SILVER-BEARING MATERIALS

Wolfgang Dahms, Berlin, Germany, assignor to Schering AG, Berlin, Germany
No Drawing. Filed Jan. 29, 1970, Ser. No. 6,957
Int. Cl. C23f *11/00*
U.S. Cl. 148—6.24 **12 Claims**

A silver passivating composition consisting of a carrier inert to silver and a thiocarbamic compound.

3,649,374
METHOD OF PROCESSING ALPHA-BETA TITANIUM ALLOY

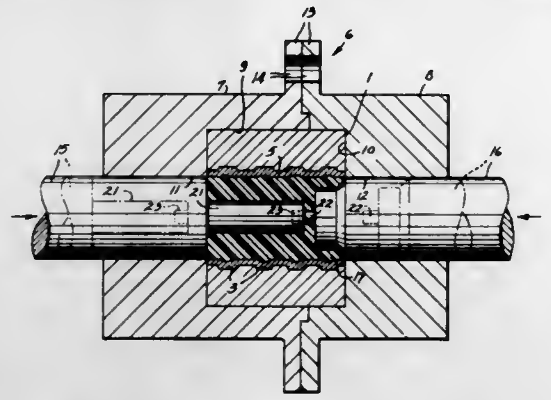
David L. Chalk, Monroe, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio
Filed Apr. 24, 1970, Ser. No. 31,529
Int. Cl. C22f *1/18*
U.S. Cl. 148—11.5 F **11 Claims**



A procedure for improving the ductility and rollability of an alpha-beta titanium, such as Ti–6Al–4V, whose initial hot reduction occurs in part below the beta transus temperature. The further and final processing steps are characterized by a sequence of operations which include at least two rolling stages to final gauge. The sequence is further characterized by the provision of a low temperature intermediate anneal separating each said rolling stage, and that at least one of said rolling stages reduces the alloy strip by an amount greater than 25% at a temperature between about 430–790° C. (800–1450° F.).

3,649,375
METHOD OF FORMING METALLIC MATERIAL

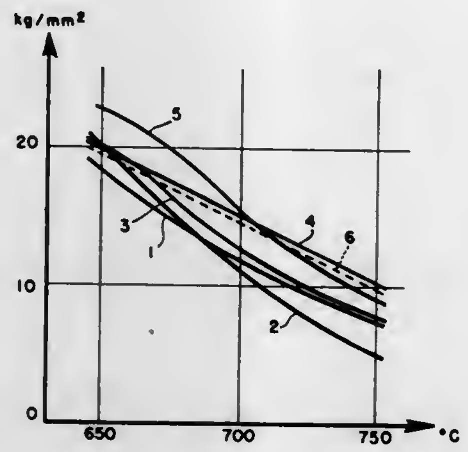
Peruvemba Swaminatha Venkatesan, Princeton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Jan. 26, 1970, Ser. No. 5,712
Int. Cl. C22f *1/16*
U.S. Cl. 148—11.5 R **20 Claims**



Superplastifiable metallic cylinder (78% by weight zinc, 22% by weight aluminum), in segmented die with intaglio characters, is heated to superplastic state by heated and pressurized thermoplastic material (acrylonitrile-butadiene-styrene) and expanded into die to form printing drum. Thermoplastic material hardened in situ to add mass to cylinder. Aperture may be formed in thermoplastic material simultaneously with expansion of cylinder into die by means of suitable mandrels. Other material, such as thermosetting polymerics or low melting metallics, may be used to heat cylinder to superplastic state and to expand same into die.

3,649,376
PROCESS FOR PREPARING AND TREATING AUSTENITIC STAINLESS STEELS

Jean Decroix, Moutmoreucy, France, assignor to Ugine Kuhlmann, Paris, France
Continuation-in-part of applications Ser. No. 609,503, Jan. 16, 1967, now Patent No. 3,551,142, and Ser. No. 741,245, July 1, 1968. This application Aug. 3, 1970, Ser. No. 60,388
Claims priority, application France, Dec. 14, 1966, 87,383; Dec. 15, 1966, 87,502; Dec. 16, 1966, 87,796
Int. Cl. C21d *7/14*
U.S. Cl. 148—12 **8 Claims**

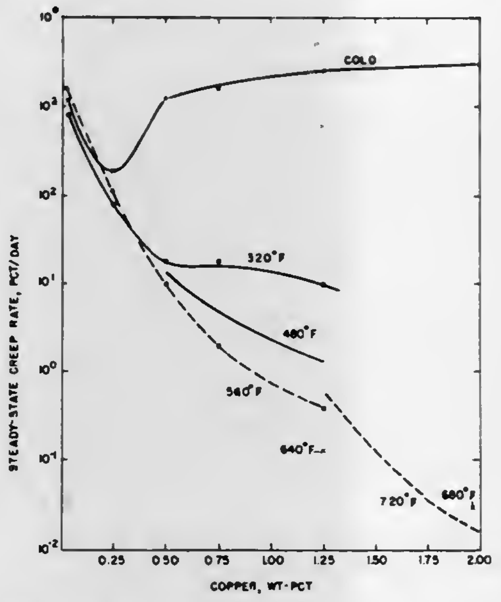


Process for preparing and treating new austenitic stainless steels with improved creep strength at high temperatures, the steels having a composition in percent by weight within the following limits: carbon ≤ 0.175, silicon ≤ 1.0, chromium 15 to 20, nickel 4 to 16, manganese 1 to 12,

molybdenum 0 to 4, tungsten 1 to 6, copper 0 to 4, nitrogen ≥ 0.15, vanadium at least equal to 1.2 times nitrogen where vanadium plus nitrogen ≤ 0.65, columbium 0 to 2, boron 0.001 to 0.005 and the balance iron and incidental impurities. The process includes preparing the alloy, work hardening the alloy while hot, and chilling the alloy. In a preferred embodiment columbium is mandatory in amounts of 0.2 to 2.0 percent and preferably 0.4 to 1.0 percent.

3,649,377
PROCESS FOR IMPROVING CREEP RESISTANCE OF ZINC-COPPER ALLOYS

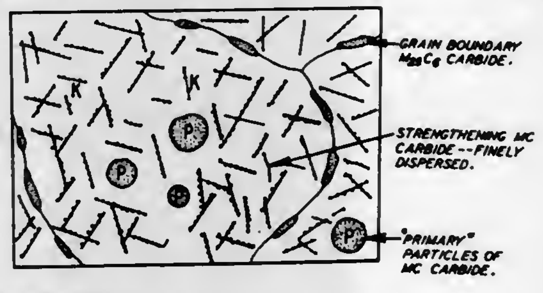
Leander A. Neumeier and John S. Risbeck, Rolla, Mo., assignors to the United States of America as represented by the Secretary of the Interior
Filed Oct. 13, 1969, Ser. No. 865,788
Int. Cl. C22f *1/16;* **C22c** *17/00*
U.S. Cl. 148—11.5 R **6 Claims**



Creep resistance of binary zinc-copper alloys containing up to about 2 weight percent copper is substantially increased by working the alloys within a temperature range correlated with copper content so as to control the degree to which copper is retained by the zinc matrix while simultaneously controlling the form and amount of zinc-copper ε-phase precipitated at grain boundaries.

3,649,378
MONOCARBIDE PRECIPITATION-STRENGTHENED NICKEL BASE ALLOYS AND METHOD FOR PRODUCING SAME

Peshotan Sohrab Kotval, Indianapolis, Ind., assignor to Cabot Corporation, Boston, Mass.
No Drawing. Filed June 20, 1969, Ser. No. 835,201
Int. Cl. C22c *19/00;* **C21d** *7/00*
U.S. Cl. 148—12.7 **7 Claims**


GRAIN BOUNDARY $M_{23}C_6$ CARBIDE.
STRENGTHENING MC CARBIDE--FINELY DISPERSED.
"PRIMARY" PARTICLES OF MC CARBIDE.
K
P

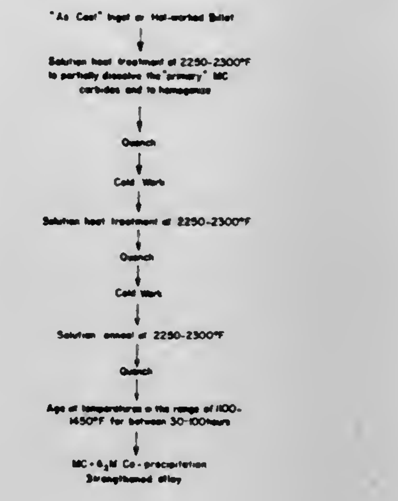
SCHEMATIC REPRESENTATION OF SURFACE OF THE STRENGTHENED ALLOY.

(APPROX. 8000X)

Nickel base alloys of 15–22% Cr, 3–12% Mo; at least one of the group consisting of 6–9% Ta, 3–5% Cb and 3–6% V, and 0.03–0.15% C, balance nickel and residual impurities are strengthened by precipitating dispersed monocarbides having particle sizes of less than 250 angstroms by sequentially solution heat treating the alloy at a temperature of 2250–2300° F., quenching and cold-working in repetitive cycles. The material is thereafter finally annealed, quenched and aged to produce the monocarbide precipitate.

3,649,379
CO-PRECIPITATION-STRENGTHENED NICKEL BASE ALLOYS AND METHOD FOR PRODUCING SAME

Peshotan Sohrab Kotval, Indianapolis, Inc., assignor to Cabot Corporation, Boston, Mass.
Filed June 20, 1969, Ser. No. 834,942
Int. Cl. C22c *19/00;* **C21d** *7/00*
U.S. Cl. 148—12.7 **10 Claims**


"As Cast" Ingot or Hot-worked Billet
Solution heat treatment at 2250-2300°F to partially dissolve the "primary" MC carbides and to homogenize
Quench
Cold Work
Solution heat treatment at 2250-2300°F
Quench
Cold Work
Solution anneal at 2250-2300°F
Quench
Age at temperatures in the range of 1100-1450°F for between 30-100hours
MC + A_3M Co-precipitation Strengthened alloy

Nickel base alloys of 15–22% Cr, 3–12% Mo; at least one of the group consisting of 6–10% Ta, 6–9% Cb and 6–9% V, and 0.03–0.15% C, balance nickel and residual impurities are strengthened by co-precipitating dispersed monocarbides having particle sizes of less than 250 angstroms and an intermetallic phase by sequentially: (1) solution heat treating the alloy at a temperature of 2250–2300° F. (2) quenching and (3) cold-working in repetitive cycles. The material is thereafter finally annealed, quenched and aged to produce the co-precipitation-strengthened structure.

3,649,380
METHOD OF MANUFACTURING HARD FACED EXHAUST VALVES

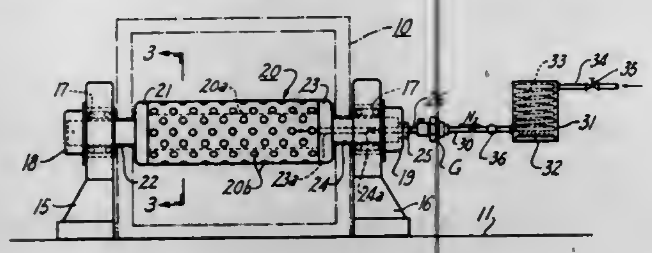
Max J. Tauschek, South Euclid, Ohio, assignor to TRW Inc., Cleveland, Ohio
Continuation-in-part of application Ser. No. 573,908, Aug. 22, 1966. This application Apr. 14, 1969, Ser. No. 824,343
Int. Cl. B21k *1/22*
U.S. Cl. 148—142 **6 Claims**

An internal combustion engine valve prepared by applying a facing material onto the seating face of the valve while the valve body is heated, quenching the applied facing while the valve body is at least partially in a plastic condition to cause the facing material to contract about the valve body, and cooling the valve body to thereby pull the facing material radially inwardly by the contraction of the valve body and to provide a high residual compressive stress in the facing material.

3,649,381
GUIDE ROLL CONSTRUCTION AND UTILIZATION

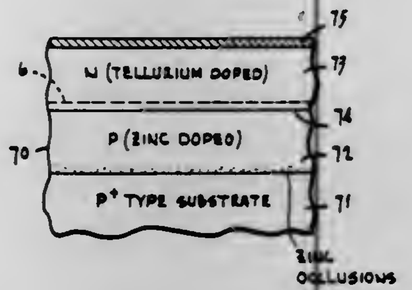
John T. Mayhew, 156 Sunset Drive, Toronto, Ohio 43964
Filed Jan. 15, 1970, Ser. No. 3,072
Int. Cl. C21d *9/56*
U.S. Cl. 148—156 **5 Claims**

A roll used for guiding metal strip or sheet material through a furnace of hollow construction is provided with perforations or openings in its guide surface for supplying an inert gas, such as nitrogen, to lubricate the roll and provide an adhering film of the gas on the cooperating surface of the metal material.



3,649,382
DOUBLE EPITAXIAL SOLUTION REGROWTH PROCESS AND DEVICE MADE THEREBY

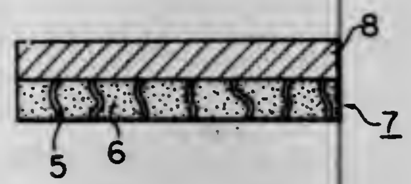
Frank Z. Hawrylo, Trenton, N.J., assignor to RCA Corporation
Continuation-in-part of application Ser. No. 544,934, Apr. 25, 1966. This application Feb. 26, 1968, Ser. No. 708,324
Int. Cl. H01l *7/38;* **H05b** *33/00;* **B01j** *17/00*
U.S. Cl. 148—171 4 Claims



A process for manufacturing a semiconductor laser diode by depositing from the liquid phase successive P type and N type gallium arsenide epitaxial layers with a P–N junction therebetween. The N type layer is grown by precipitation from a gradually cooled melt of gallium arsenide and tellurium in a gallium solvent. The P type layer is deposited by precipitation from a slowly cooled melt of gallium arsenide and zinc in a gallium solvent. While the layers may be deposited in either order, improved ohmic contacts and reproducibility of device parameters are obtained by depositing the P type layer first.

3,649,383
PROCESS OF FABRICATING ELECTRO-LUMINESCENT ELEMENT

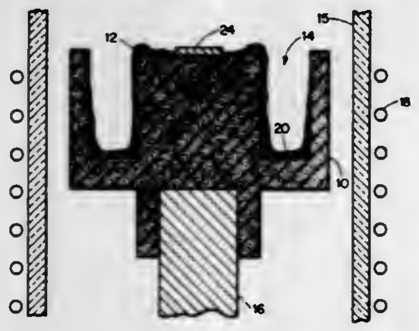
Isamu Akasaki, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 17, 1969, Ser. No. 807,688
Claims priority, application Japan, Mar. 23, 1968, 43/19,576
Int. Cl. H01l *7/46, 15/00;* **C23c** *3/00*
U.S. Cl. 148—171 4 Claims



A process for fabricating an electroluminescent element of a semiconductor material consisting of two layers of mutually different conductivity types, particularly including the steps of coating grains of a p-type (for example) electroluminescent semiconductor crystal with insulating material, hot-pressing the coated grains into a single-grain layer, etching opposite surfaces of said layer to remove the insulating coating at the surfaces, and growing another layer of the semiconductor material of n-type, whereby the crystal grains in the first layer are insulated from one another in the transverse direction.

3,649,384
PROCESS FOR FABRICATING SILICON CARBIDE JUNCTION DIODES BY LIQUID PHASE EPITAXIAL GROWTH

G. Sanjiv Kamath, Wellesley, Mass., assignor to Norton Research Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 624,896, Mar. 21, 1967, and a continuation-in-part of application Ser. No. 659,690, Aug. 10, 1967. This application Mar. 27, 1969, Ser. No. 810,977
Int. Cl. H01l *7/38;* **H05b** *33/00;* **C01b** *31/36*
U.S. Cl. 148—171 5 Claims

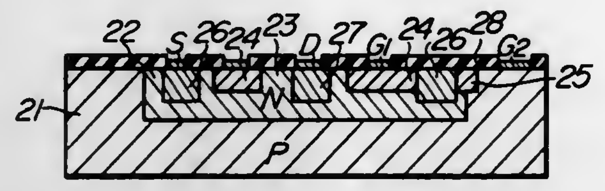


The production of electroluminescent silicon carbide junction diodes having low forward resistance is described. These diodes are produced by doping an epitaxially grown layer containing boron as a major impurity with a minor quantity of aluminum.

This invention relates to novel silicon carbide junction diodes, particularly light-emitting diodes, and the novel method of manufacturing such diodes. The method involves liquid phase epitaxial growth and requires a temperature gradient between the base crystal and the molten solution.

3,649,385
METHOD OF MAKING A JUNCTION TYPE FIELD EFFECT TRANSISTOR

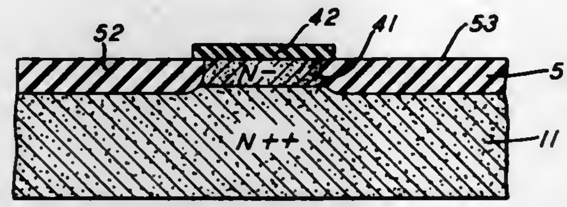
Kazuo Kobayashi, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 6, 1970, Ser. No. 17,076
Claims priority, application Japan, Mar. 12, 1969, 44/18,322
Int. Cl. H01l *7/44*
U.S. Cl. 148—186 1 Claim



A method of making a diffused junction type field effect transistor, wherein an annular P type gate region having a protruding portion connected to a P type silicon substrate across an N type source region is preliminarily formed, and after measuring the electrical characteristics between the source and a drain region, the protruding portion is heavily doped with an N type determining impurity so as to isolate the annular P type gate region and the substrate.

3,649,386
METHOD OF FABRICATING SEMICONDUCTOR DEVICES

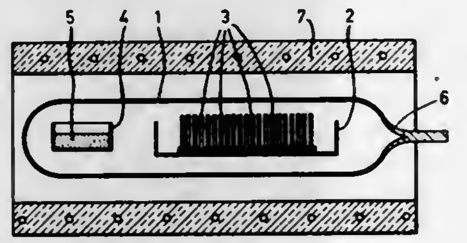
Bernard T. Murphy, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Apr. 23, 1968, Ser. No. 723,529
Int. Cl. H01l *7/44*
U.S. Cl. 148—187 11 Claims



The invention is a method of fabricating semiconductor devices which have the uniform avalanche breakdown junctions characteristic of prior art mesa device structures while retaining the desirable passivation and overlay contact features characteristic of planar structures. An important feature is based on the fact that the bulk increases when silicon is converted to the oxide whereby depressions in a silicon body can be filled by selective oxidation of the regions of the depressions.

3,649,387
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Herman Frentz, Nijmegan, Netherlands, and Bernard Hendrik Weijland, Beaverton, Oreg., assignors to U.S. Philips Corporation, New York, N.Y.
Filed June 20, 1969, Ser. No. 834,972
Claims priority, application Netherlands, June 21, 1968, 6808723
Int. Cl. H01l *7/44*
U.S. Cl. 148—187 9 Claims

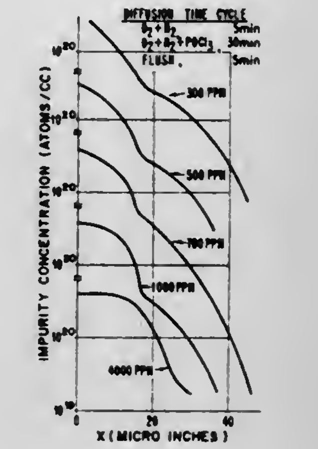


In the manufacturing of a semiconductor device in which a semiconductor body is locally dopped by diffusion from a masking material which comprises an impurity, the incidental diffusion of the impurity from the masking material into a surface of the semiconductor body which is unmasked is checked by performing the diffusion process in the presence of a powder of a semiconductor material. This method also permits the diffusion of two or more impurities during a single diffusion process.

3,649,388
METHOD FOR MAKING A SEMICONDUCTOR DEVICE HAVING A SHALLOW, FLAT FRONT DIFFUSION LAYER

Madhukar L. Joshi, Essex Center, Vt., and Alan Platt, La Grangeville, and Edward S. Wajda, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 4, 1968, Ser. No. 772,983
Int. Cl. H01l *7/44*
U.S. Cl. 148—189 2 Claims

A method of concurrently forming a shallow, flat front diffusion layer and a high surface impurity concentration in a semiconductor wafer, by preheating the wafer to diffusion temperature in an atmosphere that will not form any film, such as an oxide or nitride layer, upon the surface of the semiconductor wafer; carrying the diffusant, such as As or P, in a carrier gas such as argon that will not interfere by layer formation with the diffusion; diffusing the As or P to a depth not exceeding 20 microinches; and then cooling in an inert atmosphere.



3,649,389
POLYMERIC PROPELLANT AND LINER COMPOSITION USING A TRIMER ACID

Benny G. Barron, Lake Jackson, Tex., assignor to North American Rockwell Corporation
No Drawing. Filed Dec. 9, 1966, Ser. No. 601,296
Int. Cl. C06d *5/06;* **F42b** *13/00*
U.S. Cl. 149—19 7 Claims

Solid propellant matrices and liner compositions containing trimer acid as an additive to improve the mechanical properties thereof.

3,649,390
ALUMINO-THERMIC REACTION MIXTURE

Wilhelm Ahlert, Essen-Bredeney, Walter Bungardt, Essen-Stadtwald, Andreas Brusdeylins, Essen, Paul Damm, Essen-Steel, and Camillo Herget, Essen, Germany, assignors to Th. Goldschmidt A.-G., Essen, Germany
No Drawing. Filed Nov. 3, 1969, Ser. No. 873,629
Claims priority, application Germany, Oct. 10, 1969, P 18 08 315.3
Int. Cl. C06b *15/00*
U.S. Cl. 149—37 3 Claims

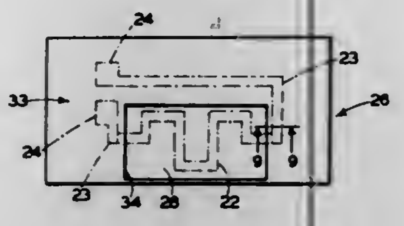
This invention relates to an aluminothermic reaction mixture consisting essentially of aluminum and iron oxide and containing about 0.1 to 5 percent by weight, based on the total weight of the mixture, of at least one aluminothermically reducible oxide having a particle size in the range of about 0.05 to 50μ.

3,649,391
PROCESS FOR PRODUCING A MARKING RECEPTIVE SURFACE ON A POLYSTYRENE SUBSTRATE

Albert D. Lewis, 2523 Valleybrook Drive,
Toledo, Ohio 43615
No Drawing. Filed May 1, 1970, Ser. No. 33,954
Int. Cl. B44c *1/22;* **B29d** *7/20*
U.S. Cl. 156—2 6 Claims

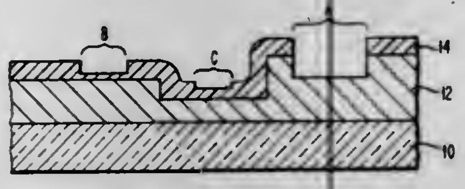
A process for producing a marking receptive surface on a polystyrene substrate which process consists in subjecting the substrate to the action of a solution of dichloromethane, perchloroethylene and heptane for a time sufficient to produce a visible marking surface.

3,649,392
THIN-FILM CIRCUIT FORMATION
James F. Schneck, Emmaus, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Dec. 6, 1968, Ser. No. 781,817
Int. Cl. H05k *1/00;* **H01l** *7/50*
U.S. Cl. 156—3 **6 Claims**



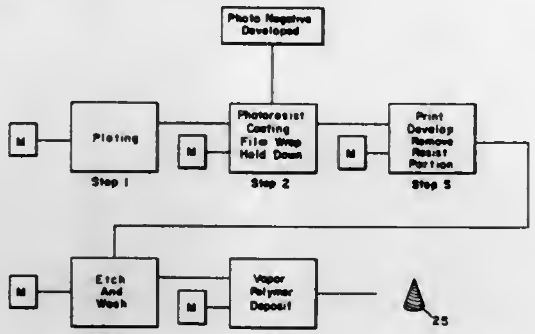
In the manufacture of thin-film circuits from substrates having superimposed films of a resistive and a conductive material, the undercutting of resistors or the unintentional reduction of conductor-termination pad dimensions by misregistration is eliminated through the use of a first "rough" mask to permit removal of the conductive film from the general area where the resistors will be formed. A second mask in the configuration of the entire thin-film circuit is used to permit the removal of the remaining unwanted portions of the thin films. Since the resistor portion of the second mask falls directly on the resistive film in the general area where the conductive film was removed by the first mask, and the second mask contains the entire thin-film circuit, both undercutting and misregistration, which leads to unintentional reduction of conductor-termination pad dimensions, are avoided.

3,649,393
VARIABLE DEPTH ETCHING OF FILM LAYERS USING VARIABLE EXPOSURES OF PHOTORESISTS
Michael Hatzakis, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 12, 1970, Ser. No. 45,676
Int. Cl. C23f *1/00*
U.S. Cl. 156—3 **4 Claims**



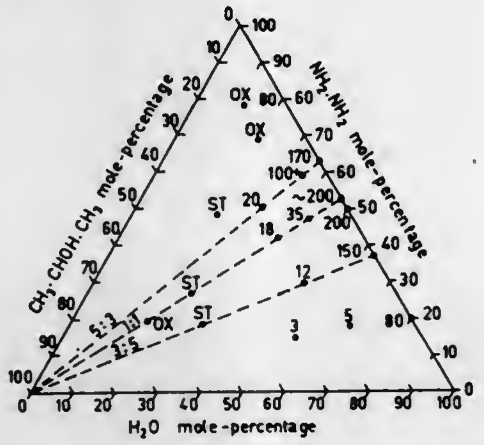
A method of etching film material such as a thin film layer where the thickness of the thin film is not uniform. The thin film layer, which may consist of an oxide, a metal or the like, is normally supported on a substrate. The thin film layer has markedly different thickness in different areas to be etched. The photoresist coated thin film is exposed by an electron beam in a series of separate exposures with different exposure densities. The thickest area is exposed first with the highest exposure density. Subsequent exposures are made in the other desired areas with decreasing densities in accordance with decreasing thickness. In the development steps, the photoresist is developed until the area of highest exposed density is opened and the thin film is etched to the next thickness level. Development is continued until the second highest exposed density is opened and then the thin film is etched to the next thin film level and so on.

3,649,394
3-DIMENSIONAL CONE ANTENNA METHOD
Werner Erickson, Jr., West Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Apr. 3, 1969, Ser. No. 813,026
Int. Cl. H05k *1/00, 3/00;* **H01g** *1/38*
U.S. Cl. 156—16 **5 Claims**



The method of consistently prefabricating 3-dimensional circuitry and particularly improved nose cone 3-dimensional antennas meeting the requirements of element tolerance control by providing a rotating conductor cone, as a basic configuration, coating the conductor surface with a photoresist, applying a photoprinting film of the required configuration, bonding the film to the photoresist, exposing the film to a light source while rotating the film coating surface, rotatably etching the printed pattern, cleaning the etched pattern, and depositing a continuous insulating film of poly-p-xylylene polymer overlying and supporting the etched circuitry configuration, and product.

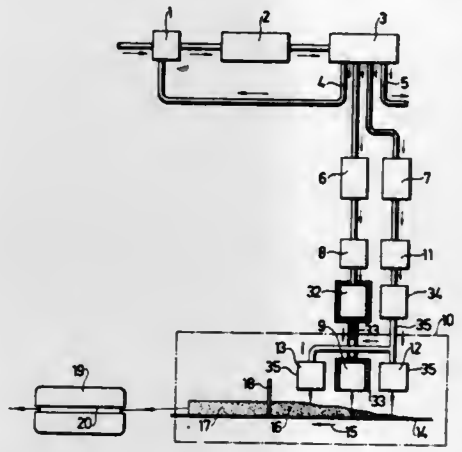
3,649,395
METHODS OF ETCHING SEMICONDUCTOR BODY SURFACES
David Belgrove Lee, London, England, assignor to U.S. Philips Corporation
Filed Oct. 21, 1969, Ser. No. 868,089
Claims priority, application Great Britain, Oct. 21, 1968, 49,869/68
Int. Cl. C23f *1/02;* **H01l** *7/00*
U.S. Cl. 156—16 **9 Claims**



A method of etching desired portions of a monocrystalline silicon body in which an anisotropic etch consisting of water and amine is employed and surface portions of the silicon body are protected with a coating of aluminum.

3,649,396
METHOD OF MAKING RIGID PARTICLE BOARDS OR THE LIKE
Bengt J. Carlsson, Motala, Sweden, assignor to Aktiebolaget Motala Verkstad, Motala, Sweden
Filed Jan. 22, 1970, Ser. No. 5,049
Int. Cl. B29j *5/02*
U.S. Cl. 156—62.2 **4 Claims**

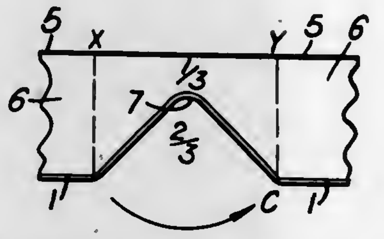
A particle web is made by spreading upon a support surface superimposed layers of particles coated with a heat hardenable glue. The first outside layer is spread employing particles which are unheated, a center layer is then spread on the first layer employing particles which have been preheated to a temperature just below the hardening temperature of the glue, and a second outside layer of unheated particles is then spread on the center layer. The web is then promptly pressed between pressing members heated to a temperature above the hardening temperature of the glue to form a rigid member. The result of the preheating of the particles is a more rapid pressing operation and a better outer surface on the resulting pressed member. A small amount of water may be applied to the exposed surfaces of the web just prior to the pressing so that steam generated by contact between the pressing members and the water assists in carrying heat to the center of the web.



3,649,397
MANUFACTURE OF PRODUCTS FROM COMMINUTED WOOD
Thomas E. Peters, Oakridge, Oreg., assignor to Pope & Talbot, Inc., Portland, Oreg.
Filed Apr. 4, 1969, Ser. No. 813,474
Int. Cl. B29j *5/00*
U.S. Cl. 156—62.2 **8 Claims**

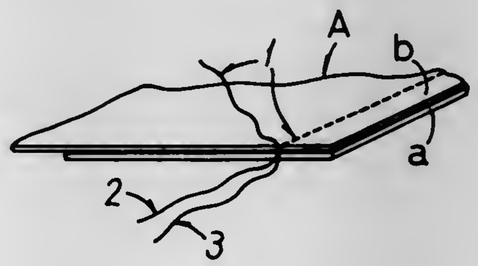
A process for preparing a wood mixture comprising comminuted wood having urea and a urea-formaldehyde concentrate incorporated with the comminuted wood at two stages. The urea is added to the comminuted wood first, and the resulting wood mass is dried prior to the distribution in the wood mass of the urea-formaldehyde concentrate. The making of a consolidated product by heating and pressing such a wood mixture containing urea-formaldehyde concentrate, with resinification occurring during such heating and pressing to form a urea resin binder.

3,649,398
FOLDABLE FOAM LAMINATES
Donald George Keith, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Aug. 4, 1969, Ser. No. 847,021
Claims priority, application Great Britain, Sept. 4, 1968, 42,040/68
Int. Cl. B32b *5/20*
U.S. Cl. 156—79 **12 Claims**



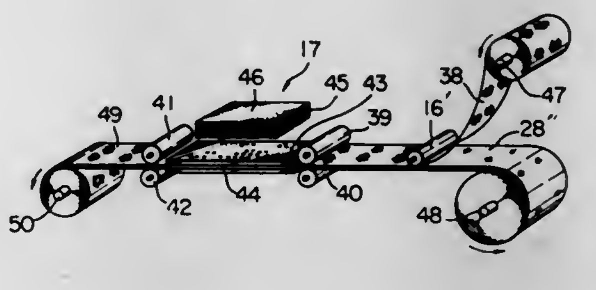
A method of making foldable laminate comprising a rigid layer of a foamed synthetic polymer confined between a flexible upper skin and a lower skin, the lower skin being provided with at least one upstanding notch of inverted V-shape the apex of which extends through the foam layer to a point below the upper skin, the laminate being foldable in a hinge-like manner about said apex, said method includes foaming said polymer and then pressing same in a tacky condition upon a preformed flexible film having the desired configuration.

3,649,399
METHOD IN TAILORING OF PREVENTING ONE SIDE OF CLOTH FOLDED BACK FROM BEING UNFOLDED
Hiroshi Nakanishi, Haguri-gun, Japan, assignor to Manzen Co., Ltd.
Filed Oct. 1, 1968, Ser. No. 764,194
Claims priority, application Japan, Nov. 8, 1967, 42/71,852
Int. Cl. B32b *7/08*
U.S. Cl. 156—93 **6 Claims**



This method of preventing one side of cloth folded back from being unfolded may be used in the tailoring of men's suit jackets. The method uses a synthetic resin fiber thread which has a low melting point. The cloths are sewn together by means of this fiber thread. They are then folded and heat is applied to the fold. The resin fiber melts, bonding the cloths and effecting a permanent fold.

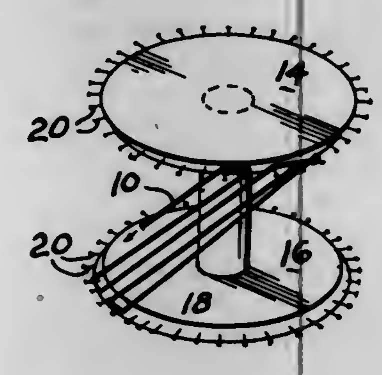
3,649,400
METHOD OF MANUFACTURING NONWOVEN FABRIC WITH PATTERN FORMED THEREON
Teiji Sawaki, Niwa-gun, Aiti Prefecture, and Sigenobu Otsuka, Hasima-gun, Gifu Prefecture, Japan, assignors to Toa Wool Spinning & Weaving Co. Ltd., Osaka, Teiji Sawaki, Aiti Prefecture, and Sigenobu Otsuka, Gifu Prefecture, Japan, fractional part interest to each
Filed Mar. 14, 1969, Ser. No. 807,286
Claims priority, application Japan, Mar. 16, 1968, 43/17,445; Aug. 13, 1968, 43/66,914; Dec. 30, 1968, 44/971
Int. Cl. D01h *1/48*
U.S. Cl. 156—148 **8 Claims**



A nonwoven fabric having a colored pattern of designs thereon made of colored fibers, such as yarn, secured thereto by needling. The process of manufacture of the patterned nonwoven fabric comprises disposing the colored fibers on the base fabric in position where they are to be fixed and subjecting the base fabric and the colored fibers thereon to needling by closely spaced needles that pierce the base fabric and entangle the colored fibers on the base fabric and render the areas of the base fabric and pattern colored fibers thereon substantially homogenous. The colored fibers are disposed on the base fabric by mounting or otherwise securing the fibers in a pattern arrangement on a carrier such as a thin film by bonding, flocking and the like and then letting the carrier overlie the base fabric and subjecting the fibers, carrier and base fabric to needling. The base fabric can be embossed in areas corresponding to the desired pattern and the colored fibers are received in the embossed areas. The carrier film is removed after the design fibers are fixed on the base fabric.

3,649,401
METHOD OF MAKING CONTINUOUS FIBER GLASS FILAMENT OPEN WEAVE FRAMES AND STRUCTURES

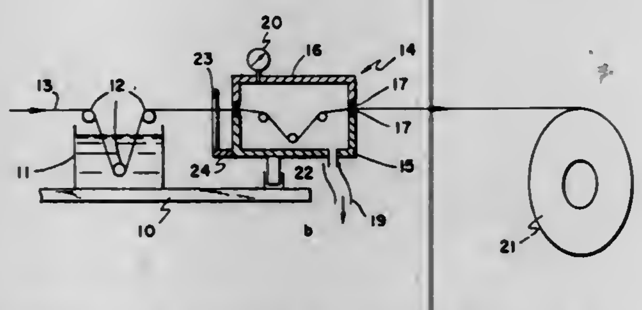
Dale B. Gunnerson, 1978 Lindsay Drive,
Salt Lake City, Utah 84119
Filed Oct. 28, 1968, Ser. No. 771,230
Int. Cl. B65h *81/00*
U.S. Cl. 156—175 **5 Claims**



A lattice-like frame is formed by extending a resin saturated strand of filaments angularly between pins secured to opposing end surfaces of a frame-work support. The pins and frame-work support are removed after the resin has set.

3,649,402
METHOD AND APPARATUS FOR WINDING RESIN-IMPREGNATED FILAMENTS TO REDUCE ENTRAINED AIR

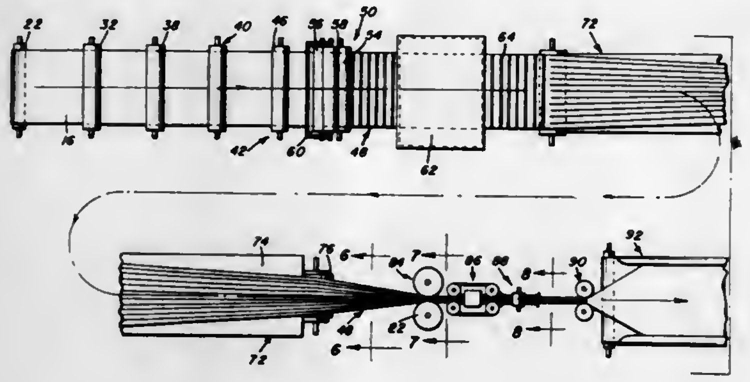
Herman F. Schwencke, Delft, Netherlands, assignor to
Shell Oil Company, New York, N.Y.
Filed June 13, 1969, Ser. No. 833,040
Claims priority, application Netherlands, Sept. 23, 1968,
6845110
Int. Cl. B65h *54/04, 55/04*
U.S. Cl. 156—175 **3 Claims**



A method for reducing the entrained air in an article prepared from a resin-impregnated filament is described which comprises impregnating composite filament with a liquid resin, passing the filament through a vacuum chamber, moving the filament from said vacuum chamber to a mandrel in a substantially rectilinear direction, winding said impregnated filament on a mandrel to form an article thereon, and allowing the resin to harden.

3,649,403
APPARATUS FOR PRODUCING EXPANDABLE CORE MATERIAL

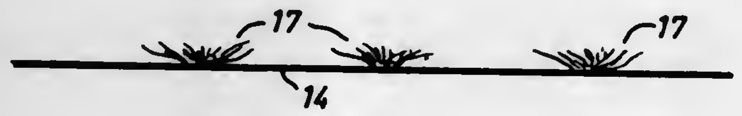
Lucien E. Tisdale, Monroe, La., assignor to
Ridge Ply, Inc.
Filed Jan. 27, 1969, Ser. No. 794,291
Int. Cl. B31d *3/02*
U.S. Cl. 156—197 **2 Claims**



A lamination of three or more webs employing glue printers to provide a predetermined pattern of transverse stripes of adhesive on the webs and on the top and bottom surfaces of the assembled lamination after which the lamination is corrugated as it moves longitudinally into an accordion folded condition with the folded edges then being trimmed to provide an unexpected honeycomb core. The unexpected honeycomb core is then expanded to form a honeycomb core material.

3,649,404
MAKING FILAMENTS WITH FIBRILS BONDED THERETO

George Waterhouse, Macclesfield, England, assignor to
Ernest Scragg & Sons Limited, Macclesfield, England
Filed July 14, 1969, Ser. No. 841,449
Claims priority, application Great Britain, July 24, 1968,
29,993/68
Int. Cl. B32b *3/10, 31/18*
U.S. Cl. 156—229 **9 Claims**



Filaments of man-made materials suitable for textile yarns are produced by first forming a laminate whose laminae have intermittent bonds and have different stretching characteristics, and then, before or after slitting into narrow strips, subjecting the laminate to a mechanical treatment which comprises stretching, and if desired such operations as scratching, scoring and scuffing, to cause rupture of unbonded parts of some of the laminae and the formation of fibrils on a main stem.

3,649,405
METHOD OF MAKING A LAMINATE WITH A MOVABLE INTERLAYER

Robert O. Osborn, Snyder, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 10, 1969, Ser. No. 831,970
Int. Cl. B29c *19/00*
U.S. Cl. 156—244 **4 Claims**

A heat shrinkable material comprising an oriented plastic open-mesh netting member which is completely enclosed within a plastic film member, with the netting member not being fixedly secured to the film member whereby

the netting member may move relative to the film member during tearing, for example. When the material is shrunk, it will shrink substantially uniformly due to the orientation of the netting member. Methods are provided for making this material.

3,649,406
IMPROVEMENTS IN OR RELATING TO FIBROUS INSULATING MATERIALS

Thomas Gordon McNish, "Silverton," 27 Silver St.,
Buckden, Huntingdonshire, England
No Drawing. Filed Dec. 12, 1969, Ser. No. 884,722
Claims priority, application Great Britain, Dec. 16, 1968,
59,719/68
Int. Cl. B28b *13/06*
U.S. Cl. 156—245 **14 Claims**

In a method of making a fibrous insulating material consisting of, for example, ceramic fibres, a mass of fibrous filaments is first treated to the action of a binding agent such as a silica sol and thereafter a part or the whole of the surface of the material is sprayed with an adherent coating or layer of a metal oxide such as alumina.

3,649,407
PRODUCING ARTICLES OF SYNTHETIC MATERIAL BY MOLDING AND BONDING

Theodoor Hendrik Markus, Bilthoven, Netherlands, assignor to Grontmij, Grondverbetering-En Ontginningmaatschappij N.V., De Bilt, Netherlands
Filed Dec. 20, 1968, Ser. No. 785,713
Claims priority, application Netherlands, Dec. 29, 1967,
6717828
Int. Cl. B29c *19/00*
U.S. Cl. 156—245 **5 Claims**

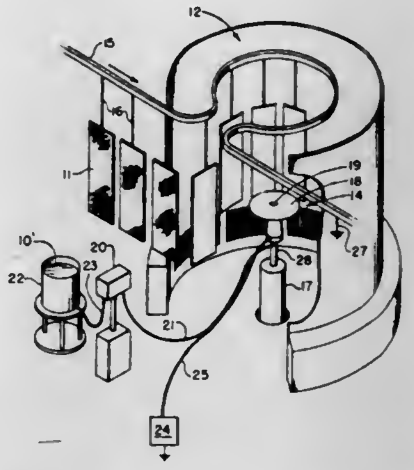
Profiled members such as beams and girders having smooth surfaces all over, are produced by assembling a plurality of sections that have one smooth side and one rough side, and adhesively bonding the rough sides to each other to leave the smooth sides outermost. Fillers and reinforcements may be included between the sections. The sections are sufficiently flexible or remoldable that they can take on a somewhat different shape upon assembly.

3,649,408
METHOD OF APPLYING FIBER-LIKE ADHESIVE TO A SUBSTRATE

Emery P. Miller, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.
Filed Aug. 15, 1969, Ser. No. 850,596
Int. Cl. B05b *5/00;* **C09j** *5/06*
U.S. Cl. 156—272 **11 Claims**

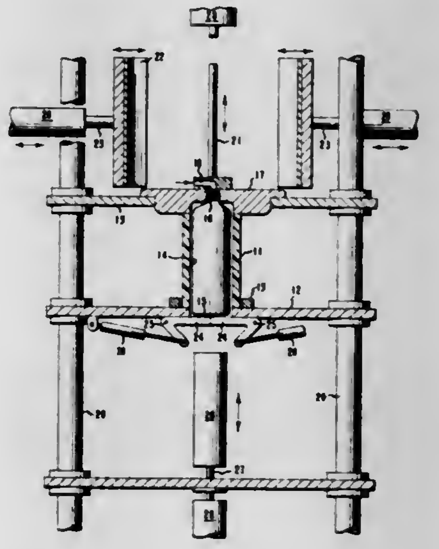
A method for forming and causing deposition of fiber-like lengths of an adhesive substance upon a side of an apertured substrate. The method includes the steps of forming and propelling fiber-like lengths of the adhesive substance toward the side of the apertured substrate. Substantially all of the fiber-like lengths of the adhesive substance are deposited on the side of the substrate in a jackstraw fashion. The fiber-like lengths of adhesive substance deposited on the side of the substrate may be treated at an elevated temperature. During heat treatment of the fiber-like lengths of adhesive substance at the elevated temperature, the adhesive substance melts and due to its surface tension tends to accumulate about the edges of the apertures of the apertured substrate as a substantially continuous mass. If desired, the opposite side of the substrate may also have the adhesive substance applied thereto in the same manner.

A sheet material may be placed contiguous to the side of the apertured substrate carrying the adhesive substance. The application of heat and/or pressure to the contiguous substrate and sheet material tends to cause the adhesive substance carried by the substrate to form a fillet-like mass which generally extends between the sheet material and the apertured substrate. The fillet of the adhesive substance joins the sheet material to the apertured substrate to provide sandwich structure.



3,649,409
PROCESS FOR LINING A PLASTIC CYLINDER WITH ANOTHER PLASTIC

George F. Bell, Newark, and Kit P. Carson, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed July 1, 1969, Ser. No. 838,291
Int. Cl. B32b *31/20*
U.S. Cl. 156—294 **11 Claims**

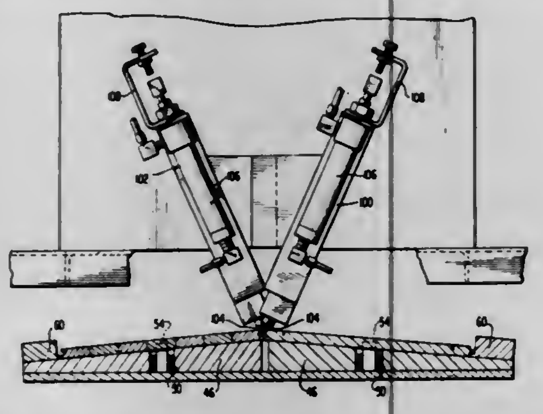


A process for lining a cylindrically shaped article made from a first plastic that softens before it degrades with a second plastic which also softens before it degrades, which comprises: preforming the second plastic into the form of a bottle, heating said bottle until soft, radiantly heating the internal surface of said article until soft with a radiant heater maintained at a temperature just sufficient to raise the internal surface of said article to the desired temperature without degrading that surface or destroying the dimensional stability of said article, positioning said bottle within said article, and inflating said bottle until it contacts the internal surface of said article and bonds to it.

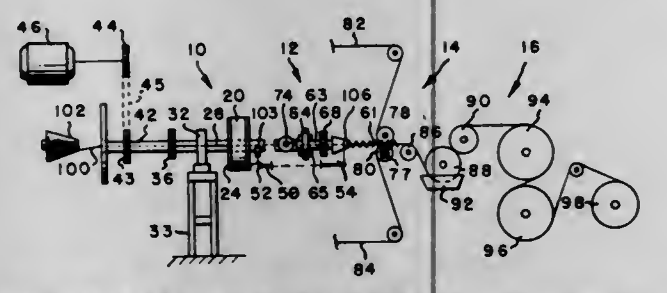
3,649,410
APPARATUS FOR UNITING FLOORING BLOCKS OR THE LIKE INTO A UNIT

Howard C. Tibbals, P.O. Drawer A.
Oneida, Tenn. 37841
Filed May 2, 1969, Ser. No. 828,079
Int. Cl. B05c *7/00*
U.S. Cl. 156—390 **25 Claims**

Method and apparatus for flexibly uniting four parquet wood flooring blocks into a rectangular unit used to facilitate installation of the blocks on a floor, wherein the floor blocks, having tongues and grooves, are arranged into a rectangular configuration on a conveyer which conveys the blocks to a first glueing station where a hot melt adhesive is applied to a first pair of tongues aligned along the axis of the conveyer path. Prior to application of the adhesive, the blocks are tented upwardly to expose the tongues for receiving the adhesive without allowing the adhesive to flow into the associated grooves. This tenting is accomplished by a raised bed portion on the conveyer which receives the lower surfaces of the blocks; cooperable guide rails along the sides of the conveyer which engage the outer side edges of the blocks, and overlying hold down members which engage the upwardly disposed block surfaces to maintain the blocks downwardly in the proper tented position. After the blocks leave the glueing station, the bed of the conveyer increases in angularity so that the blocks are lowered towards a coplanar position which causes the previously exposed tongues with the adhesive, to enter their associated grooves while still preventing the adhesive from entering into the bottom of the grooves. The adhesive is allowed to cool as the blocks continue to be conveyed in this second slightly angular position, maintained by hold down members and guide rails. At the end of the cooling phase, the blocks are discharged in a vertical hopper from which they are moved in a second direction perpendicular to the first conveyed path by a second conveyer during which the process is repeated with respect to a second pair of aligned tongues which extend perpendicular to the first pair. After the second pair of tongues are flexibly attached in their corresponding grooves, the block unit passes to an applicator which applies a common layer of cellular foam to the four upwardly disposed surfaces of the blocks.

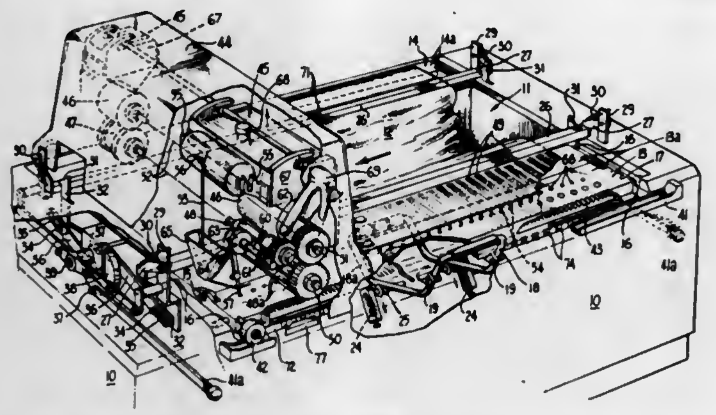


3,649,411
APPARATUS FOR THE PRODUCTION OF A BONDED TEXTILE FABRIC
Milton M. Bolles, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Feb. 3, 1969, Ser. No. 796,135
Int. Cl. B32b *5/08;* B65h *54/70*
U.S. Cl. 156—391 3 Claims



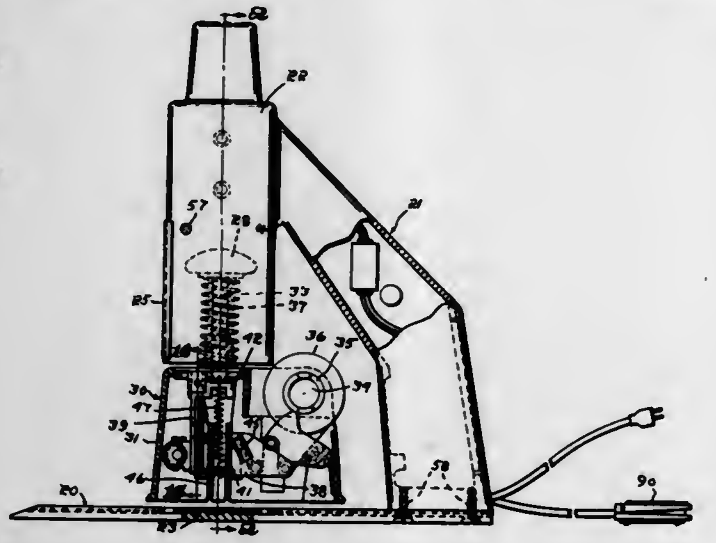
A process and apparatus for the production of nonwoven net textile fabrics composed of warp and weft sheets of threads adhered in contiguous co-planar relation, wherein the weft sheet is formed by winding a continuous thread about spaced thread support members to form a plurality of generally parallel reaches therebetween, which reaches are laterally advanced to form the weft sheet, and wherein the continuous thread is wound about the support members from guide means moving in a generally elliptical path around the members.

3,649,412
APPARATUS FOR PRODUCING CURTAINS
James Douglas Foggo, Buxton, England, assignor to Thomas French & Sons Limited
Filed Mar. 30, 1970, Ser. No. 23,951
Claims priority, application Great Britain, Apr. 2, 1969, 17,140/69
Int. Cl. B31f *7/00*
U.S. Cl. 156—443 23 Claims



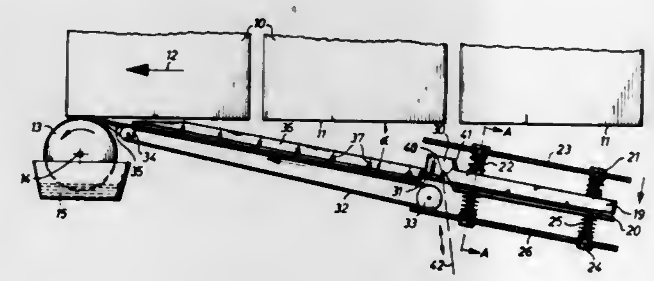
In an apparatus for producing curtains there is provided a clamping device for holding at least one edge region of a piece of curtain material in position on a table provided with a traversing head from which adhesive and a cord can be dispensed so as to apply the adhesive to selected regions of the piece of material so held and so as the cord can be looped through the material at spaced intervals, the table having flap means operable to fold together to trap a folded edge of the curtain therebetween and thus by pressure applied by the flaps cause the adhesive coated regions of the material to adhere to conceal all but the loops of the cord inserted through the material.

3,649,413
POWER OPERATED APPARATUS FOR DELIVERING PREDETERMINED LENGTHS OF AN ADHESIVE TAPE TO AN ARTICLE
David G. Way, Boxborough, Mass., assignor to Tapeler Corporation, Newton, Mass.
Filed July 31, 1969, Ser. No. 846,437
Int. Cl. B32b *31/18*
U.S. Cl. 156—518 17 Claims



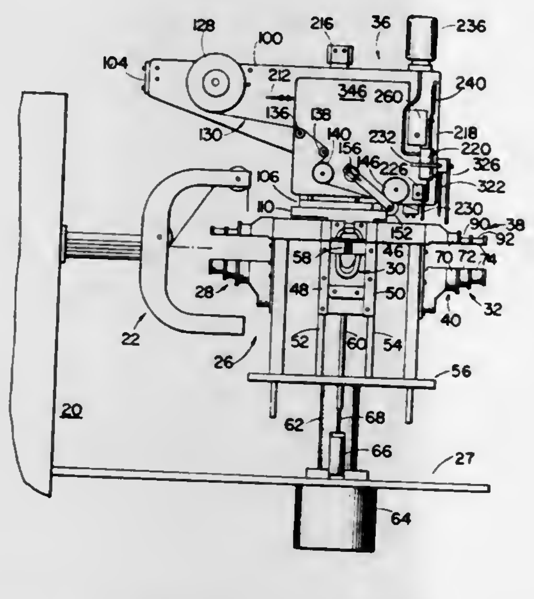
Apparatus is disclosed consisting of the combination of a device for applying to an article a tape section of a predetermined length from a roll of an adhesive tape and a support for the device. The support has a carrier to which the actuator of the device is connected and which is reciprocated by power operated means between a first carrier position in which the device is unseated and a second carrier position in which the device is seated and operated. The connection between the carrier and the actuator is preferably a detachable swivel. Air and electrically operated embodiments of the apparatus are disclosed.

3,649,414
DEVICE FOR CUTTING AND GLUING GAUZE STRIPS ON BOOK PAD BACKS
Hermann Brenner, Kocherstetten, Germany, assignor to Walter Sigloch, Grossbuchbinderei, Kunzelsau, Germany
Filed Apr. 4, 1969, Ser. No. 813,564
Claims priority, application Germany, Sept. 7, 1968, P 17 86 258.7–27
Int. Cl. B32b *31/00*
U.S. Cl. 156—521 5 Claims



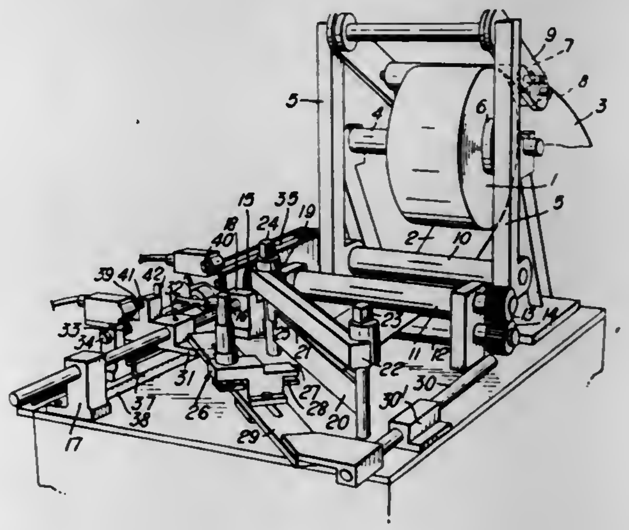
A device for cutting and gluing gauze strips onto the backs of books which are moved past a rotating glue application roller. A gauze strip is fed into a cutting tool from a supply roll by means of a pair of feed rollers and cut into strips of the desired width. The strips are consecutively pressed onto an inclined conveyor which brings then into contact with the backs of the moving books.

3,649,415
TAPE APPLYING APPARATUS FOR COIL WINDING MACHINE
Robert J. Eminger, Fort Wayne, Ind., assignor to Essex International, Inc., Fort Wayne, Ind.
Filed July 17, 1969, Ser. No. 842,567
Int. Cl. B31c *1/00;* B65h *54/02*
U.S. Cl. 156—521 26 Claims



A machine for winding dynamoelectric machine field coils including a coil form and a flyer winder for winding coils thereon, and apparatus for dispensing and applying adhesive tape to a coil to retain it in its coiled condition after removal from the coil form. The tape dispensing and applying apparatus includes means for advancing a predetermined length of adhesive tape longitudinally over a portion of the peripheral surface of the coil form prior to winding a coil thereon, the tape having an adhesive side which faces outwardly thereby to retain the coil wound thereover, and passages formed in the coil form which communicate with the surface portion thereof for applying a vacuum to the non-adhesive side of the tape, thereby to hold the tape on the coil form prior to and during the winding of a coil thereover.

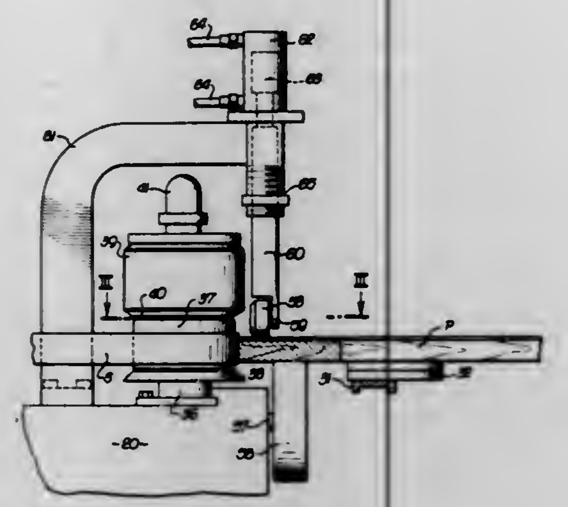
3,649,416
GUILLOTINE CUTTING MACHINE
Charles Walter Chapman, Thornton Heath, Surrey, and Eric Matthews, Whitton, Middlesex, England, assignors to Hallite Holdings Limited, Hampton, England
Filed July 15, 1969, Ser. No. 841,920
Claims priority, application Great Britain, Oct. 23, 1968, 50,402/68
Int. Cl. B26d *5/20;* B32b *31/18*
U.S. Cl. 156—523 10 Claims



The guillotine chopping machine carries a roll of rubberised web material having a polythene backing sheet interposed between the layers, the backing sheet is stripped off by rollers as the roll is unwound and the rubberised web is led through power-driven feed rollers to a guillotine arrangement. The leading end of the web is gripped on the far side of the guillotine by a gripping arrangement which can move between the guillotine and a point at a pre-determined distance from the guillotine to draw the web through the guillotine to that predetermined distance, the guillotine then performing a cutting action. The movement of the power-driven feed rollers and gripping arrangement are co-ordinated to impart a firm push-pull action to the web to hold and move it firmly. The sequence of events is carried out successively and automatically, the cut pieces of web being delivered individually for further processing. The machine may be linked with that in which the cut pieces are to be used, so that the two operate in phase.

3,649,417
AUTOMATIC EDGE BANDING APPARATUS
Manuel Izen, 1785 E. Vernon Ave., Los Angeles, Calif., and George Klotzek, Los Angeles, Calif.; said Klotzek assignor to said Izen
Filed Jan. 29, 1970, Ser. No. 6,826
Int. Cl. B32b *31/20, 31/10*
U.S. Cl. 156—552 8 Claims

An apparatus for adhesively securing a flexible strip of material around the edge of a panel, such as a table top, which may be warped, by rotatably mounting the table top at the end of an arm and biasing the arm and thus the edge of the table top against a contact roller so that the flexible strip, which may be pre-glued, is inserted therebetween.



3,649,418

METHOD OF AND A DEVICE FOR USE IN ADHESIVELY SECURING TOGETHER THE SURFACES OF SUBSTANTIALLY IMPERMEABLE MATERIALS

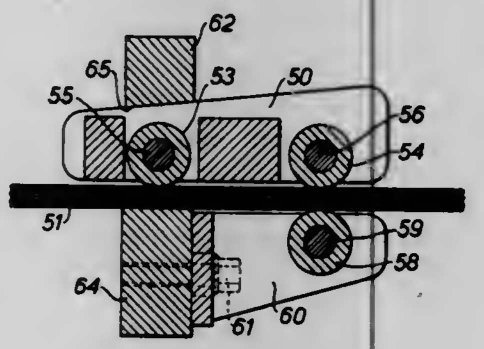
David James, Coychurch, near Bridgend, Glamorgan, Wales, assignor to Drawn & Rolled Sections Ltd., Bridgend, Glamorgan, Wales, Great Britain

Filed July 2, 1969, Ser. No. 838,484

Claims priority, application Great Britain, July 4, 1968, 31,932/68

Int. Cl. B31f *5/00;* **B32b** *31/04*

U.S. Cl. 156—580 **3 Claims**



In order to secure the surface of one metal article to the surface of another metal article, an adhesive substance containing a solvent is applied to either one or both surfaces in the form of a coating, and the surfaces are placed in contact so that a bond is formed between the surfaces. A bond so formed is likely to be unsatisfactory since the impermeability of the surfaces of the articles prevents the solvent from drying out fully at the interface between the coating layer and the metallic surface. Partial drying of the adhesive coating, and subsequently bringing together of the surfaces under pressure, known as impact adhesion, may improve the bond.

The method herein disclosed teaches the steps of coating the surfaces with an adhesive coating, drying out the adhesive coatings fully by evaporation of the solvent including curing where necessary or preferred, then applying a thin film of solvent to each layer, and finally placing the surfaces together under pressure to form a bond.

By this method, a more reliable bond may be easily formed between each metallic surface and its coating, and subsequently a further bond is formed between the adhesive coatings in the region of their respective superficial faces. The quantity of solvent in the film being such that the bond between the adhesive coating and the metallic surface is not impaired. A device is disclosed by which the step of placing the surfaces together under pressure is advantageously carried into effect.

3,649,419

WRAPPING MACHINE

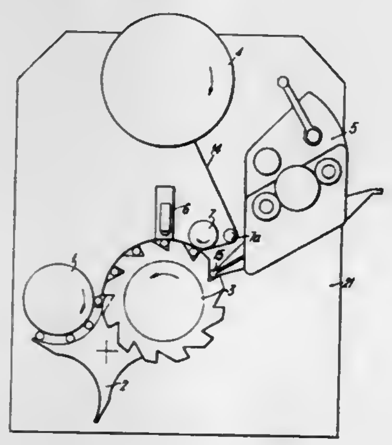
Paul Anderegg, Horgen, and Rolf Gerhard Graner, Oberrieden, Switzerland, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 20, 1970, Ser. No. 13,263

Claims priority, application Switzerland, Mar. 28, 1969, 4,724/69

Int. Cl. B32b *31/10;* **B65c** *3/12*

U.S. Cl. 156—567 **4 Claims**



A machine for wrapping round bodies with adhesive tape wherein the bodies to be wrapped are provided to a driving wheel having grooves formed therein. To enable the acceptance by the wheel of bodies of varying diameter the grooves may be varied in size. To this end two types of grooved discs are mounted on an axle, one type of disc being fixedly connected to said axle whereas the other type of disc is rotatably mounted on said axle. Shifting one disc relative to the other provides grooves of varying size. Adhesive tape is brought into contact with the driving wheel and with the bodies retained in the wheel grooves. A cutting device consisting of a heated wire is brought into and out of contact with said adhesive tape to provide tape strips of a desired length. The round body with a length of adhesive tape attached is then transferred to a roller arrangement which rotates the round bodies, thereby wrapping the tape around said bodies.

3,649,420

SONIC APPARATUS WITH ELECTRICAL CIRCUIT MEANS

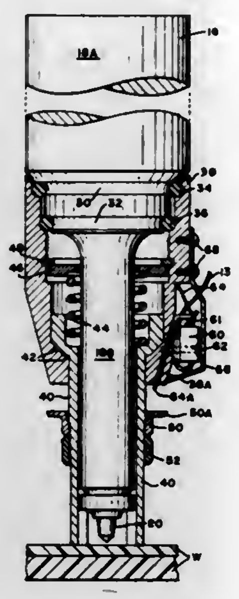
Edward G. Obeda, Brookfield, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Filed Apr. 13, 1970, Ser. No. 28,352

Int. Cl. B29c *27/08;* **B32b** *31/16*

U.S. Cl. 156—580 **12 Claims**

A sonic apparatus adapted for spot welding thermoplastic parts is provided with mechanical depth control means and an electrical switch for interrupting the current flow and thereby stopping the dissipation of sonic energy when a predetermined depth of tool penetration within the workpiece has been achieved.



3,649,421

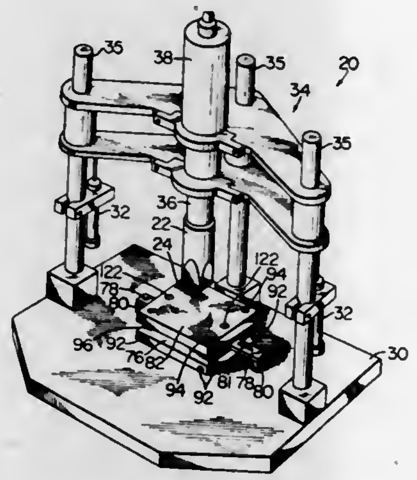
SONIC WELDING APPARATUS HAVING FLUID ACTION ALIGNING MEANS

Walter J. Berleyoung, Goshen, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Division of application Ser. No. 668,508, Sept. 18, 1967, now Patent No. 3,506,510, and a continuation-in-part of application Ser. No. 643,716, June 5, 1967. This application Dec. 9, 1969, Ser. No. 879,980

Int. Cl. B30b *31/34;* **B29c** *27/08*

U.S. Cl. 156—580 **16 Claims**



This application discloses an apparatus and method for sonically welding a plurality of thermoplastic members or flat plates. A sonic signal producing element or horn presses and imparts welding sonic signals to one of the thermoplastic members. A holding fixture holds one or more of such thermoplastic members. A base plate supports the holding fixture, and fluid action supporting means are provided between the holding fixture and the base plate. Such fluid action supporting means may include a plurality of fluid actuated plungers to support said fixture. This construction equally distributes the main part of the force of the horn over the entire surface of the parts of the thermoplastic members to be welded together.

3,649,422

COLORED DIAPOSITIVE FILM

Keishi Kubo and Kiyoshi Sakai, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

No Drawing. Filed Jan. 22, 1969, Ser. No. 793,181

Claims priority, application Japan, Jan. 30, 1968, 43/5,640

Int. Cl. G03c *1/78*

U.S. Cl. 161—2 **5 Claims**

A colored diapositive film for use in projection is prepared by contacting a colored, substantially transparent thermoplastic film with an original having an image thereon, and irradiating infrared rays through said thermoplastic colored film, thereby forming on said colored film an image corresponding to said original image and consisting of an aggregation of fine wrinkles having lower transparency than the remainder of said thermoplastic colored film.

3,649,423

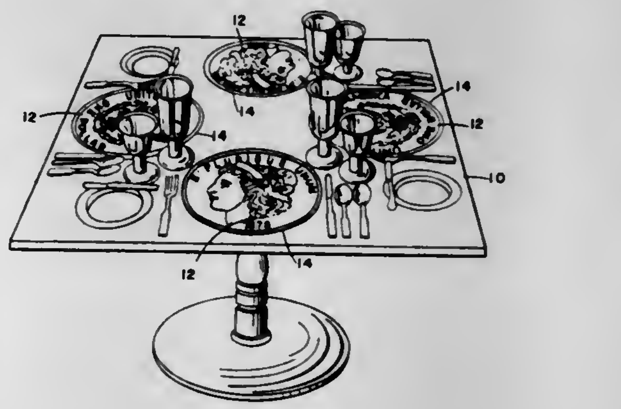
DECORATIVE FOOD AND BEVERAGE SERVING MEANS

Ralph P. Wilton, Wrightsville, and John J. Fitzpatrick, Hellam, Pa., assignors to Wilton Brass Company, Columbia, Pa.

Filed May 20, 1970, Ser. No. 39,082

Int. Cl. B44f *1/04;* **B32b** *1/06*

U.S. Cl. 161—5 **6 Claims**



Food and beverage serving means such as a table, bar counter and similar items having medallion-like decorative members resembling service plates in size which are inset permanently into the upper surface of said serving means at spaced locations adjacent one edge to denote serving areas.

3,649,424

PANELS

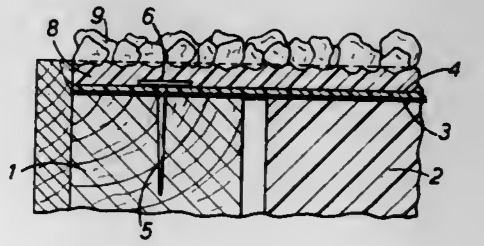
Maxwell Alvin Earl Rhiando, "Stonecroft," Friary Road, South Ascot, England

Filed June 30, 1969, Ser. No. 837,720

Claims priority, application Great Britain, July 1, 1968, 31,361/68

Int. Cl. B32b *1/04, 3/06, 7/00*

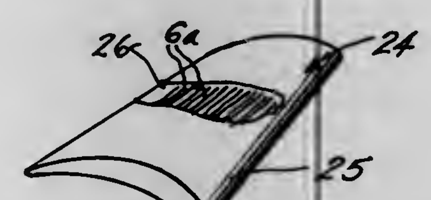
U.S. Cl. 161—43 **9 Claims**



Structural and/or decorative panels of this invention comprise a porous mat impregnated with a composition as herein referred to and overlaid by a layer of a compatible composition, one or more elongated fixing devices being anchored in the composition layer and protruding through the mat for attaching the panel to a reinforcing member. The advantages of panels made in accordance with this invention include moulding the panel in situ with shuttering which affords reinforcement for the panels and overcomes the requirement of expensive moulds.

3,649,425
ARCUATE SHAPED COMPOSITES OF REFRACTORY TAPES EMBEDDED IN A METAL MATRIX

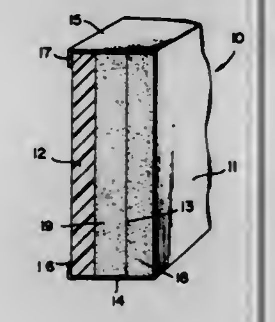
John A. Alexander, Painesville, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Mar. 18, 1970, Ser. No. 20,551
Int. Cl. B32b *15/14*
U.S. Cl. 161—43 **5 Claims**



Components, such as airfoils for jet engines and other complex shaped parts, are provided by fiber-reinforced, high-strength, light-weight metal matrix composites economically prepared to close dimensional tolerances by applying matrix tapes in side-by-side relation to a contoured metal base sheet or foil and building up a body of the desired thickness and shape with superimposed layers of such applied tapes, which are then covered with a contoured metal cover sheet or foil. Each layer may be bonded to the underlying layer by resistance diffusion bonding, and the cover sheet is bonded to the base sheet prior to hot pressing the entire assembly to the finished size and shape. The tapes are preferably composed of refractory filaments, such as boron, running lengthwise, and embedded in a metal matrix which is fully consolidated. The metal matrix and base and cover sheets are preferably composed of aluminum or titanium alloys, and the interior of the covered article is preferably evacuated prior to pressure bonding.

3,649,426
FLEXIBLE PROTECTIVE ARMOUR MATERIAL AND METHOD OF MAKING SAME

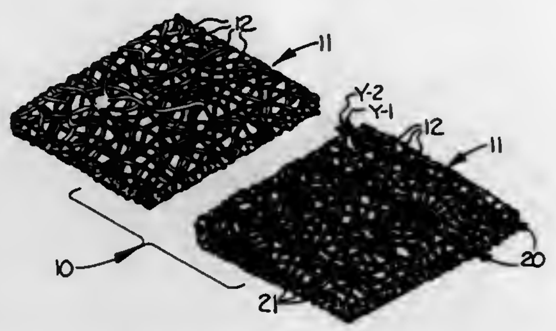
Louis E. Gates, Jr., Inglewood, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Dec. 22, 1967, Ser. No. 692,852
Int. Cl. B32b *5/16*
U.S. Cl. 161—43 **9 Claims**



The disclosure herein pertains to protective dilatant fluid insulation material or flexible fluid dilatant armor material for insulation and protection of personnel and equipment from intense sound rays, heat, light, and high velocity projectile impact. Such protective material comprising a mixture of a relatively fluid material and suspended medium therein resistant to radiant energy or particle (shrapnel and bullet) penetration.

3,649,427
STITCHED, SELF-BONDED, NONWOVEN FABRIC

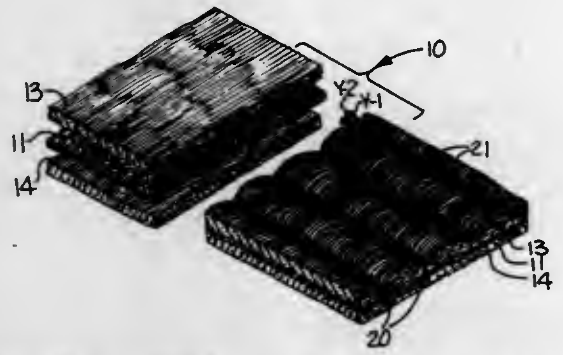
George H. Hughes, Asheville, N.C., assignor to Beacon Manufacturing Company, Swannanoa, N.C.
Filed Mar. 12, 1970, Ser. No. 18,852
Int. Cl. D04h *13/00;* **D04b** *21/00*
U.S. Cl. 161—50 **6 Claims**



A stitched, self-bonded, nonwoven fabric adaptable for use as bed coverings, draperies, garments and the like and specifically characterized by superior strength, stability and durability. The fabric comprises a three-dimensional batt of self-bonding fibers extending in random directions throughout the batt and being bonded to each other at the crossing points of the fibers to provide strength and stability to the fabric in all directions and elongate, spaced apart rows of stitches penetrating the batt of self-bonded fibers for stitch-bonding together the individual fibers of the batt. The rows of stitches extend in generally the lengthwise direction throughout the length of the fabric for providing additional strength and stability to the fabric in the lengthwise direction.

3,649,428
STITCHED COMPOSITE NONWOVEN FABRIC HAVING A SELF-BONDED FIBROUS SUPPORTING LAYER AND OUTER FIBROUS LAYERS

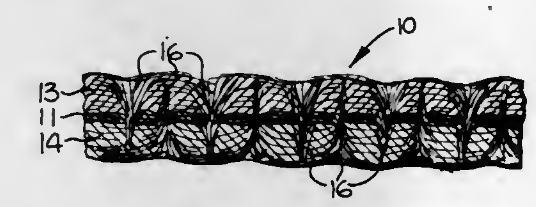
George H. Hughes, Asheville, N.C., assignor to Beacon Manufacturing Company, Swannanoa, N.C.
Filed Mar. 12, 1970, Ser. No. 18,853
Int. Cl. D04h *13/00;* **D04b** *21/00*
U.S. Cl. 161—50 **8 Claims**



A stitched, composite, integrated, multi-layer, nonwoven fabric adaptable for use as bed coverings, garments and the like and specifically characterized by improved strength and durability. The fabric comprises a supporting layer of self-bonding fibers, preferably synthetic organic fibers, extending in random directions throughout the layer and being bonded to each other at the crossing points of the fibers; upper and lower three-dimensional, self-sustaining facing layers of nonwoven textile fibers superimposed on opposite sides of and being contiguous with the supporting layer to completely cover the supporting layer and form the multi-layer fabric; and elongate, spaced apart rows of stitches penetrating the superimposed layers for stitch-bonding together the individual fibers of each of the facing layers and for stitch-bonding together the superimposed layers to form the composite fabric. The resulting composite nonwoven fabric may include napped and/or ribbed outer surfaces to provide desired characteristics.

3,649,429
NEEDLED COMPOSITE NONWOVEN FABRIC HAVING A SELF-BONDED FIBROUS SUPPORTING LAYER AND OUTER FIBROUS LAYERS

George H. Hughes, Asheville, N.C., assignor to Beacon Manufacturing Company, Swannanoa, N.C.
Filed Mar. 12, 1970, Ser. No. 18,851
Int. Cl. D04h *11/00;* **B32b** *5/06*
U.S. Cl. 161—64 **2 Claims**



A needled, composite, integrated, multi-layer, nonwoven fabric adaptable for use as bed coverings, garments and the like and specifically characterized by improved strength and durability. The fabric comprises a supporting layer of self-bonding fibers, preferably synthetic organic fibers, extending in random directions throughout the layer and being bonded to each other at the crossing points of the fibers; upper and lower three-dimensional, self-sustaining, facing layers of nonwoven textile fibers superimposed on opposite sides of and being contiguous with the supporting layer to completely cover the supporting layer and form the multi-layer fabric; and a multiplicity of needled fiber entanglements extending from each outer face of the fabric, through the superimposed layers, to the other outer face of the fabric and interlocking the fibers of the outer facing layers with each other and with the self-bonded fibers of the supporting layer to form the composite, integrated, multi-layer fabric. The resulting composite, nonwoven fabric may include napped fiber outer surfaces thereon to provide desired characteristics.

3,649,430
VIBRATION DAMPING LAMINATES

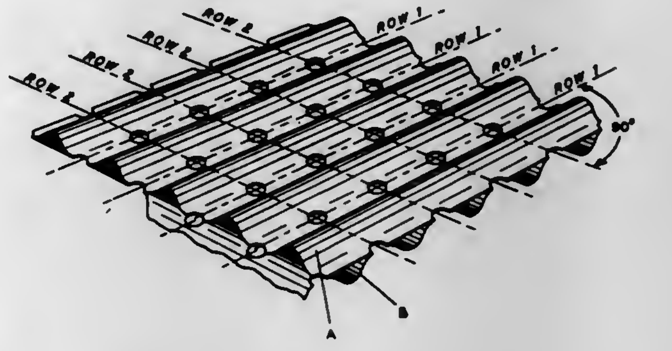
Armand Francis Lewis, Fairfield, and Gerald Brent Elder, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.
Filed Oct. 21, 1965, Ser. No. 499,389
Int. Cl. B32b *3/10*
U.S. Cl. 161—88 **4 Claims**

This invention relates to polymer core metal laminates composed of a polymer material core containing a multiplicity of perforations throughout its planar surface, having bonded thereto with a tough, elastomeric adhesive, at least one layer of a metal.

3,649,431
THERMOPLASTIC ARTICLES

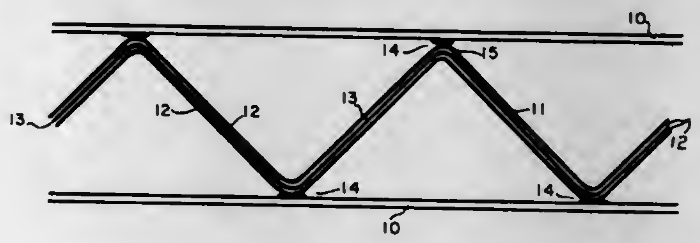
Phillip H. Parker, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Original application Apr. 5, 1968, Ser. No. 719,147, now Patent No. 3,542,635, dated Nov. 24, 1970. Divided and this application June 30, 1970, Ser. No. 51,244
Int. Cl. B32b *27/32, 3/10*
U.S. Cl. 161—112 **10 Claims**

Thermoplastic articles comprising at least two uniaxially oriented sheets of crystalline polymer, said sheets being cross lapped at an angle of at least 10° relative to their orientation directions, perforated in closely spaced parallel rows and fusion bonded at the periphery of each perforation. These articles are useful in packaging applications.



3,649,432
CORRUGATED BOARD CONSTRUCTIONS

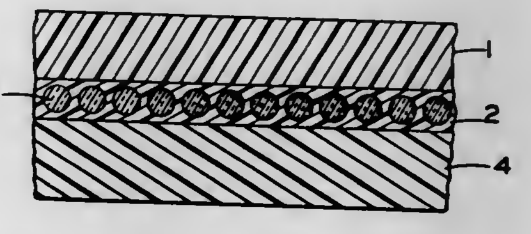
Stephen H. Alexander, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 430,821, Feb. 8, 1965. This application July 13, 1970, Ser. No. 54,607
Int. Cl. B32b *5/28*
U.S. Cl. 161—137 **7 Claims**



Corrugated board constructions having increased wet strength are made by laminating at least two sheets of material, suitable for corrugating, with an asphalt material having a softening point of from 150 to 240° F., penetration values at 32° F., 200 grams, 60 seconds of 4 to 11 mm./10, at 77° F., 100 grams, 5 seconds of 6 to 18 mm./10, at 115° F., 50 grams, 5 seconds of 20 to 35 mm./10 and a viscosity (Saybolt Furol) at 350° F. of 150 to 1000 seconds, corrugating the resulting laminate and adhering at least one substantially flat liner board to the resulting corrugations.

3,649,433
PARALLEL STRAND REINFORCED CELLULAR FLOOR COVERING

Frank G. Drout, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed July 9, 1970, Ser. No. 53,416
Int. Cl. B32b *5/08, 5/18, 5/28, 27/12*
U.S. Cl. 161—143 **1 Claim**

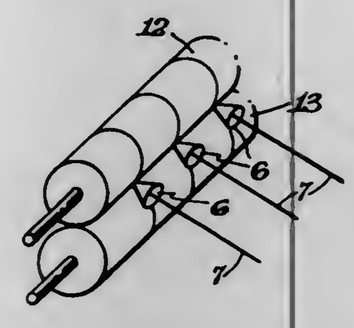


A floor structure is made with a vinyl wearing surface adhesively bonded to a foamed plastic backing. Between these two layers there is placed a reinforcing layer of parallel strands of glass fiber.

3,649,434

ENCAPSULATING PROCESS AND PRODUCTS OF WIRE COATED WITH POLY(TETRAFLUOROETHYLENE)

Carl Walter Mortenson, R.D. 3, Newark, Del. 19711
Continuation of application Ser. No. 490,165, Sept. 17, 1965, which is a continuation-in-part of application Ser. No. 414,604, Nov. 30, 1964. This application Sept. 2, 1969, Ser. No. 854,595
Int. Cl. B44d *1/42*
U.S. Cl. 161—143 **13 Claims**

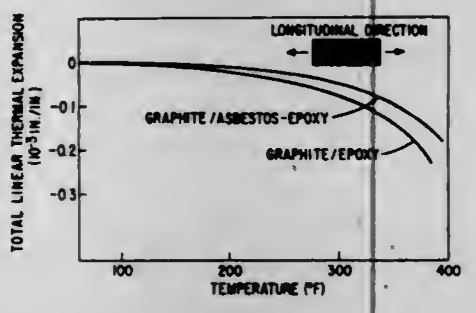


Unsintered poly(tetrafluoroethylene) in sheet form is passed through a funnel-like element to cause the sheet to roll along its longitudinal axis and to surround an article, such as a wire, that is being simultaneously passed through the aperture formed by the rolling sheet material, thus wrapping the article which is then subjected to pressure to bond the unsintered sheets together where they contact each other. The coated article that emerges is then heated to sinter the poly(tetrafluoroethylene).

3,649,435

HIGH MODULUS GRAPHITE FIBER REINFORCED HYBRID LAMINATES

Mike Varlas, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.
Filed May 18, 1970, Ser. No. 38,368
Int. Cl. B32b *5/12, 19/06, 19/02*
U.S. Cl. 161—156 **6 Claims**



A resin impregnated lamina structural material including graphite reinforcing fibers and inorganic papers or mats such as asbestos, asbestos-glass papers or mica mat. Fabrication of the lamina is accomplished by impregnating the chrysotile asbestos paper or mica mat with synthetic resinous matrices using solvent, film, or vacuum-pressure impregnating techniques and laminating the hybrid lamina to form laminates having improved thermal physical properties.

3,649,436

COHESIVE SHEET

George J. Buese, East Brunswick, N.J., assignor to Johnson & Johnson
Filed May 22, 1970, Ser. No. 39,842
Int. Cl. A61l *15/00;* **B37b** *5/18*
U.S. Cl. 161—160 **10 Claims**

This cohesive sheet material which can be used as a bandage, tape, closure or the like, comprises a porous, resilient, open-cell cellular web such as polyurethane foam having a cell density or pore count in the range of about 10 to 120 cells or pores per running inch, the cellular surface area on at least the exposed exterior thereof occupying less than about 15% of the total area of said exterior, preferably less than 5%. The cell surfaces throughout said cellular web are coated with a non-pore-filling, non-tacky cohesive coating. Compression of the wrapping substantially increases the coated cellular surface area on the exposed exterior of the wrapping and thereby increases the cohesiveness of said wrapping relative to a contacting cohesive surface.

3,649,437

THERMOFORMED FOLDING CARTONS

Leon Edward Wolinski, Buffalo, N.Y., and Roland G. Harris, Chadds Ford, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 848,206, Aug. 7, 1969. This application Sept. 26, 1969, Ser. No. 861,468
The portion of the term of the patent subsequent to Nov. 9, 1971, has been disclaimed
Int. Cl. B32b *3/26*
U.S. Cl. 161—161 **2 Claims**

Thermoformed folding cartons and carton blanks prepared from a laminar structure comprising oriented foam having thermoplastic film bonded to the surfaces thereof.

3,649,438

NON-CURING THERMOSENSITIVE SEALANT TAPE

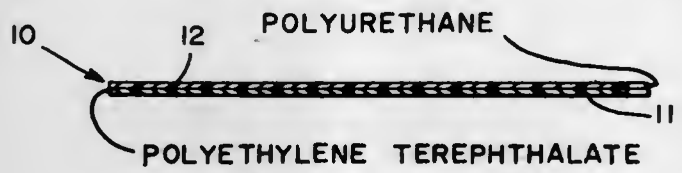
John Walker and Ronald Hindmarch McEuan, Sarnia, Ontario, Canada, assignors to Polymer Corporation Limited, Sarnia, Ontario, Canada
No Drawing. Filed Sept. 18, 1968, Ser. No. 760,686
Claims priority, application Canada, Oct. 3, 1967, 001,516
Int. Cl. B32b *5/16, 15/06, 15/08*
U.S. Cl. 161—162 **8 Claims**

The invention provides thermosensitive compositions comprising an elastomeric polymer, a compatible resinous polymer, finely divided metal particles and optionally filler and plasticiser materials. The compositions are suitable for use in sealant tapes which comprise an electrically conducting core embedded in a matrix of the composition. Such sealant tapes are used to bond surfaces together by passing an electric current through the core to soften the matrix and by pressing the surfaces into the softened matrix.

3,649,439

PRINTING ELEMENT

William C. Ross, Winchester, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.
Continuation-in-part of application Ser. No. 541,258, Apr. 8, 1966. This application Sept. 25, 1968, Ser. No. 768,604
Int. Cl. B32b *27/08, 27/40*
U.S. Cl. 161—165 **7 Claims**

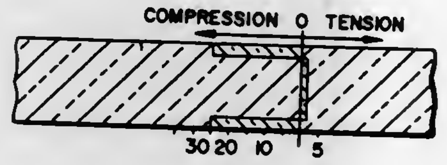


A product suitable for use as a top sheet for printing presses having a base layer of a dimensionally stable, flexible, polymeric sheet substance (e.g. polyethylene terephthalate) and a working surface of an elastomeric substance having a modulus of at least 420 p.s.i. at 300% elongation (e.g. polyurethane). A resilient, compressible backing (e.g. a porous elastomer-impregnated, felted fibrous sheet) can be adhesively secured to the base layer to absorb vibration occurring in the printing operation.

3,649,440

STRENGTHENED LAMINATED GLASS BODIES

John E. Megles, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed July 9, 1969, Ser. No. 840,199
Int. Cl. B32b *17/06;* **C03b** *23/20*
U.S. Cl. 161—166 **3 Claims**



This invention relates to the supplemental strengthening of laminated articles of glass formed of a plurality of fused adjacent laminae, wherein each lamina exhibits a state of stress opposite to that of the lamina contiguous thereto, by thermal tempering such as to greatly increase the impact resistance of such articles and inhibit spontaneous breakage thereof due to bruise checking.

3,649,441

BLENDS OF OLEFIN POLYMERS HAVING IMPROVED STRESS CRACK RESISTANCE

Carl P. Strange and Gordon Y. T. Liu, Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Aug. 28, 1968, Ser. No. 755,829
Int. Cl. H01b *7/00*
U.S. Cl. 161—175 **5 Claims**

An electrical conductor jacketing material having improved thermal stress crack resistance, environmental stress crack resistance, and abrasion resistance, said jacketing material comprising a high density blend of a high density, high molecular weight polyethylene and a copolymeric constituent containing as an essential ingredient a block copolymer of polyethylene and a polymer of butene-1.

3,649,442

METHOD FOR PREPARING LAMINAR WOOD STRUCTURES

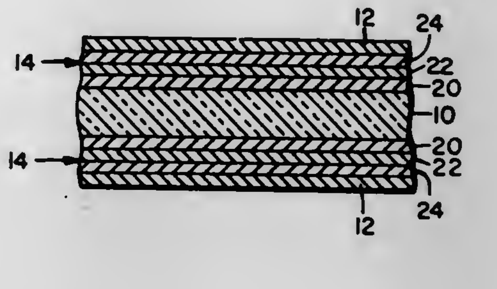
Duane L. Kenaga, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Oct. 31, 1969, Ser. No. 873,120
Int. Cl. B32b *21/08*
U.S. Cl. 161—184 **4 Claims**

A method for bonding wood surfaces, which have a hard, smooth, water and stain-repellent impregnant to produce laminate and plywood structures having good bond strengths which comprises impregnating at least one ply of wood, which may be an outer ply, or laminate with a vinyl aromatic monomer, an acrylate monomer and/or methacrylate monomer or mixture thereof associated with a catalyst and/or cross-linking agent, curing the monomer in the wood, then treating the surface with a solvent and/or a polyethyleneimine having an average molecular weight from about 10,000 to 100,000; and in the case of preparing laminar surfaces, spreading one surface with a non-aqueous formulated adhesive (e.g., epoxy resin adhesive) laying up the laminate and curing the adhesive under pressure.

3,649,443

METHOD OF BONDING GLASS TO VINYL FABRIC

Joseph J. Domicone, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Continuation-in-part of application Ser. No. 750,573, Aug. 6, 1968. This application Oct. 8, 1970, Ser. No. 79,138
Int. Cl. B32b *17/06, 27/08;* **B60j** *1/18*
U.S. Cl. 161—193 **8 Claims**

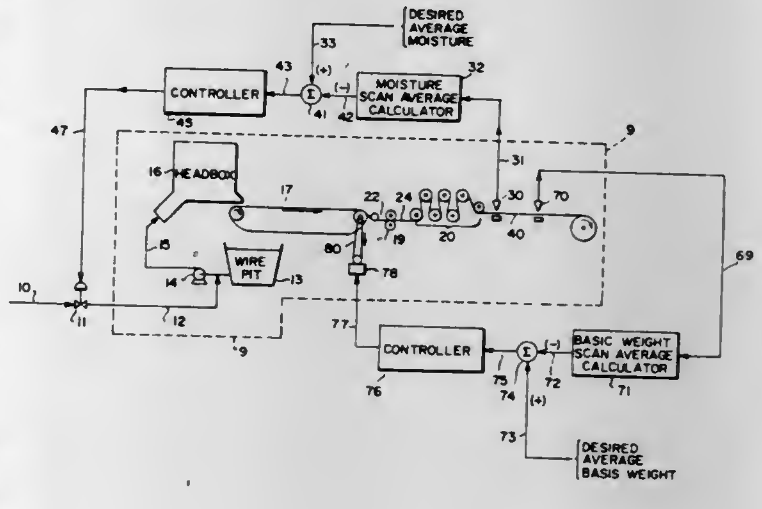


This invention relates to a method for bonding vinyl material to a glass article. More particularly, the method of this invention comprises a four step process wherein: (1) the glass surface is contacted with a silane coupling agent; (2) the so-reacted surface is contacted with a phenolic resin primer coating; (3) a vinyl plastisol coating is applied thereover; and (4) the vinyl material is bonded to the plastisol adhesive system.

3,649,444

MOISTURE CONTROL SYSTEM INCLUDING CONTROL OF PULP FLOW TO A PAPER MACHINE HEADBOX IN RESPONSE TO MOISTURE MEASUREMENT

James M. Futch, Jr., Yonges Island, S.C., assignor to Westvaco Corporation, New York, N.Y.
Filed May 15, 1969, Ser. No. 824,857
Int. Cl. D21f *1/06*
U.S. Cl. 162—198 **13 Claims**



On a paper machine wherein the driers are operating at full capacity, the moisture content of the paper web coming off of the machine is measured. If the moisture content so measured deviates from the desired moisture content, corrective action is taken through readjustment of the bone dry basis weight.

Flow rate of stock to a paper machine headbox is increased when the moisture content is lower than the desired moisture content and the flow rate of stock to the headbox is decreased when the moisture content is higher than the desired moisture content.

3,649,445

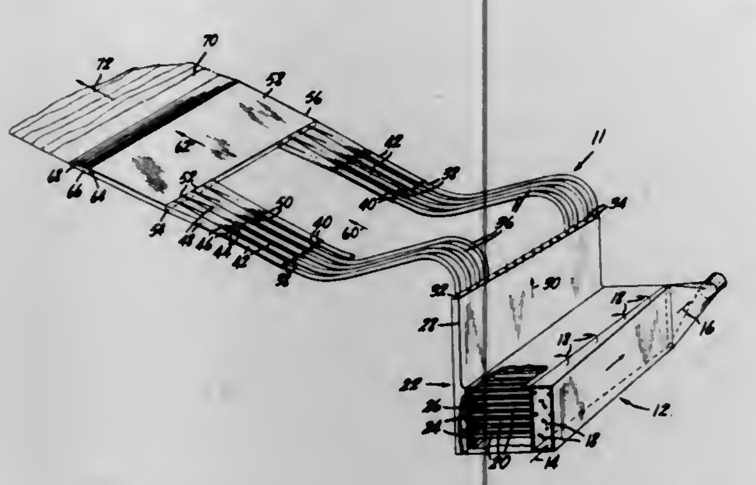
METHOD OF CONTROLLING THE TRANSVERSE BASIS WEIGHT OF A PAPER WEB USING MULTIPLE INDIVIDUALLY ADJUSTABLE FLOW CHANNELS, AND APPARATUS THEREOF

Frederick R. Bliss, Jr., West Redding, Conn., assignor to Time, Incorporated, New York, N.Y.

Filed Mar. 14, 1969, Ser. No. 807,208

Int. Cl. D21f *1/06*

U.S. Cl. 162—212 **3 Claims**



Flexible hoses arranged in parallel in a paper stock flow system that supplies paper stock to a paper-forming element of a paper-forming machine on which the stock is formed into a paper web are provided with clamps. The clamps are adjusted to alter the relative impedances of the hoses so as to minimize the transverse basis weight variation of the paper web in response to transverse basis weight measurements across the width of the paper web.

3,649,446

METHOD AND APPARATUS FOR PRESSURE CONTROL OF A PAPER MACHINE PRESSURE HEAD BOX

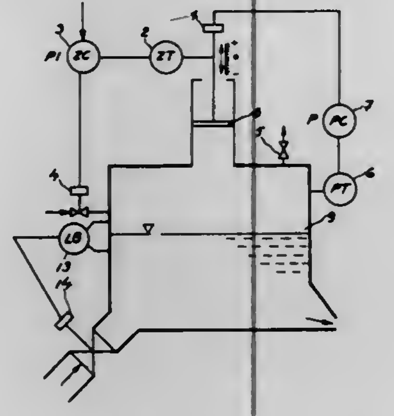
Aarne Olavi Makela, Karhula, Finland, assignor to A. Ahlstrom Osakeyhito, Noormarkku, Finland

Filed Apr. 7, 1969, Ser. No. 814,115

Claims priority, application Finland, Apr. 9, 1968, 991/68

Int. Cl. D21f *1/02*

U.S. Cl. 162—212 **9 Claims**



When a change occurs in the pressure of a pressure head box the volume of the head box is varied until the desired pressure is obtained again. The head box includes apparatuses fitted to move in relation to a predetermined O-position according to changes of pressure in the head box for changing the volume of the head box to constantly maintain the desired pressure in the head box and it is also equipped with a device to return it to its O-position all the time maintaining the desired pressure in the head box. The movable portion of the headbox can be a piston-cylinder combination, a movable cover, or simply an elastic vessel.

3,649,447

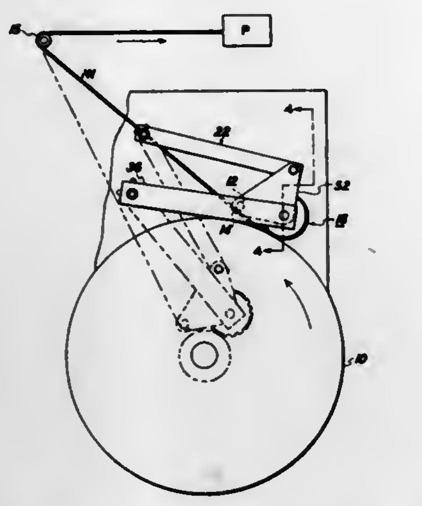
APPARATUS FOR DECURLING A PAPER WEB

Lyman H. Turner, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Sept. 9, 1969, Ser. No. 856,254

Int. Cl. B65h *23/10*

U.S. Cl. 162—271 **4 Claims**



Apparatus for decurling a web as it is being fed from its supply roll including a frame having a pivotable decurl member mounted on a pivotable linkage and positioned in a web path and a rubber-covered roll operatively connected to the linkage and engaging the supply roll surface such that the angle said decurl member makes with the web path is caused to change to vary the degree of decurl in response to the changes in the roll diameter. The decurl member comprises a generally circular member subtended by a chordal portion forming a decurling edge thereon.

3,649,448

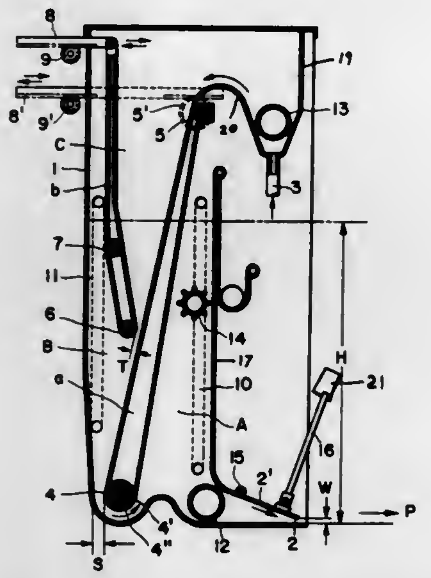
PAPER MACHINE HEADBOX WITH ADJUSTABLE PARTITIONS THEREIN TO REGULATE STOCK FLOW

Tadashi Kobayashi, 227 Mitoshima, Fuji-shi, Shizuoka-ken, Tokyo, Japan

Filed Dec. 30, 1969, Ser. No. 889,039

Int. Cl. D21f *1/02*

U.S. Cl. 162—343 **5 Claims**



A headbox with first and second partitions therein which are adjustable with respect to one another and the headbox to define a feed chamber, a holding chamber, and an outflow chamber, and which function to regulate the rate at which stock flows from the slice. The partitions are moved by rack and pinions located externally of the headbox, the first partition pivoting around its upper end and the second partition pivoting at a point intermediate its ends. Perforated rolls are located in the feed chamber and outflow chamber to facilitate the entwining of stock fibers.

3,649,449

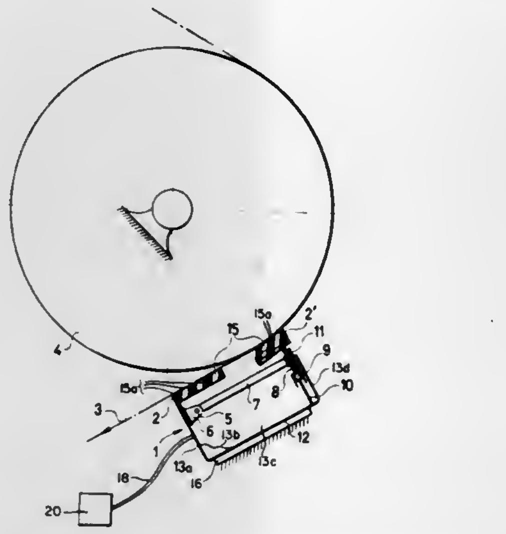
PAPERMAKING MACHINE SUCTION BOX WITH YIELDABLY BIASED COVER

Erik Albert Nykopp, Tampere, Finland, assignor to Oy Tampella Ab, Tampere, Finland

Filed Jan. 27, 1970, Ser. No. 6,234

Int. Cl. D21f *1/52*

U.S. Cl. 162—365 **11 Claims**



A box structure which may be a suction box or blow box has a bottom wall, side walls, and an apertured cover and is mounted on a papermaking machine such that the cover is yieldably biased against a wire or felt carrying a paper web to dewater the web through the wire or felt or provide enhanced adherence of the web to the wire or felt. The entire box may be pivoted around a shaft and bracket and biased against the wire or felt by a spring connected to the bottom wall or the box may be immovable with a portion of the cover biased against the wire or felt by connection to a pivot arm and elastic tube.

3,649,450

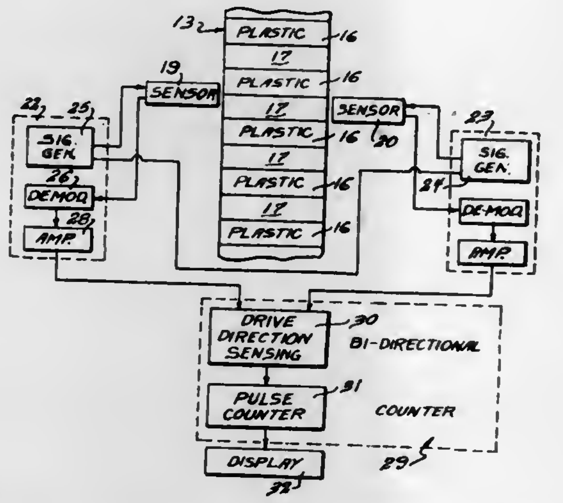
CONTROL ROD POSITION INDICATION SYSTEM

Donald R. Barton, Idaho Falls, Idaho, assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 4, 1970, Ser. No. 16,506

Int. Cl. G21c *17/00*

U.S. Cl. 176—19 **1 Claim**



The position and motion of a control rod are measured by pulse techniques. The magnetic properties of the control rod are varied along its length and the rod forms part of the magnetic circuit of a sensing device. Motion of the rod causes changes in the magnetic structure of the sensing device to develop pulses which are processed by standard pulse techniques.

3,649,451

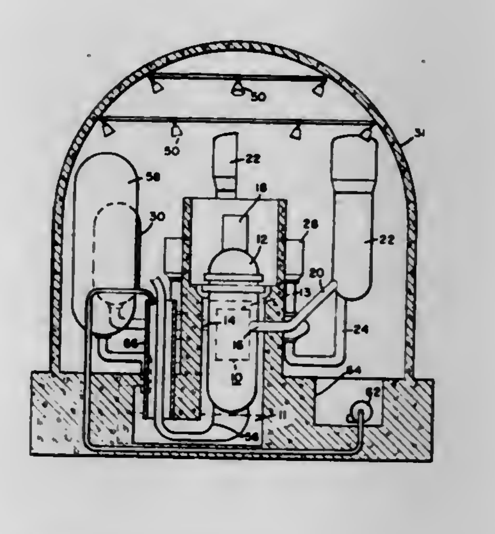
NUCLEAR REACTOR CONTAINMENT SYSTEM

Joseph M. Yedidia and Peter W. Reichelsdorfer, Pittsburgh, Joseph W. Dorrycott, Monroeville, and James G. Russell, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 23, 1968, Ser. No. 776,295

Int. Cl. G21c *19/40*

U.S. Cl. 176—37 **9 Claims**



A nuclear reactor containment system wherein a nuclear reactor vessel is supported within a normally dry well and means are provided for flooding the dry well to protect the nuclear core against melt down in the event of a vessel failure. A first quantity of coolant fluid, for example, borated water, is provided to fill the dry well to a level beneath the vessel, and a second quantity of coolant fluid, which may be obtained from condensed primary coolant that had been lost through a rupture in the primary system, is utilized to fill the dry well to a sufficient level to protect the nuclear core.

3,649,452

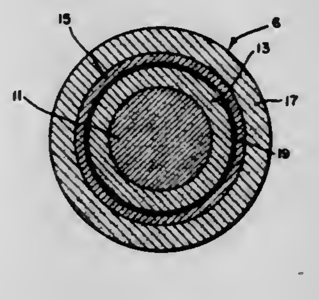
NUCLEAR REACTOR FUEL COATED PARTICLES

Jack Chin and Charles S. Luby, San Diego, and Richard G. Mills, Solana Beach, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 28, 1968, Ser. No. 716,856

Int. Cl. G21c *3/20*

U.S. Cl. 176—68 **5 Claims**



A process for producing coated nuclear fuel particles having improved fission product retention by applying a low density pyrolytic carbon layer, followed by a dense silicon or zirconium carbide layer and thereafter a dense isotropic pyrolytic carbon layer. A thin seal layer of an impermeable pyrolytic carbon is deposited between the low density carbon and the metal carbide layer. For certain cases, and particularly where oxide fuel particles are employed, an additional seal layer of an impermeable pyrolytic carbon is deposited immediately adjacent the nuclear fuel core. Further, the particles may include a layer of dense isotropic pyrolytic carbon deposited interior of the metal carbide layer. The exterior dense isotropic layer should have a thermal coefficient of expansion which approximates that of the metal carbide within about 20 percent such that the metal carbide is maintained in compression under subsequent irradiation.

3,649,453

PROCESS FOR MICROBIOLOGICALLY OXYGENATING 1-AMIDOADAMANTANES

Milton E. Herr, Kalamazoo, Herbert C. Murray, Hickory Corners, and Gunther S. Fonken, Galesburg, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Continuation-in-part of abandoned applications Ser. No. 666,990, Sept. 11, 1967, and Ser. No. 528,346, Feb. 18, 1966. This application Jan. 21, 1970, Ser. No. 4,782
Int. Cl. G12d *13/00*
U.S. Cl. 195—51 **17 Claims**

A novel method for the introduction of oxygen into 1-aminoadamantanes by bioconversion by means of *Sporotrichum sulfurescens, Rhizopus arrhizus* or *Curvularia lunata* to obtain the corresponding oxygenated 1-amidoandamantanes which can be chemically converted to novel derivatives thereof. These novel bioconversion products and their derivatives are of particular value as central nervous system stimulants.

3,649,454

BACTERIOLYTIC ENZYME AND PROCESS FOR THE PRODUCTION THEREOF

Masao Isono, Nishinomiya, and Takeshi Takahashi and Yoshio Yamazaki, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan
Filed Jan. 19, 1970, Ser. No. 3,920
Claims priority, application Japan, Jan. 18, 1969, 44/3,659
Int. Cl. C12d *13/10;* **A61k** *19/00*
U.S. Cl. 195—62 **5 Claims**

Bacteriolytic enzyme is produced by cultivating a bacteriolytic enzyme-producing microorganism belonging to the genus Achromobacter in a growth medium and recovering the accumulating bacteriolytic enzyme therefrom. The bacteriolytic enzyme and preparations containing it are specifically useful in detergent compositions, oral compositions for use in preventing dental cavities and eyewash compositions.

3,649,455

PRODUCTION OF LIPASE

Jinnosuke Abe, Tagata-gun, Tetsuo Watanabe, Yokohama-shi, and Kango Miyauchi, Tsutomu Yamaguchi, Toshiharu Nito, and Noriyuki Muroya, Tagata-gun, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka-ken, Japan
No Drawing. Filed July 2, 1969, Ser. No. 838,658
Claims priority, application Japan, July 2, 1968, 43/45,608
Int. Cl. C07g *7/028*
U.S. Cl. 195—66 R **5 Claims**

A process for the production of enzyme lipase, in which a microorganism of genus Chromobacterium is cultivated in a culture medium containing a source of assimilable carbon and nitrogen, and the enzyme produced is then separated from the cultured medium. The enzyme lipase thus produced is characterized by good stability and activity. A new microorganism is useful in this process, namely, *Chromobacterium viscosum* var. *paralipolyticum* KO HATSU KEN KIN KI No. 137 of the Fermentation Research Institute of Japan.

3,649,456

SEPARATION OF POLYPEPTIDE SUBSTANCES WITH MACRORETICULAR RESINS

Peter L. de Benneville, Philadelphia, and Heinz W. Blessing, Levittown, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
No Drawing. Filed Sept. 8, 1969, Ser. No. 856,176
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 **19 Claims**

Method for the selective separation and recovery of polypeptide substances (e.g. bacterial and fungal exoenzymes, heme pigments, polypeptide hormones) from a biotic fluid (e.g. culture broth, blood serum, urine, sap, extracts of disintegrated cells). Involves contacting the biotic fluid with a macroreticular resin to effect adsorption of the polypeptide, washing the resin with water or salt solution, and then eluting the polypeptide with an aqueous solution of an ionizing substance and a miscible low molecular weight organic solvent. The macroreticular resins employed may be copolymers of divinylbenzene with styrene and ethylvinylbenzene or copolymers of trimethylolpropane trimethylacrylate with trimethylolpropane dimethacrylate.

3,649,457

ENZYMATIC PROCESSING WITH POLYMER-ENZYME PRODUCT

Thomas L. Westman, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Sept. 27, 1968, Ser. No. 763,368
Int. Cl. C07g *7/02;* **C12k** *1/00*
U.S. Cl. 195—68 **18 Claims**

Polymer-enzyme products, in which enzyme is covalently bound, are employed in processing by containing them, preferably in solution, in a reaction zone, at least one boundary of which is defined by a semi-permeable membrane having exclusion limits selected to exclude passage therethrough of enzyme-polymer product (EPP), especially water-soluble enzyme-polymer product (SEPP), but allow passage therethrough of smaller molecular weight reaction products. Exclusion limits of membrane may also prevent passage therethrough of substrate, which is introduced into the reaction zone and contacted with EPP, especially SEPP, therein. Products of the enzymatic reaction pass through the membrane and are recovered. Additional substrate may then be introduced into reaction zone. EPP, including SEPP, may be recycled in the process.

3,649,458

PROCESS FOR THE PREPARATION OF ANTIBIOTIC SUBSTANCE SICCANIN

Akio Torikata, Hisashi Kayamori, Yasuo Mase, Keijiro Murata, and Reizo Maekawa, Tokyo, Japan, assignors to Sankyo Company Limited
No Drawing. Filed June 25, 1970, Ser. No. 49,947
Claims priority, application Japan, July 3, 1969, 44/52,596
Int. Cl. C12d *9/00*
U.S. Cl. 195—81 **5 Claims**

Improved process for the preparation of the antibiotic substance siccanin, which possesses a highly antifungal activity against Trichophyton fungi, by cultivating *Helminthosporium siccans* in a nutrient culture medium where said cultivation is carried out under such a condition that the pH of said culture medium is being gradually brought to a lower pH range than the optimum pH for the growth of said microorganism. According to the

present process, the antibiotic substance siccanin can be obtained in a higher yield, as compared with the prior art process.

3,649,459

MICROBIOLOGICAL OXIDATION OF HYDROCARBONS

Bernard Wolnak, Highland Park, and Brian Andreen, South Holland, Ill., and Chin-Yung Wen, Morgantown, W. Va., assignors to Institute of Gas Technology
No Drawing. Continuation-in-part of application Ser. No. 547,042, May 2, 1966. This application Feb. 23, 1968, Ser. No. 707,424
Int. Cl. C12d *13/06;* **A23j** *1/00*
U.S. Cl. 195—96 **13 Claims**

The specification discloses a novel mixed culture of micro-organisms useful as a food supplement. Growth mediums, methane containing feeds therefor, and methods of isolation and fermentive propagation are also disclosed. The mixed culture is on deposit as ATCC 19,385.

3,649,460

ISOLATION OF HEMOPHILUS BACTERIA

Guido Controni, New Carrollton, Waheed N. Khan, Silver Spring, and James R. Patrick, Mount Airy, Md., and Sydney Ross, Washington, D.C., assignors to Children's Hospital of the District of Columbia, Washington, D.C.
Continuation-in-part of application Ser. No. 703,480, Feb. 6, 1968, now Patent No. 3,445,339. This application Mar. 7, 1969, Ser. No. 805,330
The portion of the term of the patent subsequent to May 20, 1986, has been disclaimed
Int. Cl. C12k *1/04*
U.S. Cl. 195—100 **7 Claims**

A method of isolating and discerning the presence of Hemophilus species in cerebral spinal fluid and body cavity fluid specimens, which is equally adapted to isolation and examination of these bacteria: meningococci; staphylococci: pneumococci. A carrier disc, impregnated with saponin, Bacitracin and optionally yeast extract, is provided for use with a blood agar plate streaked with the suspect microroganisims. One principal application of the method lies in the ready identification of pathogenic *Hemophilus influenzae*, which are virtually always capsulated and nearly all belong to Type *b*.

3,649,461

PAPER STRIP TEST FOR CITRATE UTILIZATION

George L. Evans, Hopatcong, Donald P. Kronish, Rockaway, Metka Prevorsek, Morristown, Benjamin S. Schwartz, Livingston, and Lee S. Zuriff, Parsippany, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
No Drawing. Continuation-in-part of application Ser. No. 632,894, Apr. 24, 1967. This application Aug. 9, 1968, Ser. No. 751,342
Int. Cl. C12k *1/00*
U.S. Cl. 195—103.5 **6 Claims**

A paper strip material is impregnated in consecutive zones with (1) a reagent medium consisting of a citrate source such as citric acid or a citrate salt, and a buffer system which maintains the pH of this reagent medium at about 6.4; (2) a microbiologically inert hydrophobic barrier; (3) a pH indicator or a combination of indicators which changes color between a pH of 6 and a pH of 8. Suitable buffers include a phosphate buffer prepared from monobasic potassium phosphate and dibasic potassium phosphate; a Gomori tris-maleate buffer, formed from tris-(hydroxy methyl)aminomethane and maleic acid; and a Kolthoff borax-phosphate buffer which is a combination of sodium borate and monobasic potassium phosphate. Suitable indicators include: a combination of Brom Thymol Blue and a water soluble grade of Phenol Red; Neutral Red; Phenol Red; Rosolic Acid; m-Dinitrobenzoylene Urea; Brilliant Yellow; and Quinoline Blue. The reagent medium and the indicator system are adjusted to a pH of 6.4 before application to the paper strip. Cultures grown on a non-citrate containing medium can be tested for citrate utilization by incubation in contact with the reagent zone of the paper strip for approximately 4 hours, and then contacting the culture with the indicator zone of the paper strip and observing the color change approximately one-half hour later.

3,649,462

VARIABLE ANGLE TUBE HOLDER

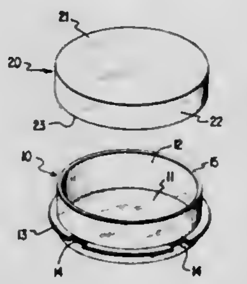
Artie D. Jessup, Hampton, Va., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Nov. 5, 1969, Ser. No. 874,177
Int. Cl. C12k *1/10*
U.S. Cl. 195—127 **2 Claims**

A variable angle tube holder to enable laboratory personnel to make agar slants at any angle from the horizontal to the vertical.

3,649,463

PETRI DISH

Noel L. Buterbaugh, Bethesda, Md., assignor to Microbiological Associates, Inc., Bethesda, Md.
Filed Oct. 10, 1969, Ser. No. 865,292
Int. Cl. C12k *1/10*
U.S. Cl. 195—139 **9 Claims**



A container for the culturing of micro-organisms comprises a transparent cover member which includes a substantially flat top portion which merges into a continuous depending side wall, and a transparent body member having a substantially flat bottom portion merging into an upstanding cylindrical wall portion which carries on its outer surface an outwardly extending peripheral flange provided with a plurality of inwardly extending slots, said flange being spaced upward from the bottom portion and away from the lower edge of said cover side wall, the outer edge of said flange extending beyond the exterior of said cover side wall to permit grasping of the flange by the fingers.

3,649,464

ASSAY AND CULTURE TRAY

Aaron E. Freeman, Rockville, Md., assignor to Microbiological Associates, Inc., Bethesda, Md.
Filed Dec. 5, 1969, Ser. No. 882,493
Int. Cl. C12k *1/00*
U.S. Cl. 195—140 **15 Claims**

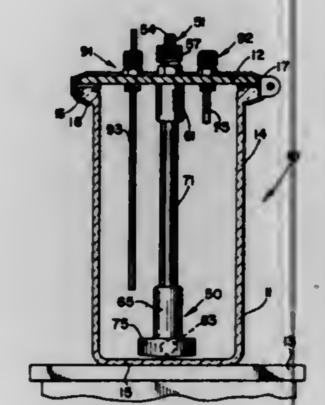
A plate or tray suitable for assay and cell and tissue culture on a miniature scale comprises a transparent base member made of plastic and having extending upward therefrom a plurality of parallel rows of open top cylindrical wells spaced apart from each other a sufficient distance to avoid cross-contamination, an integral peripheral upstanding wall terminating in a flange provided with a seat adapted to receive and sercure a lid having a downwardly extending wall adapted to engage the flange portion of the plate, which lid may include a plurality of parallel rows of downwardly extending well seals positioned to engage the mouth portions of the wells to form closures therefor.

3,649,465

SPINNER FLASK

Harold Scharf, Charles E. Bender, and Douglas S. Fraser, New Paltz, N.Y., assignors to The Virtis Company, Inc., Gardiner, N.Y.

Filed June 24, 1969, Ser. No. 836,091
Int. Cl. C12b *1/00*
U.S. Cl. 195—143 6 Claims



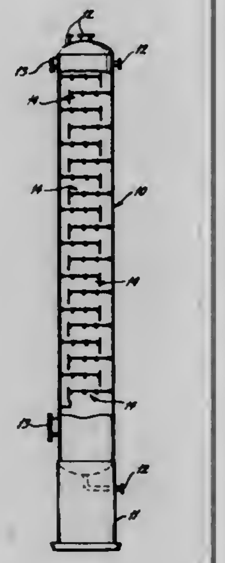
A spinner flask arrangement for tissue and virus culture having a vessel closed by a cover with sealing means interposed. A novel clamp holds the cover assembled to the vessel and biases the sealing means for fluid-tight integrity. The cover supports a magnetically driven cylindrical agitator having a novel mounting to prevent cell grinding and bearing residue from contaminating the culture. The agitator shape prevents cell damage from impacts and assures good mixing.

3,649,466

VACUUM DISTILLATION COLUMN WITH TRAY ASSEMBLY FASTENING DEVICE

George B. Boon, Webster Groves, and Evan W. Pittenger, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 13, 1969, Ser. No. 876,426
Int. Cl. B01d *3/18*
U.S. Cl. 202—158 10 Claims



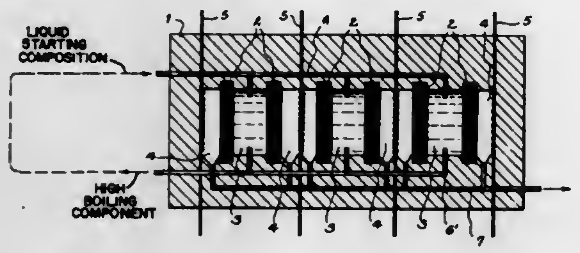
A vacuum distillation column comprises a support, a shell, a tray support ring affixed to the shell, a distillation tray and a wedge-type fastening device which rigidly affixes the tray to the support ring but still allows easy removal of the tray for access to the column interior. The tray and support ring rigidly fastened together by the wedge-type fastening devices form an internal reinforcing diaphragm which stiffens the shell of the column preventing its collapse under the force of atmospheric pressure and eliminates the need for other shell stiffening devices. The wedge-type fastening devices may also be used to rigidly fasten tray segments and other members of the column together.

3,649,467

VAPORIZATION APPARATUS FOR THE REMOVAL OF HEAT AND CONCENTRATION OF ELECTROLYTE IN A FUEL CELL BATTERY

August Winsel and Hans-Jürgen Schwartz, Kelkheim, Taunus, Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Filed Feb. 13, 1968, Ser. No. 705,173
Claims priority, application Germany, Feb. 13, 1967, V 32,954; Feb. 18, 1967, V 33,004; Mar. 11, 1967, V 33,231; Apr. 1, 1967, V 33,352, V 33,353
Int. Cl. B01d *3/00;* H01n *27/00*
U.S. Cl. 202—160 19 Claims



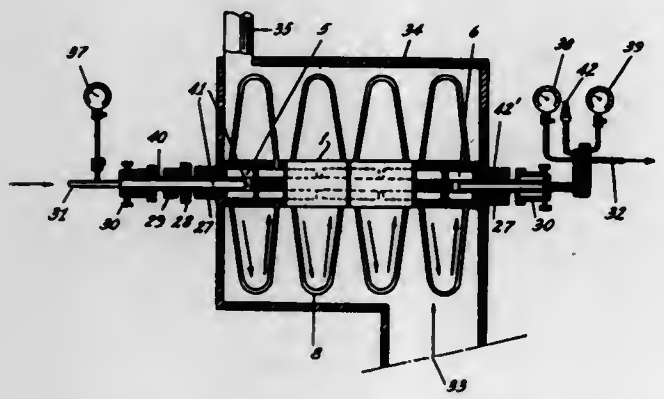
Process and equipment for recovering, in liquid form, vaporizable components from compositions by bringing the composition into contact with one side of a porous wall through which the component to be recovered is caused to permeate as a vapor, and the vapor is subsequently condensed on a second wall and recovered therefrom in liquid form. The second wall may also be porous and the vapors of the vaporizable components may be allowed to pass through the second wall before being recovered in condensed form.

3,649,468

VAPORIZATION APPARATUS HAVING ROTATABLE HUB AND TUBULAR MEMBERS FOR THE PASSAGE OF DISTILLAND

Emile Bechard and Veuve Maurey, both of 753 Boulevard Brune, F5, Paris 14C, France

Filed Mar. 24, 1969, Ser. No. 809,873
Int. Cl. B01d *3/08*
U.S. Cl. 202—235 17 Claims



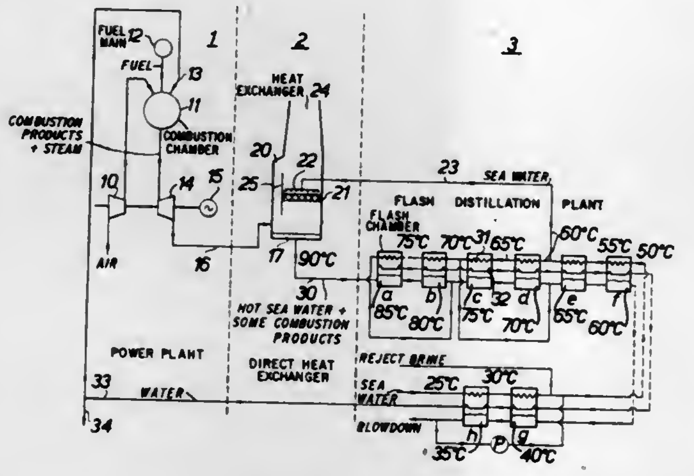
An apparatus for vaporization of a liquid which contains elements which cannot be separated in liquid phase. The apparatus includes means for forming a vapor carrying the elements and means for separating the elements from the vapor at the outlet of the apparatus whereby deposits of the elements are not formed in the area where vaporization occurs.

3,649,469

PLANT FOR PRODUCING BOTH POWER AND PROCESS HEAT FOR THE DISTILLATION OF WATER

Robert Victor MacBeth, Bournemouth, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed May 22, 1968, Ser. No. 730,995
Claims priority, application Great Britain, May 22, 1967, 23,727/67
Int. Cl. B01d *3/06*
U.S. Cl. 203—10 2 Claims



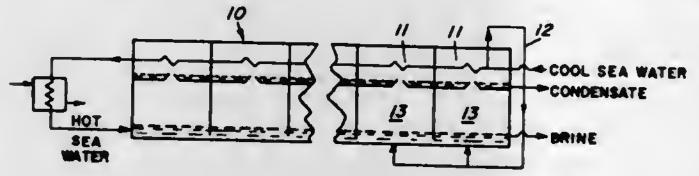
A plant for producing power by means of an expansion engine, the working fluid for which is such that a condensible constituent appears in the exhaust, has a heat exchanger in which the condensible constituent gives up its heat to a solution which forms the feed for a distillation means. The distillate is fed to expansion engine cycle so as to form a part of the working fluid.

3,649,470

HOT BRINE SEEDING TECHNIQUE TO INCREASE FLASHING EFFICIENCIES IN MULTISTAGE FLASH EVAPORATORS

Jack A. Hunter, La Jolla, Calif., and Frederick W. Gilbert, Old Saybrook, Conn., assignors to the United States of America as represented by the Secretary of the Interior

Filed Jan. 28, 1970, Ser. No. 6,641
Int. Cl. B01d *3/00, 3/02;* C02b *1/04*
U.S. Cl. 203—11 10 Claims



To enhance flashing in a stage of multistage flash distillation unit, small amounts of liquid, at the same or a lower temperature than the distilland in the stage, are injected below the level of the distilland.

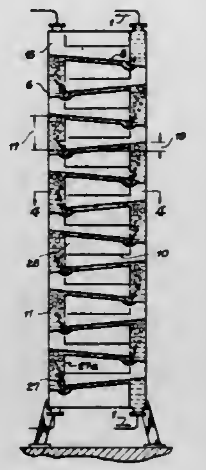
3,649,471

VERTICAL MULTISTAGE FLASH EVAPORATION AND DIRECT CONTACT CONDENSATION

Bernhard Kunst, Gustavsburg, Germany, assignor to GHH-M.A.N. Technik Gesellschaft fur Anlagenbau m.b.H., Essen (Ruhr), Germany

Continuation-in-part of application Ser. No. 640,246, May 22, 1967. This application July 11, 1968, Ser. No. 744,138
Claims priority, application Germany, May 27, 1966, M 69,650
Int. Cl. B01d *3/06, 5/00*
U.S. Cl. 203—11 2 Claims

In a method for concentrating liquid solutions and producing the solvent in which the multistage flash evaporation and direct contact condensation are combined with hydrostatic compensation both on the solvent and solution sides of the pressure differences between consecutive stages, the liquid depths in the evaporation and condensation chambers of all stages are kept approximately at the same low level by compensating for the hydrodynamic head losses by means of the lifting effect produced by solution stage vapor.



3,649,472

POROSITY TESTING

Ronald James Morrissey, Harrisburg, and J. A. Crumley, Camp Hill, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 14, 1968, Ser. No. 767,231
Int. Cl. G01n *27/00*
U.S. Cl. 204—1 T 4 Claims

Porosity, measured as apparent area fraction of anode, is determined in an electroplated specimen, in which the plating metal is cathodic to the basis metal, by measuring the corrosion potential of the specimen with respect to a suitable reference electrode in an electrolyte which serves as a mild corrodent to the basis metal of the specimen under test. A calibration curve is obtained by measuring, in the same electrolyte and versus the same reference electrode, the corrosion potentials of galvanically connected pure samples of the basis and plating metals, the area relationships of which are known. Corrosion potentials thus obtained for such galvanically connected couples over a predetermined range of area relationships are plotted versus the logarithm of the basis metal (anode) area fraction for each couple to provide a calibration curve, by reference to which the apparent anode area fraction of the test specimen is determined from its observed corrosion potential. If the gross surface area of the test specimen is known, the exposed basis metal area (porosity) can be directly calculated.

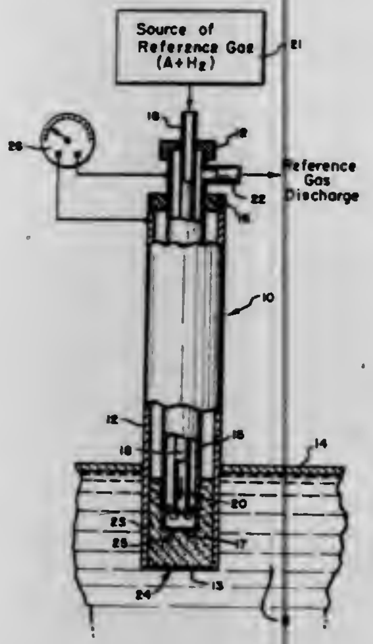
3,649,473

DETERMINATION OF HYDROGEN IN A HIGH TEMPERATURE FLUID AND APPARATUS THEREFOR

Robert B. Holden, Scarsdale, and Nathan Fuhrman, Shrub Oak, N.Y., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 8, 1969, Ser. No. 883,153
Int. Cl. G01n *27/30, 27/26*
U.S. Cl. 204—1 T 21 Claims

The hydrogen activity of a high temperature fluid such as liquid sodium is measured by immersing thereinto a probe that forms an equilibrium electrolytic cell. The probe comprises a closed-end metal tube that is impervious to the fluid, the tube being provided with a hydrogen sensing electrode portion that is permeable to hydrogen. Inside the tube is a hydrogen reference electrode electrically insulated therefrom. The space between the closed end of the probe and the reference electrode is filled with a fused salt electrolyte containing an oxygen-bearing ion that reacts with elemental hydrogen. A po-

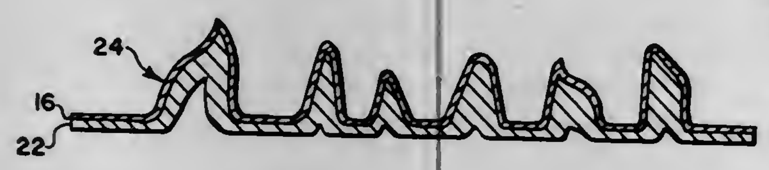


tentiometer measures the difference in electrical potential between the sensing electrode and the reference electrode to provide an accurate measure of the hydrogen activity of the fluid.

3,649,474
ELECTROFORMING PROCESS

Byron Edward Blakeslee, South Bound Brook, Thaddeus Joseph Gajewski, Middlesex, and Akio Ishida, Berkeley Heights, N.J., assignors to Johns-Manville Corporation, New York, N.Y.

Filed Dec. 5, 1969, Ser. No. 882,594
Int. Cl. B51c *3/08;* **C23b** *7/00*
U.S. Cl. 204—6 **12 Claims**



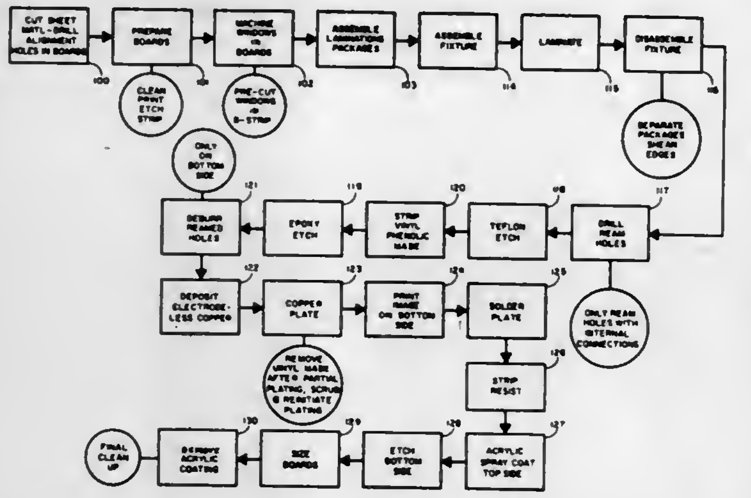
Process for electroforming metal articles by (1) spraying a thin conductive coating of metal on a non-conductive male model; (2) electroplating a thin layer of metal on the coated male model; (3) applying a mold material on the electroplated layer of metal on the male model to form a female mold: (4) withdrawing the male model from the female mold which has the effect of transferring the electroplated layer and the conductive coating onto the surface of the female mold; (5) stripping the conductive coating layer from the surface of the female mold; and (6) electrodepositing a metal article in the female mold to produce an electroformed article having a surface formed by the original electroplated layer.

3,649,475
MULTI-LAYER PRINTED CIRCUIT BOARDS AND METHODS OF MAKING SAME

Joseph F. Degnan, Webster, and Robert A. Ayotte, Rochester, N.Y., assignors to General Dynamics Corporation

Filed July 22, 1969, Ser. No. 843,435
Int. Cl. C23b *5/48;* **B44m** *3/08;* **B44d** *1/18*
U.S. Cl. 204—15 **7 Claims**

A multi-layer printed circuit board for use in microwave frequency circuits is described. The board has at least a pair of printed circuit boards having polytetrafluorethylene substrates, one of which is single sided and the other of which is double sided. One circuit of the double sided board provides an internal layer of the multi-layer board. The outer layers form ground planes such that stripline circuits are provided for connection to microwave circuit components. The process includes steps for laminating the boards together providing plated through holes which permit polytetrafluorethylene to be used in a manner compatible with microwave circuit requirements.


CUT SHEET MATL - DRILL ALIGNMENT HOLES IN BOARDS
100
PREPARE BOARDS
101
CLEAN PRINT ETCH STRIP
MACHINE WINDOWS IN BOARDS
102
PRE-CUT WINDOWS IN B-STRIP
ASSEMBLE LAMINATIONS PACKAGES
103
ASSEMBLE FIXTURE
114
LAMINATE
115
DISASSEMBLE FIXTURE
116
SEPARATE PACKAGES SHEAR EDGES
ONLY ON BOTTOM SIDE
121
DEBURR REAMED HOLES
119
EPOXY ETCH
120
STRIP VINYL PHENOLIC MASK
118
TEFLON ETCH
117
DRILL REAM HOLES
ONLY REAM HOLES WITH INTERNAL CONNECTIONS
122
DEPOSIT ELECTRODE-LESS COPPER
123
COPPER PLATE
REMOVE VINYL MASK AFTER PARTIAL PLATING, SCRUB & REINSTATE PLATING
124
PRINT IMAGE ON BOTTOM SIDE
125
SOLDER PLATE
126
STRIP RESIST
127
ACRYLIC SPRAY COAT TOP SIDE
128
ETCH BOTTOM SIDE
129
SIZE BOARDS
130
REMOVE ACRYLIC COATING
FINAL CLEAN UP

3,649,476
PRECONDITIONER FOR METALLIZING OF POLYOLEFINS

Habet M. Khelghatian and Wassily W. Poppe, Springfield, Pa., and James E. Fitzpatrick, New Castle, Del., assignors to Standard Oil Company, Chicago, Ill.

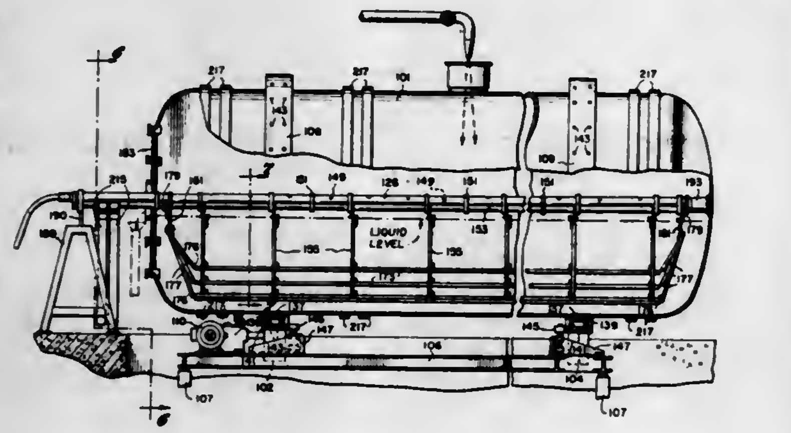
No Drawing. Filed Oct. 11, 1968, Ser. No. 766,996
Int. Cl. C23b *5/60;* **B44d** *1/092*
U.S. Cl. 204—20 **10 Claims**

A process of metallizing molded polyolefin articles, especially those made of polypropylene, wherein the article is pretreated with a conditioner comprising a ketone which is capable of penetrating the surface of the polyolefin article and which is dispersible, emulsifiable or at least slightly soluble in water. Acetone and methyl ethyl ketone are particularly useful ketones for use as the polyolefin preconditioner.

3,649,477
ELECTROPLATING LARGE CYLINDRICAL TANKS

Siegfried G. Bart, Montclair, N.J., assignor to Bart Manufacturing Company, Newark, N.J.

Filed May 14, 1968, Ser. No. 729,099
Int. Cl. C23b *5/56;* **B23p** *1/00;* **B01k** *3/04*
U.S. Cl. 204—26 **11 Claims**



This specification discloses a method and apparatus for electroplating the interior surface of a large vessel such as the tank of a railroad tank car. A large hole is cut into the end wall of the vessel and a preassembled anode is brought into the vessel through this hole. The vessel is mounted on rollers for rotation about the anode. The hole in the end wall is closed with a circular plate designed for this purpose. The interior surface of the vessel is first activated by treating it with acid and reverse current while the vessel is rotated about the anode and purged by means of an inert gas. The vessel is then partially filled with electroplating solution and is rotated about the anode while the electroplating of the interior surface of the vessel is carried out. The anode is then removed and the portion of the end wall which is cut away is welded back in place, this portion having been previously electroplated in a conventional manner.

3,649,478
PLATING METHOD UTILIZING SILVER-COATED ANODE LEADS

Merton M. Beckwith, Tolland, Conn., assignor to Conversion Chemical Corporation, Rockville, Conn.

No Drawing. Filed Apr. 25, 1969, Ser. No. 819,452
Int. Cl. B01k *3/00;* **C23b** *5/08, 5/12*
U.S. Cl. 204—49 **5 Claims**

In an electrodeposition method utilizing a chloride electrolyte, the conductor to the anode has a base or core of conductive metal and a coating of silver.

3,649,479
PROCESS FOR CHROMIUM ELECTROPLATING USING ELECTROLYTIC SOLUTIONS CONTAINING TRIVALENT CHROMIUM

Jean J. G. Icxi, Paris, France, assignor to Dalic, Paris, France

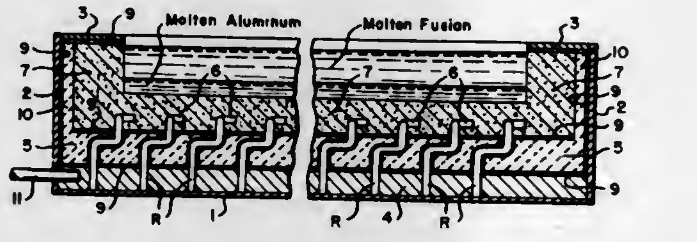
No Drawing. Filed Jan. 21, 1969, Ser. No. 792,787
Claims priority, application France, Jan. 30, 1968, 137,944
Int. Cl. C23b *5/06*
U.S. Cl. 204—51 **1 Claim**

A process for minimizing the presence of hexavalent chromium ions in a chromium electroplating solution which comprises adding a barium salt to the solution.

3,649,480
METHOD OF WITHDRAWING HEAT AND CURRENT FROM MOLTEN ALUMINUM CATHODE ELECTROLYTIC CELLS

Arthur F. Johnson, 203 Creole Lane,
Franklin Lakes, N.J. 07417

Application Jan. 4, 1967, Ser. No. 607,330, now Patent No. 3,434,958, dated Mar. 25, 1969, which is a continuation-in-part of application Ser. No. 528,503, Feb. 18, 1966, now Patent No. 3,434,957, dated Mar. 25, 1969. Divided and this application Feb. 26, 1969, Ser. No. 840,556
Int. Cl. C22d *3/02, 3/12*
U.S. Cl. 204—67 **3 Claims**



The electrolytic cell of the invention comprises a steel shell including a bottom and a cathodic slab of aluminum in juxtaposition with respect to the bottom which may be in intimate contact with the bottom or electrically insulated from the bottom with a refractory layer between and a multiplicity of iron current collector rods secured to the steel bottom which rods are in intimate electrical contact with the slab of aluminum and have flexible portions extending upward through a layer of non-rigid thermal insulation into the carbon lining providing means to connect electrically the carbon lining to the aluminum slab. More particularly the iron collector rods are so sized and shaped as by being angularly bent or branched that they provide greatly increased and permanent surface contact where embedded in the carbon lining thus lowering electrical contact resistance, and are sufficiently yielding where embedded in the thermal insulation that they permit heaving of the carbon lining without impairing the electrical circuit between the carbon lining and the aluminum slab.

3,649,481
CATHODIC PROCESS FOR THE PREPARATION OF TETRAALKYL LEAD COMPOUNDS

William P. Banks, Ponca City, and William H. Harwood, Lawton, Okla., assignors to Continental Oil Company, Ponca City, Okla.

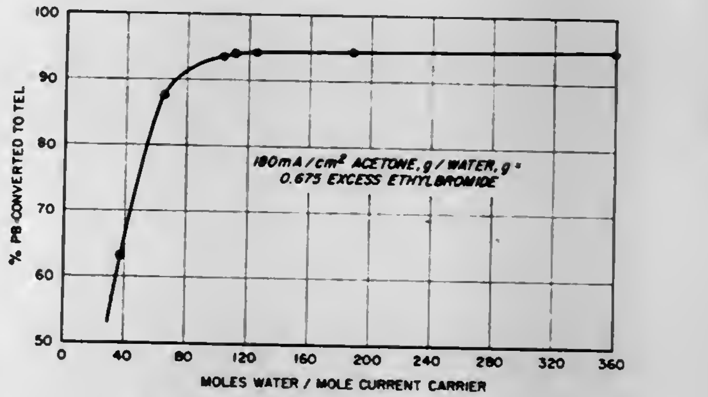
No Drawing. Filed Aug. 31, 1970, Ser. No. 68,551
Int. Cl. C07b *29/06;* **B01k** *3/00*
U.S. Cl. 204—72 **3 Claims**

The present invention relates to the process for the preparation of tetraalkyl lead compounds wherein the anolyte comprises a solution of tetrabutyl ammonium bromide or tetrabutyl phosphonium bromide in an organic solvent. The anolyte may also contain some water. In this process bromine is produced at the anode and is soluble in the organic solvent present in the anolyte. This bromine can be recovered by treating the anolyte solution with hydrogen sulfide to convert the bromine present to hydrogen bromide and sulfur. The sulfur is removed from the solution and the solution is treated with ethanol to form ethylbromide by reaction with the hydrogen bromide present in the solution. The ethylbromide is separated from the solution and returned to the cathode compartment of the electrolytic cell whereby it is subsequently converted to tetraethyl lead. The quaternary bromide salt and the organic solvent is returned to the anode compartment of the electrolytic cell where it then becomes part of the anolyte.

3,649,482
CATHODIC PROCESS FOR THE PREPARATION OF TETRAALKYL LEAD COMPOUNDS

Kang Yang, James D. Reedy, Morris A. Johnson, and William H. Harwood, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of application Ser. No. 773,321, Nov. 4, 1968. This application Oct. 2, 1969, Ser. No. 863,096
Int. Cl. C07b *29/06;* **C07f** *7/26*
U.S. Cl. 204—72 **14 Claims**



DEPENDENCE OF TEL YIELD ON THE MOLES WATER PER MOLE OF CURRENT CARRIER

A process for cathodically producing tetraalkyl lead compounds wherein the cathode is lead and the catholyte contains an alkyl halide, a tetrabutyl ammonium halide, or a tetrabutyl phosphonium halide, water, and an alkylating agent solubilizer, such as acetone or tetrahydrofuran (THF).

3,649,483

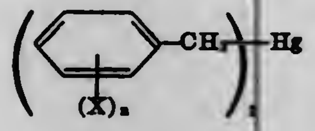
PROCESS FOR PRODUCING BISORGANOMERCURY COMPOUNDS BY THE ELECTROREDUCTION OF SULFONIUM COMPOUNDS

William J. Settineri and Ritchie A. Wessling, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

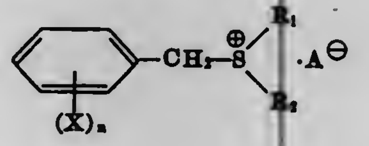
No Drawing. Filed Dec. 2, 1969, Ser. No. 881,573
Int. Cl. C07b *3/12, 29/06*

U.S. Cl. 204—72 **7 Claims**

Bisorganomercury compounds having the structural formula



wherein n is an integer of from 0 to 5 and X is an inert, substantially non-interfering substituent, are prepared by subjecting a benzylsulfonium salt in an electrolysis solvent to an electrical potential sufficient to reduce the sulfonium salt; the sulfonium salt has the formula



wherein n and X are as defined above, R_1 and R_2 are alkyl or hydroxyalkyl groups and $A^{\ominus}$ is an electrolytically acceptable anion. The reduction occurs on a mercury cathode, which is consumed in the reaction. The products are useful as catalysts for free radical initiated polymerizations. In example, dibenzylmercury was prepared by subjecting an aqueous solution of benzyldimethylsulfonium chloride to a cathode potential of about −1.0 volt vs. a saturated calomel electrode.

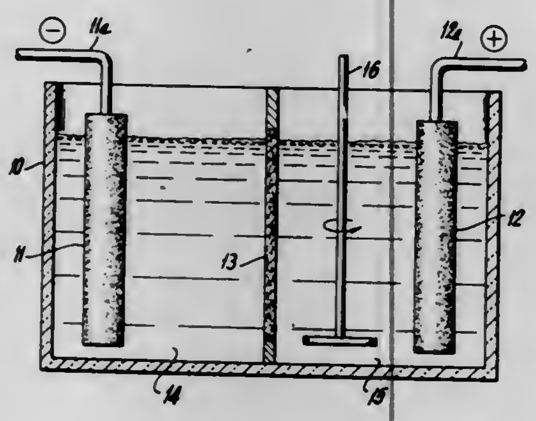
3,649,484

ELECTROLYTIC PROCESS FOR THE MANUFACTURE OF AZO COMPOUNDS

Irwin A. Prager, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Apr. 9, 1969, Ser. No. 814,734
Int. Cl. C01b *29/06;* **C07c** *107/02*

U.S. Cl. 204—79 **5 Claims**



A process is provided for the manufacture of azo compounds by the electrolytic oxidation of hydrazo compounds in an alkali metal halide electrolyte.

3,649,485

ELECTROLYSIS OF BRINE USING COATED CARBON ANODES

Raymond S. Chisholm, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Oct. 2, 1968, Ser. No. 764,618
Int. Cl. C01b *11/26;* **B01k** *3/06*

U.S. Cl. 204—95 **4 Claims**

Novel electrodes are described having an electroconductive base and a coating applied to the base. The coating consists of the sulfides, nitrides, borides and carbides of the elements aluminum, tantalum, titanium, bismuth, tungsten, zirconium and hafnium mixed with the metals, oxides, sulfides, nitrides, borides and carbides of the elements gold, silver, platinum, palladium, ruthenium, rhodium, iridium, osmium, nickel, chromium, lead, copper and manganese. The use of the novel electrodes in alkali metal chlorine cells, both diaphragm and mercury type, alkali metal chlorate cells and other similar electrolytic applications is disclosed.

3,649,486

METHOD OF ACCELERATION OF THE DECOMPOSITION OF SODIUM-AMALGAM IN DECOMPOSERS OF MERCURY-CELLS

Rudolf Proft and Siegmar Richter, Bitterfeld, and Günter Kreutzberger, Wolfen, Germany, assignors to VEB Chemiekombinat Bitterfeld, Bitterfeld, Germany

No Drawing. Filed Feb. 2, 1970, Ser. No. 7,975
Int. Cl. C01d *1/06;* **B01k** *1/00*

U.S. Cl. 204—99 **8 Claims**

The present invention provides an improved method for decomposing a sodium amalgam by adding water to said amalgam whereby said amalgam is decomposed into mercury, and sodium hydroxide and hydrogen are formed. The improvement comprises admixing tungsten carbide with said sodium amalgam and water.

3,649,487

PROCESS FOR THE RECOVERY, FROM SECONDARY MATERIAL, OF SUCH METALS AS NICKEL, COBALT, IRON AND COPPER, SAID SECONDARY MATERIAL COMPRISING IN ADDITION ONE OR MORE METALS HAVING A HIGH MELTING POINT

Alexander Iskander Aue, Gullspang, Gotthard E. Bjorling, Djursholm, and Sven Agden Johansson, Gullspang, Sweden, assignors to Gullspangs Elektrokemiska AB, Gullspang, Sweden

No Drawing. Filed Dec. 3, 1969, Ser. No. 881,876
Int. Cl. B01k *1/00;* **C22d** *1/14, 1/16*

U.S. Cl. 204—112 **6 Claims**

In a process for the recovery of metals such as nickel, cobalt, iron or copper from secondary material, i.e. scrap, which in addition contains one or more metals having high melting-point, for instance chromium, molybdenum or tungsten the first step is to insure that the last mentioned metal is present in a combined or bound state in said secondary material. Therefore, when necessary the secondary material is pretreated by adding one or more non-metals belonging to any of the Groups III, IV or V in the periodic system in order to insure presence of said one or more metals bound preferably as a carbide, boride, silicide, nitride and/or phosphide. Anode plates are cast from the secondary material which anode plates are put in an electrolytic neutral or acid bath from metallic salts of acids having no oxidizing action. The voltage in the bath is kept so low, i.e. less than 4 v., that the carbides, silicides etc. from said one or more metals will not be dissolved or decomposed. When using granulated secondary material it can be carried in baskets or the like made of inert materials, for instance titanium. Between the electrodes there is put a diaphragm and a solution having composition other than the anolyte is used as a catholyte.

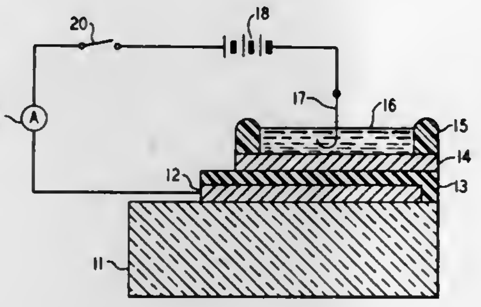
3,649,488

ELECTROCHEMICAL ETCHING TECHNIQUE FOR CHARTING AND CURING DEFECTS IN THIN FILM CAPACITORS

Raymond C. Pitetti, Wescosville, and Theodore W. Zuber, Jr., Allentown, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Nov. 7, 1969, Ser. No. 874,912
Int. Cl. B23p *1/00*

U.S. Cl. 204—143 R **8 Claims**



Defects in planar capacitors may be charted and cured by electrolytic etching of localized regions of capacitor counterelectrodes above high conductivity paths through the dielectric.

3,649,489

PROCESS FOR ELECTROLYTICALLY STRIPPING COATINGS AND BATH THEREFOR

Horst Dillenberg, 26 Kaiser-Wilhelm-Allee, 56 Wuppertal-Elberfeld, Germany

No Drawing. Filed May 18, 1970, Ser. No. 38,568
Claims priority, application Germany, May 22, 1969, P 19 26 228.3
Int. Cl. B01k *1/00*

U.S. Cl. 204—146 **5 Claims**

Process and aqueous bath for rapid stripping of thick nickel and/or chromium coatings from non-ferrous base metals, the coated non-ferrous base being connected as an anode under a voltage of about 8–15 volts at a current density of about 10–25 amperes per square decimeter and at a temperature of between 20 and 80° C., the aqueous stripping containing from 50–95% of sulfuric acid or water-soluble alkyl or aryl sulfonic acid and 50–100 grams per liter of polycarboxylic acid compound selected from citric acid, lactic acid, oxalic acid, and water-soluble salts of said acids, e.g. the sodium, potassium, ammonium, and amine salts.

3,649,490

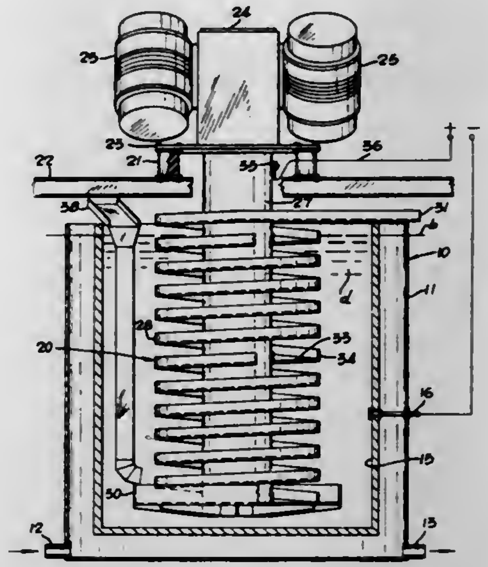
METHOD FOR TIMED ELECTROLYTIC PROCESSING OF MASSES OF ELECTRICALLY CONDUCTIVE METAL PARTS

Michael Francis Nolan, St. Charles, and Elmer John Storie, Webster Groves, Mo., assignors to Diversified Metals Corporation, Hazelwood, Mo.

Filed Nov. 12, 1968, Ser. No. 774,814
Int. Cl. B63g *49/00;* **B01r** *3/00;* **C22d** *1/02;* **C23b** *5/68*

U.S. Cl. 204—146 **2 Claims**

A conventional spiral vibratory conveyor is immersed into an electrolytic tank, to automatically time an electrolytic operation carried out on moving masses of small metal parts. Typical operations include de-electroplating or stripping tin coatings from bits of copper wire, and the electroplating of nuts. As the mass of metal parts is vibrated upward, conductive contact is made, in the intervals between successive vibratory pulses, with electrode means on the spiral flight.



3,649,491

ELECTROLYTIC STRIPPING COMPOSITION

Russell L. Bowers, Columbus, Ind., and Larry E. Napier, Conway, Ark., assignors to Hamilton Cosco, Inc., Columbus, Ind.

No Drawing. Original application Oct. 16, 1967, Ser. No. 675,338, now Patent No. 3,492,210, dated Jan. 27, 1970. Divided and this application Sept. 4, 1969, Ser. No. 855,362
Int. Cl. B23d *1/00;* **B01k** *1/00*

U.S. Cl. 204—146 **1 Claim**

A method and composition for electrochemically removing metallic layers from a work-piece in which the workpiece is disposed in an electrolytic bath of an aqueous solution of ammonium nitrate, tartaric acid and sodium hydroxide.

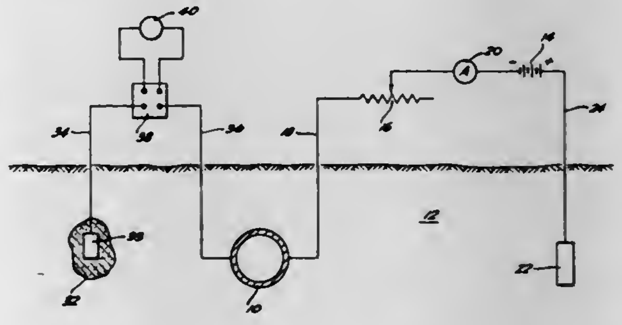
3,649,492

METHOD FOR DETERMINING THE COMPLETENESS OF CATHODIC PROTECTION OF CORRODIBLE METAL STRUCTURE

Glenn A. Marsh and Edward Schaschl, Fullerton, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of application Ser. No. 557,492, June 14, 1966, which is a continuation-in-part of application Ser. No. 213,171, July 30, 1962. This application Sept. 21, 1970, Ser. No. 73,931
Int. Cl. C23f *13/00;* **G01n** *27/46*

U.S. Cl. 204—148 **8 Claims**



A method for evaluating the effectiveness of a cathodic protection system in which the completeness of cathodic protection of a corrodible metal structure exposed to a corrosive environment is ascertained by measuring the polarity of the structure with respect to a specimen of the same metal placed in the corrosive environment and electrically connected to the structure and maintained in electrolytic contact with the corrosive environment and out of contact with oxygen. All areas of the structure are completely cathodically protected when the structure exhibits the same potential as the test specimen, or is negative with respect to the specimen.

3,649,493

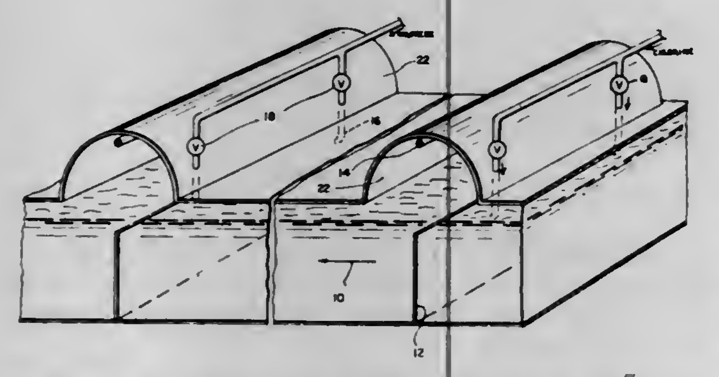
PROCESS OF PURIFYING WATER WITH ACTIVE HALOGEN COMPOUND AND ACTINIC RADIATIONS

Alfred Meiners and Evan P. Shea, Kansas City, Mo., assignors to Midwest Research Institute, Kansas City, Mo.

Filed July 10, 1969, Ser. No. 840,771

Int. Cl. C02b *3/08*

U.S. Cl. 204—157.1 **19 Claims**



Contaminated waters have their oxidizable impurities materially reduced by oxidation with a hypohalous acid forming compound in the presence of actinic light, irradiated from a source maintained in close proximity to the water.

3,649,494

PROCESS FOR THE RADIATION GRAFTING OF 4-VINYL PYRIDINE ONTO POLYESTERS IN THE PRESENCE OF A POLYMERIZABLE UNSATURATED ORGANIC ACID

Ichiro Sakurada, Kyoto-shi, Kyoto-fu, and Toshio Okada, Moriguchi-shi, Osaka-fu, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

No Drawing. Filed Sept. 4, 1968, Ser. No. 757,467

Claims priority, application Japan, Sept. 5, 1967, 42/56,561

Int. Cl. B01j *1/00;* **C08d** *9/10*

U.S. Cl. 204—159.15 **7 Claims**

Polyester fiber material which can be easily dyed with acidic, basic, direct or dispersed dyes was obtained by graft-copolymerizing 4-vinyl pyridine and a polymerizable unsaturated organic acid onto a polyester fiber material in an aqueous emulsified system by means of ionizing radiation.

3,649,495

PHOTOPOLYMERIZATION OF VINYL MONOMERS USING A PHOTO-OXIDANT DYE-TRIORGANO PHOSPHINE OR ARSINE CATALYST SYSTEM

John B. Rust, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of application Ser. No. 483,986, Aug. 31, 1965. This application May 15, 1969, Ser. No. 824,903

Int. Cl. B01j *1/00;* **C08f** *1/00*

U.S. Cl. 204—159.24 **14 Claims**

A method of photopolymerization of a polymerizable vinyl monomer system with a photo-redox catalyst system utilizing in combination a photo-oxidant with a triorgano phosphine and triorgano arsine and compositions thereof. The photo-oxidant is reacted with the phosphine and/or arsine to produce a free-radical by withdrawing and transferring an electron to promote photopolymerization of the vinyl system.

3,649,496

PROCESS FOR THE PRODUCTION OF ALKYLARYL SUCCINIC ANHYDRIDES

Vsevolod Vladimirovich Nesterovsky, Ulitsa Pivchenkova 5, kv. 28; Julius Lazarevich Khmelnitsky, Semenovskaya naberezhnaya 3/1, korpus 1, kv. 41; Vladimir Ivanovich Karzhev and Ekaterina Ivanovna Silchenko, both of Zubovsky bulvar 31/33, kv. 30; Nina Vasilievna Goncharova, Jurievsky pereulok 22, korpus 1, kv. 111; Valentina Petrovna Svirina, Shosse Entuziastov 146–154, kv. 91; Margarita Viktorovna Maikova, Rublevskoe shosse 91, korpus 3, kv. 43; and Marfa Markovna Murashkina, 5 Parkovaya ulitsa 38/13, korpus 4, kv. 12, all of Moscow, U.S.S.R.

No Drawing. Filed Sept. 8, 1969, Ser. No. 856,180

Int. Cl. B01j *1/10*

U.S. Cl. 204—162 HE **17 Claims**

A process for the production of alkylaryl succinic anhydrides comprising the condensation of alkyl derivatives of benzene with anhydrides of dibasic aliphatic acids. The process involves heating the materials under pressure under the action of ionizing radiation. Additionally, organic peroxides may be used with the radiation.

3,649,497

PROCESS FOR CARRYING OUT CHEMICAL REACTIONS

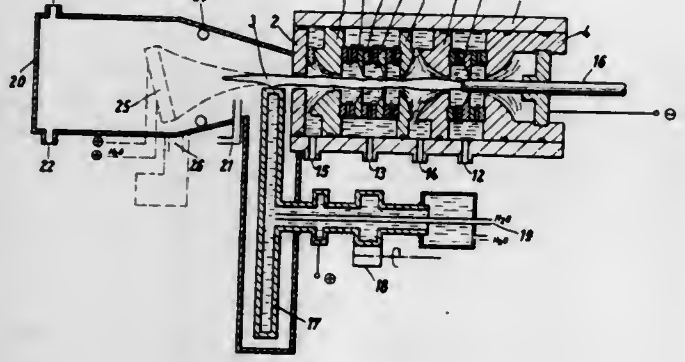
Tibor Kugler, Sins, and Jakob Silbiger, Basel, Switzerland, assignors to Lonza, Ltd., Gampel, Valais (Direction Basel), Switzerland

Filed Dec. 17, 1969, Ser. No. 885,927

Claims priority, application Switzerland, Dec. 27, 1968, 19,259/68; Apr. 1, 1969, 4,949/69

Int. Cl. C01b *31/30;* **C01g** *23/02*

U.S. Cl. 204—164 **11 Claims**



Chemical reactions are carried out under the thermal action of the plasma of an arc discharge by causing a reactant containing a metal or metalloid to swirl and form a vortex in the liquid state so as to at least partially form and stabilise a plasma, and said reactant reacts in the plasma state to form a reaction product containing at least one metal or metalloid component. Chemical reactions which may be carried out are for example reduction, cracking reactions, and carbide formation.

3,649,498

DETECTION IN CHROMATOGRAPHY

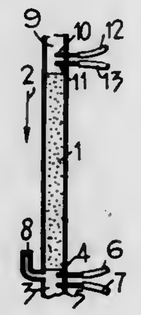
Victor Pretorius, "Klein Waterkloof," Club Ave., Waterkloof, Pretoria, Republic of South Africa, and Hans Helmut Hahn, 38 Marais St., Bailey's Muckleneuk, Pretoria, Republic of South Africa

Continuation-in-part of application Ser. No. 583,788, Oct. 3, 1966. This application Aug. 2, 1967, Ser. No. 657,804

Claims priority, application Republic of South Africa, Aug. 8, 1966, 66/4,568

Int. Cl. B01k *5/00, 3/00*

U.S. Cl. 204—180 G **8 Claims**



The progress of a chromatographic separation is monitored at any desired locality of the chromatographic system by observing at a solid detection electrode with reference to a reference electrode any detectable constitution and concentration dependent electrical quantity, e.g. conductivity, electrolytic current, capacitance, zeta-phenomena or a combination of superimposed quantities.

3,649,499

METHOD FOR ESTABLISHING THE ZONES OCCURRING IN ELECTROPHORESIS AND FOR THEIR QUANTITATIVE DETERMINATION

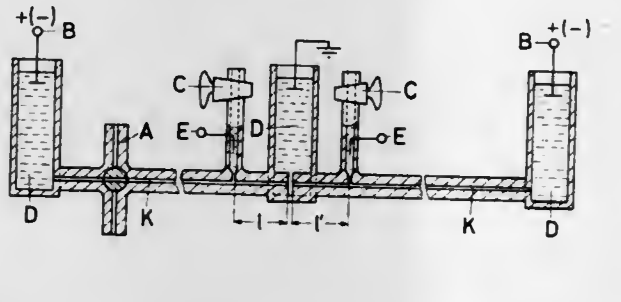
Rauno Erkki Virtanen, Otakallio 3 B 22, Otaniemi, Finland, and Pekka Kivalo, Kuusiniementie 21 E, Helsinki 34, Finland

Filed Mar. 24, 1969, Ser. No. 809,659

Claims priority, application Finland, Mar. 27, 1968, 853/68

Int. Cl. B01k *5/00*

U.S. Cl. 204—108 **5 Claims**



A method is provided for establishing zones occurring in electrophoresis and for quantitively determining substances present in them. The method is characterized by measuring in the electrophoresis system the electrochemical potential of an electrode placed at a given point between end electrodes or connected by a salt bridge, or by measuring the change of this potential as a function of time with respect to a reference electrode.

3,649,500

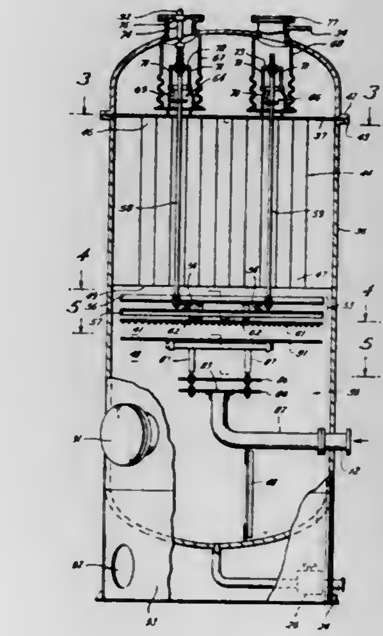
ELECTRIC TREATMENT OF CONDUCTIVE DISPERSIONS

Frederick D. Watson and Joseph D. Winslow, Jr., Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.

Original application Mar. 29, 1968, Ser. No. 717,133, now Patent No. 3,528,907, dated Sept. 15, 1970. Divided and this application Apr. 13, 1970, Ser. No. 27,910

Int. Cl. B03c *5/00*

U.S. Cl. 204—188 **13 Claims**



A process for electrically resolving a dispersion carrying water-soluble impurities and having an electrical conductivity greater than about 1×10^{-8} mhos/centimeter. The dispersion is formed with immiscible external and internal liquid phases. These phases are formed of a liquid organic material and a more conductive aqueous material, respectively. The dispersion is subjected to an electric field from a non-direct current voltage which produces a voltage gradient not in excess of about 1000 volts per each inch the field traverses the dispersion. The dispersion flows continuously from the electric field into a settling zone in which substantially uniform flow conditions exist in a region free from any significant electrical field effects. The treated organic material produced by the electric field and passage in the settling zone is separated from the aqueous material and impurities. About 5 to 35 volume percent of water may be admixed with the dispersion prior to treatment in the electric field.

3,649,501

PREPARATION OF SINGLE CRYSTAL FILMS OF LITHIUM NIOBATE BY RADIO FREQUENCY SPUTTERING

Varadachari Sadagopan, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 18, 1970, Ser. No. 47,483

Int. Cl. C23c *15/00*

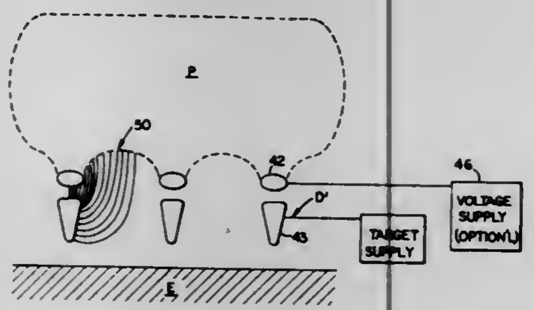
U.S. Cl. 204—192 **17 Claims**

A method of radio frequency sputtering lithium niobate thin, single crystal films having bulk properties is disclosed. The sputtering process is preferably carried out at substrate temperatures in a range of 450° C. to 870° C. The substrate is preferably single crystal c or a-α-Al_2O_3 or may be a single crystal of grown lithium niobate. Radio frequency powers in the range of 25 to 150 watts for a four-inch diameter cathode and deposition rates of less than 0.4 A. per second may be utilized. Argon pressures during sputtering are in the range of 25 microns to 44 microns. Thin, single crystal films up to 10,000 A. in thickness have been produced utilizing the above sputtering technique. The resulting films have properties similar to crystals grown in bulk.

3,649,502
APPARATUS FOR SUPPORTED DISCHARGE SPUTTER-COATING OF A SUBSTRATE

Lawrence Herte, Palo Alto, and Sheldon D. Softky and Nicholas D. Schoenberger, Menlo Park, Calif., assignors to Precision Instrument Company, Palo Alto, Calif.

Filed Aug. 14, 1969, Ser. No. 849,950
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **10 Claims**



A supported discharge sputter coating apparatus is provided with the target located between the center of a highly ionized plasma and the substrate to be coated.

3,649,503
SPUTTER ETCH MASK

Lewis E. Terry, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 3, 1969, Ser. No. 881,715
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **2 Claims**

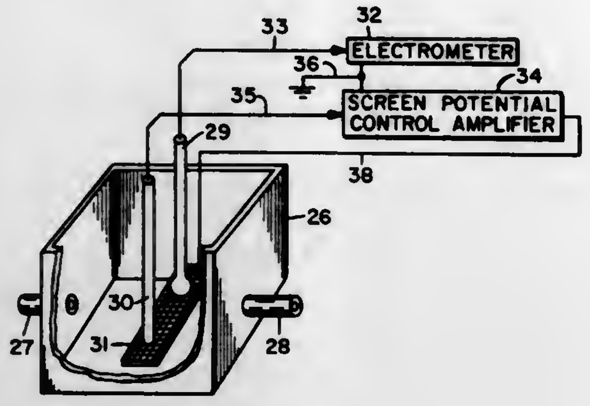
A metal film, such as titanium which chemically etches relatively easily but sputter etches relatively slowly, serves as a mask in a sputter etching process for metals such as gold and platinum which are difficult to etch chemically.

3,649,504
SYSTEM FOR CONTROLLING THE ELECTRICAL FIELD IN A FLUID ANALYZING CHAMBER

Marshall E. Evans, Millerton, Pa., and David M. H. Platt, Hopkinton, Mass., assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 17, 1970, Ser. No. 29,468
Int. Cl. G01n *27/00*
U.S. Cl. 204—195 **8 Claims**

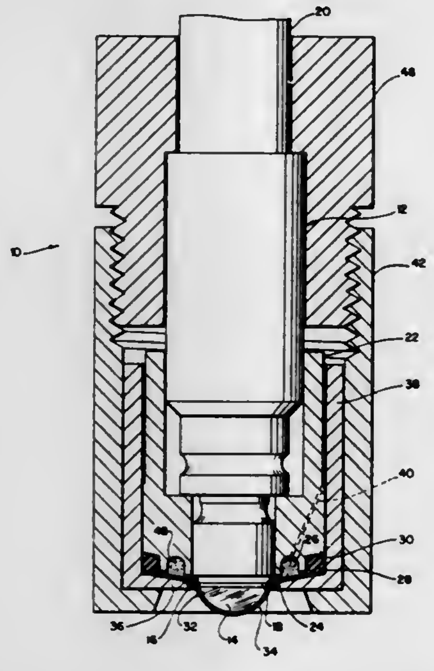
A sample analyzing chamber for flow-through analysis of a sample solution includes an equipotential screen disposed adjacent the tips or active portions of all electrodes in the chamber. The voltage sensed by the reference electrode is amplified and inverted by a control amplifier, the output of which is applied to the screen. Any deviation of the reference electrode potential from the ground potential of the circuitry of the electrometer or other utilization means results in the application of a voltage from the control amplifier to the screen. This voltage is of proper amplitude and polarity to drive the reference electrode and the potential of the solution in the vicinity of the screen back to ground potential. The ion-sensing electrode signal, which is now referenced to ground, is coupled to the electrometer.



3,649,505
AMMONIA SENSOR

Allen Strickler and Cedric H. Beebe, Fullerton, Calif., assignors to Beckman Instruments, Inc.

Filed Mar. 3, 1969, Ser. No. 803,781
Int. Cl. G01n *27/30*
U.S. Cl. 204—195 **6 Claims**



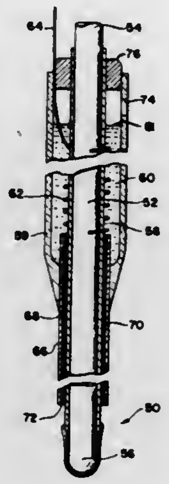
An electrochemical cell for measuring the ammonia content of a sample. The cell comprises a hydrogen ion sensitive electrode, such as a glass electrode, and a reference electrode joined by an ammonium ion containing electrolyte. The electrodes and electrolyte are separated from the sample medium being analyzed by means of a microporous hydrophobic membrane which is highly permeable to ammonia and substantially impermeable to liquid and ions. A preferred membrane of this character is a microporous polyvinylidene fluoride filter material.

3,649,506
SOLID STATE GLASS ELECTRODE

Arne J. Petersen, Balboa, and George Matsuyama, Fullerton, Calif., assignors to Beckman Instruments, Inc.

Filed Oct. 14, 1969, Ser. No. 866,249
Int. Cl. G01n *27/36*
U.S. Cl. 204—195 **10 Claims**

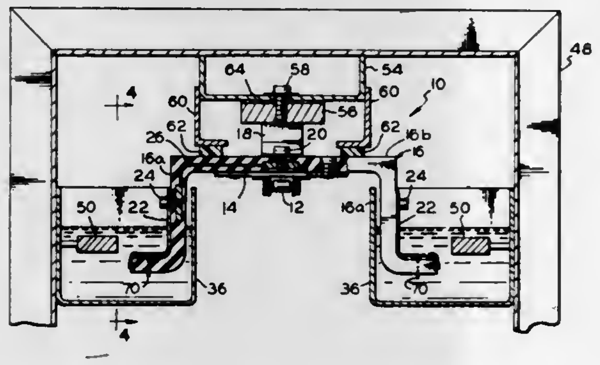
A solid state glass electrode in which a conductor having a surface layer of an electrochemically active metal is coated with a first coating of a mixture of a glass and a halide of the active metal and a second outer coating of ion sensitive glass. The preferred active metal and halide are copper and cuprous chloride, respectively. The electrode is rugged, has a response approximately that of a standard glass electrode and has better stability over long periods and changing temperature conditions than previous solid state glass electrodes.



3,649,507
APPARATUS FOR CONTINUOUS ELECTROPLATING

Gary D. Welter, Oregon City, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Filed July 13, 1970, Ser. No. 54,494
Int. Cl. B65g *49/02*
U.S. Cl. 204—202 **8 Claims**



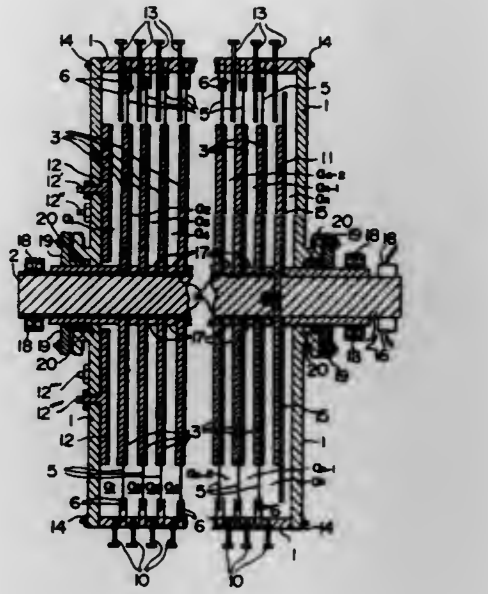
Apparatus for electroplating items passing through an electrolyte on a continuous conveyor system including means for masking off portions of the items and further including means for automatic loading and unloading of the items to the conveyor system. The items are electrically isolated from one another, and each is individually electrically connected to a power source while in the electroplating bath.

3,649,508
VERTICAL ROTARY BIPOLAR-TYPE MERCURY PROCESS CHLOR-ALKALI ELECTROLYTIC CELL

Noriyuki Yokota, Ashiya-shi, Shingo Tokuda, Nishinomiya-shi, and Shigeo Asada, Ibaraki-shi, Japan, assignors to Osaka Soda Co., Ltd., Osaka, Japan

Filed Oct. 20, 1969, Ser. No. 867,611
Claims priority, application Japan, Oct. 22, 1968, 43/76,925
Int. Cl. C23b *5/68*
U.S. Cl. 204—212 **12 Claims**

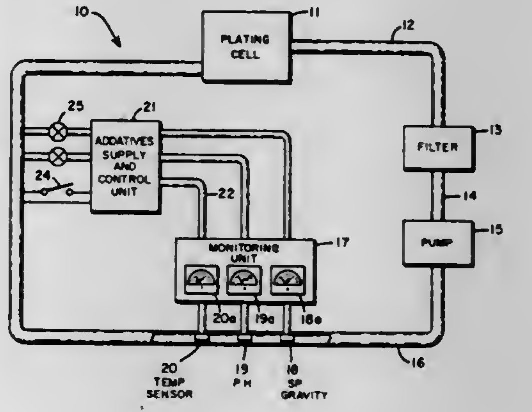
A vertical, chlor-alkali electrolytic cell in which mercury cathode surfaces are vertically positioned, employing bipolar rotatable electrodes dividing the cell into a plural number of cell chambers, with each cell chamber separated from adjacent cell chambers by current cut-off members located on the circumference of each bipolar electrode.



3,649,509
ELECTRODEPOSITION SYSTEMS

Peter L. Morawetz, Minneapolis, and Meryl W. Tinklenberg, St. Paul, Minn., assignors to Buckbee-Mears Company, St. Paul, Minn.

Filed July 8, 1969, Ser. No. 839,918
Int. Cl. B01k *3/00;* **C22d** *1/02*
U.S. Cl. 204—238 **10 Claims**



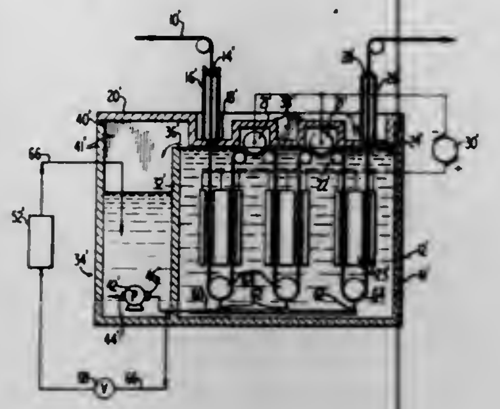
A recirculating electrodepositing system having a plating cell with a pressurized plenum chamber for uniformly dispersing the plating solution onto the cathode and a set of sensors for continually determining the composition of the plating solution.

3,649,510
COATING SYSTEM WITH COATING MEDIUM CIRCULATION

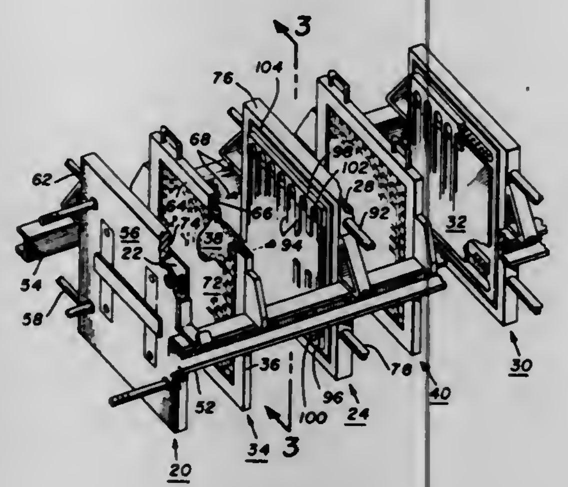
Edwin J. Smith, Winterville, Ohio, and Lowell W. Austin, Weirton, W. Va., assignors to National Steel Corporation

Filed July 11, 1968, Ser. No. 743,987
Int. Cl. B05c *11/00;* **C23b** *5/30, 5/68*
U.S. Cl. 204—238 **3 Claims**

Large volumes of moisture-sensitive fused salt electrolyte are agitated by circulation without exposing the fused salt to moisture in the surrounding atmosphere. Fused salt in an airtight coating tank flows over a weir into an airtight reservoir for filtration and circulation to the bottom of the coating tank. The salt flows upwardly in the coating tank for continuous overflow into the reservoir.



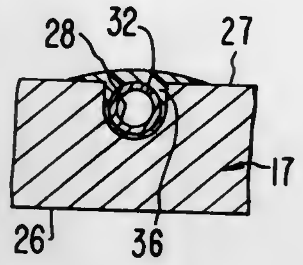
3,649,511
ELECTROLYTIC CELL
Donald E. Danly, Cantonment, and Robert W. McWhorter, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.
Continuation of application Ser. No. 553,851, May 31, 1966. This application Oct. 9, 1969, Ser. No. 866,126
Int. Cl. B01k *3/10*
U.S. Cl. 204—252 **10 Claims**



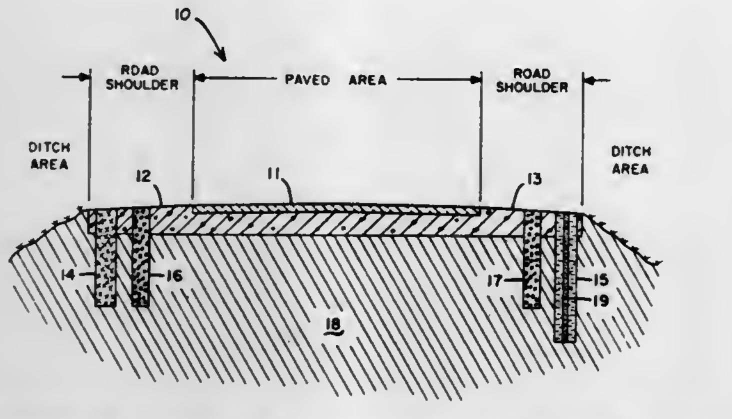
An ion exchange membrane divides an electrolytic cell into separate anolyte and catholyte compartments. Spacer strips between the membrane and cathode define smooth-walled catholyte passages between the membrane and cathode. The spacer strips are parallel to catholyte flow. Anolyte pressure is slightly higher than catholyte pressure. The dimensions of the membrane frame are chosen to seal against the anode and cathode blocks without distorting the electrodes.

3,649,512
LARGE AREA SPUTTERING TARGET ELECTRODE STRUCTURE
James W. Ackley, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed June 25, 1970, Ser. No. 49,797
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **11 Claims**

A target electrode structure for sputtering by a gaseous discharge is described which enables the economical construction and use of large sputtering areas. The electrode structure includes as a unit a ground plate which is removably secured within a controlled environment chamber, such as a vacuum coating chamber, and a target electrode plate. The target electrode plate has a face providing the large sputtering area and is insulatively supported from the ground plate a distance assuring that no gaseous discharge can be formed in the space between the target and ground plates. In order to provide adequate cooling of the target electrode plate without causing capacitive losses and the unwanted gaseous discharge between the target electrode and the ground plate, cooling fluid tubing is recessed into a groove which follows a sinuous path over the back side of the plate, i.e., the side of the plate facing the ground plate.

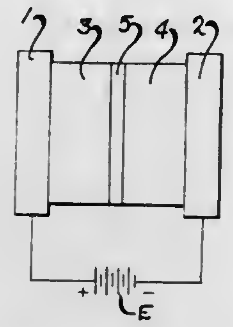


3,649,513
SYSTEM FOR PREVENTION OF FROST HEAVES IN HIGHWAYS
Earl C. Peterson, 1300 Kelly Drive N., Minneapolis, Minn. 55427
Filed Aug. 6, 1970, Ser. No. 61,684
Int. Cl. B01d *13/02;* **B01k** *5/00*
U.S. Cl. 204—299 **6 Claims**



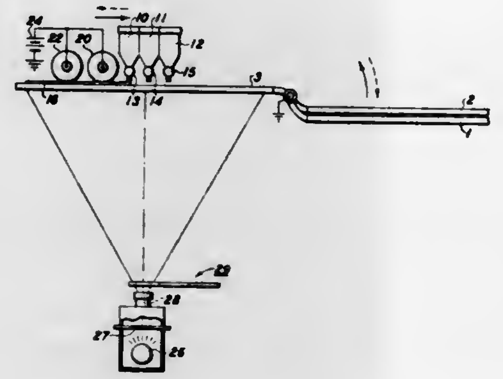
Improved means for controlling the moisture content and ultimate freezing parameters of a roadbed including, a combination of electrolytic means together with a conventional roadbed, the electrolytic means being utilized to control the moisture migration through the soil. The system comprises therefore, a combination of a roadbed having a centrally disposed paved zone flanked by lateral shoulder zones, and electrolytic means along said shoulder zones for controlling the moisture migration through the soil. The electrolytic means includes a plurality of spaced electrodes, including a plurality of anodes and a plurality of cathodes arranged in spaced relationship along the lateral shoulder zones. The anode means include crushed or finely divided iron particles, such as, for example, ground scrap iron or the like arranged in bores formed in the lateral shoulder areas; the cathode means including pulverized carbon particles such as, for example, pulverized coke or the like disposed in bores formed along the same or the opposite shoulder area from the anode means. If desired, additional rock-filled bores may be disposed adjacent the electrodes, with creosote oil being applied to the bores and to the materials filling the bores.

3,649,514
APPARATUS FOR PRACTICING ELECTROPHOTOGRAPHY
Barnett Rosenberg, Lansing, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Apr. 22, 1970, Ser. No. 30,668
Int. Cl. B01k *5/00, 5/02;* **C23b** *13/00*
U.S. Cl. 204—299 **2 Claims**



There is disclosed a reusable image panel device for practicing electrophotography. The panel is composed of a conductive transparent electrode, a photoconductive layer, an opaque layer, a layer of liquid toner, and a second electrode. There is formed an image on the opaque layer by electrophoretic deposition of toner particles in image configuration.

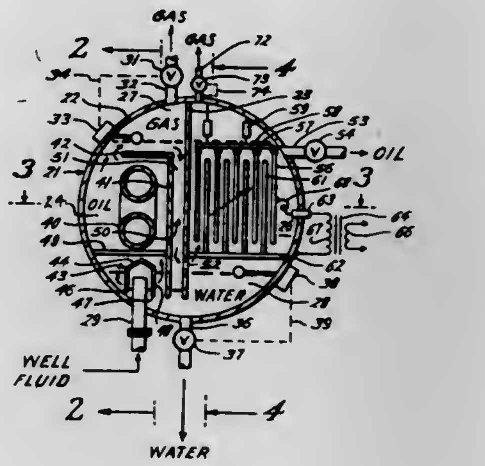
3,649,515
PHOTOGRAPHIC MASKING SYSTEM
Vsevolod Tulagin, Rochester, and Leonard M. Carreira, Penfield, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Mar. 31, 1970, Ser. No. 24,152
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—300 **14 Claims**



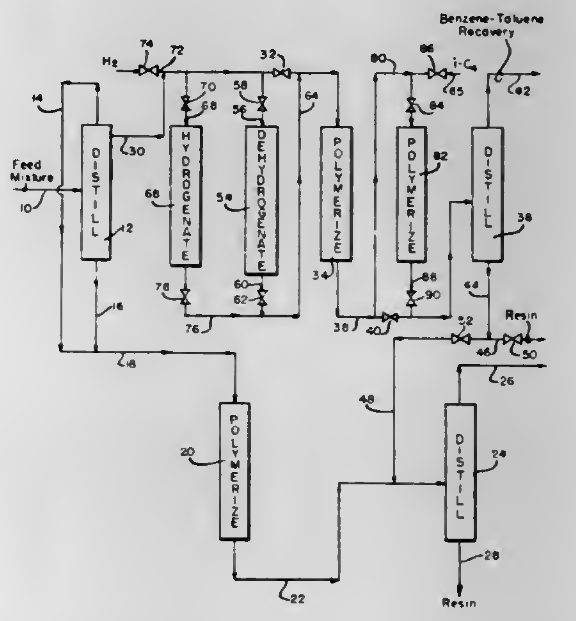
A rapid masking system in image producing apparatus by forming color selected first images for immediate use in exposing a photosensitive material especially of the photoelectrophoretic type for use as masks for image correction or formation.

3,649,516
SEPARATOR WITH VESSEL-LENGTH PHASE SEPARATION SECTIONS
Ernest A. Cole, Jr., Frederick D. Watson, and Weldon D. Mayse, Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.
Filed Sept. 28, 1970, Ser. No. 76,160
Int. Cl. B01k *1/00;* **C10g** *33/02*
U.S. Cl. 204—302 **31 Claims**

A separator for oil-continuous emulsions containing gas and dispersed water phases. A closed horizontally-elongated vessel is divided into side-by-side inlet and outlet chambers by a vertical non-pressure baffle extending longitudinally within the vessel. Gas and water separation zones extend above and below the inlet and outlet chambers. Emulsion flows through the inlet chamber past a heater which promotes an initial separation of gas and water. Heated emulsion moves from the inlet chamber in a flow passage to a water sealed distributor which provides substantially uniform emulsion flows into the horizontal extent of the outlet chamber. Electrodes provide an electrical field for resolving the emulsion within the outlet chamber. An oil outlet removes the oil phase from the vessel on the side of the electric field opposite the distributor. Gas and water outlets remove these separated phases from the separation zones. The vessel-length separation sections need only gas and water level controllers to maintain all interfaces within the treater.



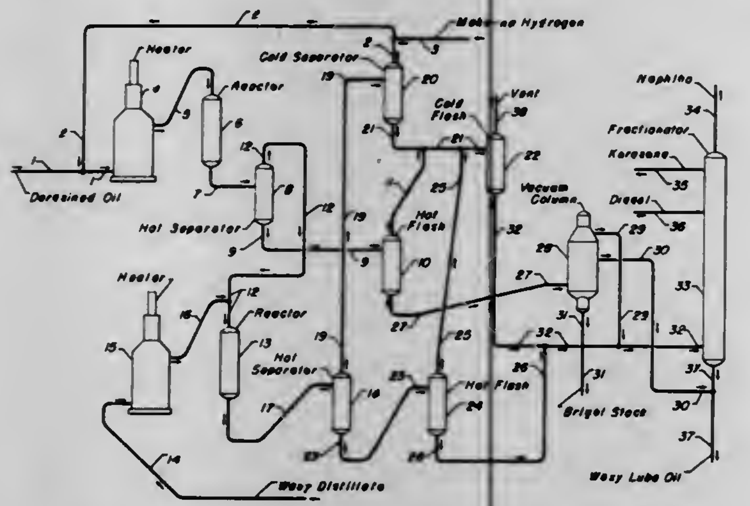
3,649,517
RESINS PREPARED FROM AROMATIC HYDROCARBONS
Stephen M. Kovach, Ashland, and Ralph E. Patrick, Flatwoods, Ky., assignors to Ashland Oil, Inc., Houston, Tex.
Continuation of application Ser. No. 582,754, Sept. 28, 1966. This application Dec. 29, 1969, Ser. No. 888,160
Int. Cl. C08f *15/42*
U.S. Cl. 208—22 **8 Claims**



Polymer products are produced by distilling a full range dripolene to remove an overhead product boiling below about 140 to 160° F. and a bottoms product boiling above 245 to 250° F., and an intermediate product boiling between these two materials, the overhead and bottoms are combined, polymerized, and distilled to recover a resin boiling above 350° F., and the intermediate product is either hydrogenated or dehydrogenated and thereafter polymerized in at least one stage of polymerization and distilled to recover a resin product boiling above about 245° F.

3,649,518
LUBRICATING OIL BASE STOCK PRODUCTION BY HYDROCRACKING TWO SEPARATE FEEDSTOCKS

Charles H. Watkins, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Apr. 2, 1970, Ser. No. 25,066
Int. Cl. C08g *37/02*
U.S. Cl. 208—59 **10 Claims**



A multiple-stage process for producing lubricating oil base stocks having viscosity indices greater than about 100. The heavier portion of the charge stock, having an initial boiling point in the range of about 800° F. to about 925° F., is separately processed in a first stage. The front end of the resulting product effluent is processed in a second stage, in admixture with the lighter portion of the charge stock having an end boiling point in the range of about 800° F. to about 925° F. A series of separation steps is employed to recover the lubricating oil base stock while concentrating a high viscosity index bright stock

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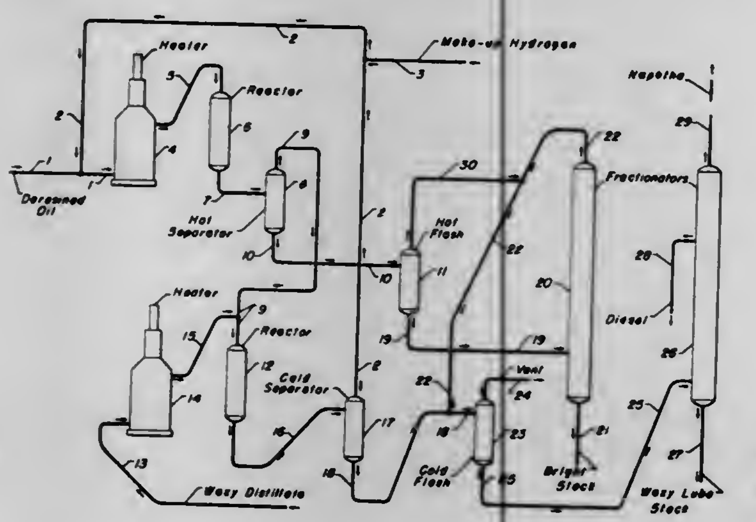
3,649,519
LUBRICATING OIL BASE STOCK PRODUCTION BY HYDROCRACKING TWO SEPARATE FEEDSTOCKS

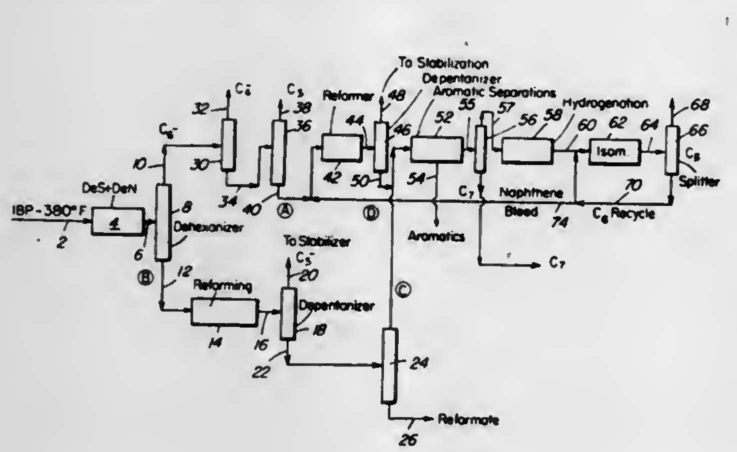
Charles H. Watkins, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Apr. 2, 1970, Ser. No. 25,067
Int. Cl. C10g *37/02*
U.S. Cl. 208—59 **10 Claims**



A multiple-stage process for producing lubricating oil base stocks having viscosity indices greater than about 100. The heavier portion of the charge stock, having an initial boiling point in the range of about 800° F. to about 925° F. is processed in a first stage; the front end of the resulting product effluent is processed in a second stage, in admixture with the lighter portion of the fresh feed charge stock. A series of separation steps is employed to recover the lubricating oil base stock while concentrating a high viscosity index bright stock.

3,649,520
PRODUCTION OF LEAD FREE GASOLINE

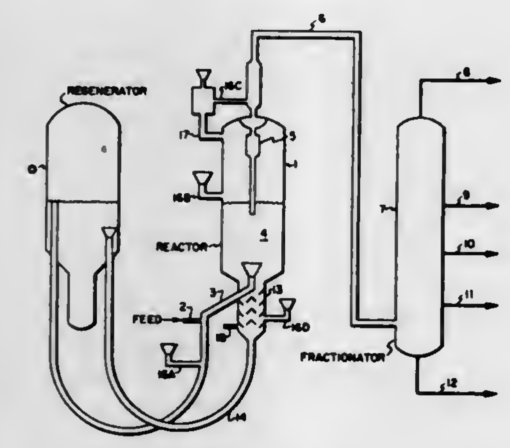
Richard G. Graven, Westmont, N.J., assignor to Mobil Oil Corporation
Filed Mar. 13, 1970, Ser. No. 19,174
Int. Cl. C10g *39/00*
U.S. Cl. 208—93 **3 Claims**



Production of lead free gasoline is described by the process combination of reforming, aromatic recovery and isomerization arranged to isolate among other things C_6 hydrocarbons upgraded to a higher octane product by isomerization thereby contributing to the yield of acceptable octane product for blending with reformate product.

3,649,521
FLUID CATALYTIC CRACKING PROCESS EMPLOYING CONVENTIONAL CRACKING CATALYST AND SUPERACTIVE MOLECULAR SIEVE CRACKING CATALYST

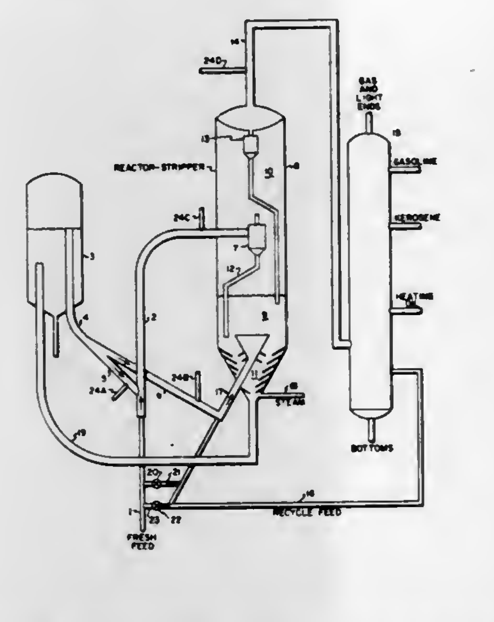
Homer Z. Martin, Westfield, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.
Filed Sept. 19, 1969, Ser. No. 859,279
Int. Cl. C10g *37/02, 11/18*
U.S. Cl. 208—120 **13 Claims**



Conversion of a petroleum hydrocarbon fraction in a fluid catalytic cracking process utilizing a conventional amorphous fluid cracking catalyst or a conventional crystalline aluminosilicate zeolite fluid cracking catalyst is increased by contacting at least a vapor portion of the fraction with a catalyst comprising a pure superactive crystalline aluminosilicate zeolite material having a particle size of less than about 10 microns.

3,649,522
TRANSFERLINE FLUID CRACKING PROCESS EMPLOYING CONVENTIONAL CRACKING CATALYST AND SUPERACTIVE MOLECULAR SIEVE CRACKING CATALYST

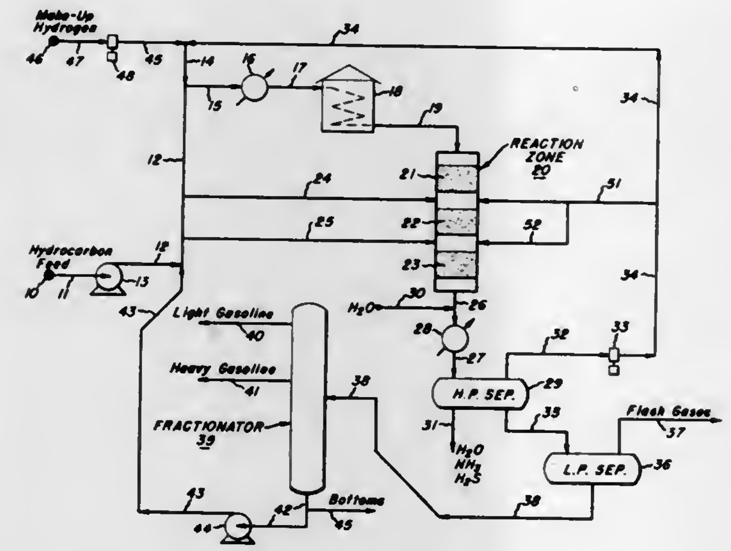
Homer Z. Martin, Westfield, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.
Filed Sept. 19, 1969, Ser. No. 860,852
Int. Cl. C10g *11/18*
U.S. Cl. 208—120 **12 Claims**



Conversion of a petroleum hydrocarbon fraction in a fluid catalytic cracking process which includes cracking in at least one transferline reactor utilizing a conventional fluid cracking catalyst and a second catalyst comprising a pure superactive crystalline aluminosilicate zeolite material having a particle size of less than about 10 microns.

3,649,523
HYDROCRACKING PROCESS AND CATALYST

Ralph J. Bertolacini, Chesterton, and Louis C. Gutberlet, Crown Point, Ind., assignors to Standard Oil Company, Chicago, Ill.
Filed Apr. 10, 1969, Ser. No. 814,996
Int. Cl. C10g *13/02;* C01b *33/28;* C07c *2/58*
U.S. Cl. 208—111 **21 Claims**



The catalyst comprises Group VI–A and Group VIII metals and/or their compounds and an acidic support comprising large-pore crystalline aluminosilicate material and a porous support material selected from the group consisting of alumina, aluminum phosphate, and silica. Preferred Group VI–A metals are molybdenum and tungsten. Preferred Group III metals are cobalt and nickel. The preferred large-pore crystalline aluminosilicate material is ultrastable, large-pore crystalline aluminosilicate material.

The processes are hydrocarbon conversion processes, a typical example of which is a hydrocracking process. The hydrocracking process comprises contacting in a hydrocracking reaction zone under hydrocracking conditions and in the presence of hydrogen petroleum hydrocarbon fractions with the catalyst of the present invention.

3,649,524
METHOD FOR REFORMING PARAFFINIC AND NAPHTHENIC RICH HYDROCARBON FEED STREAMS

Walter R. Derr, Ashland, and Francis E. Davis, Jr., West Deptford, N.J., assignors to Mobil Oil Corporation
No Drawing. Filed Sept. 30, 1969, Ser. No. 862,517
Int. Cl. C10g *35/08*
U.S. Cl. 208—139 **4 Claims**

A reforming process is described wherein a platinum reforming catalyst comprising in the range of from about 0.15 up to about 1.0 weight percent of platinum in combination with a metallic reaction modifier and controlled catalyst acid activity is found to be a most unusually effective reforming catalyst at least with respect to maintaining the hydrogen purity of the recycle gas, product selectivity and yield octane rating of a reformed naphtha by controlling the chloride and/or water (moisture) atmosphere of the catalyst within particular limits.

3,649,525
MULTIPLE-STAGE DESULFURIZATION OF BLACK OIL

Lee Hilfman, Prospect Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Nov. 6, 1969, Ser. No. 874,697
Int. Cl. C10g *23/02, 31/14*
U.S. Cl. 208—210 **6 Claims**

Desulfurization of hydrocarbonaceous black oil is effected in a plurality of individual conversion zones. The first zone, containing a catalytic composite of an alumina-containing carrier material, a zinc component and a Group VI–B component, functions to produce a hydrocarbon stream containing from 1.0% to about 2.0% by weight of sulfur, and preferably from 1.35% to about 1.65% by weight. The subsequent conversion zone, containing a catalytic composite of a siliceous carrier material, a Group VIII metal component and a Group VI–B metal component, effects further desulfurization to a level less than about 1.0% by weight.

3,649,526
MULTIPLE-STAGE PRODUCTION OF FUEL OIL

Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Nov. 17, 1969, Ser. No. 877,421
Int. Cl. C10g *23/02, 31/14*
U.S. Cl. 208—210 **6 Claims**

A hydrocarbonaceous black oil is converted to fuel oil in a plurality of catalytic conversion zones. The first zone, containing a catalytic composite of an alumina-containing carrier material, a bismuth component and a Group VI–B component, functions to produce a hydrocarbon stream containing from 1.0% to about 2.0% by weight of sulfur, and preferably from about 1.30% to about 1.70% by weight. The subsequent conversion zone, containing a catalytic composite of a siliceous carrier material, a Group VIII metal component and a Group VI–B metal component, effects further desulfurization to a level of about 1.0% by weight, or less, the limitation currently placed on hydrocarbonaceous material utilized as fuel oil.

3,649,527

STEAM TREATMENT OF SULFUR-CONTAINING HEAVY CRUDE OIL OR OIL RESIDUE WITH A COMBINATION CATALYST COMPRISING A HYDROGENATION-DESULFURIZATION CATALYST AND AN OVERBASED JET FUEL CONTAINING AN ALKALINE EARTH OR ALKALI METAL ALKYL PHENOL COMPLEX

Armin C. Pitchford and Albert N. de Vault, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed Mar. 23, 1970, Ser. No. 22,098
Int. Cl. C10g *23/02*
U.S. Cl. 208—217 **5 Claims**

An overbased jet fuel containing dispersed alkaline earth metal carbonate, e.g., calcium carbonate, and an alkaline earth or alkali metal alkyl phenol complex, e.g., calcium octyl phenol complex, is combined with an oil soluble hydrogenation and desulfurization catalyst, e.g., nickel stearate, to provide a catalyst for a high temperature, elevated pressure steam treatment of a heavy crude oil or oil residue to generate in situ hydrogen thus reducing the specific gravity and the sulfur content of the crude and minimizing coke formation.

3,649,528

DENITROGENATION BY DISTILLATION IN PRESENCE OF ALKALI METALS

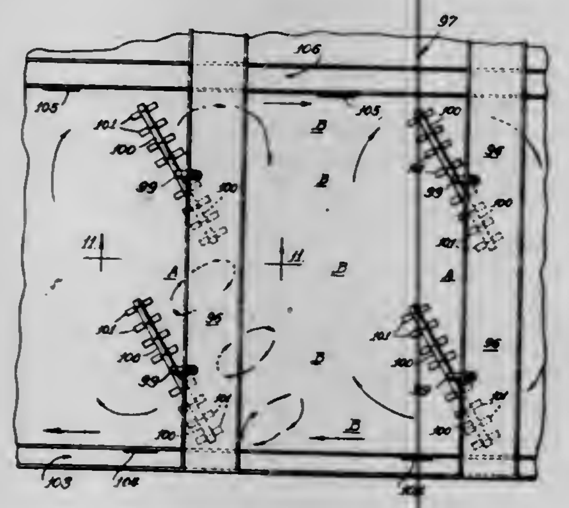
Robert Kartzmark and John M. MacDonald, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company, Linden, N.J.
No Drawing. Filed Mar. 16, 1970, Ser. No. 20,149
Int. Cl. C10g *23/02, 29/04, 31/14*
U.S. Cl. 208—294 **6 Claims**

Lubricating oil fractions are treated with finely divided dispersions of free alkali metals of one micron or less to remove non-basic and weakly basic nitrogen compounds and thereby reduce the color and increase the color stability of the oil. Finely divided sodium is particularly effective. The process is best carried out by distilling the oil from a mixture of the oil and the metal. Hydrofining either before or after the alkali metal treat or both further improves the oil.

3,649,529

COMPLETE MIX SEWAGE TREATMENT SYSTEM

James Donald Walker, Aurora, Ill., assignor to Chicago Bridge & Iron Company, Aurora, Ill.
Filed Jan. 23, 1969, Ser. No. 793,446
Int. Cl: C02c *1/12*
U.S. Cl. 210—4 **11 Claims**



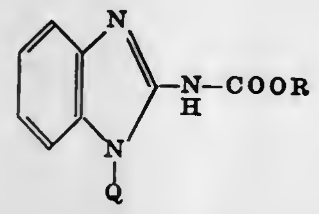
In an activated sludge sewage aeration system, aeration, mixing, and uniformity throughout a tank, are improved by liberating air along lines positioned to generate in the contents of the tank, rolls having their axes on a bias, that is, neither parallel to nor perpendicular to the tank walls or to the "general direction of flow" of the processed liquid. Preferably using a tank thus mixed, the known advantages of "complete mixing" are achieved, and may be enhanced, by feeding an intimate mixture of raw sewage and return activated sludge to the tank at feed points so scattered that no part of the tank is far from a feed point.

3,649,530

METHOD OF INCREASING THE BENEFICIAL OXIDATION OF A BIOLOGICAL SUBSTRATE WITH 2-AMINOBENZIMIDAZOLE DERIVATIVES

Norman R. Kouba, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 714,719, Mar. 20, 1968. This application July 1, 1970, Ser. No. 51,656
Int. Cl. C02c *1/00*
U.S. Cl. 210—11 **4 Claims**

2-aminobenzimidazole compounds of the formula:



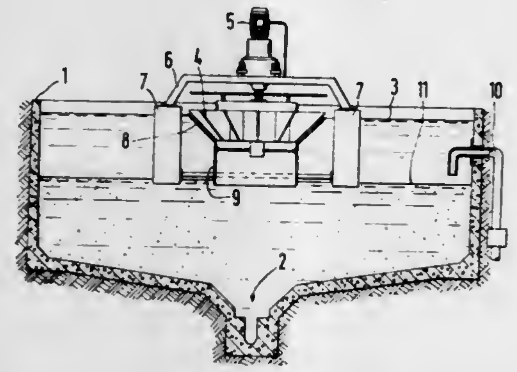
wherein Q and R are as defined hereinafter, can be used to increase the rate of biological oxidation for both sewage and agricultural fertilizers.

Exemplary of the compounds of the above formula is 1 - (butylcarbamoyl) - 2-benzimidazolecarbamic acid, methyl ester.

3,649,531

DEWATERING OF DIGESTED SLUDGE

Basil Reginald Brown and Leslie Ballentyne Wood, London, England, assignors to National Research Development Corporation, London, England
Filed Apr. 15, 1970, Ser. No. 28,645
Claims priority, application Great Britain, Apr. 18, 1969, 19,905/69
Int. Cl. C02c *1/14*
U.S. Cl. 210—10 **9 Claims**

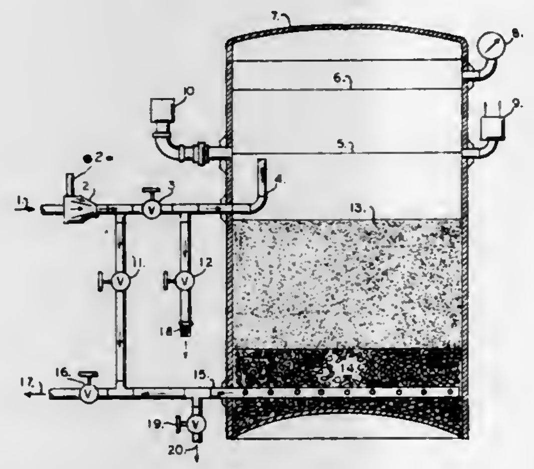


The dewatering time of a sludge obtained by anaerobic digestion of a primary sewage sludge is reduced substantially by subjecting the digested sludge to aeration with air or other suitable oxygen containing gas. Typically, aeration is carried out for at least 4 hours, the sludge is allowed to settle, and then dewatered within two days. Aeration may be carried out by means of diffused air or, preferably, by mechanical means using a surface aerator.

3,649,532

METHOD OF TREATING WATER

John Oliver McLean, Varina, Va.
(Box 288A, Rte. 14, Richmond, Va. 23702)
Filed July 20, 1970, Ser. No. 56,294
Int. Cl. C02b *1/28*
U.S. Cl. 210—48 **8 Claims**

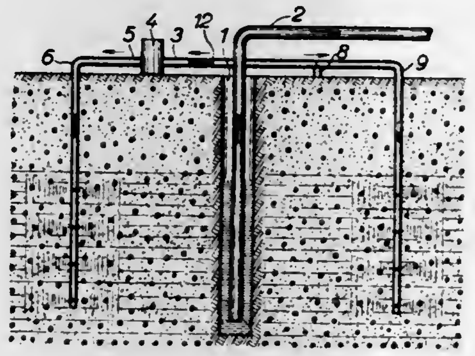


A compact, one tank system is provided for treating water from wells comprising aerating, storing, neutralizing, oxidizing and filtering in a single, relatively simple mechanical, inexpensive setup.

3,649,533

METHOD AND ARRANGEMENT FOR PURIFYING WATER DRAWN FROM A GROUND-WATER WELL

Yrjö Johannes Reijonen and Veli Elias Reijonen, both of Siltasaarenkatu 14A, Helsinki 53, Finland
Filed Feb. 4, 1970, Ser. No. 8,520
Claims priority, application Finland, Feb. 13, 1969, 453/69
Int. Cl. C02b *1/28*
U.S. Cl. 210—50 **2 Claims**

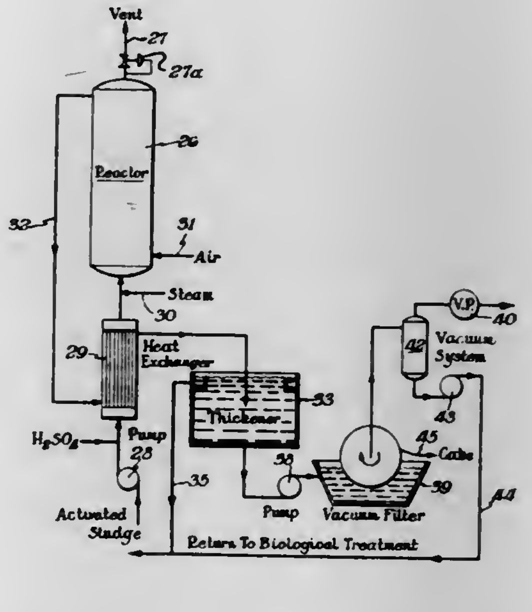


The present invention concerns a method for purifying water drawn from a ground-water well, most suitably from a deep well, from iron by introducing in the water oxygen or an oxygen-releasing substance and by filtering to remove the iron oxide which is precipitated. The method is characterized in that into the ground water-carrying soil layer surrounding the well feed water is fed which contains oxygen or an oxygen-releasing substance.

3,649,534

WET OXIDATION OF ACIDIFIED ACTIVATED SLUDGE

William Schotte, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del
Filed May 15, 1970, Ser. No. 37,704
Int. Cl. C02c *5/04*
U.S. Cl. 210—63 **2 Claims**



Improving the filterability and other properties of activated sewage sludge by oxidation of the acidified sludge for a period of about 2 hours while maintaining at a temperature of about 120–170° C.

3,649,535

PREPARATION OF FINISH COMPOSITION FOR SYNTHETIC FIBERS

John E. Clark and Michael R. Cusano, Charlotte, N.C., assignors to Standard Chemical Products, Inc., Hoboken, N.J.
No Drawing. Continuation of application Ser. No. 579,844, Sept. 16, 1966, which is a continuation-in-part of applications Ser. No. 346,390, Feb. 21, 1964, and Ser. No. 494,969, Oct. 11, 1965, which in turn is a continuation-in-part of application Ser. No. 269,186, Mar. 27, 1963. This application Apr. 17, 1970, Ser. No. 28,249
Int. Cl. D06m *1/18, 3/20*
U.S. Cl. 252—8.75 **23 Claims**

Finish compositions for imparting anti-static and lubricating properties to synthetic fibers comprising (A) an amine salt of a çarboxylic acid ester of an α-sulfonated fatty acid and (B) a high molecular weight fatty acid ester and method of treating synthetic fibers.

3,649,536

SYNERGISTIC COMPOSITION AND USE THEREOF

Edwin J. Latos, Chicago, and Robert H. Rosenwald, Western Springs, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 591,990, Nov. 4, 1966. This application Jan. 30, 1970, Ser. No. 7,209
Int. Cl. C10m *1/46*
U.S. Cl. 252—32.5 **11 Claims**

Synergistic mixture of (1) the reaction product of from one to two mole proportions of amino compound and one mole proportion of polyhalopolyhydropolycyclicdicarboxylic acid or anhydride and (2) salt of acid orthophosphate and amino compound. The composition is used as an additive to organic substrates and particularly in lubricating oils.

3,649,537

LUBRICANT CONTAINING β-KETOLS

Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed July 1, 1970, Ser. No. 51,705

Int. Cl. C10m *1/20, 1/22*

U.S. Cl. 252—49.5 **8 Claims**

A lubricant composition comprising a major portion of a carrier fluid and a minor effective portion of a β-ketol of from 11 to 40 carbons atoms containing an alkyl group of from 8 to 30 carbon atoms in chain length.

3,649,538

DIOL-CONTAINING ALUMINUM LUBRICANT

Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 853,474, Aug. 27, 1969. This application Dec. 29, 1969, Ser. No. 888,806

Int. Cl. C10m *1/22, 1/30*

U.S. Cl. 252—49.3 **11 Claims**

A process for lubricating aluminum and aluminum alloys by applying to the metal surface a lubricant comprising a major portion of a carrier fluid, such as mineral oil, hydrocarbon oil, halogenated or oxygenated hydrocarbons, or water, and a minor portion of a C_{10}–C_{30} α- or β-diol. The diol is present as 0.1–30 volume percent of the lubricant.

3,649,539

PIEZOELECTRIC CERAMIC COMPOSITIONS

Masamitsu Nishida and Hiromu Ouchi, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 3, 1969, Ser. No. 813,210

Claims priority, application Japan, Apr. 3, 1968, 43/22,496

Int. Cl. C04b *35/46, 35/48*

U.S. Cl. 252—62.9 **8 Claims**

Piezoelectric ceramic compositions having very high mechanical quality factors and electromechanical coupling coefficients and high stabilities in resonant frequency and mechanical quality factor over a wide temperature range comprising the solid solutions defined by the lines connecting points A, B, C, D, E, and F; the lines connecting points G, H, I, J, K and L, and the lines connecting points M, N, O, P and Q of the diagram of FIG. 2 and further containing from 0.1 to 5 weight percent of MnO_2.

3,649,540

PIEZOELECTRIC CERAMIC COMPOSITIONS

Masamitsu Nishida, Osaka-shi, and Hiromu Ouchi, Toyonaka-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 5, 1969, Ser. No. 855,575

Claims priority, application Japan, Oct. 1, 1968, 43/72,062

The portion of the term of the patent subsequent to Sept. 29, 1987, has been disclaimed

Int. Cl. C04b *35/46, 35/48*

U.S. Cl. 252—62.9 **5 Claims**

Piezoelectric ceramic compositions having very high mechanical quality factors and electromechanical coupling coefficents and high stabilities in resonant frequency and mechanical quality factor over a wide temperature range comprising the solid solutions of

$$Pb(Cu_{1/4}Nb_{3/4})O_3\text{-}PbTiO_3\text{-}PbZrO_3$$

defined by the lines connecting points A, B, C, D and E and the lines connecting F, G, H, I, J and K of the diagram of FIG. 2 and further containing from 0.1 to 3 weight percent of MnO_2.

3,649,541

MAGNETIC RECORDING ELEMENTS CONTAINING STABILIZED CHROMIUM DIOXIDE, A POLYURETHANE BINDER, AND AN ISOCYANATE HARDENING AGENT

Henry Gilbert Ingersoll, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 10, 1969, Ser. No. 840,845

Int. Cl. H01j *1/26;* **G11b** *5/70*

U.S. Cl. 252—62.54 **11 Claims**

Magnetic recording compositions contain at least 75% by weight of particulate ferromagnetic chromium oxide, stabilized against reductive degradation, in a binder comprising a non-reactive, preformed polyurethane resin (optionally with other resins) and a polyfunctional isocyanate hardening agent. The compositions are useful for making magnetic recording members, e.g., tapes, discs, cylinders and the like.

3,649,542

DIELECTRIC COMPOSITIONS FOR HIGH-VOLTAGE APPLICATION

Morikuni Hasebe, Teruo Fukuda, and Hisatomo Furusawa, Yokohama-shi, Kanagawa-ken, and Hironori Matsuba, Kawasaki-shi, Kanagawa-ken, Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan

Filed Jan. 22, 1969, Ser. No. 793,069

Claims priority, application Japan, Jan. 22, 1968, 43/3,581

Int. Cl. C08f *45/62;* **H01b** *3/18*

U.S. Cl. 252—63.5 **3 Claims**

Plastic dielectric compositions, specifically useful for high-voltage insulation, said composition containing a resin as the major component and a minor amount of an organic compound partially compatible with the resin, which organic compound is converted into a substance having a surface resistivity of less than $10^{12}\Omega$ when exposed to electrical discharges. Insulation produced from such compositions are stable over a long period of time at high voltages.

3,649,543

COMBINATIONS OF HYDROXYALKYL-N-METHYL TAURINES AND ANIONIC SURFACTANTS AS SYNERGISTIC EMULSIFIERS

Arno Cahn, Pearl River, N.Y., Joseph Anthony Ackilli, Dover, Del., and Frank Emery Carroll, Wyckoff, N.J., assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 573,192, Aug. 18, 1966. This application May 26, 1969, Ser. No. 828,002

Int. Cl. B01f *17/00;* **C11d** *1/18, 3/066*

U.S. Cl. 252—526 **5 Claims**

Emulsifying agents characterized by unusual mildness toward the skin are described which consist essentially of a synergistic combination of a water soluble taurine salt of the general formula:

$$R_1—CH(OH)—CH_2—N(CH_3)—CH_2—CH_2—SO_3M$$

wherein R_1 is selected from the group consisting of alkyl and oxaalkyl radicals having from 10 to 18 carbon atoms and M is a water-solubilizing cation and a surface active organic sulfate or sulfonate detergent, the organic portion of which consists of the atoms C, H, O or amido nitrogen and having from 8 to 20 carbon atoms. The taurine salt is preferbaly present in a weight ratio of approximately 1:3 to 3:1 with the sulfate or sulfonate detergent ingredient.

3,649,544

SKIN PROTECTIVE WASHING AND CLEANSING COMPOSITIONS

Ernst Gotte, Ratingen-Tiefenbroich, and Rudi Heyden, Dusseldorf, Germany, assignors to Henkel & Cie, G.m.b.H., Dusseldorf-Holthausen, Germany

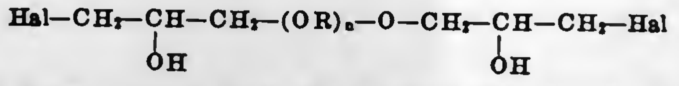
No Drawing. Filed Nov. 14, 1968, Ser. No. 775,908

Claims priority, application Germany, Dec. 14, 1967, H 64,775

Int. Cl. C11d *1/22, 1/831, 3/30*

U.S. Cl. 252—544 **4 Claims**

Washing and cleansing compositions having a content of anionic surface active agents and an effective amount of a skin-protective polyamine derivative, said polyamine derivative being in a form selected from the group consisting of water-dispersible polyamine derivatives and water-soluble acid addition salts thereof and being the reaction product of 1 mol of a bis-halohydrinether of the formula



$$\mathrm{Hal{-}CH_2{-}}\underset{\mathrm{OH}}{\underset{|}{\mathrm{CH}}}\mathrm{{-}CH_2{-}(OR)_n{-}O{-}CH_2{-}}\underset{\mathrm{OH}}{\underset{|}{\mathrm{CH}}}\mathrm{{-}CH_2{-}Hal}$$

and from 1 to 2 mols of a polyalkyleneamine of the formula

$$NH_2—(R'—NH)_m—R'—NH_2$$

wherein R is selected from the group consisting of ethylene, propylene, butylene, pentamethylene and hexamethylene, R′ is selected from the group consisting of R and cyclohexylene, Hal represents a halogen, *m* represents an integer from 1 to 5 and *n* represents an integer from 1 to 20.

3,649,545

SYNTHETIC DETERGENT IN MASSES AND THEIR MANUFACTURING METHODS

Rinnosuke Susuki, Tokyo, Hiroshi Hoshi, Narashino-shi, and Jiro Saito and Kiyoshi Moriki, Tokyo, Japan, assignors to Raion Yushi Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1970, Ser. No. 3,103

Claims priority, application Japan, Jan. 16, 1969, 44/3,251; Feb. 8, 1969, 44/9,537; May 15, 1969, 44/44,734; May 16, 1969, 44/45,036

Int. Cl. C11d *17/04*

U.S. Cl. 252—174 **10 Claims**

Synthetic detergent in solid masses and in hollow masses. Said solid masses are produced by first preparing a slurry of synthetic detergent containing a relatively large amount of sodium silicate with or without a foaming agent, then either placing the slurry in a mold or on a tray without the use of a mold, and drying the slurry with heat to form masses or cakes of specific shape corresponding to the cavity of the mold or to form masses of non-specific shape. The hollow masses are produced by heat-drying a slurry either in a mold or on a tray to fully foam the slurry by utilizing the foaming agent and/or the moisture contained in the slurry. The heat-drying in this invention does not rely on the conventional spray-drying process which requires an expensive, large scale apparatus. Synthetic detergent in masses has many unprecedented advantages over conventional detergents available in powder or granular form.

3,649,546

NON-HAZARDOUS KETONE PEROXIDE POLYMERIZATION INITIATORS

Chester M. McCloskey, Altadena, and Donald E. Rees and George Hoff, Glendora, Calif., assignors to The Norac Company, Inc., Azusa, Calif.

No Drawing. Continuation-in-part of applications Ser. No. 638,643, May 15, 1967, and Ser. No. 653,617, July 17, 1967. This application Aug. 17, 1970, Ser. No. 64,661

Int. Cl. C07c *73/00;* **C08f** *1/60*

U.S. Cl. 252—186 **20 Claims**

Esters boiling from 140–250° C. are disclosed as effective phlegmatizers for lower ketone peroxides.

3,649,547

CALCIUM POLYACRYLATE COMPOSITION AND METHOD FOR TREATING CALCIUM SALT CONTAMINATED LOW-SOLIDS DRILLING FLUIDS

James L. Lummus and Duane B. Anderson, Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

No Drawing. Filed Jan. 9, 1970, Ser. No. 1,845

Int. Cl. C10m *7/02, 7/26, 7/34*

U.S. Cl. 252—181 **12 Claims**

Certain calcium salts of partially hydrolyzed polyacrylonitrile are used to treat low-solids well drilling fluid in combination with certain water-soluble salts such as sodium carbonate to reduce fluid loss in such a way that fluid loss characteristics do not change when calcium or other metal ions having a valence of at least two are encountered during drilling. The material is especially useful in treating certain polymer-treated drilling mud.

3,649,548

NON-HAZARDOUS KETONE PEROXIDE POLYMERIZATION INITIATORS

Chester M. McCloskey, Altadena, and Donald E. Rees and George Hoff, Glendora, Calif., assignors to The Norac Company, Inc., Azusa, Calif.

No Drawing. Continuation-in-part of application Ser. No. 638,643, May 15, 1967. This application Aug. 17, 1970, Ser. No. 64,662

Int. Cl. C07c *73/00;* **C08f** *1/60*

U.S. Cl. 252—186 **10 Claims**

Nonhazardous ketone peroxide compositions are prepared by the addition of chlorooctanes, and ethers boiling from 170 to 195° C.

3,649,549

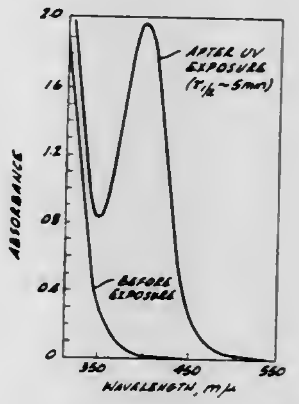
STRUCTURES FOR PHOTOCHROMIC COMPOUNDS

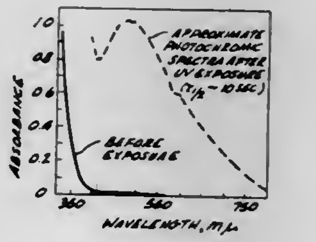
John D. Margerum, Chatsworth, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 19, 1967, Ser. No. 676,544

Int. Cl. F21v *5/24*

U.S. Cl. 252—300 **4 Claims**





The disclosure herein relates to reversible phototropic systems, compounds and compositions and the discovery of photochromic structures which regularly undergo reversible phototropism as photo-induced reversible color change in water and water containing substrates including particularly the control of their back reactions and the method of use thereof by providing a multiple color and color change indicator and/or light filters.

3,649,550
LUMINESCENT MANGANESE-ACTIVATED STRONTIUM BARIUM CHLORO-ALUMINATE PHOSPHOR COMPOSITION, PROCESS AND LAMP

Charles F. Chenot, Towanda, Pa., assignor to Sylvania Electric Products Inc., Seneca Falls, N.Y.
Filed July 27, 1970, Ser. No. 58,241
Int. Cl. C09k *1/68*
U.S. Cl. 252—301.4 R **9 Claims**

Cerium sensitized, manganese-activated strontium barium chloro-aluminate phosphor compositions are disclosed wherein the formula for the phosphor can be characterized as follows:

$$Sr_xBa_yCl_zAl_2O_{4-z/2}:Mn_uCe_w$$

wherein the sum of x and y is between 0.87 to about 0.95, z is between about 1.08 to about 1.16, u and w are each from about 0.005 to 0.05. A process for producing the phosphor composition is also disclosed wherein sources of strontium, barium, chloride, aluminate, manganous and cerous ions are uniformly admixed by blending and heated under controlled temperature conditions for a time sufficient to produce the luminescent phosphor composition. Additionally, an improved lamp utilizing a cerium-sensitized, manganese-activated strontium barium chloro-aluminate phosphor is disclosed.

3,649,551
GLASSY ACETATE MATERIAL

Roger F. Bartholomew, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 773,319, Nov. 4, 1968. This application Sept. 8, 1970, Ser. No. 70,592
Int. Cl. C03c *3/30;* **C07c** *53/08;* **C09k** *1/02*
U.S. Cl. 252—301.2 R **8 Claims**

This invention relates to the production of anhydrous glassy materials through the fusion of certain monovalent and divalent metal acetates alone or the fusion together of combinations of various monovalent and divalent metal acetates.

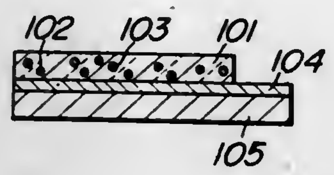
3,649,552
METHOD FOR PREPARING HIGH QUALITY RARE EARTH AND ALKALINE EARTH FLUORIDE SINGLE CRYSTALS

Morton Robinson, Granada Hills, and Donald M. Cripe, Santa Monica, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Mar. 31, 1967, Ser. No. 627,355
Int. Cl. C09k *1/04*
U.S. Cl. 252—301.4 **6 Claims**

Laser quality crystals of alkaline earth and rare earth fluorides, including mixtures thereof, which are purified of oxides and oxyfluorides during crystal growth. Purification is effected by an ion-exchange technique and by reaction with hydrogen fluoride as a scavenger of oxide impurities primarily by means of a modified Stockbarger-type furnace. The melt in the furnace is subjected to HF gas throughout crystal growth to prevent hydrolysis caused by small quantities of water vapor in the HF/He atmosphere and/or generated by furnace outgassing. Purification methods have resulted in crystals transparent to 0.14 micron.

3,649,553
SEMICONDUCTIVE ELECTRO-LUMINESCENT ELEMENT

Kazunobu Tanaka, Kawasaki-shi, and Tadao Kohashi, Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 21, 1967, Ser. No. 684,713
Claims priority, application Japan, Dec. 2, 1966, 41/79,463; Dec. 5, 1966, 41/80,733
Int. Cl. C09k *1/12*
U.S. Cl. 252—301.5 **4 Claims**



A semiconductive electro-luminescent element having an ohmic resistivity of from 10^5 to 10^8 ohm-cm. wherein a mixture of electroluminescent powder metal oxide powder having a good reflectivity to the light emitted by the electro-luminescent powder and glassy binding agent powder is applied to a nesa glass plate. The grain size of the glassy powder is smaller than that of the metal oxide powder which in turn is smaller than that of the electro-luminescent powder. The softening point of the glassy binding agent is lower than the firing temperature which in turn is lower than the softening point of the glass plate. The element is useful as an electro-luminescent element for a solid state image intensifier.

3,649,554
PHOSPHOR COMPOSITIONS AND PROCESSES FOR PRODUCING SAME

David A. Grisafe, Lawrence, Kans., assignor to Sylvania Electric Products Inc.
Continuation-in-part of application Ser. No. 834,905, June 19, 1969. This application Nov. 16, 1970, Ser. No. 89,624
Int. Cl. C09k *1/54*
U.S. Cl. 252—301.6 F **8 Claims**

A phosphor composition is disclosed that can be represented by the formula:

$$x(Li_2O).y(ZnO).3GeO_2:zMn$$

wherein $x+y+z$ is from greater than about 1.9 to 2, x and y are each from 0.9 to 1.0, $x+y$ is at least 1.9 and z is from about 0.001 to 0.1. A process is disclosed that comprises forming a mixture of appropriate metal sources and heating the mixture under controlled condition to produce the phosphor compositions of this invention.

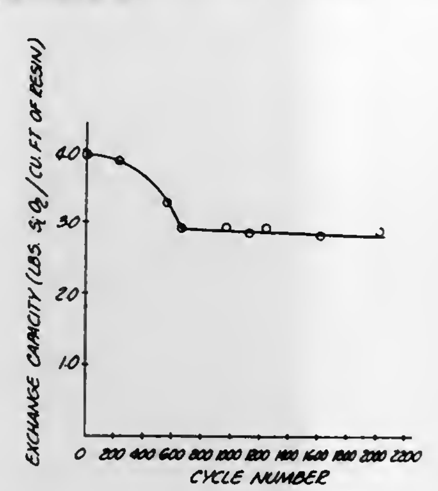
3,649,555
PHOSPHOR COMPOSITIONS AND PROCESS FOR UPGRADING YTTRIUM ORTHOVANADATE PHOSPHORS

James E. Mathers, Ulster, and Sam Z. Toma, Towanda, Pa., assignors to Sylvania Electric Products Inc.
No Drawing. Filed Sept. 8, 1970, Ser. No. 70,516
Int. Cl. C09k *11/14, 1/10, 1/12*
U.S. Cl. 252—301.65 **4 Claims**

A red-emitting phosphor composition for cathode ray tubes consisting essentially of a red-emitting cathodo-luminescent phosphor selected from the group consisting of yttrium oxide and yttrium oxysulfide as a first component and as second component a substantially uniform blend consisting essentially of from about 90% to about 99.5% by weight of europium-activated yttrium orthovanadate and from about 0.5% to about 10% by weight of a yellow-emitting silver activated zinc cadmium sulfide.

3,649,556
PRODUCTION OF POLYSILICIC ACID BY ION EXCHANGE

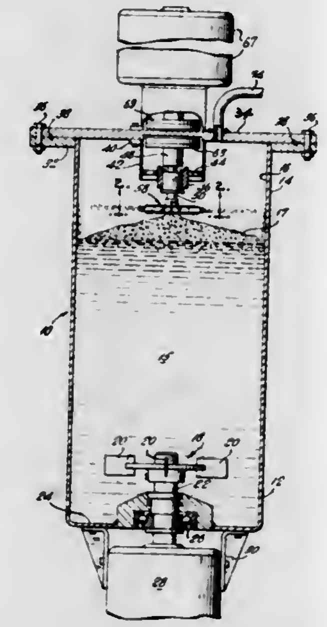
George W. Hoffman, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 669,171, Sept. 20, 1967. This application July 22, 1970, Ser. No. 57,684
Int. Cl. B01j *13/00;* **C01b** *33/14*
U.S. Cl. 252—313 S **6 Claims**



The invention provides a process of converting an alkali metal silicate, such as sodium silicate, to polysilicic acid by the use of a cation exchange resin bed. Degradation of the resin and clogging of the bed by silica gel are avoided by the combined use of a macroreticular resin; the use of a follower rinse of dilute sodium hydroxide; and subsequent water rinses in both forward and reverse directions; followed by acid regeneration; followed by water rinses in the forward and reverse directions. This combination of features enables the use of relatively concentrated silicate solutions, and recycling for thousands of cycles using the same resin bed. A preferred resin is a macroreticular sulfonated co-polymer of styrene and di-vinylbenzene; a preferred alkali metal silicate is sodium silicate having a $SiO_2:Na_2O$ ratio of 3.75:1; and, preferred regenerating acids are sulfuric and hydrochloric.

3,649,557
CENTRIFUGAL MECHANICAL DEFOAMER

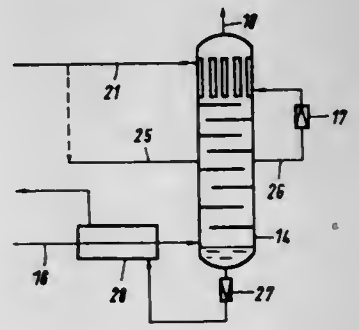
David Freedman, Highland Park, and Sanford J. Tick, Millington, N.J., assignors to New Brunswick Scientific Co., Inc.
Filed Oct. 14, 1969, Ser. No. 866,291
Int. Cl. B01d *19/00, 53/06*
U.S. Cl. 252—361 **5 Claims**



A defoamer which breaks up foam by centrifugal, mechanical action. The defoamer includes a vessel having an inner surface which surrounds and defines a foam region where foam will normally be located. Situated in this foam region is a rotary impeller which acts centrifugally on the foam to subject the latter to centrifugal action as well as to impact the foam against the inner surface of the vessel which defines the foam region thereof. As a result of these actions derived from the rotary impeller the foam is broken up into its gaseous and liquid phases, so that the liquid phase can flow back down to a lower liquid region of the vessel while the gaseous phase can escape from the interior of the vessel.

3,649,558
PROCESS AND APPARATUS FOR THE PRODUCTION OF AMMONIA SYNTHESIS GAS

Gerhard Linde, Munich, Walter Scholz, Wolfratshausen, and Rudolf Becker, Munich, Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany
Filed Aug. 22, 1968, Ser. No. 754,652
Claims priority, application Germany, Aug. 29, 1967, L 57,318
Int. Cl. C01b *2/30;* **F25j** *3/02;* **C01c** *1/04*
U.S. Cl. 252—376 **15 Claims**



Ammonia synthesis gas is produced from gases containing hydrogen and hydrocarbons by subjecting the hydrocarbons to partial oxidation with air, removing the main quantity of the higher boiling components, cooling the remaining gaseous mixture to liquefy a portion of the nitrogen therein and scrubbing the remaining impurities from the nitrogen-hydrogen mixture in a rectification column. Additional reflux liquid is obtained by one or more of the following techniques:

(a) withdrawing a portion of the liquid nitrogen after scrubbing from a mid-portion in the rectification column several plates below said head condenser, evaporating said withdrawn portion and partly recycling said evaporated portion to the rectification column at approximately the mid-portion thereof;
(d) admixing re-evaporated scrubbing agent to the crude gas before partial oxidation thereof;
(c) admixing part of the re-evaporated scrubbing agent to the gas to be separated; and recycling a portion of waste gas from an ammonia synthesis cycle to the gas to be separated. There is also provided apparatus for the above processes.

3,649,559
OXIDATIVE REGENERATING CRYSTALLINE ALUMINO-SILICATES WITH RECYCLE GAS TREATMENT

David E. Cooper, Greenville, S.C., assignor to Texaco Inc., New York, N.Y.
Filed June 27, 1967, Ser. No. 670,482
Int. Cl. B01j *11/04, 11/72*
U.S. Cl. 252—416 **2 Claims**

A circulating oxidizing gas stream used to regenerate a bed of crystalline aluminosilicates is oxidized external to the bed to remove oxidizables from the effluent stream before it is recycled back to the bed. As an alternate to the oxidation, the oxidizables are removed from the effluent stream in an adsorption step.

3,649,560
OXIDATIVE DEHYDROGENATION CATALYSTS

Louis J. Croce, Seabrook, Tex., and Laimonis Bajars, Princeton, N.J., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Original application Mar. 28, 1968, Ser. No. 716,986, now Patent No. 3,607,966, dated Sept. 21, 1971. Divided and this application Sept. 14, 1970, Ser. No. 72,188

Int. Cl. B01j *11/82*

U.S. Cl. 252—432 **2 Claims**

Compositions of matter comprising ferrites of magnesium, manganese, cobalt, nickel, zinc or cadmium modified with boron and a process of oxidative dehydrogenation by feeding oxygen to a reactor containing these compositions.

3,649,561
CATALYST FOR MAKING HIGH MOLECULAR WEIGHT STEREOREGULAR POLYMERS FROM OLEFIN OXIDES AND SULFIDES

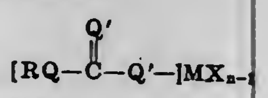
Joginder Lal, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Original application Dec. 18, 1968, Ser. No. 784,773, now Patent No. 3,632,784, dated Jan. 4, 1972. Divided and this application Feb. 13, 1970, Ser. No. 14,896

Int. Cl. C08g *23/06, 23/14*

U.S. Cl. 252—431 R **5 Claims**

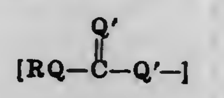
An olefin oxide or sulfide polymerization catalyst consisting of a mixture of (I) the metal-containing reaction product of an alcohol, phenol or mercaptan with a compound having the formula



$$[RQ-\overset{Q'}{\overset{\|}{C}}-Q'-]MX_{n-1}$$

and (II) MR''_n, wherein

R is monovalent hydrocarbon, oxyhydrocarbon or thiohydrocarbon containing up to 10 carbon atoms,
R'' is monovalent hydrocarbon containing up to 14 carbon atoms,
Q is oxygen or sulfur,
Q' is oxygen or sulfur and at least one Q' in each molecule is sulfur,
M is Zn, Cd, Mg or Al,
n is the valence of M, and
X is monovalent halide, alkoxy, thioalkyl or



$$[RQ-\overset{Q'}{\overset{\|}{C}}-Q'-]$$

3,649,562
CATALYST FOR THE OXIDATION AND AMMOXIDATION OF OLEFINS

Robert E. Lane, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 26, 1969, Ser. No. 827,956

Int. Cl. B01j *11/74*

U.S. Cl. 252—439 **2 Claims**

A catalyst for preparing aldehydes and nitriles by reacting an olefin, or an unsaturated alcohol or ether, and O_2, or O_2 and NH_3. The catalyst consists essentially of the mixed oxides of Fe, Mo, Te and at least one of Re, Mn and V.

3,649,563
CATALYST COMPOSITION

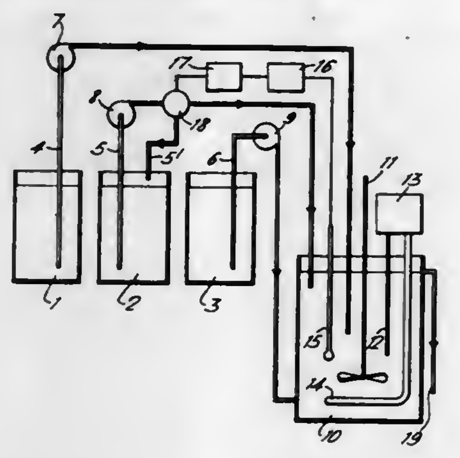
Ebo Jan Holscher, Cornelis Okkerse, and Adrianus Rozendaal, Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Aug. 28, 1969, Ser. No. 853,868

Int. Cl. B01j *1/22*

U.S. Cl. 252—459 **8 Claims**

A process for preparing a nickel-on-silica catalyst using sodium hydroxide at a pH of 7 to 10.5 as the precipitating agent for the nickel in which a catalyst with improved selectivity without loss of activity is obtained by subjecting the precipitated nickel hydroxide on silica to an aqueous heating step at 50° C. to 120° C. and at pH 11 to 13.5 before drying and activating the catalyst.



3,649,564
DEHYDROGENATION CATALYST CONTAINING PLATINUM, RHENIUM, GERMANIUM AND AN ALKALI OR ALKALINE EARTH METAL

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 839,086, July 3, 1969. This application Feb. 24, 1970, Ser. No. 13,777

Int. Cl. B01j *11/08*

U.S. Cl. 252—466 PT **13 Claims**

Dehydrogenatable hydrocarbons are dehydrogenated by contacting them at dehydrogenation conditions with a catalytic composite comprising a combination of catalytically effective amounts of a platinum group component, a rhenium component, a germanium component and an alkali or alkaline earth metal with a porous carrier material. A specific example of the catalytic composite disclosed herein is a combination of a platinum component, a rhenium component, a germanium component and an alkali or alkaline earth component with an alumina carrier material, wherein the components are present in amounts sufficient to result in the composite containing, on an elemental basis, 0.01 to 2 wt. percent platinum, 0.01 to 2 wt. percent rhenium, 0.01 to 5 wt. percent germanium and 0.1 to 5 wt. percent of alkali or alkaline earth metal.

3,649,565
DEHYDROGENATION METHOD AND CATALYTIC COMPOSITE FOR USE THEREIN

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 835,218, June 20, 1969. This application Oct. 20, 1969, Ser. No. 867,861

Int. Cl. B01j *11/08*

U.S. Cl. 252—466 PT **6 Claims**

Dehydrogenatable hydrocarbons are dehydrogenated by contacting them at dehydrogenation conditions with a catalytic composite comprising a combination of catalytically effective amounts of a platinum group component and a lead component with a porous carrier material. A specific example of the catalytic composite disclosed herein is a combination of a platinum component, a lead component and an alkali or alkaline earth component with a porous carrier material wherein the platinum and lead components are uniformly distributed throughout the porous carrier material, wherein the composite contains about 0.01 to about 2 wt. percent of platinum and about 0.01 to about 5 wt. percent of the alkali metal or alkaline earth metal and wherein the lead component is present in an amount sufficient to result in an atomic ratio of lead to platinum of about 0.05:1 to about 0.9:1.

3,649,566
DEHYDROGENATION CATALYSTS CONTAINING PLATINUM, RHENIUM, A GROUP VI TRANSITION METAL AND AN ALKALI OR ALKALINE EARTH METAL

John C. Hayes, Palatine, and Ernest L. Pollitzer, Skokie, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 723,895, Apr. 24, 1968. This application Jan. 12, 1970, Ser. No. 2,435

Int. Cl. B01j *11/08*

U.S. Cl. 252—470 **10 Claims**

Dehydrogenatable hydrocarbons are dehydrogenated by contacting them at dehydrogenation conditions with a catalytic composite comprising a combination of catalytically effective amounts of a platinum group component, a rhenium component, a Group VI transition metal component and an alkali or alkaline earth metal component with a porous carrier material. A specific example of the catalytic composite disclosed herein is a combination of platinum, rhenium, tungsten and alkali or alkaline earth metal with a gamma-alumina carrier material in amounts sufficient to result in the composite containing, on an elemental basis, about 0.05 to 1 wt. percent platinium, about 0.05 to 1 wt. percent rhenium, about 0.01 to 1 wt. percent tungsten and about 0.1 to 5 wt. percent of the alkali or alkaline earth metal.

3,649,567
METALLIZING COMPOSITIONS WHICH YIELD COATINGS HAVING UNOBJECTIONABLE BACKSIDE COLOR

Oliver A. Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 30, 1969, Ser. No. 820,635

Int. Cl. H01b *1/02;* **C03c** *17/00*

U.S. Cl. 252—514 **12 Claims**

The metallizing compositions comprise silver, inorganic binder and a salt from the group consisting of alkali metal salts, alkaline earth metal salts and mixtures thereof, wherein the salts are present in amounts which yield from 0.1–10% of the metal ion upon firing. These metallizing compositions are applied to glass substrates and fired to produce metallic coatings having a silvery gray color on both the back and front side of the glass, thus eliminating the previously objectionable backside color (e.g., tan-deep olive).

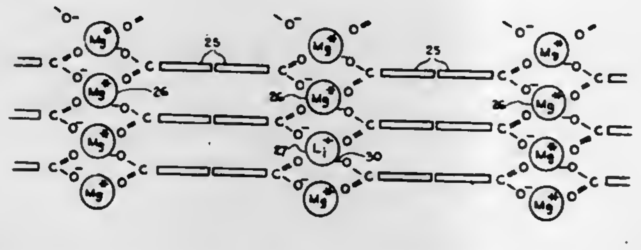
3,649,568
ION SELECTIVE ELECTRODES

Pauline P. Ho, Syracuse, N.Y., assignor to Syracuse University Research Corporation, Syracuse, N.Y.

Filed Oct. 15, 1969, Ser. No. 866,570

Int. Cl. C11c *1/00;* **H01b** *1/06;* **H01l** *3/00*

U.S. Cl. 252—521 **2 Claims**



Electrodes for detecting and measuring the concentration of the cation of an alkaline earth metal are made by melting a stearate of the metal doped with the like stearate of another metal having a different valence and having an ion whose ionic radius is near to that of the alkaline earth metal ion. A large crystal is then grown by a known single-pull zone refinement apparatus and the crystal utilized in a wet electrode. When the electrode is placed in a solution containing the ion of the alkaline earth metal used the crystal displays a change in electric potential which may be measured.

3,649,569
TEXTILE TREATING COMPOUNDS, COMPOSITIONS AND PROCESSES FOR TREATING TEXTILES

Charles Bruce McCarty, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of application Ser. No. 648,527, June 5, 1967. This application May 29, 1969, Ser. No. 829,093

Int. Cl. D06m *13/30*

U.S. Cl. 252—543 **17 Claims**

Novel softening compounds having one long alkyl group containing 20 to 30 carbon atoms, i.e., zwitterionic, tertiary phosphine oxide and anionic sulfonate compounds; novel liquid and solid detergent softener compositions containing said novel softening compounds or ethoxylated alcohol, ethoxylated alcohol sulfate or tertiary amine oxide compounds having an alkyl group containing 20 to 30 carbon atoms. said compositions also containing either a conventional organic detergent, a brightening agent, alkaline detergency builder salts or mixtures thereof; processes for the softening of textiles during the wash or rinse cycle of the laundering process employing critical amounts of said softening compounds.

3,649,570
LUBRICANT COMPOSITIONS

Raymond H. Boehringer, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Filed Sept. 24, 1969, Ser. No. 860,831

Int. Cl. C10m *1/26*

U.S. Cl. 252—56 S **4 Claims**

Lubricant compositions containing a polyester are prepared from short-chain dicarboxylic acids containing from 6 to 13 carbon atoms, polyols, and monobasic carboxylic acid chain terminators refined with a glycidyl ester of an aliphatic acid having from about 5 to 22 carbon atoms.

3,649,571
CATIONICALLY DYEABLE POLYESTER

Max H. Keck, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed June 1, 1970, Ser. No. 42,517

Int. Cl. C08g *17/06, 17/16;* **D06p** *3/52*

U.S. Cl. 260—22 D **10 Claims**

Polyethylene terephthalate and its copolyesters are rendered cationically dyeable by incorporating in the polyester about 0.5 or 1.0 to 15.0 or 20.0 weight percent (preferably 3 to 7 weight percent) of the product of the reaction of dimer or trimer acid with the sodium salt of isethionic acid.

3,649,572
EPOXY FOAMS

Thomas J. Hairston, College Station, and Wayne E. Presley and Stephen P. Edwards, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 28, 1969, Ser. No. 820,710

Int. Cl. C08g *53/10*

U.S. Cl. 260—2.5 EP **13 Claims**

This invention relates to epoxy resin foams having good physical properties and being free of scorching in thicknesses up to at least two inches. Such foams are prepared by curing an epoxy resin with an amine in the presence of a phenolic promoter while expanding with a volatile agent wherein the composition has a W_s value of not less than about 270, and an M_b value of not greater than about 320. When the phenolic promoter is 2.5 functional or higher and is used to replace part of the amine curing agent under the conditions defined herein, the limit of M_b is increased to a maximum of 380 as the proportion of phenolic promoter is increased. The W_s limit, however, remains at 270.

3,649,573

SULFUR-CURABLE COMPOSITIONS COMPRISING AMORPHOUS OLEFIN COPOLYMERS AND DIENE RUBBERS

Seimei Yasui, Takatsuki-shi, Masaaki Hirooka, Ibaragi-shi, and Teruo Oshima, Nishinomiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Feb. 11, 1969, Ser. No. 798,448
Claims priority, application Japan, Feb. 20, 1968, 43/10,963
Int. Cl. C08c *9/08;* **C08f** *29/12*
U.S. Cl. 260—5 **4 Claims**

A sulfur-curable composition consisting essentially of 95 to 5% by weight of at least one amorphous olefinic copolymer having a main chain consisting essentially of ethylene and at least one α-olefin of 3 to 20 carbon atoms, and having at least one side chain containing hydrocarbon group having at least two acyclic carbon-carbon double bonds, and having 0.08 to 1.2 moles of the said double bonds per 100 g. of the copolymer, and 5 to 95% by weight of at least one diene rubber having at least 0.8 mole of double bonds per 100 g. of the diene rubber. The composition has an increased compatibility between the copolymer and the diene rubber owing to the presence of the unsaturated side chain of the copolymer and a highly improved co-curability.

3,649,574

FLEXIBLE SEALANT COMPOSITION

Robert C. Cole, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

No Drawing. Filed Oct. 29, 1968, Ser. No. 771,631
Int. Cl. C08f *45/04, 45/18, 45/34*
U.S. Cl. 260—17.4 R **9 Claims**

This invention relates to a flexible sealant, capable of setting in the absence of a polymerization catalyst, comprising an acrylamide monomer, a polyfunctional cross-linking agent such as an alkylidene bisacrylamide, a polyol containing at least three hydroxy groups such as glycerol and a diol such as ethylene glycol. The sealant is particularly useful in grouting applications where high electrical resistivity is desired and may be used for stabilizing soil, consolidating loose sand, grouting and bridging or plugging openings of vugular and/or fractured formations.

3,649,575

STABLE PREPARATIONS FOR FINISHING WOOL

Rosemarie Toepfl, Basel, Heinz Abel, Reinach, Arthur Maeder, Therwil, and Alberto Deflorin, Riehen, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed Apr. 1, 1970, Ser. No. 24,889
Claims priority, application Switzerland, Apr. 10, 1969, 5,565/69
Int. Cl. C08g *45/10;* **D06m** *3/02*
U.S. Cl. 260—21 **11 Claims**

A stable preparation of reaction products is provided, which is prepared by reacting a basic polyamide with a reaction product of an epoxide and an aminoplast precondensate, an at least dihydric alcohol, a dicarboxylic acid or an anhydride of a dicarboxylic acid. The polyamides are made from polymeric unsaturated fatty acids and polyalkylene polyamines. The equivalent ratio of the amino groups of the polyamide to the epoxide groups of the epoxide reaction product is 1:1 to 5:1. The pH-value of the preparation is from 2 to 8. The resulting preparations are useful in the textile industry e.g. for rendering wool non-felting. Especially suitable are the preparations when applied in combination with a dyeing process.

3,649,576

COBALT II HALIDE COMPLEXES OF UNIDENTATE LIGANDS

Christian H. Stapfer, Newtown, Pa., assignor to Carlisle Chemical Works, Inc., Reading, Ohio

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,159
Int. Cl. C08f *21/04;* **C08g** *17/16;* **C05d** *3/68*
U.S. Cl. 260—22 CA **10 Claims**

Cobalt II halide complexes of the formula

$$[Co(II)(Z)_n]X_2$$

where X is a halogen, Z is a non sulfur bearing, non nitro, unidentate ligand and n is 1 to 6 are used as driers for alkyd resins and to accelerate the oxidative polymerization of unsaturated polyesters, in conjunction with organic peroxides.

3,649,577

SYNERGISTIC STABILIZER FOR HALOGENATED RESINS AND RESIN COMPOSITIONS STABILIZED THEREWITH

Robert D. Dworkin, Old Bridge, N.J., and Christian H. Stapfer, Newtown, Pa., assignors to Carlisle Chemical Works, Inc., Reading, Ohio

No Drawing. Filed Jan. 7, 1970, Ser. No. 1,320
Int. Cl. C08f *45/62*
U.S. Cl. 260—23 **10 Claims**

A combination of magnesium maleate and a zinc salt of an aliphatic carboxylic acid produces a halogenated resin stabilizer having synergistic properties. The stabilizer is particularly useful for polyvinyl chloride food packaging materials and small amounts of a phenolic antioxidant will further improve stabilization.

3,649,578

PROCESS FOR PREPARING IONOMERS

John L. Bush, Vienna, W. Va., and Carl William Milligan, Kinston, N.C., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 25, 1970, Ser. No. 22,692
Int. Cl. C08f *27/04*
U.S. Cl. 260—23 AR **6 Claims**

Process for ionically crosslinking first copolymers formed by copolymerizing at least one alpha-olefin of the general formula $RCH{=}CH_2$ where R is hydrogen or hydrocarbyl having 1 to 8 carbon atoms and at least one alpha,beta-ethylenically unsaturated carboxylic acid having 1 to 2 carboxylic acid groups and 3 to 8 carbon atoms, the alpha-olefin content of the first copolymer comprising at least 50 mole percent of the first copolymer, the alpha,beta-ethylenically unsaturated acid content of said first copolymer comprising 0.2 to 25 mole percent of the first copolymer which comprises mixing the first copolymer with a cation-supplying blend of 20 to 80 percent by weight of substantially water-insoluble metal oxide and/or metal hydroxide and/or metal carbonate, 0 to 10 percent by weight of a lubricant and a complemental amount of a second copolymer with a melt index of 50 to 2000 g./10 min. formed as the first copolymer, at a pressure of 100 to 10,000 p.s.i., at a temperature above the melting point of both the first and second copolymers and between 100° C. and 290° C., with the amount of the cation-supplying blend present being that amount which has sufficient cations to neutralize at least 10% of the carboxylic acid groups in the first and second copolymers and neutralizing at least 10 percent of the carboxylic acid groups in the first and second copolymers.

3,649,579

BLOCK COPOLYMER COMPOSITIONS

Ramsis Gobran, Roseville, Leon V. Kremer, Cottage Grove, and Dolores O. Ethier, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 707,976, Feb. 26, 1968. This application Jan. 27, 1969, Ser. No. 794,354
Int. Cl. C09j *3/26*
U.S. Cl. 260—27 **15 Claims**

Adhesives, inks, primers, etc., in which tackifying resins are combined with certain poly alpha-olefin block polymers, have excellent specific adhesion to low energy surfaces such as polyethylene and polypropylene as well as to such other surfaces as metal, wood, plastics, glass and rubber. The polymer is a block alpha-olefin which has the general formula $A—(B—A)_n$ wherein A blocks are at least capable of crystallization and B blocks are substantially amorphous.

3,649,580

TALL OIL PITCH TACKIFIERS IN ETHYLENE-PROPYLENE TERPOLYMER RUBBER

Herbert George Arlt, Jr., Ridgefield, Conn., and Edward Helmut Sheers, Flushing, N.Y., assignors to Arizona Chemical Company, New York, N.Y.

No Drawing. Filed Mar. 13, 1969, Ser. No. 807,086
Int. Cl. C08d *9/12*
U.S. Cl. 260—27 **4 Claims**

Tall oil pitch containing at least 75% and preferably 80% to 100% of nonvolatile material is incorporated into ethylene-propylene terpolymer rubber, preferably as a 40% to 90% solution in rubber processing oil.

3,649,581

STABLE POLYMERIC LATICES OF HIGH CARBOXYL CONTENT

William C. Mast, Stow, and Daniel F. Klemmensen, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 659,894, Aug. 11, 1967. This application Mar. 2, 1970, Ser. No. 15,835
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 Z **6 Claims**

Discloses making mechanically stable synthetic polymeric latices comprising at least 55 percent alpha-unsaturated carboxylic monomers such as methacrylic acid polymerized in an emulsion system containing an emulsifier selected from the group consisting of disodium or diammonium nonylphenoxy polyethoxy sulfosuccinate and a sodium or ammonium lauryl polyethoxy sulfate. These emulsifiers permit the formation of a polymeric latex mechanically stable against coagulation while at the same time containing more than 55 percent carboxylic monomers even when the monomeric acid is copolymerized with other copolymerizable monomers such as acrylates, styrene and butadiene.

3,649,582

REINFORCED THERMOPLASTIC CARBOXY ACID COPOLYMER LATEX COMPOSITIONS

George L. Wesp, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Oct. 13, 1969, Ser. No. 866,042
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 N **29 Claims**

Reinforced compositions are made from a thermoplastic latex copolymer of an unsaturated free-radical polymerizable non-acidic monomer and an unsaturated free-radical polymerizable carboxy acid, an aminosilane coupling agent and a siliceous reinforcing material. A process for making the compositions and forming them into useful structural and decorative articles is also disclosed.

3,649,583

WATER CLEANABLE EPOXY ADHESIVE

Victor M. Guthrie, Olean, N.Y., assignor to The Dexter Corporation, Windsor Locks, Conn.

No Drawing. Filed Apr. 10, 1970, Ser. No. 27,463
Int. Cl. C08g *51/26*
U.S. Cl. 260—30.4 EP **8 Claims**

A water cleanable epoxy based adhesive is prepared from a liquid epoxy resin, a monoglycidyl ether, a water dispersible surfactant and a polyamide hardener.

3,649,584

COMPOSITION FOR CHEMICAL MILLING MASKANT

Wesley T. Bailey, Palos Verdes Estates, and Robert Cummings, Anaheim, Calif., assignors to Purex Corporation, Ltd., Lakewood, Calif.

No Drawing. Filed Feb. 20, 1969, Ser. No. 801,207
Int. Cl. C08f *45/30;* **C23f** *1/04*
U.S. Cl. 260—31.2 **7 Claims**

The incorporation of a normally liquid synthetic organis polymer into a composition comprising elastomer reinforcing agents and a solution in a prechloroethylene-containing solvent of an elastomer reduces incidence of voids and pinholes in maskant coatings formed from the composition including at low percentage volumes of perchloroethylene in the elastomer solvent.

3,649,585

STABILIZATION OF (ETHYLENE BIS-STEARAMIDE)-LUBRICATED ABS WITH AN ACID

Donald Henry Foelsch, Williamsport, and Donald G. Manly, West Chester, Pa., assignors to Glyco Chemicals, Inc., New York, N.Y.

No Drawing. Filed Sept. 22, 1969, Ser. No. 860,045
Int. Cl. C08d *11/02, 11/04*
U.S. Cl. 260—32.6 A **8 Claims**

Enhancing heat stabilization of an ethylenediamine bis-stearamide lubricated ABS resin subject to discoloration at certain high temperatures by incorporating with the lubricating amount of said lubricant into the resin a minor amount, with respect to the lubricant, of a heat stabilizing effective amount of one or more of malic, citric and gallic acid; and the resulting heat stabilized ABS resins.

3,649,586

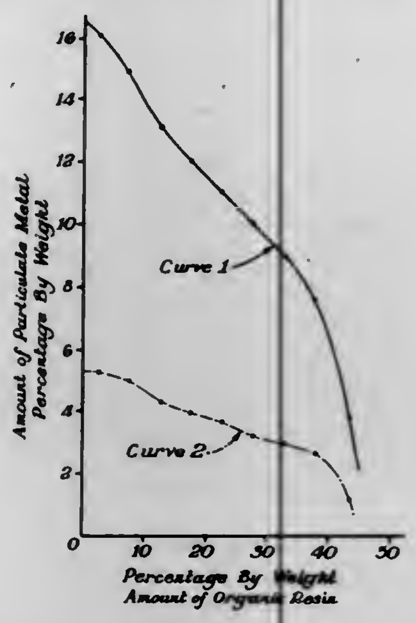
"FLEMISHING" METHOD AND ARTICLES

Helen E. Trexel, Wilmington, Del., assignor to Da-Kor Products, Inc.

Continuation-in-part of applications Ser. No. 457,179, May 19, 1965, Ser. No. 698,401, Jan. 17, 1968, and Ser. No. 827,132, May 23, 1969. This application May 5, 1970, Ser. No. 34,769
Int. Cl. C08f *45/04*
U.S. Cl. 260—33.6 **1 Claim**

Herein are disclosed improved articles of manufacture and the method for making same, involving the imparting of a pleasing "flemish" appearance to decorative articles of manufacture having a nonporous surface including artificial flowers, fruit, vegetables and the like by applying to the surface thereof a formulation comprising a powdered metal dispersed in a solution of a solid, resinous or oleaginous binder in a volatile solvent. A pigment also may be included to impart a desired color shade.

The articles of this invention are useful as decorative displays such as centerpieces, bouquets and the like and



the composition is useful for imparting an antiqued or flemished appearance to polyethylene flowers, fruits, vegetables and the like.

3,649,587
BUTADIENE-STYRENE COPOLYMERS STABILIZED WITH METAL OXIDES
Joseph A. Beckman, Akron, Jerry Donald Hunt, Cuyahoga Falls, and Edward Leo Kay, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
No Drawing. Filed June 30, 1969, Ser. No. 837,954
Int. Cl. C08d *11/04*
U.S. Cl. 260—33.6 AQ **6 Claims**

Unvulcanized rubbery interconnected polymers are stabilized with metal oxides.

3,649,588
TREATMENT OF FINELY DIVIDED PARTICLES AND PARTICLES SO TREATED
Henry Kinmy Kennedy-Skipton, West Kilbridge, Scotland, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Apr. 6, 1970, Ser. No. 26,170
Claims priority, application Great Britain, Apr. 11, 1969, 18,658/69
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB **7 Claims**

Treatment of fillers and pigments to render them hydrophobic and non-structure inducing with a low molecular weight organopolysiloxane in presence of an amino compound, at least part of the process being carried out at an elevated temperature and under pressure.

3,649,589
COATING COMPOSITIONS CONTAINING COAL TAR DISTILLATE EXTENDER RESIN AND AN EPOXY ETHER RESIN
Prentiss B. Mayfield, Woodville, Tex., assignor to Witco Chemical Corporation, New York, N.Y.
No Drawing. Filed May 1, 1970, Ser. No. 33,909
Int. Cl. C08g *51/04, 45/06*
U.S. Cl. 260—37 EP **8 Claims**

Thermosetting coating compositions comprising an epoxy ether resin and a synthetic, highly aromatic polymeric extender resin, said resin being produced by subjecting a coal tar distillate fraction to conditions of elevated temperature and pressure. The compositions are especially useful as joint sealers.

3,649,590
QUATERNARY ALKYLATED ALIPHATIC AMIDES
John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.
No Drawing. Filed Sept. 2, 1969, Ser. No. 854,778
Int. Cl. C09f *5/00, 7/00*
U.S. Cl. 260—404 **10 Claims**

Methods employing and compositions comprising a quaternary alkylated aliphatic hydrocarbon amide or ester and derivatives thereof for the control of insects.

3,649,591
AMMONIUM POLYPHOSPHATE-PHOSPHONIUM BROMIDE COMBINATIONS AS FLAME-RETARDANTS FOR PROPYLENE POLYMERS
Robert William Murray, Lebanon, and Christos Savides, Piscataway, N.J., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Oct. 29, 1970, Ser. No. 85,306
Int. Cl. C08f *45/04, 45/60;* **C09k** *3/28*
U.S. Cl. 260—41 **10 Claims**

Flame-retardant compositions comprising (A) a phosphonium halide having the formula

$$R_3\overset{+}{P}R'\cdot Br^- \quad \text{or} \quad R_3\overset{+}{P}-CH_2CH_2\overset{+}{P}R_3\cdot 2Br^-$$

wherein R is phenyl or 2-cyanoethyl and R′ is lower alkyl, 2-cyanoethyl, benzyl or bromobenzyl and (B) ammonium polyphosphate and polyolefins containing said compositions, are disclosed.

3,649,592
HEAT STABLE POLYPROPYLENE-ASBESTOS MOLDING COMPOSITION
Jean Claude Bernard and Pierre Pascal, Martigues, France, assignors to Naphtachimie, Paris, France
No Drawing. Filed Dec. 4, 1968, Ser. No. 781,251
Claims priority, application France, Dec. 6, 1967, 131,214
Int. Cl. C08f *45/10, 45/58*
U.S. Cl. 260—41 **9 Claims**

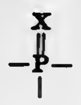
A thermally stable composition of polypropylene and asbestos formulated with a stabilizing mixture of a phenol or polyphenol, thiodipropionic acid ester and an organic phosphite, hydrazide, triazole or oxamide.

3,649,593
ORGANIC PHOSPHITES AS STABILIZERS FOR POLYMERS
Richard H. Kline, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Feb. 25, 1970, Ser. No. 14,234
Int. Cl. C08c *27/66;* **C08d** *11/04;* **C08f** *45/58*
U.S. Cl. 260—45.7 PS **11 Claims**

Polymers subject to oxidative degradation are stabilized by incorporating therein phosphite stabilizers such as tris [4-(methylthio) phenyl] phosphite.

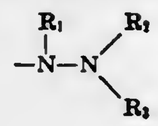
3,649,594
STABILIZATION OF URETHANE POLYMERS
Hiroshi Ono, Kotaro Watanabe, and Hajime Suzuki, Ootsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan
No Drawing. Filed Oct. 11, 1968, Ser. No. 766,968
Claims priority, application Japan, Oct. 24, 1967, 42/68,691
Int. Cl. C08g *51/60*
U.S. Cl. 260—45.9 R **10 Claims**

Urethane polymers are stabilized against discoloration by combustion gases commonly found in the atmosphere by the addition of a compound having at least one



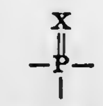
$$-\overset{\overset{\displaystyle X}{\|}}{\underset{|}{P}}-$$

linkage in the molecule, one to three radicals



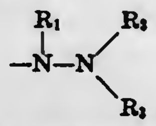
$$-\overset{\overset{\displaystyle R_1}{|}}{N}-N\begin{matrix}\diagup R_2\\ \diagdown R_3\end{matrix}$$

bonded to each



$$-\overset{\overset{\displaystyle X}{\|}}{\underset{|}{P}}-$$

linkage and having no active radical which is capable of reacting with the radical

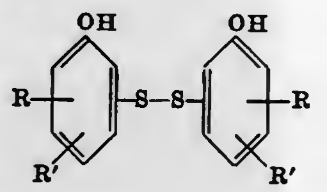


$$-\overset{\overset{\displaystyle R_1}{|}}{N}-N\begin{matrix}\diagup R_2\\ \diagdown R_3\end{matrix}$$

wherein X is S or O, R_1 is hydrogen or a monovalent aliphatic hydrocarbon radical having 1–7 carbon atoms, and each of R_2 and R_3 is hydrogen or a monovalent aliphatic, alicyclic or aromatic radical having 1–20 carbon atoms, or R_2 and R_3 together with the adjacent N atom form a closed ring.

3,649,595
HEAT STABILIZERS FOR POLYAMIDES
Richard H. Kline, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Oct. 14, 1968, Ser. No. 767,460
Int. Cl. C08g *51/58*
U.S. Cl. 260—45.95 **6 Claims**

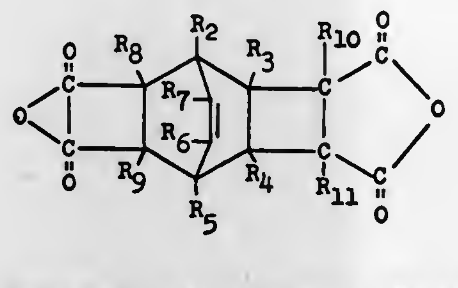
A compound for stabilizing macromolecular synthetic linear polyamides against tensile degradation at elevated temperatures which comprises a bisphenol disulfide having the general formula



in which R and R′ are members selected from the group consisting of hydrogen and alkyl groups containing from one to eight carbon atoms.

3,649,596
POLYAMIC ACID FROM TRICYCLO-(4.2.2.0^{2,5})-DEC-7-ENE - 3,4,9,10 - TETRACARBOXYLIC DIANHYDRIDE
Shaler G. Smith, Jr., Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Aug. 5, 1964, Ser. No. 387,778
Int. Cl. C08g *20/32*
U.S. Cl. 260—47 CP **6 Claims**

Polymeric acid compositions comprising the reaction product of an organic diamine and a tricyclic tetracarboxylic dianhydride having the structural formula,



wherein R_2 through R_7 are individually selected from the group consisting of hydrogen, C_1 to C_6 alkyl, chlorine, and fluorine; and R_8 through R_{11} are individually selected from the group of hydrogen, methyl, chlorine and fluorine. The polyamic acid compositions are useful as coating compositions, particularly for wire coatings.

3,649,597
DIMETHYLHYDANTOIN-FORMALDEHYDE-ACETALDEHYDE TERPOLYMERS
William O. Henley, Jr., Montoursville, Pa., assignor to Glyco Chemicals, Inc., New York, N.Y.
No Drawing. Filed Oct. 17, 1968, Ser. No. 768,551
Int. Cl. C08g *9/24;* **A61k** *7/10*
U.S. Cl. 260—67.5 **7 Claims**

5,5 - di(lower)alkylhydantoin - formaldehyde-acetaldehyde terpolymers, wherein each lower alkyl group has from one to two carbon atoms and the acetaldehyde, formaldehyde, and hydantoin moieties are in the ratio of from about 0.05 to about 0.5 mol of the acetaldehyde moiety per about 0.95 to about 0.5 mol of the formaldehyde moiety per mole of the dialkylhydantoin.

3,649,598
METHOD FOR PRODUCING CONDENSATION PRODUCTS OF UREA AND FORMALDEHYDE USING SODIUM BORATE AS AN ALKALIZER
Hisao Namioka, Norio Komaki, and Seiji Nishizawa, Niihama-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
No Drawing. Filed Jan. 26, 1970, Ser. No. 5,976
Claims priority, application Japan, Aug. 22, 1969, 44/66,794
Int. Cl. C08g *9/10*
U.S. Cl. 260—69 R **5 Claims**

Urea-formaldehyde condensation products high in slow-acting nitrogen as fertilizers are produced by subjecting urea and aqueous formaldehyde solution to addition reaction at an alkaline condition and in heating condition in the presence of 0.2–4.0% by weight based on the formaldehyde of sodium borate as an alkalizing agent either singly or in combination with other alkalizing agent and subjecting the resulting methylolurea solution to condensation reaction at an acidic condition and in heating condition.

3,649,599
EPOXY-MODIFIED, AMINE CURABLE URETHANE RESIN AND METHOD OF MAKING SAME
Frank D. Swanson, Minnetonka, and Norm Gregornik, Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn.
No Drawing. Filed Feb. 20, 1970, Ser. No. 13,198
Int. Cl. C08g *22/00*
U.S. Cl. 260—77.5 AQ **25 Claims**

An adduct prepared by reacting a monoepoxide and an aromatic diprimary amine in a mol ratio of no more than about 1 mol of the former per mol of the latter, is mixed with an isocyanate-containing urethane prepolymer (including a urethane polymer-forming mixture of polyisocyanate and polyol).

3,649,600
POLYETHER SPANDEX THREADS
Cyril N. Harper and Ralph A. Maglio, Easthampton, Mass., assignors to J. P. Stevens & Co., Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 718,218, Apr. 12, 1968. This application May 5, 1970, Ser. No. 34,889
Int. Cl. C08g *22/14*
U.S. Cl. 260—77.5 AP **5 Claims**

This specification discloses polyurethane compositions suitable for producing melt extruded threads prepared by reacting (i) a polyether containing from 0.06% to 0.3% water based on the weight of the polyether and (ii) an organic diisocyanate to form an isocyanato-terminated prepolymer and thereafter reacting the prepolymer with a diol chain extender.

3,649,601

AROMATIC POLYIMIDES CONTAINING PERFLUOROALKYLENE GROUPS

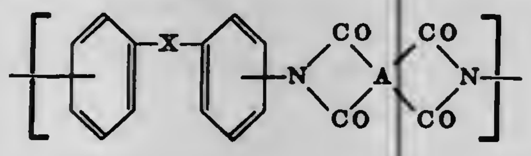
John Phillip Critchley, Farnham, and William Alexander Lee, Camberley, England, assignors to National Research Development Corporation, London, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 734,520, June 5, 1968. This application Sept. 29, 1970, Ser. No. 76,616

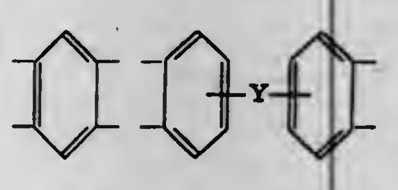
Int. Cl. C08g *20/32*

U.S. Cl. 260—78 TF **4 Claims**

Aromatic polyimides are provided having the general formula



where A is a quadrivalent aromatic group represented by the formula



and X or Y or both is a perfluoroalkylene group $—(CF_2)_n—$ where *n* is an integer from two to eight inclusive and the remaining groups X and Y are direct link, —O—, —S—, —CO—, $—SO_2—$ or $—CH_2—$.

3,649,602

COPOLYAMIDES FROM DODECANE DIOIC ACID, HEXAMETHYLENE DIAMINE, m- AND p-XYLYLENE DIAMINE

Yoshizo Tsuda, Akinori Yamamoto, and Kozyuro Ikeda, Otsu-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Sept. 4, 1969, Ser. No. 855,125

Claims priority, application Japan, Sept. 9, 1968, 43/64,328; Apr. 28, 1969, 44/33,072

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **2 Claims**

A novel class of copolyamides is provided which is synthesized from a mixture consisting of (a) 45–90% by weight of paraxylylene dodecane·dioic acid diamide, (b) 10–45% by weight of metaxylylene dodecane·dioic acid amide and (c) 0–45% by weight of hexamethylene dodecane·dioic acid amide. The copolyamides of this invention are especially valuable when manufactured into fibers.

3,649,603

TERNARY COPOLYAMIDES FROM SEBACIC ACID, HEXAMETHYLENE DIAMINE AND XYLYLENE DIAMINES

Yoshizo Tsuda, Akinori Yamamoto, and Kozyuro Ikeda, Otsu-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Aug. 13, 1969, Ser. No. 849,704

Claims priority, application Japan, Sept. 10, 1968, 43/64,679

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **2 Claims**

Strong, crystalline, low modulus, low shrinkage filaments are formed by drawing and melt spinning a novel ternary copolyamide consisting, by weight, of 30–80% (preferably 30–70%) paraxylylene sebacamide, 10–60% metaxylylene sebacamide, and 10–60% hexamethylene sebacamide. The copolyamide is made by polymerizing the three sebacamide salts under pressure at a temperature below 300° C.

3,649,604

NOVEL METHOD FOR POLYMERIZING VINYL COMPOUNDS IN THE PRESENCE OF IMIDAZOLE AND A CARBON TETRAHALIDE

Minoru Imoto, 3–46 Okashimachi, Hirakatsshi, Osakafu, Japan; Kiichi Takemoto, 3–32 Sumie Nishi, Sumiyoshiku, Osakafu, Japan; and Heiichi Azuma, 11 Sanjo Minamimachi, Ashiyashi, Hyogoken, Japan

No Drawing. Continuation-in-part of application Ser. No. 701,050, Jan. 29, 1968. This application Sept. 1, 1970, Ser. No. 68,767

Int. Cl. C08f *3/12, 3/76, 3/64*

U.S. Cl. 260—80 **3 Claims**

Method for polymerizing vinyl compound in the presence of an imidazole and a carbon tetrahalide or in the presence of the same accompanied with a high molecular weight substance or the same accompanied with a high molecular weight substance and water. No other catalytic components including sulfur dioxide are needed.

3,649,605

SYSTEM FOR THE POLYMERIZATION OF CONJUGATED DIOLEFINS

Morford C. Throckmorton, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Mar. 30, 1970, Ser. No. 23,969

Int. Cl. C08d *3/04, 3/08, 1/00*

U.S. Cl. 260—82.1 **7 Claims**

There is disclosed a process for polymerizing butadiene or butadiene in mixture with isoprene to give polymers having 95% or more of the butadiene units in the cis-1,4 configuration and high molecular weights employing a four component catalyst system comprised of (1) at least one organometallic compound, (2) at least one organonickel compound, (3) at least one organic acid fluoride compound, and (4) at least one promoter compound.

3,649,606

PROCESS FOR REDUCING EQUIPMENT FOULING IN THE MANUFACTURE OF BUTADIENE HOMOPOLYMER

Lloyd M. Watson, Cincinnati, Ohio, and Leo H. Broering, Fort Wright, Ky., assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Filed Aug. 31, 1967, Ser. No. 664,638

Int. Cl. C08d *1/32, 3/06;* **C08f** *1/28*

U.S. Cl. 260—82.1 **7 Claims**

In the polymerization of butadiene to butadiene homopolymer a high molecular weight gel-like polybutadiene is produced which fouls the equipment. The instant invention provides a process for reducing if not substantially eliminating the build-up of this gel-like material on the equipment by incorporating in the polymerization reaction mixture from about 1 to about 5% by weight isoprene or styrene. This improved process is especially applicable to the polymerization of butadiene with alfin catalysts.

3,649,607

PROCESS FOR MANUFACTURING BUTADIENE-ISOPRENE COPOLYMER

Junji Furukawa, Takeo Saegusa, and Akira Onishi, Kyoto, and Takao Ishikawa, Shiro Anzai, Koichi Irako, Tsuneaki Narumiya, and Yuzo Ishizuka, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 480,159, Aug. 16, 1965. This application May 6, 1969, Ser. No. 822,326

Claims priority, application Japan, July 13, 1965, 40/41,759; July 22, 1965, 40/44,027, 40/44,029

Int. Cl. C08d *1/12, 3/08, 3/12*

U.S. Cl. 260—82.1 **11 Claims**

Butadiene-isoprene copolymer having a butadiene unit of at least 90% of cis-1,4-structure and an isoprene unit of at least 95% of 1,4-structure is produced by copolymerizing butadiene and isoprene by means of three component catalyst consisting of (A) a compound selected from the group consisting of an organic carboxylic acid salt and an organic complex compound of nickel, (B) a compound selected from the group consisting of boron trifluoride and its complex compound with an oxygen-containing organic compound and (C) an organometallic compound selected from the group consisting of trialkylaluminum, dialkylzinc, alkyllithium and dialkylalkoxyaluminum, butadiene/isoprene feed ratio being in the range of 90/10–70/30 (mole ratio), the mole ratio of said (C)-component to said (A)-component being at least 0.5 and the mole ratio of said (C)-component to said (B)-component being within the range of 0.5 to 2.0.

3,649,608

PROCESS FOR THE PRODUCTION OF SHAPED ARTICLES, PARTICULARLY DENTAL PROSTHESES

Heino Logemann and Paul-Gunther Bruckmann, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 23, 1969, Ser. No. 844,158

Claims priority, application Germany, July 23, 1968, P 17 69 840.7, P 17 69 839.4

Int. Cl. C08f *15/18*

U.S. Cl. 260—885 **23 Claims**

A process for use in the production of dental prostheses, wherein 25–27 parts by weight of a liquid consisting predominantly of monomeric methyl methacrylate and 73–75 parts by weight of a polymer powder are mixed together. The use of a polymer powder comprising 85–60 parts of a polymer of methacrylic acid and 40–15 parts of an acrylic acid ester/methyl methacrylate or methacrylic acid ester/methyl methacrylate copolymer, where the ester content in the copolymer, the molecular weight of the polymer and copolymer, and the particle size of the polymer and copolymer are required to be within specified ranges results in a rapid start of processing and a processing time of at least an hour.

3,649,609

FABRICATION OF CARBOXY NITROSO RUBBER EXPULSION BLADDERS

Nathan B. Levine, Colonia, Joseph Green, East Brunswick, and William R. Sheehan, Hopatchong, N.J., assignors to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed Aug. 21, 1968, Ser. No. 754,488

Int. Cl. C08f *3/24*

U.S. Cl. 260—92.1 **3 Claims**

An inert thermoplastic and elastomeric material capable of curing has been provided for preparing molded articles necessitating reworking. This inert elastomeric material is derived from nitroso polymer and is prepared by curing, at elevated temperature, a composition consisting of a nitrosoterpolymer and magnesium oxide. A representative nitrosoterpolymer consists of a polymer derived from trifluoronitrosomethane, tetrafluoroethylene, and a nitrosofluorocarboxylic acid or an ester of the carboxylic acid. The nitroso monomer and/or nitrosofluorocarboxylic acid or ester, such as nitrosodifluoroacetic acid methyl ester make up 50% on mole basis of the monomeric components, the nitrosocarboxylic acid or its ester being about 0.5 to 2% of the total nitroso component because of economical reasons. Before the ester component containing polymer can be used, the ester must be hydrolyzed to the free acid. An elastomeric nitrogen tetroxide storage bladder is a representative molded article prepared from the curable, thermoplastic composition.

3,649,610

PROCESS FOR THE POLYMERIZATION OF VINYL AROMATIC MONOMERS IN AQUEOUS SUSPENSION

Harold A. Wright, Murrysville, Pa., assignor to Sinclair-Koppers Company

Continuation-in-part of application Ser. No. 689,969, Dec. 12, 1967. This application June 22, 1970, Ser. No. 48,418

Int. Cl. C08f *1/11, 7/04, 7/06*

U.S. Cl. 260—93.5 W **4 Claims**

The production of polymer beads by a suspension polymerization process in which a vinyl aromatic monomer having a free-radical generating catalyst dissolved therein is suspended in an aqueous medium with the aid of a finely divided phosphate suspending agent and heated to cause the monomer to polymerize into polymer beads is improved by the addition to the suspension of at least about 0.01% by weight based on monomer of a terminal vicinal hydroxy-keto compound as sole extender. The process of the invention is especially applicable in the preparation of large spherical polymer beads.

3,649,611

SPLITTABLE POLYOLEFIN FILM

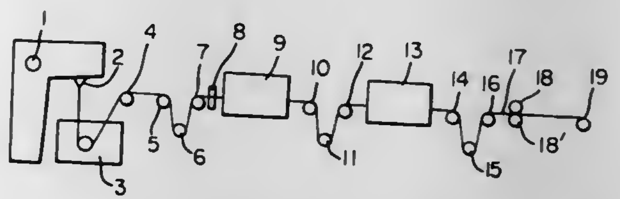
Munehiro Okumura, Tatsuaki Nishikawa, and Nobuaki Nishikawa, Otake-shi, Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

Filed May 23, 1968, Ser. No. 731,431

Claims priority, application Japan, May 24, 1967, 42/33,009, 42/33,010

Int. Cl. C08f *3/08, 47/22*

U.S. Cl. 260—93.7 **1 Claim**



An improved splittable polyolefin film which is useful for producing bulk yarns is characterized by a characteristic temperature relating to visco-elasticity ranging from 138° C. to the melting point of the polyolefin, a ratio of the tensile strength of a 40 cm. length of the film and the tensile strength of 1 cm. length of the film ranging from 0.2 to 0.9 and a thickness ranging from 5 to 1,200μ. A polyolefin film having these characteristics is manufactured by drawing a polyolefin at a temperature of at least 175° C. in a first drawing operation and then drawing the polyolefin in a second drawing operation at a temperature of at least 175° C.

The splittability of the film is enhanced by the presence of additional polymers and by the addition of certain metallic salts of organic carboxylic acids.

Textile products made of the film have desirable strength, excellent dyeability and antistatic properties.

3,649,612
TREATMENT OF ROSIN WITH AN ARYL THIOL

Roland Pierre Franz Scharrer, Pelham, N.Y., assignor to Arizona Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 827,174, May 23, 1969. This application Apr. 20, 1970, Ser. No. 30,233

Int. Cl. C09f *1/04*

U.S. Cl. 260—98 **8 Claims**

Rosin is disproportionated and bleached by heating at temperatures of about 180–350° C., and for a time sufficient to reduce the abietic acid content to less than 15%, in the presence of 0.01–1% of an arylthiol.

3,649,613
TRIAZENO COMPOUNDS

Charles A. Krauth, Taejon, Korea, and Yoder Fulmer Shealy and Clinton Allen O'Dell, Birmingham, Ala., assignors to the United States of America as represented by the Secretary of the Department of Health, Education, and Welfare

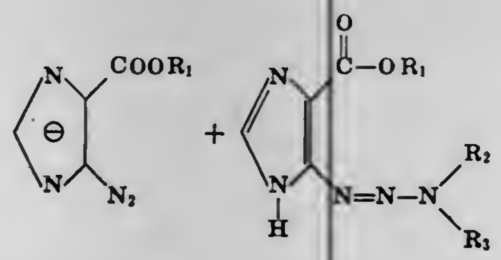
No Drawing. Filed Sept. 14, 1967, Ser. No. 667,659

Int. Cl. C07c *115/00*

U.S. Cl. 260—140 **10 Claims**

Certain derivatives of the imidazole heterocyclic ring which is a 5-membered diaza structure containing two nitrogen atoms and two double bonds are described. Since tautomeric structures are possible, substituents in the 4 and 5 positions are written thus: 4(or 5) and 5(or 4). The present compounds are triazeno and diazo derivatives of imidazole carboxylic acid esters. The formulas for the compounds of the present invention are set out below:

FORMULA I



R_1=alkyl, substituted alkyl, aryl and acid addition salts thereof;
R_2=alkyl, substituted alkyl, aryl;
R_3=H, alkyl, substituted alkyl and aryl.

3,649,614
POLYAZO SEQUENTIAL FREE RADICAL INITIATORS

Chester Stephen Sheppard, Tonawanda, and Ronald Edward MacLeay, Williamsville, N.Y., assignors to Pennwalt, Corporation

No Drawing. Filed Aug. 15, 1968, Ser. No. 752,752

Int. Cl. C09b *29/00*

U.S. Cl. 260—174 **4 Claims**

Polyazo compounds having at least one azo function different from the other azo function(s).

Examples: 4-ethoxycarbonylazo - 4 - cyanopentyl 4-t-butylazo-4-cyanovalerate; 2,2′-azobis[2-(4 - t - butylazo-4-cyanovaleroyloxy)-4-methylpentane].

Organic syntheses requiring free radical generation in two stages are carried out using as the source of sequential free radicals a polyazo compound, as defined, wherein at least one azo function is ruptured in the first stage and the remaining azo function(s) are ruptured in the second stage.

Example: Styrene monomer and 4-ethoxycarbonylazo-4-cyanopentyl 4-t-butylazo - 4-cyanovalerate were reacted at about 76° C. to obtain a polystyrene containing functional azo groups. The polystyrene-azo polymer was reacted with methyl methacrylate monomer at 130° C. to obtain a block copolymer of polystyrene and poly(methyl methacrylate).

3,649,615
PHENYL-AZO-NAPHTHOL DYES

Takuo Ikeda, Ibaragi-shi, Otohei Matsumoto, Toyonaka-shi, and Hiroshi Sugiyama, Ashiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

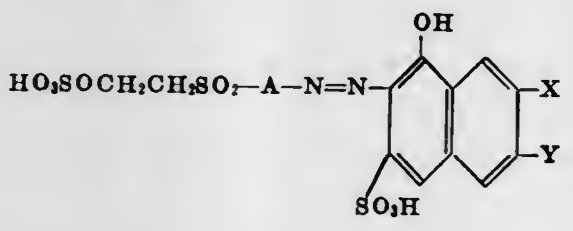
No Drawing. Filed June 19, 1969, Ser. No. 834,907

Claims priority, application Japan, July 3, 1968, 43/48,017; July 11, 1968, 43/48,903; Sept. 12, 1968, 43/65,784, 43/65,785

Int. Cl. C07c *107/08;* **C09b** *29/30*

U.S. Cl. 260—199 **4 Claims**

A monoazo dye of the formula, as a free acid,



wherein A is a benzene ring unsubstituted or substituted with a lower alkyl group, a lower alkoxy group or a halogen atom and one of X and Y is hydrogen atom and the other is

$$—NHCOCH_2CH_2COOH$$

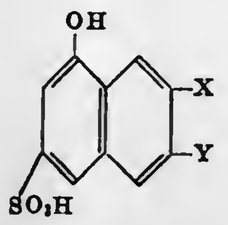
or

$$—NHCOCH{=}CHCOOH$$

The dye is produced by reacting a diazotized amine having the formula,

$$ZCH_2CH_2SO_2—A—NH_2$$

wherein A is as defined above and Z is hydroxy group or $—OSO_3H$, with an α-naphthol derivative having the formula,



wherein X and Y are as defined above, and treating the resultant having β-hydroxyethyl sulfonyl group with a sulfating agent.

The dye may be used for dip-, pad-dyeing or printing textile fibers.

3,649,616
PROCESS FOR MAKING STARCH ETHERS

Arthur M. Goldstein, Plainview, Erwin M. Heckman, Long Beach, and Jay Harvey Katcher, Rego Park, N.Y., assignors to Stein, Hall & Co., Inc., New York, N.Y.

No Drawing. Filed Feb. 6, 1970, Ser. No. 9,403

Int. Cl. C08b *19/06*

U.S. Cl. 260—233.3 R **5 Claims**

Epihalohydrin amine reagents free of unreacted epihalohydrin are prepared by combining tertiary amine salts and epihalohydrin in approximately equimolar quantities, reacting them at about 30°–35° C. to form the reagent, and adding an increment of a strong alkali such as caustic or a tertiary amine followed by an additional period of reaction at about 30°–35° C. to consume unreacted epihalohydrin. Said reagent is added to starch to affect etherification thereof under nongelatinizing conditions.

3,649,617
2-SUBSTITUTED AMINO-5-PHENYL-3H-1,4-BENZODIAZEPINES

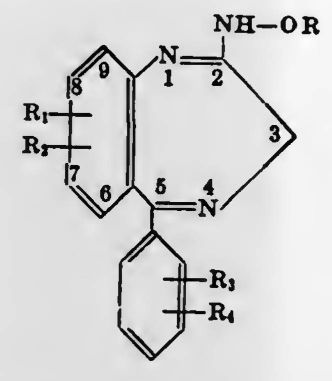
Jackson Boling Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 803,450, Feb. 28, 1969. This application July 20, 1970, Ser. No. 56,750

Int. Cl. C07d *29/28, 53/06*

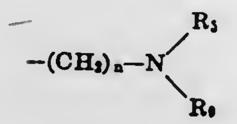
U.S. Cl. 260—239 BD **13 Claims**

3H-1,4-benzodiazepines of the Formula II:



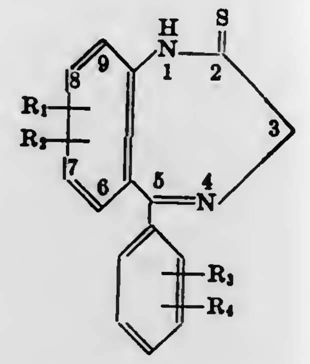
II

wherein R is selected from the group consisting of hydrogen, lower-alkyl of 1 to 4 carbon atoms, inclusive, alkenyl of 3 or 4 carbon atoms, benzyl, $—CH_2—COOH$ and $—(CH_2)_2—COOH$ and the esters thereof derived from an alkanol of 1 to 3 carbon atoms, inclusive, and



$$—(CH_2)_n—N\begin{matrix}R_5\\ \\R_6\end{matrix}$$

in which *n* is 2 or 3 and R_5 and R_6 are lower-alkyl of 1 to 4 carbon atoms, inclusive, or R_5 and R_6 together are alkylene of 4 or 5 carbon atoms; and wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of hydrogen, alkyl defined as above, thioalkyl in which alkyl is defined as above, lower alkoxy of 1 to 3 carbon atoms, inclusive, halogen, nitro, cyano and $—CF_3$; are prepared by condensing the corresponding thiolactam Compound I:



I

with a compound of the formula $H_2N—OR$ in which R is defined as above. These compounds and their pharmacologically acceptable acid addition salts have sedative and tranquilizing action and can be used in mammals and birds as tranquilizers.

3,649,618
CERTAIN 1-ARALKYL AZETIDINES

Bruce Wayne Horrom, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 684,492, Nov. 20, 1967. This application Oct. 2, 1970, Ser. No. 77,754

Int. Cl. C07d *25/00, 99/04*

U.S. Cl. 260—239 A **4 Claims**

A novel series of substituted 1-(phenylisopropyl)-3,3-dimethyl azetidines useful as appetite depressants.

3,649,619
METHOD FOR THE PREPARATION OF ANTIBIOTICS AND INTERMEDIATES

Peter I. Pollak, Scotch Plains, Norman L. Wendler, Summit, and Burton G. Christensen, Scotch Plains, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 15, 1968, Ser. No. 729,424

Int. Cl. C07d *23/06*

U.S. Cl. 260—239 **3 Claims**

A method of the preparation of (±) and (−) (cis-1,2-epoxypropyl)phosphonic acid and its corresponding salts and ester derivatives which comprises treating a 1,2-disubstituted n-propylphosphonic acid or a salt or ester thereof under ring closure conditions, at least one of which substituents is hydroxy or a functionally equivalent oxygen-containing moiety and the remaining substituent being any leaving group which can be displaced to yield the desired epoxide product.

The (±) and (−) (cis-1,2-epoxypropyl)phosphonic acid of this invention and its salts are antibiotics which have utility as antibacterials in inhibiting the growth of gram-positive and gram-negative pathogenic bacteria.

3,649,620
ALDOSTERONE 21-ESTERS AND 1-DEHYDRO ANALOGUES

Alberto Ercoli, Milan, Rinaldo Gardi, Carate Brianza, Romano Vitali, Casatenovo, and Giovanni Falconi, Carate Brianza, Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,911

Claims priority, application Italy, Feb. 19, 1969, 13,033/69; Dec. 10, 1969, 25,583/69

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 **14 Claims**

Aldosterone 21-p substituted benzoates and their 1-dehydro-analogues having prolonged adrenocortical, hypertensive and gamma rays protecting activity are obtained by partial acid hydrolysis of the corresponding new 18,21-di-p substituted benzoates.

3,649,621
NOVEL 3-CYCLOPENTYL ETHERS OF 13-ALKYL-GON-POLY-ENES

Reinhardt P. Stein, Conshohocken, and Herchel Smith, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 806,705, Mar. 12, 1969, which is a continuation-in-part of application Ser. No. 699,785, Jan. 23, 1968. This application Dec. 19, 1969, Ser. No. 886,795

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R **27 Claims**

This invention is concerned with the 3-cyclopentyloxy derivatives of 13-(lower)alkyl-1,3,5(10),8-tetraenes; 13-polycarbonalkyl-8α-gona - 1,3,5(10) - trienes; 13-polycarbonalkyl-16α-hydroxygona - 1,3,5(10)-trienes; 13-(lower) alkylgona-1,3,5(10)-trienes; 13 - polycarbonalkylgona-1,3,5(10),16 - tetraenes; 13 - (lower)alkylgona-1,3,5(10),6,8-pentaenes; and 13-polycarbonalkylgona-1,3,5(10),9(11)-tetraenes; which are pharmacologically active as long-acting estrogens.

3,649,622
21-ESTERS OF TRIAMCINOLONE AND ACETONIDES THEREOF

Jean Epuran, Monte-Carlo, Monaco, assignor to Laboratorie de Recherches Chimiques et Industrielles Morson, Principaute de Monaco

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,936

Claims priority, application France, Dec. 31, 1968, 183,120; Mar. 31, 1969, 183,309

Int. Cl. C07c *169/32*

U.S. Cl. 260—239.55 **6 Claims**

Inflammatory conditions in mammals are significantly diminished by oral or parenteral administration of the 21-esters of triamcinolone or their acetonides.

3,649,623

α:β-DI-[5-METHYL-BENZOXAZOLYL-(2)]-ETHYLENE OPTICAL BRIGHTENING AGENT

Franz Ackermann, Binningen, Max Duennenberger, Frenkendorf, and Adolf Emil Siegrist, Basel, Switzerland, assignors to Intracolor Corporation, Fair Lawn, N.J.

No Drawing. Continuation-in-part of application Ser. No. 295,224, July 15, 1963, which is a continuation-in-part of application Ser. No. 80,036, Jan. 3, 1961, which in turn is a continuation-in-part of application Ser. No. 591,277, June 14, 1956. This application Dec. 22, 1965, Ser. No. 515,749

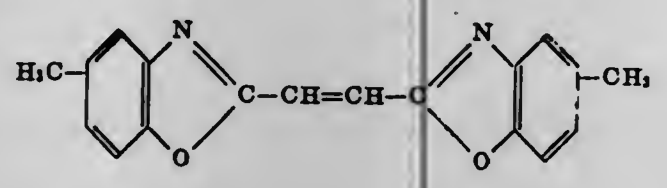
Claims priority, application Switzerland, June 17, 1955, 21,053/55

Int. Cl. C07d *85/48*

U.S. Cl. 260—240 E **1 Claim**

This invention relates to a new and very useful crystalline product of manufacture consisting of pure α:β-di-[5-methyl-benzoxazolyl-(2)]-ethylene of the formula

(1)



which exists in the form of fine yellowish needles, melts at 183 to 184° C., shows an ethanol solution extinction maxima at the wave lengths of $\lambda=350$ mμ, $\lambda=362$ mμ and $\lambda=380$ mμ, exhibits in dioxane solution a bluish fluorescence, is free from any staining effect and is a highly active optical brightening agent, which exerts an optical brightening effect on textile fibers made from polyamide, polyester, cellulose acetate or cellulose, when applied to said fibers in an aqueous bath as a detergent preparation obtained by spray drying a homogeneous aqueous preparation containing the detergent and the said α:β-di-[5-methyl-benzoxazolyl-(2)]-ethylene.

3,649,624

CARBOXYL STARCH AMINE ETHERS

Robert M. Powers and Roland W. Best, Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Original application Apr. 24, 1968, Ser. No. 723,883. Divided and this application Dec. 12, 1969, Ser. No. 889,810

Int. Cl. C08b *19/04*

U.S. Cl. 260—233.3 R **12 Claims**

Carboxyl starch amine ethers having an anionic subsituent-to-amine-ether substituent molar ratio of at least 1:1 and paper coating colors containing the carboxyl starch amine ethers as high-strength binders, especially for a low weight publication-grade paper.

3,649,625

PROCESS FOR PRODUCING α-AMINOBENZYLPENICILLIN

Leon John Heuser, Robbinsville, and Carl Francis Anderson, Milltown, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Nov. 12, 1969, Ser. No. 876,111

Int. Cl. C07d *99/14*

U.S. Cl. 260—239.1 **6 Claims**

The production of α-aminobenzylpenicillin in a biphasic solvent system comprising a water immiscible halogenated hydrocarbon and water provides an improved method of synthesis in that better yields are obtained and a smaller volume of water, which must later be removed, is used.

3,649,626

FUSED RING SYSTEMS CONTAINING [1,3]OXAZINE

Max von Strandtmann, Rockaway, Marvin P. Cohen, New Milford, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

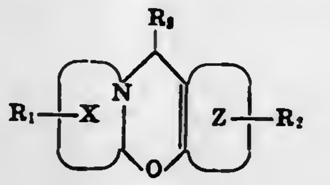
No Drawing. Continuation-in-part of application Ser. No. 673,927, Oct. 9, 1967. This application Apr. 27, 1970, Ser. No. 32,358

Int. Cl. C07d *87/20, 99/02*

U.S. Cl. 260—244 R **11 Claims**

Fused ring systems containing [1,3]oxazine of Formula I and the method for their preparation have been disclosed.

(I)



X represents 1,2,3,4-tetrahydroisoquinoline, 1,2,3,4-tetrahydro - 2 - carboline, tetrahydro - 4 - phthalazinone, 1,2-dihydroquinazoline, hexahydropyrimidine; Z is an aromatic or heteroaromatic nucleus, R_1, R_2 and R_3 are hydrogen or various substituents. The compounds of this invention are hypotensive agents.

3,649,627

PRODUCTION OF N-SUBSTITUTED MORPHOLINES

Ernst Fuerst, Neustadt, Karl Adam, Ludwigshafen, Herwig Hoffmann, Frankenthal, Kurt Pilch, Ludwigshafen, Siegfried Winderl, Heidelberg, and Walter Sanne, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

No Drawing. Filed Sept. 19, 1969, Ser. No. 859,570

Claims priority, application Germany, Sept. 25, 1968, P 17 95 393.4; Aug. 27, 1969, P 19 43 500.8

Int. Cl. C07d *87/24, 87/26*

U.S. Cl. 260—247 **7 Claims**

An improved process for the production of N-substituted morpholines by heating a N-substituted bis-(β-hydroxyethyl)-amine or bis-(β-hydroxypropyl)-amine in the presence of a water-eliminating catalyst, the improvement consisting in carrying out the reaction at a temperature of from 180° to 270° C. in the presence of water or in the presence of a high-boiling organic solvent which is inert under the reaction conditions.

3,649,628

PROCESS FOR PRODUCING SUBSTITUTED CYCLOHEXENE COMPOUNDS

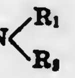
Robert M. Novack, Mendham, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Continuation-in-part of application Ser. No. 727,689, May 8, 1968. This application Nov. 19, 1968, Ser. No. 777,202

Int. Cl. C07c *101/42*

U.S. Cl. 260—247.2 B **12 Claims**

A process is described which comprises the steps of (1) reacting an amine having the formula



$$HN\begin{matrix} \diagup R_1 \\ \diagdown R_2 \end{matrix}$$

II

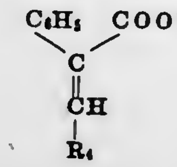
with an aldehyde having the formula:

$$R_4—CH_2—CR_4=CR_4—CHO \qquad \text{III}$$

in the presence of a dehydrating agent, and optionally a quinone catalyst, there being present in the reaction mixture a ratio of from about 0.5 mole to about 1.0 mole

of the Formula II amine for each mole of the Formula III aldehyde present therein; and

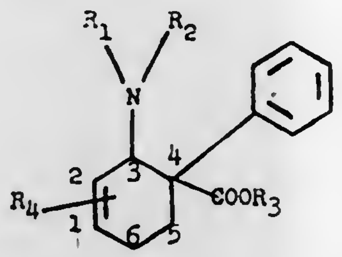
(2) condensing the reaction product, thus obtained, with a compound having the formula:



$$\begin{matrix} C_6H_5 \quad COOR_3 \\ \diagdown \ \diagup \\ C \\ \| \\ CH \\ | \\ R_4 \end{matrix}$$

IV

there being present in the reaction mixture a ratio of about 0.45 mole of Formula IV compound for each mole of the Formula III compound employed in step (1) of the process, said process yielding a substituted cyclohexene compound having the formula:



the symbols R_1, R_2, R_3 and R_4, wherever they appear in Formulas I, II, III and IV, having the following meanings: R_1 is a straight or branched lower alkyl group; R_2 is a straight or branched chain lower alkyl group; or R_1 and R_2, taken together with the nitrogen atom to which they are attached, form a heterocyclic ring system; R_3 is a straight or branched chain lower alkyl group; and R_4 is hydrogen or one or more straight or branched chain lower alkyl groups. In Formulas III and IV, each group represented by the symbol R_4 may be hydrogen or one or more or all may be lower alkyl groups. Where R_4 represents two or more alkyl groups, such groups may be the same or different.

3,649,629

TRIAZAMETHYL HETEROCYCLIC IMMUNOSUPPRESSIVES

William H. W. Lunn, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed May 11, 1970, Ser. No. 36,434

Int. Cl. C07d *57/12*

U.S. Cl. 260—256.4 F **7 Claims**

Pentacyclic 2,3 - dihydro-1H,8H-3a,7b,12b-triazabenz [c]acephenanthrylene-8-ones and hexacyclic 9H,14H-4b,9a,13b - triazadibenz[a,e]acephenanthrylene - 9,14-diones, prepared via sodium borohydride reduction of the ionic 2,3 - dihydro-8-oxo-1H,8H,3a,7b,12b-triazabenz[c] acephenanthrylen-12c-ylium halides and 9,14-dioxo-9H, 14H - 4b,9a,13b-triazadibenz[a,e]acephenanthrylen-14b-ylium halides respectively are useful agents for suppressing antibody formation.

3,649,630

HOMATROPINE DIPROPYLACETATE

Henry E. Meunier, Grenoble, Isere, and Pierre L. Eymard, Fontaine, Isere, France, assignors to Laboratoires J. Berthier S.A., Grenoble, France

No Drawing. Filed Feb. 27, 1970, Ser. No. 15,264

Claims priority, application France, Mar. 4, 1969, 6905809; Mar. 5, 1969, 6906045

Int. Cl. C07d *43/06*

U.S. Cl. 260—292 **1 Claim**

As a new medicament, particularly useful as an antispasmodic and antiulcer agent, di-n-propylacetylated derivative of homatropine having a molecular weight of 401.33 and a melting point from about 137° to 140° C.

3,649,631

N'-THIAZOLYLALKYL-, N' - PYRAZOLYLALKYL-, AND N'-IMIDAZOLYLALKYL-N-(THIAZOLYL-2)-PIPERAZINES

Volker Koppe, Karl Schulte, Hans-Joachim Schliep, and Ernst Schorscher, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Filed Aug. 28, 1969, Ser. No. 853,955

Claims priority, application Germany, Sept. 11, 1968, P 17 95 314.9

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 H **13 Claims**

N'-substituted-N-(thiazolyl-2)-piperazines, wherein the N'-substituent is a thiazolyl-5-alkyl-, pyrazolyl-3-alkyl-, pyrazolyl-5-alkyl-, or imidazolyl-5-alkyl group, having vasodepressor activity and one or more narcosis-prolonging, narcosis-potentiating, tranquilizing and neuroleptic activity are produced by reacting the corresponding unsubstituted N-(thiazolyl-2)-piperazine with a thiazolyl-, pyrazolyl-, or imidazolyl-lower alkylhalide; a thiazolyl-, pyrazolyl-, or imidazolyl-lower alkyl-piperazine with a 2-halo-thiazol; a thiazolyl-, pyrazolyl-, or imidazolyl-lower alkylamine with a 2-(N,N-di-haloethyl-amino)-, 2-(morpholino)-, or 2-(thiomorpholino)-thiazole, or a 2-(thiazolyl-, pyrazolyl-, or imidazolyl-lower-alkylaminoethylamino)-thiazol with a dihaloethane.

3,649,632

3,4-DIHYDROACRIDIN-2-(1*H*)-ONE DERIVATIVES

James L. Diebold, Delaware, and Milton Wolf, Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Jan. 27, 1970, Ser. No. 6,286

Int. Cl. C07d *37/18*

U.S. Cl. 260—279 R **1 Claim**

The disclosure is directed to novel 3,4-dihydroacridin-2(1*H*)-one derivatives obtained by the reaction of o-aminocarbonyl derivatives with cyclohexane-1,4-dione in the presence of a strong acid. The compounds are useful as central nervous system depressants in that they produce a calming effect in the host.

3,649,633

4 NAPHTHALIMIDO PYRAZOLIUM SALTS

Georges R. H. Mingasson, Paris, and Annick M. S. S. Domergue, Eaubonne, France, assignors to Ugine Kuhlmann, Paris, France

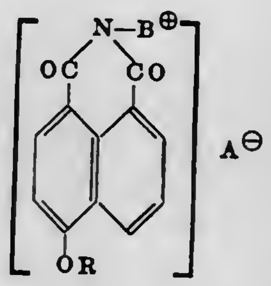
No Drawing. Filed Aug. 9, 1968, Ser. No. 751,349

Claims priority, application France, Aug. 11, 1967, 117,728, Patent 1,541,050

Int. Cl. C07d *49/20*

U.S. Cl. 260—281 **4 Claims**

Cationic organic compounds are provided of the general formula:



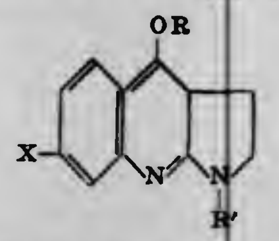
in which R represents an alkyl radical, B⊕ represents a cycloammonium group and A represents a monovalent anion. These compounds can be used as fluorescent brightening agents for fibres based on acrylonitrile polymers or copolymers. A process for the preparation of the cationic organic compounds is also provided.

3,649,634

4-ALKOXY-2,3-DIHYDRO-1H-PYRROLO[2.3-b] QUINOLINE COMPOUNDS

Hajime Fujimura, Kyoto-shi, Kyoto-fu, Tadasu Tanaka, Oomiya-shi, Mitsuyoshi Wagatsuma, Hatogaya-shi, Takeo Twakuma, Oomiya-shi, and Michihiko Miyazaki, Kawaguchi-shi, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan
No Drawing. Filed Jan. 23, 1969, Ser. No. 793,573
Claims priority, application Japan, Jan. 25, 1968, 43/4,515, 43/4,516
Int. Cl. C07d *57/04*
U.S. Cl. 260—286 R **6 Claims**

4 - alkoxy - 2,3 - dihydro - 1H-pyrrolo[2,3-b]quinoline compounds represented by the formula:



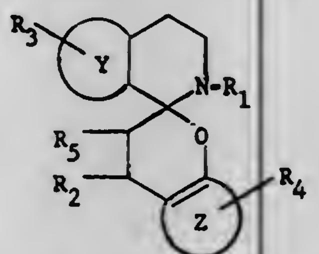
wherein R is a lower alkyl group, R' is a hydrogen atom or a benzyl group and X is a hydrogen atom, a halogen atom or a methoxy group and having remarkable anti-inflammatory activity, and a method for preparing the said compounds by etherifying the corresponding 4-hydroxyl compounds with diazo(lower)alkane or by reacting the corresponding 4-halo compounds with alkali metal lower alkoxide or a mixture of lower alkanol and alkali metal hydroxide.

3,649,635

SPIROPYRANOPYRIDINES

Maximilian von Strandtmann, Rockaway, Marvin P. Cohen, New Milford, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
No Drawing. Filed Oct. 24, 1969, Ser. No. 869,335
Int. Cl. C07d *35/10*
U.S. Cl. 260—287 R **1 Claim**

The present invention is concerned with spiropyranopyridines of Formula I:



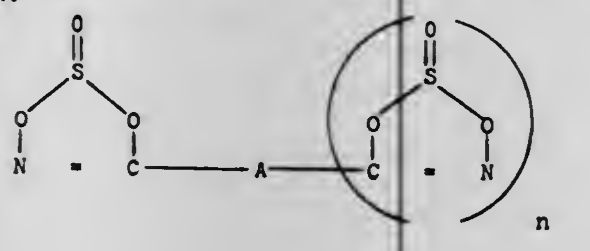
wherein Y and Z are aromatic or heteroaromatic nuclei, R_1, R_2, R_3, R_4 and R_5 are hydrogen or various substituents such as alkyl, aryl, alkoxy, halogen, etc.

3,649,636

PROCESS FOR PRODUCING CYCLIC NITRILE SULFITES

Emmett H. Burk, Jr., Glenwood, Ill., and Donald D. Carlos, Middletown, Ky., assignors to Atlantic Richfield Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 850,336, Aug. 11, 1969, which is a continuation of application Ser. No. 603,454, Dec. 21, 1966. This application Nov. 13, 1969, Ser. No. 876,593
Int. Cl. C07d *95/00*
U.S. Cl. 260—301 **11 Claims**

A cyclic nitrile sulfite compound of the general formula:



wherein *n* is 0 to 2 and A is aromatic hydrocarbon having 1 to 3 aromatic rings, up to 30 carbon atoms, and no acetylenic or ethylenic unsaturation, the cyclic nitrile sulfite groups being directly attached to aromatic ring atoms of A, is prepared by addition reacting sulfur dioxide with a nitrile oxide compound of the general formula:

$$O\leftarrow N\equiv C—A(C\equiv N\rightarrow O)_n$$

wherein A and *n* are as defined above. The cyclic nitrile sulfite compound is useful as, for example, an isocyanate generator. Thus, it can be thermally decomposed to an isocyanate of the general formula:

$$O=C=N—A(N=C=O)_n$$

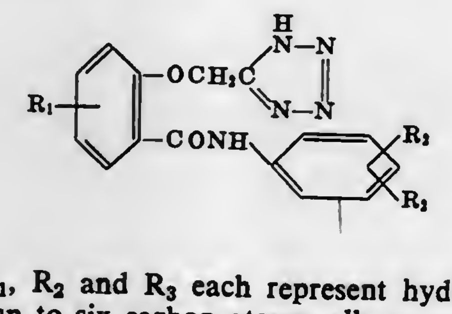
wherein A and *n* are as defined above.

3,649,637

SUBSTITUTED 5-(ORTHO CARBOXANILIDO-PHENOXYMETHYL)TETRAZOLES

John Gordon Bernard Howes, Hertford, and Rupert Aleck Selway, Harlow, Essex, England, assignors to T. J. Smith & Nephew Limited, Kingston-upon-Hull, England
No Drawing. Filed Nov. 4, 1968, Ser. No. 773,306
Claims priority, application Great Britain, Nov. 3, 1967, 50,066/67
Int. Cl. A61k *27/00;* **C07d** *55/56*
U.S. Cl. 260—308 D **4 Claims**

Substituted tetrazoles which are useful for the treatment of inflammatory disorders in mammals are provided having the general formula



in which R_1, R_2 and R_3 each represent hydrogen, alkyl containing up to six carbon atoms, alkoxy containing up to six carbon atoms, halogen or trifluoromethyl.

3,649,638

SUBSTITUTED 5-NITROIMIDAZOLES

Goro Asato, Titusville, Gerald Berkelhammer, Princeton, and William Henry Gastrock, Hightstown, N.J., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Continuation-in-part of application Ser. No. 766,984, Oct. 11, 1968. This application Oct. 2, 1969, Ser. No. 863,378
Int. Cl. C07d *49/36, 85/54, 91/62*
U.S. Cl. 260—309 **3 Claims**

This invention relates to chemical compounds of the class 1 - substituted - 5 - nitro-2-substituted imidazoles and methods for the preparation thereof. These compounds are useful for their anti-microbial activity.

3,649,639

PREPARATION OF 1-(1-SUBSTITUTED-5-NITRO-2-IMIDAZOLECARBOXIMIDOYL) - 3 - THIOSEMICARBAZIDES

Ira Starer, Somerville, and Christos George Papaioannou, Somerset, N.J., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Oct. 7, 1969, Ser. No. 864,530
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **10 Claims**

The reaction of 1-substituted-2-cyano-5-nitroimidazole with thiosemicarbazide to produce 1-(1-substituted-5-nitro-2-imidazolecarboximidoyl)-3-thiosemicarbazide is described. The latter compounds can be cyclized to produce

2-(2-amino - 1,3,4 - thiadiazole-5-yl)-1-substituted-5-nitroimidazole. The latter compounds are useful as antibacterial or antiparasitic agents.

3,649,640

α-ARYL-3-(2-IMIDAZOLIN-2-YL)-2-NAPHTHALENE-METHANOLS

Theodore S. Sulkowski, Wayne, and Albert A. Mascitti, Norristown, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Mar. 10, 1970, Ser. No. 18,306
Int. Cl. C07d *49/34*
U.S. Cl. 260—309.6 **5 Claims**

α-Aryl-3-(2 - imidazolin - 2-yl)-2-naphthalenemethanols have been prepared which have anti-inflammatory activity.

3,649,641

4-HYDROXY - 1 - SUBSTITUTED-1*H*-THIENO[2,3-c] PYRAZOLE-5-CARBOXYLIC ACID DERIVATIVES AND INTERMEDIATES THERETO

Dong H. Kim, Wayne, and Arthur A. Santilli, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Nov. 4, 1969, Ser. No. 874,055
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 R **4 Claims**

4 - hydroxy-1-substituted-1*H*-thieno[2,3-c]-pyrazole-5-carboxylic acid derivatives useful as antiamebic agents are disclosed, as well as methods of synthesis of these compounds.

3,649,642

GREEN PIGMENT DYES OF THE PHTHALO-CYANINE SERIES

Arnold Tartter, Lambsheim, Pfalz, and Enno Luebcke and Horst Belde, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Feb. 2, 1968, Ser. No. 702,521
Claims priority, application Germany, Feb. 4, 1967, P 15 69 665.8, P 16 69 680.3
Int. Cl. C09b *47/04*
U.S. Cl. 260—314.5 **2 Claims**

Valuable green pigment dyes are obtained when phthalocyanines containing phenyl groups are treated at temperatures above 20° C. with sulfuric acid having a concentration of more than 50% by weight until the reaction product has a sulfur content of 0.1 to 3.5% by weight.

3,649,643

N-PHTHALIMIDOACETYL-5-CHLORO-2-CYCLO-PROPYL-METHYLAMINOBENZHYDROL

Robert M. Novack, Mendham, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
No Drawing. Filed Mar. 10, 1969, Ser. No. 805,894
Int. Cl. C07d *27/52*
U.S. Cl. 260—326 N **5 Claims**

There is described N-phthalimidoacetyl - 5 - chloro-2-cyclopropylmethylaminobenzhydrol; a process for producing said compound; and a method for converting same into N-phthalimidoacetyl - 5 - chloro - 2 - cyclopropylmethylaminobenzophenone. The benzhydrol compound of this invention is prepared by reacting 5-chloro-2-cyclopropylmethylaminobenzhydrol with phthalimidoacetyl chloride in the presence of an alkali at a temperature below normal room temperatures. It is converted to the aforementioned known benzophenone by reaction with an aqueous acetic acid solution of chromium trioxide.

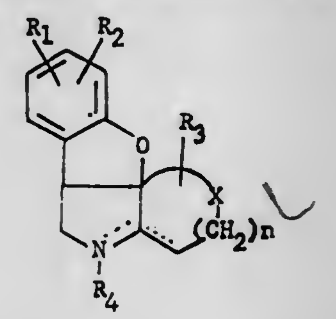
N - phthalimidoacetyl - 5 - chloro - 2 - cyclopropylmethylaminobenzhydrol is useful, and it is used, as the penultimate intermediate in a process for the preparation of 1-cyclopropylmethyl - 5 - phenyl - 7 - chloro - 1H - 1,4-benzodiazepine-2(3H)-one. The novel benzhydrol compound is converted into the corresponding benzophenone and the latter, in turn, is converted into the benzodiazepine compound. The aforementioned benzodiazepine compound is a known tranquilizer, exhibiting anti-anxiety and sedative activity without undesirable side effects such as hypnosis.

3,649,644

1,2,3,4,4a,5,6,6a-OCTAHYDROBENZOFURO [3,2-c]INDOLES

Arch Christian Sonntag, Gainesville, Fla., and Sylvester Klutchko, Hackettstown, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
No Drawing. Filed Aug. 8, 1969, Ser. No. 848,745
Int. Cl. C07d *27/04*
U.S. Cl. 260—326.5 B **11 Claims**

The present invention discloses a tetracyclic hydrogenated benzofuro[3,2-c]indole having the formula:



wherein *n* is from 2 to 4, inclusive; X is sulfur, oxygen, CH_2, or N—R_5, wherein R_5 is hydrogen, alkyl, aryl or aralkyl; R_1 is hydrogen, hydroxy, acyloxy, alkoxy, alkyl or halogen; R_2 is hydrogen, hydroxy, acyloxy, alkoxy, alkyl or halogen; R_1 and R_2 taken together are methylenedioxy; R_3 is alkyl, aryl or aralkyl; and R_4 is hydrogen, lower alkyl, substituted alkyl or aralkyl, acyl, alkenyl, guanyl, $CH_3\oplus I\ominus$ or $(CH_3)_2\oplus I\ominus$ (when no double bond is present) and which may or may not contain a double bond between the positions indicated.

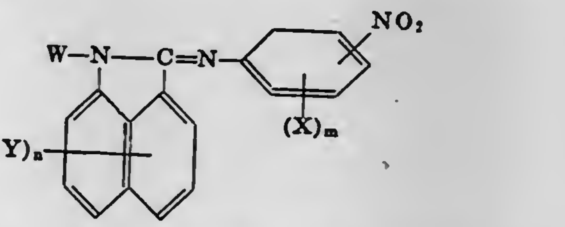
These compounds are useful as central nervous system stimulants.

3,649,645

NAPHTHOSTYRIL TYPE DISPERSE DYES

Eiji Yamada, Ibaragi-shi, Kiichiro Yamaguchi, Minoo-shi, and Takashi Akamatsu, Ashiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
No Drawing. Filed Apr. 1, 1969, Ser. No. 812,394
Claims priority, application Japan, Apr. 6, 1968, 43/23,043; Sept. 3, 1968, 43/63,535; Sept. 4, 1968, 43/63,913; Sept. 14, 1968, 43/66,311
Int. Cl. C07d *27/46*
U.S. Cl. 260—326.62 **10 Claims**

Naphthostyril type compounds suitable for dyeing or coloring hydrophobic man-made fibrous materials, particularly a polyester, polyester ether, acetyl cellulose or polyamide, are



wherein W is hydrogen, lower alkyl, phenyl (lower alkyl), or phenyl group; Y is hydrogen, halogen, nitro, lower alkyl, lower alkoxy, lower alkylmercapto or lower dialkylamino group; X is hydrogen, cyano, nitro, halogen, trifluoromethyl, lower alkyl, lower alkoxy, —SO_2R or —COOR; *n* is an integer of 1 to 4; *m* is an integer of 1 to 4; and R is lower alkyl.

3,649,646
1-(3',7' - DIMETHYLOCT - 6' - ENYLOXY)-3,4-METHYLENEDIOXYBENZENES AND THE 6',7'-EPOXY DERIVATIVES THEREOF

John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Filed July 30, 1970, Ser. No. 59,737

Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 **5 Claims**

Citronellyl ethers and derivatives for insect control.

3,649,647
MIXED SUGAR ALCOHOL ESTERS OF HIGHER AND LOWER SATURATED FATTY ACIDS

Masanori Ota, Osaka-shi, and Seishiro Yoshikawa, Yamato-Takada-shi, Japan, assignors to Okamura Oil Mill Limited, Kawahara-cho, Kashwara-shi, Osaka-fu, Japan

Filed Sept. 15, 1969, Ser. No. 857,725

Claims priority, application Japan, Sept. 21, 1968, 43/68,571

Int. Cl. C07c *69/32;* **C07d** *7/04;* **A23d** *5/00*

U.S. Cl. 260—345.8 **7 Claims**

A sugar alcohol ester comprising an ester of sugar alcohol having 5 to 6 carbon atoms with 1 to 3 moles per mole of sugar alcohol of a higher saturated fatty acid having 14 to 18 carbon atoms and at least one mole per mole of sugar alcohol of a lower saturated fatty acid having 2 to 4 carbon atoms, said ester having a melting point of 30 to 40° C., a hydroxyl value of 0 to 100 and a saponification value of 210 to 300; and a process for manufacturing said sugar alcohol ester from a sugar alcohol of 5 to 6 carbon atoms, high saturated fatty acid of 14 to 18 carbon atoms and lower saturated fatty acid of 2 to 4 carbon atoms. Said sugar alcohol ester is useful for edible fat, fat for suppositories, etc.

3,649,648
PREPARATION OF HIGH MOLECULAR WEIGHT EPOXIDES

David S. Fetterman, Maple Glen, Pa., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Feb. 20, 1970, Ser. No. 13,194

Int. Cl. C07d *1/08, 1/12*

U.S. Cl. 260—348.5 L **3 Claims**

In a water-free process for preparing higher molecular weight epoxides by the reaction of an organic hydroperoxide and a higher molecular weight olefin, the separation of the epoxide product from the alcohol by-product is improved by the addition of water before distillation.

3,649,649
FLUORAN DERIVATIVES AND PREPARATION THEREOF

Michio Orita and Masakichi Yahagi, Tokyo, Chohji Enomoto and Takeo Obitu, Saitama-ken, and Takafumi Tohyama, Tokyo, Japan, assignors to Nisso Kako Co., Ltd.

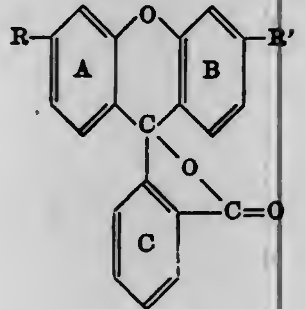
No Drawing. Filed July 2, 1968, Ser. No. 741,871

Claims priority, application Japan, July 10, 1967, 42/44,026; Mar. 23, 1968, 43/18,545

Int. Cl. C07d *5/34*

U.S. Cl. 260—343.3 **4 Claims**

Compounds of the formula



wherein R is alicyclic amino, morpholino or piperidino, and R' is hydrogen, chlorine or lower alkyl are disclosed. These compounds may be incorporated within color coating compositions.

3,649,650
NOVEL DERIVATIVES OF TETRAHYDRO-CANNABINOL

Raj K. Razdan, Belmont, and Harry G. Pars, Lexington, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

No Drawing. Filed Feb. 13, 1970, Ser. No. 11,323

Int. Cl. C07d *7/18*

U.S. Cl. 260—345.3 **7 Claims**

Novel 1-[2-(dilower-alkylamino)alkoxy]-3-alkyl (and cycloalkyl-lower-alkyl) 6a,7,8,10a-(and 6a,7,9,10a- and 7,8,9,10-) tetrahydro - 6,6,9-trilower-alkyl-6H-dibenzo-[b,d]pyrans, and acid salts thereof. These compounds possess biological activity and are useful as therapeutic agents.

3,649,651
DIBENZOFURAN DERIVATIVES AND PREPARATION THEREOF

Thomas A. Dobson, Montreal, Quebec, Canada, assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed July 2, 1969, Ser. No. 838,673

Int. Cl. C07d *5/44*

U.S. Cl. 260—346.2 **5 Claims**

There are disclosed herein -1 - (2 - dibenzofuryl)-1,4-butanediol, 2-dibenzofuryl 3-hydroxypropyl ketone, γ-oxo - 2 - dibenzofuranbutyraldehyde and γ-hydroxy-2-dibenzofuranbutyraldehyde, as well as processes for their preparation. These compounds possess antiinflammatory properties and methods for their use are disclosed.

3,649,652
ACID ANTHRAQUINONE DYESTUFFS

Hans Rudolf Schwander, Riehen, Anton Zenhausern, Reinach, Basel-Land, and Peter Hindermann, Bottmingen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

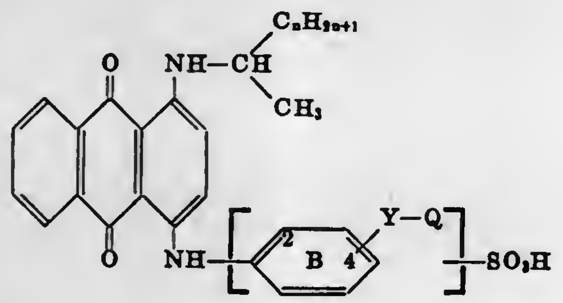
No Drawing. Original application Dec. 17, 1965, Ser. No. 514,702, now Patent No. 3,491,126, dated Jan. 20, 1970. Divided and this application Nov. 26, 1969, Ser. No. 880,414

Claims priority, application Switzerland, Dec. 21, 1964, 16,422/64; Mar. 3, 1965, 2,938/65

Int. Cl. C09b *1/34*

U.S. Cl. 260—374 **3 Claims**

Dyestuffs, which in their free acid form are of the formula



wherein

n represents 1 or 2,

Q represents phenyl, lower alkylphenyl, chlorophenyl, or bromophenyl,

Y represents —O—, —S—, $—CH_2—$, which dyestuff is produced by monosulfonating the unsulfonated dyestuff corresponding to the above formula minus $—SO_3H$, are useful for the dyeing and printing of synthetic or natural polyamide fibers.

3,649,653
PHOTOCHEMICAL PROCESS OF PRODUCING 3,5-DI-SUBSTITUTED FUCHSONES

Hans-Dieter Becker, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Original application Sept. 13, 1966, Ser. No. 579,008, now Patent No. 3,541,116, dated Nov. 17, 1970. Divided and this application Mar. 2, 1970, Ser. No. 15,968

Int. Cl. C09b *11/06*

U.S. Cl. 260—389 **9 Claims**

Irradiation of an acid-free acetone solution of a 2,6-di(C_{1-8} secondary or tertiary alkyl)phenol and a benzophenone, which can have para-substituents, using light having a wavelength in the range of 300–500 mμ produces a triphenyl carbinol intermediate. Replacing the acetone with acidified methanol converts the intermediate to a fuchsone whose 3- and 5-substituents are those of the phenol reactant and any 4'- and 4''-substituents are those of the benzophenone reactant. The fuchsones are useful as dyes and for the making of bisphenols.

3,649,654
WATER-SOLUBLE CATIONIC NAPHTHOQUINONE-IMINE DYESTUFFS CONTAINING A QUATERNARY AMMONIUM GROUP

Heinz Keller, Muttenz, and Hans Grossmann, Oberwil, Switzerland, assignors to Durand & Huguenin A.G., Basel, Switzerland

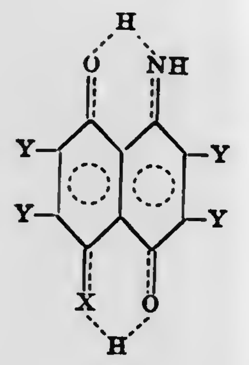
No Drawing. Continuation-in-part of application Ser. No. 698,119, Jan. 16, 1968. This application Dec. 12, 1968, Ser. No. 783,429

Claims priority, application Switzerland, Jan. 16, 1967 580/67

Int. Cl. C07c *97/10*

U.S. Cl. 260—396 N **4 Claims**

Condensation products of a primary phenylamine which contains a quaternary ammonium group, and a compound of the formula



I

in which

X is an oxygen atom or the NH group, and

Y is a hydrogen atom, a chlorine atom, a bromine atom or a lower alkyl group, are suitable for dyeing animal and human hair, and particularly for dyeing living human hair.

3,649,655
PROCESS FOR PREPARING ESTERS BY REACTING A MONOBASIC ORGANIC ACID WITH A SECONDARY ALKYL HALIDE

Charles M. Selwitz, Pitcairn, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Sept. 29, 1969, Ser. No. 862,042

Int. Cl. C07c *67/00, 67/04*

U.S. Cl. 260—410 **15 Claims**

A process for preparing an ester which involves reacting a monobasic organic acid with a secondary alkyl halide in the presence of ferric, stannic or zinc chlorides or bromides.

3,649,656
PROCESS OF IMPROVING THE QUALITY OF FATS OBTAINED DURING RENDERING OR REFINING

Ilona Taussky, 440 E. 79th St., New York, N.Y. 10021

No Drawing. Filed July 23, 1969, Ser. No. 844,159

Int. Cl. C11b *1/12*

U.S. Cl. 260—412.7 **12 Claims**

During rendering or refining of freshly rendered fats, a combination of lignin and a calcium silicate, magnesium silicate or a mixture of these two silicates is added to the charge in an amount of at least 0.05% by weight of each of these additives relative to the weight of the anticipated or measured fat yield.

The combined additives improve the color and odor of the fat, reduce the free fatty acid contents and shorten the filtration time.

3,649,657
CRYSTAL MODIFIER AND METHOD FOR SOLVENT SEPARATION OF FATTY MATERIALS

Donald D. Staker and Richard H. Plantholt, Cincinnati, Ohio, and David J. Kriege, Newport, Ky., assignors to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Filed Apr. 5, 1968, Ser. No. 719,251

Int. Cl. C09f *5/10*

U.S. Cl. 260—419 **10 Claims**

Crystal modifiers useful in the separation of mixtures of more saturated from less saturated fatty acids or mixtures of relatively saturated and relatively unsaturated triglycerides into saturated and unsaturated fractions. Also a method for crystallization of fatty materials using said crystal modifiers. The crystal modifiers are prepared in an acidolysis reaction in which polybasic acids are reacted with fatty acid esters of polyhydric alcohols.

3,649,658
ZINC CHLORINATED DITHIOBENZOATES

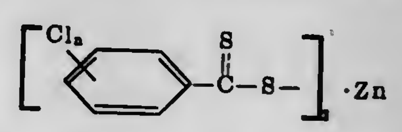
Toshiaki Ozaki, Toyonaka-shi, and Haruo Kunihiro, Takatsuki-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Sept. 24, 1969, Ser. No. 860,791

Int. Cl. C07f *3/06*

U.S. Cl. 260—429.9 **5 Claims**

Novel zinc chlorinated dithiobenzoates represented by the formula,



wherein n is an integer of 1 to 5, which may be employable as fungicidal compositions.

3,649,659
COORDINATED COMPLEXES OF MANNICH BASES

Ferdinand P. Otto, Woodbury, and Andreas Logothetis, Haddonfield, N.J., assignors to Mobil Oil Corporation

No Drawing. Continuation-in-part of application Ser. No. 582,253, Oct. 10, 1966. This application Mar. 24, 1970, Ser. No. 22,366

Int. Cl. C07f *3/06, 7/22, 15/04*

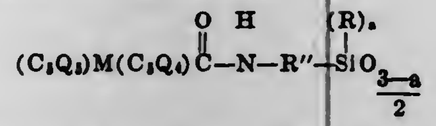
U.S. Cl. 260—429 R **11 Claims**

Metal complexes exhibiting detergency and neutralizing properties in organic fluids are prepared by reacting a Mannich product with a metal salt of an acid. Exemplary of the Mannich products used are those prepared from amines, polyalkylphenols and aldehydes.

3,649,660
SILYL ORGANOMETALLOCENES USEFUL AS ANTIOXIDANTS

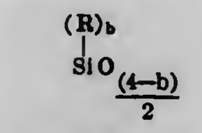
Edgar D. Brown, Jr., 1130 N. Country Club Drive, and Abe Berger, 1540 Barclay Place, both of Schenectady, N.Y. 12309
No Drawing. Filed July 20, 1970, Ser. No. 56,681
Int. Cl. C07f *15/00, 15/02, 15/04*
U.S. Cl. 260—429 CY **11 Claims**

Silylorganometallocenes selected from the class of
(a) polymers of the formula,



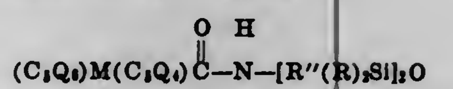
$$(C_5Q_4)M(C_5Q_5)\overset{\overset{O}{\|}}{C}-\overset{H}{N}-R''-\overset{(R)_a}{\overset{|}{Si}}O_{\frac{3-a}{2}}$$

(b) copolymers having units of the formula,



$$\overset{(R)_b}{\overset{|}{Si}}O_{\frac{(4-b)}{2}}$$

and at least one unit of (a), and
(c) disiloxanes of the formula,



$$(C_5Q_4)M(C_5Q_5)\overset{\overset{O}{\|}}{C}-\overset{H}{N}-[R''(R)_2Si]_2O$$

where R is a monovalent hydrocarbon radical, R'' is a divalent hydrocarbon radical, and $(C_5Q_4)M(C_5Q_5)$ is an organometallocene, where Q is selected from hydrogen, an electron donating organic radical, and an electron withdrawing organic radical and M is a transition metal, *a* is a whole number equal from 0 to 2 and *b* is a whole number equal from 0 to 3. These silylorganometallocenes are useful as antioxidants for organopolysiloxane fluids under extreme oxidation conditions.

3,649,661
COORDINATED COMPLEXES OF NITROGENOUS COMPOUNDS

Ferdinand P. Otto, Woodbury, and Andreas Logothetis, Haddonfield, N.J., assignors to Mobil Oil Corporation
No Drawing. Continuation-in-part of application Ser. No. 585,253, Oct. 18, 1966. This application Mar. 24, 1970, Ser. No. 22,399
Int. Cl. C07f *3/06, 7/22, 15/04*
U.S. Cl. 260—429.7 **14 Claims**

Metal complexes having improved detergency and neutralizing characteristics for industrial fluids are produced by reacting a nitrogen-containing compound with a metal salt and an alkenylsuccinic acid or anhydride. The latter two components may be reacted separately with the nitrogen in either of two possible orders, or the metal complex can be formed in situ by mixing all reactants at the same time.

3,649,662
PROCESS FOR THE PRODUCTION OF TRIORGANOLEAD COMPOUNDS AND COMPOUNDS AND MIXTURES FORMED THEREBY

Hermann Otto Wirth, Bensheim-Auerbach, Rudolf Maul, Bensheim, Bergstrasse, Hans-Helmut Friedrich, Lindenfels, Odenwald, and Wilhelm Hess, Darmstadt, Germany, assignors to Deutsche Advance Produktion GmbH, Lautern am Odenwald, Germany
No Drawing. Filed Apr. 29, 1969, Ser. No. 820,342
Claims priority, application Germany, May 10, 1968, P 17 68 409.2; Sept. 28, 1968, P 17 93 520.5; Feb. 26, 1969, P 19 09 494.1
Int. Cl. C07f *7/24*
U. S. Cl. 260—437 R **20 Claims**

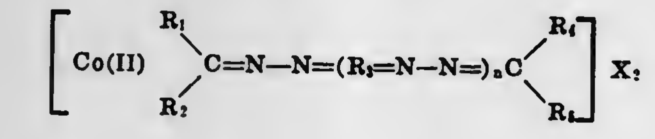
Process for producing triorganolead compounds such as triorganolead acylates, inorganic acid salts, cyanides, halides, hydroxides, organic sulfonates, triazolides, imidazolides, carbamates, organic mercaptides, thiocarbamates, thiocarboxylates, phenolates, thiophenolates, substituted acylates, etc., including mono-triorganolead and bis(triorganolead) compounds, by reacting hexaorganodilead compounds with an organic acid, an inorganic acid, a sulfonic acid, organic mercaptans, inorganic cyanides, phenols, thiocarboxylic acid esters, organic amines, organic amides, inorganic hydroxides, inorganic acid salts, etc., in the presence of a percarboxylic acid. The process also results in novel mono-triorganolead compounds and novel bis(triorganolead) compounds as well as novel mixtures of such compounds.

The resulting compounds are useful as biocides, as retarding additives for lubricants, repellents against wild animals and rodents to protect crops or vegetation and as intermediates and catalysts for the production of useful chemical materials.

3,649,663
COBALT II HALIDE KETAZINE AND ALDAZINE COMPLEXES

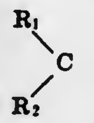
Christian H. Stapfer, Newtown, and Richard W. D'Andrea, New Hope, Pa., assignors to Carlisle Chemical Works, Inc., Reading, Ohio
No Drawing. Filed Mar. 31, 1970, Ser. No. 24,379
Int. Cl. C07f *15/02, 21/00*
U.S. Cl. 260—439 R **10 Claims**

Cobalt II halides complexes of the formula



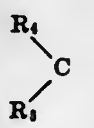
$$\left[Co(II)\ \overset{R_1}{\underset{R_2}{>}}C=N-N=(R_3=N-N=)_nC\overset{R_4}{\underset{R_5}{<}}\right]X_2$$

are prepared where R_1 and R_4 are hydrogen, alkyl, aryl, haloaryl, haloalkyl, aralkyl, furyl, tetrahydrofuryl and R_2 and R_5 are alkyl, aryl, haloaryl, haloalkyl, aralkyl, furyl, tetrahydrofuryl or



$$\overset{R_1}{\underset{R_2}{>}}C$$

together is cycloalkyl of at least 3 carbon atoms and

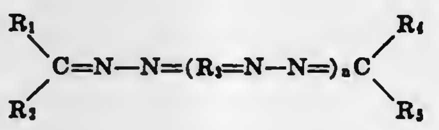


$$\overset{R_4}{\underset{R_5}{>}}C$$

together is cycloalkyl of at least 3 carbon atoms, R_3 is alkylene or arylene, *n* is 0 or 1 and X is halogen. The compounds are useful as driers for alkyd resins and to accelerate the oxidative polymerization of olefinic polymer systems, particularly unsaturated polyesters, in conjunction with organic peroxides. The compounds can also be used to form mixed bidentate ligand chelates as well as mixed bidentate unidentate ligand chelates of the formula

$$[Co(II)(Az)(Y)_m(Z)_{4-2m}]X_2$$

where Az is



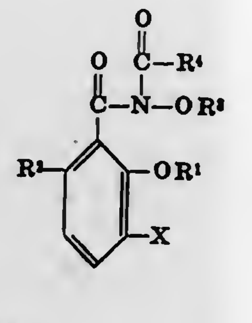
$$\overset{R_1}{\underset{R_2}{>}}C=N-N=(R_3=N-N=)_nC\overset{R_4}{\underset{R_5}{<}}$$

which have the same uses.

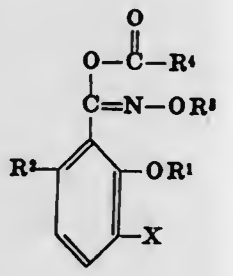
3,649,664
N-ACYLATED BENZOHYDROXAMATES

Sidney B. Richter and Eugene F. Barnas, Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.
No Drawing. Filed Oct. 8, 1968, Ser. No. 765,962
Int. Cl. C07c *101/16, 119/00*
U.S. Cl. 260—453 R **5 Claims**

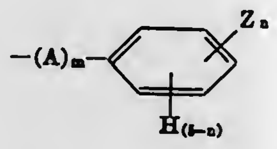
This invention discloses new chemical compounds selected from the group consisting of



and their isomeric form



wherein X is halogen; R^1 and R^3 are alkyl; R^2 is selected from the group consisting of alkyl and alkoxy; R^4 is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio and



wherein A is selected from the group consisting of oxygen, sulfur and alkylene; Z is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, cyano and dialkylamino; *m* is an integer from 0 to 1; and *n* is an integer rom 0 to 5. The compounds of the above description possess valuable acaricidal properties.

3,649,665
HYDROCARBON OXIDATION WITH NITRIC OXIDE AND OXYGEN

Harry Chafetz, Poughkeepsie, N.Y., William D. Blackley, Lake Elmo, Minn., and Kenneth L. Kreuz, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed Apr. 23, 1969, Ser. No. 818,837
Int. Cl. C07c *77/00, 77/02, 79/02*
U.S. Cl. 260—466 **15 Claims**

This invention relates to the relatively low temperature treatment of hydrocarbons with nitric oxide (NO) and oxygen to produce nitrates, nitrites and ketones and other oxidation products. Through the use of alkaline inhibitors such as the alkali metal bicarbonates, the production of ketones and other non-nitrogen containing oxidation products can be minimized while the production of nitrates and nitrites are maximized.

3,649,666
PROCESS FOR THE HYDRODIMERIZATION OF ACRYLIC ACID DERIVATIVES

Yael Arad, Tel Aviv, and Moshe Levy, Israel R. Miller, and David Vofsi, Rehovoth, Israel, assignors to UCB (Union Chimique-Chemische Bedrijven) S.A., Brussels, Belgium
No Drawing. Filed Mar. 7, 1967, Ser. No. 621,116
Claims priority, application Israel, Mar. 9, 1966, 25,344
Int. Cl. C07c *121/20, 121/28*
U.S. Cl. 260—465.8 **13 Claims**

High yields of objective dimer are obtained in the hydrodimerization of functional derivatives of acrylic acid by means of alkali metal amalgam in a medium containing water and DMSO, while allowing the reaction mixture to become as strongly alkaline as corresponds to the decomposition of the alkali metal amalgam in the course of the reaction, whereby no pH control of the reaction medium is necessary.

3,649,667
ARYL POLYESTERS OF 3,5-DIALKYL-4-HYDROXYPHENYL-ALKANOIC ACIDS

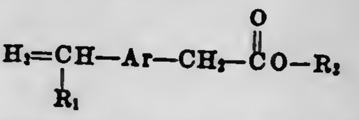
John Song, Bound Brook, Joseph Adrian Hoffman, Bridgewater Township, Somerset County, and Peter Vincent Susi, Middlesex, N.J., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Continuation-in-part of application Ser. No. 706,607, Feb. 19, 1968. This application June 24, 1970, Ser. No. 49,535
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 S **4 Claims**

Organic materials normally subject to oxidative deterioration, particularly polypropylene, are stabilized by the incorporation therein of novel hindered polyphenols which are substituted-benzyl esters of β-(substituted hydroxyphenyl)propionic acids. The antioxidants are non-discoloring and exhibit a low degree of extractability from the substrate in the presence of aromatic organic solvents.

3,649,668
HALOGEN CONTAINING ESTERS OF VINYL ARYLENE ACETIC ACID

Richard J. Dolinski, Jerry D. De Vrieze, and Robert M. Nowak, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed June 15, 1970, Ser. No. 46,499
Int. Cl. C07c *69/76*
U.S. Cl. 260—476 R **3 Claims**

Polymerizable, halogen containing esters of the following formula are disclosed



$$CH_2=\underset{R_1}{\underset{|}{C}}H-Ar-CH_2-\overset{\overset{O}{\|}}{C}O-R_2$$

where Ar is a bivalent aromatic group of 6–20 carbons, R_1 is hydrogen or methyl and R_2 is a halogenated group derived from a primary alkyl alcohol having from 5 to about 10 carbons wherein the carbon adjacent to a carbon bearing a halogen has no hydrogens, a halogenated phenyl group or a halogenated allyl group.

3,649,669
BENZOXYALKYL SUBSTITUTED THIOPSEUDOUREAS

Bernard M. Regan, Chicago, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.
No Drawing. Continuation-in-part of application Ser. No. 741,235, June 28, 1968. This application June 29, 1970, Ser. No. 50,930
Int. Cl. C07c *69/78*
U.S. Cl. 260—477 **6 Claims**

New benzoxyalkyl substituted thiopseudoureas having local anesthetic properties, for example, 2-(2-benzoxyethyl)-2-thiopseudouronium chloride.

3,649,670

TRIALKYLHYDRAZINOMETHYLPHENYL N-ALKYL CARBAMATES

Henri Sidi, Paramus, N.J., assignor to Tenneco Chemicals, Inc.

No Drawing. Filed Oct. 16, 1967, Ser. No. 675,362

Int. Cl. C07c *125/06*

U.S. Cl. 260—479 C **7 Claims**

Trialkylhydrazinomethylphenyl N - alkyl carbamates are useful as insecticides. Among the most active of these compounds as insecticides are trimethylhydrazinomethyl-3,5 - dimethylphenyl N-methyl carbamate, trimethylhydrazinomethyl - 2 - methoxyphenyl N-methyl carbamate, and trimethylhydrazinomethyl - 4 - methylthio-m-cresyl N-methyl carbamate.

3,649,671

ALKYLCARBAMIC ACID: 4-ALKYLTHIO AND 4-ALKYLSULFONYL ESTERS

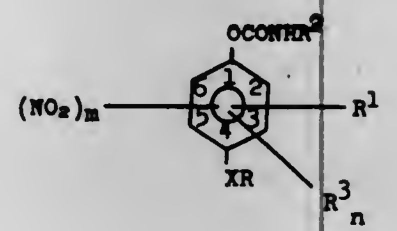
Jacqueline S. Kelyman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 23, 1968, Ser. No. 770,057

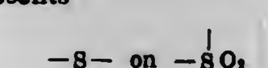
Int. Cl. C07c *125/06*

U.S. Cl. 260—479 C **4 Claims**

Novel 4-(alkylthio)- and 4-(alkylsulfonyl)-substituted nitrophenyl esters of (lower alkyl)carbamic acid are claimed, corresponding to the formula



wherein R^3 represents hydrogen, lower alkyl, lower alkoxy or halo, R^1 represents R^3 or C_{5-8} cycloalkyl, R^2 and R each represents lower alkyl which may be the same or different, X represents



$$-S- \text{ on } -\overset{|}{S}O_2$$

and *m* and *n* each represents an integer from 1 to 2. The terms "lower alkyl," "lower alkoxy," "lower alkylthio" and "lower alkylsulfonyl" represent groups containing 1 to 4 carbon atoms, and the term "halo" represents chloro, bromo or iodo. The compounds are useful as pesticides.

3,649,672

CARBOXYLIC ACID ESTERS OF 3-FORMYLBUTANOL-1 AND PROCESS

Walter Himmele, Walldorf, Werner Aquila, Ludwigshafen, and Richard Prinz, Waiblingen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Apr. 10, 1970, Ser. No. 27,431

Claims priority, application Germany, Apr. 12, 1969, P 19 18 694.8

Int. Cl. C07c *67/00, 69/14, 69/24*

U.S. Cl. 260—488 F **7 Claims**

Manufacture of carboxylic acid esters of 3-formylbutanol-1 comprising the conversion of bis(monocarboxylic acid esters) of butene-2-diol-1,4 with carbon monoxide and hydrogen in the presence of carbonyl complexes of rhodium at temperatures of more than 110° C. to 150° C. and pressures of from 150 to 800 atmospheres. Carboxylic acid esters of 3-formylbutanol-1 are intermediates in the manufacture of vitamin A esters.

3,649,673

VINYL AND ALLYL CARBAMATES

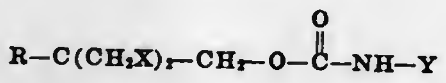
George A. Burk, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 1, 1970, Ser. No. 42,489

Int. Cl. C07c *125/06*

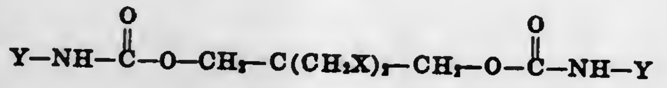
U.S. Cl. 260—482 B **4 Claims**

Novel compounds of the formula



$$R-C(CH_2X)_2-CH_2-O-\overset{O}{\overset{\|}{C}}-NH-Y$$

or



$$Y-NH-\overset{O}{\overset{\|}{C}}-O-CH_2-C(CH_2X)_2-CH_2-O-\overset{O}{\overset{\|}{C}}-NH-Y$$

wherein R is hydrogen, lower alkyl, hydroxymethyl or $—CH_2X$; X is chloro or bromo; and Y is vinyl or allyl, are disclosed. They are prepared by reacting vinyl or allyl isocyanate with an alcohol of the formula

$$R—C(CH_2X)_2—CH_2OH$$

or $HOCH_2—C(CH_2X)_2—CH_2OH$. The compounds are useful as fungicides and herbicides. In example, vinyl isocyanate reacts with 3-chloro - 2,2 - bis-(chloromethyl) propanol to produce 3-chloro-2,2-bis(chloromethyl)propyl vinylcarbamate.

3,649,674

SALTS OF CARBAMIC AND THIOCARBAMIC ESTERS WITH FUNGICIDAL AND FUNGISTATIC ACTION

Georg-Alexander Hoyer and Ernst Albrecht Pieroh, Berlin, Germany, assignors to Schering AG, Berlin and Bergkamen, Germany

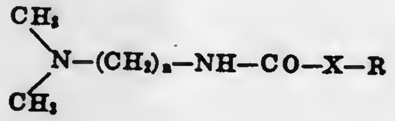
No Drawing. Filed July 18, 1968, Ser. No. 746,711

Claims priority, application Germany, Aug. 25, 1967, P 16 43 040.3

Int. Cl. C07c *125/06*

U.S. Cl. 260—482 C **17 Claims**

Salts of carbamic and thiocarbamic esters are used having fungicidal and fungistatic action, said salts having the general formula



$$\begin{array}{l} CH_3 \\ \quad\diagdown \\ \quad\; N-(CH_2)_n-NH-CO-X-R \\ \quad\diagup \\ CH_3 \end{array}$$

wherein R is an aliphatic hydrocarbon radical with preferably 2 to 4 carbon atoms, X is oxygen or sulfur, and *n* is an integer from 2 to 4, with an inorganic or organic acid.

3,649,675

PREPARATION OF BENZYL AND ALLYL ALKANOYLOXY COMPOUNDS

William J. Koehl, Jr., Yardley, Pa., assignor to Mobil Oil Corporation

No Drawing. Filed May 23, 1967, Ser. No. 640,500

Int. Cl. C07c *67/04*

U.S. Cl. 260—488 CD **11 Claims**

A method for the preparation of derivatives of benzylic and allylic compounds in the presence of a metal compound which is an oxidizing agent. The preferred oxidizing agent comprises a cobaltic ion, and the major products obtained are acyloxy derivatives. For example, the reaction of toluene with a cobaltic acetate solution yields benzyl acetate as the major compound.

3,649,676

PROCESS FOR THE MANUFACTURE OF UNSATURATED ALCOHOL-ESTERS

André Marc Galfré, Plan-de-Grasse, Marcel Plattier, Antibes, and Paul José Teisseire, Grasse, France, assignors to S.A. des Etablissements Roure-Bertrand Fils & Justin Dupont, Grasse, France

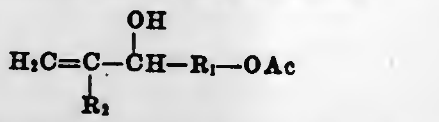
No Drawing. Continuation-in-part of application Ser. No. 625,014, Mar. 22, 1967. This application Sept. 12, 1969, Ser. No. 857,540

Claims priority, application Switzerland, Mar. 30, 1966, 4,752/66

Int. Cl. C07c *67/00*

U.S. Cl. 260—491 **6 Claims**

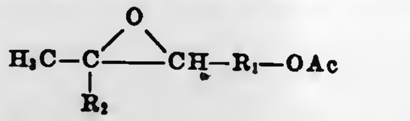
Unsaturated alcohol-esters of the formula



$$H_2C=\underset{R_2}{\underset{|}{C}}-\overset{OH}{\overset{|}{C}}H-R_1-OAc$$

(I)

wherein R_1 represents a divalent hydrocarbon group, R_2 represents a hydrogen atom or a lower alkyl group and Ac represents an acyl radical of a carboxylic acyl group, are prepared, without substantial cleavage of the ester group, by isomerising an epoxide of the general formula



(II)

using a triloweralkyl aluminium compound as catalyst to effect the isomerisation. Epoxy-citronellyl acetate obtainable by said isomerisation reaction is converted into the tetrahydropyran known as "rose-oxide" which latter is a valuable odoriferous material.

3,649,677

PROCESS FOR PREPARING BETAINES

Peter Morris, Whitley Bay, Northumberland, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Dec. 19, 1968, Ser. No. 785,393

Claims priority, application Great Britain, Jan. 10, 1968, 1,441/68

Int. Cl. C07c *101/00*

U.S. Cl. 260—501.13 **11 Claims**

A process for preparing betaines in improved yields comprising admixing a tertiary amine of the formula $R_1R_2R_3N$ wherein R_1 is alkyl of about 10 to about 18 carbon atoms and R_2 and R_3 are each alkyl of 1 to about 3 carbon atoms with an amount of water sufficient to provide a stirrable reaction mixture; heating the mixture at a temperature of about 20° C. to about 110° C.; adding at a pH of about 6.0 to about 9.0 at least a stoichiometric amount with respect to said amine of a substantially dry, particulate salt of the formula XR_4COOM wherein X is halogen, R_4 is alkylene of 1 to about 4 carbon atoms and M is alkali metal or ammonium; and continuing said heating while maintaining the pH within the range of about 6.0 to about 9.0 until the reaction is substantially complete. The betaines prepared by this process possess useful detergency properties and can be employed in the preparation of detergent compositions.

3,649,678

SUBSTITUTED CYCLOALKANE-ALKANOIC ACIDS

Raffaello Fusco, Milan, and Franco Tenconi, Monza, Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Original application Apr. 24, 1964, Ser. No. 362,959, now Patent No. 3,439,099, dated Apr. 15, 1969. Divided and this application Jan. 9, 1969, Ser. No. 790,160

Int. Cl. C07c *65/14, 65/20*

U.S. Cl. 260—501.16 **10 Claims**

There is described therapeutically active 1-benzyl- (or substituted benzyl-) substituted cycloalkanone alkanoic acids, 1-phenyl- (or substituted phenyl-) substituted cycloalkanol alkanoic acids and 1-benzyl- (or substituted benzyl-) cycloalkanol alkanoic acids. The compounds are useful, and are used, as choleretic agents.

3,649,679

SUBSTITUTED PHENYLALKANOIC ACID DERIVATIVES II

Winston S. Marshall, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Aug. 15, 1968, Ser. No. 752,800

Int. Cl. C07c *65/14, 149/40*

U.S. Cl. 260—520 **5 Claims**

Novel derivatives of 2-(4-phenoxyphenyl or 4-phenylthiophenyl)alkanoic acids having anti-inflammatory, analgesic, and anti-pyretic activity.

3,649,680

PURIFICATION OF AROMATIC CARBOXYLIC ACIDS

Alfred J. McNerney, Wallingford, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed Dec. 28, 1967, Ser. No. 694,108

Int. Cl. C07c *51/42, 63/02*

U.S. Cl. 260—524 M **10 Claims**

A process of separating and purifying aromatic carboxylic acids prepared by oxidizing alkyl aromatic hydrocarbons with an aqueous solution of an alkali metal chromate and which oxidation product has been treated with mineral acid to hydrolyze the alkali metal salt of the carboxylic acid to the free acid by interfusing the paste-like crude carboxylic acid mixture so formed with an alcohol-water mixture, separating the solid carboxylic acid and water washing same.

3,649,681

METHOD OF PREPARING AROMATIC CARBOXYLIC ACIDS

Byron E. Johnston, Edison, and Peter R. Taussig, Mountainside, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Sept. 30, 1968, Ser. No. 763,943

Int. Cl. C07c *63/02*

U.S. Cl. 260—524 R **8 Claims**

The catalytic oxidation with oxygen of p-xylene or other methyl-substituted aromatic compounds to terephthalic acid, etc. in a reaction solvent (e.g., acetic acid) containing a dissolved oxidation catalyst (e.g., cobalt acetate) is promoted or activated by incorporating certain benzylic compounds (e.g., p-xylene diacetate) to provide a higher yield of a more pure product. Methyl ethyl ketone and other methylenic ketones may be employed in conjunction with the benzylic activator. Activation with a benzylic compound having $—CH_2—$ nuclear substituents corresponding in number and orientation with the methyl substituents on the methyl benzene reactant further increases the yield by the substantial oxidation of such an activator to the desired aromatic carboxylic acid.

3,649,682

OXIDATION IN THE PRESENCE OF SACCHARIDES

Bruno J. Barone, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Filed Dec. 30, 1968, Ser. No. 788,035

Int. Cl. C07c *63/02*

U.S. Cl. 260—524 R **13 Claims**

A process for the oxidation of mononuclear aromatic compounds having at least one oxidizable group selected from methyl, hydroxymethyl, and aldehyde, in the presence of oxygen, cobaltous or cobaltic ions and an organic regulator or activator selected from the class comprising monosaccharides, disaccharides, trisaccharides, and other polysaccharides which yield these materials under the conditions of the system, and mixtures thereof, at about 60° C. to about 160° C., and at atmospheric pressure or greater.

3,649,683

PROCESS FOR PURIFYING TEREPHTHALIC ACID

Maximilien Grunfeld, deceased, late of Lyon, France, by Daniel Gras, legal representative, Paris, and Jean-Marie Bodin, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed May 27, 1968, Ser. No. 732,113

Claims priority, application France, May 29, 1967, 108,247

Int. Cl. C07c *51/42*

U.S. Cl. 260—525 **8 Claims**

Terephthalic acid is purified, especially from p-formylbenzoic acid, by treatment, in aqueous solution at elevated temperature and pressure, with a halogen.

3,649,684

PROCESS FOR THE PREPARATION OF METHACRYLIC ACID

Shinichi Akiyama, Kamakura-shi, and Shoichiro Minami, Yokohama-shi, Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

No Drawing. Filed July 25, 1969, Ser. No. 845,074

Int. Cl. C07c *57/04*

U.S. Cl. 260—530 N **8 Claims**

A process for the preparation of methacrylic acid, which comprises catalytically reacting methacrolein with molecular oxygen at elevated temperatures in vapor phase, in the presence of a catalyst consisting essentially of (a) molybdenum, (b) palladium or platinum, (c) arsenic (d) oxygen as the essential components, and any of (e) phosphorus, boron or silicon as an optional component.

3,649,685

PROCESS FOR THE PREPARATION OF ADIPIC ACID

Sachio Ishimoto, Tokyo, and Koji Nakagawa, Haruo Togawa, and Sumio Chubachi, Iwakuni-shi, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed July 15, 1969, Ser. No. 841,985

Claims priority, application Japan, Mar. 1, 1969, 44/15,693

Int. Cl. C07c *55/14*

U.S. Cl. 260—533 C **14 Claims**

A process for the preparation of adipic acid which comprises oxidizing cyclohexane with molecular oxygen in acetic acid solvent at temperatures ranging from 85° to 120° C., in the concurrent presence of an organic carboxylate of cobalt such as cobalt acetate and a bromine compound such as an alkali metal bromide and an alkaline earth metal bromide at such a ratio that the atomic ratio of Br to Co ranges from 1×10^{-4} to 1:1 and recovering the formed adipic acid. Thus, adipic acid is formed with high conversion and with an extremely short induction period, and the carboxylate of cobalt and bromine compound of the catalyst system can be recovered.

3,649,686

CONTINUOUS PROCESS FOR THE PREPARATION OF ACYLSULFANILYL CHLORIDE

Lawrence James Ross, North Plainfield, and Frederick Boyd Van Cor, South Branch, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 12, 1969, Ser. No. 823,948

Int. Cl. C07c *143/70*

U.S. Cl. 260—543 R **7 Claims**

N-acylsulfanilyl chlorides are obtained from the continuous reaction of an acylanilide and chlorosulfonic acid by adding an organic solvent and a cationic or nonionic surfactant to the reaction mixture after reaction is complete but prior to crystallizing the product. Precipitation of the product is carried out by adding water in stages to the process stream.

3,649,687

1,3,5-CYCLOHEXANE TRICARBONYL CHLORIDE

Herman H. Weyland, Folsom, and Edward E. Hamel, Roseville, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

No Drawing. Original application Nov. 6, 1967, Ser. No. 680,985, now Patent No. 3,551,469, dated Dec. 29, 1970. Divided and this application July 6, 1970, Ser. No. 52,682

Int. Cl. C07c *61/10*

U.S. Cl. 260—544 L **1 Claim**

The new compound 1,3,5-cyclohexane tricarbonyl chloride especially suitable for the preparation of the cross-linking agent 1,3,5-cyclohexane triisocyanate.

3,649,688

METHOD FOR THE PREPARATION OF N-3-OXOHYDROCARBON-SUBSTITUTED ACRYLAMIDES

Joseph Gordon, Beachwood, Ohio, Paul R. Kaufman, Riverside, Calif., and Donald I. Hoke, Chagrin Falls, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Filed July 10, 1969, Ser. No. 840,829

Int. Cl. C07c *103/00, 103/56*

U.S. Cl. 260—561 N **10 Claims**

N-3-oxohydrocarbon-substituted acrylamides, especially diacetone acrylamide, are produced in improved yields by a method involving the reaction of 3-oxoalcohols such as diacetone alcohol with an acrylonitrile in the presence of sulfuric acid. According to this method the 3-oxoalcohol is added to a mixture of the nitrile and acid, the latter being of at least 93% concentration, at a temperature below 30° C., and the molar ratio of sulfuric acid to nitrile is at least 1.8:1.

3,649,689

1,3-BIS (AMIDINOTHIO)-2-DIMETHYLAMINO PROPANE

Michihiko Sakai, Kyoto, Masayuki Kato, Osaka, Japan, and Hikoichi Hagiwara, deceased, late of Osaka, Japan, by Reiko Hagiwara, executor, and Kazuo Konishi, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Application Sept. 22, 1966, Ser. No. 612,059, now Patent No. 3,501,502, which is a division of application Ser. No. 205,088, June 25, 1962, now Patent No. 3,318,936. Divided and this application Feb. 13, 1970, Ser. No. 11,320

Claims priority, application Japan, June 27, 1961, 36/23,009

Int. Cl. C07c *123/00*

U.S. Cl. 260—564 E **1 Claim**

1,3-bis (amidinothio)-2-dimethylamino propane is disclosed to be useful as a pesticide.

3,649,690

N - (4 - ALPHA, ALPHA-DIMETHYLBENZYL PHENYL)-1 - (ALPHA, ALPHA-DIMETHYLBENZYL)-2-NAPHTHYLAMINE

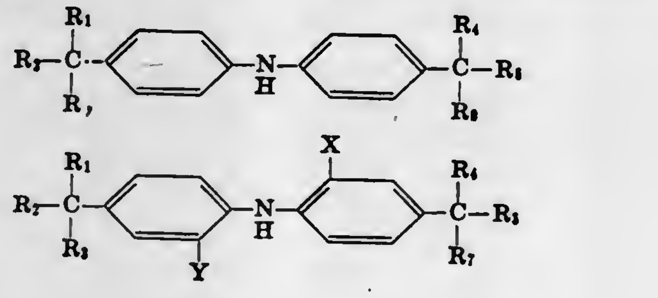
Edward L. Wheeler, Woodbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

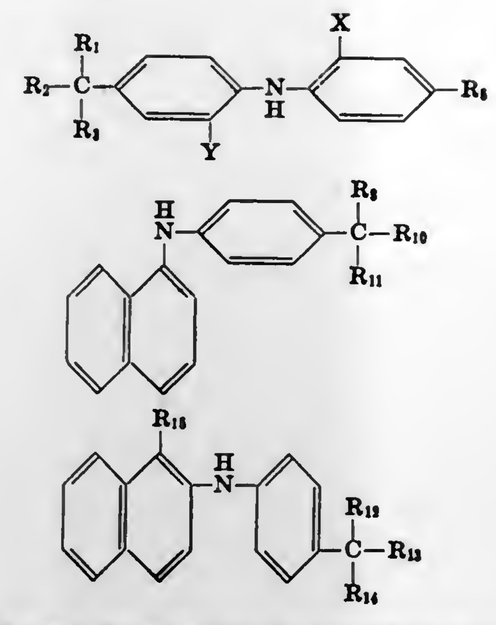
No Drawing. Original application Apr. 7, 1966, Ser. No. 540,817, now Patent No. 3,305,225, dated Apr. 7, 1970. Divided and this application Dec. 27, 1968, Ser. No. 787,577

Int. Cl. C07c *87/28*

U.S. Cl. 260—570 R **1 Claim**

Derivatives of diphenylamine or phenylnaphthylamine of the types





where R_1, R_9 and R_{12} are phenyl or p-tolyl groups and the remaining R's, X and Y may be alkyl or various other substituents, are useful antioxidants for lubricating oils or for various polymeric substrates (e.g. polypropylene) especially in combination with a dialkyl thiodiproprionate. Typical antioxidants are: 4,4′-bis(alpha, alpha-dimethylbenzyl)diphenylamine made by reacting alpha-methylstyrene with diphenylamine; 4,4′-bis (alpha-methylbenzhydryl)diphenylamine made by reacting 1,1-diphenylethylene with diphenylamine; and N-(4-alpha, alpha-dimethylbenzylphenyl) - 1 - (alpha, alpha-dimethylbenzyl)-2-naphthylamine made by reacting alpha-methylstyrene with N-phenyl-2-naphthylamine.

3,649,691

DL - 5 - [3-(TERT-BUTYLAMINO)-2-HYDROXYPROPOXY] - 3,4 - DIHYDRO - 1(2H) NAPHTHALENONE

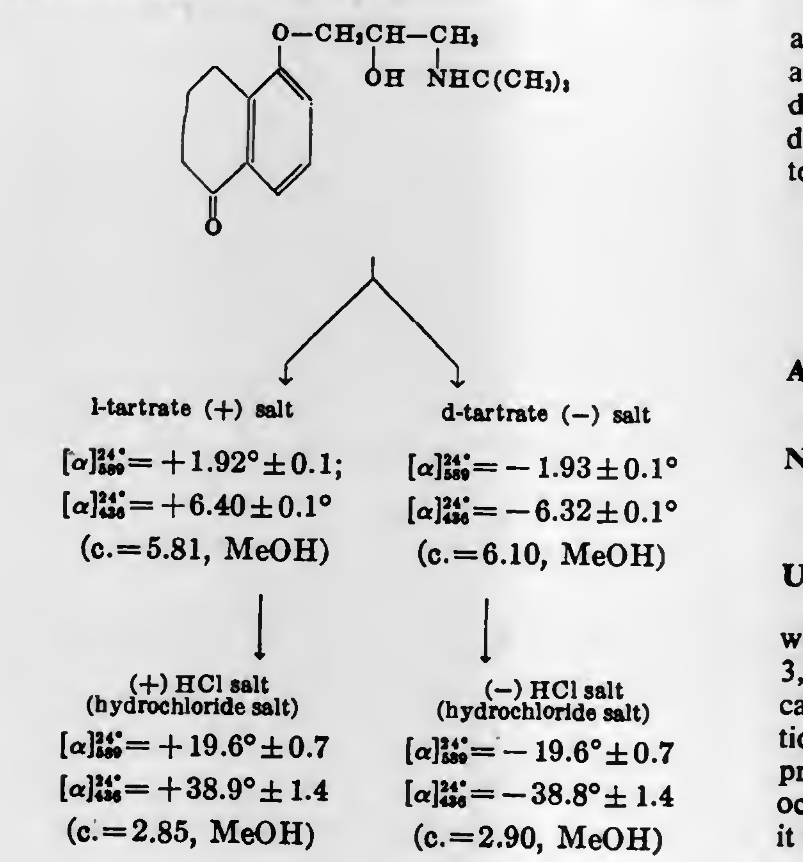
John Shavel, Jr., Mendham, and Charles F. Schwender, Far Hills, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Sept. 17, 1969, Ser. No. 859,244

Int. Cl. C07c *93/06*

U.S. Cl. 260—570.7 **4 Claims**

A process for the resolution of DL-5-[3-(tert-butylamino) - 2-hydroxypropoxy]-3,4-dihydro-1(2H)naphthalenone into a (+) isomer and a (−) isomer according to the following schematic diagram:



O—CH₂CH—CH₂
OH NHC(CH₃)₃
O
l-tartrate (+) salt
$[\alpha]_{589}^{24°}=+1.92°\pm0.1;$
$[\alpha]_{436}^{24°}=+6.40\pm0.1°$
(c.=5.81, MeOH)
d-tartrate (−) salt
$[\alpha]_{589}^{24°}=-1.93\pm0.1°$
$[\alpha]_{436}^{24°}=-6.32\pm0.1°$
(c.=6.10, MeOH)
(+) HCl salt
(hydrochloride salt)
$[\alpha]_{589}^{24°}=+19.6°\pm0.7$
$[\alpha]_{436}^{24°}=+38.9°\pm1.4$
(c.=2.85, MeOH)
(−) HCl salt
(hydrochloride salt)
$[\alpha]_{589}^{24°}=-19.6°\pm0.7$
$[\alpha]_{436}^{24°}=-38.8°\pm1.4$
(c.=2.90, MeOH)

The (−) isomer thus obtained is about sixty times more potent as a β-adrenergic blocking agent that the (+) isomer and about twice the potency of the racemate.

3,649,692

4-AMINO ALKYL-5-METHYLENE-DIBENZOCYCLOHEPTENES AND SALTS THEREOF

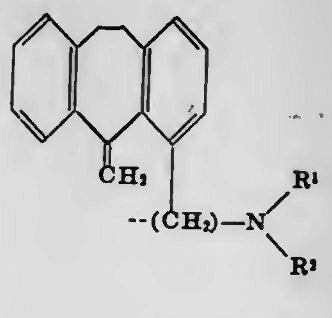
Leslie G. Humber, Dollard des Ormeaux, Quebec, Canada, assignor to Ayerst, McKenna and Harrison Limited, St. Laurent, Quebec, Canada

No Drawing. Filed May 1, 1969, Ser. No. 821,119

Int. Cl. C07c *87/28*

U.S. Cl. 260—570.9 **5 Claims**

Nuclear substituted dibenzocycloheptane derivatives of the formula



in which R^1 and R^2 are the same or different and represent hydrogen or a lower alkyl group. The compounds are prepared from 2-methyl - 1,2,3,7,8-12b - hexahydrobenzo-[1,2]cyclohept[3,4,5 - d,e] - isoquinoline by exhaustive methylation, treatment with alkali, replacement of the dimethylamino group by chlorine, and replacement of the chlorine by the appropriate basic groups. The compounds are useful as central nervous system depressant and antibacterial agents.

3,649,693

AROMATIC AMINE ALKYLATION PROCESS

John P. Napolitano, Royal Oak, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed May 2, 1969, Ser. No. 821,461

Int. Cl. C07c *85/00*

U.S. Cl. 260—578 **18 Claims**

Aromatic amines such as aniline are selectively orthoalkylated by reaction with an olefin in the presence of an aluminum anilide catalyst. The orthoalkylated product is distilled from the reaction mixture without prior hydrolysis and residue remaining can be recycled as catalyst to a subsequent orthoalkylation process.

3,649,694

PROCESS FOR THE PREPARATION OF IRONE

Albert Eschenmoser and Dorothea Felix, Zurich, and Max Stoll, Geneva, Switzerland, assignors to Firmenich et Cie, Geneva, Switzerland

No Drawing. Original application Feb. 12, 1964, Ser. No. 356,996, now Patent No. 3,413,351. Divided and this application Feb. 5, 1968, Ser. No. 724,301

Int. Cl. C07c *49/46*

U.S. Cl. 260—587 **5 Claims**

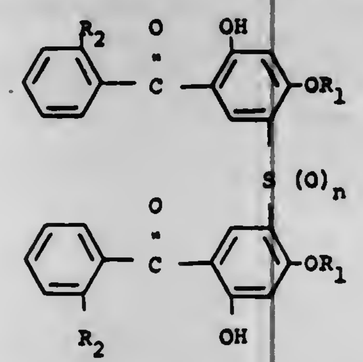
The invention relates to the process of preparing irone which comprises treating 1,1-dimethyl-2-(3-methyl-7-oxo-3,5-octadien-1-yl)-cyclopropane with an acidic reagent to cause the opening of the cyclopropane ring and the cyclization of the product to form irone. The invention also comprises 1,1 - dimethyl - 2 - (3 - methyl - 7 - oxo - 3,5-octadien-1-yl)-cyclopropane and the method of making it by reacting pseudo-ionone with bis(iodomethyl)zinc.

3,649,695

BENZOPHENONE SULFOXIDE AND SULFONE UV ABSORBERS

Jerry Peter Milionis, Somerset, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Aug. 6, 1969, Ser. No. 848,099
Int. Cl. C07c *49/82*
U.S. Cl. 260—591 **3 Claims**

Sulfinyl and sulfonyl bis(2-hydroxybenzophenones) are provided having the general formula:



wherein R_1 is hydrogen or alkyl having from 1 to 8 carbon atoms or aralkyl having from 7 to 18 carbon atoms; R_2 is hydrogen or alkyl having from 1 to 8 carbon atoms; and *n* is an integer from 1 to 2, inclusive.

3,649,696

NEW PHOTOCHROMIC COMPOUNDS (OXY AND OXYALKYLENE BRIDGES)

John Kazan, Jr., Bridgewater Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed May 16, 1968, Ser. No. 729,521
Int. Cl. C07c *49/82*
U.S. Cl. 260—591 **1 Claim**

A class of photochromic compounds characterized by the formula:

$$A—(CH_2)_m—O—(CH_2)_n—B$$

wherein *m* and *n* are each 0 or 1–4, A is a moiety of an aromatic compound $A(CH_2)_mOH$ having an efficient rate of intersystem crossing from the singlet state to the triplet state, and B is the moiety of an aromatic compound $B(CH_2)_nOH$ having the first triplet state below the first triplet state of $A(CH_2)_mOH$.

3,649,697

PREPARATION OF ETHERS

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Mar. 11, 1970, Ser. No. 18,697
Int. Cl. C07c *43/20*
U.S. Cl. 260—611 A **10 Claims**

Methylene ethers of benzylic alcohols are prepared by reacting a benzyl chloride with formaldehyde in the presence of certain catalysts such as metal halides to form the desired product. The reaction is exemplified by the preparation of methoxymethyl benzyl ether by reacting benzyl chloride with formaldehyde in the presence of noble metal halides at elevated temperatures of from about 50° to about 200° C.

3,649,698

PREPARATION OF HALOALKANES

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Dec. 2, 1968, Ser. No. 780,565
Int. Cl. C07c *17/28*
U.S. Cl. 260—648 R **13 Claims**

Haloalkanes are prepared by condensing an alkyl halide with an unsaturated hydrocarbon or a halogenated unsaturated hydrocarbon at condensation conditions in the presence of a catalyst comprising a cupric chloride-aluminum chloride complex.

3,649,699

PROCESS FOR THE PREPARATION OF HEXACHLOROCYCLOPENTADIENE

Kenneth K. Aoki, Trenton, and Arnold L. McMaster, Lincoln Park, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.
No Drawing. Filed Mar. 17, 1969, Ser. No. 807,913
Int. Cl. C07c *23/08*
U.S. Cl. 260—648 C **8 Claims**

A process for producing hexachlorocyclopentadiene (HCCP) in a single stage thermal chlorination reaction wherein n-pentane and chlorine are reacted at 275–400° C. in the presence of a catalyst comprising alumina having a low surface area. This process is also suitable for producing HCCP from chlorine and other C_5 hydrocarbons.

3,649,700

PROCESS FOR THE DEHYDROCHLORINATION OF CHLORINATED HYDROCARBONS

Herbert Baader, Hermulheim, near Cologne, Kurt Sennewald, Knapsack, near Cologne, Helmut Reis, Hurth, near Cologne, and Gunther Viertel, Bruhl, near Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany
No Drawing. Filed Nov. 22, 1967, Ser. No. 684,939
Claims priority, application Germany, Dec. 20, 1966, K 60,964
Int. Cl. C07c *21/04*
U.S. Cl. 260—654 D **4 Claims**

Process for the dehydrochlorination of chlorinated hydrocarbons by heating the same in the presence of alkyl phosphine and/or aryl phosphine and/or their hydrochlorides or quaternary phosphonium chlorides as a catalyst, at a temperature between 100 and 250° C., and by distilling off the resulting dehydrochlorinated products and hydrogen chloride, which comprises heating the chlorinated hydrocarbons under a pressure between 2 and 21 atmospheres absolute.

3,649,701

PREPARATION OF SOLUTIONS OF CYCLOHEXYLLITHIUM

William Novis Smith, Jr., Exton, Pa., assignor to Foote Mineral Company, Exton, Pa.
No Drawing. Filed Feb. 26, 1969, Ser. No. 802,668
The portion of the term of the patent subsequent to Dec. 29, 1987, has been disclaimed
Int. Cl. C07f *1/02*
U.S. Cl. 260—665 R **7 Claims**

Relatively concentrated solutions of cyclohexyllithium are prepared by reacting cyclohexyl chloride and lithium metal in an alkyl substituted benzene solvent.

3,649,702

ADAMANTANE DERIVATIVES

Richard E. Pincock, Edward Torupka, and William Bruce Scott, Vancouver, British Columbia, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
No Drawing. Filed July 27, 1970, Ser. No. 58,656
Int. Cl. C07c *13/14*
U.S. Cl. 260—666 M **17 Claims**

A reactive derivative of adamantane, 1,3 - dehydroadamantane, I, its preparation and uses are described. The

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dehydro compound I may be substituted in the 5,7 positions by alkyl groups. I is a reactive monomer for polymerizations or a reactive intermediate for preparing substituted adamantanes.

3,649,703

HYDROGENATION OF AROMATIC HYDROCARBONS

Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Division of applications Ser. No. 833,664, June 16, 1969, and Ser. No. 837,924, June 30, 1969, which applications are continuation-in-part of applications Ser. No. 819,114, Apr. 24, 1969, and Ser. No. 825,084, May 15, 1969. This application Aug. 10, 1970, Ser. No. 62,696
Int. Cl. C07c *5/10*
U.S. Cl. 260—667 **9 Claims**

A cycloparaffin producing process utilizing a catalytic composite of a porous carrier material, a tin component and a rhenium component. In one embodiment, the catalyst additionally contains a Group VIII noble metal component. Potassium and lithium constitute preferred alkalinous metal components.

3,649,704

HYDROCARBON ISOMERIZATION PROCESS

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 828,762, May 28, 1969. This application July 9, 1969, Ser. No. 840,527
Int. Cl. C07c *5/30, 15/04*
U.S. Cl. 260—668 A **22 Claims**

Isomerizable hydrocarbons are isomerized using a catalytic composite comprising a combination of a platinum group component, a germanium component, and a halogen component with a porous carrier material wherein the germanium component is present in an oxidation state above that of the elemental metal. A catalytic composite comprising a platinum group component, a germanium component, and a Friedel-Crafts metal halide component combined with a refractory inorganic oxide is also disclosed.

3,649,705

PROCESS FOR PRODUCING LIQUID POLYMERS FROM DRIPOLENE

William A. Waranius, Galveston, Tex., assignor to Standard Oil Company, Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 800,703, Feb. 19, 1969. This application June 11, 1970, Ser. No. 45,573
Int. Cl. C07c *3/08, 15/10*
U.S. Cl. 260—669 P **11 Claims**

The process comprises treating a feedstock comprising dripolene with an unsaturated hydrocarbon at selected conditions to provide a treated feedstock and thermally polymerizing the treated feedstock to produce the liquid polymer. The unsaturated hydrocarbon may be selected from ethylene, propylene, and mixtures thereof. The resultant liquid polymer has improved stability and compatibility and a more desirable odor.

3,649,706

STEAM DEALKYLATION PROCESS

George R. Lester, Park Ridge, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed June 27, 1969, Ser. No. 837,361
Int. Cl. C01b *1/18;* **C07c** *3/58;* **C10g** *31/14*
U.S. Cl. 260—672 **7 Claims**

A steam dealkylation process utilizing a dual catalyst system containing catalysts comprised of alumina-alkali metal-chromia-ferric oxide-platinum, palladium, or rhodium, and capable of producing an off-gas rich in hydrogen content and low in light paraffin content.

3,649,707

DUAL CATALYST IN STEAM DEALKYLATION PROCESS

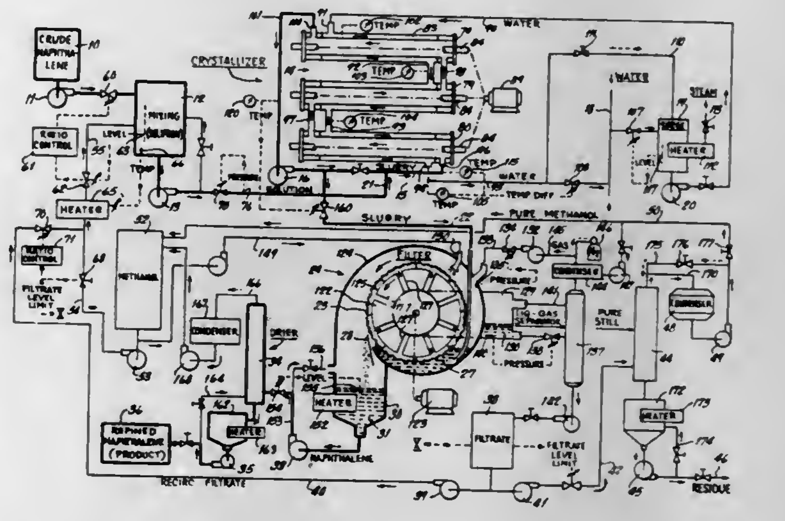
George R. Lester, Park Ridge, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed June 27, 1969, Ser. No. 837,362
Int. Cl. C01b *1/18;* **C07c** *3/58;* **C10g** *31/14*
U.S. Cl. 260—672 **11 Claims**

Alkylaromatic hydrocarbons are dealkylated, in admixture with steam, in a dual reaction zone; the first containing a cobalt component, nickel component or a Group VI–B component as an active catalytic ingredient and the second containing a platinium, palladium, or rhodium component, as an active catalytic ingredient.

3,649,708

PURIFICATION OF NAPHTHALENE

James W. Schroeder, Parma, Anthony C. Naso, Parma Heights, and Paul R. Eschenauer, Cleveland, Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio
Filed Oct. 16, 1969, Ser. No. 867,022
Int. Cl. C07c *7/14*
U.S. Cl. 260—674 N **31 Claims**



Crude naphthalene, such as from coke oven gas, is dissolved in methanol at elevated temperature and the continuously established solution is repeatedly circulated through a crystallizer while rapidly scraping the shell and exteriorly cooling the same with rapidly flowing water, to establish a continuously circulating slurry of purified naphthalene crystals. A withdrawn flow of the slurry is continuously filtered under pressure in a rotating drum filter wherein the entrained filtrate in the cake of crystals is displaced with methanol and the crystals are then removed to collect in a heated region from which melted naphthalene is withdrawn while maintaining filter pressure, the entrained methanol being thereafter recovered from the naphthalene by vaporization, yielding refined naphthalene as product. Slurry feed to the filter and solution supplied to the crystallizer are controlled to maintain constant temperature in the recirculating slurry and provide uniformity of crystal content in the slurry feed. The filtrate is in part distilled to recover pure methanol and in part reused in making up the crude naphthalene solution, i.e. in admixture with pure methanol in proportion appropriate for continuing attainment of a selected purity of naphthalene product.

3,649,709

MODIFICATION OF POLYOLEFINICALLY UNSATURATED HYDROCARBON POLYMERS WITH MONO-OLEFIN MONOMERS

Dirk Medema, Henk J. Alkema, and Robert van Helden, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed May 9, 1969, Ser. No. 823,488

Claims priority, application Netherlands, June 17, 1968, 6828663

Int. Cl. C07c *3/62;* **C08f** *27/00*

U.S. Cl. 260—680 R **5 Claims**

Conjugated diene polymers are reacted with mono-olefin monomers in the presence of a catalyst comprising the reaction product of an organometallic compound of a metal of Groups II–A, II–B, III–A, or III–B, with a salt of a metal of Groups IV–A, V–A, VI–A, VII–A, or VIII.

3,649,710

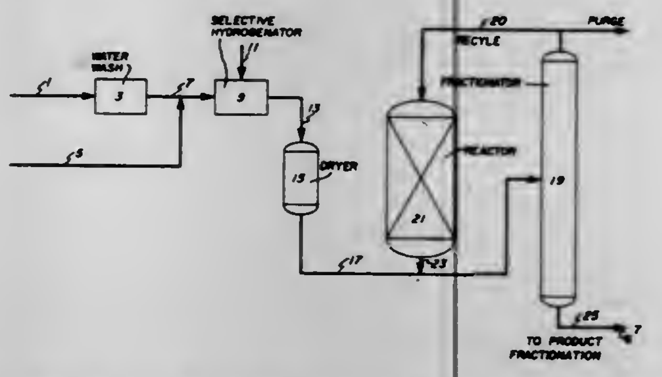
FEED PRETREATMENT PROCESS

Arthur H. Neal, P.O. Box 4255, Baytown, Tex. 77520; Raymond C. Lohman, 11 Sherwood Drive, Huntington, N.Y. 11743; and Lloyd A. Pine, Baton Rouge, La. (Koppersvagen 32, Stenungsund, Sweden)

Filed Nov. 24, 1969, Ser. No. 879,374

Int. Cl. C07c *3/20*

U.S. Cl. 260—683.15 R **5 Claims**



In those processes which employ nickel oxide catalysts in the polymerization and copolymerization of olefins, especially those containing up to about 6 carbon atoms, a particular combination of treating steps for pretreating the feed is necessary to provide good conversion and maintain a long life for the catalyst. These steps include water washing, selective hydrogenation and distillation of the feed prior to passing it to the polymerization reactor. By employing such a combination of steps, the various types of nickel oxide catalyst poisons contained in the butene and propylene feed are removed.

3,649,711

PROCESS FOR IMPROVED CURING OF UNSATURATED POLYESTER RESIN COMPOSITIONS AND RESULTING PRODUCT

Jimmie Sturgis Payne, Jr., Austin, Tex., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 694,407, Dec. 29, 1967. This application Mar. 20, 1970, Ser. No. 21,530

Int. Cl. C08f *21/00, 21/02*

U.S. Cl. 260—863 **10 Claims**

The improvement in the process of curing a polymerizable blend of (A) an unsaturated polyester and (B) a polymerizable monomer with a peroxyester and resulting product, which process comprises the addition of cobalt bromine, such addition showing synergistic action with said peroxyester.

3,649,712

THERMOPLASTIC POLYCARBONATE/POLY SULFONE/FLAME RETARDANT BLENDS

Thomas S. Grabowski, Vienna, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Filed Oct. 23, 1969, Ser. No. 868,883

Int. Cl. C08g *39/10, 51/54, 51/58*

U.S. Cl. 260—873 **4 Claims**

A thermoplastic composition, which exhibits excellent fire retardant characteristics and high heat distortion temperatures, comprised of a blend of ABS graft polymer, polycarbonate and/or polysulfone with a flame retardant additive. The additive is a flame retardant that is compatible with the thermoplastic blend and does not substantially degrade the physical properties of the composition. The additive also retains the high temperature properties to a greater degree than other known fire retardants.

3,649,713

ELECTROLESSLY PLATEABLE POLYMERIC COMPOSITION

James Chin, Naugatuck, and James C. Hartley, Jr., Middlebury, Conn., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Aug. 23, 1968, Ser. No. 754,949

Int. Cl. C08f *19/18, 41/12;* **C23c** *3/02*

U.S. Cl. 260—876 R **2 Claims**

The present invention relates to the use of vinylpyridine, which acts as an electroless metal depositing aid, as one constituent of an interpolymer. Such interpolymer is capable of being formed into a plastic article, the surfaces of which, as a result of the vinylpyridine unit contained therein, are suitable for electroless plating.

3,649,714

STRUCTURAL ADHESIVE COMPRISING A DICYANATE AND A COPOLYMER OF ACRYLONITRILE AND BUTADIENE

David A. Wangness, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Jan. 10, 1969, Ser. No. 790,467

Int. Cl. C08d *9/08*

U.S. Cl. 260—887 **13 Claims**

A mixture of dicyanate, such as the dicyanate of Bisphenol A, and compatible, uncured synthetic elastomer

(e.g., acrylonitrile-butadiene copolymer) is used as a nonvolatile, film-forming, heat-curable, structural metal-bonding adhesive to produce a thermally stable bond having desirably high strengths in shear, tension, and peel.

3,649,715

FUEL-RESISTANT RUBBER VULCANIZATES COMPRISING HALOBUTYL RUBBER AND EPIHALOHYDRIN COPOLYMER

John T. Oetzel, Lorain, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Nov. 1, 1968, Ser. No. 772,829

Int. Cl. C08f *29/12*

U.S. Cl. 260—888 **2 Claims**

Blends of (1) an amorphous rubbery linear interpolymer of an epichlorohydrin and at least one other epoxide monomer such as an alkylene oxide with (2) minor amounts (5 to 20%/wt.) of a halogenated butyl rubber and (3) cured with a dual-cure non-sulfur mercaptoimiadzoline or amine with polyvalent metal compounds curing system are novel, highly useful vulcanizates which fully meet all military specifications for fuel-resistant arctic (low temperature service) rubber compounds. Carbon black containing vulcanizates of such blends have the requisite low swell in both Type I and Type II fluids, good flexibility and low compression set at −40° C., and excellent resistance to oxygen, ozone and high temperatures.

3,649,716

BLENDS OF STYRENE/ACRYLONITRILE COPOLYMERS WITH BLOCK COPOLYMERS CONTAINING LACTONES

Clifford W. Childers and Earl Clark, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Apr. 17, 1970, Ser. No. 29,687

Int. Cl. C08f *41/12*

U.S. Cl. 260—893 **7 Claims**

The impact strength of styrene/acrylonitrile copolymers is greatly improved by blending therewith a conjugated diene block copolymer containing a lactone.

3,649,717

SYNTHETIC HIGH POLYMERS HAVING A PARTICULAR RECEPTIVITY TO DYES, AND PROCESS FOR THEIR PREPARATION

Cornelio Caldo, Terni, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

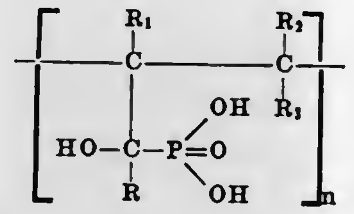
No Drawing. Filed June 15, 1970, Ser. No. 46,509

Claims priority, application Italy, June 18, 1969, 18,311/69

Int. Cl. C08f *29/12*

U.S. Cl. 260—897 B **6 Claims**

Dye receptive compositions comprising crystalline polyolefins and about 1 to 25% by weight of the composition of polymeric tinctorial modifier consisting of or containing repeating units of the formula



wherein each of R, R_1, R_2 and R_3 is selected from the group consisting, of H, alkyl and phenyl, and *n* is a number from about 10 to 1000.

Compositions are particularly useful for textile fibers and are particularly receptive to basic dyestuffs.

Tinctorial modifiers are obtained by reacting polymers containing carbonyl repeating units with PCl_3 and subsequent hydrolysis in acid medium.

3,649,718

HALOGENATED PHENYL ALKYLENE PHOSPHINATES

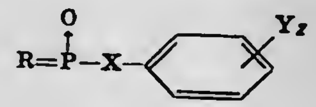
Eric Jungermann, Chicago, and Henry E. Reich, Wilmette, Ill., assignors to Armour and Company, Chicago, Ill.

No Drawing. Filed Nov. 29, 1966, Ser. No. 597,526

Int. Cl. C07d *105/02;* **C11d** *9/50*

U.S. Cl. 260—936 **4 Claims**

Germicidal compounds having the formula



wherein

Y is chloride, bromide or iodide;
z is a positive integer from 1 to 3;
X is oxygen or sulfur and
R is a hydrocarbon radical containing from 6 to 12 carbon atoms.

3,649,719

PHOSPHORIC ACID ESTER AMIDOHALIDES

Jean-Pierre Leber, Basel, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

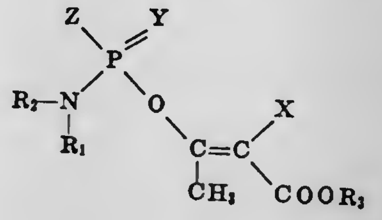
No Drawing. Continuation-in-part of application Ser. No. 829,747, June 2, 1969. This application May 1, 1970, Ser. No. 33,862

Claims priority, application Switzerland, May 5, 1969, 6,836/69

Int. Cl. C07f *9/24, 9/26*

U.S. Cl. 260—941 **17 Claims**

The invention concerns novel intermediates for the production of biocidally active phosphoric acid amidohalides. The novel intermediates are of the formula:



wherein

R_1 is hydrogen or lower alkyl of 1 to 3 carbon atoms,
R_2 and R_3 are lower alkyl of 1 to 5 carbon atoms,
X is hydrogen or chlorine,
Y is oxygen or sulphur, and
Z is chlorine or bromine.

3,649,720

O-ALKYL-O-(1-CARBOALKOXY - 1 - PROPEN-2-YL) PHOSPHOROCHLORIDATES AND PHOSPHOROTHIOCHLORODATES

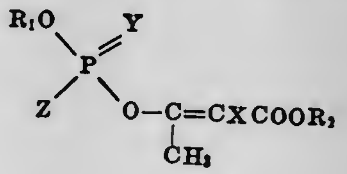
Jean-Pierre Leber, Basel, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 829,747, June 2, 1969. This application July 10, 1970, Ser. No. 53,983

Int. Cl. A01n *9/36;* **C07f** *9/14, 9/20*

U.S. Cl. 260—941 **24 Claims**

The invention concerns novel compounds of the formula:



wherein each of R_1 and R_2 is alkyl of 1 to 5 carbon atoms, X is hydrogen, chlorine or bromine, Y is oxygen or sulphur, and Z is chlorine or bromine.

The compounds may be used as intermediates for the production of insecticidally, acaricidally and nematocidally active phosphoric acid esters.

3,649,721

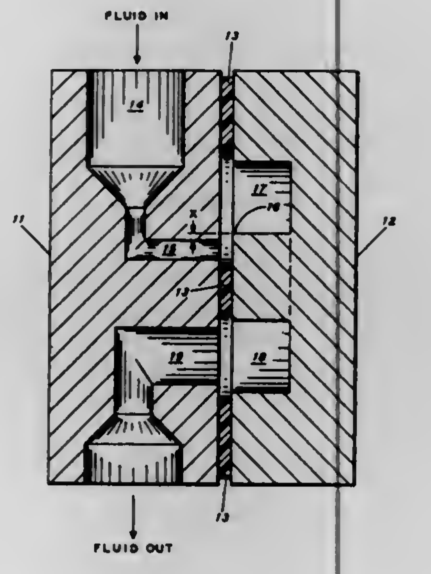
LOW ALKALI METAL CONTENT HYDRAULIC FLUIDS AND THEIR PREPARATION

Merwyn L. Burrous, El Cerrito, and Neal W. Furby, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of application Ser. No. 865,471, Oct. 10, 1969. This application Mar. 2, 1970, Ser. No. 15,392

Int. Cl. C07f *9/02*

U.S. Cl. 260—990 **11 Claims**



Improved phosphate ester hydraulic fluids are prepared by treating them to reduce their alkali metal content to 0.1–4.0 p.p.m. Treating procedures include clay contacting and liquid/liquid extraction. The fluids and their method of preparation are claimed.

3,649,722

HALOGENATED PHOSPHONOACETATE ESTERS

Denzel Allan Nicholson, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of applications Ser. No. 762,966, Sept. 26, 1968, Ser. No. 770,860, Oct. 25, 1968, and Ser. No. 785,740, Dec. 20, 1968. This application Jan. 29, 1969, Ser. No. 795,030

Int. Cl. C07c *9/40;* **C10m** *1/46*

U.S. Cl. 260—941 **5 Claims**

Monohalo and dihalophosphonoacetate esters having three hydrocarbyl groups containing from 5 to 7 carbon atoms, useful as extreme pressure additives in lubricant compositions, are disclosed.

3,649,723

O-ALKYL-S-UNSATURATED ALIPHATIC HYDROCARBYL PHOSPHOROAMIDOTHIOATES

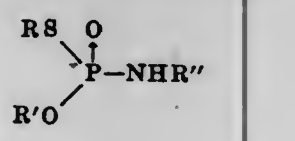
Philip S. Magee, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Sept. 9, 1965, Ser. No. 486,233

Int. Cl. A01n *9/36;* **C07f** *9/24*

U.S. Cl. 260—956 **10 Claims**

Phosphoroamidothioates of the formula:



$$\mathrm{(RS)(R'O)P(\rightarrow O)-NHR''}$$

wherein R is monovalent unsaturated aliphatic hydrocarbyl radical such as allyl or propargyl, R′ is lower alkyl and R″ is hydrogen or lower alkyl. Phosphoroamidothioates of this group are insecticidal.

3,649,724

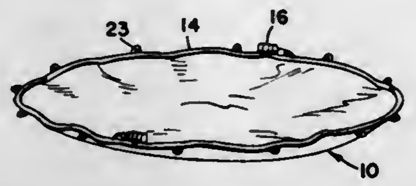
METHOD OF FORMING A PAD

Russell S. Rembert, Dallas, and Gerald F. Thomas, Arlington, Tex., assignors to LTV Aerospace Corporation, Dallas, Tex.

Filed Nov. 3, 1969, Ser. No. 873,290

Int. Cl. B29c *13/00*

U.S. Cl. 264—22 **15 Claims**



A method of conveniently forming a supporting pad is accomplished by impregnating a fibrous mat with a curable plastic formulation and transporting the impregnated mat to a desired site, where it is cured. The impregnated mat is gathered into the form of a deflated balloon for transport to the site and then inflated at the site to ensure that the mat is efficiently deployed. Additionally, the mat is stretched to a substantially flat configuration at the site by the inflation of a closed tube extending peripherally of the mat.

3,649,725

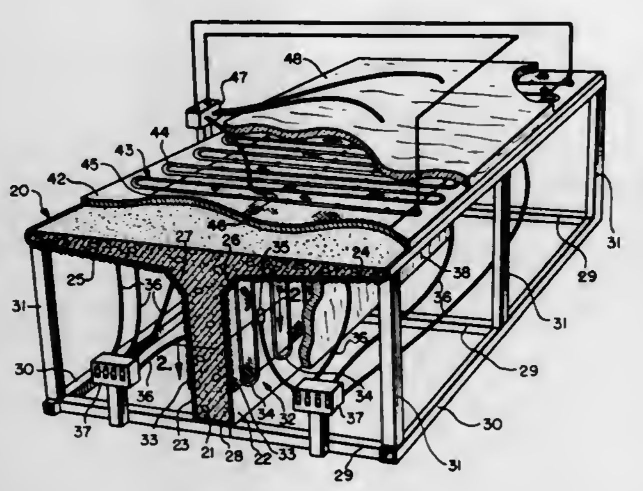
METHODS FOR ACCELERATING THE CURING OF CONCRETE

Wallace A. Olson, 500 S. Kiwanis Ave., Apt. 315, Sioux Falls, S. Dak. 57105

Original application Oct. 24, 1968, Ser. No. 770,163. Divided and this application Jan. 28, 1971, Ser. No. 110,512

Int. Cl. B28b *21/78*

U.S. Cl. 264—40 **4 Claims**



To accelerate the curing of concrete, heat is applied to a fluid concrete mix substantially uniformly over the outer mix surface. The temperature of the mix is sensed and the application of the heat is terminated when that temperature reaches a predetermined level such that the immediately subsequent exothermic heating within the mix further increases its temperature only to a substantially predetermined maximum value that corresponds to substantially maximum subsequently-ultimate compressive strength of the concrete.

3,649,726

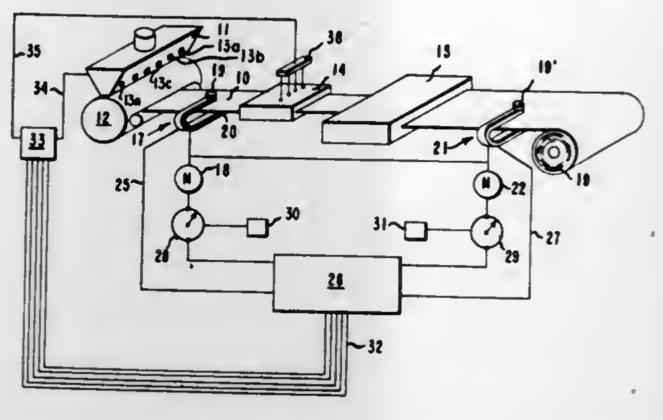
METHOD FOR CONTROLLING THE THICKNESS OF POLYMERIC FILM STRUCTURES

Frederick Lynn Knowles, Florence, S.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 20, 1968, Ser. No. 761,241

Int. Cl. B29d *7/24*

U.S. Cl. 264—40 **8 Claims**



A method is provided for manufacturing film structures of organic thermoplastic polymeric materials of improved thickness uniformity across the width thereof. Briefly, the method comprises measuring the thickness of a film structure at any location across the width thereof before stretching, measuring the thickness of said film structure at any location across the width thereof after stretching, computing the cumulative mass values of said film structure across the width thereof before and after stretching, and adjusting the thickness of said film structure at any point across the width thereof before stretching responsive to deviation from a preselected value in thickness of said film structure after stretching corresponding to the cumulative mass value of said film structure before and after stretching.

3,649,727

MAKING CONCRETE TUBES

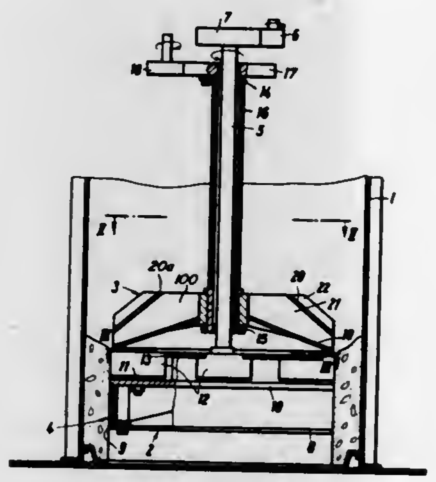
Friedhelm Gauger, Ettlingenweier, Germany, assignor to Maschinenfabrik Ettlingen, Friedrich Pfeiffer KG, Ettlingen, Germany

Filed Mar. 11, 1969, Ser. No. 806,111

Claims priority, application Austria, Mar. 20, 1968, A 2,781/68

Int. Cl. B28b *3/12*

U.S. Cl. 264—40 **2 Claims**



An apparatus for producing concrete tubes using a vertical tubular mold with a rotating piston moving upwards axially inside the mold. The piston is operated in such a manner that as the torque required for rotation of the piston decreases owing to a decrease in the supply of concrete, the rate of upward travel of the piston is decreased.

3,649,728

METHOD FOR MOLDING THERMOPLASTIC ARTICLES HAVING THROUGH-HOLES THEREIN

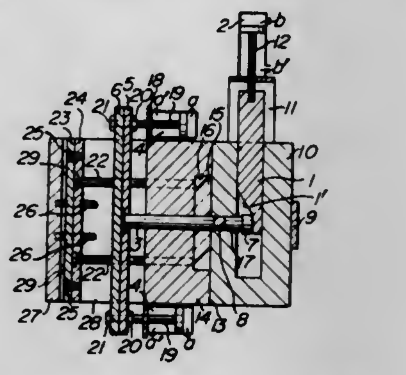
Norihisa Honsho, Neyagawa-shi, Satoshi Yasuda, Hirakata-shi, and Tamotsu Wakahata, Neyagawa-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Oaza Kadoma, Kadoma-shi, Osaka, Japan

Filed July 25, 1969, Ser. No. 844,935

Claims priority, application Japan, July 31, 1968, 43/54,757; Aug. 30, 1968, 43/62,469; Nov. 13, 1968, 43/84,107; June 17, 1969, 44/49,108

Int. Cl. B29c *11/00;* **B29f** *1/14*

U.S. Cl. 264—40 **3 Claims**



A method for producing a shaped article of thermoplastic material by molding said shaped article by injection molding and thereafter forming a hole or holes in said shaped article by punching, in which the punching is effected within the mold, immediately after the injection molding of the shaped article has been completed but before the shaped article is completely solidified, by a punching mechanism incorporated in the injection molding machine used, whereby formation of a weld-line in the shaped article is prevented and the production efficiency of the shaped article is promoted.

3,649,729

METHOD OF CURING A RUBBER OR PLASTIC TIRE

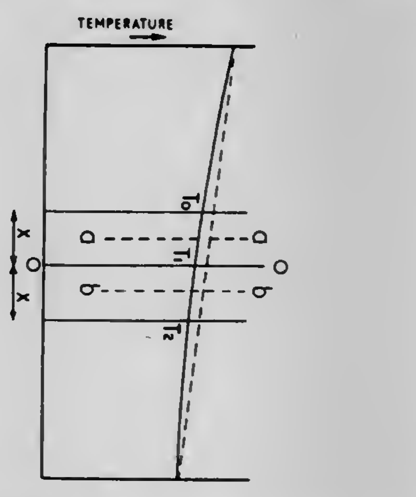
Edward P. Davis, 77 Elmcroft Road, Yardley, Birmingham, England, and Eric G. Gould, 6 Hawthorn Road, Wylde Green, Sutton Coldfield, England

Continuation-in-part of abandoned application Ser. No. 857,642, Sept. 10, 1969, which is a continuation of application Ser. No. 640,324, May 22, 1967. This application Sept. 11, 1969, Ser. No. 857,175

Claims priority, application Great Britain, Mar. 24, 1966, 12,969/66

Int. Cl. B29h *5/02;* **G01n** *25/00*

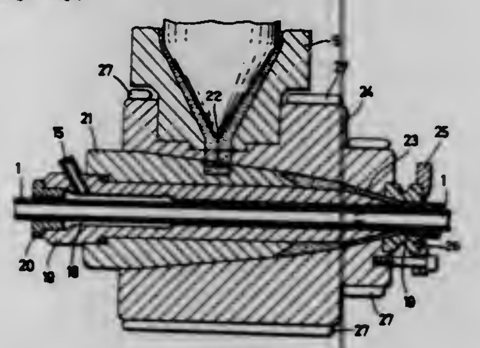
U.S. Cl. 264—40 **13 Claims**



A method for determining the state of cure of a rubber or plastics article, such as a pneumatic tire, during its cure cycle by sensing the temperature of the article at its surfaces, calculating therefrom the temperature at a point in the article at which an adequate state of cure is desired and thence determining the state of cure at such point. Also the process for curing a rubber or plastics article which includes using the above method to determine the state of cure at a point in the article and terminating the cure when a desired state of cure at that point has been reached, of which the following is a specification.

3,649,730
METHOD OF JACKETING TUBULAR STOCK WITH POLYOLEFIN FOAM

Helmut Benteler, Bielefeld, and Wilhelm Lachenmayer, Berlebeck, Germany, assignors to Benteler-Werke AG, Paderborn, Germany
Original application Sept. 20, 1968, Ser. No. 761,221. Divided and this application May 15, 1970, Ser. No. 37,801
Claims priority, application Germany, Sept. 29, 1967, P 16 29 716.8
Int. Cl. B29d *27/00*
U.S. Cl. 264—47 **7 Claims**

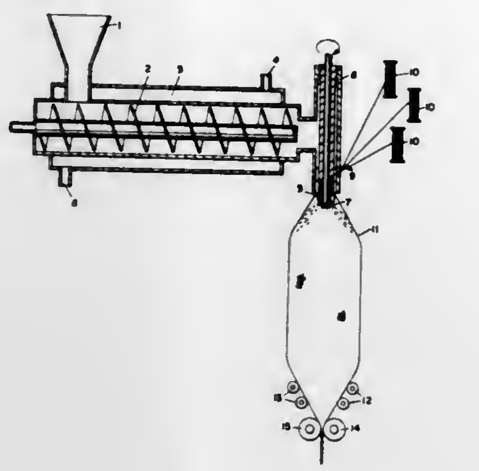


A method of jacketing tubular stock. Metallic tubular stock is advanced in a predetermined direction through an extruding die in the extruding head of an extruder. In this extruding die a jacket consisting of a mixture of preplasticated synthetic plastic polyolefin material and an azodicarbonamide blowing agent is extruded onto the outer circumferential surface of the advancing tubular stock and undergoes foaming while still within the confines of the die. As the jacketed stock issues from the die it passes through an annular member having an inner diameter slightly smaller than the outer diameter of the foamed jacket so that the peripheral surface layer of the jacket is deformed into a continuous smooth skin. Subsequently, the resulting jacketed tubular product is cooled.

3,649,731
METHOD OF REINFORCING FOAM SHEETS

Edward W. Cronin, Sedgely Farms, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Apr. 30, 1969, Ser. No. 820,423
Int. Cl. B29d *3/02, 27/00*
U.S. Cl. 264—47 **6 Claims**

Reinforced foam sheets can be prepared by forcing, such as extruding, a foamable thermoplastic polymer composition through an annular die, foaming in the form of a tube at the die face, lining the inside of the tube with fibrous material and then collapsing the tube to make a single integral laminated sheet.



3,649,732
CASTABLE-REFRACTORY DIE COMPOSITION ESSENTIALLY FREE OF CALCIUM ALUMINATE AND METHOD OF USING

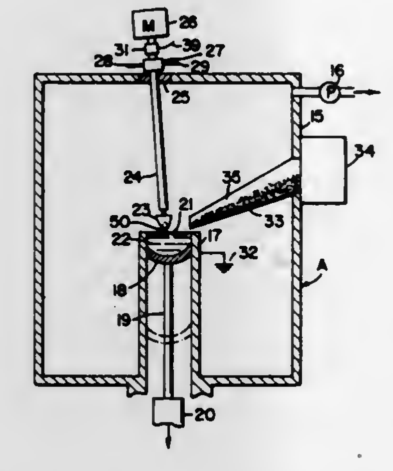
Kristin Brigham, New York, and Ronald C. Vickery, Northport, N.Y., assignors to Ceramco, Inc., Long Island City, N.Y.
No Drawing. Filed Oct. 28, 1969, Ser. No. 871,964
Int. Cl. C04b *35/04, 35/24;* **A61k** *5/00*
U.S. Cl. 264—63 **6 Claims**

A castable-refractory material having good green strength, excellent dimensional stability when fired at about 1800 to 3000° F., good hardness and strength after being fired, and thermal characteristics suiting it for use with porcelains used to make dental prostheses is obtained by mixing 140 to 100 parts of magnesium oxide with up to 32 parts of glass and about 15 to 25 parts of ammonium dihydrogen phosphate (up to 40 parts of the magnesium oxide being replaceable with alumina) to form a dry mixture and then blending 20 parts of the dry mixture with approximately 4 parts of colloidal silica sol of 40% solids content. The novel composition is superior to others previously used that contained calcium aluminate in several respects, tending to exhibit a more controllable coefficient of thermal expansion, greater as-fired hardness and strength as evidenced by a BHN of about 50, and lessened tendency toward spalling and structural breakdown after repeated firing, and thermal stability in all respects at temperatures up to 3300° F.

ELECTRICAL

3,649,733
CENTRIFUGALLY CLEANED ARC FURNACE ELECTRODE WHEEL

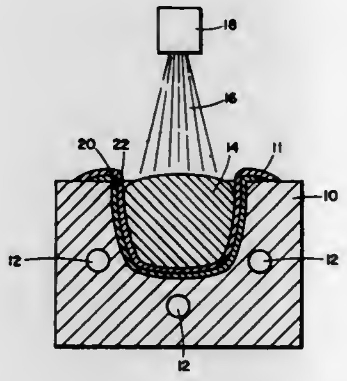
Max P. Schlienger, 19 Rollingwood Drive, San Rafael, Calif.
Filed July 17, 1970, Ser. No. 55,767
Int. Cl. H05b *7/08*
U.S. Cl. 13—18 **7 Claims**



An arc furnace having an electrode wheel which is rotated at a sufficient speed to prevent vaporized or sputtered melt material from adhering thereto. The rotational speed of the electrode wheel may be maintained at a low enough level to permit adherence of vaporized or sputtered melt material to the lower face of the electrode wheel while preventing adherence on the sidewalls of the electrode wheel, thus forming an insulating protective shield on the lower face. Furthermore, the lower face of the electrode wheel may be suitably shaped to enhance or detract from the centrifugal effects imparted to the vaporized or sputtered melt material thereon, in order to achieve a desired amount of adherence thereto.

3,649,734
CRUCIBLE ELECTRON BEAM EVAPORATION OF ALUMINUM

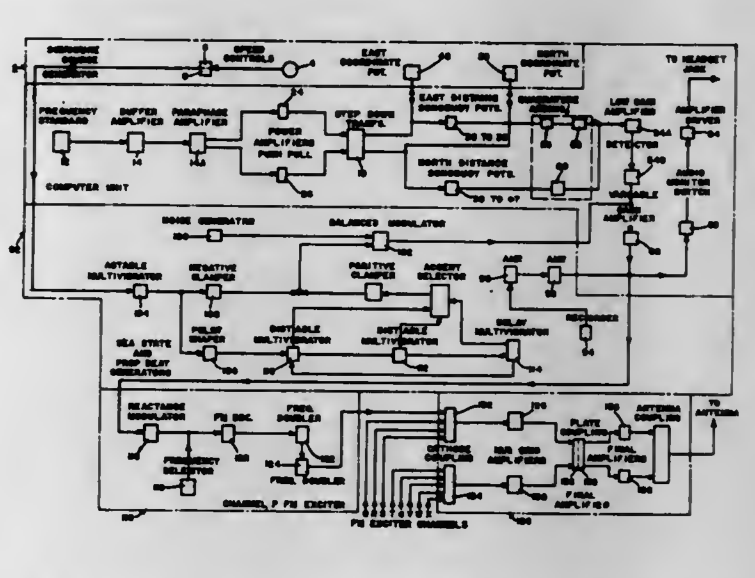
Richard W. Wilson, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Jan. 29, 1971, Ser. No. 110,937
Int. Cl. H05b *7/00*
U.S. Cl. 13—31 **4 Claims**



A crucible liner is provided for a water-cooled copper crucible for evaporating aluminum, the lining being electrically conductive but having a poor thermal conductivity. Also, the lining which does not react to a great extent with hot aluminum is and remains in intimate contact with the copper. The inner layer 22 of the lining is a composite of titanium diboride and boron nitride which is cemented to the water-cooled copper body of the crucible by a second layer operating as a cement comprising titanium or tungsten or molybdenum or a cement such as molybdenum silicide.

3,649,735
TRANSMISSION SYSTEM

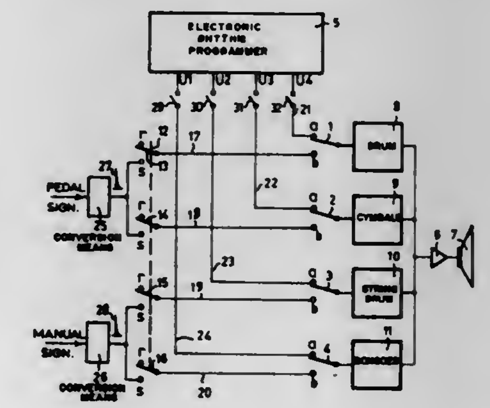
William K. Coburn, and Richard E. Hillger, both of Cambridge, Mass., assignors to The United States of America as represented by the Secretary of the Navy
Filed Aug. 17, 1955, Ser. No. 529,085
Int. Cl. G01s *9/00*
U.S. Cl. 35—10.4 **2 Claims**



1. A sonobuoy trainer comprising means producing a position analog of a simulated submarine, means producing a position analog of a simulated sonobuoy, combining means for producing a relative position analog voltage of simulated submarine from simulated sonobuoy, a variable gain amplifier biased by said relative position analog voltage, means producing said simulated submarine speed and course, modulating means conductively coupled to and operable with said last mentioned means and said variable gain amplifier to modulate the input to said variable gain amplifier in accordance with the movements of said simulated submarine and an FM modulator and transmitter coupled to and operable with the output of said variable gain amplifier.

3,649,736
ELECTRONIC RHYTHM APPARATUS FOR A MUSICAL INSTRUMENT

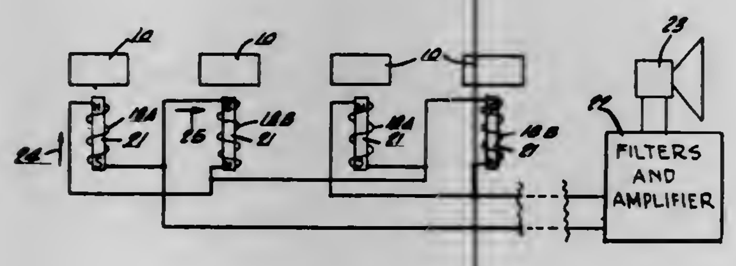
Tijmen Van Der Kooij, Bodegraven, Netherlands, assignor to N.V. Eminent, Bodegrave, Netherlands
Filed Aug. 31, 1970, Ser. No. 68,112
Claims priority, application Netherlands, Sept. 1, 1969, 69/13345
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.03 **1 Claim**



A system for switching off an electronic percussion instrument from an electronic rhythm device and coupling it to the manual or pedal of an electronic organ, comprising a switch between each output of a programmer and a control input of the percussion instrument, the switch, in the off-condition, connecting the percussion instrument to an auxiliary circuit which is energized by a control pulse for the percussion instrument. The control pulse is derived from a signal coming from the manual or pedal, and a multiple switch in each auxiliary circuit has a closing contact for closing all auxiliary circuits of a plurality of such percussion instruments simultaneously.

3,649,737
ELECTRIC VIBRAPHONE

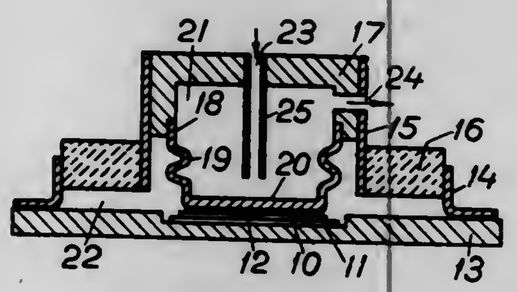
Oliver Jespersen, 1282 Summit Avenue, Westfield, N.J.
Filed Feb. 12, 1970, Ser. No. 10,764
Int. Cl. G10h *3/00*
U.S. Cl. 84—1.15 **5 Claims**



A percussion musical instrument of the xylophone type having a plurality of aluminum alloy bars and played by striking the bars with mallets. No tubular resonators are required although they may be used. A magnetic pickup coil, with a permanent magnet core, is positioned under one of the ends of each bar and coupled to an amplifier and sonic transducer to reproduce musical notes. By alternately reversing the permanent magnet poles and connecting the pickup coils in pairs, noise, hum, and unwanted magnetic feedback is avoided.

3,649,738
SEMICONDUCTOR DEVICE

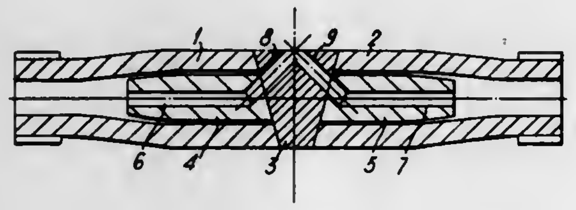
Nils Eric Andersson, and Tibor Farkas, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Feb. 16, 1971, Ser. No. 115,289
Claims priority, application Sweden, Mar. 5, 1970, 2909/70
Int. Cl. H01l *1/12*
U.S. Cl. 174—15 R **9 Claims**



A semiconductor system including a semiconductor wafer is provided on at least one side with cooling means formed of a container having a movable wall facing the semiconductor system into which a cooling fluid is fed in such a way as to maintain a substantial pressure in the container to press the movable wall against the semiconductor device.

3,649,739
CABLE JOINTS WITH COMMUNICATING FLUID DUCTS AND METHODS OF MAKING SAME

John Derrick Endacott, Chislehurst, and Michael Savvas Papadopulos, Longfield, both of England, assignors to British Insulated Callender's Cables Limited, London, England
Filed Mar. 1, 1971, Ser. No. 119,507
Claims priority, application Great Britain, Mar. 9, 1970, 11,270/70
Int. Cl. H02g *15/24, 1/14*
U.S. Cl. 174—21 R **19 Claims**

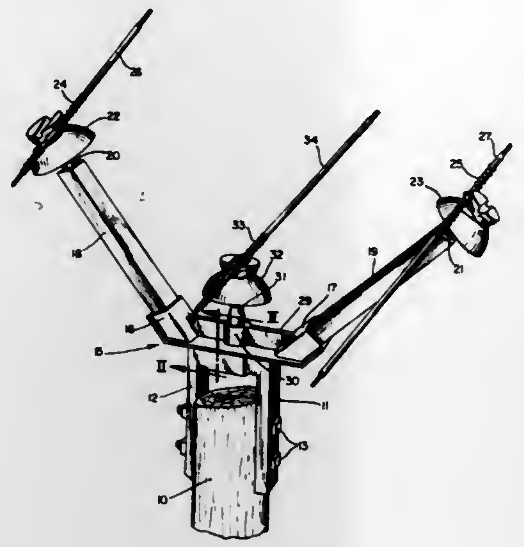


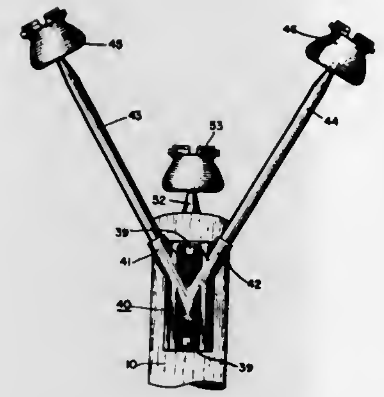
In making a joint between two hollow core conductors by forming a body of metal between the spaced ends of the conductors in such a way that it adheres to the facing cut ends of the two conductors and fills the space between them, at least one pair of straight ducts is formed within the said body, during or after its formation. The ducts of the or each pair extend from the central duct of respective conductors outwards at an acute angle to the common axis of the conductors to communicate with one another, as by directly intersecting within the body or at or adjacent to its surface, or by opening into a common recess in that surface. The ducts are preferably formed by drilling inwards from the outer surface of the body which is itself preferably formed by an MIG welding process.

3,649,740
POLE-TOP STRUCTURE FOR ELECTRIC DISTRIBUTION LINES

John R. Boyer, 2315 Springview Road, Norristown, Pa., and Charles C. Scarlett, 221 South Wayne Avenue, Wayne, Pa.
Filed Nov. 9, 1967, Ser. No. 681,795
Int. Cl. H02g *7/20;* **H01b** *17/00*
U.S. Cl. 174—43 **4 Claims**

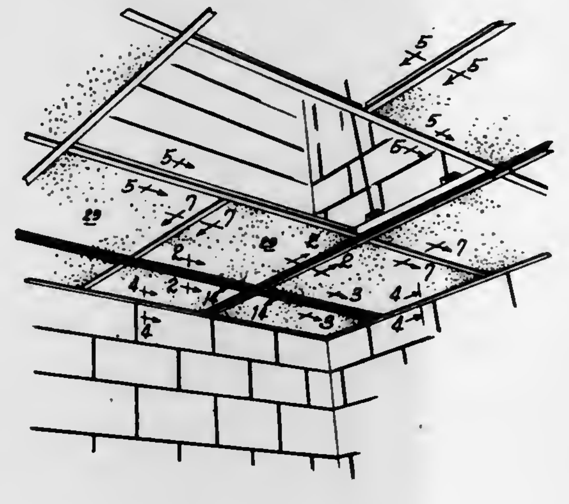
A compact inverted-delta polyphase electric distribution line carried on poles is disclosed in which the conductors are attached to pole-top structures for supporting the middle conductor above the pole top but at a substantially lower level than the two outside conductors. In a preferred form, the pole-top bracket consists of a pair of telescoping angle members adapted to be adjusted to pole tops of varying diameter. Secured to the upper surface of the outer of the telescoping angle members is a horizontal spacing member having at its ends sockets oriented upwardly and outwardly which receive insulating extension arms which extend divergently upward and have at their outer ends insulator pins for supporting insulators for carrying the outer two wires of the three-wire distribution line. At the center of the spacing member atop the pole, a vertically disposed pin is provided having thereon an insulator for carrying the third or middle wire of the three-wire system at a substantially lower level than the two outside wires. An alternate bracket embodiment is also disclosed for carrying the middle wire of the three-wire system above the pole top but at a substantially lower level than the two outside wires.





3,649,741
SUSPENDED ELECTRIFIED CEILING SYSTEM

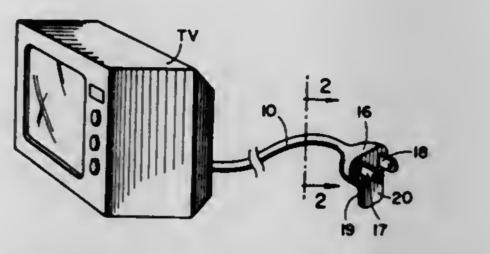
Robert S. Fremont, Wilmette, Ill., assignor to Halo Lighting Division, a Division of McGraw Edison Company, Rosemont, Ill.
Filed Nov. 19, 1969, Ser. No. 878,009
Int. Cl. H02g *3/04*
U.S. Cl. 174—48 **28 Claims**



A suspended ceiling system formed of an electrified or power track combined with inverted T-shaped members and other components to support panels which combine to form a suspended ceiling and whereby the electrified track permits the installation and connection thereto of various different types of lighting units at any point on the track surface.

3,649,742
COMBINED POWER AND ANTENNA CORD FOR TELEVISION SETS

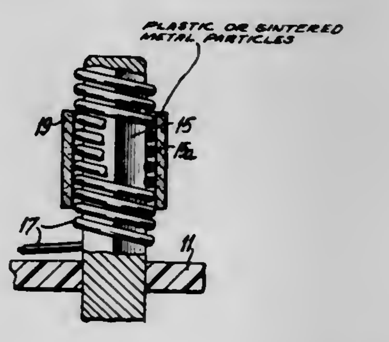
Pierre L. Tissot, 863 Via de la Paz, Pacific Palisades, Calif.
Filed Sept. 23, 1970, Ser. No. 74,734
Int. Cl. H01q *1/50;* **H04b** *1/00;* **H01r** *11/30*
U.S. Cl. 174—70 R **8 Claims**



A power cord for a television set encompasses the antenna cable in a single, molded unit. An exterior antenna cable terminates in a capacitive coupling unit adjacent to the electrical power wall outlet in the building such that when the power cord is plugged in, the television antenna lead is automatically capacitively coupled to the exterior antenna television cable. Permanent magnet means in the outlet aid in holding the capacitive coupling in place.

3,649,743
WRAPPED WIRE CONNECTION

Francis A. O'Loughlin, Scotch Plains, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Sept. 1, 1970, Ser. No. 68,688
Int. Cl. H02g *15/08*
U.S. Cl. 174—84 C **7 Claims**

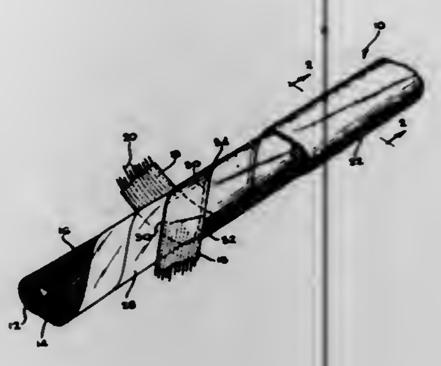


A wrapped wire connection in which an elongated post having at least one sharp edge is wrapped with a standard insulated wire and an outer sleeve fits over the wrapped turns of the wire to apply, at least temporarily, mechanical pressure to the wrapped wire, causing the sharp edge of the post to pierce the wire insulation and thereby to form a permanent electrical and mechanical connection.

3,649,744
SERVICE ENTRANCE CABLE WITH PREFORMED FIBERGLASS TAPE

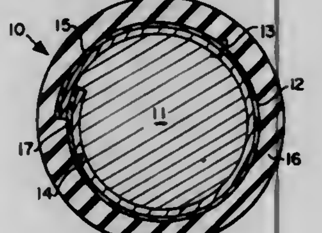
Neil Coleman, Highland Park, Ill., assignor to Coleman Cable & Wire Co., River Grove, Del.
Filed June 19, 1970, Ser. No. 47,691
Int. Cl. H01b *7/18*
U.S. Cl. 174—107 **5 Claims**

A service entrance cable having two or more insulated conductors and a neutral conductor and including a layer of fiberglass tape spirally wound and surrounding the entire bundle formed by the conductors. The entire cable, including the spiral wrapping, is encased in a polyvinyl chloride jacket. The cable is formed by aligning the conductors and spirally wrapping the fiberglass tape while moving the cable in a first longitudinal direction along its axis and extruding the polyvi-



nyl chloride jacket over the layer of fiberglass tape while moving the cable in the opposite direction.

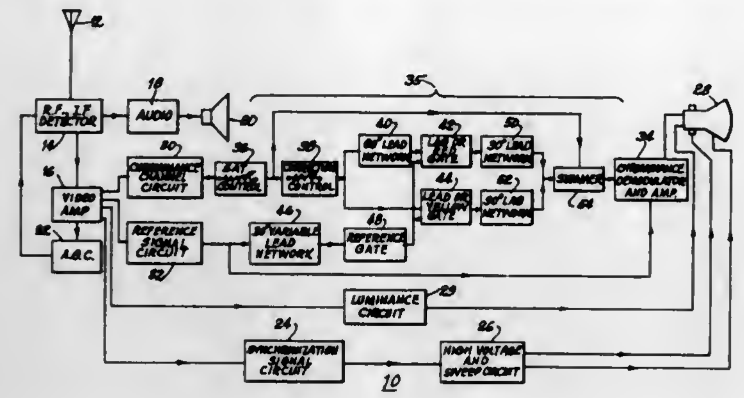
3,649,745
SODIUM CONDUCTOR CABLE
Victor F. Volk, New York, N.Y., assignor to Anaconda Wire and Cable Company, New York, N.Y.
Filed Aug. 14, 1970, Ser. No. 63,813
Int. Cl. H01b *7/18*
U.S. Cl. 174—107 **7 Claims**



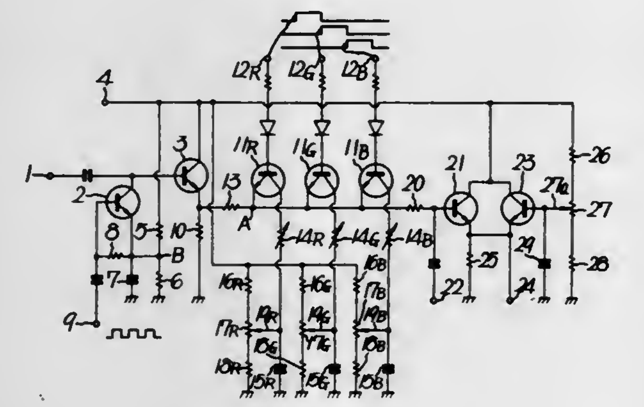
In a sodium cable the conductor is contained within a foil sheath having a bonded, overlapped seam and bonded to a layer of polymeric composition. Apparatus for making this cable includes a pipe for the sodium and a tube former forming a tube of foil-adhesive laminate around the pipe which extends into an extruder for applying the layer of polymeric composition. A method of making the sodium conductor cable comprises continuously forming a foil-laminate tube and filling it with sodium during the extrusion operation.

3,649,746
HUE EXPANDER CIRCUIT PREFERENCE CONTROL
Paul E. Knauer, and John M. Kresock, both of Fort Wayne, Ind., assignors to The Magnavox Company, Fort Wayne, Ind.
Continuation-in-part of application Ser. No. 823,781, May 12, 1969, which is a continuation-in-part of application Ser. No. 863,236, Oct. 2, 1969, which is a continuation-in-part of application Ser. No. 859,942, Sept. 22, 1969. This application May 1, 1970, Ser. No. 33,708
Int. Cl. H04n *9/12*
U.S. Cl. 178—5.4 HE **10 Claims**

Preference controls for use with color television receiver flesh expander circuits are described in which a viewer control is provided for adjusting the phase of the reference signal used to trigger the flesh detection circuits allowing the viewer to easily alter the hue of flesh colors produced on the picture tube face to suit his preference.


AUDIO
VIDEO AMP
A.G.C.
CHROMINANCE CHANNEL CIRCUIT
REFERENCE SIGNAL CIRCUIT
LUMINANCE CIRCUIT
SYNCHRONIZATION SIGNAL CIRCUIT
HIGH VOLTAGE AND SWEEP CIRCUIT
CHROMINANCE DEMODULATOR AND AMP.
10

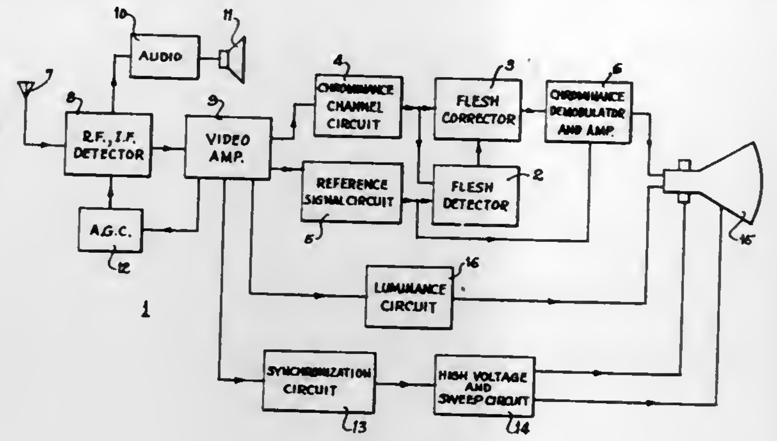
3,649,747
SEQUENTIAL COLOR SIGNAL CONTROL CIRCUIT
Takashi Okada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 22, 1970, Ser. No. 30,787
Claims priority, application Japan, Apr. 24, 1969, 44/31673
Int. Cl. H04n *9/04*
U.S. Cl. 178—5.4 R **5 Claims**



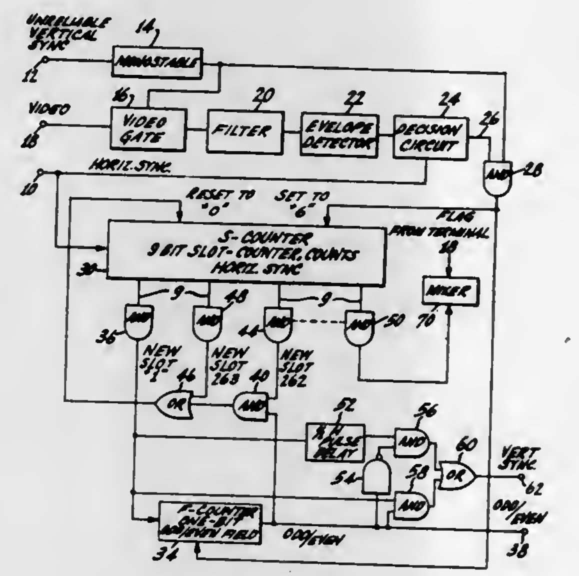
In a control circuit which maintains a desired ratio of sequential color video signals for color television transmission, the color video signals are sequentially supplied to respective impedance bridges which are constituted by four impedance elements at least one of which is variable for control of the DC signal level. The output color video signal is taken from a connection point in a series arrangement of a plurality of impedance elements connected across each bridge, with at least one element in the series arrangement being variable for control of the AC signal level.

3,649,748
METHOD AND APPARATUS FOR MODIFYING ELECTRICAL SIGNALS
Paul E. Knauer, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.
Filed May 12, 1969, Ser. No. 823,781
Int. Cl. H04n *9/12*
U.S. Cl. 178—5.4 HE **39 Claims**

A plurality of flesh expander circuits for expanding the phase range in a received chrominance signal which will produce a color having a hue characteristic of flesh on the picture tube face of a color television receiver are disclosed. The circuits detect the presence of a color near flesh in that signal and then modify it to produce a color more closely approximating flesh. A first type achieves the modification by adding an appropriate quadrature correction signal to the chrominance signal. A second type suppresses the portions of the chrominance signal near flesh and inserts a new signal more closely approximating flesh.



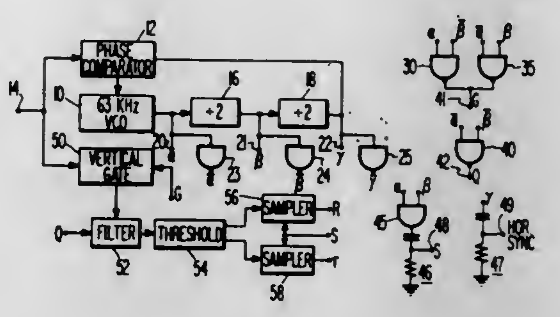
3,649,749
APPARATUS PERMITTING RELIABLE SELECTION OF TRANSMITTED TELEVISION MESSAGE INFORMATION
J. James Gibson, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Oct. 21, 1970, Ser. No. 82,593
Int. Cl. H04n *7/00*
U.S. Cl. 178—5.6 **4 Claims**



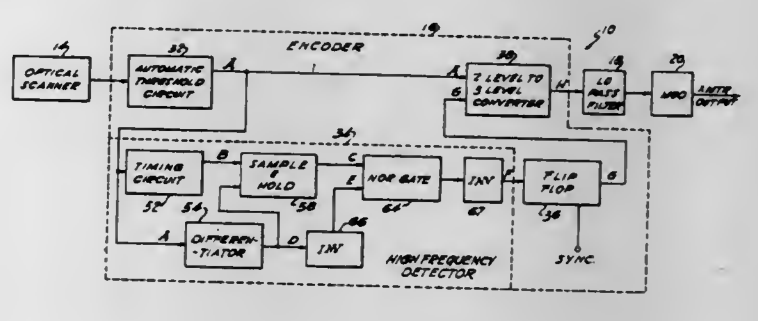
A digital countdown circuit is synchronized by a "flag" signal transmitted every other television field to permit reliable selection of a predetermined television frame line in a system transmitting auxiliary television message information. The "flag" signal can be unreliable in the sense that the countdown circuit can miss the "flag" in a large percentage of cases, but is reliable in the sense that the probability of mistaking other signals as the desired "flag" is small, even in the presence of noise which impairs the quality of the received television picture.

3,649,750
CONTROL SIGNAL GENERATING APPARATUS TO PERMIT RELIABLE SELECTION OF TRANSMITTED TELEVISION MESSAGE INFORMATION
J. James Gibson, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Oct. 21, 1970, Ser. No. 82,692
Int. Cl. H04n *7/00*
U.S. Cl. 178—5.6 **5 Claims**

Digital logic apparatus operates in response to the line and field scanning rate pulses present in a broadcast television signal to generate a control signal which synchronizes the count-down system of my copending application Ser. No. 82,593, filed Oct. 21, 1970 and entitled, "Apparatus Permitting Reliable Selection of Transmitted Television Message Information." Whereas the system of such application transmitted a control signal to effect the synchronization, the present apparatus generates such control from the broadcast signal itself, without the need for additional signal generation and transmission.



3,649,751
COMPRESSED BANDWIDTH TRANSMISSION SYSEM
Richard T. So, Chicago, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Jan. 23, 1970, Ser. No. 5,210
Int. Cl. H04n *1/40*
U.S. Cl. 178—6 **2 Claims**

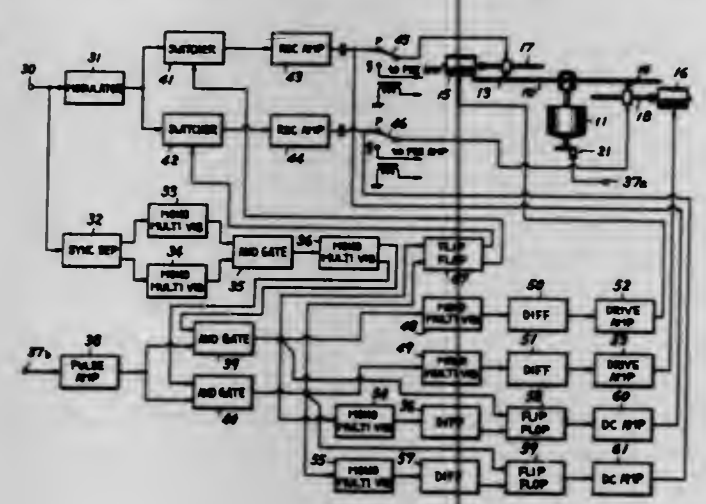


A system for reducing the required bandwidth in a facsimile data transmission system or the like in which a two level digital signal, which may be derived from an analog scanning signal, is caused to be converted into and transmitted as a duo-binary signal whenever the digital signal pulse rate is greater than a predetermined minimum and transmitted as a binary signal whenever the pulse rate is lower than the predetermined rate. The system operates to produce signals which vary from an intermediate level representing black to one of two outer levels representing white as long as each black representing pulse is longer than a predetermined duration. If the black pulse is shorter than the predetermined duration the signal changes to vary between the intermediate or black level and the other lower or white level. A two level to three level converter comprising a differential amplifier and a flip-flop is shown as well as a digitally operated toggle switch for switching the level converter. In addition, a novel analog to digital converter utilizing a differential amplifier operating about an average DC slicing level is disclosed.

3,649,752
ERASING SYSTEM FOR A MAGNETIC RECORDING AND REPRODUCING APPARATUS USING A ROTARY MAGNETIC MEDIUM

Hisao Kinjo, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 27, 1970, Ser. No. 23,137
Claims priority, application Japan, Mar. 31, 1969, 44/23890
Int. Cl. H04n *5/78*; G11b *5/02*, *19/02*
U.S. Cl. 178—6.6 DD **9 Claims**

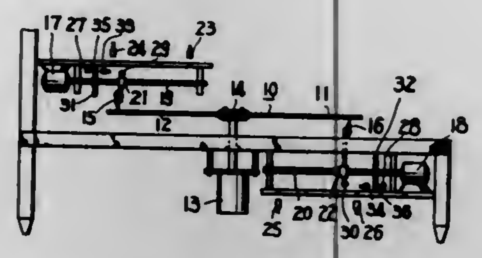


An erasing system for a magnetic recording and reproducing apparatus using a rotary magnetic medium in which same magnetic head is used both for erasing and recording. The erasing action is started from a point when a stepping of the magnetic head has been substantially ended in a vertical blanking interval of a video signal and continued to a point of an end of an interval in unit of one field from a start of the stepping.

3,649,753
SIGNAL ADDRESS SYSTEM FOR APPARATUS FOR MAGNETICALLY RECORDING AND REPRODUCING A SIGNAL ON A ROTARY MEMBER

Hisao Kinjo, Yokohama; Seiichi Takashima, Kamakura, and Takatoshi Kato, Tokyo, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Nov. 10, 1969, Ser. No. 875,295
Claims priority, application Japan, Nov. 9, 1968, 43/81668; Nov. 14, 1968, 43/82875
U.S. Cl. 178—6.6 DD **7 Claims**

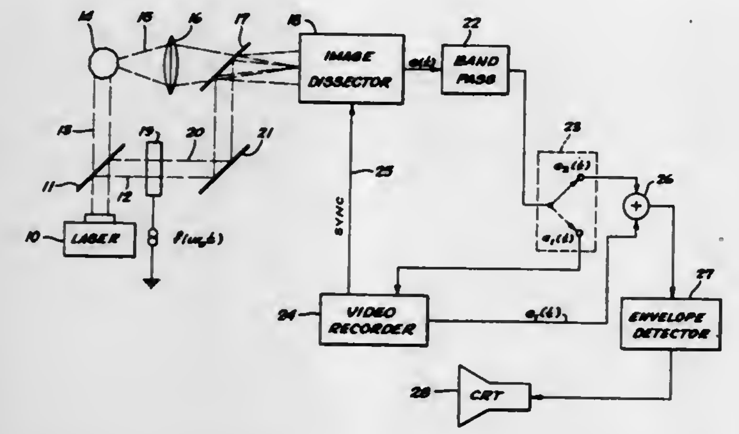


A signal address system is adapted for use with apparatus for magnetically recording and reproducing a signal on a rotary member. At least one magnetic head is provided for recording and reproducing a video signal on a rotating magnetic member. The head is moved by drive pulses associated with field signals or frame signals of the video signal. Thus, the number of drive pulses may be used to provide an output signal representing the total number of drive pulses, which is substantially equivalent to an address signal. Thus, an address may be called out without requiring the recording and reproduction of a specific address signal on the magnetic medium.

3,649,754
REAL TIME INTERFEROMETRY UTILIZING A TELEVISION SYSTEM

Albert Macovski, Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Apr. 20, 1970, Ser. No. 30,074
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **28 Claims**

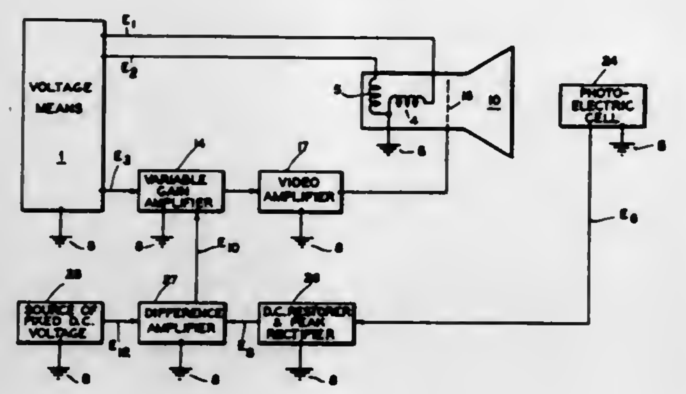


A real time holographic interferometer is disclosed. Two interference patterns of an object, one without stressing of the object and one with such stressing, are produced using holographic techniques. The interference patterns form visual inputs to a television camera which converts them into electrical signals. These electrical signals are combined to produce an output which contains information relative to position deformities of the object between the unstressed and stressed states and the position deformity information is displayed on an appropriate display device.

3,649,755
METHOD AND MEANS FOR PROVIDING A LIGHTED DISPLAY HAVING A CONSTANT CONTRAST RATIO

Anthony J. Newman, Norwalk, Conn., assignor to The Bendix Corporation

Filed June 1, 1970, Ser. No. 42,219
Int. Cl. H04n *5/58*
U.S. Cl. 178—7.5 DC **4 Claims**

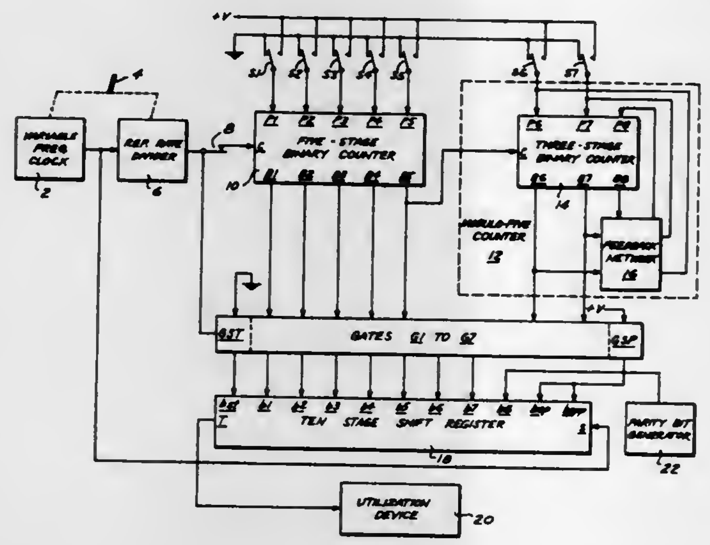


A display system has a closed loop circuit for controlling the brightness of a cathode-ray tube. The circuit includes sensing means providing an output corresponding to the brightness of the display and to ambient brightness. The output is compared to a reference signal. The signal applied to the grid of the cathode-ray tube is amplified in accordance with the comparison to control the brightness of the display so as to maintain a constant contrast ratio $C=(B_C+B_A)/B_A$ where B_C is the brightness of the cathode-ray tube display and B_A is the reflected ambient brightness.

3,649,756
GENERATOR OF BINARY-CODED REPRESENTATIONS OF SYMBOLS

Henry Roberts, Fair Lawn; Arthur R. Weirgin, New Milford, both of N.J., and Richard V. Scala, Middletown, N.Y., assignors to Computer Transceiver Systems, Inc., Paramus, N.J.

Filed Dec. 16, 1970, Ser. No. 98,785
Int. Cl. H04l *1/00*
U.S. Cl. 178—23 A **5 Claims**

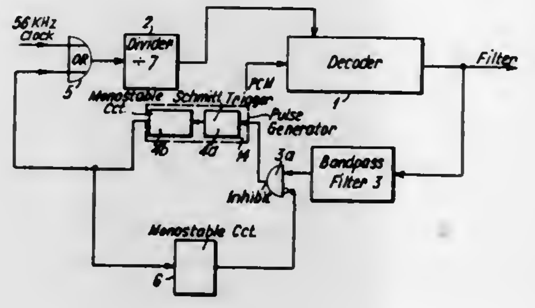


A binary-code generator includes a five-stage binary counter and a modulo-five counter connected in cascade. The input of the binary counter is driven, via a pulse repetition rate divider, from a source of periodically recurring pulses. The binary counter monotonically cycles through its 32 states to generate 32 different coded combinations of bits and steps the modulo-five counter which steps through five states. These five states only generate four different coded combinations since two of the states generate the same coded combination. The coded combinations of bits are fed to a shift register in parallel and are then transmitted therefrom serially.

3,649,757
FRAME SYNCHRONIZATION ARRANGEMENT FOR PCM SYSTEMS

Joseph Hood McNeilly, Harlow, Essex, and Paul Barton, Bishop's Stortford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 21, 1969, Ser. No. 851,988
Claims priority, application Great Britain, Sept. 20, 1968, 44,729/68
Int. Cl. H04l *7/00*
U.S. Cl. 178—69.5 R **10 Claims**

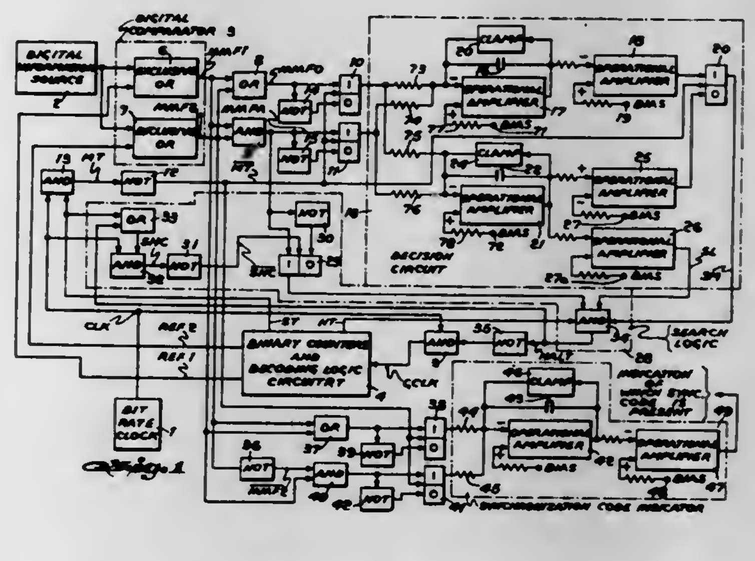


The decoder produces output containing a detectable signal component equal to one-half the frame repetition rate when an out of sync condition is present. A bandpass filter detects the signal component and produces a pulse which is inserted into the bit clock from which the frame clock is derived for operating the decoder. The frame clock is shifted one bit each frame until a sync condition is achieved and the signal component disappears. A feedback circuit inhibiting the filter output is provided to prevent for a given time interval generating a succession of additional pulses after the first extra pulse is inserted into the bit clock.

3,649,758
FRAME SYNCHRONIZATION SYSTEM

James M. Clark, Cedar Grove, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed July 6, 1970, Ser. No. 52,354
Int. Cl. H04l *7/00*
U.S. Cl. 178—69.5 R **14 Claims**



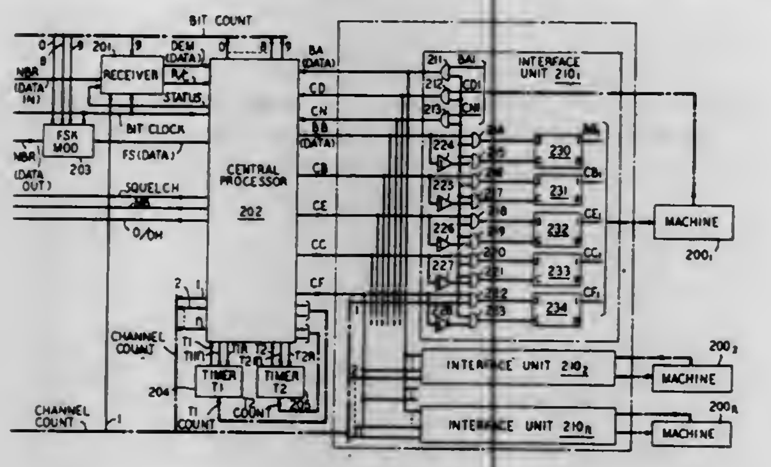
A binary information signal having a given bit rate and either one of two different synchronization codes and two local binary synchronization reference signals are applied to a digital comparison circuit, the two output signals indicating a match or mismatch between the successive adjacent bits of the information signal and the associated one of the reference signals. The two output signals are OR-ed and AND-ed with these functions being applied to a common decision circuit having a decision level resulting in a "1" output when the decision level is not exceeded and a "0" output when the decision level is exceeded. Search logic operates on the above AND function, or a separately produced AND function, of the two output signals and cooperates with the output of the decision circuit to achieve synchronization to either of the two synchronization code patterns. The search logic is described as employing the immediate response circuit and technique, the look-ahead technique employing one shift register and the look-ahead technique employing two shift registers.

3,649,759
MULTIPLE DATA SET WHICH TIME-SHARES CIRCUITRY AMONG A PLURALITY OF CHANNELS

Clair A. Buzzard, Eatontown; Gerald P. Pasternack, Colts Neck, and Burton R. Saltzberg, Middletown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

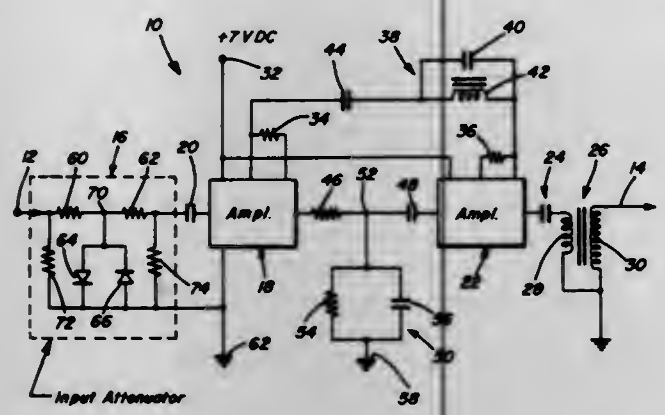
Filed Dec. 11, 1969, Ser. No. 884,251
Int. Cl. H04m *11/06*
U.S. Cl. 179—2 DP **9 Claims**

A plurality of telephone lines which convey frequency-shift signals and a corresponding plurality of data machines, which send and receive DC baseband data, are interconnected via a time-shared digital (filter) circuit receiver and digital circuit modulator under the supervision of a common central processor. The processor follows the progress of each call and determines when supervisory functions are required. These functions includes placing the telephone line in an on-hook or an off-hook condition, returning answer back signals, monitoring the line for incoming calls by detecting incoming ringing signals and, after the call is answered, monitoring the line for a continuous connection by detecting incoming carrier signals. A low-pass digital filter is arranged to filter the incoming signals to detect ringing or, alternatively, to filter the sum of the signaling frequencies to detect carrier.



To detect the low-frequency ringing, the response of the filter is modified by limiting the rate at which the input signals are applied thereto and by "holding" the processed signals in the filter for the prolonged interval between the input signal applications.

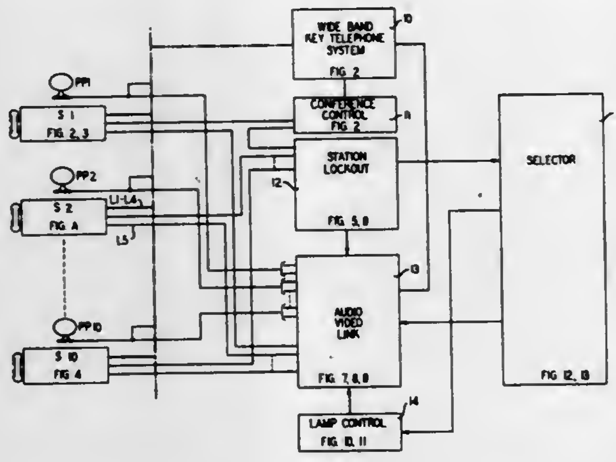
3,649,760
BANDPASS AMPLIFIER CIRCUIT
Roger C. Glidden, 12 Pleasant Street, Wenham, Mass.
Filed July 22, 1969, Ser. No. 843,339
Int. Cl. H03f *1/34*
U.S. Cl. 179—1 A **6 Claims**



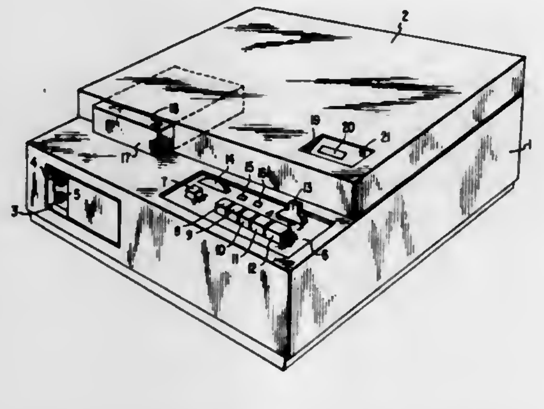
Audiofrequency signals within a narrow band width are converted into switching signals by a multistage amplifier circuit having a resonant feedback path, an input signal attenuator and a capacitive shunt network associated with an interstage coupling-reducing amplifier gain at signal frequencies above the resonant frequency of the feedback path to decrease amplifier impedance and to isolate low DC bias voltage applied to each amplifier stage.

3,649,761
DIAL SELECTIVE WIDEBAND INTERCOMMUNICATION SYSTEM
Stanley E. Bush, Boulder, Colo.; David T. Olson, Hackensack, N.J., and George E. Saltus, Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 23, 1970, Ser. No. 5,243
Int. Cl. H04m *11/00*
U.S. Cl. 179—2 TV **19 Claims**

A key telephone system is arranged with a selective intercommunication link to provide wideband service between any two stations served by the system. A station lockout circuit controls access to the link to insure that only two stations, calling station and a called station, may be connected to the link at one time. A selector circuit operates in conjunction with the lockout circuit to match the transmit-receive lead pairs of a called station with the proper lead pairs of the calling station. The system is arranged such that a three-party wideband conference may be established between a line, a first station and a second station connected to the first station via the link. All the parties to the conference are connected together for continuous audio transmission while wideband transmission is maintained only between two of the parties under selective control of the first station.



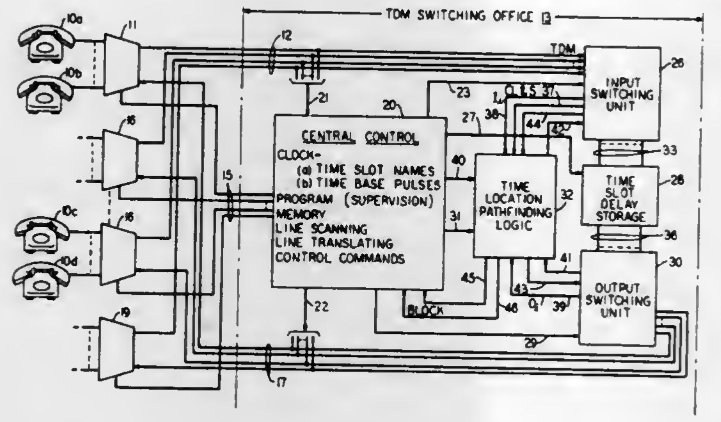
3,649,762
AUTOMATIC TELEPHONE-ANSWERING AND MESSAGE-RECORDING APPARATUS
Akira Okamura, Tokorozawa-shi, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Nov. 26, 1969, Ser. No. 880,261
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 R **12 Claims**



An automatic telephone-answering and message-recording apparatus having two functions, one serving to send outgoing messages and the other serving to record the caller's incoming messages after the outgoing message has been sent out be selectively loading two kinds of cartridges the contents of each having separate outgoing messages and having an additional auxiliary operation mechanism for preventing said cartridges from misloading.

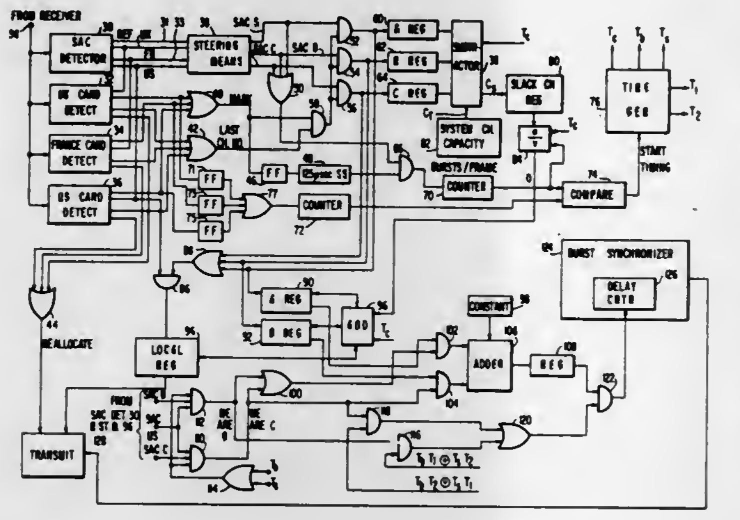
The appiratus also has a novel starting control circuit whereby stable operation may be achieved regardless of the calling signal being from any long distance, and a novel beep tone circuit controlled by a Schmitt circuit, for detecting the termination of the recording time of incoming messages as well as the sending of outgoing messages and to then restore the apparatus to its standby state.

3,649,763
TIME DIVISION SWITCHING SYSTEM
John Stewart Thompson, Sea Bright, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 27, 1970, Ser. No. 40,882
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AQ **26 Claims**



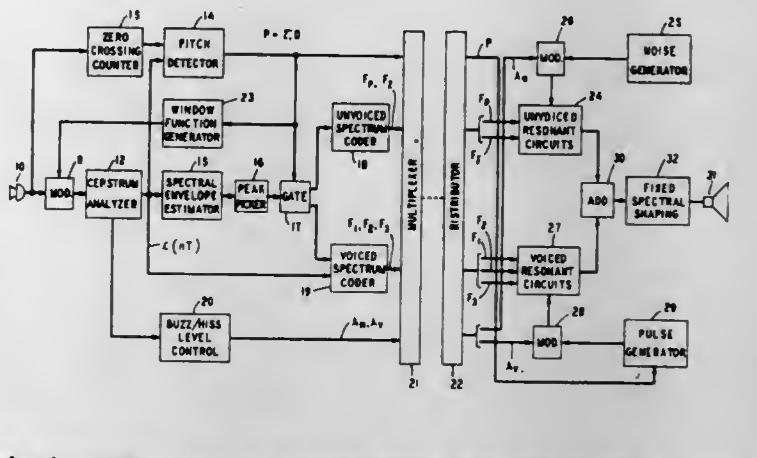
Control memories actuate space division switching matrices to connect plural time division multiplex lines to different input and output connections of time slot unit storage locations for performing plural time slot interchange functions simultaneously and independently in different portions of the locations. In two embodiments the locations are in a dynamic form as the respective stages of a reentrant shift register and the respective locations in a circulating delay line. In another embodiment the locations are in a static form as the respective memory devices in a random access memory. In any embodiment status and compare circuits evaluate storage location control signals for finding an available path of suitable length in the time-storage domain of the locations for establishing new connections between calling and called lines.

3,649,764
VARIABLE BURST LENGTH TDMA SYSTEM
Wilfrid G. Maillet, Oxon Hill, Md., assignor to Communications Satellite Corporation, Washington, D.C.
Filed Oct. 15, 1969, Ser. No. 866,635
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 BA **10 Claims**



In a time division multiple-access communications system using a satellite transponder and a plurality of earth stations, each earth station periodically transmits bursts of data which are timed so that the bursts from the earth stations in the system interleave and do not overlap in time when received at the satellite. The total time for transmitting one burst from all stations is the frame time of the system. Each burst is subdivided into numerous time slots or channels during which digital information, such as digitally coded voice communications, is transmitted. All slots or channels which are allocated at any given time to a particular station may be occupied (i.e. the station actually transmits information during the time slot) or only some of the slots may be occupied, depending upon the traffic from the station. Periodically, or in response to actual traffic conditions, each station transmits an indication of its highest numbered channel then in use. The remaining or slack channels for all stations are totaled and divided up equally among all of the operating stations in the frame. Burst movement to accommodate the reallocation of channels is accomplished serially, one burst at a time. Since the slack channels are at the end of the bursts, the nonuse of the slack channels effectively shortens each burst. Burst B moves forward to bunch up against burst A, burst C then moves forward to bunch up against burst B, etc. After the calculations with respect to total slack time have been performed and each station calculates its burst position relative to the reference station to accommodate its new allocation of channels, serial movement of the bursts takes place in a direction away from the reference burst, i.e., the last burst in the frame moves back to the proper position followed by the second to last burst, etc.

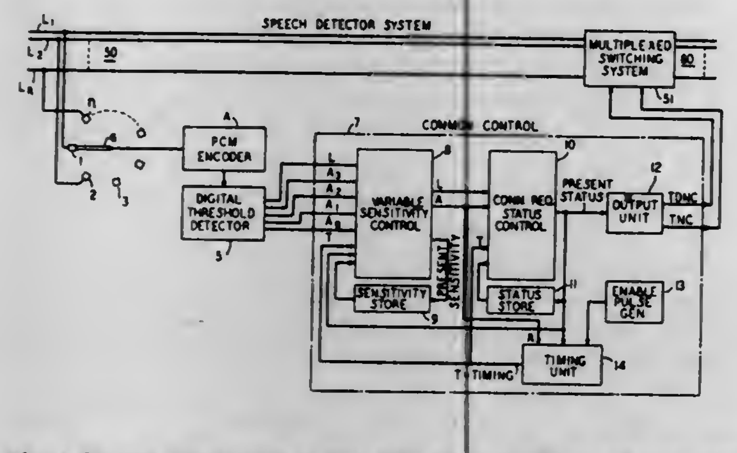
3,649,765
SPEECH ANALYZER-SYNTHESIZER SYSTEM EMPLOYING IMPROVED FORMANT EXTRACTOR
Lawrence R. Rabiner, Chatham, and Ronald W. Schafer, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 29, 1969, Ser. No. 872,050
Int. Cl. G10l *1/02*
U.S. Cl. 179—15 A **9 Claims**



An important step in speech signal analysis is the identification of formant frequencies of voiced speech. Formant data is necessary in the synthesizer used, for example, in a resonance vocoder. To derive these data, i.e., to obtain an estimate of the pitch period of the signal and its spectral envelope, a cepstrum of a speech signal is used. The lowest three formants of a voiced speech signal are then estimated from a smoothed spectral envelope using constraints on formant frequency ranges and relative levels of spectral peaks at the formant frequencies. These constraints allow detection in cases where formants are too close together to be resolved from the initial spectral envelope.

3,649,766
DIGITAL SPEECH DETECTION SYSTEM
Robert E. LaMarche, Atlantic Highlands, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 1, 1969, Ser. No. 881,089
Int. Cl. H04j *5/00*
U.S. Cl. 179—15 AS **25 Claims**

A common time-shared speech detector that requires no per trunk detection circuitry is disclosed. The signal level on a trunk is applied to a common P.C.M. encoder in the time slot for the trunk and the resulting P.C.M. code is converted to digital threshold signals by a common digital threshold detector. Digital status and timing information for a plurality of speech lines are stored in circulating delay loops and processed in time sequence with common digital circuitry. Variable sensitivity is achieved by varying digital reference values for the lines which are also stored in circulating delay loops. Operate time, delay before hangover, and hangover are timed by multiplexed digital timing signals and varied in response to line activity signals to better accommodate talkers with different speech intensities. The output comprises time-slotted requests for connection or disconnection which can be used in a time assignment speech interpolation system.

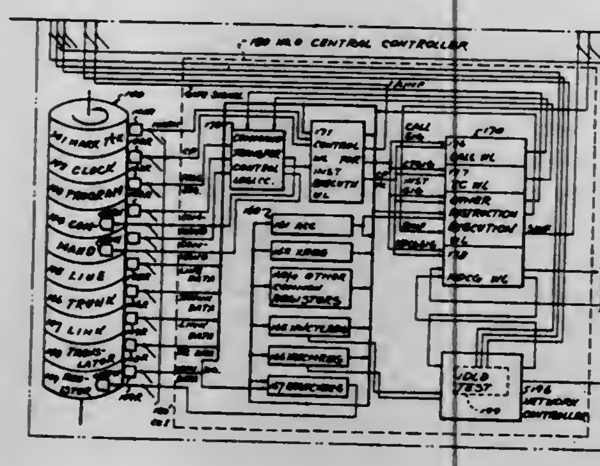


3,649,767

AUTOMATIC TELEPHONE SYSTEM ACTIVATED BY STORED PROGRAMS AND INCLUDING CIRCUITS TO INDICATE BUSY-IDLE STATES OF SYSTEM COMPONENTS

Ko Muroga; Jiro Okuda; Nobuhiko Shimasaki; Toshio Terashima; Yasushi Maruyama; Hiroshi Kaneyasu; Kikuya Sohma, all of Tokyo-to, Japan, and Clarence A. Lovell, McLean, Va., assignors to Nippon Electric Company, Limited, Tokyo-to, Japan

Filed July 16, 1969, Ser. No. 842,095
Int. Cl. H04q *3/54*
U.S. Cl. 179—18 ES **11 Claims**



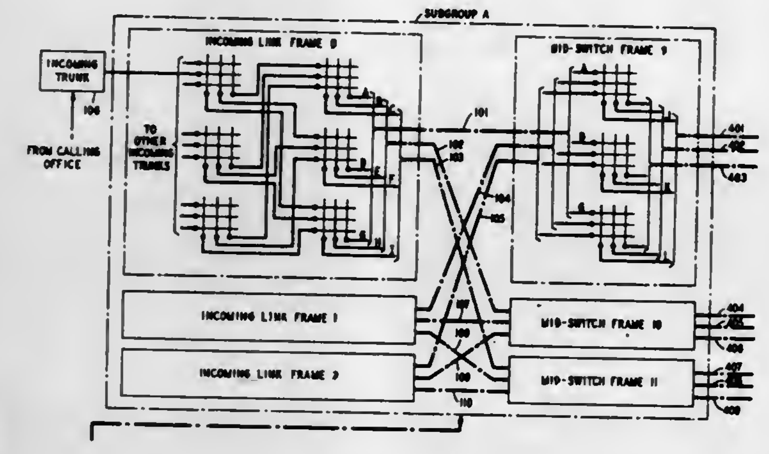
In a system of the space division, stored program type for telephone use, state circuits are connected with subscriber's line circuits, trunk circuits, links and command execution wired logics. Each state circuit supplies to the wired logics a signal representative of the instant operational state of the connected line circuit, trunk and link and receives therefrom a signal representing that the wired logics have processed the state signal. A rotating magnetic memory is used as the central memory device. Also, a pair of central controllers may be provided to operate in the reversed operational modes of call processing and link setting at the same time.

3,649,768

HIGH CAPACITY SWITCHING NETWORK AND CONTROL ARRANGEMENT

Robert Bartlett Curtis, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 1, 1970, Ser. No. 51,571
Int. Cl. H04q *3/495*
U.S. Cl. 179—22 **12 Claims**



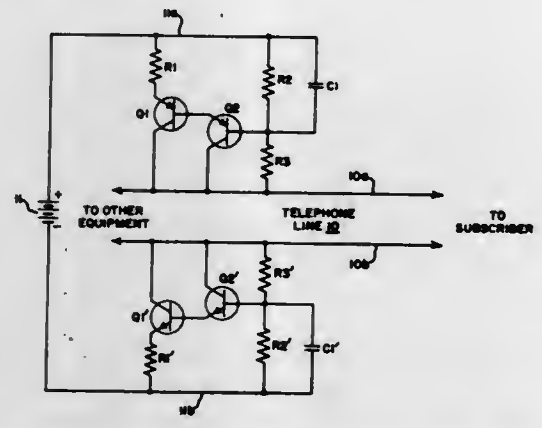
A five-stage switching network comprising incoming link frames (2-stages), midswitch frames (1-stage), and outlink frames (2-stages) is provided wherein the incoming and midswitch frames are arranged in subgroups with junctor access only between stages within the same subgroup but with junctor access from each subgroup to all outlink frames. The common control marker circuits are arranged to serve specified subgroups of incoming and midswitch frames and for this purpose a connector arrangement is provided wherein the markers and frames are arranged in a matrix with a connector relay at each point of intersection in the matrix. The connector arrangement between the markers and the outlink frames involves the use of a 2-stage connector wherein the midswitch frames contain connector relays for the control paths to the outlink frames. Thus, it is possible for all markers to obtain control of an outlink frame by first obtaining control of a midswitch frame. An extremely large capacity switching network is thereby provided employing minimal connector apparatus.

3,649,769

CIRCUIT FOR SUPPLYING DIRECT CURRENT TO A TELEPHONE LINE

Jurgen Pest, Lynchburg, Va., assignor to General Electric Company

Filed Oct. 28, 1970, Ser. No. 84,747
Int. Cl. H04m *19/08*
U.S. Cl. 179—77 **2 Claims**



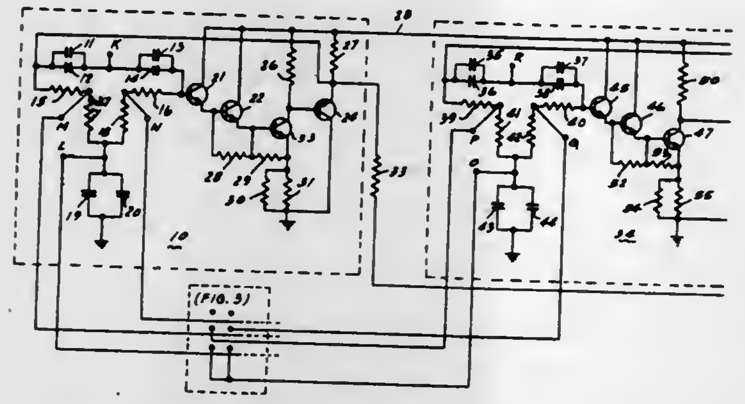
Two PNP transistors are coupled between the positive pole of a direct current source and one side of a telephone line, and two NPN transistors are coupled between the negative pole of the direct current source and the other side of the telephone line. The transistors are provided with circuits to control the direct current supplied to the telephone line. The transistors present a high impedance to voice frequency and alternating current signals on the telephone line, and thus provide the desired current without large inductors.

3,649,770

TONE SIGNALING SYSTEM

Otis L. Hale, and Charles D. Rakes, both of Little Rock, Ark., assignors to Fan Tron Corporation, Little Rock, Ark.

Filed Dec. 24, 1960, Ser. No. 887,971
Int. Cl. H04m *1/50;* **H04q** *9/12*
U.S. Cl. 179—84 VF **29 Claims**



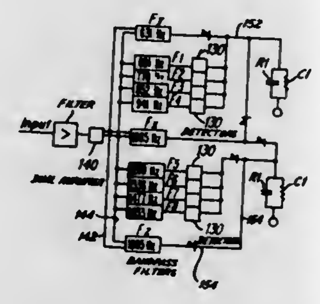
A tone signaling system comprises a tone transmitter and a tone receiver in the form of an encoder and a decoder, respectively, for generating, transmitting and translating information in the form of a serial train of tone signals. The encoder utilizes a plurality of oscillators in the form of a bridged-T configuration for generating a plurality of selected frequencies under the control of a keyer and a plurality of timers which initiate tone generation and the spacing of the tones. The decoder employs a plurality of active tuned filter circuits, also in the same basic bridged-T configuration, which circuits and their following detectors are sequentially operated by the sequence of tones to effect energization of indicating apparatus.

3,649,771

VF PUSHBUTTON SIGNALING ARRANGEMENT

Thomas Harold Flowers, Mill Hill, London, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 8, 1969, Ser. No. 848,538
Claims priority, application Great Britain, Aug. 15, 1968, 39,005/68
Int. Cl. H04m *1/50*
U.S. Cl. 179—84 VF **3 Claims**



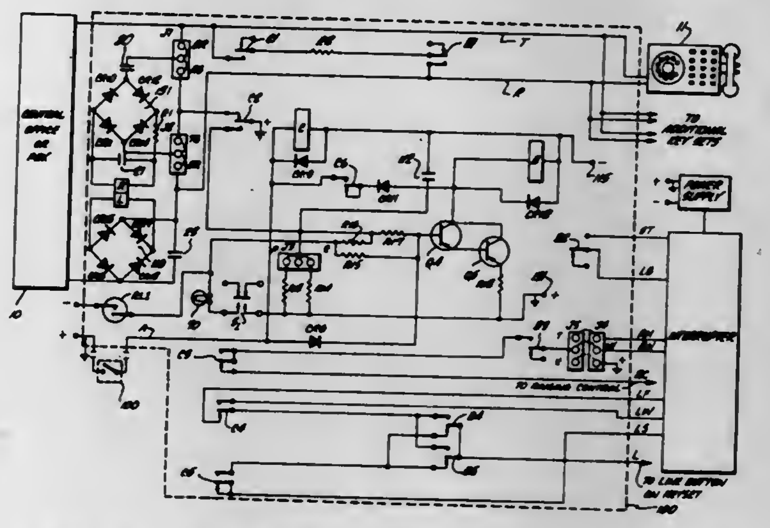
This relates to "guard" arrangements for a VF receiver, especially for handling 2 × (1 out of 4) code signals from pushbutton subscriber sets. It is shown that if signals from a high-impedance source are applied to an infinite series of resonant circuits whose resonances are in geometrical progression, a guard voltage derived from the input to the infinite series can be opposed to the signal frequencies at the output and gives adequate guard against spurious signals such as speech, without the use of input band-stop filters or of resonant circuits having a precise Q value, as used in known guard circuits.

3,649,772

LINE CARD CIRCUIT FOR A KEY TELEPHONE SYSTEM

Alan Rayment Fitzsimons, Laguna Beach, and Robert John Phelps, Anaheim, both of Calif., assignors to San/Bar Electronics Corporation, Long Beach, Calif.

Continuation-in-part of application Ser. No. 852,585, Aug. 25, 1969. This application Jan. 19, 1970, Ser. No. 3,596
Int. Cl. H04m *1/00*
U.S. Cl. 179—99 **17 Claims**



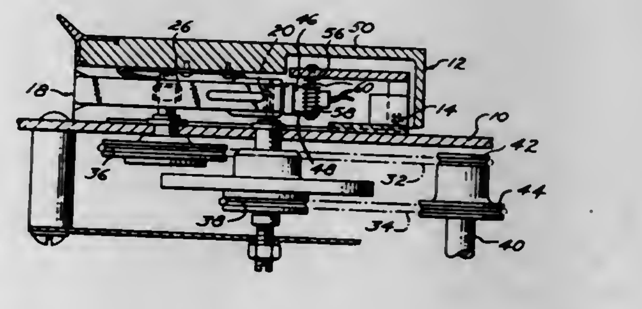
A line card circuit for a key telephone system is disclosed. A key telephone system includes a subscriber line comprising a pair of line conductors interconnecting a central office with one or more subscriber key sets. The line car circuit has a sensing means which is responsive to ringing signals in the line conductors to initiate local signaling as an indication of the presence of an incoming call. Means are provided to assure that the sensing means is nonresponsive to system noise transients. Means are further provided responsive to the operation of the sensing means to maintain said local signaling for a predetermined period. Additional means are provided to rapidly switch the associated line into a "hold" condition when required. The rapid switching assures that associated PBX or central office equipment will not receive a premature line release indication. Means are further provided to perform all the necessary switching and supervisory functions required by the associated line.

3,649,773

RECORDING HEAD ADJUSTMENT MECHANISM

James R. Trammell, Parma Heights, Ohio, assignor to Scanfax Systems Corporation, New York, N.Y.

Filed Mar. 12, 1970, Ser. No. 18,939
Int. Cl. G11b *5/56, 21/24*
U.S. Cl. 179—100.2CA **1 Claim**

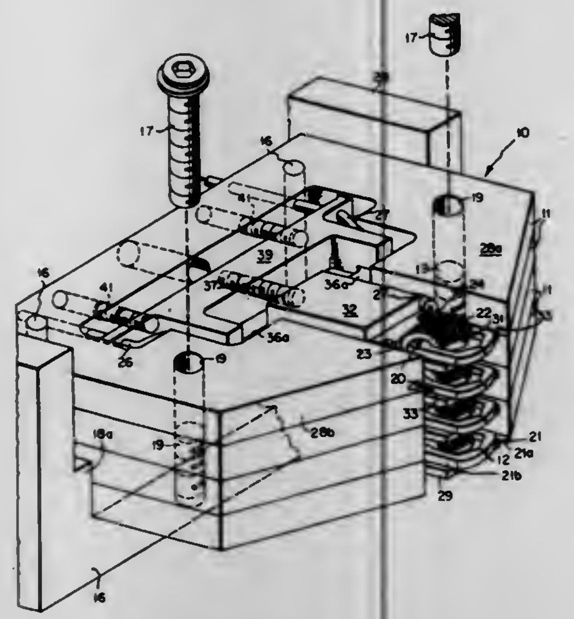


The recording head is positioned between two spaced platforms, the spacing on one side of the head being fixed by a sleeve and bolt arrangement and the spacing on the other side of the head being adjustable.

3,649,774
TRANSDUCER MOUNTING ASSEMBLY

Louis Olah, Cupertino, and Gregory J. Maleski, Sunnyvale, both of Calif., assignors to Newell Industries, Inc., Sunnyvale, Calif.

Filed July 10, 1969, Ser. No. 840,642
Int. Cl. G11b *5/56, 21/10*
U.S. Cl. 179—100.2CA **7 Claims**

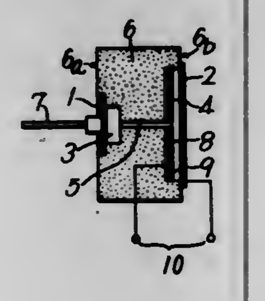


A transducer mounting assembly having a plurality of magnetic transducers each with its own gap. Each gap is independently adjustable laterally relative to the gaps of the other transducers and further adjustable to position all gaps transversely of the record path and in a single straight line extending through all gaps.

3,649,775
ELECTRO-STATIC PHONOGRAPH PICKUP

Hirotake Kawakami, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 14, 1969, Ser. No. 850,102
Int. Cl. H04r *19/10*
U.S. Cl. 179—100.41K **5 Claims**

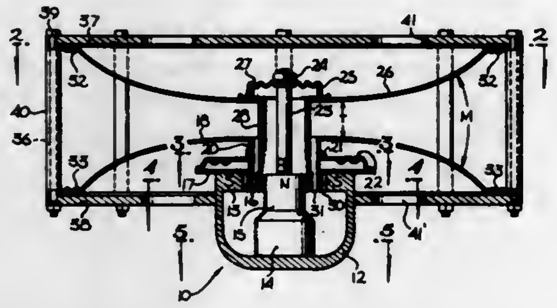


A phonograph pickup cartridge including an electrostatic transducer with an air chamber having flexible walls connected to the transducer, and a stylus and an arm for converting the movement of the stylus into air pressure variations in the air chamber.

3,649,776
OMNIDIRECTIONAL HORN LOUDSPEAKER

William D. Burton, 2946 Getrude Avenue, Los Angeles, Calif.

Filed July 22, 1969, Ser. No. 843,346
Int. Cl. H04r *9/02*
U.S. Cl. 179—115.5 H **11 Claims**

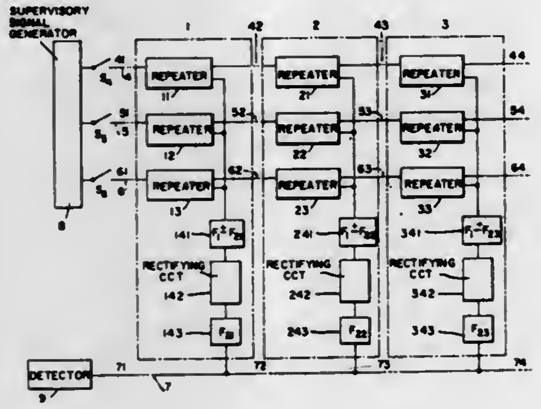


An omnidirectional loudspeaker is disclosed herein having a pressure wave radiator comprising a pair of circular, vibrating pistons incorporating opposing spaced-apart shaped surfaces wherein each piston carries a cylindrical extension disposed at its center with a voice coil movable in the magnetic gap of a magnetic structure. An outer portion of the shaped surfaces of the vibrating pistons forms an omnidirectional exponential horn for propagating sound in all directions outwardly as the pressure waves are generated by the piston movement, via energization of the respective coaxial voice coils. The voice coils are electrically connected out of phase so as to differentially move the pistons in opposite directions to increase or decrease the pressure components between the opposing piston-shaped surfaces. The pistons are maintained in coaxial relationship by a pair of spider members mounting the extensions of the pistons respectively to rigid supporting structure.

3,649,777
SUPERVISORY APPARATUS FOR PCM REGENERATIVE REPEATERS

Takao Matsushima, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Apr. 21, 1969, Ser. No. 817,840
Claims priority, application Japan, Apr. 26, 1968, 43/28130
Int. Cl. H04b *1/60*
U.S. Cl. 179—175.31R **7 Claims**

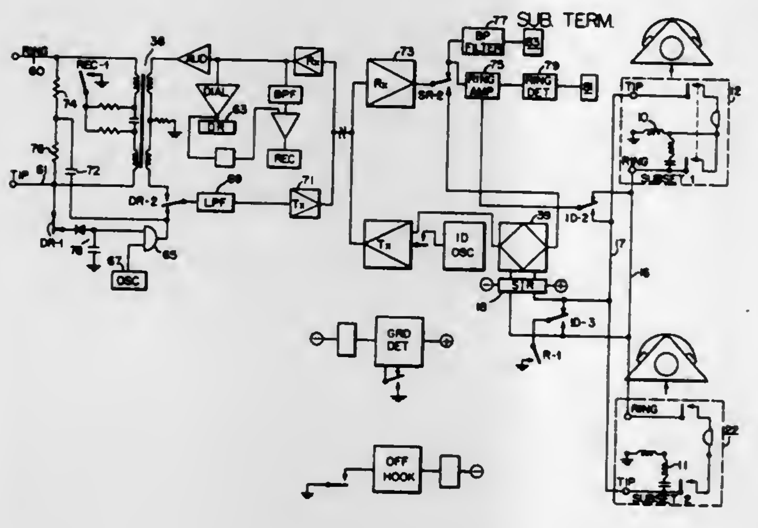


Supervisory apparatus is provided in accordance with this invention for monitoring or supervising the operation of the repeater means present in a PCM transmission system wherein the transmitted information comprises a unipolar waveform. According to one embodiment of the present invention, select frequency components of differing character are assigned to each of the repeater means disposed along a common information transmission path present within the PCM transmission system. The supervisory apparatus provided in this embodiment of the present invention includes a supervisory transmission path adapted for the transmission of each of such select frequency components from said repeater means to a terminal portion of said PCM transmission system, supervisory circuit means interposed between each of said repeater means and said supervisory transmission path for applying only a specifically assigned one of such select frequency components from the repeater means connected thereto to said supervisory transmission path and means for selectively applying a unipolar supervisory signal to each of said repeater means disposed along said common information transmission path. The means for selectively applying a unipolar supervisory signal to each of said repeater means is adapted to produce a unipolar supervisory signal which is binary in nature and characterized by a waveform wherein the relative ratio of the duration of the segments thereof representing each binary state is varied to form at least two slowly varying frequency component. Such slowly varying frequency component comprises one of the select frequency components assigned to each of said repeater means and said unipolar supervisory signal may be produced in a manner so that each of such select frequency components is provided to said repeater means and readily discriminated. Accordingly, the remote detection of such select frequency components as present in said supervisory transmission path is determinative of the operating condition of the repeater means being supervised.

3,649,778
SELECTIVE RINGING IN SUBSCRIBER CARRIER TELEPHONE SYSTEM

Morris A. Suntop, and Uno Randmere, both of Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Sept. 18, 1970, Ser. No. 73,560
Int. Cl. H04j *1/14*
U.S. Cl. 179—17 E **2 Claims**

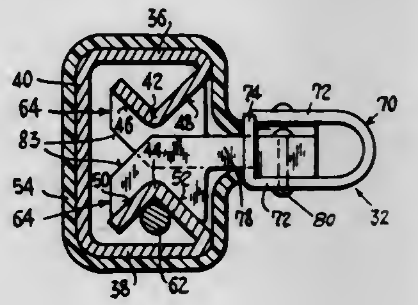


Selective ringing for two subscribers who share a single channel in a subscriber carrier telephone system. The ringers at the subscribers' subsets are connected respectively between ground and the ring lead for one subscriber and between ground and the tip lead for the other subscriber. When the central office switching equipment applies a ring signal between its outgoing tip lead and ground, the terminal equipment at the central office transmits both the ring signal and a 1.1 kHz. tip identification signal on the outbound carrier signal. The terminal equipment at the subscriber end of the line detects the identification signal and operates a relay in response to it to cause the output of the "ring" amplifier to be applied between the tip lead and ground. In the absence of the identification signal, the output of the "ring" amplifier is applied between the ring lead and ground.

3,649,779
RAIL-TYPE ELECTRIFICATION SYSTEM

Alleyne C. Howell, Jr., c/o Howell Corp., 470 Surf Avenue, Stratford, Conn.

Filed Apr. 17, 1970, Ser. No. 29,458
Int. Cl. B60l *5/08*
U.S. Cl. 191—45 A **22 Claims**

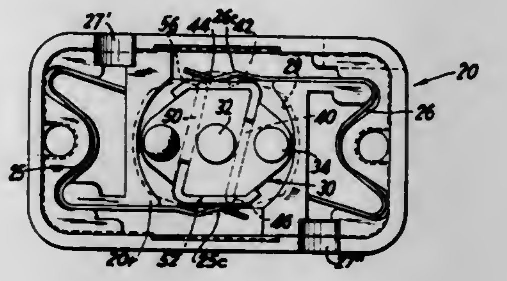


A rail-type electrification system comprising one or more rail members each of which is constituted of a pair of coextensive spaced, opposed, conductor bars defining between them a path of travel for a contact shoe or collector assemblage. Each collector assemblage comprises a plurality of shoes disposed between the bars and adjacent each other, each of said shoes having angularly disposed contact surfaces which face away from each other. A spring clip carries the contact shoes and permits limited relative movement while biasing them against the bars. The shoes and spring mounting can be connected by cables to equipment. Each pair of shoes has a total of four contacting faces bearing against the two bars of the rail member.

3,649,780
ELECTRIC REVERSING SWITCH

David W. Johnson, Newington, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.

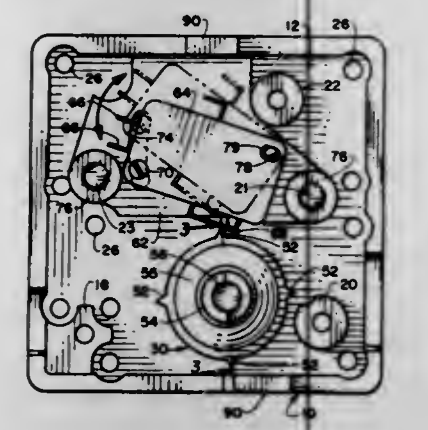
Filed May 13, 1970, Ser. No. 36,909
Int. Cl. H01h *9/00*
U.S. Cl. 200—1 V **12 Claims**



An electric reversing switch for power-operated tools has an insulating casing, the two parts of which are identical. Two one-piece contact and terminal members are mounted on each half of the casing in position for engagement by two identical movable contacts which are carried by an oscillatory contact carrier of insulating material and are stamped from sheet metal into such shape that a part of each contact is always in engagement with the two fixed contacts in one-half of the casing, while the other parts of these movable contacts engage and disengage the fixed contacts in the other part of the casing. In one position, the portion of the contacts which are always engaged also engage the fixed contacts in the other part of the casing. For maintaining the contact carrier in its two position, two ball detents each are pressed into one or the other of two depressions in each of the parts of the casing by a single spring between the two balls.

3,649,781
SELECTIVELY VARIABLE TIMER WITH IMPROVED INTEGRAL CLUTCH CAM STRUCTURE

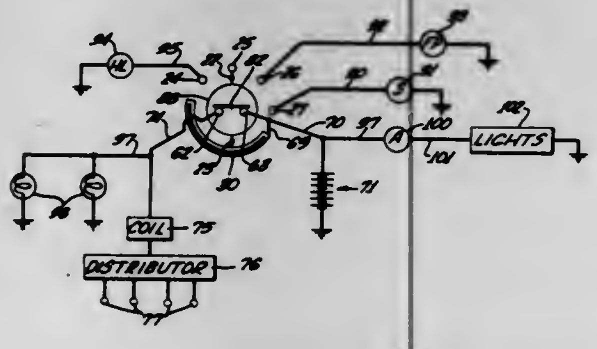
Eric C. Johnsen, Santa Monica; Eugene T. McKinnon, Pacific Palisades, and Alvin S. Drutz, Los Angeles, all of Calif., assignors to said McKinnon and said Drutz, by said Johnsen
Filed Oct. 23, 1970, Ser. No. 83,488
Int. Cl. H01h *7/00, 43/00*
U.S. Cl. 200—33 B **14 Claims**



A selectively variable timer especially useful for refrigerators and the like for initiating defrost cycles wherein unique design of the timer permits easy mounting of an actuator member, selected from a provided group, to actuate a selectively variable switch member to initiate cycles and meet a variety of needs without major reconstruction of the device. The interchangeable actuator member is driven through a clutchlike train and is provided with one or a plurality of cam surfaces to operate a pressure switch shiftably mounted with respect to the cam surface to vary the period of circuit energization and deenergization and wherein a clutch train permits simple infield testing of the device. Manufacturers's inventories are substantially reduced in that one basic motor and timer, having the interchangeable feature, eliminates the need of having a plurality of individual motors and associated timers to meet a multiplicity of needs.

3,649,782
AUTOMOBILE IGNITION LOCK

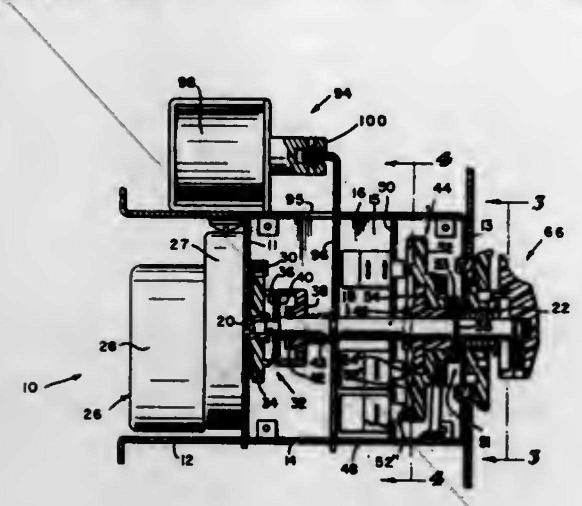
Marshall H. Feldman, P.O. Box 922, Twenty-Nine Palms, Calif.
Filed Jan. 11, 1971, Ser. No. 105,250
Int. Cl. H01h *27/00*
U.S. Cl. 200—44 **8 Claims**



A lock comprising a rotatable, key-turned cylinder having a split pin on its axis, one end of which is exposed at the keyhole. The two halves of the pin are electrically insulated from one another, and one-half is connected to the battery. The other half is connected to the ignition coil, and when the key is telescoped over the split pin, it closes the circuit to the coil. A rotatable switch on the cylinder selectively closes the circuit to either solenoid-actuated hood latches, electrical fuel pump, or starter relay, according to the angular position of the key. Inserting key in lock closes circuit to the ignition coil, and turning key actuates starter relay, fuel pump, or hood latches, as desired. Pick-proof lock has oppositely facing hooks on the outer edges of alternate lock tumblers, which engage lips on the tumbler cavity when torque is applied to cylinder, to prevent tumblers from being pulled down out of cavity. Key in lock also closes circuit to telltale lights visible from outside of car, notifying police so that citation can be issued for leaving car with keys in ignition lock.

3,649,783
CAM-OPERATED TIMER WITH IMPROVED ELECTRICAL RESET MEANS

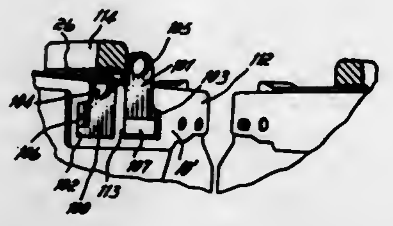
Elmo W. Voland, and Lewis E. Jones, both of Indianapolis, Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Filed Feb. 24, 1970, Ser. No. 13,480
Int. Cl. H01h *7/08, 43/10*
U.S. Cl. 200—38 C **13 Claims**



An energy storage means is coupled to the cam-programming means of a timer such that when the timer has completed its sequence, the cam-programming means can be automatically returned to its sequence-starting point. An electromechanical means energizes the motor drive means of the timer in response to the axial displacement of a shaft which carries the cam-programming means. The cam-programming means includes timer-sequencing delay means and timer interval load sequencing means.

3,649,784
CIRCUIT BREAKER WITH IMPROVED UNAUTHORIZED USE PREVENTION STRUCTURE

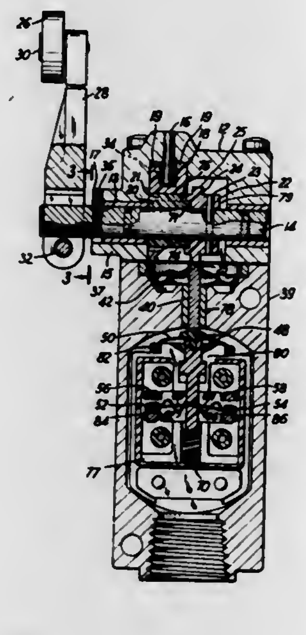
William H. Middendorf, Fort Mitchell, and Edward J. Fritz, Florence, both of Ky., assignors to The Wadsworth Electric Mfg. Co., Incorporated, Covington, Ky.
Original application Jan. 26, 1970, Ser. No. 5,693, now Patent No. 3,566,326, which is a continuation-in-part of application Ser. No. 689,640, Dec. 11, 1967, now abandoned. Divided and this application May 28, 1970, Ser. No. 41,528
Int. Cl. H01h *27/00*
U.S. Cl. 200—42 T **3 Claims**



A circuit breaker is disclosed having a fixed contact, a movable contact, a movable carrier mounting the movable contact, and a tripping mechanism for disconnecting the contact in response to overload currents. The carrier is spring biased, and mounted for pivotal movement between an unlatched position wherein the contacts are electrically disconnected, and a latched position wherein the contacts are selectively connectable. The tripping mechanism is in series electrical circuit with the fixed and movable contacts for releasably maintaining the carrier in the latched position under nonoverload current conditions, thereby enabling the series electrical circuit to be selectively completed, and for releasing the carrier to permit it to return to its unlatched position in response to overload current conditions, thereby interrupting the circuit connection between the fixed and movable contacts. The tripping mechanism includes a pivotal main latch selectively engageable with the carrier to maintain the carrier in the latched position, an auxiliary latch pivotal transversely relative to the main latch for selectively holding the main latch in a position to engage the carrier, and a bimetal movable in response to overload currents for pivoting the auxiliary latch which in turn releases the main latch enabling the latter to pivot, releasing the carrier and electrically disconnecting the fixed and movable contacts.

3,649,785
ELECTRICAL LIMIT SWITCH

Walter L. Dietrich, Windsor, Conn., assignor to Arrow-Hart Inc., Hartford, Conn.
Filed July 30, 1969, Ser. No. 846,002
Int. Cl. H01h *19/32*
U.S. Cl. 200—47 **22 Claims**



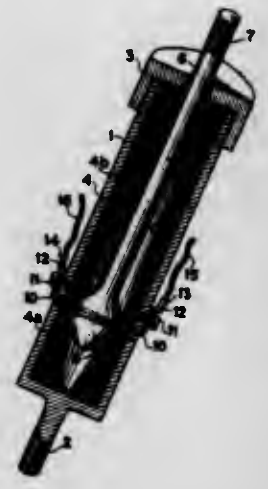
An electrical limit switch includes a shaft which is selectively rotated by a switch-actuating rocker arm. A pinion cooperates with a symmetrically biased rack for effecting a centered rest position for the shaft and rocker arm, and a cam is affixed to the shaft to selectively connect and disconnect electrical contacts acting through a plunger linkage.

In accordance with other aspects of the present invention, additional plunger-actuating embodiments are provided to effect contact-switching responsive to associated applied mechanical displacements.

3,649,786
SAFETY SWITCH AND SYSTEM FOR A VEHICLE

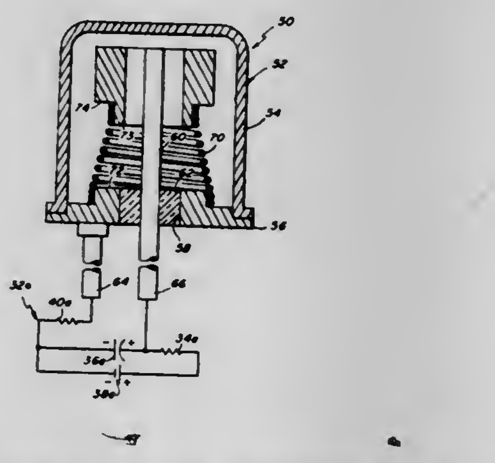
Gerard Mauron, Le Pecq, France, assignor to Automobiles Peugeot, Paris and Regie Nationale des Usines Renault, Billancourt, France
Filed Oct. 13, 1969, Ser. No. 865,920
Claims priority, application France, Oct. 30, 1968, 171900
Int. Cl. H01h *35/14;* **B60r** *21/02*
U.S. Cl. 200—61.53 **6 Claims**

A switching device in which the movable member of the switch actuating means is shifted by a moving element of an energy-absorbing device upon operation of the latter.



3,649,787
DISTURBANCE SENSITIVE SWITCH

Joseph A. Kasabian, Newtonville, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Aug. 14, 1970, Ser. No. 63,740
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.45 R **18 Claims**

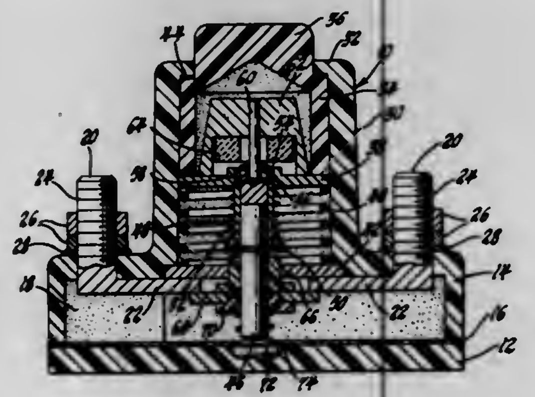


A disturbance sensitive device comprising an electrical switch having resilient means for supporting a movable contact member in normally open relationship with a stationary contact member, and structured to provide prolonged closure when the device is disturbed. A further improvement includes a second resilient means which is carried on the movable contact member for reducing the gap between the contacting members and increasing the closure time interval.

3,649,788
ACCELERATION RESPONSIVE SWITCH

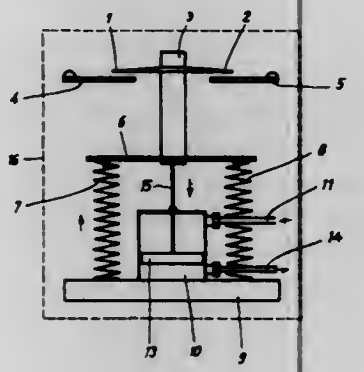
Howard A. Heckendorf, Brookfield, Wis., assignor to General Motors Corporation, Detroit, Mich.
Filed July 6, 1970, Ser. No. 52,244
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.45 R **6 Claims**

An acceleration responsive switch includes a housing mounting a pair of spaced fixed contacts connected across a source of power. The housing includes a cylindrical lateral extension which slidably receives a pushbutton and a release plate. A coil compression spring seating on one apertured wall of the housing holds the release plate in engagement with the pushbutton to hold the pushbutton in engagement with the other apertured wall. An operator is slidably mounted within a guide portion of the release plate. A movable contact for bridging the fixed contacts is slidably mounted on the operator and spring biased to a position connecting the fixed contacts. A plurality of balls are slidably mounted within respective radial bores of the operator for movement inwardly of the bores or outwardly thereof. In the latter position, the balls are axially engageable between the walls of the bores and a radial shoulder of the release plate to locate the operator in a first position against a spring bias to a second position. The balls are forced outwardly of the bores by an axial pin which is secured to a generally frustoconically shaped seismic mass seating on the release plate. A magnet on the mass exerts a predetermined flux between the mass and plate to normally locate the mass in seated position unless an acceleration pulse of predetermined amplitude and time is applied to the mass. When such a pulse is received, the control pin is withdrawn from engagement with the balls to permit the balls to move inwardly of the bores and release the operator for movement under its spring bias to its second position. The operator engages the movable contact as the operator moves to its second position to open the switch. The switch can be reset in closed position by manually moving the pushbutton inwardly of the extension. This moves the release plate, the mass and the button toward the operator to locate the radial shoulder of the plate with respect to the radial bores of the operator and simultaneously engage the control pin with the balls to force the balls into engagement with such radial shoulder. This reconnects the release plate and operator, and the spring of the release plate returns the operator to its first position and likewise returns the release plate and pushbutton to their normal position to reset the switch.



3,649,789
ELECTRICAL SWITCH APPARATUS

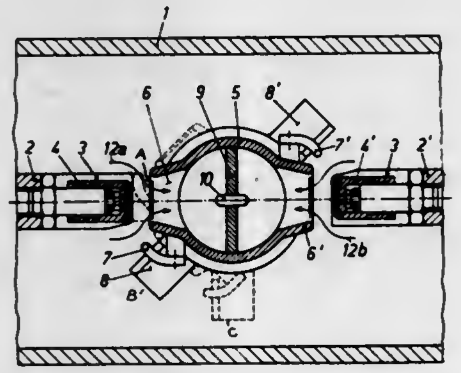
Kurt Stoll, Schanbacher Str. 48, Esslinger-Hegensberg, Germany
Filed Nov. 2, 1970, Ser. No. 88,957
Int. Cl. H01h ***35/38***
U.S. Cl. 200—82 R **8 Claims**



An electrical switch includes sets of contacts and counter-contacts, one set being mounted on a movable carrier which is moved by a pneumatic cylinder and piston arrangement in one direction and by return springs in the other direction. The air inlet into the pressure chamber of the pneumatic arrangement is provided with a ball valve which allows only a slow flow of air into the working chamber during movement of the contacts towards engaging position but allows rapid movement to disengaging position.

3,649,790
GAS-BLAST CIRCUIT BREAKER WITH DOUBLE-NOZZLE CONTACT SYSTEM

Edmund Friedrich, Rheinheim, Germany, and Harald Strubin, Neuenhof, Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed Oct. 19, 1970, Ser. No. 81,779
Claims priority, application Switzerland, Oct. 31, 1969, 16237/69
Int. Cl. H01h ***33/80***
U.S. Cl. 200—148 H **6 Claims**

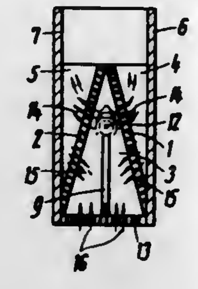


A gas-blast circuit breaker includes within a contact chamber which is filled with a pressurized arc extinguishing gas a hollow shaft rotatable about its axis, a pair of normally open power switching contact structures located at opposite sides of the shaft and which are connectable temporarily in series during an opening operation of the breaker, and a normally closed supplementary switching means of the knife blade type arranged in a current path electrically in parallel with the power switching contact structures. Each of the power switching contact structures includes a movable contact carried by the rotatable shaft and a nozzle communicating with the interior of the shaft for carrying off the flow of arc extinguishing gas when the movable contact disengages from its associated stationary contact, and the supplementary switching means includes a movable contact blade carried by the rotatable shaft in association with a stationary contact. The operating sequence of the switches during a circuit breaking operation is that when the hollow shaft is rotated, the circuit through the power switching contact structures is completed before the circuit through the supplementary switching means is opened thereby enabling the contacts of the latter to open in an arc-free manner and transfer the load current to the circuit through the then in series connected power switching contact structures.

3,649,791
ARC CHUTE FOR ELECTRICAL SWITCH APPARATUS

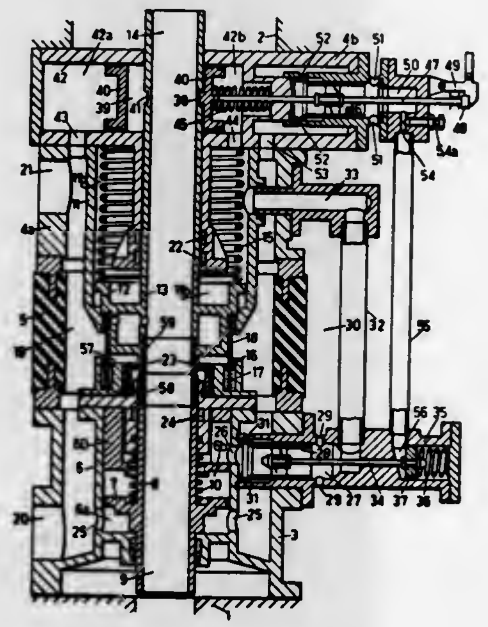
Wilfried Kruckewitt, Grossaubeim, Germany, assignor to Brown, Boveri & Cie Aktiengesellschaft, Mannheim-Kafertal, Germany
Filed July 1, 1970, Ser. No. 60,218
Claims priority, application Germany, July 2, 1969, P 19 33 529.6
Int. Cl. H01h ***33/08***
U.S. Cl. 200—144 R **7 Claims**

An arc chute for an electrical switch apparatus includes sidewalls which converge together toward the top and which are perforated ceramic plates arranged on each side of the electrodes forming the arc. The plates form a wedge-shaped arc space within the electrode space and also on the exterior of the plates and vertical fire walls. Each of the exterior wedge-shaped arc spaces is divided by intermediate substantially vertical division walls or webs which extend substantially perpendicular to the fire walls. The interior wedge-shaped arc space is closed preferably by a perforated plate made of ceramic material. The two plates forming the interior wedge-shaped arc space either converge to a point or they are spaced apart at their tops by a crossmember or horizontal plate.



3,649,792
GAS-BLAST CIRCUIT BREAKERS

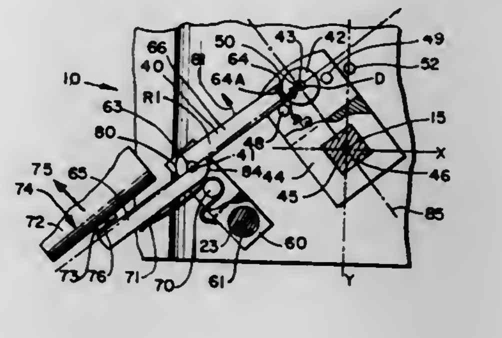
Egbertus A. Frowein, Arnhem, Netherlands, assignor to N.V. "COQ", Utrecht, Netherlands
Filed Dec. 10, 1969, Ser. No. 883,808
Claims priority, application Netherlands, Dec. 20, 1968, 6818386
Int. Cl. H01h ***33/86***
U.S. Cl. 200—148 R **9 Claims**



A gas-blast circuit breaker comprising, within a switching chamber permanently filled with extinguishing gas under overpressure, a first and a second switching contact, the switching-off action of said switching contacts being effected by pistons which are spring biased against such action and are mounted within cylinders associated with said switching contacts, respectively, at least one of said cylinders being permanently in open communication with said switching chamber, a locking member being provided which is adapted to be released by a switching-off command and which is holding the switching contacts in their respective rest positions corresponding to the closed condition of the circuit breaker.

3,649,793
TRIGGER MECHANISM FOR ROTARY SWITCHES AND THE LIKE

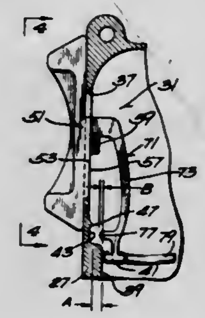
Alexander MacLean, Hingham, Mass., assignor to Electro Switch Corp., Weymouth, Mass.
Filed Aug. 13, 1970, Ser. No. 63,442
Int. Cl. A01h ***3/00***
U.S. Cl. 200—153 H **12 Claims**



A trigger mechanism for rotary electrical switches and the like has a first roller mounted for rotation about a fixed point and a second roller mounted on a movable support with the support being pivotally mounted for pivotal movement about a pivot point spaced from the center point of the second roller. Means urge the second roller into contact with the first roller at a point lying on coincident radii of the first and second rollers for establishing a latch position of the trigger mechanism. A trip means preferably in the form of a solenoid push rod is provided for moving the first roller pivotally about its fixed pivot point. The trigger mechanism permits an extremely large force as may be provided by a loaded spring, to be maintained in the latch position and immediately released by a small force provided by the trip means which trip means can be small in size, fast acting and relatively inexpensive. Thus, rotary electrical switches such as lockout relays can be latched in a first position and automatically tripped by a small force to be immediately responsive to move to a second position.

3,649,794
ONE-PIECE IGNITION SWITCH FOR SMALL INTERNAL COMBUSTION ENGINES

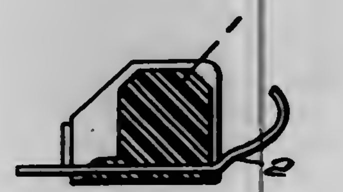
Ulrich Otto Densow, Peterborough, Ontario, Canada, assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed July 13, 1970, Ser. No. 54,195
Int. Cl. H01h ***15/06, 13/08***
U.S. Cl. 200—157 **14 Claims**



Disclosed herein is a switch construction including a switch support having a protuberance and an electrically nonconducting switch member movable on said support and including a main body and a part extending resiliently from said main body and having an electrically conducting contact biased toward said support and movable, in response to movement of the switch member, between a position of contact with the support when the switch member is in a first position and a position of noncontact with the support when the switch member is in a second position. The part also has a foot which is biased toward the support and which is movable, in response to movement of the switch member, between a position out of engagement with the support when the switch member is in the first position and a position of engagement with the support when the switch member is in the second position. In one embodiment, the foot moves relative to the protuberance to provide an impositive detent for both first and second switch positions. In another embodiment, the foot moves relative to the protuberance to cooperate in establishing engagement between the contact and the support and to provide an impositive detent for at least one switch position.

3,649,795
ELECTRICAL CONTACTS

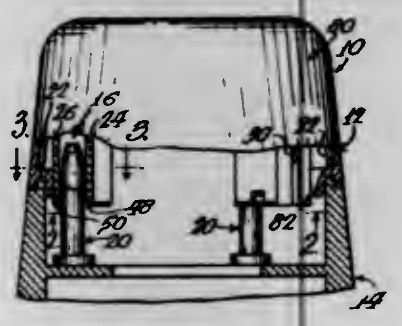
William Ralph Byrne, 722 Harris Avenue, Providence, R.I.
Filed May 1, 1969, Ser. No. 820,849
Int. Cl. H01h *1/02*
U.S. Cl. 200—166 C **5 Claims**



An electrical contact comprising a high-purity nickel alloy for use in a corrosive atmosphere as, for example, in the presence of sulphur bearing materials.

3,649,796
FASTENER STRUCTURE FOR HOUSING MEANS

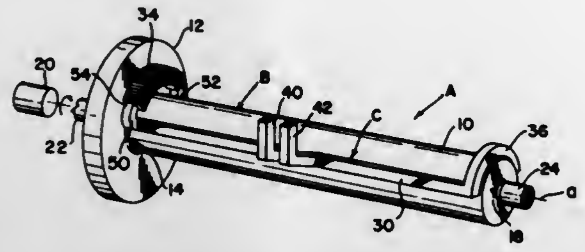
Prentice R. Corn, and Wallace A. Gebhardt, both of Logansport, Ind., assignors to Switches, Incorporated
Filed Dec. 14, 1970, Ser. No. 97,677
Int. Cl. H01h *9/02*
U.S. Cl. 200—168 R **25 Claims**



A standard, including a plurality of circumferentially spaced downwardly opening cavities, is releasably connected to a support, which includes a plurality of mounting members each received within one cavity. A fastener is slidably inserted in each cavity, and is permanently retained therein by locking tabs that bite into the end walls of each cavity. Each fastener includes an opening having an enlarged portion adapted to be slidably positioned over a mounting member, and detent portions adjacent the enlarged portion which spread outwardly as the standard is rotated relative to the support. The fasteners include inclined retention portions on the opposite side of the opening from the enlarged portion which bite into the mounting members to positively prevent axial separation of the standard from the support.

3,649,797
INDUCTOR FOR HEATING AN ELONGATED, FLANGED WORKPIECE

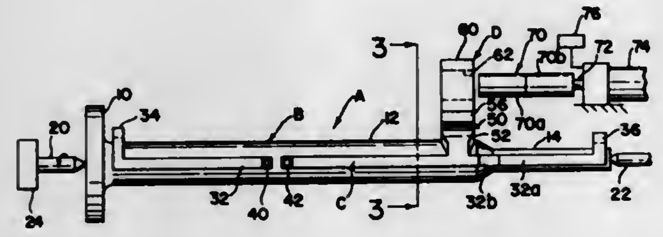
Robert V. Vickers, Shaker Heights, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio
Filed May 14, 1970, Ser. No. 37,255
Int. Cl. H05b *9/02*
U.S. Cl. 219—10.79 **2 Claims**



An inductor for inductively heating an elongated, flanged workpiece including two generally parallel conductors extending the length of the workpiece and a crossover conductor magnetically coupled with the flange. This crossover conductor includes two diverging legs connected by a generally arcuate portion so that the arcuate portion has a length substantially greater than the arcuate spacing between the parallel conductors.

3,649,798
INDUCTOR FOR HEATING ELONGATED WORKPIECES

Richard F. Seyfried, Parma Heights, and Norbert R. Balzer, Parma, both of Ohio, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio
Filed June 8, 1970, Ser. No. 44,321
Int. Cl. H05b *9/02*
U.S. Cl. 219—10.79 **1 Claim**



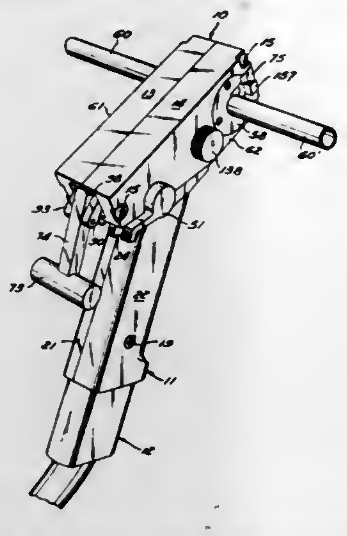
An elongated workpiece having two separate cylindrical portions with different diameters is inductively heated by an inductor including two generally parallel elongated conductors extending the length of the workpiece and magnetically coupled to the separate cylindrical portions. A conductive loop is connected between the parallel conductors generally adjacent the intersection of the cylindrical portions, and the reactance of the loop is changed to control the heating of the smaller cylindrical portion.

3,649,799
WELDING HEAD WITH TOGGLE CLAMP

James R. Jeromson, Jr., Willoughby, and Robert W. Kennelly, Aurora, both of Ohio, assignors to The Weatherhead Company, Cleveland, Ohio
Filed Mar. 24, 1971, Ser. No. 127,611
Int. Cl. B65d *43/24*
U.S. Cl. 219—60 A **11 Claims**

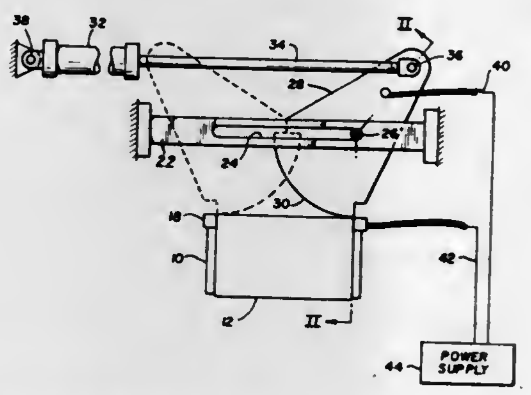
An in-place inert gas tube welder is disclosed which includes a head portion and a handle portion. The head portion includes a clamping means having an over center toggle for clamping the tubes to be welded. A sectored ring carries a nonconsumable tungsten electrode along a path adjacent the junction of of tubes to be welded. Inert gas is supplied to the welding chamber around the full 360° of the joint. A one-way

clutch permits manual rotation of the sectored ring. The handle portion includes a drive motor for rotating the sectored ring, a means for supplying inert gas to the welding chamber, and a means for supplying electrical power to the electrode. An attachment means releasably secures the handle portion to the head portion. A supply cable is releasably connected to the handle portion for releasably connecting an inert gas source to the means for supplying inert gas to the welding chamber and for releasably connecting an electrical power source to the means for supplying electrical power to the electrode.



3,649,800
APPARATUS FOR WELDING CAN BODIES

William J. Happel, Pittsburgh, and Kenneth E. Opal, Oakmont, both of Pa., assignors to Power Control Corporation, Pittsburgh, Pa.
Filed Jan. 8, 1970, Ser. No. 1,391
Int. Cl. B23k *11/06*
U.S. Cl. 219—64 **3 Claims**

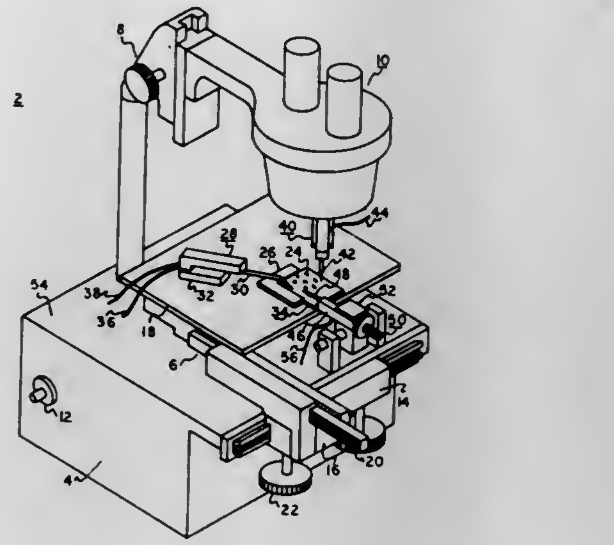


Described is a welding head arrangement for resistance seam welding of can bodies and the like at extremely high speeds, and characterized in that the head comprises a stationary rail member and a cooperating arcuate member which passes over the seams of successive can bodies in opposite directions. In this manner, the arcuate member need never make a complete revolution; and problems encountered in attempting to make electrical contact with a rotating element at the extremely high amperages required are eliminated.

3,649,801
FILM RESISTOR TRIMMER

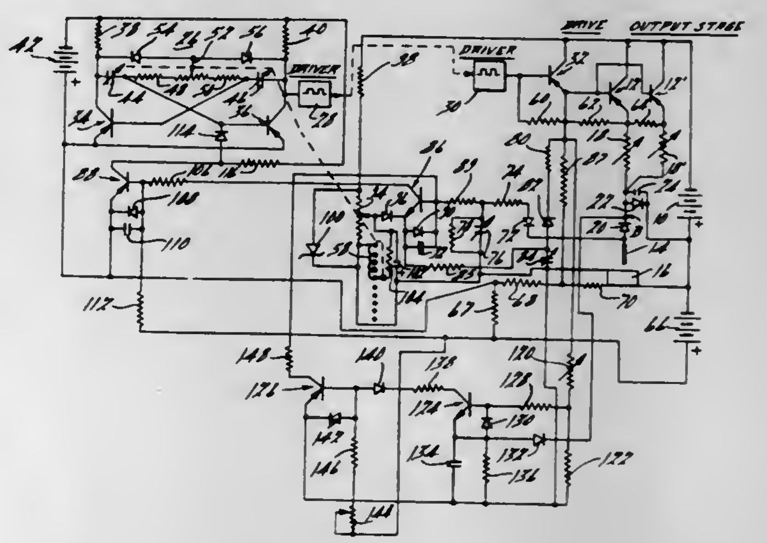
Robert J. Cardell, and Walter S. Harubin, both of Pittsfield, Mass., assignors to General Electric Company
Filed Apr. 29, 1970, Ser. No. 33,004
Int. Cl. B23p *1/00*
U.S. Cl. 219—68 **4 Claims**

A method and apparatus for adjusting the resistance value of film resistors by arc probe means which removes the resistor material until readout means in the apparatus indicates that a desired resistance value has been obtained. A work table in the apparatus holds the resistor being trimmed so that it can be moved in a given plane with respect to the stationary arc probe means while the resistor material is being removed. The adjustment of resistance values by his technique carefully removes the resistive material thereby increasing the resistance of the film resistor until the desired value is obtained and permits trimming a resistor in a microelectronic circuit while power is being applied to the circuit.



3,649,802
PROTECTIVE SYSTEM FOR ELECTRICAL DISCHARGE MACHINING POWER SUPPLY CIRCUIT

Kurt H. Sennowitz, Royal Oak, Mich., assignor to Elox Inc., Davidson, N.C.
Continuation-in-part of application Ser. No. 851,882, Aug. 21, 1969, now Patent No. 3,558,428, dated June 28, 1971, Continuation-in-part of application Ser. No. 851,952, Aug. 21, 1969. This application Dec. 28, 1970, Ser. No. 102,009
Int. Cl. B23b *1/08*
U.S. Cl. 219—69 C **10 Claims**



A circuit is provided to sense an electrical parameter of the gap to determine whether electrical discharge machining is progressing properly. A gap parameter such as gap voltage or a voltage directly related to such parameter is compared to a variable reference voltage to provide reduction or interruption of machining power pulses. A control is included which conjointly controls frequency of machining pulses and the magnitude of the variable reference voltage.

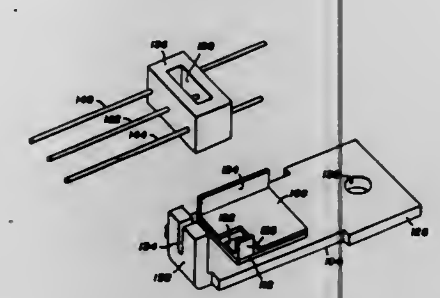
3,649,803
FAST MOUNT OVEN

Richard J. Desmond, North Syracuse; Edward J. Fronczek, Auburn, and John J. McCarthy, Port Bryon, all of N.Y., assignors to General Electric Company

Filed May 4, 1970, Ser. No. 34,041

Int. Cl. B23k *1/02*

U.S. Cl. 219—85 **7 Claims**



An oven is disclosed including a track along which heat sink strips may be advanced for soldering to assembled elements, such as semiconductor elements. The oven includes a preheat station, a bonding station, and a post bonding station within the housing. An advancement mechanism moves the strips in stepped increments between the stations. The assembled elements associated with the strip are simultaneously engaged by a weighting and clamping head at the bonding station. Both reducing and cooling gases are blown onto the strips at the bonding station. A radiant heater element is located externally of the oven housing for heating the strips at the bonding station. At the preheat and post bonding stations ports are provided in the track to flush unwanted gases from the strips.

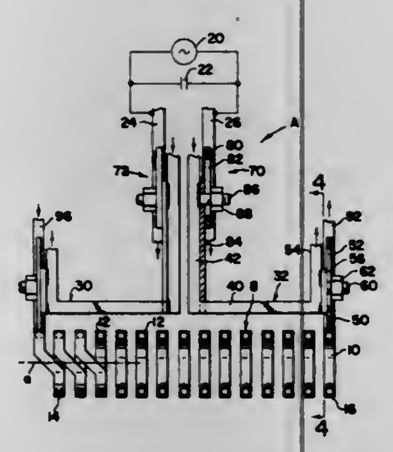
3,649,804
METHOD AND APPARATUS FOR TUNING A MULTI-TURN INDUCTION HEATING COIL

Robert J. Kasper, Seven Hills, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Jan. 15, 1971, Ser. No. 106,867

Int. Cl. H05b *9/02*

U.S. Cl. 219—10.75 **6 Claims**



In an induction heating device including a multiturn induction heating coil and at least one conductor extending from the coil to a power supply, which conductor is closely adjacent the outer periphery of the coil, there is provided means for adjusting the spacing between the conductor and the coil to tune the coil with an alternating frequency power supply.

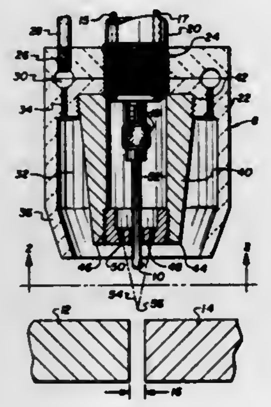
3,649,805
PLASMA GENERATING METHOD AND MEANS

Roderick Rohrberg, Torrance, Calif., assignor to North American Rockwell Corporation and Air Products and Chemicals, Inc., Allentown, Pa., part interest to each

Original application May 8, 1969, Ser. No. 830,565, now Patent No. 3,604,889, which is a continuation-in-part of application Ser. No. 693,365, Dec. 16, 1967, now abandoned. Divided and this application Apr. 29, 1970, Ser. No. 43,636

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 P **10 Claims**



An inert gas welding torch is used to create plasma by directing one or more discrete high velocity jet gas streams into a welding arc between the electrode and the workpiece. The plasma stream is controllable with regard to energy content or location by varying the amount or direction of the inert gas flow. The plasma stream is insensitive to variations of arc length, and permits abnormally high current densities in the electrode. When used with consumable electrodes, the invention is useful for casting as well as for deep welding heavy plate materials in a single pass.

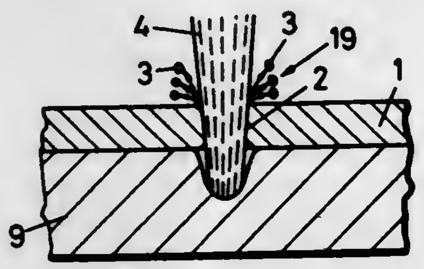
3,649,806
PROCESS AND APPARATUS FOR MATERIAL EXCAVATION BY BEAM ENERGY

Dieter Konig, Hohenwaldeckstr 8, Munich 90, Germany

Continuation of application Ser. No. 735,635, June 10, 1968. This application Dec. 16, 1970, Ser. No. 98,892

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 EM **17 Claims**



Process and apparatus for extracting material by means of beam energy, including producing depressions, slots, cuts, bores, and other recesses in which additional forces are exerted on the material impacted and heated by the beam energy, characterized by the feature that at least one auxiliary substance is used to exert forces on the heated material to remove the heated material from the processing region.

3,649,807
METHOD OF PRODUCING CONTACTS

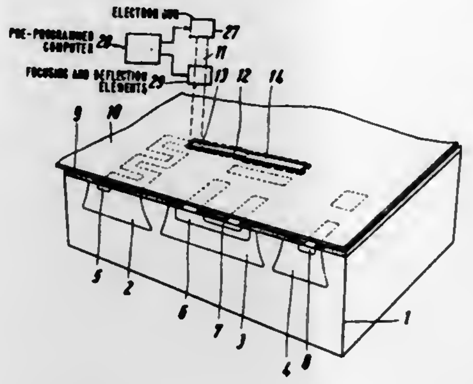
Fritz Stork, Grossgartach, Germany, assignor to Telefunken Patentverwertungsgesellschaft, Ulm am Danube, Germany

Filed Oct. 1, 1969, Ser. No. 862,777

Claims priority, application Germany, Oct. 1, 1968, P 18 00 193.9

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 EB **10 Claims**



A method of producing electrical contact to a semiconductor body having a partial covering of an insulating layer by cutting out parts of a metal foil placed thereon by means of a guided electron beam in such a way as to cause precipitation on the semiconductor device for the formation of conductive and/or resistive paths and alloying into noncovered portions of the semiconductor body for the formation of contacts joined to the conductive and/or resistive paths, and then removing the unused portions of the metal foil.

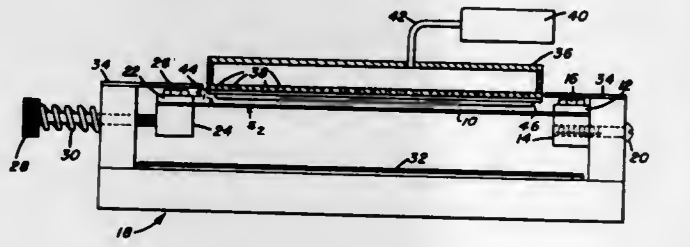
3,649,808
FUSING DEVICE

William F. Garbe, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 1, 1970, Ser. No. 42,400

Int. Cl. H05b *1/00*

U.S. Cl. 219—216 **11 Claims**



A radiant-energy fusing device for fixing resinuous marking material to a support element is comprised of a partially enclosed chamber and a heater means formed of at least one thin metal strip having one surface which is treated to enhance heat emission in the wavelength region of absorption of the element and the other surface is treated to minimize all radiation.

3,649,809
SOLDERING AND DE-SOLDERING TIP FOR CONNECTOR PINS OF ELECTRICAL COMPONENTS

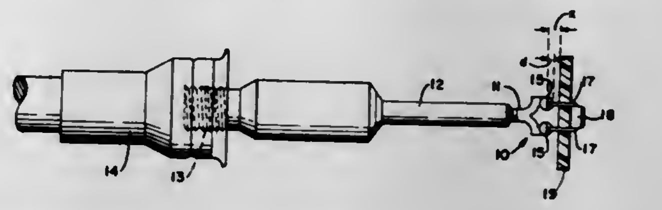
William Meredith Halstead, P.O. Box 195, Linthicum Heights, Md.

Continuation of application Ser. No. 835,924, June 24, 1969, now abandoned. This application Apr. 19, 1971, Ser. No. 135,378

Int. Cl. B23k *3/02;* **H05b** *1/00*

U.S. Cl. 219—228 **5 Claims**

A supporting shank attachable to a soldering iron and provided at its end with a pair of elongated tip bodies disposed in spaced parallel relation and extending transversely of the shank. The tip bodies are each provided with a longitudinally extending continuous groove for reception of a row of connector pins of an electrical component. The grooves are each of a depth less than the distance which the connector pins project from the underside of the printed circuit board on which the component is mounted and are of such width as to retain a quantity of solder in a molten state by capillary action when the tip is heated, so that all the connector pins may be simultaneously soldered to or de-soldered from the printed circuit board. End portions of the tip bodies are pointed and wedge-shaped so that they may be used for straightening bent over connector pins by prying the latter away from the board.



3,649,810
HOT SCREEN PRINTING MACHINE

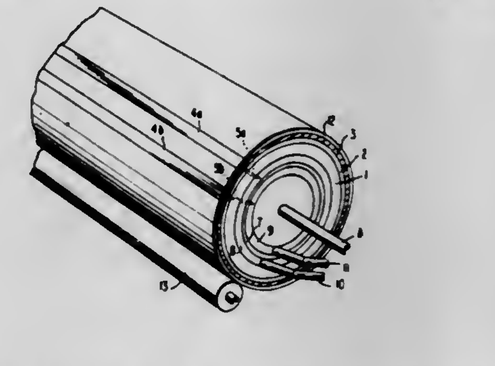
Masayoshi Tsuboi; Tsuneo Komura; Sigeru Tezuka, and Asaji Kondo, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 7, 1970, Ser. No. 62,115

Claims priority, application Japan, Aug. 11, 1969, 44/63389

Int. Cl. H05b *1/00*

U.S. Cl. 219—216 **4 Claims**



A practical and useful hot screen printing machine having at least one rotatable cylindrical printing drum comprising a flexible plane heater on the outer surface thereof and an electrical insulating layer surrounding the plane heater.

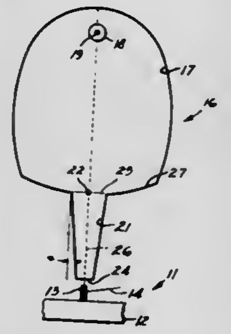
3,649,811
RADIANT ENERGY SOLDERING

David Schoenthaler, Yardley, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed July 24, 1969, Ser. No. 844,400

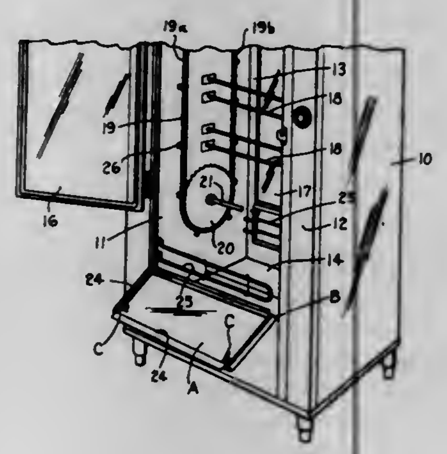
Int. Cl. H05b *1/00*

U.S. Cl. 219—349 **9 Claims**



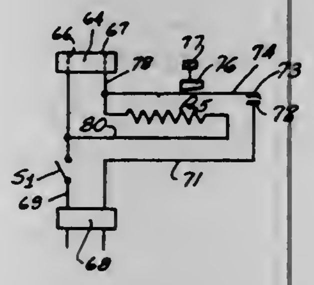
An ellipsoidal or cylindroidal reflector is employed to direct radiant energy into a condenser cone or channel. The condenser cone or channel condenses the radiant energy to produce a high-flux density at the exit end thereof and to produce highly divergent rays at the exit end. In this manner, a relatively high-flux density can be applied to a raised portion of a heat sensitive workpiece, for example, to solder a lead to a terminal extending from a heat sensitive connector block, and the flux density can be reduced to a sufficiently low level before reaching the workpiece to avoid damage thereto.

3,649,812
BARBECUE OVEN WITH A DISPLACEABLE PANEL
Robert G. Wilson, 165 Faris Circle, Greenville, S.C.
Filed Apr. 26, 1971, Ser. No. 137,226
Int. Cl. F27d *11/02*
U.S. Cl. 219—396 **3 Claims**



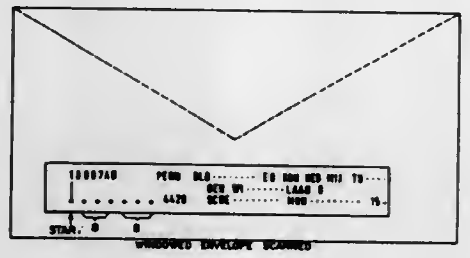
A barbecue oven having a housing enclosing a rotatable supporting assembly and a first electrode heating means. A recess in a vertical wall of the housing and containing second electric heating means for emitting heat into the oven while protecting the same from drippings. A panel attached to the vertical wall closing the recess and accommodating the second heating means, said panel being vertically displaceable to facilitate cleaning of said panel and the adjacent inner areas of the housing.

3,649,813
UNIVERSAL BLANKET CONTROL
George C. Crowley, Winnetka, Ill., assignor to Northern Electric Company, Chicago, Ill.
Filed July 13, 1970, Ser. No. 54,315
Int. Cl. H05b *1/02*
U.S. Cl. 219—492 **7 Claims**



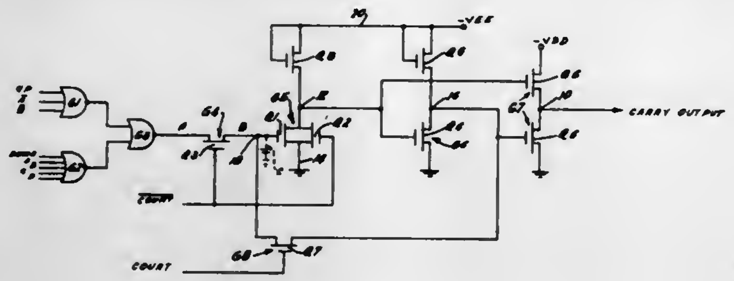
A blanket control which may be used with blankets of different power requirements. The invention replaces a plurality of controls required for blankets at the present time. A temperature-responsive switch is controlled by a resistor which is connected in parallel with the applied voltage so that the temperature-responsive switch may be adjusted to apply power for a predetermined time which is independent of the power required for the appliance.

3,649,814
OCTONAL CODE READER
Arie Adriaan Spanjersberg, Leiderdorp, Netherlands, assignor to De Staat der Nederlanden, Ten Deze Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, The Hague, Netherlands
Filed Jan. 5, 1970, Ser. No. 741
Claims priority, application Netherlands, Jan. 3, 1969, 6900168
Int. Cl. Go1n *21/30;* **G06k** *7/10, 4/04*
U.S. Cl. 235—61.11 E **11 Claims**



An octonal dot code and an apparatus for mechanically reading such code marked on documents and read through windowed envelopes for these documents. This apparatus comprises a selecting circuit for the optical scanner aligned with the dots, a clock circuit for timing the spacing of the dots, a checking circuit for determining the number of dots on each document, and circuits for processing and storing the data scanned from the dots.

3,649,815
LOOK-AHEAD CARRY FOR COUNTERS
Colin Clifford, Glenrothes, Fife, Scotland, assignor to General Instrument Microelectronics Ltd., Fife, Scotland
Filed Sept. 4, 1969, Ser. No. 855,093
Int. Cl. H03k *21/16*
U.S. Cl. 235—92 LG **8 Claims**

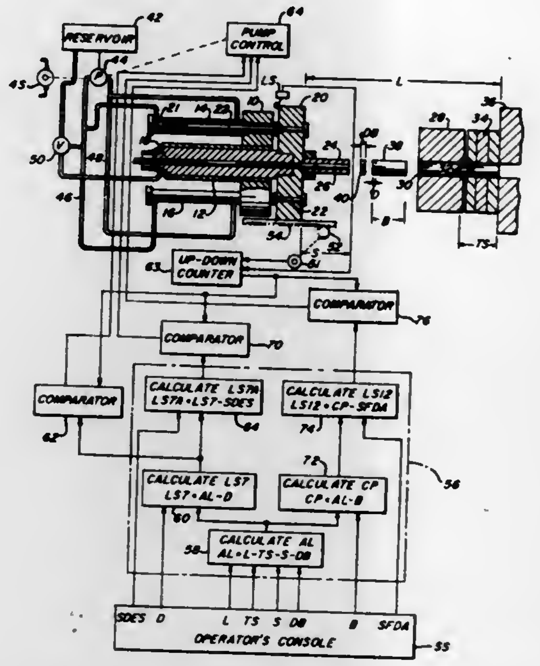


A circuit for use with a counter senses and stores a precarry condition in the counter when one count away from a carry condition so that the next count signal is directly propagated through the circuit to produce a carry output signal substantially simultaneously with that count signal. The precarry circuit is electrically isolated from the counter during the time of the count signal so that a change in the counter direction control may be made at that time without causing the production of a spurious carry signal.

3,649,816
CONTROL SYSTEM FOR HYDRAULIC EXTRUSION PRESS
Alfred W. Johnes, Summit, N.J.; James B. Murtland, Jr., Natrona Heights, and Perry Marvin Rockwell, Glenshaw, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Brackenridge, Pa.
Filed Nov. 9, 1970, Ser. No. 87,903
Int. Cl. G06g *7/48;* **B21c** *23/00*
U.S. Cl. 235—151.1 **5 Claims**

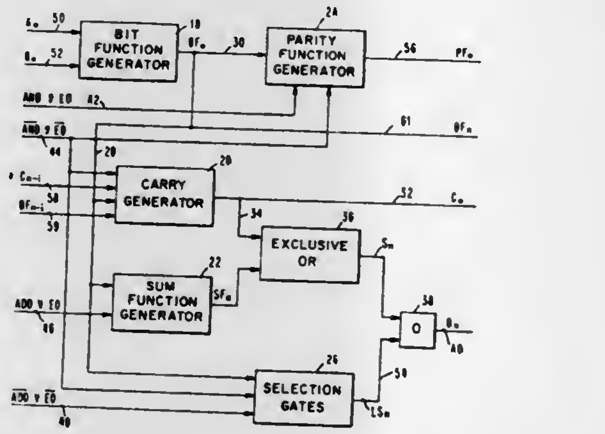
A computer control system for hydraulic extrusion presses and the like characterized in that the operator need only

preset at a control console certain lengths and distances dictated by the characteristics of the billet to be extruded, without the necessity for setting limit switches on the press itself. Aside from this, the operation of the press is automatic



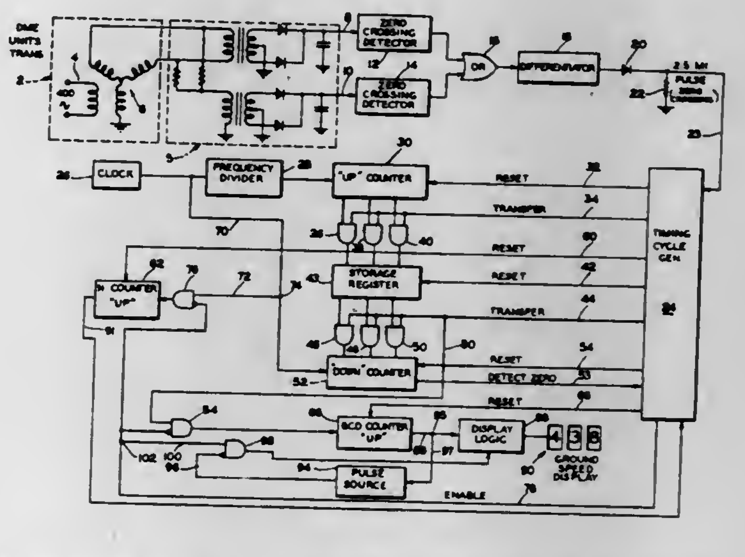
during an extrusion cycle, resulting in smoother operation of the press, improvements in yield and greater uniformity of product. In addition, the control system incorporates an automatic slowdown of the stem before it contacts a dummy block and billet, thereby reducing damage to dies.

3,649,817
ARITHMETIC AND LOGICAL UNIT WITH ERROR CHECKING
Gunter Keller; Guenter Knauft, both of Boeblingen; Petar Skuin, Magstadt, and Edwin Vogt, Boeblingen, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 29, 1970, Ser. No. 59,220
Claims priority, application Germany, July 31, 1969, P 19 38 912.9
Int. Cl. G06f *11/10*
U.S. Cl. 235—153 **7 Claims**



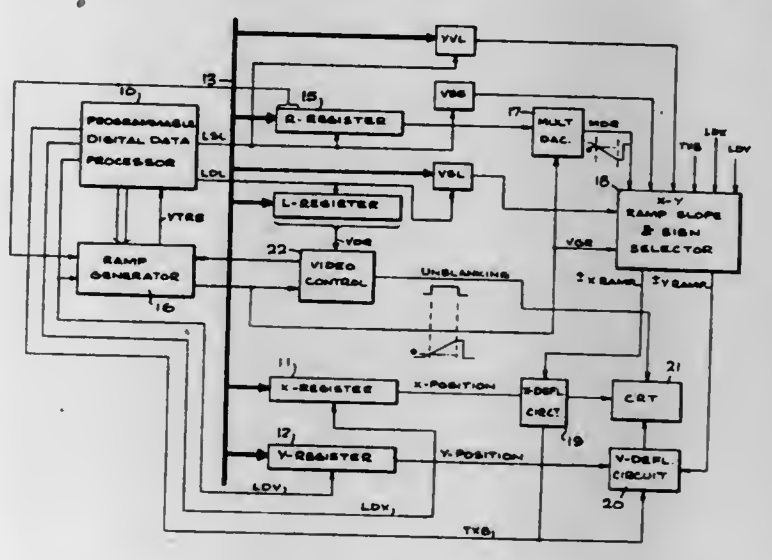
In an arithmetic and logical unit suitable for "Adding," "AND," "OR" and "Exclusive OR" operations, additions are performed to the carry-dependent sum formation principle, while during the execution of logical operations, operand bit parity functions related to the respective operation are generated by means of a function generator. In an operation-dependent checking circuit the carries of additions or the parity functions of logical operations are combined for result parity prediction independently of the sum formed. For error-checking the result, the parity of the result bits is compared for compliance with the predicted parity.

3,649,818
GROUNDSPEED AND TIME-TO-GO COMPUTER
Frederick B. Sylvander, Rutherford; Richard L. Cohen, Old Bridge, and Murray Putzer, West Caldwell, all of N.J., assignors to The Bendix Corporation
Filed Dec. 17, 1969, Ser. No. 885,779
Int. Cl. G06d *15/32*
U.S. Cl. 235—150.27 **6 Claims**



A groundspeed and time-to-go computer for an aircraft. The groundspeed computation is implemented by counting the pulses from a fixed frequency pulse generator during an interval established by the units transmitter of distance-measuring equipment (DME), and which interval is inversely proportional to groundspeed. The time-to-go computation is implemented by counting down the count from units, tens and hundreds DME transmitters until zero is reached and noting the interval.

3,649,819
VECTOR GENERATOR FOR RECTANGULAR CARTESIAN COORDINATE POSITIONING SYSTEM
Robert W. Waller, Northridge, Calif., assignor to Information International, Inc., Boston, Mass.
Filed Oct. 12, 1970, Ser. No. 79,735
Int. Cl. G06f *3/14;* **G06k** *15/18*
U.S. Cl. 235—151 **10 Claims**

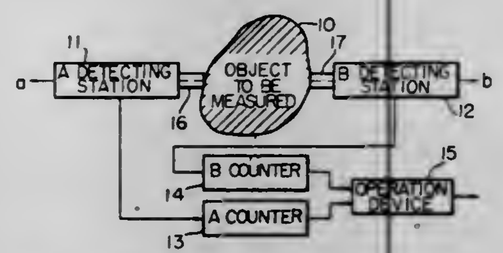


A vector generator in a rectangular Cartesian coordinate positioning system for X- and Y-deflection control of a cathode-ray tube is disclosed using the following information provided by a programmable data processor: (1) maximum ramp signal magnitude of larger vector component; (2) sign of larger vector component; (3) ratio of smaller to larger vector component; (4) sign of smaller vector component; and (5) indication as to which of the components is the largest. A large linear ramp signal is generated at a predetermined rate and routed to the deflection control channel for the larger component with proper polarity as a function of information items 2 and 5. A small linear ramp signal is derived from the large linear ramp signal by multiplying the latter by item 3, and is applied to the deflection control channel of the smaller component with proper polarity as a function of items 4 and 5. The duration of both ramp signals is controlled by turning off the ramp generator when the magnitude of the large ramp signal reaches the value of item 1, thereby providing programmed control of vector length. Item 3 is decoded to select a rate for the ramp signal that approximates a constant beam deflection velocity for all vectors.

3,649,820
DIGITAL MEASURING SYSTEM

Yasushi Totsuka, and Shin-Ichi Kamachi, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1969, Ser. No. 888,312
Int. Cl. G06f *7/46*
U.S. Cl. 235—151.32 **12 Claims**



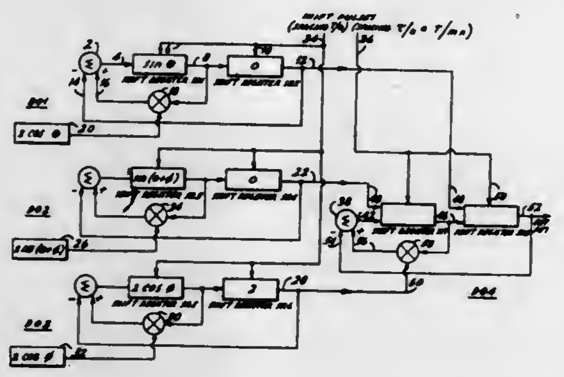
Digital measuring system comprising the steps of generating pulse signals indicative of values for the desired measurement of an object by using at least a pair of detecting stations and counting the respective pulse signals by a single counter. In order to prevent each subsequent pulse signal from occurring within the minimal sequential response speed of the counter when the pulse signals derived from the pair of detecting stations are summed so as to be applied to the counter, thereby avoiding false function of the counter, the digital measuring system comprises the steps of converting the pulse signals respectively into rectangular pulses, the duration of the rectangular pulses being made greater than the minimal sequential response interval of the counter, producing logic AND output and logic OR output from the rectangular pulses, and summing instantaneous differential pulse signals generated by either one of the logic AND and OR outputs and those generated by the negative logic output of the other of the logic AND and OR outputs so that output pulses having a time interval at least equal to the predetermined duration of the rectangular wave pulses are produced which are supplied to the counter so as to obtain the desired digital measured value without causing any false function of the counter. Each of the detecting stations may produce addition and subtraction pulse signals which are supplied together to a reversible counter.

3,649,821
DIGITAL MULTIPLE-TONE GENERATOR

Constantine Gumacos, Broomall, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed June 15, 1970, Ser. No. 46,221
Int. Cl. G06f *15/34*
U.S. Cl. 235—152 **8 Claims**

A digital oscillator circuit which generates binary words representative of quantized samples of a sinusoid of desired frequency. The circuit comprises two shift registers, a multiplier, and an adder, interconnected so that the contents of the first shift register are multiplied by a given stored number, the contents of the second shift register are subtracted from the product, and the resultant difference is transferred into the first shift register after its contents are transferred into the second shift register. The desired frequency is obtained by proper choice of the given stored number, the initial constants stored in the two shift registers, and the rate at which the contents of the first shift register are completely transferred into the second shift register and the multiplier and adder are actuated.



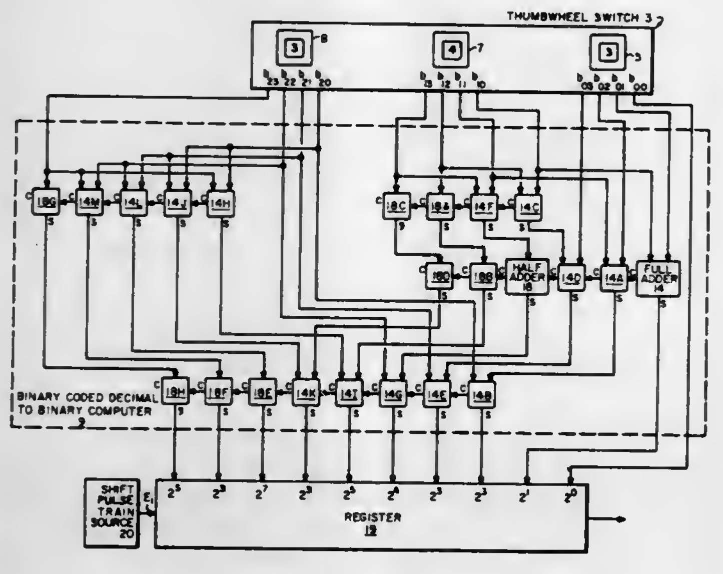
Binary words representative of a frequency-modulated carrier are obtained by using a modulating voltage, rather than a constant, in place of the given stored number.

Four digital oscillator circuits are interconnected to form a digital multiple-tone generator which can provide binary words representative of time-multiplexed quantized samples of a large number of tones. Frequencies of desired tones are controlled by appropriate choice of multiplier and shift register constants.

3,649,822
BCD TO BINARY CONVERTER

Gerald S. Mersten, Caldwell, N.J., assignor to The Bendix Corporation

Filed Aug. 29, 1969, Ser. No. 854,078
Int. Cl. H04l *3/00*
U.S. Cl. 235—155 **5 Claims**


THUMBWHEEL SWITCH 3
3
4
3
HALF ADDER
FULL ADDER
BINARY CODED DECIMAL TO BINARY COMPUTER
SHIFT PULSE TRAIN SOURCE 20
REGISTER 12

A high-speed binary coded decimal to binary converter having a plurality of full adders and half adders arranged to

add the binary coded decimal signals to provide the binary signals in accordance with the following equation:

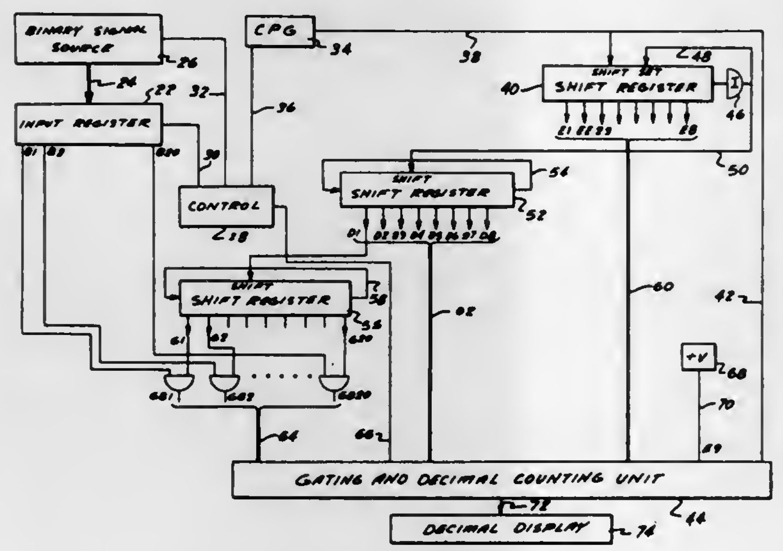
$$N_{bcd}=(b_{i3}2^3+b_{i2}2^2+b_{i1}2^1+b_{i0}2^0)\times 10^i+\ .\ .\ .\ .$$
$$+(b_{13}2^3+b_{12}2^2+b_{11}2^1+b_{10}2^0)\times 10^1$$
$$+(b_{03}2^3+b_{02}2^2+b_{01}2^1+b_{00}2^0)\times 10^0 \qquad (1)$$

Where N_{bcd} is the binary coded decimal number, i is the maximum decimal order of the decimal number, and b is the binary coded decimal signal and has a logic value of 1 or 0.

3,649,823
DIGITAL TRANSLATOR

Edward G. Busch, Newtown Square, Pa., assignor to Adtrol Electronics, Inc., Broomall, Pa.

Filed Dec. 22, 1969, Ser. No. 886,930
Int. Cl. H04l *3/00*
U.S. Cl. 235—155 **10 Claims**



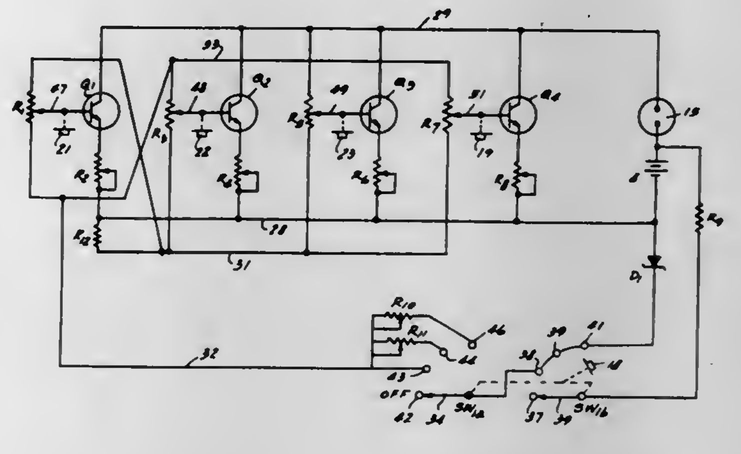
A translator for converting a weighted binary-coded signal representative of a number into a decimal representation of the number. The translator includes means for receiving a binary-coded signal, a source of clock pulses and a replaceable unit having both gating means which is comprised of a plurality of coincidence gates and a counting means which is comprised of a plurality of decimal counters. Each of the counters corresponds to a digit of the decimal number generated by the translator. The unit further includes a plurality of conductive leads which are responsive to the binary signal and the clock pulses. The gates are connectable to the conductive leads in accordance with the decimal significance of each bit of the binary code so that the gating means enable the passage of clock pulses to the counter in accordance with the decimal significance of each bit of the binary signal which is present. The counter is stepped to the count corresponding to the number. Display means are provided which are responsive to the counter for visually displaying the number.

3,649,824
SYSTEMS RANGE CALCULATOR

Donald P. De Vale, Schaumburg, Ill., assignor to De Vale Enterprises, Inc., Schaumburg, Ill.

Filed Mar. 2, 1970, Ser. No. 15,563
Int. Cl. G06g *7/48, 7/32*
U.S. Cl. 235—193 **6 Claims**

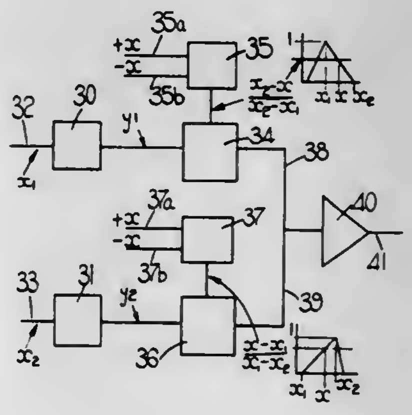
An analog computer which is very accurate and is capable of calculating results dependent upon a number of independent variables. The independent variables are handled in separate portions of the computer and the outputs of each portion are combined to obtain a solution. The preferred embodiment of the computer disclosed comprises a systems range calculator in which receiver sensitivity, transmitter power, antenna gain, tower height and the frequency of the transmitter may be set to obtain the calculated range of the equipment.



3,649,825
APPARATUS FOR FUNCTION GENERATION BY LINEAR INTERPOLATION

Robert Graham Burrage, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Nov. 25, 1969, Ser. No. 879,823
Int. Cl. G06g *7/30*
U.S. Cl. 235—197 **10 Claims**



The invention relates to an apparatus for generating a mathematical function of the type $y=f(x)$ by linear interpolation between two values y_1, y_2 which are known for two values x_1, x_2.

The apparatus includes two function generators respectively producing values y_1, y_2. Associated with each function generator is an interpolation function generator. The interpolation function generators produce, for a value of x lying between x_1 and x_2 signals corresponding to

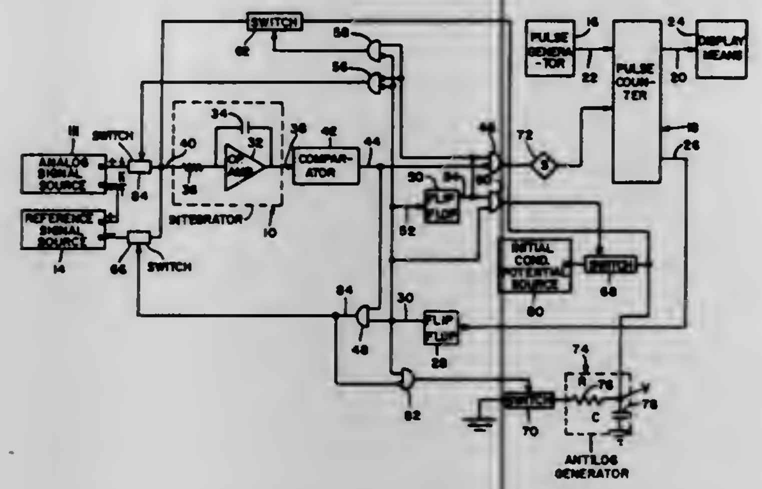
$$\frac{x_2-x}{x_2-x_1}\text{ and }\frac{x-x_1}{x_2-x_1}$$

respectively.

3,649,826
INTEGRATING ANTILOG FUNCTION GENERATOR

Robert W. Larsson, Holliston, and Robert L. Scott, Medfield, both of Mass., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 22, 1969, Ser. No. 886,952
Int. Cl. G06f *7/24*
U.S. Cl. 235—197 **29 Claims**

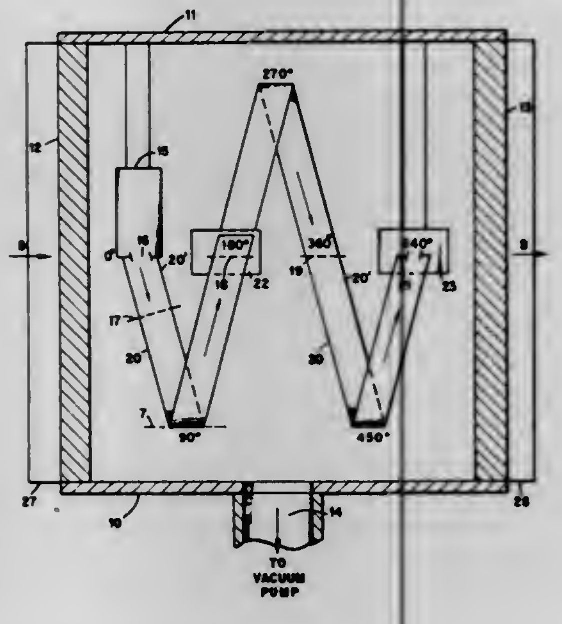


An integrating antilog function generator including an analog-to-digital converter for performing two successive dual slope integration routines. During the first integration routine, a time interval related to the magnitude of an unknown signal is determined, and a voltage proportional to the antilog of the unknown signal is generated. During the second integration routine, there is generated an output signal in digital form representative of the antilog of the magnitude of the unknown signal.

3,649,827
HELICAL THREE-STAGE ISOTOPE SEPARATION

William A. Bell, Jr.; Ray L. Johnson, Jr., and Allen M. Veach, all of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 13, 1970, Ser. No. 63,456
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 ME **9 Claims**

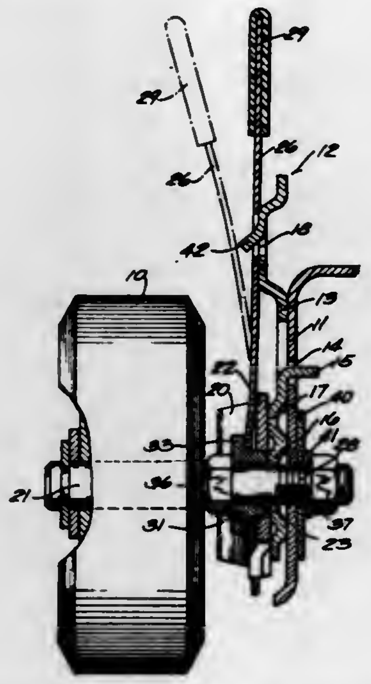


An isotope separator of the type having an evacuated tank, a magnetic field through the tank, and an ion source and a receiver wherein the ion source is orientated at a slight angle to the magnetic field lines such that the stream of ions exiting from the ion source spiral along the magnetic field in a helical path, producing a three-stage separation after 540° of rotation, and the desired isotopic ions are collected in a receiver located at the 540° focus.

3,649,828
ADJUSTABLE WHEEL BRACKET ASSEMBLY

Warren H. Price, Sheboygan, Wis., assignor to Gilson Bros. Co., Plymouth, Wis.

Filed June 24, 1970, Ser. No. 49,421
Int. Cl. B62d *21/18*
U.S. Cl. 280—43.17 **3 Claims**

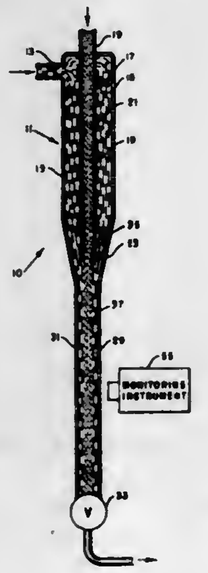


An adjustable wheel bracket assembly which includes a relatively stiff wheel axle crank and a relatively flexible spring steel adjusting lever keyed to the crank is provided with tension producing mechanism to take up the tolerance and eliminate play in the assembly. The tension producing mechanism comprises a warp formed in the spring steel lever and a clamp to exert pressure on the warp and thus create tension in the system to hold the assembly together without play.

3,649,829
LAMINAR FLOW CELL

Henry W. Randolph, Belvedere, S.C., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 6, 1970, Ser. No. 78,427
Int. Cl. G01n *23/12*
U.S. Cl. 250—43.5 FC **10 Claims**

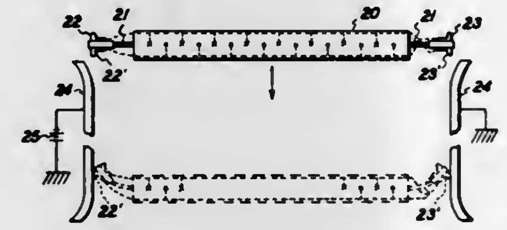


A sample fluid, containing, for example, radioactive material, is made to flow as an integral core within a column of inert fluid through the sensitive zone of a monitor such as a radiation detector. The inert fluid acts as a sheath to prevent contamination of stationary surfaces within the sensitive zone. Sample fluid is injected into the flow of inert fluid with a minimum of turbulence and mixing.

3,649,830
UNIFORM CHARGING METHOD AND APPARATUS USING AN ARRAY OF NEEDLE ELECTRODES

Masamichi Sato, and Isoji Takahashi, both of Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 3, 1970, Ser. No. 86,449
Int. Cl. G03g *13/02, 15/02*
U.S. Cl. 250—49.5 ZC **3 Claims**

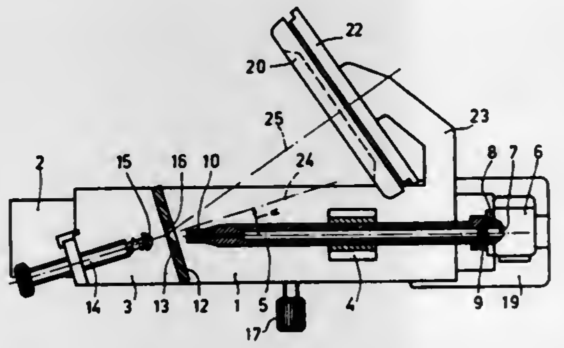


Charging method and apparatus for applying a uniform charge to a surface in which an array of needle electrodes is moved relative to the surface, and a source of relatively high electric potential is coupled to alternate ones of the electrodes on each pass in inverse order. The remaining alternate electrodes are coupled to a source of relatively low electric potential or ground. By switching the potentials on each pass a uniform charge is obtained. In one embodiment a lattice-type arrangement is utilized with alternate rows of electrodes offset from an adjacent row to provide the desired uniform charge.

3,649,831
DEVICE FOR DETERMINING THE CRYSTALLOGRAPHIC DIRECTIONS IN SINGLE CRYSTALS BY X-RAYS

Peter Eckerlin, Aachen, Germany, assignor to U. S. Philips Corporation, New York, N.Y.

Filed June 23, 1969, Ser. No. 835,611
Claims priority, application Germany, June 22, 1968, P 17 72 706.9
Int. Cl. G01n *23/20*
U.S. Cl. 250—51.5 **4 Claims**



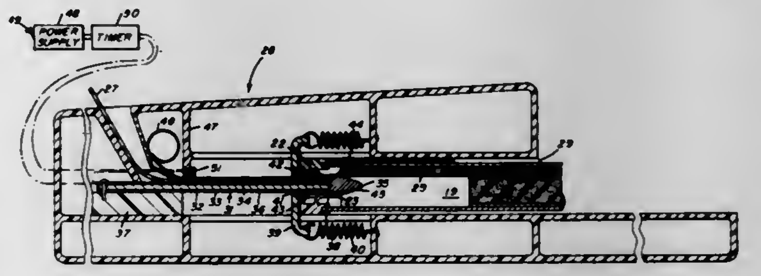
A device for determining the crystallographic directions in single crystals comprises a holder for a single crystal, a source of primary X-rays, e.g., an X-ray tube, and a recording surface for receiving and recording X-rays reflected by the lattice planes of the crystal, e.g., diffracted X-rays. In order to increase the accuracy of the measurement, the crystal is ground to provide a reference surface the normal of which is inclined at a small angle relative to the path of the beam of primary X-rays which are incident thereon. The film for receiving and registering the reflected X-rays from the lattice planes of the crystal is located to one side of the path of the primary X-ray beam and is so positioned that the normal to the surface of the film is rotated relative to the primary X-ray beam by twice the angle between the normal to the smooth surface of the crystal and the central ray of the primary X-ray beam.

Preferably, the crystal is mounted in a holder which with the film are arranged on a common base plate.

3,649,832
FILM IDENTIFICATION APPARATUS

Allen R. Lentz, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,126
Int. Cl. G03b *41/16*
U.S. Cl. 250—67 **12 Claims**

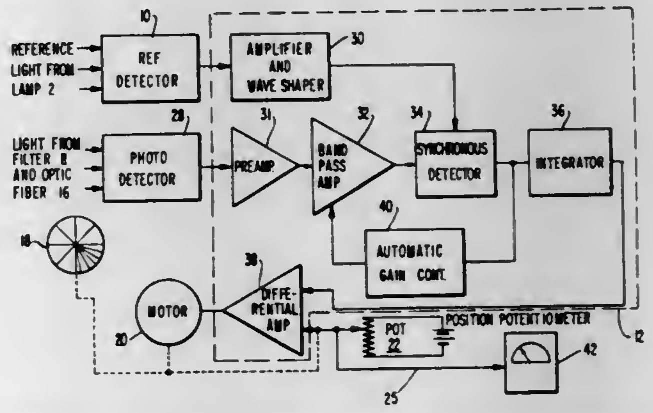


Apparatus including an illuminable tongue supporting an information-bearing card for insertion into a cassette for the formation of a latent image of the information on a portion of a photographic film sheet contained within the cassette. The cassette includes a cavity adjacent the film portion that is to receive the information and a slot positioned along a portion of one edge of the cassette to permit entry of the tongue into the cavity. In the slot area the cassette is made light tight by an openable flexible light lock, such as interlocking flaps. The apparatus includes the improvement of a sleeve positioned about and slidably connected to the tongue to maintain the light lock open and isolated from the tongue as the tongue is relatively moved into the cassette so that rubbing between the tongue and the light lock is eliminated during the major portion of the relative movement of the tongue into the cassette. In addition increased image resolution is obtained by adapting the tip of the tongue when in the cassette to deflect away from the film so that intimate contact between the card and the film is ensured.

3,649,833
IN SITU FLUOROMETER USING A SYNCHRONOUS DETECTOR

William Benjamin Leaf, Silver Spring, Md., assignor to Prototypes Incorporated, Kensington, Md. and Zone Research Incorporated, Washington, D.C., part interest to each

Filed Apr. 16, 1970, Ser. No. 134,781
Int. Cl. G01n *21/26*
U.S. Cl. 250—71 R **4 Claims**

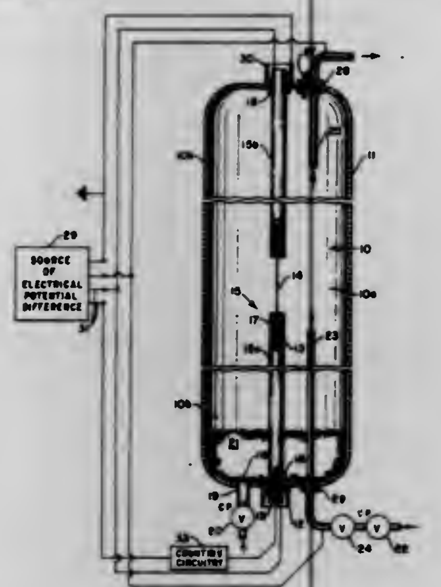


Disclosed herein is a self-contained submersible fluorometer designed for the continuous in situ recording of concentrations of materials in an aqueous environment, said materials being stimulated to fluoresce when excited by light of proper wavelengths.

3,649,834
LAMINAR GAS FLOW RADIATION DETECTOR

Henry W. Randolph, Belvedere, S.C., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 6, 1970, Ser. No. 78,538
Int. Cl. G01t *1/18;* **G01n** *23/12;* **H01j** *39/26*
U.S. Cl. 250—83.6 FT **6 Claims**

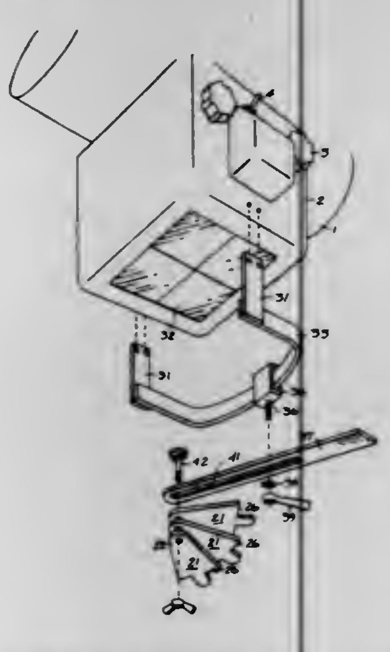


A radiation detector for high resolution measurement of energy spectra in flowing gas samples has a first electrode, a parallel second electrode of opposite polarity, and a detection chamber between the two electrodes. An integral pulse or stream of sample gas is passed in laminar flow through the detection chamber. A nonradioactive gas flows around the stream of sample gas to prevent contact and contamination of either electrode with radioactive material, as well as to absorb the radiation from the sample gas for detection.

3,649,835
ADJUSTABLE RADIATION SHIELD

Dennis D. Brackenbrough, P.O. Box 226, Cutten, Calif.; Harold E. Godfrey, Jr., 1487 Allen Drive, Eureka, Calif., and Richard G. Mills, Route 1, Box 1, Bay Side, Calif.

Filed May 14, 1970, Ser. No. 37,179
Int. Cl. G21f *3/00*
U.S. Cl. 250—108 R **8 Claims**

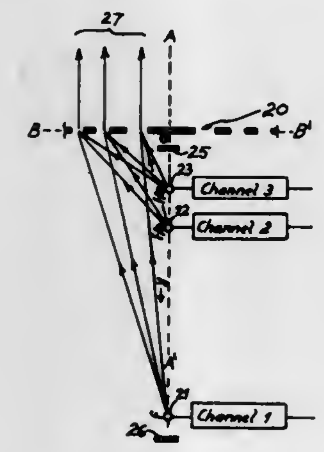


This adjustable radiation shield fits on the collimator used on X-ray equipment for indicating and adjusting the exact area to be exposed to radiation. A shutter of the collimator is adjustable to indicate by means of a light field the area to be exposed. A plurality of radiopaque metal plates are mounted on a support on the collimator is such relation to the collimator as to be normally out of the way of the light field, but be adjustable to obstruct a selected portion of the light field, enabling the technologist to visualize by the shadow cast by the shield the exact area to be protected from radiation without the knowledge of or inconvenience to the patient.

3,649,836
ELECTRO-OPTICAL MULTIPLE IMAGE ARRANGEMENTS

Kurt Lehovec, 11 Woodlawn Drive, Williamstown, Mass.

Filed Apr. 14, 1970, Ser. No. 28,420
Int. Cl. G02b *5/18;* **H01j** *3/14, 39/12*
U.S. Cl. 250—209 **28 Claims**

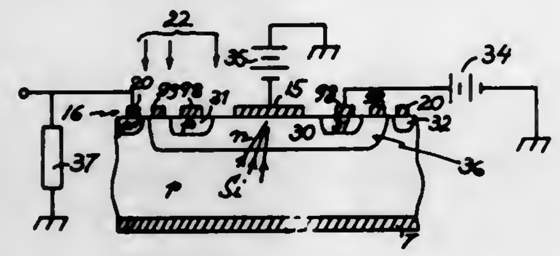


An image-forming diffraction optics having a multiplicity of focal points is used for directing a coherent light beam toward a plurality of photocells located at these multiple image points, or else, for combining into a single light beam a plurality of light beams emitted from a plurality of coherent light sources located at these multiple image points. In another embodiment, light source, illuminated object and photocell registering light from this object are placed on such image points of a diffraction optical image-forming means that at least two pairs of the three couples formed by light source, photocell and illuminated object are in optical communication by means of said image-forming means.

3,649,837
DIFFRACTIVE IMAGE-FORMING MEANS INTEGRATED INTO SEMICONDUCTING DEVICES

Kurt Lehovec, 11 Woodlawn Drive, Williamstown, Mass.

Continuation-in-part of application Ser. No. 653,245, July 13, 1967, now Patent No. 3,569,997. This application Apr. 27, 1970, Ser. No. 32,160
Int. Cl. G02b *5/18;* **H01j** *39/12;* **H01l** *11/00*
U.S. Cl. 250—211 J **16 Claims**

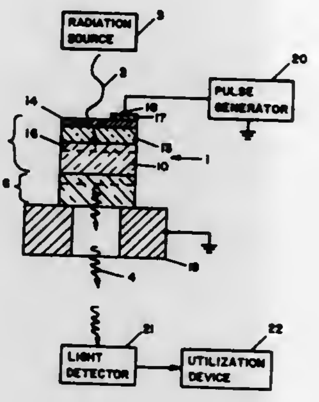


Integrated electro-optical struct$res are disclosed which comprise a diffractive image-forming means on a transparent semiconductive body in optical alignment with a photoelectric element on said body. In particular, image-forming means and photoelectrical element are located at the same surface of said body and radiation passes between them by reflection on the opposite surface of the body. This arrangement permits extensive electric integration of conducting portions of image-forming means with a photoelectric device.

3,649,838
SEMICONDUCTOR DEVICE FOR PRODUCING RADIATION IN RESPONSE TO INCIDENT RADIATION

Robert J. Phelan, Jr., Concord, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed July 25, 1968, Ser. No. 747,520
Int. Cl. H01j *39/12*
U.S. Cl. 250—211 J **18 Claims**

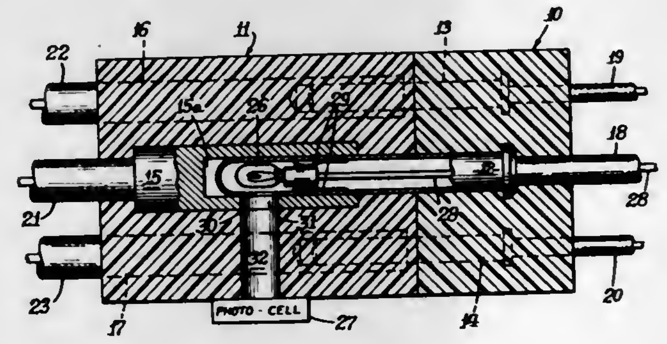


A semiconductor device for producing radiation in response to incident radiation of wavelength is made of a sandwich of semiconductor materials providing electrically in series a radiation detector which responds electrically to incident radiation, a capacitor for integrating the effect of the incident radiation and a radiation emitting diode which produces output radiation of a different wavelength and of intensity representative of the intensity of the incident radiation.

3,649,839
LIGHT CONTROL DEAD FRONT CONNECTOR

Arthur I. Appleton, 1 Bridlewood Road, Northbrook, Ill.

Filed Sept. 17, 1970, Ser. No. 73,023
Int. Cl. H01j *5/02, 39/12*
U.S. Cl. 250—215 **8 Claims**

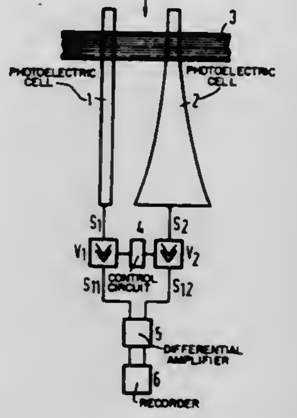


In a mating plug and socket assembly one prong of the plug has a light and photocell associated with it when it is in place in the socket so that light is transmitted to the photocell thereby indicating that the plug and socket are mated. This photocell controls a relay having contacts in series between the electrical source and the socket so as to only close the circuit to the socket when the plug and socket are so mated. There are various arrangements of the light and photocell in conjunction with the one prong and the socket.

3,649,840
RADIATION-SENSITIVE DEVICE UTILIZING A LASER BEAM TO MEASURE THE DISPLACEMENT OF AN OBJECT

Jurgen Thorn, Haar, and Horst Moritz, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 13, 1970, Ser. No. 19,330
Claims priority, application Germany, Mar. 17, 1969, P 19 133 99.4
Int. Cl. G01d *5/34*
U.S. Cl. 250—231 R **9 Claims**



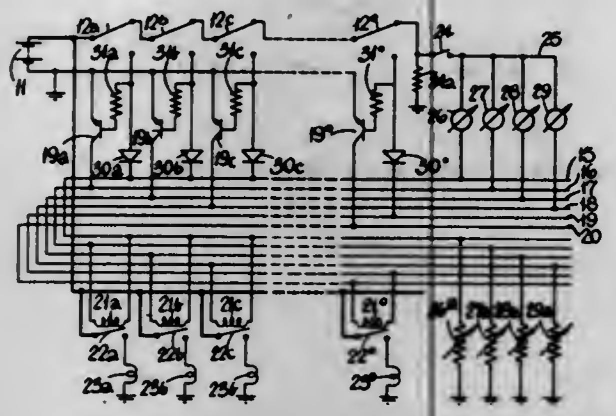
A device for continually measuring the displacement of an object utilizing a laser beam. A photoreceiver is attached to the object in such a manner as to be subject to displacement corresponding to the displacement of the object. The photoreceiver has a measuring photoelectric cell extending in the direction in which displacement is being measured. The photoelectric cell has a sensitivity which changes continuously in the direction of measurement. A source of a laser beam is positioned on a reference point, and the beam is directed toward the photocell to generate an electrical signal in response to the position of the beam on the cell. The beam is fanned out along a path which intersects and crosses the cell, and accordingly displacement of the object causes a displacement of the cell which generates a change in the electrical output. In order to produce an electrical output signal which is free from fluctuations due to causes other than the displacement of the object, a comparison photoelectric cell is disposed parallel to the measuring photocell, and the laser beam crosses the comparison cell as well. The comparison cell produces a signal which is fed to an amplifier and which may be used as a reference to compare the magnitude of the output from the measuring photoelectric cell. In addition, the amplifier for the comparison cell may be self adjusting to produce a constant output and may be coupled to the amplifier at the output of the measuring cell to control the amplification factor thereof. In this way, the amplification can be varied without losing the reference as a means for determining the displacement of the measuring cell.

3,649,841
ELECTRICAL SYSTEMS FOR ROAD VEHICLES

William David Holt, Colne, Lancashire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Apr. 21, 1970, Ser. No. 30,561
Claims priority, application Great Britain, July 28, 1969, 37,709/69
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 **2 Claims**

An electrical system for a road vehicle has a pair of electrical loads, a plurality of switches controlling the loads respectively, a plurality of feed lines, means whereby each switch when operated energizes two or more feed lines in a unique manner, switching means sensitive to the way in which the feed lines are energized for switching the loads on and off under the control of their respective switches, and at least one instrument on the vehicle. The instrument has a reading which is determined by a variable resistor in some other part



of the vehicle, and in accordance with the invention it is found possible to make the connection between the instrument and resistor through one of the feed lines.

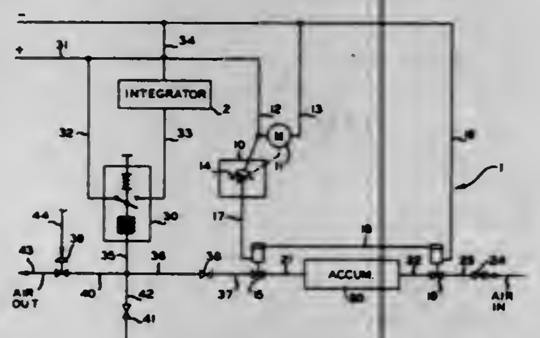
3,649,842
SIGNAL GENERATION

William J. Thornhill, and Richard O. Welty, both of c/o Phillips Petroleum Co., Bartlesville, Okla.

Filed Apr. 30, 1969, Ser. No. 820,585

Int. Cl. H03k *3/00*

U.S. Cl. 307—106 **9 Claims**



In order to automatically add measured amounts of a catalyst or other substance to a chemical reaction as needed, a signal representing a specific reaction condition is utilized to generate a pulse which has a width representative of the magnitude of said signal. An integrator then adds the pulses and after a predetermined total pulse time triggers an actuating mechanism which performs the operations necessary to add a substance to the chemical reaction.

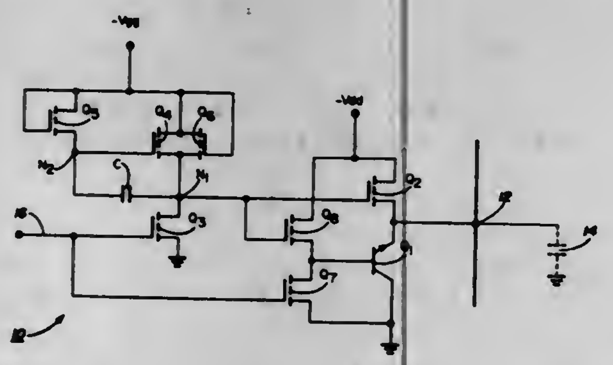
3,649,843
MOS BIPOLAR PUSH-PULL OUTPUT BUFFER

Donald J. Redwine, and Earl M. Worstell, Jr., both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 26, 1969, Ser. No. 836,796

Int. Cl. H03k *19/40*

U.S. Cl. 307—214 **12 Claims**



An output buffer for an MOS integrated logic circuit which utilizes an output stage comprised of a bipolar transistor and an MOS transistor connected in push-pull configuration is described. The output stage is operated by an MOS control circuit which utilizes an inverter stage with an improved capacitive bootstrap switching network to reduce the magnitude of the gate supply voltage required for positive switching. The circuit is characterized by very low input capacitance, and very low output impedance and thus high capacitive drive capability. A unique connection to ground internally of the integrated circuit is also described which comprises a diffusion made at the same time as the emitter diffusion of the bipolar transistor to provide ohmic contact between an overlying conductor and the substrate which then provides the return path to ground.

3,649,844
PARITY CIRCUIT IN ECL TECHNIQUE WITH SHORT TRANSIT TIME

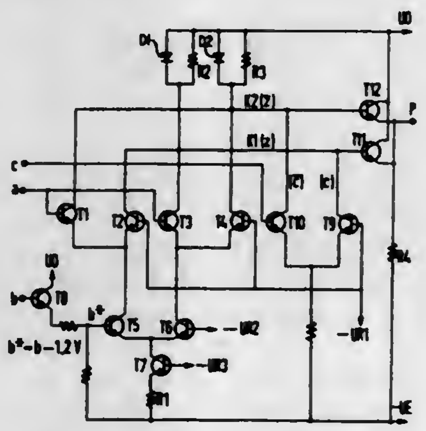
Friedrich-Karl Kroos, Soecking, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 1, 1970, Ser. No. 41,901

Claims priority, application Germany, June 9, 1969, P 19 29 144.2

Int. Cl. G06f *11/10*; **H03k** *19/32*

U.S. Cl. 307—216 **7 Claims**



A three-input parity circuit constructed in accordance with ECL techniques employs four current switches each having a pair of transistors, and wherein a pair of collector load resistors are shared by three of the switches and shared via one of those three switches by the fourth current switch to obtain, in response to three input signals, formation of the logical function (or its inverse) of $P=a\cdot b\cdot c+a\cdot c+a\cdot b\cdot c+a\cdot b\cdot c$.

3,649,845
GENERATION OF PHASE-DISPLACED TRIANGULAR SIGNALS WHICH MAY BE TWO-PHASE AND THREE-PHASE, AND OF CORRESPONDING SINUSOIDAL SIGNALS

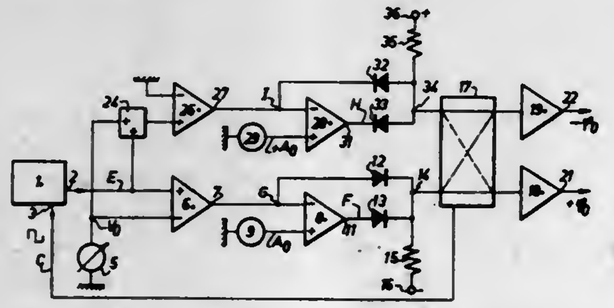
Henri Foch, Toulouse, France, assignor to Agence Nationale de Valorisation de la Recherche Anvar

Filed Aug. 12, 1970, Ser. No. 63,156

Claims priority, application France, Aug. 14, 1969, 69/28.017

Int. Cl. H03k *4/08*

U.S. Cl. 307—228 **2 Claims**



In order to generate a phase-displaced triangular signal or a plurality of such signals, the invention utilizes as a base a single triangular signal and, by various purely additive combinations of this signal or of its inverse with continuous voltages, generates the desired signal or signals by simple logical switching operations. The signal obtained is, simultaneously in frequency and amplitude, in a simple numerical ratio (1, 2 or 3) with the frequency and amplitude of the basic signal, and for this reason there cannot occur either drift or variation either of frequency or amplitude, which constitutes an outstanding advantage of the invention.

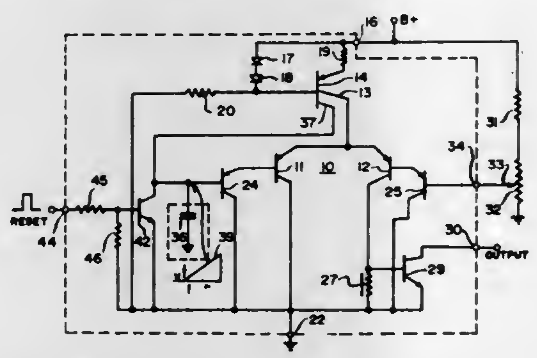
3,649,846
SINGLE SUPPLY COMPARISON AMPLIFIER

Thomas M. Frederiksen, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 7, 1971, Ser. No. 104,660

Int. Cl. H03k *5/20*

U.S. Cl. 307—235 **12 Claims**



A monolithic integrated circuit comparison amplifier employs Darlington and modified Darlington connected PNP transistors in a differential circuit configuration to compare input voltages having a common-mode voltage range extending down to 0 volts. The comparison amplifier operates from a single voltage supply.

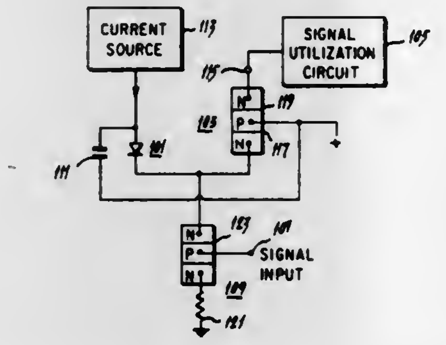
3,649,847
ELECTRICALLY CONTROLLED ATTENUATION AND PHASE SHIFT CIRCUITRY

Allen LeRoy Limberg, Sommerville, N.J., assignor to RCA Corporation

Filed Oct. 30, 1970, Ser. No. 85,401

Int. Cl. H03k *5/08*

U.S. Cl. 307—237 **14 Claims**



Input signal current combined with a substantially constant direct current bias is coupled to the junction of the emitter electrode of a transistor biased in common base configuration and one electrode of a diode poled similarly to the base-emitter junction of the transistor. A variable direct current supply is coupled to the other electrode of the diode. The collector of the transistor provides an output signal current, the average value of which is complementary to the average current flow through the diode. An electrically controlled attenuator is thus provided. This attenuator mechanism can be used to regulate a reactive current flow in phase shift circuitry to afford electrically controlled phase shift networks. Such electrically controlled attenuation and phase shift circuitry is well suited for use in remotely controlled television receivers and lends itself to monolithic integrated circuit construction.

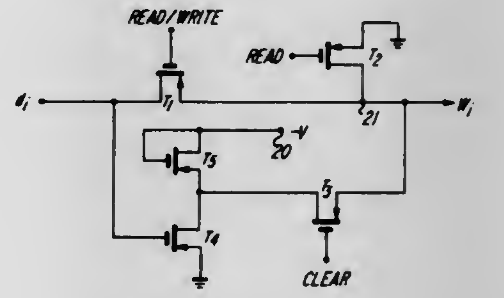
3,649,848
VOLTAGE TRANSLATION CIRCUIT FOR MNOS MEMORY ARRAY

Edward Charles Ross, Hightstown, N.J., assignor to RCA Corporation

Filed Dec. 3, 1970, Ser. No. 94,884

Int. Cl. H03k *17/60*

U.S. Cl. 307—251 **5 Claims**



A plurality of switches such as metal-oxide-semiconductor (MOS) field-effect transistors interconnected to produce appropriate voltage levels for operating a metal-nitride-oxide-semiconductor (MNOS) memory. In response to a word line selection voltage, the switches apply to a selected word line a voltage which: is equal to, is the logical complement of, or is of a value between these levels, on the line selection voltage, depending upon whether a write, clear or read operation is called for, respectively.

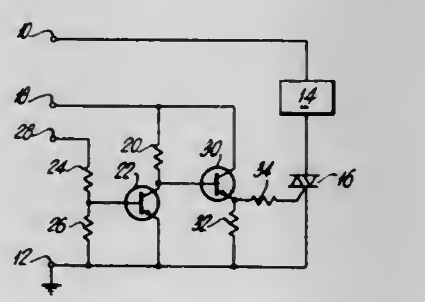
3,649,849
TRIGGERING CIRCUITS FOR GATE-CONTROLLED FULL-WAVE ALTERNATING CURRENT SEMICONDUCTOR SWITCHES

Francis A. McGuirk, Jr., Chatham, N.J., assignor to Wagner Electric Corporation

Filed Sept. 18, 1970, Ser. No. 73,369

Int. Cl. H03k *17/00*

U.S. Cl. 307—252 VA **6 Claims**



Trigger circuits for rendering conductive a gate-controlled full-wave alternating current semiconductor switch (thyristor) by generating triggering pulses which are synchronized with the alternating current voltage applied to the main terminals of said switch so that said triggering pulses are provided to the gate of the switch as said alternating current voltage wave passes through the null point.

3,649,850

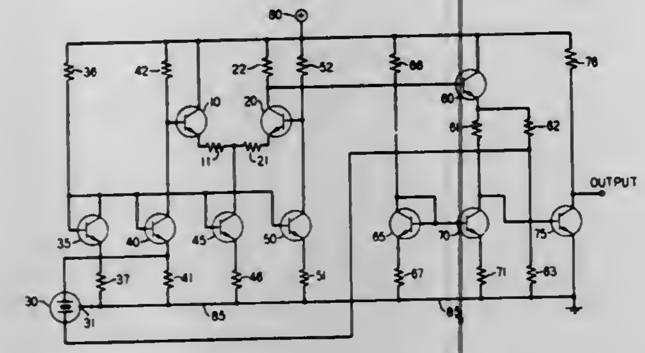
CRYSTAL-CONTROLLED SQUARE-WAVE GENERATOR

Paul C. Davis, Laureldale, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 26, 1969, Ser. No. 880,202

Int. Cl. H03k *17/00*

U.S. Cl. 307—261 **2 Claims**



A crystal, a wideband noninverting amplifier with low input and output impedance, a nonphase-shifting limiter circuit, a level shift and buffer output stage provide a square wave voltage output with a high degree of stability. The crystal is connected in a feedback circuit between the output of the limiter circuit and the input of the amplifier. The limiter circuit contains a pair of emitter-coupled transistors neither one of which is driven into saturation. Cutoff of each of the transistors in the pair provides clipping of the sinusoidal voltage peaks provided at the input of the limiter circuit. The generator contains only transistors, resistors, and a piezoelectric crystal, and is therefore especially suited for integrated circuit use.

3,649,851

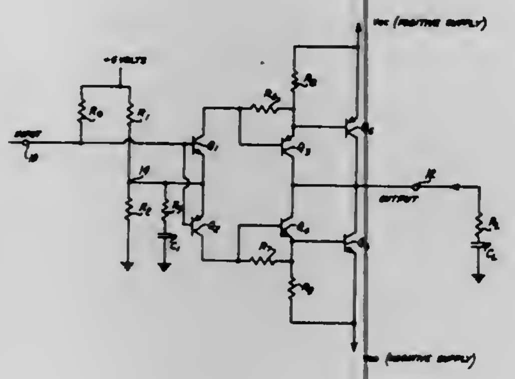
HIGH CAPACITANCE DRIVING CIRCUIT

Burton E. Cohen, Huntington Station, N.Y., assignor to General Instrument Corporation, Newark, N.J.

Filed Feb. 25, 1970, Ser. No. 13,870

Int. Cl. H03k *1/00, 3/26*

U.S. Cl. 307—270 **28 Claims**



A circuit for providing signals to a high-capacitive load is described which comprises a pair of complementary input switching devices and a pair of complementary output switching devices. One of the former is initially turned on by an input pulse to thereupon cause a corresponding one of the latter to turn on, thereby to rapidly charge an output terminal to a desired level. Thereafter, the drive on the conducting input device and the current supplied to the output terminal are reduced while the output terminal remains clamped at the desired level.

3,649,852

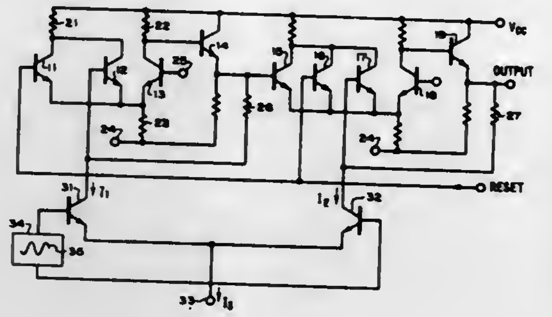
TRIGGER CIRCUIT UTILIZING A PAIR OF LOGIC GATES COUPLED IN PARALLEL CURRENT PATHS

Thomas K. Bohley, Colorado Springs, Colo.

Filed Mar. 10, 1971, Ser. No. 122,695

Int. Cl. H03k *17/00*

U.S. Cl. 307—289 **8 Claims**



A triggering circuit for producing an oscilloscope sweep trigger signal employing a pair of parallel current paths, one path including one input of a first logic gate and a current control device coupled thereto and the second path including one input of a second logic gate and a second current control device coupled thereto. Feedback circuits couple the output of each gate to said input of each gate for regenerative feedback. A reset control signal is coupled to a second input of each gate. The output of said one gate is coupled to a third input of said second gate. A sync signal controls each of said current control devices to control the current through each path for operating said gates in sequence, said first gate operating at a preselected level in one half cycle of said sync signal and said second gate operating at a preselected level in the next half cycle of said sync signal to produce said triggering signal.

3,649,853

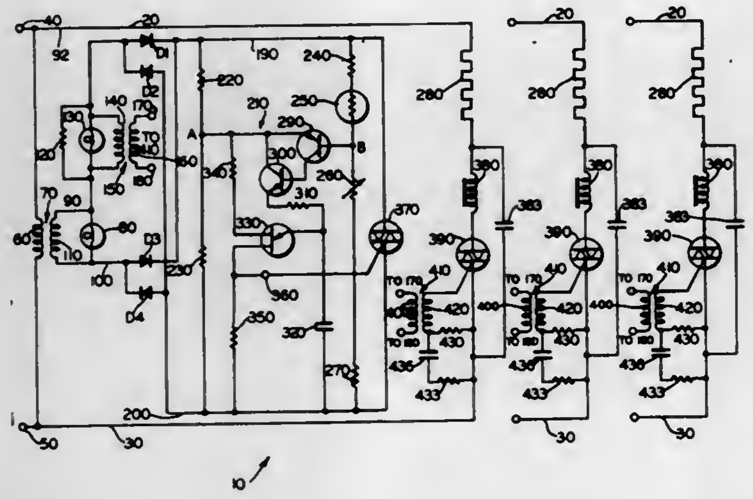
ELECTRIC HEAT CONTROL SYSTEM

Charles F. Kerchner, Bath, Pa., assignor to Kalglo Electronics Co., Inc., Lehigh Valley, Pa.

Filed Apr. 15, 1970, Ser. No. 28,659

Int. Cl. H03k *17/00;* **H05b** *1/02*

U.S. Cl. 307—310 **10 Claims**



The system of the invention includes a bridge circuit adapted to sense changes in the desired and set temperature of apparatus at a remote location. The system includes means for sensing unbalance in the bridge due to a change in the temperature of the apparatus at the remote location, the circuit including means for responding to the bridge unbalance and firing or operating a control circuit and a heating circuit for heating the apparatus.

3,649,854

REGULATING ARRANGEMENT PREFERABLY FOR REGULATING THE TEMPERATURE IN HEATING SYSTEMS

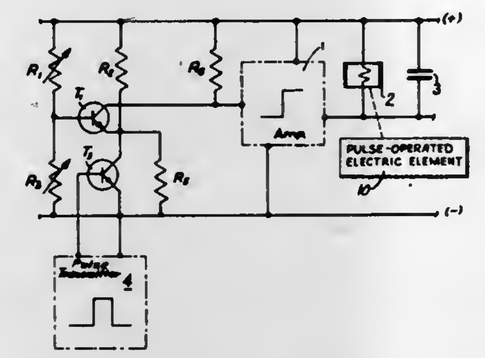
Fritz Reuter, Esslingen/Neckar, Germany, assignor to J. Eberspacher, Esslingen/Neckar, Germany

Filed July 3, 1969, Ser. No. 838,736

Claims priority, application Germany, Oct. 4, 1968, P 18 01 158.0

Int. Cl. G05d *23/24*

U.S. Cl. 307—310 **21 Claims**



A regulating arrangement comprises a control signal input bridge having a transistor amplifier connected as a diagonal and an electronic switching device connected in series in the bridge output. Means are operable to vary rhythmically the value of one arm of the bridge, and the resulting bridge diagonal voltage is applied, as a control voltage, to an active element of the bridge controlling the bridge output. One arm of the bridge includes a negative temperature coefficient resistance and the other arm of the bridge includes a resistance whose value is varied rhythmically either by operation of a circuit interrupter or by an electric pulse transmitter.

3,649,855

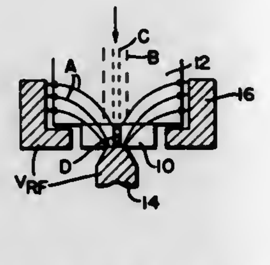
METHOD OF AND APPARATUS FOR OPTICALLY CONTROLLING PIEZOELECTRIC COUPLING

Bertram A. Auld, Menlo Park, Calif., assignor to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Mar. 6, 1970, Ser. No. 17,178

Int. Cl. H01v *7/00*

U.S. Cl. 310—8.1 **12 Claims**



A method of and apparatus for controlling piezoelectric coupling by directing light in variable fashions against photoconductive material associated with a piezoelectric medium so that a modulation of the conversion of acoustical to electrical energy or vice versa is achieved.

3,649,856

TRANSDUCER FOR CONVERTING DIGITAL SIGNALS INTO LINEAR MOTION

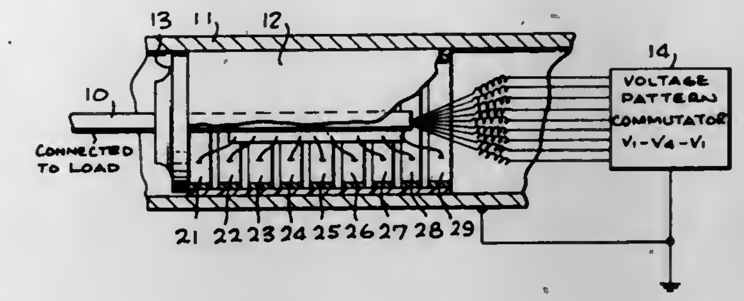
Cormac Garrett O'Neill, Lafayette, Calif., assignor to Physics International Company, San Leandro, Calif.

Filed Aug. 3, 1970, Ser. No. 60,263

Int. Cl. H04r *17/00*

U.S. Cl. 310—8.3 **10 Claims**

A transducer for converting digital signals into linear motion is comprised of a hollow cylinder made of ferroelectric ceramic material made to have piezoelectric properties. The cylinder will move along the inside wall of a linear tube in response to a voltage pattern commutated through annular rings on the inside of the hollow cylinder such that voltage on a given ring increases in steps to a maximum and then decreases with the result that the hollow cylinder contracts in circumferential and axial dimensions in annular sections progressively from one end to the other in the direction of desired motion as the voltage pattern is commutated in that direction. A predetermined motion is achieved by one cycle commutation. For further motion the voltage pattern is commutated through additional cycles.



3,649,857

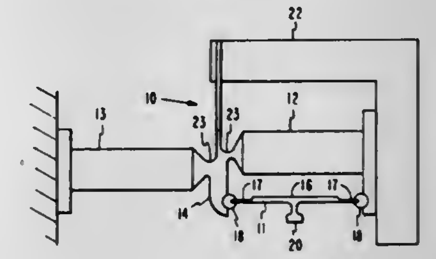
MECHANICAL ENERGY STORAGE AND RELEASE DEVICE

La Verne F. Knappe, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 30, 1970, Ser. No. 59,400

Int. Cl. H01v *7/00*

U.S. Cl. 310—8.7 **9 Claims**



A device for high-speed mechanical actuation wherein a mechanical energy storage element is excited at a frequency near a resonant point while being subjected to a set of motion constraints. Mechanical energy is stored in the constrained vibration mode and released to do mechanical work by varying the motion constraints in the proper phase and duration.

3,649,858

TRANSMISSION, PARTICULARLY FOR USE IN A TIMEPIECE, FOR CONVERTING THE OSCILLATING MOVEMENT OF A TUNING FORK INTO A ROTATING MOVEMENT

Gaston Raval, La Neuveville, Switzerland, assignor to Omega Louis Brandt & Frere S.A. Biel, Berne, Switzerland

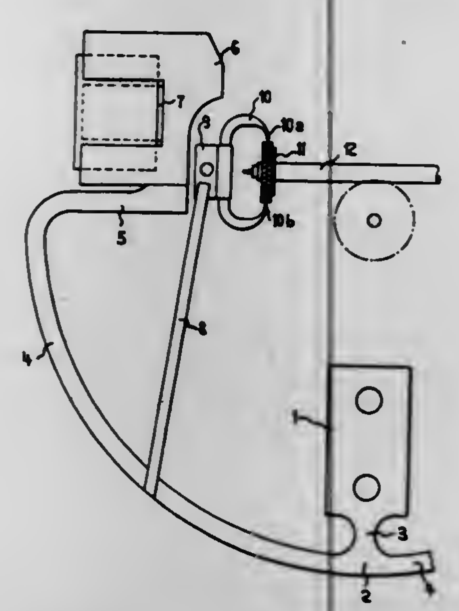
Filed Feb. 6, 1970, Ser. No. 9,361

Claims priority, application Switzerland, Feb. 19, 1969, 2477/69

Int. Cl. H02k *7/06*

U.S. Cl. 310—21 **10 Claims**

A transmission, particularly for use in a timepiece, for converting the oscillating movement of a tuning fork into a rotating movement, wherein a driving element in diving engagement with an indexing wheel is mounted on a driving rod rigidly fixed to one branch of the tuning fork for obtaining a



substantially rectilinear movement of said driving element in spite of nonrectilinear oscillation of said tuning fork.

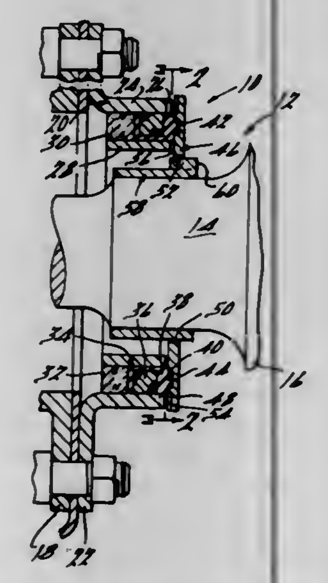
3,649,859
SENSOR WITH CONSTANT AIRGAP

John A. Watt, Ann Arbor, Mich., and Hugh E. Riordan, Wycoff, N.J., assignors to Kelsey-Hayes Company, Romulus, Mich.

Continuation of application Ser. No. 741,735, July 1, 1968, now abandoned. This application June 15, 1970, Ser. No. 48,868

Int. Cl. H02k *7/18*

U.S. Cl. 310—67 R **11 Claims**



An electrical sensor for sensing rotational speed between a pair of relatively rotatable members with the sensor including a pair of relatively rotatable poles being mounted, such that there will be substantially no change in airgap despite relative radial and axial movement between the relatively rotatable members.

3,649,860
DYNAMOELECTRIC MACHINES

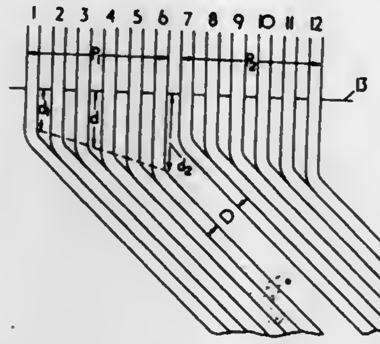
Philip Richardson, Newcastle, England, assignor to Reyrolle Parsons Limited, Durham, England

Filed Mar. 30, 1971, Ser. No. 129,456

Int. Cl. H02k *3/46*

U.S. Cl. 310—260 **7 Claims**

A dynamoelectric machine having a multiphase armature winding having conductors grouped according to phase the conductors of each phase group having axially extending portions protruding beyond the stator core and end portions cranked at an angle to the axially extending portions, adjacent conductors of each phase group having axially extending portions the lengths of which progressively increase from a first conductor of the group to the last conductor of the group, wherein the conductor having the longest axially extending portion of the phase group or subgroup is located adjacent the conductor having the shortest axially extending portion of the adjacent phase group and the angle through which the end portions of the conductors of said adjacent phase groups are cranked is chosen so that while adjacent end portions of conductors of a phase group contact one another, the end portions of conductors of adjacent phase groups are separated by a gap accommodating means for clamping the said end portions of the conductors.



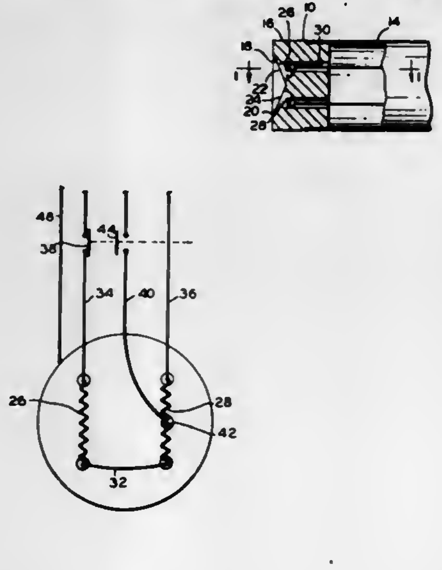
3,649,861
DOUBLE FOCUS X-RAY TUBE

Zed J. Atlee, Elmhurst, and Viktor W. Pleil, Downers Grove, both of Ill., assignors to Picker Corporation, Cleveland, Ohio

Filed Sept. 9, 1970, Ser. No. 70,769

Int. Cl. H01j *35/00*

U.S. Cl. 313—57 **5 Claims**



Double-focus X-ray tube has cathode focused to provide two contiguous line-focus focal spots each of 1 millimeter width. One of filaments connected to permit energization of only half-length to get fine focal spot.

3,649,862
SEPARATED ION BEAM SOURCE WITH ADJUSTABLE SEPARATION

Lars E. Wahlin, Boulder, Colo., assignor to Colutron Corporation, Boulder, Colo.

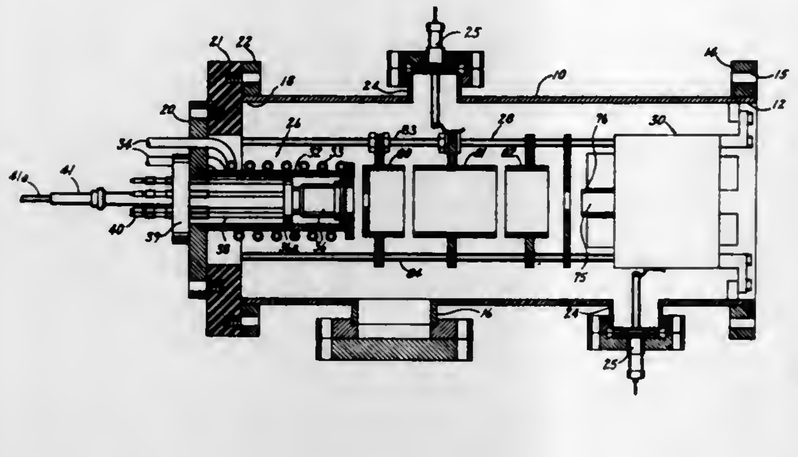
Filed May 1, 1969, Ser. No. 821,021

Int. Cl. H05h *5/00*

U.S. Cl. 313—63 **15 Claims**

An ion beam source includes an ion source, ion accelerator and focusing system, and a velocity filter with a deflection plate pair. The velocity filter provides for dispersion of ions

according to their charge, mass and velocity. The ion source includes a nonconducting barrel, a filament mounted in the barrel and an anode enclosing the barrel opening except for a source aperture. Filament current is arranged to provide an



electron current to the anode, this electron current ionizes the charge material thus forming a plasma cloud for ejecting into the focusing and lens system, and then into a velocity filter causing separation of ion beam.

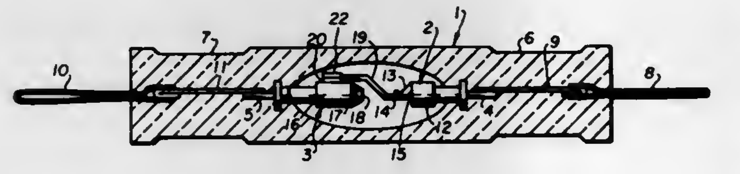
3,649,863
ELECTRICAL DISCHARGE LAMP

Barry F. Bolt, Fairview, N.J., assignor to Engelhard Hanovia, Inc.

Filed July 2, 1970, Ser. No. 51,753

Int. Cl. H01j *17/04*

U.S. Cl. 313—217 **7 Claims**



An electrical discharge lamp comprising a light transmissive envelope containing a pair of electrodes and an ionizable atmosphere, the electrodes being spaced-apart axially of each other internally of the envelope and forming an arc gap therebetween, one of the electrodes being a cathode and the other electrode being an anode, a link wire electrically bridging the anode and cathode, one end portion of the wire being welded to the cathode, the other end portion of the wire being welded to one metal component of a composite bimetallic tab, and the tab being weld-bonded to the anode with the metal component to which the wire is welded being positioned adjacent the anode surface.

3,649,864
LOW-PRESSURE DISCHARGE LAMP HAVING AN ENVELOPE ENCOMPASSING THE DISCHARGE SPACE AND CONSISTING INTER ALIA OF A SUPPORT

Petrus Johannes Marie Willemsen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

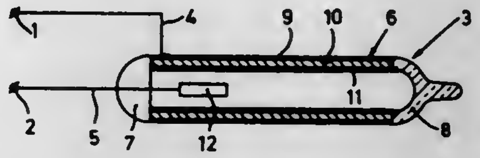
Filed Sept. 16, 1969, Ser. No. 858,289

Claims priority, application Germany, Sept. 19, 1968, G 67 53 632

Int. Cl. H01j *17/16*

U.S. Cl. 313—221 **10 Claims**

A low-pressure glow discharge lamp having an envelope encompassing the discharge space formed from a ceramic dielectric material which is coated by layers of electrical con-



ducting material to function as a self-ballasting capacitor for stabilizing the electric discharge in the lamp.

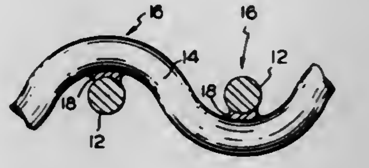
3,649,865
WIRE MESH MEMBER HAVING INTERSECTING STRANDS BONDED TOGETHER AND METHOD OF MANUFACTURE

Robert E. Holmes, Portland, Oreg., assignor to Tektronix, Inc., Tektronix Industrial Park, Beaverton, Oreg.

Filed Dec. 29, 1969, Ser. No. 888,328

Int. Cl. H01j *1/46, 1/52, 17/04*

U.S. Cl. 313—350 **6 Claims**



A woven wire mesh member and method of manufacture are described in which the intersecting wire strands are bonded together and then etched for increasing the transmission characteristics of such mesh. The bonding of the intersecting portions of the wire strands is accomplished by electroplating and insures a strong mesh structure whose wires remain in a fixed position after such etching. The bonded mesh member is etched by electropolishing to uniformly reduce the diameter of the wires and removes the plating layer from the wires except in the regions of such bonds. This electropolishing increases the electron transmission characteristics of the wire mesh, in one example to a transmission of 85 to 90 percent. Such a mesh member may be used as a grid, a collector or a storage target electrode in an electron beam tube.

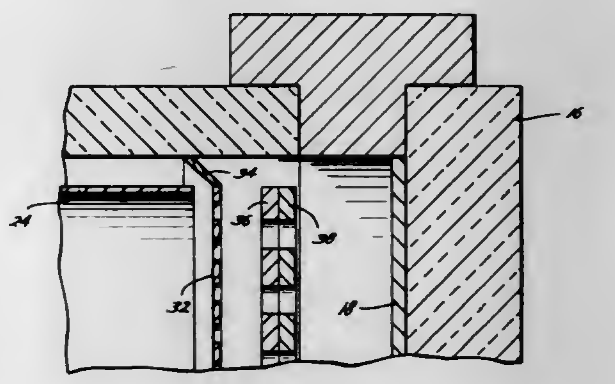
3,649,866
TELEVISION CAMERA STORAGE TUBE HAVING CONTINUAL READOUT

Reinhold C. Salgo, Richardson, Tex., assignor to General Electrodynamics Corporation, Garland, Tex.

Filed June 18, 1969, Ser. No. 834,452

Int. Cl. H01j *31/48*

U.S. Cl. 315—11 **7 Claims**

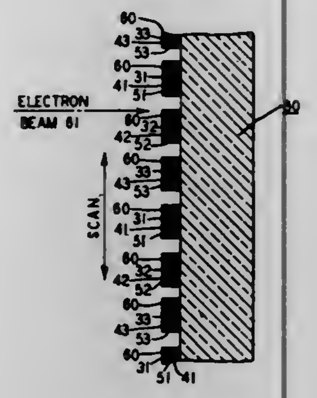


A television camera storage tube having the photoconductor deposited on a mesh positioned between the conductive coating and the source of electrons, the photoconductor being on the side of the mesh facing the conductive coating, and acting as a potential barrier to flow of electrons to the conductive coating, such flow of electrons varying in proportion to the degree of illumination on elemental areas of the photoconductor, and the method of operating such a tube in which a charge pattern on the photoconductor is erased by the impingement of electrons on it.

3,649,867
IMAGE DISPLAY DEVICE UTILIZING A TARGET COMPOSED OF DISCRETE PHOSPHORS

Arthur N. Chester, Murray Hill; Dawon Kahng, Bridgewater Township, Somerset County, and Bernard B. Kosicki, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 6, 1969, Ser. No. 831,083
Int. Cl. H01j *29/41*
U.S. Cl. 315—12 **8 Claims**

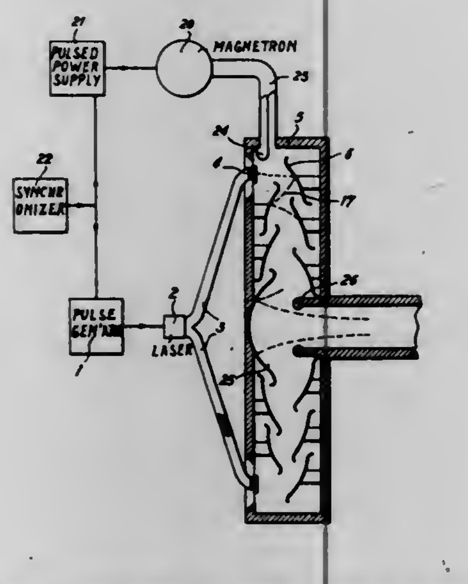


The specification describes a single-gun television receiving tube in which color selection is obtained by direct modulation of the phosphor target. Associated with the three-color array of phosphors is an electrode grid which enables all phosphor regions of one color to be exposed simultaneously to an electric field. Via a field quenching mechanism emission from those regions selectively exposed to the field is prevented while the phosphor regions for the color corresponding to the input information emit.

3,649,868
PULSE ELECTRON GUN

Andre Bensussan, Paris, France, assignor to Thomson-CSF

Filed Mar. 26, 1970, Ser. No. 22,892
Claims priority, application France, Mar. 31, 1969, 69/09674
Int. Cl. H01j *1/46, 11/80, 19/02*
U.S. Cl. 315—39 **1 Claim**

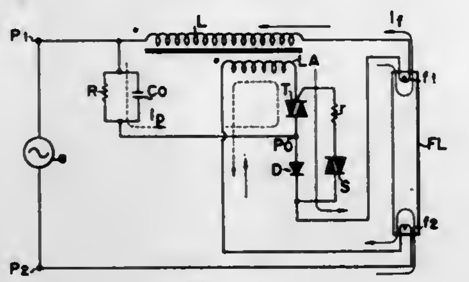


An electron gun comprises a photoemissive source, which is excited by a source of light such as a pulsed laser. This electron emission is amplified by a secondary emission multiplication system comprising a plurality of AC or DC biased dynodes. In the former case the gun envelope forms a resonator cavity.

3,649,869
APPARATUS FOR LIGHTING DISCHARGE LAMPS

Osamu Nomura; Nobuhiro Fujii; Nanjo Aoike, and Fumio Kamiya, all of Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Mar. 27, 1970, Ser. No. 23,430
Claims priority, application Japan, Feb. 21, 1969, 44/12765; Mar. 25, 1969, 44/22187; May 22, 1969, 44/39444; June 20, 1969, 44/48558; 44/48561; July 30, 1969, 44/59772; Sept. 12, 1969, 44/72174
Int. Cl. H05b *37/00*
U.S. Cl. 315—205 **20 Claims**

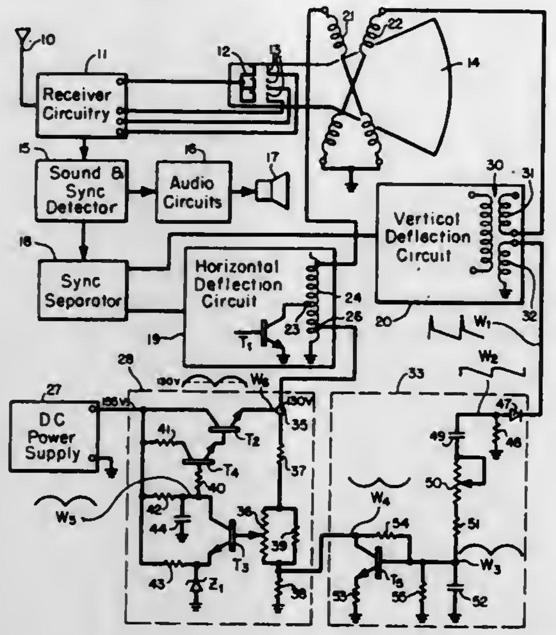


An apparatus for operating one or more electric discharge lamps from an AC source with an inductive element, in which a semiconductor switching element is Both preheating and pulse generating circuits included in a preheating circuit and a pulse generating circuit for starting and operating a discharge lamp. circuits are operated for the common switching element, so that the discharge lamp is preheated and then kept in a stable lighting condition.

3,649,870
PINCUSHION CORRECTION CIRCUIT UTILIZING A DC-REGULATED POWER SUPPLY

William W. Maulsby, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed May 1, 1970, Ser. No. 33,765
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 GD **5 Claims**

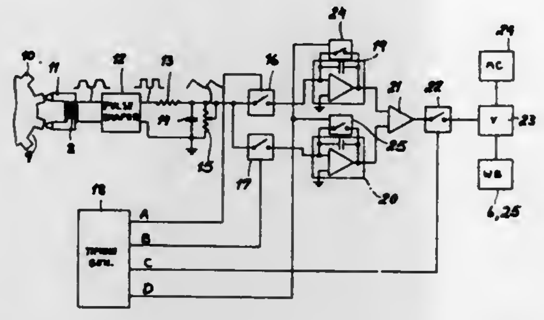


A circuit for correcting side pincushion distortion in a color television receiver having a cathode-ray tube and associated horizontal and vertical deflection circuits for generating a raster thereon. The circuit comprises a power supply for developing a DC potential and a regulating circuit for the supply which includes a transistor device, the collector-emitter path of which is serially interposed between the output of the supply and the energizing electrode of an output transistor in the horizontal deflection circuit. An integrating network, coupled to the vertical deflection circuit, derives a parabolic wave signal which is applied to the DC potential translated by the regulating transistor. The parabola-modulated DC potential applied to the energizing electrode of the horizontal output transistor changes the magnitude of horizontal scanning current in the horizontal deflection circuit parabolically as the electron beams are vertically deflected from the top of the raster to the bottom.

3,649,871
METHOD OF AND APPARATUS FOR MEASURING ANGULAR ACCELERATION

Hans-Christof Klein, Hattersheim, and Gunther Werner, Oberstedten, both of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Germany

Original application Sept. 25, 1968, Ser. No. 762,402, now Patent No. 3,522,973, dated Aug. 4, 1970. Divided and this application Feb. 17, 1970, Ser. No. 12,113
Int. Cl. G01p *3/42*
U.S. Cl. 317—5 **6 Claims**

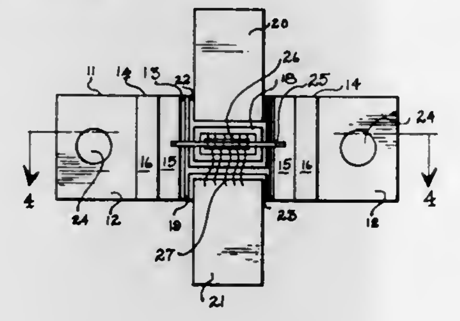


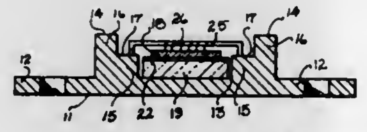
A disk formed with peripheral notches or magnetic regions forms the input of an acceleration-measuring device. As the disk turns these notches or magnetic regions are scanned by a pickup coil, thereby producing a pulse train for which a pulse shaper ensures pulses of equal duration and amplitude, the frequency being proportional to angular velocity. The signal is then averaged. The average is integrated in two consecutive equal time periods and the difference of the two resulting integrals is obtained by an algebraically operating summing amplifier, the difference being equal to the angular acceleration.

3,649,872
PACKAGING STRUCTURE FOR HIGH-FREQUENCY SEMICONDUCTOR DEVICES

Vahan Garboushian, Torrance, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed July 15, 1970, Ser. No. 55,132
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **11 Claims**



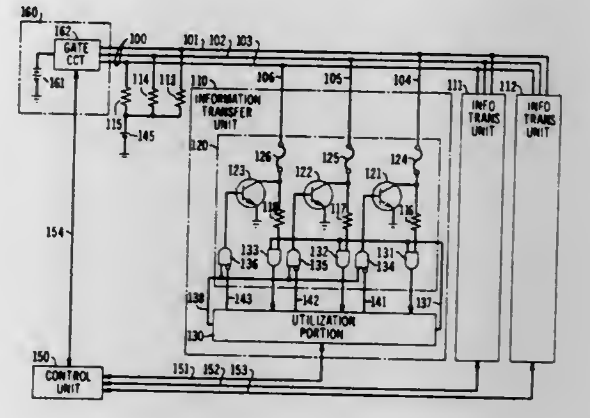


A package for a high-frequency semiconductor device. A semiconductor wafer having active regions therein is mounted upon a portion of a metallized thermally conducting ceramic member. The metallized thermally conducting ceramic member is secured within a cavity disposed in a copper header, the cavity being defined by spaced, upwardly depending projections of the copper header. Contact is made to the semiconductor wafer by metal leads cured to metallized portions of the metallized thermally conducting ceramic member, and by a conducting staple lead secured between the spaced projections of the copper header, an active region of the semiconductor device being connected thereto.

3,649,873
ARRANGEMENT FOR REMOVAL OF FAULT CONDITIONS IN DIRECT COUPLED INFORMATION TRANSFER SYSTEMS

David Vlack, Aurora, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 22, 1971, Ser. No. 108,794
Int. Cl. H02l *3/00*
U.S. Cl. 317—26 **6 Claims**

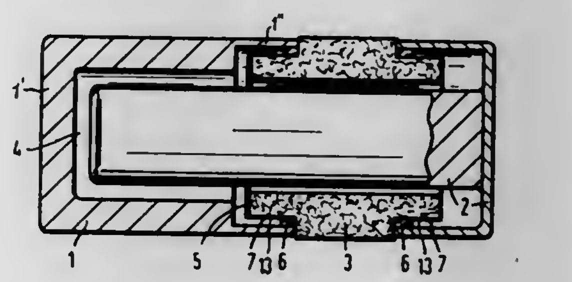


In a direct coupled system in which information transfer units connected between a pair of signal buses communicate with one another by changing the impedance between the buses, a faulty unit which provides a continuous reduced impedance between buses significantly reduces the information transfer capacity of the system. To permit ready removal of a faulty unit, a separate circuit breaking device is connected in series with each unit in its path between buses. An attempt is made to restore all units to a high-impedance state and a fixed voltage, sufficient to operate any circuit breaking device supplying a unit not in the high-impedance state, is applied between buses. Any faulty unit is thus removed from service and the information transfer capacity of the system is restored.

3,649,874
OVERVOLTAGE ARRESTER

Gerhard Peche, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 26, 1970, Ser. No. 66,916
Claims priority, application Germany, Sept. 2, 1969, P 19 44 564.8
Int. Cl. H02h *1/04*
U.S. Cl. 317—62 **4 Claims**



Electrode material which is evaporated during overvoltage arresting is prevented from forming in an area between electrodes, the area being shaded by overlapping parts of the overvoltage arrester. In one embodiment the shaded area is formed between an electrode and a ceramic ring having a T-shaped cross section, and in another embodiment between an electrode support member and a ceramic ring. In each embodiment the ceramic ring and the electrodes form a casing for the arrester.

3,649,875

LIGHTNING ARRESTER

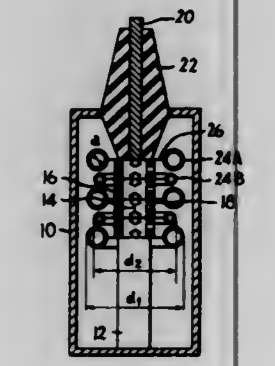
Nobuo Nagai; Shoji Tada, and Katsu Ujita, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan

Filed July 28, 1970, Ser. No. 58,874

Claims priority; application Japan, Aug. 1, 1969, 44/60866; June 19, 1970, 45/53281

Int. Cl. H02h *9/06*

U.S. Cl. 317—68 **8 Claims**



Serially connected discharging gaps are shunted by resistors and capacitors and disposed between a characteristic element and a line terminal within a grounded housing. At least one shielding ring encloses each gap and includes a disc connected to one end of an electrode forming each gap.

3,649,876

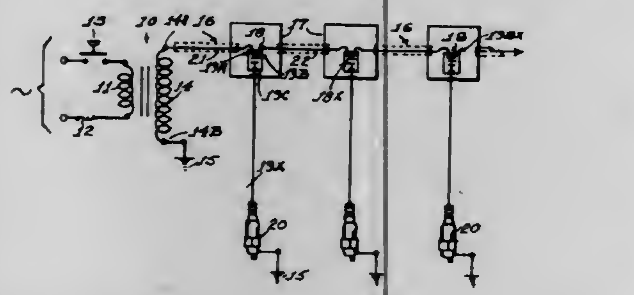
SINGLE-TRANSFORMER IGNITION SYSTEM FOR MULTIPLE GAS BURNERS

Richard F. Mandock, Schiller Park, and Ronald F. Plambeck, Chicago, both of Ill., assignors to Protection Controls, Inc., Skokie, Ill.

Filed Nov. 20, 1970, Ser. No. 91,232

Int. Cl. F23g *3/00*

U.S. Cl. 317—96 **7 Claims**



A simplified spark ignition system for industrial gas burners and the like wherein a single high-voltage transformer with "One Wire" feeder distribution through individual capacitance modules serves a multiplicity of burners and is operable in continuous duty from the usual utility power supply, requiring no rotary distributor or like mechanisms by reasons of achievement of a nominal switching action by use of low-level capacitance in the respective modules in series with the slight capacitance represented by the respective spark gaps and the breakdown impedance effect thereof as an ostensible diode effect to cause a chainlike sparking action with each gap firing at least once during each power cycle.

3,649,877

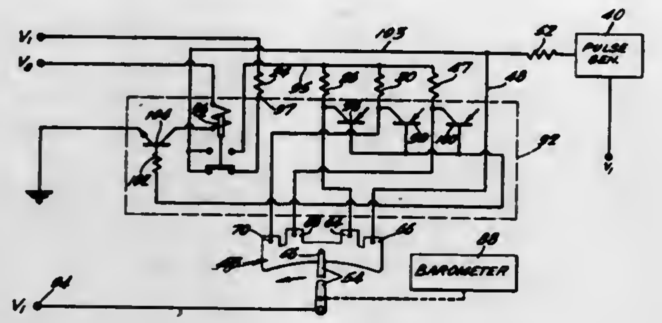
RADIOSONDE APPARATUS AND SWITCHING CIRCUITS SUITABLE FOR USE THEREIN

Maurice Friedman, Roslyn; Edward Miller, Philadelphia, and Anthony J. Pessiki, Norristown, all of Pa., assignors to Viz Manufacturing Company, Philadelphia, Pa.

Filed June 29, 1970, Ser. No. 50,852

Int. Cl. H01h *47/26*

U.S. Cl. 317—148.5 R **16 Claims**



A switching circuit suitable for use in a radiosonde of the type in which potential is to be supplied through at least three sensors, sequentially and independently, to a control terminal of a transmitter, to cause transmission of electrical signals representative of the contemporaneous resistance values of the sensors, and hence of the parameters which they sense. One of the sensors is connected between the potential source and the control terminal by normally closed contacts of a relay. One terminal of each of the other sensors is connected to said transmitter control terminal by the normally open contacts of said relay, and the second terminals of said other sensors are connected sequentially to the potential source by way of a baroswitch. Said second terminals of said other sensors are also connected through respective diode rectifiers to a common transistor amplifying stage, which drives the relay to open its normally closed contacts; the diode rectifiers are so poled that when said potential is supplied to any of said other sensors by the baroswitch, the corresponding rectifier conducts and causes a current to flow through the relay coil to open the normally closed relay contacts, thereby removing said one sensor from the circuit and connecting said one terminals of said other sensors to said control terminal of said transmitter. Preferably the diode rectifiers comprise the collector and base elements of reject transistors, the emitters of which are disconnected. The resultant switching circuit is of reduced weight, volume and expense.

3,649,878

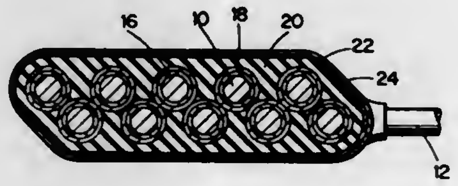
NON-POLAR SOLID ELECTROLYTIC CAPACITOR

Herman Schneider, Phoenix, Ariz., assignor to Components, Incorporated

Filed July 23, 1970, Ser. No. 57,475

Int. Cl. H01g *9/05*

U.S. Cl. 317—230 **1 Claim**



A nonpolar solid electrolytic capacitor comprises two facing electrodes of film-forming metal having a dielectric film on the surface thereof and a semiconductive oxide covering the dielectric film and positioned between the electrodes. The electrodes may be of tantalum or similar film-forming metals. The dielectric may be an oxide of the metal and the semiconductor may be manganese dioxide, lead oxide or similar metal. The method of preparation is described.

3,649,879

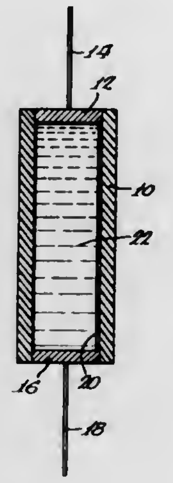
ELECTROLYTIC COLOR-INDICATING TIMER

Henry S. Gates, Salt Lake City, Utah, assignor to Gibbs Manufacturing & Research Corporation, Janesville, Wis.

Filed Aug. 17, 1970, Ser. No. 64,411

Int. Cl. H01g *9/02*

U.S. Cl. 317—230 **10 Claims**



An electrolytic coulometer useful as a timer which incorporates two electrolytes in solution and an indicator wherein the passage of electric current eliminates one electrolyte from solution before the other and thereafter acts on the second electrolyte to cause the indicator to change color.

3,649,880

SOLID ELECTROLYTIC CAPACITOR HAVING A TITANIUM-ZIRCONIUM ALLOY ELECTRODE

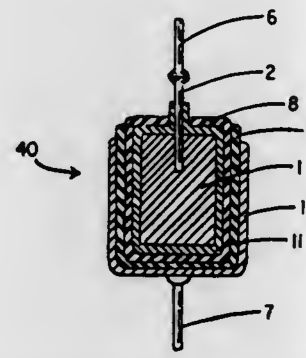
Koreaki Nakata, Hyogo-ken, and Yoshio Iida, Osaka, both of Japan

Continuation of application Ser. No. 704,057, Feb., 1968, now abandoned. This application Sept. 16, 1970, Ser. No. 72,824

Claims priority, application Japan, Apr. 21, 1967, 42/25937; July 19, 1967, 42/46934

Int. Cl. H01g *9/05*

U.S. Cl. 317—230 **5 Claims**



An electrical capacitor according to the invention comprises a pair of electrodes and an electrically conductive material in contact therewith, at least one of the electrodes being of titanium-zirconium alloy, the electrode having an anodic dielectric oxide film thereon. The Ti-Zr electrode preferably comprises 40–90 atomic percent of Ti and 10–60 percent of Zr, and has a sintered porous structure. In one form, the electrically conductive material is MnO_2; in another form, it is an aqueous solution of phosphoric acid, sulfuric acid, ammonium borate or potassium nitrite. A method of manufacture is also disclosed.

3,649,881

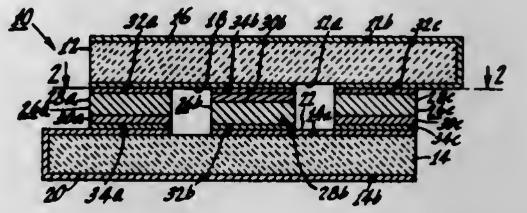
HIGH POWER SEMICONDUCTOR DEVICE ASSEMBLY

Kern Ko Nan Chang, Princeton, and Hans John Prager, Bellemead, both of N.J., assignors to RCA Corporation

Filed Aug. 31, 1970, Ser. No. 68,371

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **4 Claims**



A high-power semiconductor device assembly wherein a plurality of semiconductor diodes are mounted between opposed, spaced, parallel surfaces of two flat bodies of electrical insulating and good heat conducting material. The opposed surfaces of the bodies have metal films thereon to which the diodes are electrically and mechanically secured. The metal films are arranged to electrically connect the diodes in series. Heat generated in the diodes is conducted through the metal films to the bodies which dissipate the heat to the surrounding ambient.

3,649,882

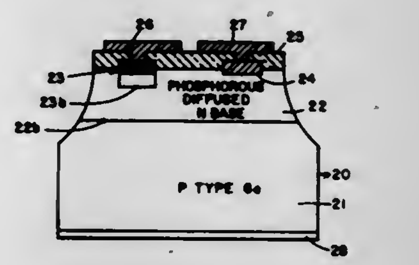
DIFFUSED ALLOYED EMITTER AND THE LIKE AND A METHOD OF MANUFACTURE THEREOF

Albert Louis Hoffman, 6408 N. 86th St., Scottsdale, Ariz., and Derek Elden Longstaff, 2626 N. Foote St., Phoenix, Ariz.

Filed May 13, 1970, Ser. No. 36,777

Int. Cl. H01l *7/44, 7/46*

U.S. Cl. 317—235 R **9 Claims**



In a germanium transistor wherein an aluminum emitter is selectively diffused from an aluminum trichloride vapor phase chemical displacement reaction with germanium and is localized by a patterned or windowed silicon dioxide mask, the surface concentration of said emitter is increased substantially by alloying into said aluminum diffusion, in a nondestructive manner, a film of aluminum evaporated over said diffusion. The surface concentration of aluminum in the emitter can be increased from about 5×10^{19} atoms per cubic centimeter for the diffused emitter to 5×10^{20} toms per cubic centimeter for the diffused alloyed emitter. Consequently, the efficiency of the aluminum diffused emitter is substantially increased by the subsequent alloying.

3,649,883

SEMICONDUCTOR DEVICE HAVING A RECOMBINATION RING

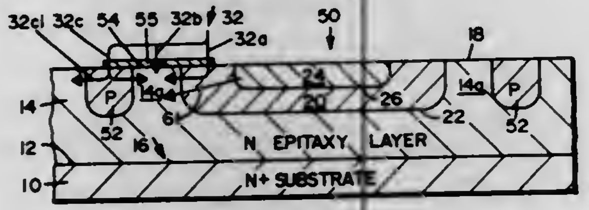
Lawrence G. Augustine, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 17, 1970, Ser. No. 64,412

Int. Cl. H01l *3/00*

U.S. Cl. 317—235 UA **4 Claims**

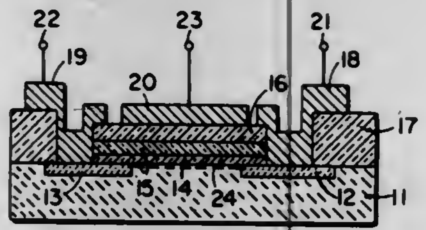
A transistor geometry is disclosed utilizing the interdigitation of the base area for increasing the effective base-collector junction periphery. A recombination ring is provided comprising in part parts of the base and collector for dissipating minority carriers injected into the collector region of the



transistor from the base region. A metal contact adheres to the surface of the transistor in electrical contact across the base-collector junction.

3,649,884
FIELD EFFECT SEMICONDUCTOR DEVICE WITH MEMORY FUNCTION

Yuichi Haneta, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Minato-ku, Tokyo, Japan
Filed June 2, 1970, Ser. No. 42,685
Claims priority, application Japan, June 6, 1969, 44/43978
Int. Cl. H01l *11/14*
U.S. Cl. 317—235 R **4 Claims**

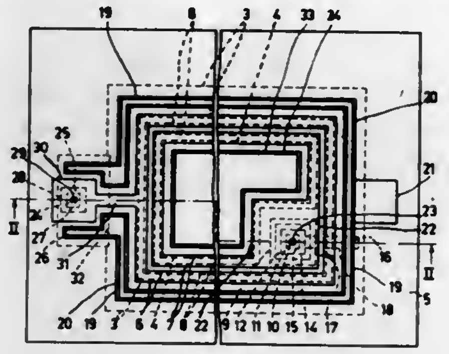


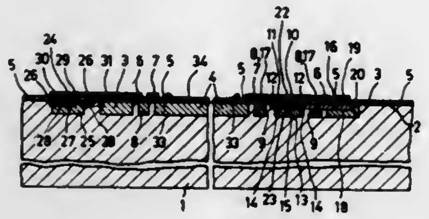
A field effect transistor is provided with a gate assembly comprising a sandwich of a layer of silicon oxide with excess silicon between two insulating films of appropriate thickness for the entrapment of charge carriers in the silicon-rich silicon oxide layer. Such entrapment provides the transistor with information storage capabilities in which information can be stored for a long time and readily erased or modified.

3,649,885
TETRODE MOSFET WITH GATE SAFETY DIODE WITHIN ISLAND ZONE

Rijkent Jan Nienhuis, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed June 24, 1970, Ser. No. 49,404
Claims priority, application Netherlands, July 3, 1969, 6910195
Int. Cl. H01l *11/14*
U.S. Cl. 317—235 **9 Claims**

A field-effect transistor having at least two insulated-gate electrodes comprises an island zone of the same conductivity type as the electrode zones (source and drain zones) situated between two gate electrodes. According to the invention an aperture is provided in said island zone in which aperture a circuit element is provided, particularly a safety diode, which

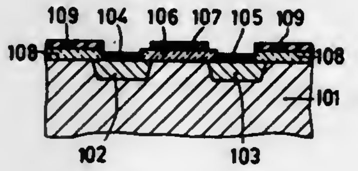




is connected to a gate electrode. In this case a particularly simple and short connection is possible between the circuit element and a gate electrode.

3,649,886
SEMICONDUCTOR DEVICE HAVING A SEMICONDUCTOR BODY OF WHICH A SURFACE IS AT LEAST LOCALLY COVERED WITH AN OXIDE FILM AND METHOD OF MANUFACTURING A PLANAR SEMICONDUCTOR DEVICE

Else Kooi, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 19, 1968, Ser. No. 776,922
Claims priority, application Netherlands, Nov. 21, 1967, 6715753
Int. Cl. H01l *07/00, 11/14, 5/06*
U.S. Cl. 317—235 R **11 Claims**



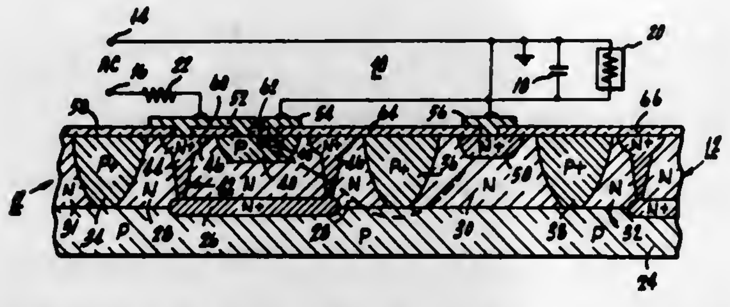
Semiconductor devices are described having on a semiconductor surface an insulating layer having a first portion of silicon oxide without silicon nitride and a second portion of silicon oxide covered with silicon nitride. These layers are provided so as to establish at the semiconductor surface certain desired concentrations or densities of semiconductive surface states and surface or oxide charges in order to control the performance of the device.

3,649,887
AC LINE OPERATION OF MONOLITHIC CIRCUIT

Jean-Paul Keller, Neshanic Station, and Stefano A. Graf, Somerville, both of N.J., assignors to RCA Corporation
Filed Aug. 11, 1969, Ser. No. 849,065
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R **5 Claims**

An integrated circuit chip is disclosed which can be coupled directly to and operated from a source of AC potential. To prevent conduction between the substrate and epitaxial layer of the chip which otherwise will occur and result in inoperativeness and possible catastrophic failure, a diode is

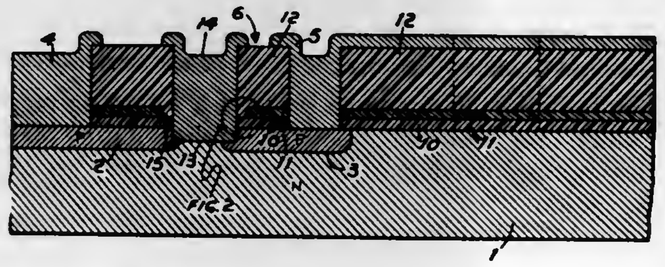
formed between the substrate and one terminal of the AC source, such that the diode is conductive only during half-cycle of one polarity of the AC signal, thereby referencing the substrate to ground or reference potential during that



time. During the half cycles of opposite polarity, the substrate is "floating." Means are provided for impairing parasitic device action due to the presence of the additional diode.

3,649,888
DIELECTRIC STRUCTURE FOR SEMICONDUCTOR DEVICE

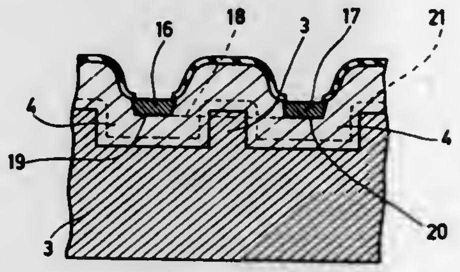
Dorman C. Pitzer, Palm Springs; Walter B. Braddock, Riviera Beach; Richard C. G. Swann, and Anthony E. Pyne, both of North Palm Beach, all of Fla., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed May 14, 1969, Ser. No. 824,436
Int. Cl. H01l *11/06;* H01c *7/14*
U.S. Cl. 317—235 R **8 Claims**



This invention is for a dielectric structure for semiconductor devices which provides an oxygen barrier to preserve the high charge at a silicon-silicon oxide interface, and also serves as a barrier to mobile charges in a thin film of silicon oxide. The invention also provides for a structure and method of eliminating low-voltage dielectric breakdown at the border of the active and inactive regions in a semiconductor device.

3,649,889
VIDICON TARGET PLATE HAVING A DRIFT FIELD REGION SURROUNDING EACH IMAGE ELEMENT

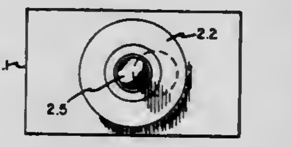
Paul Anton Herman Hart, Emmasingel, Eindhoven, Netherlands
Filed Nov. 14, 1969, Ser. No. 876,759
Claims priority, application Netherlands, Nov. 27, 1968, 6816923
Int. Cl. H01l *17/00, 15/00*
U.S. Cl. 317—235 R **14 Claims**

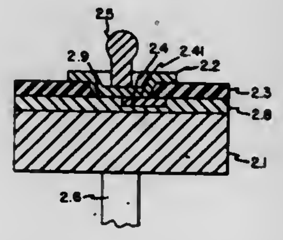


A semiconductor device, particularly a camera tube having a target plate for converting a radiation picture into electric signals, the target plate comprising a mosaic of radiation-sensitive elements, and being furthermore doped in such manner that the charge carriers produced by radiation are conveyed to the desired element by incorporated electric fields.

3,649,890
HIGH BURNOUT RESISTANCE SCHOTTKY BARRIER DIODE

Charles M. Howell, Littleton, and Yoginder Anand, Woburn, both of Mass., assignors to Microwave Associates, Inc., Burlington, Mass.
Filed Dec. 31, 1969, Ser. No. 889,634
Int. Cl. H01l *9/00*
U.S. Cl. 317—235 UA **9 Claims**



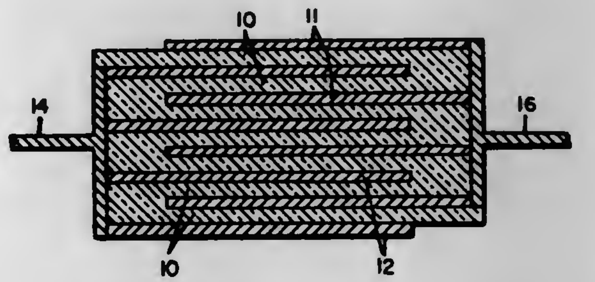


A semiconductor rectifier device particularly suited for mixing and/or detecting electric wave signals in the microwave frequency range and having a high resistance to RF burnout is disclosed.

A semiconductive region having an impurity concentration greater than a prescribed amount is located in a semiconductor body of opposite polarity to the region. A metal in face to face contact with the region and the semiconductor body forms an N-type and a P-type Schottky-barrier junction. A PN junction is also defined at the interface of the semiconductive region and semiconductor body such that under the influence of a low signal level no injection occurs at the PN junction but under the influence of a high signal level large injection occurs at the PN junction causing a large change in the impedance and capacitance of the device. As a result the semiconductor device, previously matched to the line at low RF signal level becomes mismatched and highly reflective of RF energy at high RF signal level, thus preventing burnout. (For the purposes of this disclosure low signal level is defined as 1–2 mW. typically of electromagnetic energy but no greater than 50 mW. per diode, whereas high signal level is any electromagnetic energy over 50 mW.)

3,649,891
CAPACITIVE CRYOGENIC THERMOMETER

William N. Lawless, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed June 18, 1970, Ser. No. 47,334
Int. Cl. H01g *7/04*
U.S. Cl. 317—247 **8 Claims**



A capacitive device suitable for use in cryogenic temperature measuring. The dielectric material used in the capacitor is made from a composition in which strontium titanate, $SrTiO_3$, has been controllably crystallized in a glass matrix. A capacitive device having this type of dielectric material is particularly useful in measuring cryogenic temperatures in that the dielectric constant of such a dielectric material decreases smoothly with decreasing temperature, varies linearly with temperature over a suitable portion of the range thereof, and possesses a large sensitivity in the cryogenic temperature range.

3,649,892

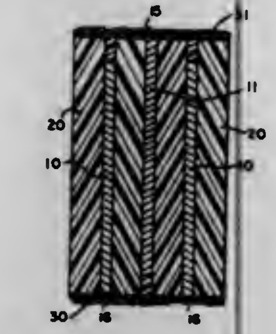
CAPACITORS UTILIZING BONDED DISCRETE POLYMERIC FILM DIELECTRICS

James M. Booe, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed July 13, 1970, Ser. No. 54,187

Int. Cl. H01g *1/01*

U.S. Cl. 317—258 **19 Claims**



Capacitors employing discrete polymeric film dielectrics adhesively bonded to metal foil electrodes have been found to be effective up to and including high-voltage applications of either AC or DC.

3,649,893

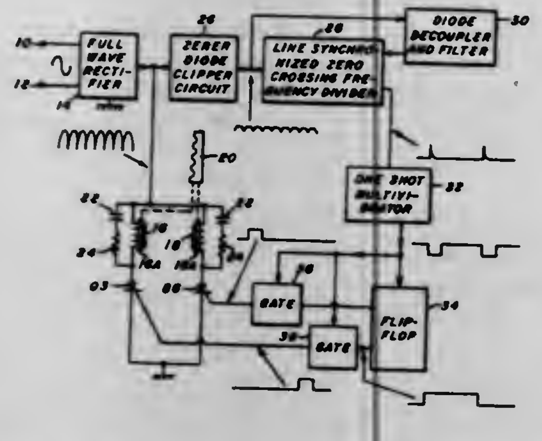
SYNCHRONIZED DRIVER FOR ELECTRICAL UTILIZATION DEVICES

Peter A. Lajoie, Chelmsford, Mass., assignor to Allegheny Ludlum Industries, Inc., Brackenridge, Pa.

Filed Aug. 11, 1970, Ser. No. 62,843

Int. Cl. H02k *33/00*

U.S. Cl. 318—119 **10 Claims**


10
12
FULL WAVE RECTIFIER
ZENER DIODE CLIPPER CIRCUIT
LINE SYNCHRONIZED ZERO CROSSING FREQUENCY DIVIDER
DIODE DECOUPLER AND FILTER
30
ONE SHOT MULTIVIBRATOR
20
GATE
GATE
FLIP-FLOP
34

Apparatus for alternately energizing two electrical utilization devices such as linear motors, or two windings around a single linear motor armature, in such a manner so as to produce a reciprocating motion. One linear motor is energized for a given period of time, followed by a time elapse; whereupon the second linear motor is energized for the same time period and the cycle repeats. Synchronization of the two linear motors is achieved in one embodiment of the invention by counting or integrating the zero crossings of an applied alternating current waveform. Alternatively, a single linear motor can be energized for predetermined time intervals separated by fixed time periods, in which case the armature of the linear motor will ordinarily be returned to its starting position by a spring or the like.

3,649,894

CONTROL CIRCUIT FOR DRIVING AN ALTERNATING CURRENT MOTOR AT A SPEED CORRESPONDING TO THE MAGNITUDE OF A CONTROL SIGNAL AND FOR BRAKING THE MOTOR WHEN THE SIGNAL FALLS BELOW A CERTAIN VALUE

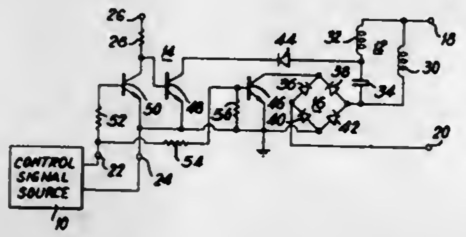
Juho Yoneya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 14, 1970, Ser. No. 63,728

Claims priority, application Japan, Aug. 15, 1969, 44/77894

Int. Cl. H02p *3/20*

U.S. Cl. 318—210 **10 Claims**



An alternating current motor having main and auxiliary windings is provided with a control circuit by which circuit flows in the windings produce a rotating magnetic field for driving the motor so long as control signals applied to the circuit are above a predetermined value and the speed of rotation of the motor is made dependent on the magnitude of the control signals. When the control signals fall below the predetermined value, the current flows in the windings are altered by the control circuit to provide a retarding magnetic field, which may rotate in opposition to the rotating magnetic field for normal driving of the motor, whereby to exert a braking action.

3,649,895

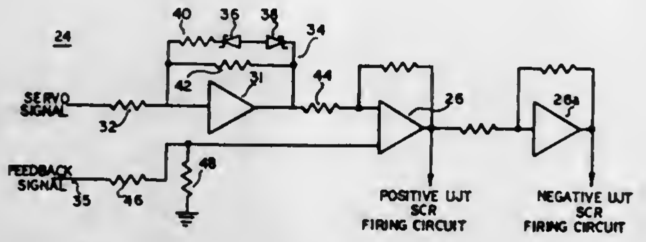
MOTOR CONTROL SYSTEM

John A. Joslyn, Dalton, Mass., assignor to General Electric Company

Filed Dec. 20, 1968, Ser. No. 785,643

Int. Cl. H02p *5/00*

U.S. Cl. 318—331 **3 Claims**


24
40
36
38
34
42
31
44
26
26a
SERVO SIGNAL
32
FEEDBACK SIGNAL
35
46
48
POSITIVE UJT SCR FIRING CIRCUIT
NEGATIVE UJT SCR FIRING CIRCUIT

A motor control system utilizing a phase control power amplifier with controlled rectifiers which include circuit means to vary the magnitude of the actuating signals to said power amplifier as a function of the magnitude of a back EMF signal from the motor to compensate for gain variations occuring in the phase control power amplifier. In order to linearize the relationship between motor current and input control signal applied to the motor control system for all conditions of motor EMF, a voltage amplifier having a gain which varies nonlinearly with said input control signal is placed between the source of these input signals and the power amplifier itself. The gain of this voltage amplifier is appropriately varied by an associated circuit network. A positive feedback signal proportional to the motor back EMF value is combined with the output signal from the variable gain amplifier.

3,649,896

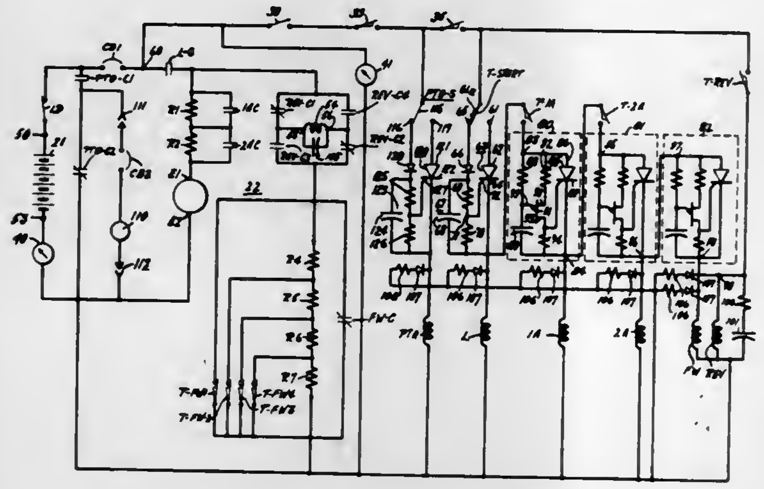
CONTROL CIRCUITS FOR AN ELECTRIC TRACTOR

William B. Mason, Schenectady, and Douglas R. Houst, Pattersonville, both of N.Y., assignors to General Electric Company

Filed Feb. 12, 1970, Ser. No. 10,863

Int. Cl. H02p *1/00*

U.S. Cl. 318—387 **8 Claims**



The main current conduction path of a controlled rectifier and a starting network therefore are connected in parallel across a source of unidirectional potential through a single pole, double throw switch. With the switch in the start position with the pole engaging one contact the starting network is connected in circuit with the source of operating potential and in the other position with the pole engaging the other contact, circuit is completed through the controlled rectifier. The triggering voltage developed by the starting network decays rapidly with time the starting network is out of circuit. Accordingly, after conduction has been established in the controlled rectifier by switching the pole of the switch from the start to the operate position, should conduction be interrupted by a safety switch in the main conduction circuit of the controlled rectifier conduction cannot be reestablished therein by simply closing the safety switch but requires the return of the single pole, double throw switch to the start position to establish triggering potential for the controlled rectifier.

3,649,897

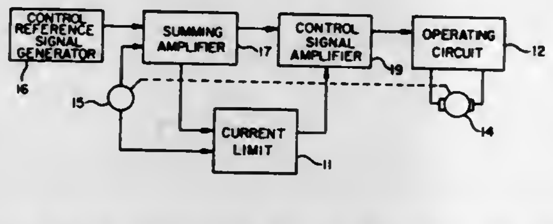
MOTOR ARMATURE CURRENT LIMIT SYSTEM

Mikel Jay Messick, Chagrin Falls, Ohio, assignor to Square D Company, Park Ridge, Ill.

Filed Oct. 22, 1970, Ser. No. 83,073

Int. Cl. H02p *5/06*

U.S. Cl. 318—434 **7 Claims**



The system allows maximum acceleration and deceleration of a constant field motor and prevents commutator flashing during forward and reverse motoring and plugging operations. Positive and negative standstill current limits and acceleration and deceleration current limits are independently adjustable for optimum motor operation.

3,649,898

WINDSHIELD WIPER CONTROL APPARATUS

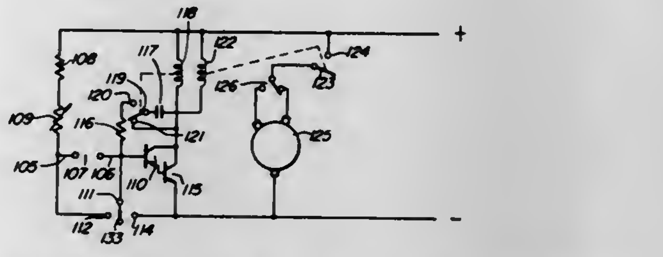
Goro Inoue, Hamamatsu-shi, Japan, assignor to Nippon Denso Kabushiki Kaisha, Kariya-shi, Japan

Filed Aug. 19, 1969, Ser. No. 851,311

Claims priority, application Japan, Sept. 25, 1968, 43/69259; Nov. 27, 1968, 43/87230; Sept. 21, 1968, 43/65880

Int. Cl. H02p *3/00*

U.S. Cl. 318—483 **10 Claims**



An apparatus for automatically controlling the starting and stopping of a windshield wiper, the shifting of the wiper operation from a low speed operation to a high speed operation or vice versa, and the stopping of the wiper in a fixed resting position, which comprises a water drop detector having at least two electrodes mounted on the outer surface of the windshield with a small space interval therebetween, a control circuit for controlling the starting time or stopping time of the wiper operation in response to a signal obtained synchronously with the energization of said water drop detector caused by a drop of water attached thereto or a reciprocatory movement of the wiper blade, and a relay and an amplifier for actuating said relay.

3,649,899

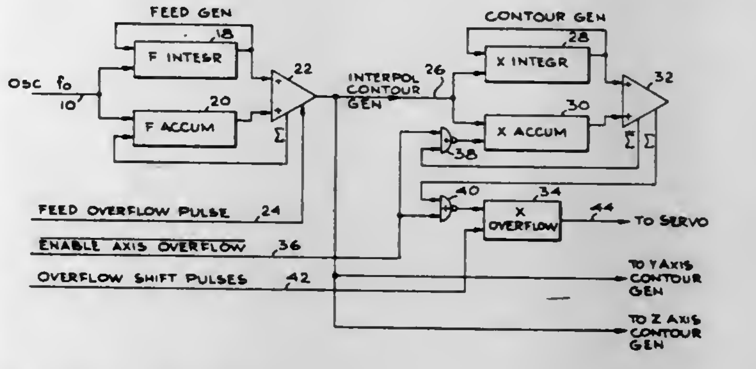
FEEDRATE NUMERICAL CONTROL CONTOURING MACHINE INCLUDING MEANS TO PROVIDE EXCESS FEEDRATE

Ernst Dummermuth, East Cleveland, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Jan. 25, 1971, Ser. No. 109,317

Int. Cl. G05b *19/24*

U.S. Cl. 318—571 **10 Claims**



A circuit arrangement is provided in a numerical control system such that the rate of motion command signals provided at the output of the contour generator for the numerical control system may exceed the input rate substantially.

3,649,900

REMOTE CONTROL FOR A STEPWISE ADJUSTABLE DEVICE, ESPECIALLY TURNTABLE FOR TOY AND MODEL RAILROADS

Max Ernst, Lohengrenstrasse 14, 85 Nuremberg, Germany

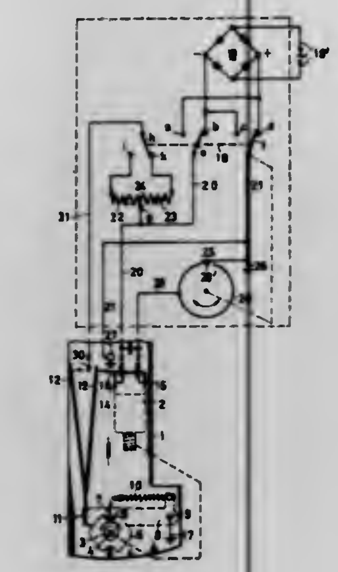
Filed Aug. 10, 1970, Ser. No. 62,457

Claims priority, application Germany, Aug. 8, 1969, P 19 40 334.0

Int. Cl. G05b *11/01*

U.S. Cl. 318—675 **21 Claims**

A remote control device for an installation having a reversible electric motor. The device has a control element which is adjusted manually and a follower element which is driven step wise in a direction to follow the control element. When the control element is moved in either direction away from a predetermined position relative to the follower element, the motor is energized to run in a respective direction and actuates switch means which controls the supply of energy to an indexing device for the follower element to drive it in the direction in which the control element was moved. When the predetermined relative position of the control element and follower element is restored the motor is deenergized.

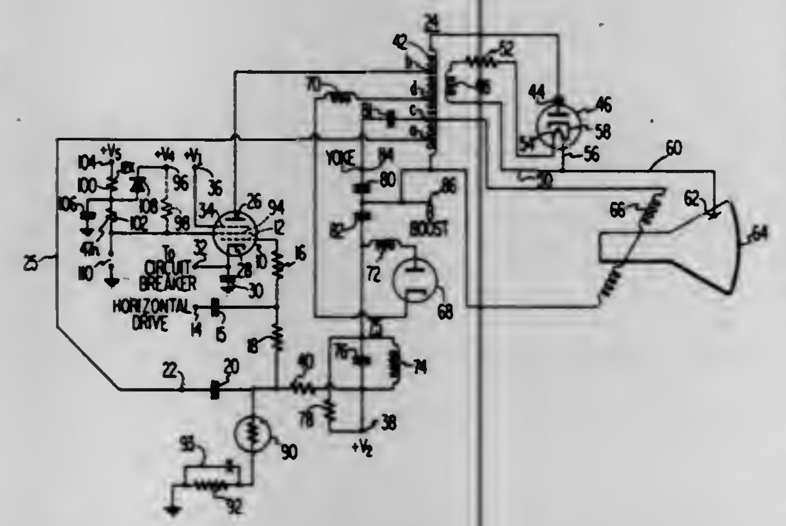


3,649,901
HIGH VOLTAGE HOLD-DOWN CIRCUIT

Ronald Keith Waltner, Indianapolis, Ind., assignor to RCA Corporation

Filed Mar. 5, 1971, Ser. No. 121,306
Int. Cl. H02m *3/22*; H01j

U.S. Cl. 321—2 **9 Claims**



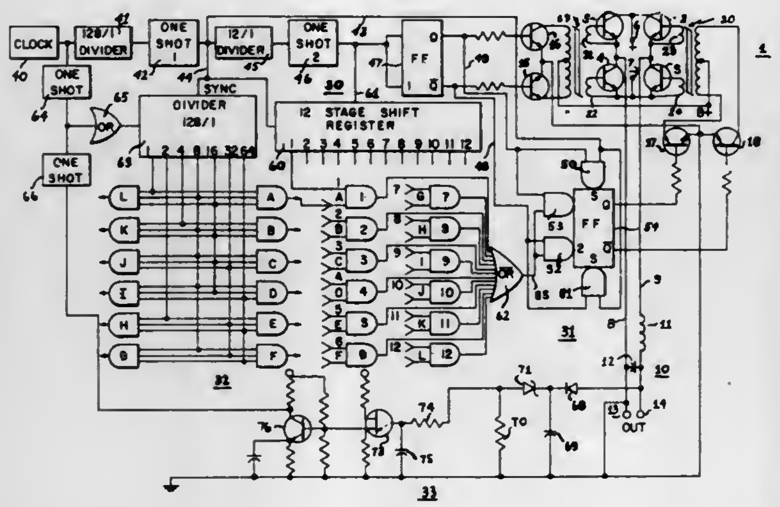
Loss of the flyback pulse which regulates the bias applied to the control grid of the horizontal output tube of a television receiver can cause the high voltage developed for its picture tube to increase to a value at which X-radiations can be produced. Use of a dropping resistor to reduce the screen grid bias on the horizontal output tube in response to the increase in screen current which results when this negative voltage control is lost offsets this increase—and, with the further use of a clamping diode for the screen grid, maintains normal high voltage operation during non-fault conditions.

3,649,902
DC TO AC INVERTER FOR PRODUCING A SINE-WAVE OUTPUT BY PULSE WIDTH MODULATION

Robert A. Dunbar, Swampscott, Mass., assignor to General Electric Company

Filed June 15, 1970, Ser. No. 46,017
Int. Cl. H02m *1/12*

U.S. Cl. 321—9 A **6 Claims**



A DC to AC bridge inverter circuit produces a sine wave output of low-harmonic content. One transistor of each pair of transistors in opposite arms of the inverter bridge is switched into conduction at the desired output frequency; i.e., 400 times per sec. for a 400 Hz. output. The remaining complementary transistor of each pair is switched on and off *n* times per alternation to produce *n* constant amplitude, variable width output pulses during each alternation. The duration of the conduction time of the complementary transistor is controlled so that the area of each pulse is equal to the area of the corresponding sinusoidal segment where each sinusoidal segment represents an angle ϕ in electrical degrees equal to: $\phi=180°/n$. These variable width output pulses are applied to a filter to produce a sinusoidal output having low-harmonic content. A clock-driven logic system controls the complementary transistor of each transistor pair turning it on *n* times per alternation and turning it off at different times during each interval to produce the desired sinusoidal pulse width modulation. The turnoff pulses are generated by a clock-driven divider and associated AND gates. Each of the AND gates is energized in response to a predetermined count from the divider to produce a turnoff pulse during each of the *n* intervals at a point in time during each interval such that the pulse width is proportional to the sine of the angle.

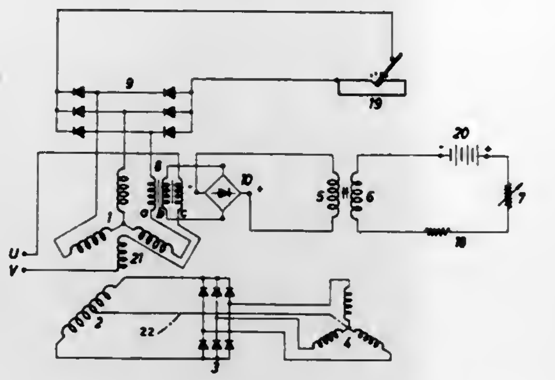
3,649,903
BRUSHLESS DIRECT-CURRENT WELDING GENERATOR

Gustav Fiedler, Neu-Isenburg, Germany, assignor to A.van Kaick "AvK"-Generatoren-u. Motoren-Werke oHG, Frankfurt/Main, Germany

Filed Feb. 18, 1970, Ser. No. 12,277
Int. Cl. H02p *9/30*

U.S. Cl. 322—27 **10 Claims**

A brushless direct-current generator for welding operation has a rotatable unit which includes an exciter rotor with a three-phase first winding, a main rotor with a single-phase second winding and a rectifier for energizing the latter winding from the exciter rotor; a main stator, having a three-phase third winding juxtaposed with the winding of the main rotor, feeds a load circuit through a further rectifier and also energizes the primary winding of a feedback transformer in series with one of its own phase windings. A fourth winding, forming part of an exciter stator juxtaposed with the corresponding rotor, is split into two sections; one section is in series with an extraneous DC source (battery) and an adjustable control resistor, the other being connected across the secondary of the feedback transformer. In one embodiment, the control resistor is shunted by a transistor with Zener-stabilized inout connections to the load circuit for blocking the transistor in response to the flow of welding current so as to reduce the flow of battery current during a welding operation.

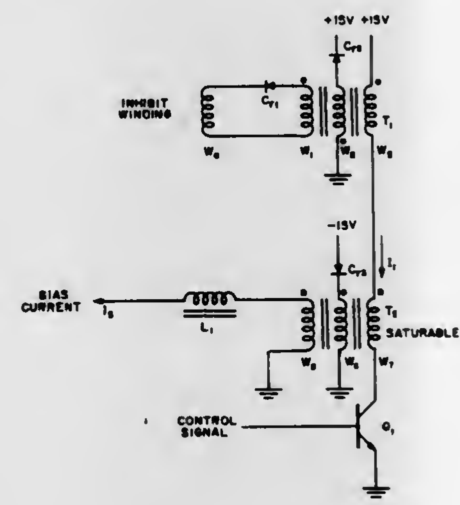


3,649,904
SATURABLE LOOP CORE CURRENT SOURCE

John F. Bruder, Phoenix, Ariz., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 7, 1970, Ser. No. 95,647
Int. Cl. G05f *3/08*

U.S. Cl. 323—6 **3 Claims**



A low-power, regulated, high-impedance current source wherein a sat$rable or square loop core is used to control the current in an inhibit winding of a ferrite core-type computer memory circuit.

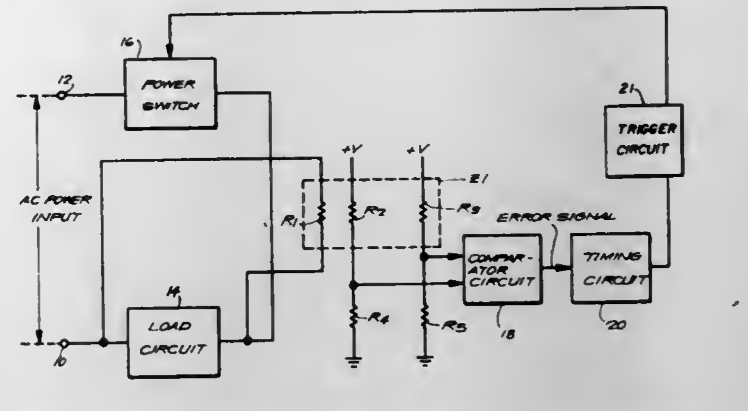
3,649,905
TRUE RMS VOLTAGE REGULATOR

Ronnie W. Krupka, Richardson, Tex., assignor to Electronic Control Corporation, Euless, Tex.

Filed Feb. 12, 1970, Ser. No. 10,910
Int. Cl. G05f *1/44*

U.S. Cl. 323—22 SC **16 Claims**

A heater resistor is connected in parallel with the load voltage to be regulated. A first temperature-responsive resistor is mounted in intimate thermal contact with the heater resistor and a second heat-responsive resistor is mounted in intimate thermal contact with the ambient temperature. The resistance ratio of the two heat-responsive resistors is compared to a reference resistance ratio in a comparator circuit and the resulting error signal is applied to a trigger timing circuit that controls the firing time of a semiconductor switching device in series with the AC voltage supply and the load.

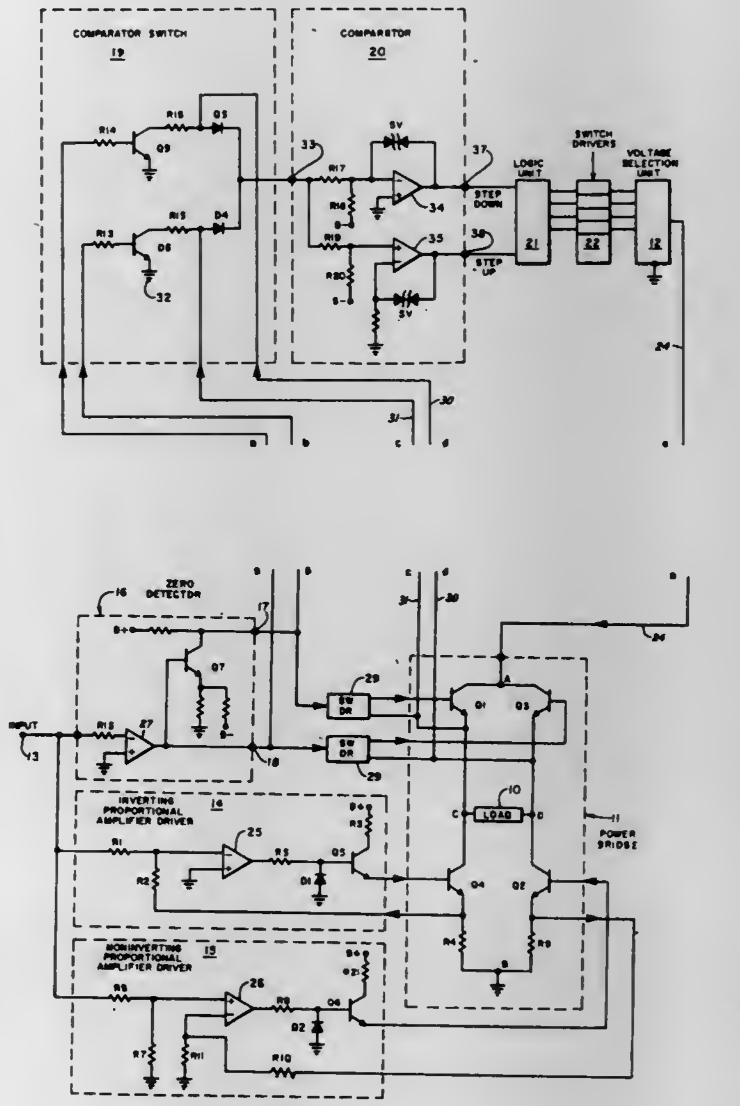


3,649,906
PROGRAMMABLE DC POWER SUPPLY

Richard A. Carpentier; Spencer A. Shriver, and Richard C. Smith, all of Charlottesville, Va., assignors to Sperry Rand Corporation

Filed Sept. 8, 1970, Ser. No. 70,259
Int. Cl. G05f *1/56*

U.S. Cl. 323—22 T **12 Claims**

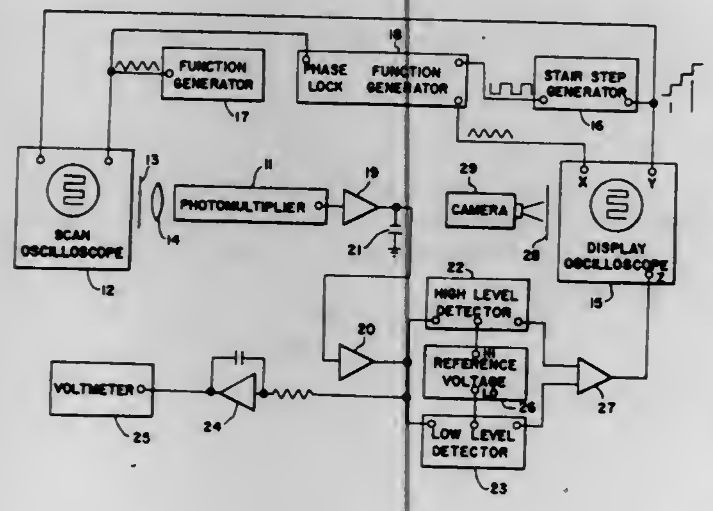


A programmable DC power supply including a proportionally controlled transistor connected in series with the load for varying the load current in accordance with the magnitude of a control signal applied to the transistor. A detector coupled across the transistor functions to sense high and low voltage thresholds and thereupon select an incrementally higher or lower voltage for application to the load to assure that the transistor operates continuously in its proportional range, thereby enabling the input signal to maintain control of the load current.

3,649,907
METHOD AND APPARATUS FOR MAPPING THE SENSITIVITY OF THE FACE OF A PHOTODETECTOR SPECIFICALLY A PMT

Otto Youngbluth, Jr., Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Mar. 11, 1970, Ser. No. 18,427
Int. Cl. G01r *31/22*
U.S. Cl. 324—20 R **7 Claims**



Apparatus and technique for obtaining color-coded area sensitivity maps of photomultiplier tubes. First and second oscilloscopes are driven in synchronism to produce rasters on their faces. The raster of the first oscilloscope is optically imaged on the face of the photomultiplier tube being checked. The output of the photomultiplier is applied to a detector which produces an output if and only if the output of the photomultiplier is between two voltages set into the detector. The output of the detector intensity modulates the second oscilloscope and a color camera takes a picture of the face of the second oscilloscope through a color filter. Different voltages are set into the detector and the camera takes another picture through a different color filter. This procedure is continued which results in a color-coded area sensitivity map of the photomultiplier tube.

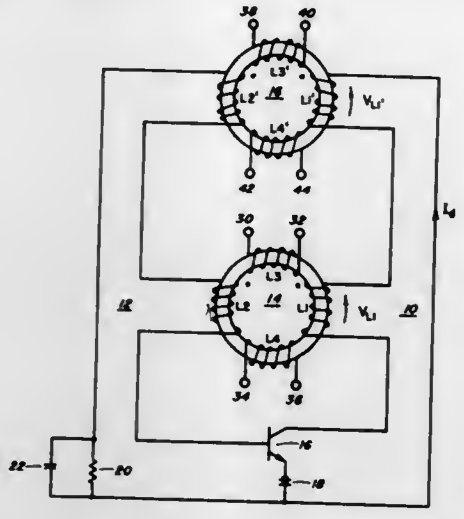
In an alternate embodiment of the invention a color television is used in place of the second oscilloscope, the camera and the color filter. In this embodiment a different detector is needed for each color.

3,649,908
MAGNETIC FIELD GRADIOMETER UTILIZING A PAIR OF CORES DRIVEN BY A BLOCKING OSCILLATOR

Robert E. Brown, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 12, 1970, Ser. No. 79,837
Int. Cl. G01r *33/02*
U.S. Cl. 324—43 G **9 Claims**

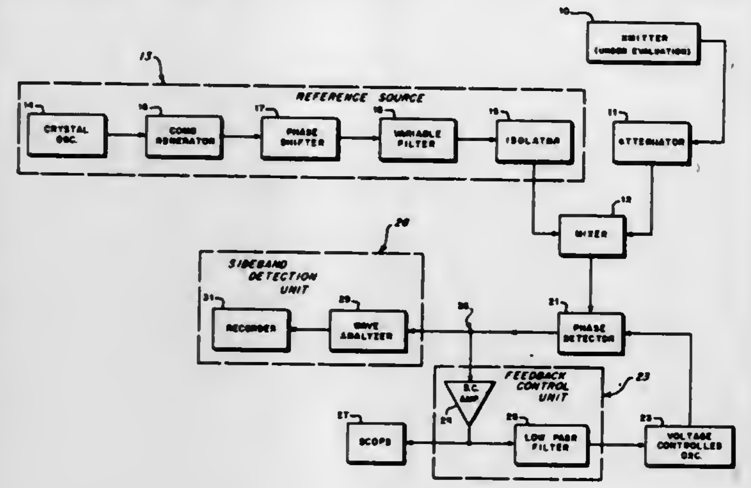
A gradiometer having in one embodiment two ring cores of high magnetic permeability with drive windings thereon and a blocking oscillator supplying unidirectional current to the drive windings to drive the cores around a portion of the hysteresis curve. The blocking oscillator drive circuit is controlled by feedback windings around both cores. A pair of sense windings are wound on each core, and each sense winding carries a signal composed of the induced drive signal and a magnetic field induced signal that varies with the ambient fields. The sense windings are connected to a demodulator circuit so that the induced drive signals cancel out and only the difference in ambient fields between the two ring cores is passed, indicative of the gradient in the DC magnetic field. In an alternative embodiment, ferromagnetic scroll cores replace the ring cores.



3,649,909
WIDE BAND PHASE LOCK SPECTRAL PURITY MEASURING APPARATUS

Eldon L. Ort, Bucks City; John K. Smith, Philadelphia, and John A. Kacergis, Bucks City, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 8, 1970, Ser. No. 53,047
Int. Cl. G01n *23/16, 27/02*
U.S. Cl. 324—77 E **10 Claims**

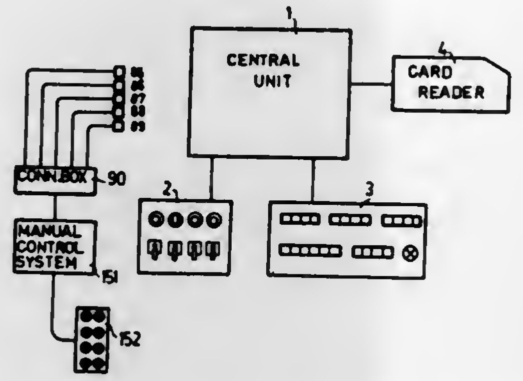


For phase locked measurements of spectral purity of radar transmitters, a comb generator provides harmonics of a crystal oscillator output signal which are applied through a phase shifter and a variable filter to furnish a reference frequency. The transmitter output signal is combined with the reference frequency in a mixer whose IF output is applied to a phase detector along with the output signal of a voltage-controlled oscillator. After rough adjustment of the oscillator, the phase detector output is fed back through a DC amplifier and low pass filter to the control input of the oscillator to maintain quadrature phase lock allowing FM sideband detection. The phase detector output may be passed to a wave analyzer and recording means or passed through a set of tuned bandpass filters and respective threshold detectors arranged to drive indicator means.

3,649,910
METHOD AND APPARATUS FOR GENERATING DIAGNOSTIC INFORMATION

Mario Vinsani, and Angelo Carnevale, both of Milan, Italy, assignors to Honeywell Information Systems Italia S.p.A., Caluso, Turin, Italy

Filed Feb. 10, 1970, Ser. No. 10,254
Claims priority, application Italy, Feb. 12, 1969, 12751 A69
Int. Cl. G01r *15/12*
U.S. Cl. 324—73 **5 Claims**

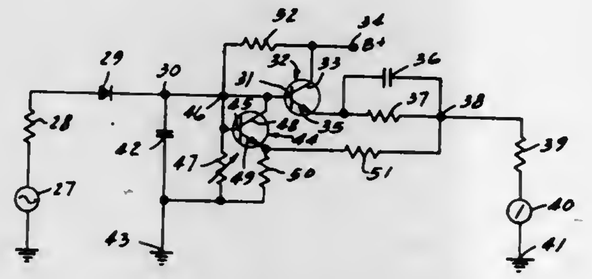


A system for generating a fault dictionary for electronic equipment, wherein apparatus is provided for selectively replacing integrated circuit units of the apparatus with fault generating devices adapted to be controlled to simulate various faults of the integrated circuit unit replaced, and wherein, for each fault simulated, a sequence of diagnostic signals is applied to the equipment, selected output indicia of the equipment are sensed, and when such indicia deviate from the corresponding indicia for correct operation such output indicia are recorded as symptoms of the corresponding fault.

3,649,911
METER DRIVER CIRCUIT HAVING INTIIAL OVERDRIVE AND MEANS TO DISCHARGE A STORAGE CIRCUIT AT A CONSTANT RATE

Hilmer I. Swanson, Quincy, Ill., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Mar. 27, 1970, Ser. No. 23,371
Int. Cl. G01r *1/14, 15/08, 15/10*
U.S. Cl. 324—125 **5 Claims**

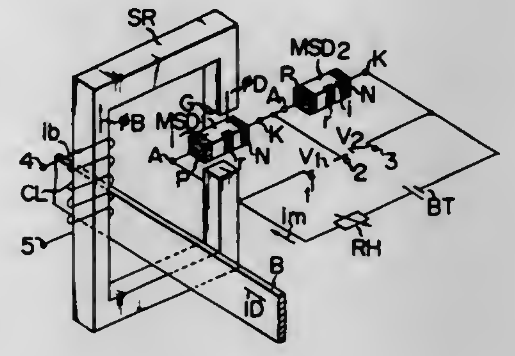


A meter driver circuit for improving the responsiveness of a meter to an electrical signal being measured. The signal being measured is applied through a first charging circuit which is in series with the meter to apply a temporary pulse to the meter. The pulse temporarily overdrives the meter to overcome the inertia and friction of the meter. The initial pulse decays according to the time constant of the charging circuit. A second charging circuit is provided in the form of a capacitor which is in parallel with the input signal and a transistor which is in parallel with the capacitor. The transistor is biased in such a way as to provide a linear discharge path for the capacitor. The output of the transistor is coupled directly to the meter to provide a linear discharge. By means of the linear discharge circuit, the meter receives increased energy while meeting the F.C.C. specifications.

3,649,912
DIRECT CURRENT TRANSFORMER EMPLOYING MAGNETORESISTANCE DIODES FOR USE IN CURRENT MEASUREMENT

Tetsuji Nakamura, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Apr. 8, 1969, Ser. No. 814,260
Claims priority, application Japan, Apr. 10, 1968, 43/23576
Int. Cl. G01r *1/22, 33/02*
U.S. Cl. 324—127 **10 Claims**

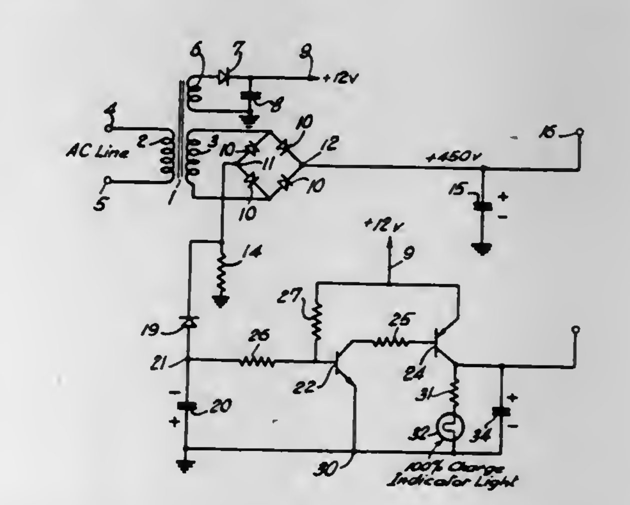


This is a direct current transformer wherein there is inserted through the interior space of a C-shaped core a primary conductor through which there flows a direct current; there is disposed a magnetosensitive semiconductor device in a space defined between both ends of said core; a difference between the value of voltages obtained in proportion to the magnetic fluxes generated by the direct current travelling across both terminals of the magnetosensitive semiconductor device and the value of output voltages obtained from a constant voltage element serially connected to the magnetosensitive semiconductor device without being affected by the magnetic fluxes, is amplified by a differential amplifier; a current determined by said voltage difference is impressed, after being amplified, on a coil wound around part of the C-shaped core to generate such magnetic fluxes as offsetting the magnetic fluxes produced in the core by an electric current introduced through the primary conductor thereby always to maintain the magnetic fluxes prevailing in the core substantially at zero and current outputs from the differential amplifier are measured to find the value of the direct current passing through the primary conductor.

3,649,913
CAPACITOR CHARGE INDICATOR CIRCUIT

Robert A. Flieder, Englewood Cliffs, and Sumner S. Averett, Bayside, N.Y., assignors to Berkey Photo, Inc., New York, N.Y.

Filed Mar. 19, 1969, Ser. No. 808,574
Int. Cl. G01r *19/16*
U.S. Cl. 324—133 **14 Claims**



A charge indicator circuit is shown as adapted to be incorporated in a circuit with a capacitor connected to a charging circuit. The charging circuit includes means to provide a source of direct current responsive to current flow to the main capacitor, this source of direct current being used to actuate switching means controlling an indicating light, the circuit being arranged so that the indicating light is ignited in the absence of current flow to the main capacitor.

3,649,914

SUPPRESSED CARRIER ORTHOGONAL MODULATION TRANSMISSION DEVICE AND ASSOCIATED TRANSMITTERS AND RECEIVERS FOR THE TRANSMISSION OF SYNCHRONOUS PULSE SIGNALS

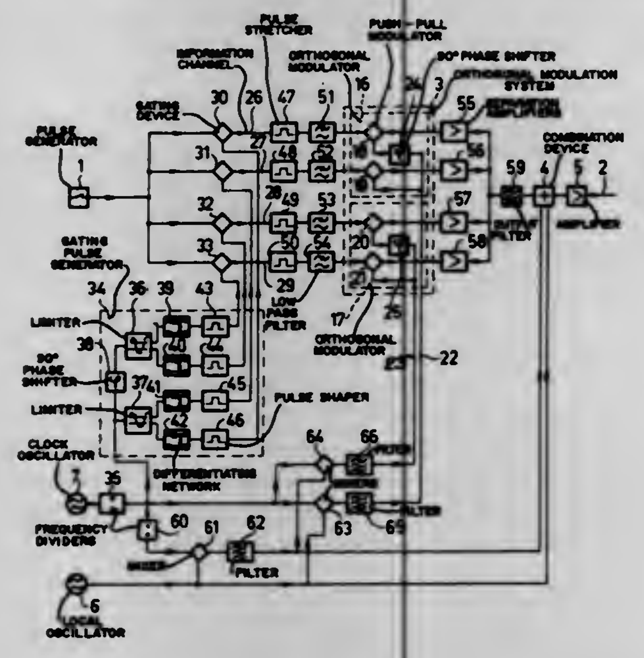
Frank De Jager, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1968, Ser. No. 771,462

Claims priority, application Netherlands, Nov. 14, 1967, 6715479

Int. Cl. H04b *1/00*

U.S. Cl. 325—38 R **14 Claims**



A suppressed carrier pulse transmission system features the transmission of the information signals by orthogonal modulation about a central frequency section containing two pilot signals. Because of a selected relationship among the pilot, carrier, and pulse clock frequencies, the receiver features devices, such as mixers, filters, and multipliers, for recovering the carrier and clock frequencies from the pilot signals without frequency or phase distortion.

3,649,915

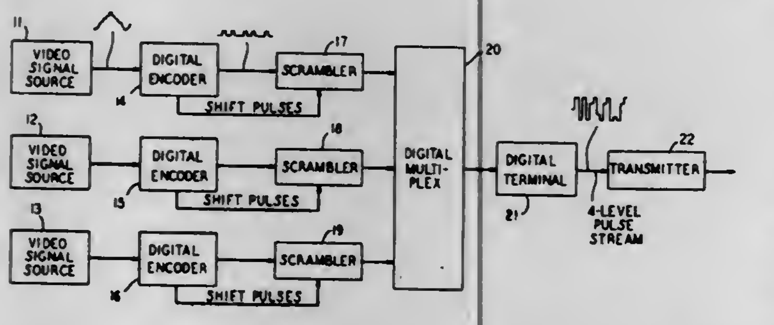
DIGITAL DATA SCRAMBLER-DESCRAMBLER APPARATUS FOR IMPROVED ERROR PERFORMANCE

Harry Astour Mildonian, Jr., Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 22, 1970, Ser. No. 48,256

Int. Cl. H04b *1/10*

U.S. Cl. 325—42 **8 Claims**



The output of a digital encoder is delivered to a digital data scrambler prior to being encoded as a multilevel (e.g., quaternary) signal for transmission. The digital input to the scrambler is operated on in a deterministically randomized manner which results in a digital output that is modified so as to insure the virtual elimination of unwanted DC shift in the multilevel signal. At the receiving end of the transmission facility, the inverse operation, again deterministic, returns the received digital signal to its original form prior to the decoding operation. In the preferred embodiment, the scrambler (and descrambler) comprises a one-cell feedback shift register with a modulo-2 adder in the feedback coupling.

3,649,916

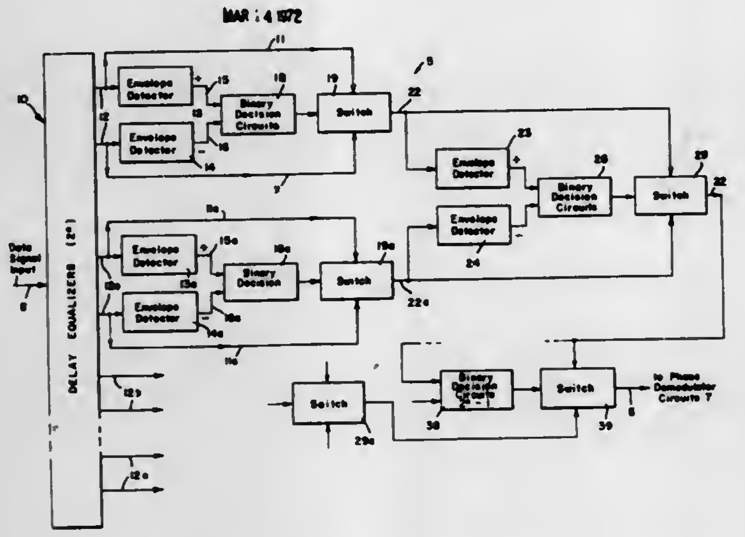
AUTOMATIC EQUALIZER FOR COMMUNICATION CHANNELS

Paul N. Winters, Harrisburg, Ark., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 18, 1970, Ser. No. 90,590

Int. Cl. H04b *1/10, 3/04*

U.S. Cl. 325—42 **19 Claims**



Delay equalization for phase-modulated data transmission by communication channels is automatically provided by selection of the least amplitude-modulated output of a plurality of delay equalizers, each having a frequency-independent amplitude characteristic and a different complementary, freqency-dependent delay characteristic over the frequency passband of the channels. Envelope detectors determine the extent of amplitude modulation present in each output of a set of delay equalizers and the detected amplitude modulation is compared in binary decision circuits to select an equalizer output having the least amplitude modulation. Plural stages of detection and comparison are provided for 2^n delay equalizers where $n>1$, and automatic equalizers are cascaded for extended complementary matching o channel delay distortion over the frequency passband.

3,649,917

SOLID-STATE TEST OSCILLATOR-TRANSMITTER HAVING CAVITY

Vernon R. Schoep, and Carl N. Bullai, both of Boulder, Colo., assignors to Ball Brothers Research Corporation, Boulder, Colo.

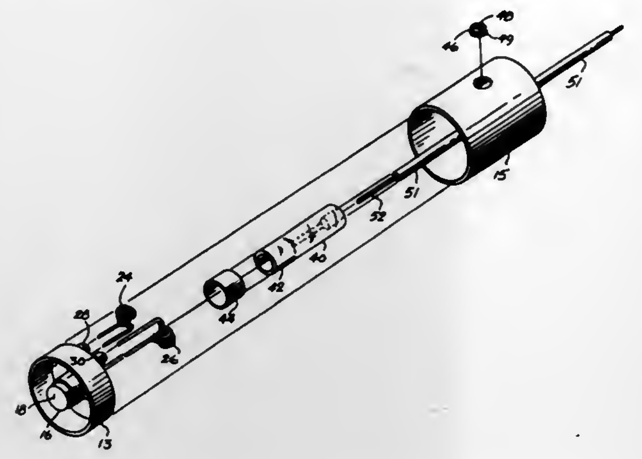
Filed Oct. 14, 1968, Ser. No. 767,327

Int. Cl. H03b *5/24*

U.S. Cl. 325—105 **8 Claims**

A compact solid-state oscillator-transmitter which includes a transistor within a small can defining a tuning cavity. The can is electrically connected in the output circuit to present a capacitance which may be varied by manual adjustment of a tuning screw so that the effective output impedance, including parasitic impedance, has the proper phase angle necessary to permit oscillation at the desired frequency. The can is

also utilized to shield radiation of radiofrequency conducting circuit components, to secure the components, and to protect the same against adverse environmental influences. A probe is provided to pick up oscillatory signal energy in the cavity and is utilized as an antenna when transmitting the produced signal.



3,649,918

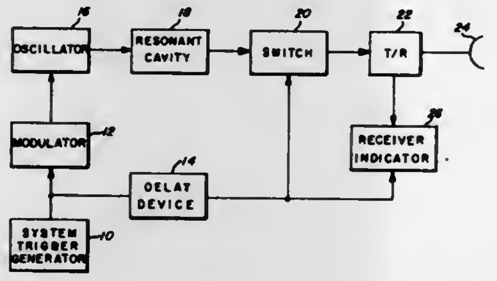
PULSED OSCILLATOR

Nathan Freedman, West Newton, and Harold M. Hart, Wellesley, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed June 9, 1970, Ser. No. 44,825

Int. Cl. H04b *1/04*

U.S. Cl. 325—164 **2 Claims**



Radio frequency circuits for amplifying the level of the power produced by an oscillator, preferably a solid state oscillator. The disclosed circuits include a resonant cavity in which oscillations are built up by loosely coupling such cavity to the oscillator and periodically discharging the cavities through a tightly coupled load, discharging being accomplished by actuating of a high-speed switch in the output circuit.

3,649,919

WIDEBAND FM DEMODULATOR

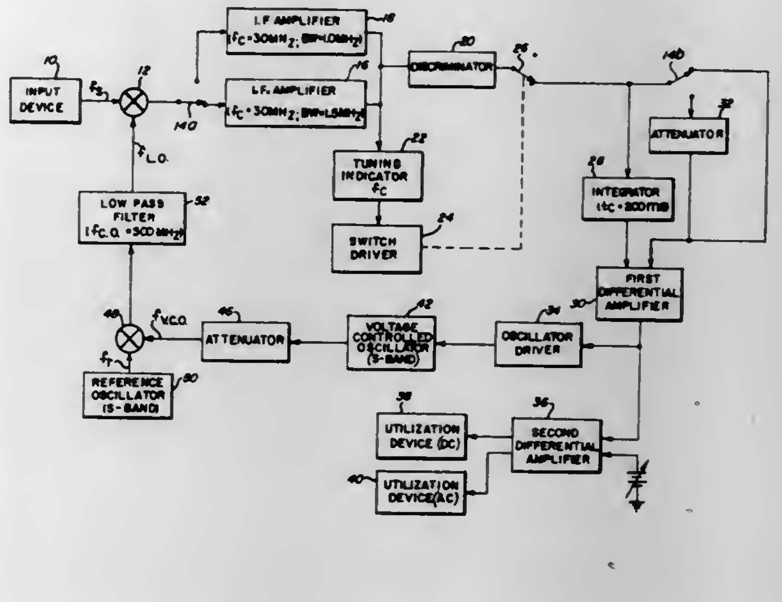
Jonathan D. Fridman, Sudbury; Kenneth F. Kinnard, Lexington; Kurt A. Meister, Framingham, and Robert M. Young, Newton, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 8, 1969, Ser. No. 864,821

Int. Cl. H03d *3/02*

U.S. Cl. 325—346 **1 Claim**

A demodulator for frequency modulated radio frequency signals adapted to produce a DC signal indicative of the average frequency of such a signal and an AC signal indicative of the frequency deviation thereof. Such demodulator including a reference signal oscillator and a voltage controlled oscillator feeding a mixer to produce a difference frequency signal serving as a local oscillator signal to beat with the frequency modulated radio frequency signals being demodulated. The frequency of the signal out of the voltage controlled oscillator is controlled so that the beat frequency signal out of the mixer varies with changes in the frequency of the frequency modulated radio frequency signal being demodulated. The DC component of the control signal to the voltage controlled oscillator then is indicative of the average frequency of the frequency modulated radio frequency signals being demodulated and the variations in such control signal is indicative of the frequency deviation thereof.



3,649,920

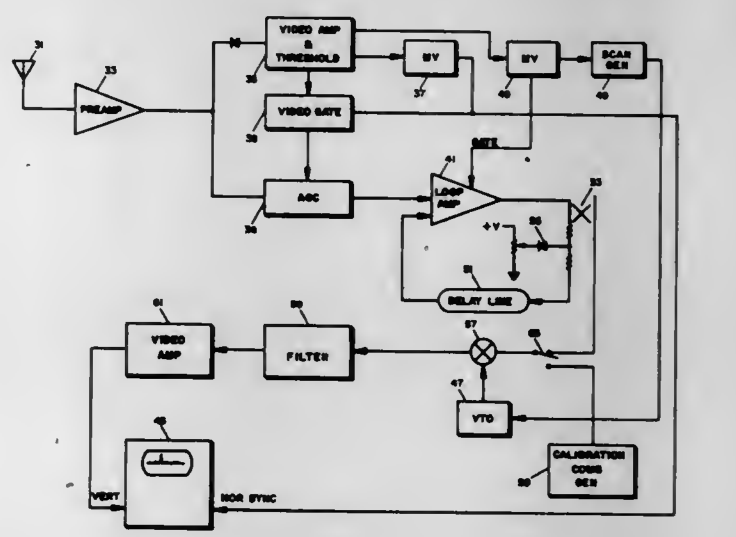
BUFFERED MICROSWEEP RECEIVER

Richard E. Williams, Reston, and Fred J. Gartzke, Fairfax, both of Va., assignors to Scope-Incorporated, Reston, Va.

Filed Dec. 18, 1969, Ser. No. 886,263

Int. Cl. H04b *1/00, 1/36*

U.S. Cl. 325—363 **15 Claims**



A frequency measuring receiver which takes a captured RF pulse or a plurality of pulses and stretches them into a train of closely spaced pulses by means of a recirculating delay-line loop. The pulses in the loop are scanned by a voltage tuned oscillator and presented to a panoramic display device.

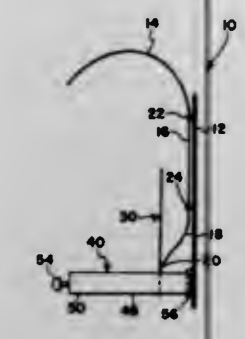
3,649,921

ONE-HAND BACKPACK HARNESS

David F. Thomas, Hampton, Va., assignor to The United States of America as represented by the National Aeronautics and Space Administration

Filed Feb. 20, 1970, Ser. No. 13,266
Int. Cl. A45f *3/00*

U.S. Cl. 224—25 A **6 Claims**



A backpack harness wherein a pressure plate effects the encircling action of shoulder hooks and a waist belt in order to permit the fastening of a backpack to the back of an individual by using only one hand. A controlled deformation belt for use about the waist of the user of the backpack.

3,649,922

DIGITAL WAVEFORM GENERATOR

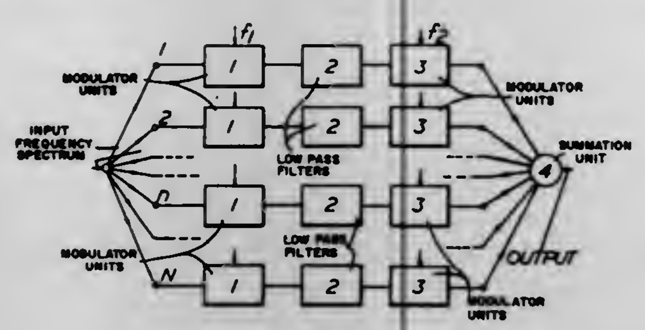
Frank Ralph, Bishop's Stortford, and Michael John Gingell, Harlow, both of England, assignors to International Standard Electric Corporation

Original application June 1, 1967, Ser. No. 642,855, now Patent No. 3,510,782, dated May 5, 1970. Divided and this application June 19, 1969, Ser. No. 847,772

Claims priority, application Great Britain, June 3, 1966, 24,785/66

Int. Cl. H03b *19/00*

U.S. Cl. 328—14 **2 Claims**



A digital waveform generator is provided for synthesizing a digital waveform having only the fundamental and prescribed harmonic components present. Additionally, a frequency translation system is provided for selecting a band of frequencies from a given input spectrum and to translate it, either erect or inverted, to a new frequency band. This system is application to both N-path filters or modulators and to R-C digital filters.

3,649,923

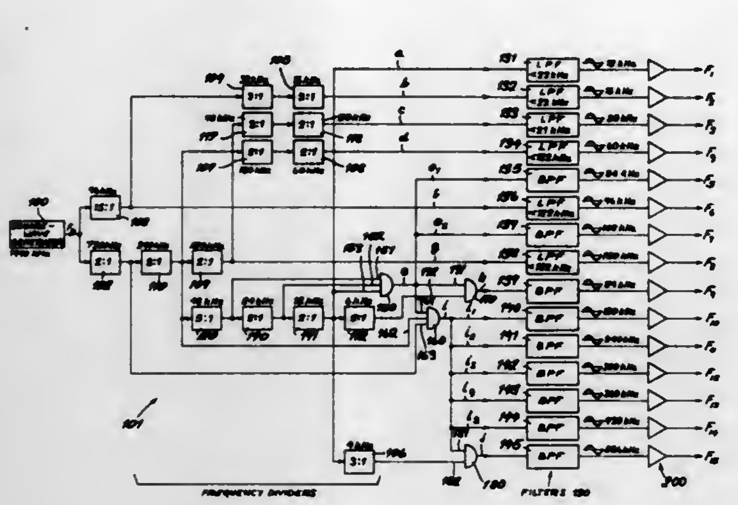
CARRIER-FREQUENCY GENERATOR FOR MULTIPLEX COMMUNICATION SYSTEM

Piero Venturini, Milan, Italy, assignor to Societa Italliana Telecomunivacioni Siemens S.p.A., Milan, Italy

Filed May 11, 1970, Ser. No. 36,026
Claims priority, application Italy, May 19, 1969, 16965 A/69
Int. Cl. H03k *1/00*

U.S. Cl. 328—105 **6 Claims**

A square wave generated by a high-frequency oscillator is subjected to repetitive frequency division with formation of the logical products of the outputs of various combinations of divider stages to produce trains of relatively narrow pulses with relatively wide spacing. Higher harmonics of the fundamental frequencies of these pulse trains, obtained from them by filtration, have a nearly uniformly high signal-to-noise ratio.



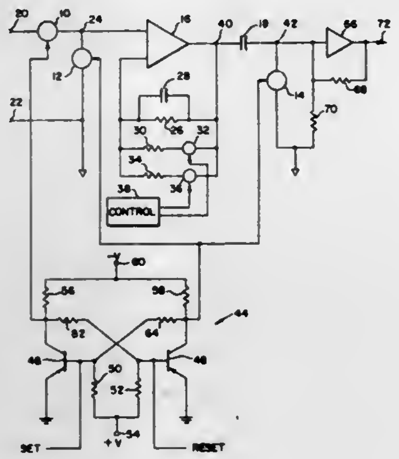
3,649,924

SAMPLING AMPLIFIER

Paul G. Lucas, Sudbury, Mass., assignor to Gordon Engineering Company, Wakefield, Mass.

Filed Mar. 2, 1970, Ser. No. 15,690
Int. Cl. H03f *1/02*

U.S. Cl. 330—9 **6 Claims**



An output signal from a sampling system employing an operational amplifier is independent of the offset voltage of the amplifier. A voltage as at the input terminal of a first switch and a ground as at the input terminal of a second switch are applied selectively to the operational amplifier, the output terminal of each of the switches being connected to the noninverting input of the operational amplifier. The gain of the amplifier is governed by a digitally controlled impedance network which is connected as a feedback loop between the output terminal of the amplifier and has inverting input. A capacitor is connected serially between the output terminal of the amplifier and the input terminal of a third switch, the output terminal of the third switch is connected to ground. The first, second and third switches are responsive to signals from a control, the second and third switches having like states and the first switch having a state opposite that of the second and third switches.

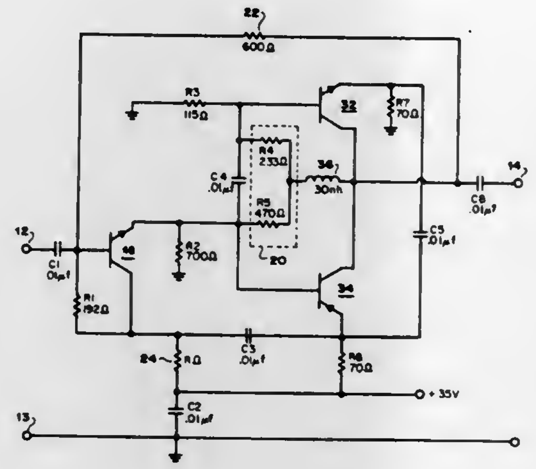
3,649,925

HIGH FREQUENCY AMPLIFIER

Leslie Besser, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed July 20, 1970, Ser. No. 56,276
Int. Cl. H03f *3/18*

U.S. Cl. 330—13 **4 Claims**



The gain of a two stage transistor amplifier is made constant with frequency through the use of overall shunt and series feedback in conjunction with local shunt feedback around the second stage to control the phase shift of the amplifier. Overall shunt and series feedback are also used to set the input and output impedances of the amplifier.

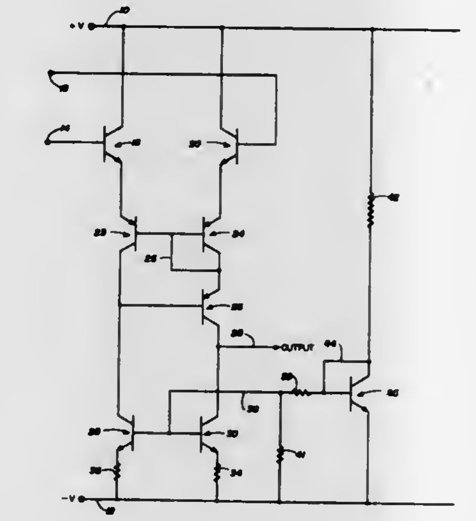
3,649,926

BIAS CIRCUITRY FOR A DIFFERENTIAL CIRCUIT UTILIZING COMPLEMENTARY TRANSISTORS

Lorimer K. Hill, Cupertino, Calif., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 8, 1970, Ser. No. 1,511
Int. Cl. H03f *3/68*

U.S. Cl. 330—30 D **15 Claims**



A differential circuit is disclosed which utilizes opposed pairs of complementary active electronic control devices. Bias circuitry, including a generally constant current source, controls the bias characteristics of the control devices to provide a wide range of differential operation.

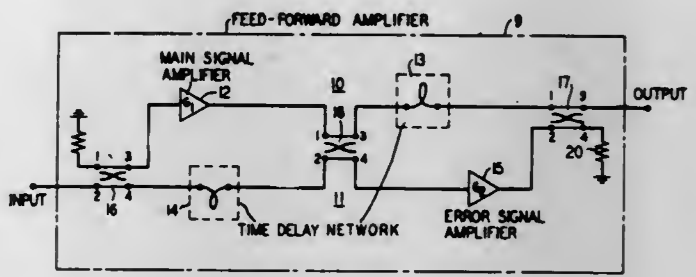
3,649,927

FEED-FORDWARD AMPLIFIER

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Feb. 27, 1970, Ser. No. 15,002
Int. Cl. H03f *3/68*

U.S. Cl. 330—124 **2 Claims**



The parameters of a feed-forward compensated amplifier are redefined such that the error correcting signal and the uncorrected signal combine in phase at maximum output power. It is then shown that for this condition a directional coupler can be used as the error injection network with minimal loss of error signal power or main signal power. This results in the most efficient use of both the main signal amplifier and the error signal amplifier and, in addition, produces an impedance match in the main signal wavepath, in the error signal wavepath and at the output terminal of the overall amplifier.

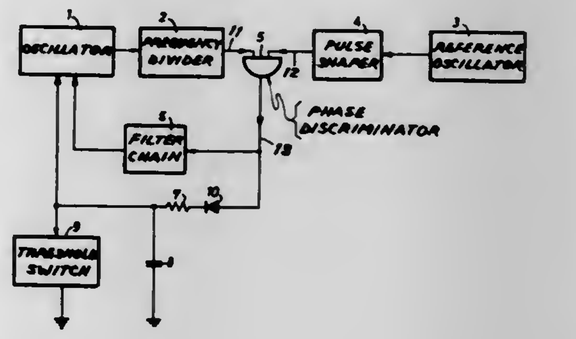
3,649,928

OSCILLATOR PHASE CONTROL SOAP PROVIDING COARSE AND FINE TUNING SIGNALS

Lorenz Rieder, and Klaus Vester, both of Pforzheim, Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 31, 1970, Ser. No. 68,087
Int. Cl. H03b *3/04*

U.S. Cl. 331—10 **2 Claims**

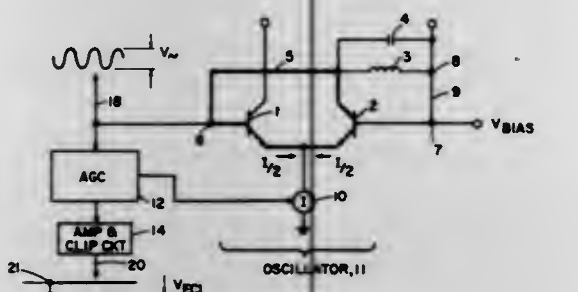


This invention provides a circuit arrangement for effecting the phase control of an oscillator with the aid of a flip-flop or gating circuit acting as a phase discriminator. A filter chain provides a returning voltage for causing the phase of the oscillator frequency to coincide with a reference frequency. The pulses of the phase discriminator appearing at the input of the filter chain are applied via a resistor to a capacitor whose charging voltage effects the coarse tuning of the oscillator.

3,649,929
SINUSOIDAL AND SQUARE WAVE OSCILLATOR WITH AUTOMATIC GAIN CONTROL

James E. Thompson, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 30, 1970, Ser. No. 93,543
Int. Cl. H03b *3/02, 5/12*
U.S. Cl. 331—61 **13 Claims**

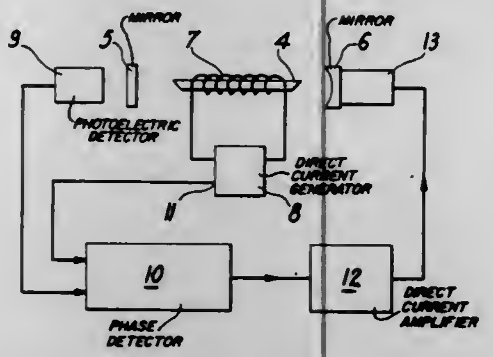


There is disclosed an integrated circuit which functions as a sinusoidal and square wave generator with a direct coupled automatic gain control to vary the current through the oscillator, so as to keep the gain of the oscillator at a figure less than that at which the nonlinearity of the circuit becomes significant. The automatic gain control portion of the circuit includes half-wave rectifying and peak following circuits which follow the peak to peak voltage in the oscillator section and control the current through the oscillator as a function of this voltage. The square wave generating circuit includes a half-wave rectifying circuit and a high gain amplifying section to provide a partially clipped square wave operating below a reference potential, making the square wave signal compatible with emitter coupled logic systems.

3,649,930
METHOD OF FREQUENCY-STABILIZATION OF A SINGLE-MADE GAS LASER

Albert Le Floch, 7, square du Bois Perrin, 35 Rennes, France

Filed Dec. 4, 1970, Ser. No. 95,283
Claims priority, application France, Dec. 12, 1969, 6943193
Int. Cl. H01s *3/10*
U.S. Cl. 331—94.5 **7 Claims**

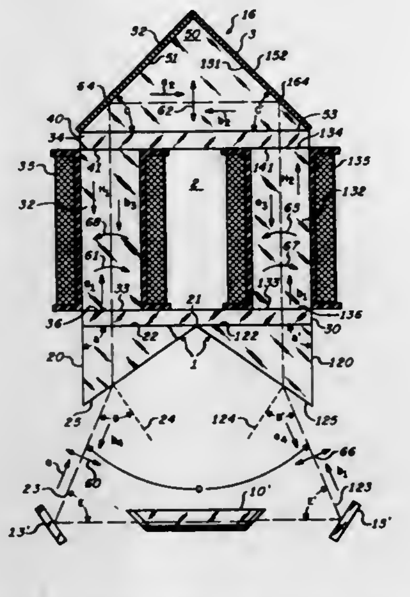


The method consists in applying a steady axial magnetic field to the active gaseous medium, in determining either the value of said steady magnetic field which corresponds to the laser-cavity oscillation frequency to be stabilized or the length of the laser cavity corresponding to a set value of the steady magnetic field so that the oscillation frequency should correspond to the peak value of one of the two Doppler curves obtained as a result of the Zeeman effect by splitting the Doppler curve which corresponds to a zero value of the steady magnetic field, in superimposing an alternating axial magnetic field on said steady magnetic field and causing the split Doppler curve to oscillate about a position corresponding to the selected value of the steady magnetic field in order to modulate the output light intensity of said laser, in detecting the modulated output intensity, in comparing the variations in modulation of said output intensity with those of the alternating magnetic field by means of a detector which delivers a signal so that the light-emission frequency of the laser may be corrected by said signal and by a change in length of the laser cavity.

3,649,931
COMPENSATED FREQUENCY BIASING SYSTEM FOR RING LASER

Warren M. Macek, Huntington Station, N.Y., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,257
Int. Cl. G02f *1/22;* **H01s** *3/10*
U.S. Cl. 331—94.5 **10 Claims**

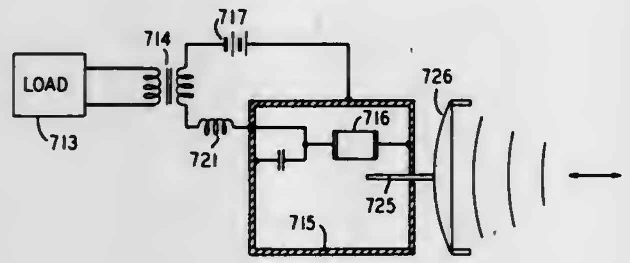


A compensated Faraday bias cell system is adapted to shift differentially the respective phases of the contradirectionally flowing light waves propagating in a ring laser cavity. The desired phase shift is produced by Faraday effect interaction occurring between the light waves and symmetrically disposed dual segments of the compensating bias cell system, the segments being specially oriented so as substantially to compensate for or to eliminate undesired reactions in the cell to the presence of disturbing ambient magnetic fields. The compensating bias cell may be employed as a corner mirror in a ring laser device of the type used for measuring rotation rate.

3,649,932
MICROPHONE COMPRISING LSA OSCILLATOR

John A. Copeland, Gillette, N.J.

Filed May 6, 1970, Ser. No. 47,929
Int. Cl. H03c *1/46*
U.S. Cl. 332—2 **4 Claims**



In one embodiment, an input signal is applied to an LSA oscillator circuit where it mixes with the oscillatory frequency f_{LSA} to give a difference frequency f_a that is amplified. In another embodiment, a signal of frequency f_a applied to an LSA oscillator modulates the oscillatory output frequency. In another embodiment, an input frequency f_a mixes with the oscillator frequency to give an amplified sum frequency. In all the above embodiments, f_a conforms to the relationship

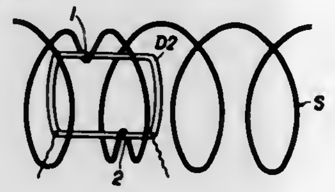
$$f_a \leq \frac{f_{LSA}}{Q},$$

where Q is the quality factor of the oscillator resonance circuit. A simple Doppler-effect radar is disclosed in which an LSA oscillator provides an output transmitted frequency and also detects and amplifies input frequency shifts indicative of the velocity of a target. The amplitude modulation phenomenon can be employed in a microphone in which a diaphragm is used to vary the quality factor Q of the *LSA* oscillator resonant circuit.

3,649,933
ELECTRO-MECHANICAL APPARATUS FOR PRODUCING ARTIFICAL REVERBERATION

Werner Fidi, Baden, and Franz Srb, Wien, both of Austria

Filed Oct. 12, 1970, Ser. No. 79,995
Claims priority, application Austria, Oct. 22, 1969, A 9967/69
Int. Cl. H03h *7/30*
U.S. Cl. 333—30 R **6 Claims**

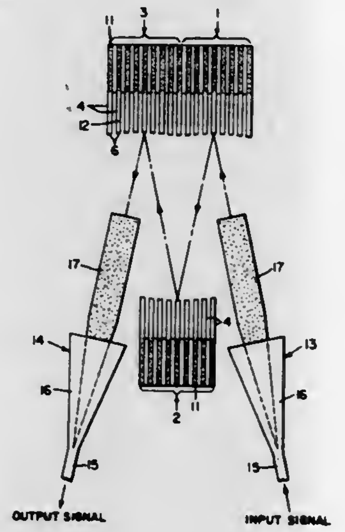


In electromechanical apparatus, which includes a helical spring as a delay item for producing artificial reverberation, a movable element of a transducer is rigidly connected to at least one turn of the spring at a point intermediate the ends of the spring without interrupting its continuity. The movable element is a rotatable frame-wound coil and the connection is made between the spring and the sides of the coil disposed in parallel relationship with its axis of rotation. The portions of the turn or turns of the spring connected to the movable element are deformed inwardly toward the coil.

3,649,934
QUASI-OPTICAL LOW-PASS ABSORPTION TYPE FILTERING SYSTEM

George L. Matthaei, Santa Barbara, and David A. Leedom, Goleta, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 17, 1970, Ser. No. 55,797
Int. Cl. H03h *7/02;* **H01q** *19/06*
U.S. Cl. 333—73 R **5 Claims**

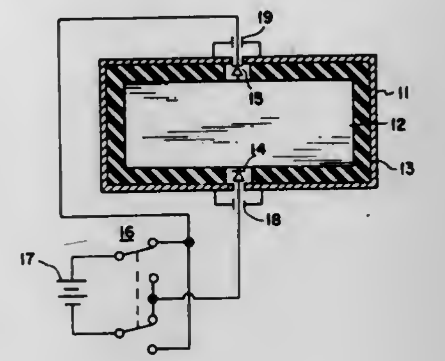


Microwaves including millimeter waves and possibly infrared systems are filtered by reflectively focusing and refocusing input electromagnetic waves between sets of parallel metal plates the end portions of which are curved to form the respective mirror surfaces. The individual plates are spaced one from the other a distance equal to about one half wavelength or less in the low-pass band and the spacing between plates is filled with an absorbent material (in the regions away from the plate edges). Filtering is achieved by absorbing wavelengths of frequencies higher than the pass band in the absorbing material.

3,649,935
ACTIVE MICROWAVE IRISES AND WINDOWS

George M. Low, Administrator to the National Aeronautics and Space Administration with respect to an invention of; Robert L. Ramey; Hugh S. Landes, both of Charlottesville, and Eugene A. Manus, Blacksburg, all of Va.

Filed Aug. 18, 1970, Ser. No. 64,723
Int. Cl. H01p *1/08, 1/10, 1/22*
U.S. Cl. 333—98 R **6 Claims**

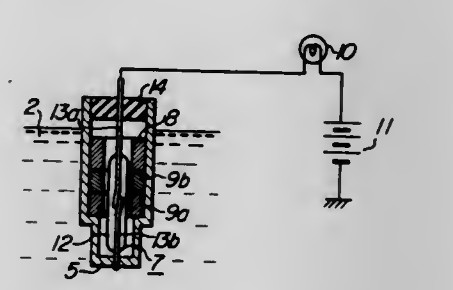


A waveguide thin film window or an iris fabricated from either a thin film or a conventional plate and mounted transverse to the flow of energy in a waveguide and electrically insulated from the waveguide. Diode switching means are provided for selectively disconnecting and connecting the window or iris to the walls of the waveguide.

3,649,936
TEMPERATURE SWITCH

Mitsuo Masuda, and Nobuyoshi Ota, both of Kariya, Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Japan

Filed July 9, 1970, Ser. No. 53,515
Claims priority, application Japan, July 14, 1969, 44/67048
Int. Cl. H01h *61/02*
U.S. Cl. 335—208 **1 Claim**



A temperature switch in which a reed switch connected to an alarming device is disposed in a magnetic circuit of a permanent magnet and two parts or pieces of magnetic substances having different magnetic transition points are magnetically arranged in series with the permanent magnet, thereby the alarming device being actuated by switching on and off the reed switch in accordance with the change in the permeability of the parts of magnetic substance with respect to the temperature variation and thus abnormal rise and drop of the of objects to be measured can be directly detected.

3,649,937

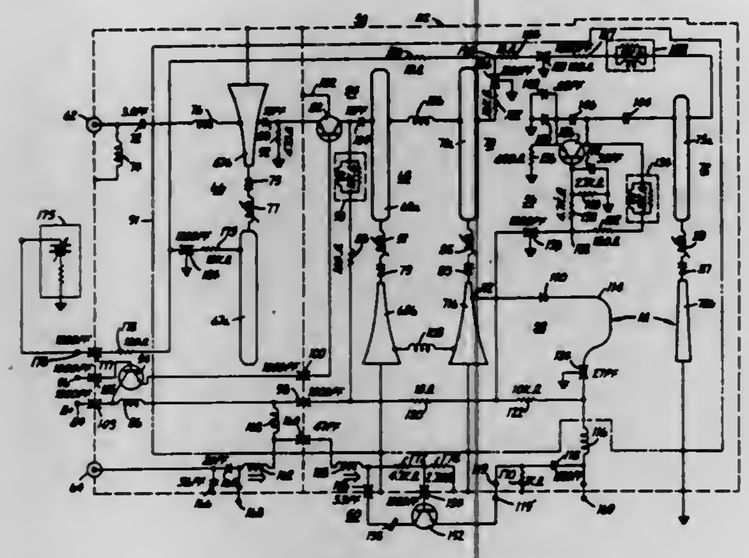
ELECTRONICALLY TUNED ULTRA HIGH FREQUENCY TELEVISION TUNER

David John Carlson, Indianapolis, Ind., assignor to RCA Corporation

Filed Mar. 23, 1970, Ser. No. 21,563

Int. Cl. H03h *5/12*

U.S. Cl. 334—15 **32 Claims**



An ultra high frequency (UHF) tuner includes tunable transmission lines having two conductive sections disposed on one face of a dielectric plate opposite a conductive ground plane disposed on the other dielectric plate face. The transmission lines are tuned by variable capacitance devices coupled between the conductive section of each line. To minimize interaction between the two transmission lines, the conductive sections of the lines are disposed on opposite surfaces of the dielectric plate with like ends of the lines adjacent opposite edges of the plate.

3,649,938

ELECTROMAGNETIC DEVICE

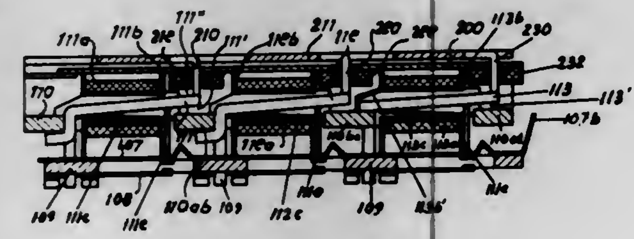
Rolf Albin Zander, Storhagsvagen 28A, 125 32, Alvsjo; Per Harry Elias Claesson, Osterhagens Gard 142 00, Trangsund, and Sten Daniel Vigren, Mosbacke Torg 16-18, 116 20, Stockholm, all of Sweden

Filed July 6, 1970, Ser. No. 52,647

Claims priority, application Sweden, July 9, 1969, 9718/69

Int. Cl. H01h *67/14*

U.S. Cl. 335—112 **18 Claims**



An electromagnetic device including a plural number of individual magnetic circuits, each with magnetically operable armatures, assembled in a unit. Each magnetic circuit includes a first coil and two stationary yokes disposed on opposite sides of the coil with an armature extending through the coil and pivoted at one of its ends. (Two armature pivot structures are disclosed.) The other end of the armature is disposed for operating movement between two stationary pole faces, one on each of the two yokes. A second, "extra" coil is disposed around a portion of one of the two yokes for each magnetic circuit. By appropriate energizing of the two coils, selected disposition of the armature can be maintained and attained. The armatures can be used for various purposes, e.g., to operate mechanical devices, or as a relay operator to actuate one or more contact spring sets. The device is assembled in a manner to enable independent operation of the armature of each magnetic circuit without the magnetic circuit affecting the positions of the other armatures in the assembly.

3,649,939

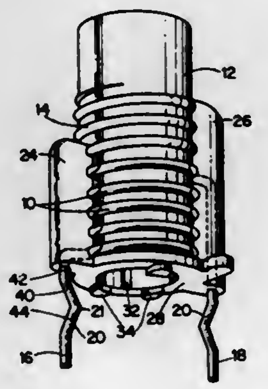
ELECTRICAL COMPONENT

Albert R. Hildebrandt, Cincinnati, Ohio, assignor to Standard International Corporation, Cincinnati, Ohio

Filed Jan. 13, 1970, Ser. No. 2,575

Int. Cl. H01f *15/10, 21/06*

U.S. Cl. 336—65 **4 Claims**



An electrical coil adapted to be mounted on a circuit board and accurately secured in a predetermined position thereon during circuit assembly. The coil includes electrical leads each having a crimp formed therein and operative to positively seat the coil on a circuit board prior to soldering.

3,649,940

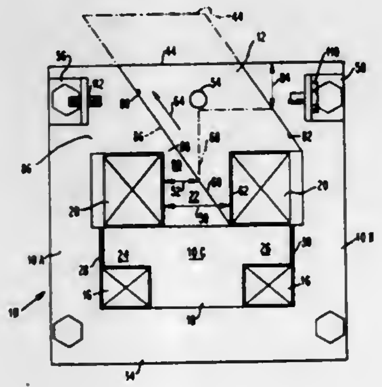
ADJUSTABLE FERRORESONANT TRANSFORMER

Harry S. Hoffman, Jr., Saugerties, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 30, 1970, Ser. No. 59,406

Int. Cl. H01f *21/06*

U.S. Cl. 336—132 **12 Claims**



A ferroresonant transformer having a mechanical adjustment in the limiting cross section of the core linking the secondary windings provided by a movable rectilinear segment in the leg on which the secondary is wound, with the longitudinal axes of movement of the segment being canted with respect to the axes of the leg so as to constitute an offset portion of the leg presenting a decreasing limiting cross section as the segment is withdrawn along its axis.

3,649,941

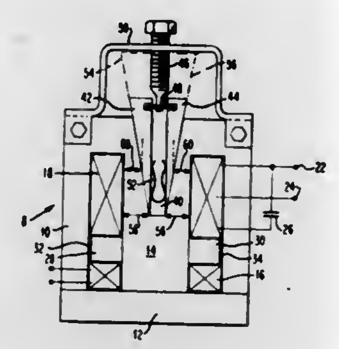
ADJUSTABLE OUTPUT VOLTAGE REGULATOR TRANSFORMER

Burt E. Hart, Red Hook, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 30, 1970, Ser. No. 59,405

Int. Cl. H01f *21/06*

U.S. Cl. 336—132 **11 Claims**



A ferroresonant transformer having a mechanical adjustment in the limiting cross section of the core linking the secondary windings provided by a movable wedge segment in the leg on which the secondary is wound, with the longitudinal axes of movement of the segment being canted with respect to the axes of the leg so as to constitute an offset portion of the leg presenting a decreasing limiting cross section as the segment is withdrawn along its axis.

3,649,942

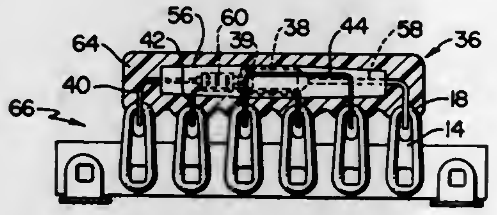
THERMAL LIMITER FOR ONE OR MORE ELECTRICAL CIRCUITS AND METHOD OF MAKING THE SAME

Emil Robert Plasko, Washington Township, Ohio, assignor to Micro Devices Corp., Dayton, Ohio

Continuation-in-part of application Ser. No. 62,369, Aug. 10, 1970, now abandoned. This application Dec. 28, 1970, Ser. No. 101,848

Int. Cl. H01h *85/02*

U.S. Cl. 337—163 **20 Claims**



This invention relates to a thermal limiter which can be used to limit one or more electrical circuits, such as multiple circuits in which one of the circuits is a primary circuit and the other circuits are secondary circuits energized or controlled by the primary circuit. The limiter of this invention is a unitary construction which can be connected to the primary and secondary circuits to control the same. A new method of making the limiter is included in this invention. This invention can be used in combination with a transformer for a television set in combination with its primary and secondary circuits, in combination with an air conditioning system, such as for automobiles, or in combination with other devices, as desired.

3,649,943

THERMAL SWITCH

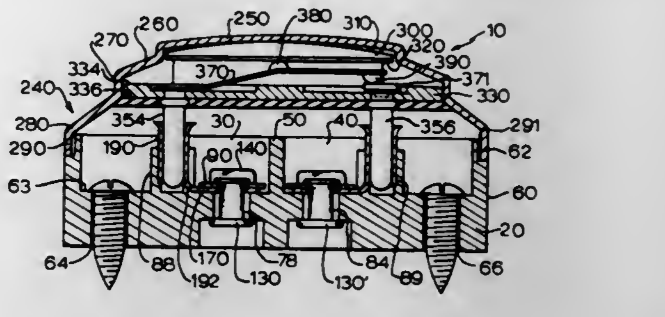
Victor G. Matto, Highlands Drive, Kinnelon, N.J.

Filed Apr. 21, 1970, Ser. No. 30,555

Int. Cl. H01h *37/04*

U.S. Cl. 337—380 **6 Claims**

A thermal switch comprises a base member which carries portions of an electrical alarm circuit and switch contacts therefor, and a removable cap which carries a heat-sensitive



element and means for operating said switch contacts in response to ambient heat.

3,649,944

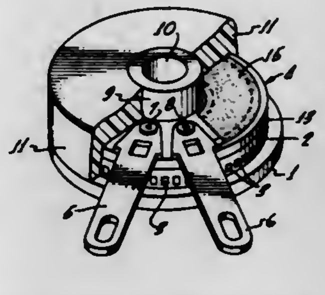
FILM-TYPE POWER RESISTOR

Richard E. Caddock, 640 Sandalwood Court, Riverside, Calif.

Continuation-in-part of application Ser. No. 847,783, July 18, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 820,538, Apr. 30, 1969, now abandoned. This application May 25, 1970, Ser. No. 40,308

Int. Cl. H01c *1/02*

U.S. Cl. 338—260 **14 Claims**



A film-type power resistor consists of a ceramic wafer or washer having a central opening, one side of such washer being printed at its outer and inner edges with generally annular traces of termination metal. An electrically resistive film is printed on such one side over all portions of, and between, the termination metal, excepting for predetermined adjacent end portions which are connected to radially outwardly extending terminal lugs or leads. In one embodiment, the metal traces are continuous, whereas in another embodiment they are interrupted in order to create series-related resistor portions. The washer (and its associated films) are mounted over a metal base and are embedded in a thermosetting synthetic resin, the base having an upwardly extending central post which passes through the opening in the washer to the upper surface of the resin.

In accordance with the method, the planar surface of a ceramic substrate is first printed with termination film traces, following which such traces are overprinted with electrically resistive film. The ceramic (with its associated coatings) is then fired in order to cure the resistive film. Thereafter, the entire outer surface of the resistive film is uniformly abraded by means of a jet of abrasive particles, the abrading continuing in a uniform manner until the resistive film is within the required tolerance. During the abrading step, the terminal regions of the terminal film traces are masked. Thereafter, terminal lugs or leads are connected to such terminal regions.

3,649,945

THIN FILM RESISTOR CONTACT

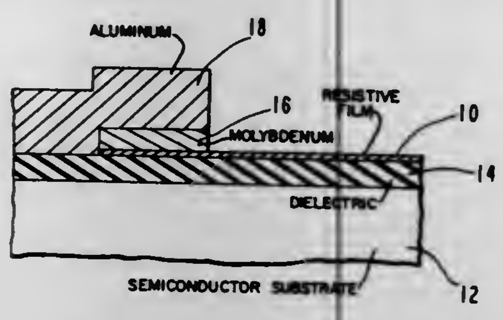
Robert K. Waits, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Jan. 20, 1971, Ser. No. 107,909

Int. Cl. H01c *7/00*

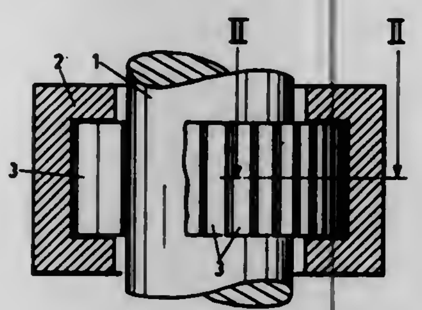
U.S. Cl. 338—309 **9 Claims**

An intermediate layer of molybdenum is interposed between the aluminum interconnect layer of a semiconductor device and a thin resistive film of nickel chromium, silicon-metal, or doped silicon to prevent a reaction between the resistive film and the aluminum layer, particularly during exposure to relatively high temperatures.



3,649,946
ELECTRIC CONTACT DEVICES

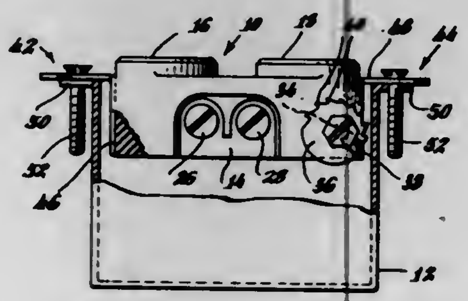
Egbertus Adrianus Frowein, Arnhem, Netherlands, assignor to N.V."COQ", Utrecht, Netherlands
Filed Jan. 25, 1971, Ser. No. 109,518
Claims priority, application Netherlands, Feb. 5, 1970, 70.01611
Int. Cl. H01r ***39/00***
U.S. Cl. 339—8 R **8 Claims**



Electric contact device for the permanent connection between relatively movable conducting members, said device consisting of a rod-shaped conductor, a contact holder surrounding said conductor with ample clearance and a zigzag folded metal contact strip bent in the shape of a ring and provided in the annular gap between said conductor and said holder, the parts of said strip extending between the folds thereof being all bent in the same direction.

3,649,947
GROUNDING WHEEL FOR GROUNDING ELECTRICAL DEVICES

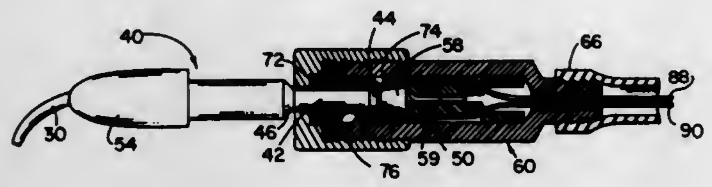
Vincent L. Carissimi, Fairfield, Conn., assignor to Harvey Hubbell, Incorporated, Bridgeport, Conn.
Filed July 13, 1970, Ser. No. 54,514
Int. Cl. H01r ***3/06***
U.S. Cl. 339—14 R **12 Claims**



A toothed eccentric grounding wheel is freely rotatably supported on the conventional grounding screw of the safety grounding circuit of a grounding electrical device and is arranged upon its rotation in a predetermined direction along a noncircular path to cam with an inner portion of a grounded metal box. The wheel is provided with peripheral teeth which upon such camming of the wheel engage with and firmly dig into the end wall of the box such as to effect a high-pressure grounding contact between the grounding screw and the box.

3,649,948
ELECTRIC-PNEUMATIC JUNCTION

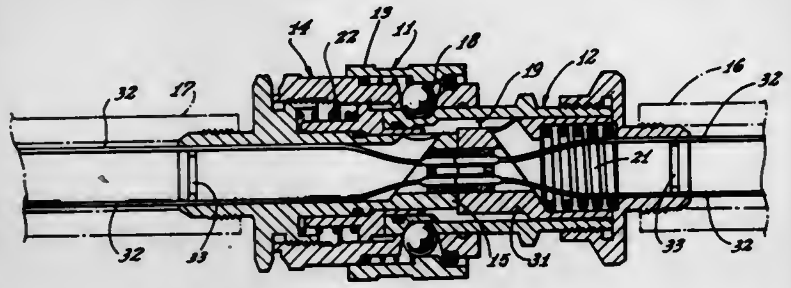
John H. Porter, Winooski, Vt., assignor to Ladd Research Industries, Inc., Burlington, Vt.
Filed Apr. 23, 1970, Ser. No. 31,327
Int. Cl. H01r ***3/04***
U.S. Cl. 339—16 R **6 Claims**



A junction is described facilitating connection and disconnection of a first pneumatic line carrying within it one or more electrical conductors to and from a second pneumatic line carrying within it corresponding conductors by means of a connecting plug insertable therein, the junction having contacts mating with corresponding contacts on the connector, an air passage communicating with the first line and a releasable seal engaging the connector which in turn has not only the contacting surfaces electrically connected to the conductors of the second line but also an air passage communicating with the second line.

3,649,949
QUICK DISCONNECT FLUID-ELECTRICAL COUPLER

James W. McCarthy, Anaheim, and Thomas F. Opferman, Los Alamitos, both of Calif., assignors to Northrop Corporation, Beverly Hills, Calif.
Filed June 22, 1970, Ser. No. 48,298
Int. Cl. H01r ***3/04***
U.S. Cl. 339—16 R **5 Claims**

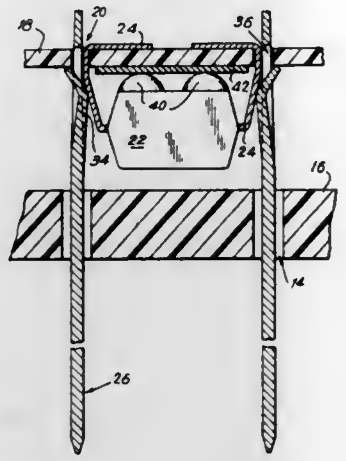


A quick connect-disconnect coupler utilized to convey a pressurized gas and electrical energy to an installation submerged in a liquid body, the pressurized gas flowing to the installation functioning to effect and maintain the integrity of the electrical connection particularly at such time as the coupler is rendered operational.

3,649,950
POST CONNECTOR AND ASSEMBLY

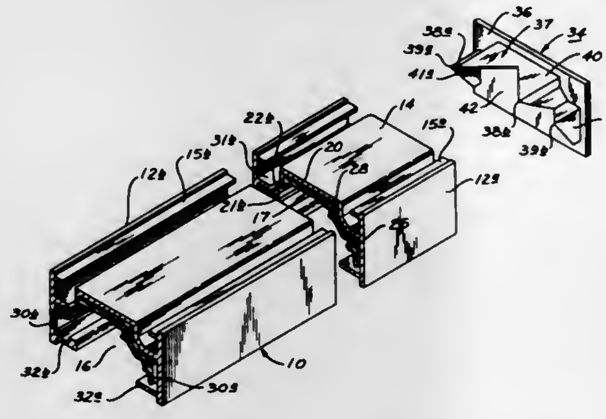
Glenn Harlan Gluntz, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 27, 1970, Ser. No. 6,076
Int. Cl. H05k ***1/02***
U.S. Cl. 339—17 CF **14 Claims**

An electrical connector assembly for demountably connecting electrical components. Typically at least two post-type connectors are staked to a baseboard which may have printed circuitry thereon with the post connectors advantageously having point-to-point wire termination extending from one side of the baseboard and from the other side having an elongated spring contact lanced out from the middle of each of said posts with the free ends of said spring contacts being formed near the ends of said posts and curved back towards said posts. A carrier board, having similar holes, carries an electrical component positioned adjacent said holes advantageously with its leads loosely clinched through said holes. The carrier board being demountably positioned on said posts by pressing the carrier board down onto said posts with the free ends of respective posts passing into the corresponding holes until a spring contact engages a respective individual lead of the electrical component passing through the particular hole.



3,649,951
END INSULATOR FOR A POWER DISTRIBUTION SYSTEM

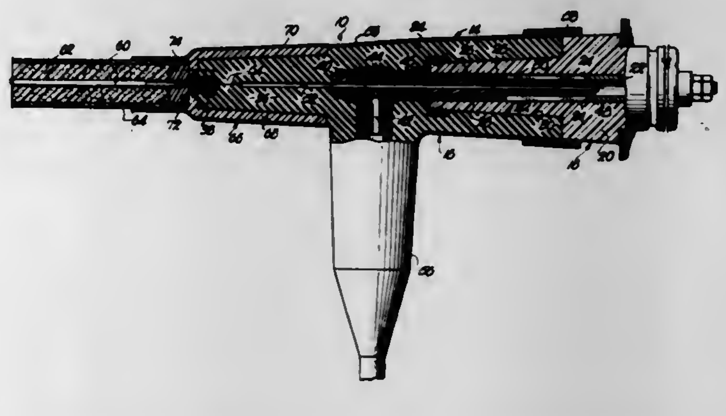
Larry L. Routh, Castro Valley, and James Contratto, Livermore, both of Calif., assignors to U.S. Industries, Inc., New York, N.Y.
Filed June 1, 1970, Ser. No. 42,197
Int. Cl. H01r ***9/00***
U.S. Cl. 339—21 R **10 Claims**



An end insulator for a power distribution system of the type providing an essentially continuous convenience outlet enabling electrical plugs to be connected thereto at substantially any selected location therealong. The system includes one or more elongated track assemblies that provide such convenience outlet, and each such track assembly comprises a rigid metal track or channel component equipped along its length with a conductor assembly having a plurality of spaced-apart electric conductors supported by an open-ended insulating carrier that electrically isolates the conductors one from another and from the metal track. The end insulator is connectable with a track assembly at an end thereof so as to overlie the otherwise exposed ends of the conductors thereof, and the end insulator may take the form either of a dead end closure having a transverse wall generally corresponding in external dimensions and in cross-sectional area to the associated end of the track assembly so as to substantially cover the same, or of an end connector similar to the dead end closure but having a large opening through its transverse wall to permit insertion therethrough of a portion of a splice box used to join successive track assemblies or of a live end closure used to attach a junction box thereto and within which the conductors of the distribution system are connected with power supply lines. In addition to its transverse wall, each end insulator has a flange extending longitudinally therefrom for telescopic engagement with the track assembly intermediate the rigid metal track and conductor assembly carried thereby.

3,649,952
GAS-SEPARABLE ELECTRICAL CONNECTOR AND METHOD

Robert W. Harmon, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.
Filed Mar. 18, 1970, Ser. No. 20,641
Int. Cl. H01r ***13/54***
U.S. Cl. 339—45 R **23 Claims**

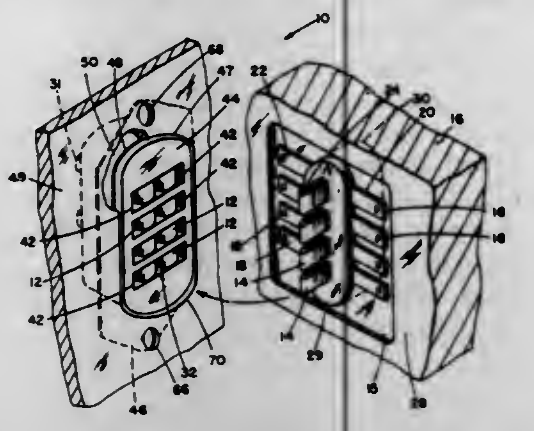


An electrical connector has a pair of complementally configured connector components which are adapted to be separated by a pressurized gas. Each of the connector components comprises a contact element and an insulating housing which are normally disposed in interengagement with a complemental contact element and a complemental insulating housing of the other connector component. One of the connector components includes passage-defining means which extends through the insulating housing and the corresponding contact element, and communicates with the other connector component. A passage-defining member is adapted to be coupled in sealing relationship with the passage-defining means, and the member in turn is adapted to be coupled with a source of pressurized gas. By introducing a quantity of the pressurized gas into the connector and directing the same through the one component and against the other component, the two components are caused to shift relatively away from each other.

3,649,953
SELF-LOCATING ELECTRICAL CONNECTOR FOR LARGE PLANAR SURFACES

J. Gordon Hoffman, Memory Lane, Greenwich, Conn.
Filed Sept. 23, 1969, Ser. No. 860,192
Int. Cl. H01r ***21/28, 13/40***
U.S. Cl. 339—64 M **5 Claims**

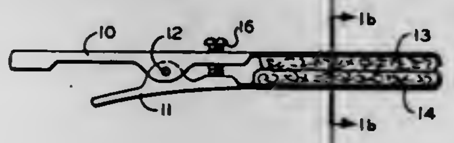
A self-locating male-female connector is shown which is utilized with an aerospace plastic lighting panel. The male element is embedded in the rear of the lighting panel, which bears operational information on the front thereof. The male element is generally T-shaped with the leg projecting outwardly from the rear surface of the panel. The female element is movably mounted, within an orifice in a metal backplate, to which the panel is to be secured. The female element is generally Y-shaped having a lead connecting portion and a resilient guiding portion extending upwardly



therefrom whereby the resilient guiding portion is capable of compressibly engaging the projecting male portion when inserted therein.

3,649,954
CLAMP-TYPE ELECTRICAL TERMINALS

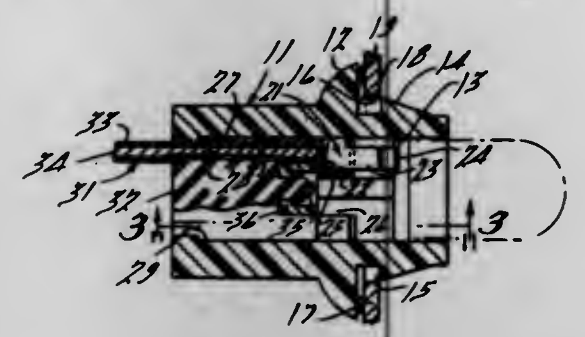
John O. Kurtz, P.O. Box 79, Smithville Flats, N.Y.
Filed June 26, 1970, Ser. No. 50,028
Int. Cl. H01r *9/12*
U.S. Cl. 339—95 R **20 Claims**



Clamp-type electrical terminals of the type typified by alligator clips include one or more resilient conductive pads against which a wire or other device being connected will be compressed, so that very fine wires may be securely held.

3,649,955
SNAP-IN BULB SOCKET

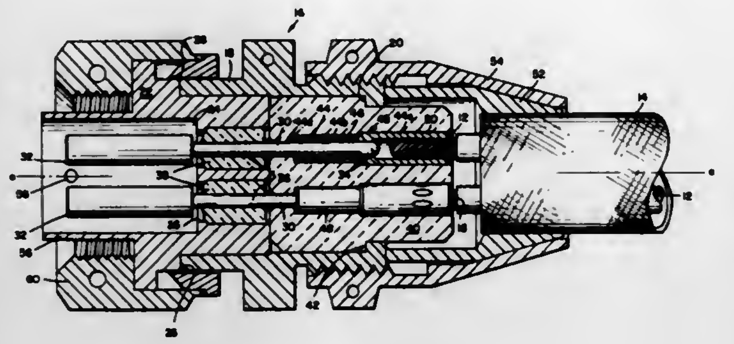
Francis C. Schmidt, Berkley; Don L. DeLano, Mt. Clemens, and Joseph W. Horton, Pontiac, all of Mich., assignors to Microdot Inc.
Filed June 19, 1970, Ser. No. 47,722
Int. Cl. H01r *9/08*
U.S. Cl. 339—99 L **4 Claims**



The body of the socket is made from a plastic material having a degree of resiliency in a manner to receive and support a pair of terminals located within a recess in which the base of a lamp bulb is insertable. An extension on each terminal projects into the body of the socket and is provided with barbs into which the wires of a pair of conductors are forced by a plug which urges the conductors apart as the plug is anchored within the body. The exterior of the body has securing means which supports the socket in an aperture in a lamp housing or other supporting member.

3,649,956
REPLACEABLE ELECTRICAL CONNECTOR

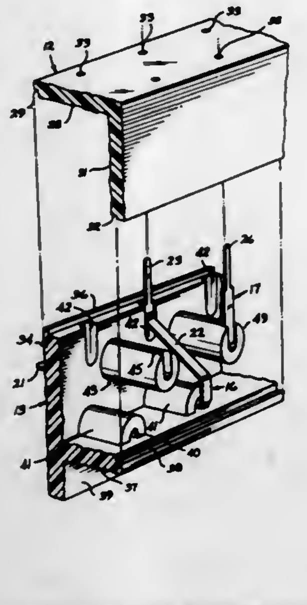
Eliahu Vrobel, Los Angeles, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Sept. 2, 1969, Ser. No. 854,496
Int. Cl. H01r *13/58, 13/40*
U.S. Cl. 339—103 B **9 Claims**



A cable connector permitting ease of replacement thereof with respect to its connections to a cable. One or more longitudinal conductors are permanently secured within the connector shell assembly, each conductor having a forward end including conventional contact means for releasably engaging a corresponding contact supplied by a mating connector component. The rearward end of each of the longitudinal conductors includes respective rearward contacts, to which secondary contacts (preferably crimped to the cable wires) are conductively and releasably securable.

3,649,957
ELECTRICAL CONNECTOR

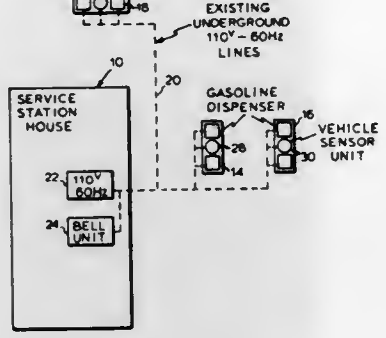
Francis M. Baluck, Columbus, Ohio, assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed May 28, 1970, Ser. No. 41,292
Int. Cl. H05c *1/06*
U.S. Cl. 339—156 R **5 Claims**



An electrical connector includes two substantially L-shaped sections composed of an insulating material. One of the sections if formed with bosses having central openings for supporting intermediate portions of terminals. The L-shaped sections are joined together after portions of the terminals have been assembled within the bosses so that end portions of the terminals extend from outer faces of the joined sections. The ends of the terminals extending from one face of the joined sections can be connected to a circuit such as a printed circuit. The opposite ends of the terminals can then be connected, for example by wire-wrap connections, to various external circuits.

3,649,958
VEHICLE DETECTION SYSTEM

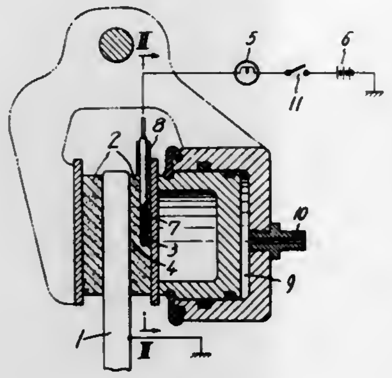
Ralph J. Koerner, Canoga Park, Calif., assignor to Canoga Controls Corporation, Canoga Park, Calif.
Filed Mar. 25, 1970, Ser. No. 22,555
Int. Cl. G08g *1/00*
U.S. Cl. 340—38 L **24 Claims**



A system useful in service stations and the like for indicating the entry of a vehicle onto a specified area of the earth's surface. The system includes a magnetic field sensor which yields an output signal indicative of the magnetic field intensity thereat. The sensor is mounted adjacent to but outside of a volume being monitored which constitutes the projection of the specified area in the direction of the magnetic field thereat. When the magnetically permeable mass of a vehicle enters the volume being monitored, it increases magnetic field intensity therein but reduces the field intensity outside of this volume. The reduction in field intensity is recognized by the sensor which then energizes an indicating device such as a remote bell. The sensor preferably comprises a flux gate magnetometer which is excited by a high frequency signal supplied by an oscillator. This signal can be coupled to the existing service station power line to energize the remotely located bell, also coupled to the power line.

3,649,959
VEHICLE DISK BRAKE LINING WEAR

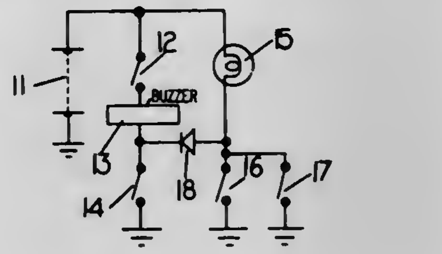
Mamoru Sakata; Hiroyuki Komori, both of Tokyo, and Katsuhiko Fujii, Fukuoka-Machi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed July 7, 1970, Ser. No. 52,930
Claims priority, application Japan, July 23, 1969, 44/69978
Int. Cl. G08b *21/00*
U.S. Cl. 340—52 A **6 Claims**



An abrasion detecting apparatus for a friction member comprises a detecting switch having facing electric contacts constituted on the one hand as a rotating member such as the brake disk and on the other hand a lead wire embedded in a friction member such as a brake pad facing the rotating member. The switch is interposed in a circuit having an indicating device such as a lamp connected to an electric source. The portion of the lead wire embedded in the friction member is covered over the entire surface thereof with an insulating layer such as an insulating tube.

3,649,960
WARNING CIRCUITS FOR ROAD VEHICLES

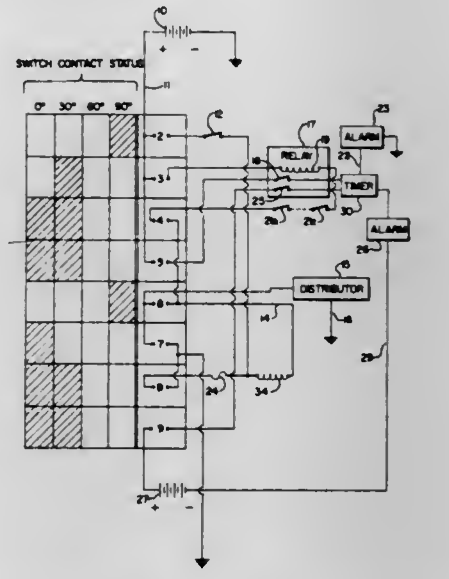
Arthur Charles Severn, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Apr. 29, 1970, Ser. No. 32,872
Claims priority, application Great Britain, June 9, 1969, 29,037/69
Int. Cl. B60q *5/00;* **G08b** *21/00*
U.S. Cl. 340—52 D **3 Claims**



In a warning circuit for road vehicles for giving a warning to the driver if he attempts to leave the vehicle without first removing the ignition key, the vehicle battery is bridged by a series circuit including a first switch which is opened when the ignition key is removed, a warning device, and a second switch which is closed when the driver's door is opened. A second series circuit is connected across the battery includes a courtesy light and a third switch which when closed energizes the courtesy light. A diode couples the first and second series circuits and permits energization of the courtesy light by the second switch while preventing energization of the warning device by the third switch.

3,649,961
MOTOR VEHICLE UNAUTHORIZED TAMPERING ALARM SYSTEM

Ernest William Draper, 337 Queen Street, Brisbane, Queenslands 4000, Australia
Filed Jan. 9, 1970, Ser. No. 1,576
Claims priority, application Australia, May 15, 1969, 55084/69
Int. Cl. G08b *13/00*
U.S. Cl. 340—64 **4 Claims**



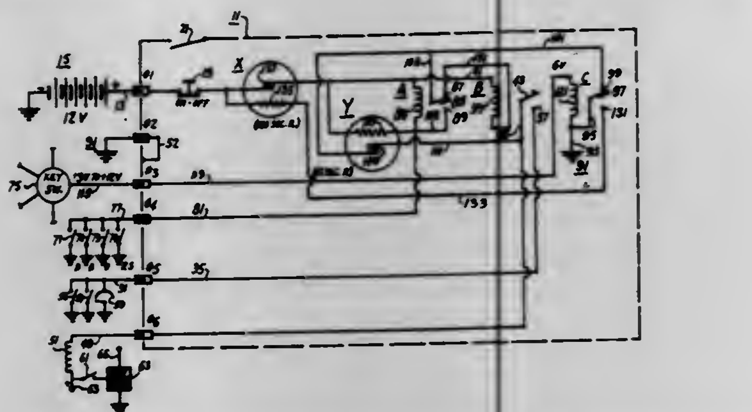
An alarm system for motor vehicles comprising an electrical multicontact key switch having at least four positions, and a relay actuated by the passage of electric current through the switch, wherein current passes into an ignition circuit to provide means for effecting vehicle drive on rotation of the switch into an initial position, and on further rotation current is partially diverted into circuits which operate to raise an alarm should the vehicle be tampered with.

3,649,962
VEHICLE ALARM SYSTEM

Peter R. Bedard, 4057 Pratt Avenue, Bronx, N.Y., and Charles J. Spall, Jr., 152 South MacQuesten Parkway, Mount Vernon, N.Y.

Filed Oct. 17, 1969, Ser. No. 867,309
Int. Cl. B60r *25/10*

U.S. Cl. 340—64 **7 Claims**



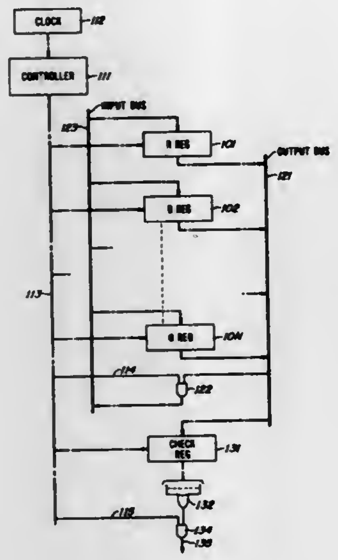
The invention provides a protective alarm system for a vehicle by sounding an alarm when the vehicle is tampered with or entered during the owner's absence. A first set of switches, including an inertia switch, is connected by a normal sensing relay to sound the alarm immediately if the vehicle is shaken or tampered with in other ways. A second set of switches is provided to set up an alarm condition by holding relay and a thermostatic delay relay if normal entry is gained to the vehicle, as by opening a door, but will not sound the alarm during a predetermined 15 second delay. Turning the ignition on during this 15 second entry period disables the entire alarm system by way of a de-activating relay and a further thermostatic delay relay. When the ignition switch is turned off the further delay relay provides a 120-second nonalarming period for exit from and locking of the vehicle.

3,649,963
ERROR DETECTION ARRANGEMENT FOR REGISTER-TO-REGISTER DATA TRANSMISSION

Barry Douglas Holm, Naperville, and Daniel John Senese, Lisle, both of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 5, 1970, Ser. No. 43,803
Int. Cl. G08c *25/00*

U.S. Cl. 340—146.1 **2 Claims**



An arrangement for checking the contents of one register against the contents of another after a transfer of information therebetween. The contents of a source and a destination register are consecutively gated onto a linking bus which gating also controls inputs to a check register parallelly connected with the bus. After a completed sequence of gating operations, the contents of the check register should conform to normal initial states. Any differences from the initial states indicate that the contents of the destination and source registers differ as a result of a transmission error.

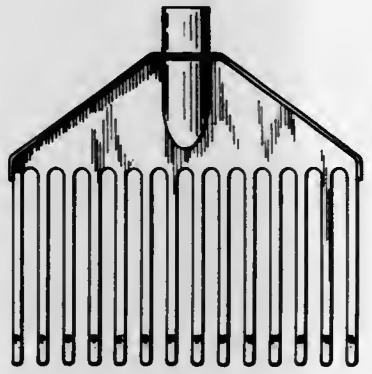
DESIGNS

MARCH 14, 1972

223,100
SHAG RUG COMB HEAD

Kenneth D. Kingston, 524 N. 12th,
Broken Bow, Nebr. 68822
Filed Aug. 25, 1970, Ser. No. 24,690
Term of patent 14 years
Int. Cl. D4—*01*

U.S. Cl. D4—3

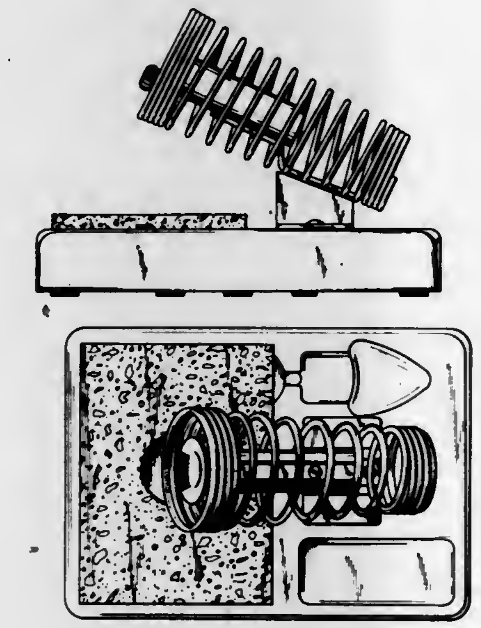


223,101
SOLDERING IRON STAND

Joseph A. Sylvester, Wayne, N.J., assignor to Hexacon Electric Company

Continuation-in-part of design application Ser. No. 19,989, Nov. 10, 1968. This application Nov. 6, 1970, Ser. No. 25,975
Term of patent 14 years
Int. Cl. D8—*05*

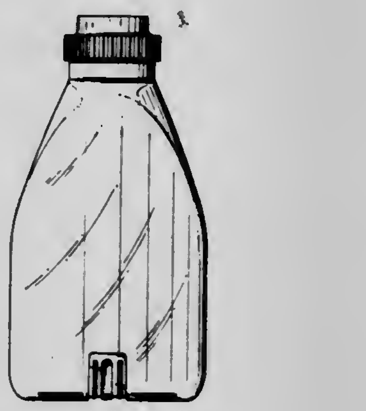
U.S. Cl. D8—71



223,102
COMBINED BOTTLE AND SUPPORT CLIP THEREFOR

James B. Purcell, Jamaica, N.Y., assignor to
Knomark Inc., Jamaica, N.Y.
Filed Mar. 16, 1970, Ser. No. 21,923
Term of patent 14 years
Int. Cl. D9—*01*

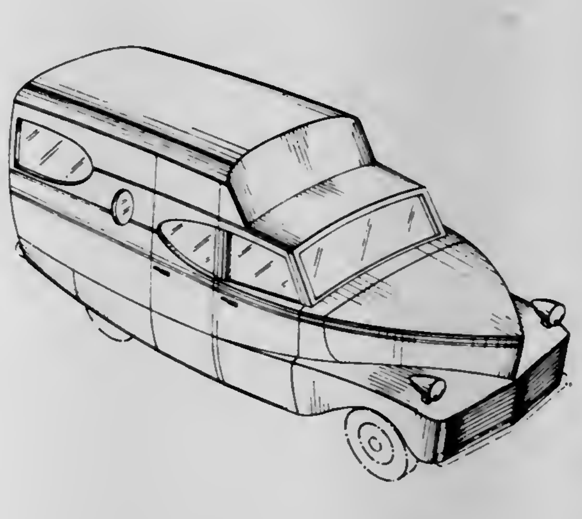
U.S. Cl. D9—10



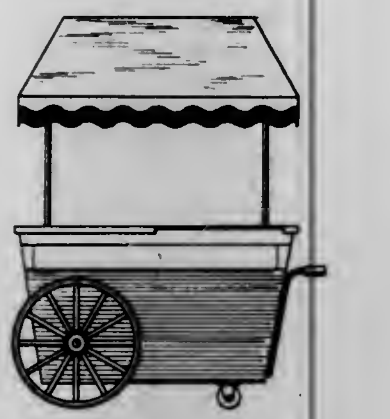
223,103
AUTOMOTIVE VEHICLE BODY

James I. Harvey, Jr., 1117 119th St. SE.,
Lake Stevens, Wash. 98258
Filed Oct. 26, 1970, Ser. No. 25,642
Term of patent 14 years
Int. Cl. D12—*08*

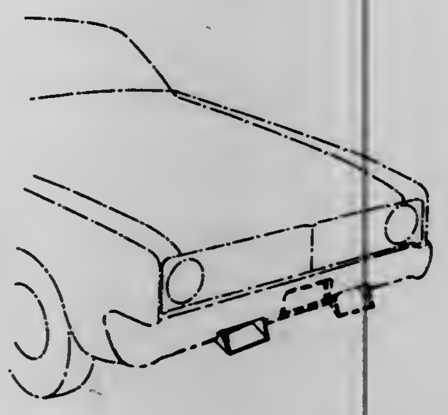
U.S. Cl. D14—3



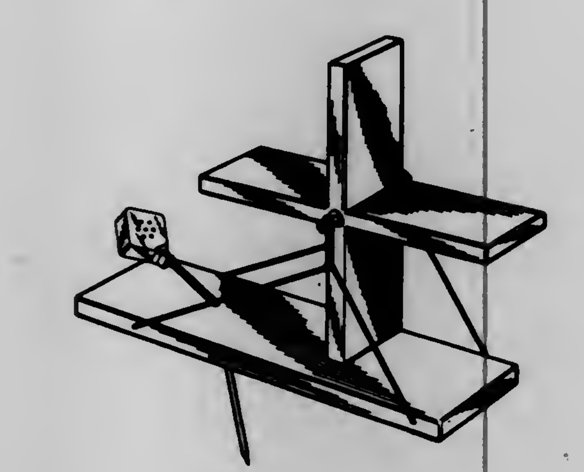
223,104
FLOWER CART
Peter Looms, Denver, Colo., assignor to Flowers A La Karte, Inc., Denver, Colo.
Filed Dec. 21, 1970, Ser. No. 26,583
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—3



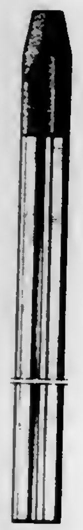
223,105
BUMPER AIR SCOOP
Jack M. Hamond, 6530 Camden Ave., San Jose, Calif. 95120
Filed Sept. 4, 1970, Ser. No. 24,854
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



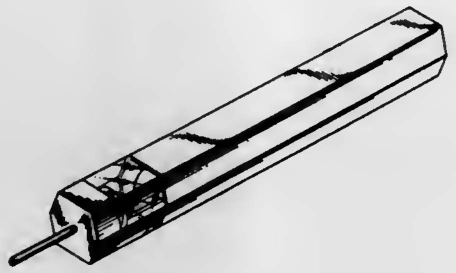
223,106
COMBINED WATER WHEEL TOY AND LAWN SPRINKLER
John Louis Deets, Denver, Colo., assignor to Great Western Construction, Ltd., doing business as The Deets Manufacturing Co., Denver, Colo.
Filed Aug. 14, 1970, Ser. No. 24,488
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—10



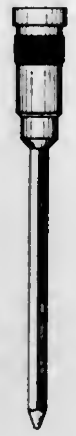
223,107
CARBONIC ELECTRODE BAR FOR GOUGING PURPOSES
Keigo Momose, Koji Ishihara, and Kojiro Matsuo, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed Aug. 4, 1970, Ser. No. 24,303
Claims priority, application Japan May 29, 1970
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D26—1



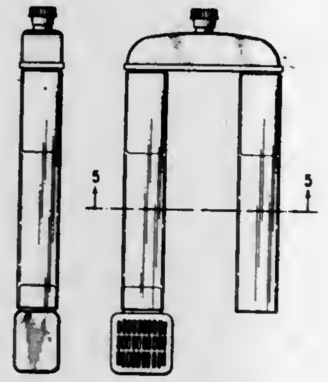
223,108
CIRCUIT TEST PROBE
Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed Oct. 9, 1970, Ser. No. 25,414
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D26—1



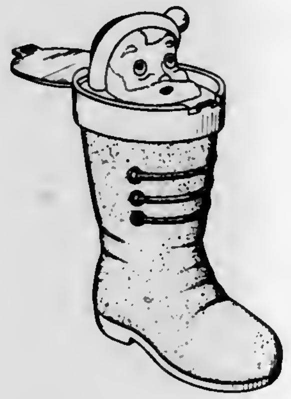
223,109
ELECTRONIC TERMINAL
James V. Murphy, Warwick, R.I., assignor to Electronic Molding Corporation, Woonsocket, R.I.
Filed Dec. 18, 1970, Ser. No. 26,568
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1



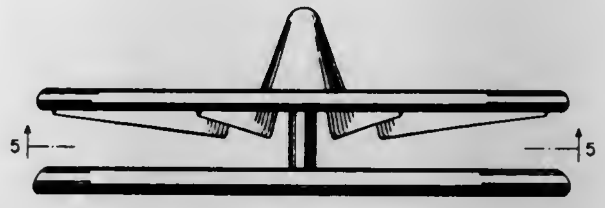
223,110
AQUARIUM SIPHON
Richard C. J. Palson, Medfield, Mass., assignor to Biozonics Corp., Natick, and Fred A. Ravreby, Framingham, Mass., fractional part interest to each
Filed July 29, 1970, Ser. No. 24,208
Term of patent 14 years
Int. Cl. D30—*01*
U.S. Cl. D30—12



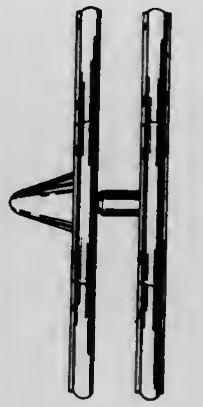
223,111
TOY SANTA CLAUS BOOT WITH SPRING-UP HEAD
Perry Feuer, Roslyn, N.Y., assignor to Creative Creations Inc., New York, N.Y.
Filed Nov. 25, 1970, Ser. No. 26,165
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4



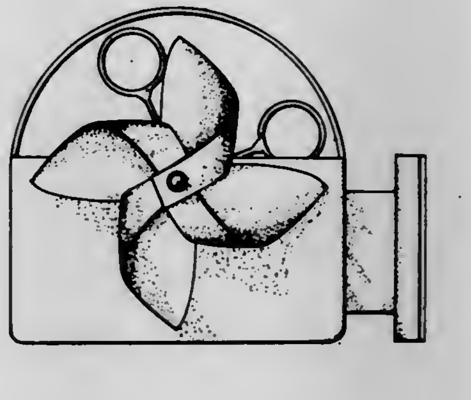
223,112
EXERCISER
William L. King, Springfield, Oreg., assignor to Nathan E. Knecht, Springfield, Oreg.
Filed Mar. 9, 1970, Ser. No. 21,782
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



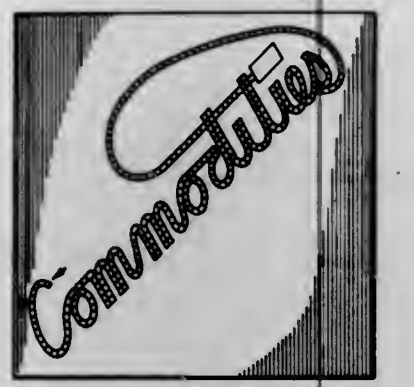
223,113
EXERCISER
William L. King, Springfield, Oreg., assignor to Nathan E. Knecht, Springfield, Oreg.
Filed Mar. 9, 1970, Ser. No. 21,818
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



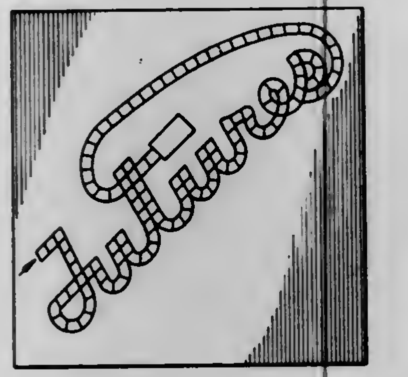
223,114
BUBBLE FORMING WINDMILL TOY
Paul Brickler, 28 Royal Ave., Cold Spring, Ky. 41076
Filed Oct. 23, 1970, Ser. No. 25,615
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



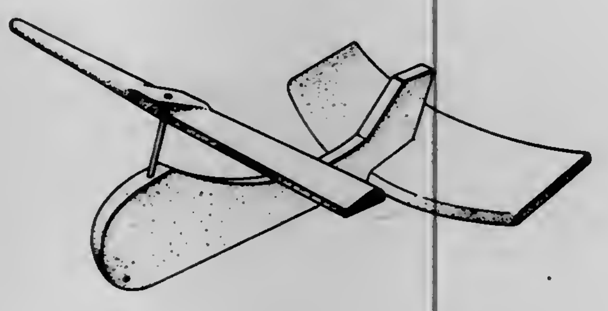
223,115
GAMEBOARD FOR PARLOR GAMES
Bill E. Taylor, 617 S. Quincy, Enid, Okla. 73701
Filed Feb. 26, 1971, Ser. No. 119,436
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



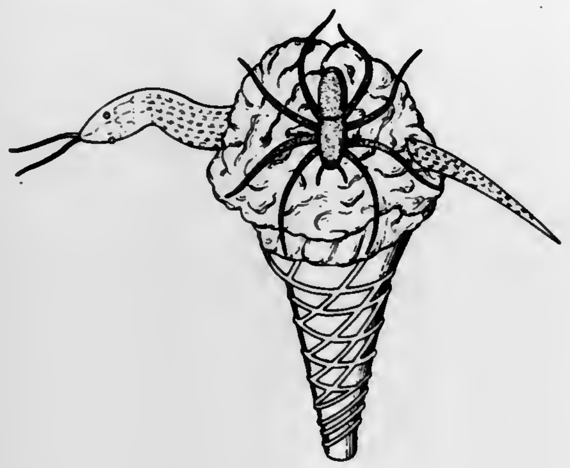
223,116
GAMEBOARD FOR PARLOR GAMES
Bill E. Taylor, 617 S. Quincy, Enid, Okla. 73701
Filed Feb. 26, 1971, Ser. No. 119,437
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



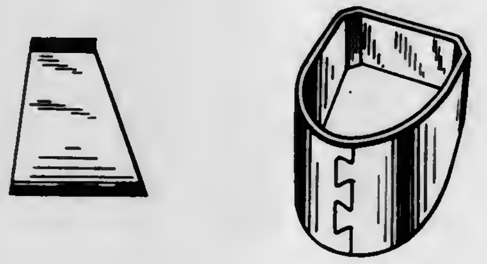
223,117
HELICOPTER KITE TOY
Walter P. Tolomizenko, 240 Ellis Ave.,
Toronto 3, Ontario, Canada
Filed Apr. 23, 1970, Ser. No. 22,602
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



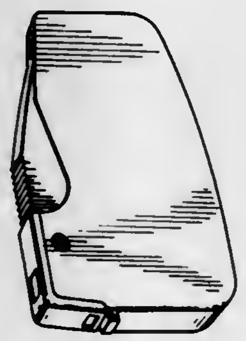
223,118
PLASTIC NOVELTY ICE CREAM CONE
Perry Feuer, Roslyn, N.Y., assignor to Creative
Creations, Inc., New York, N.Y.
Filed Nov. 25, 1970, Ser. No. 26,166
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



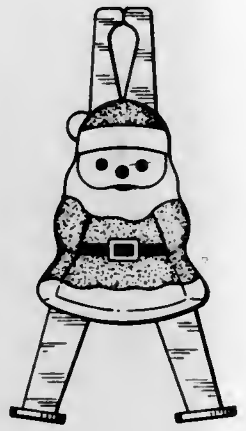
223,119
PROTECTING FERRULE FOR A COOKING VESSEL HANDLE
William Michael Carroll, 1111 E. Dean Road,
Milwaukee, Wis. 53217
Filed Sept. 25, 1970, Ser. No. 25,192
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—29



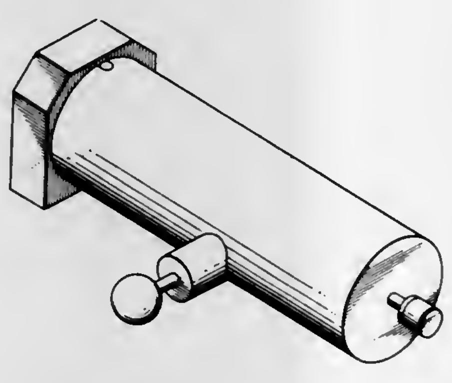
223,120
CIGARETTE LIGHTER
Keith Soane, Broadbridge, England, assignor to Ronson
Corporation, Woodbridge, N.J.
Filed Nov. 10, 1970, Ser. No. 25,922
Claims priority, application Great Britain May 11, 1970
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—20



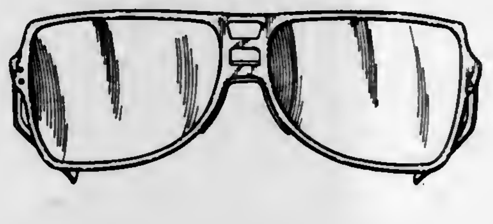
223,121
SANTA CLAUS CLOTHES PIN
Perry Feuer, Roslyn, N.Y., assignor to Creative
Creations, Inc., New York, N.Y.
Filed Nov. 25, 1970, Ser. No. 26,164
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—1



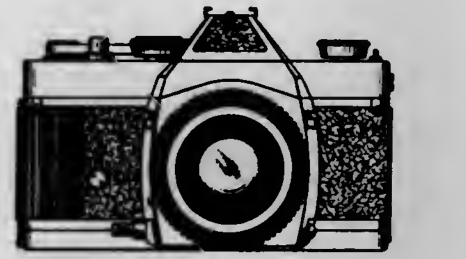
223,122
PARACHUTE ACTUATOR TEST CHAMBER
James Robert King, Van Nuys, and Gerald D. Myers, Sepulveda, Calif., assignors to King Nutronics Corporation, Van Nuys, Calif.
Filed Dec. 28, 1970, Ser. No. 26,678
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—1



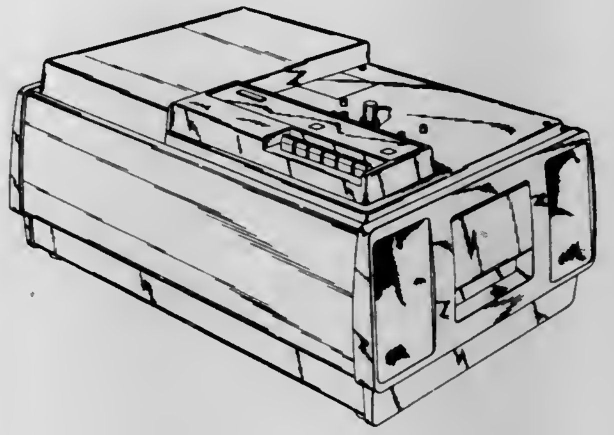
223,123
PAIR OF SPECTACLES
Anthony Shindler, Brookline, Mass., assignor to American
Optical Corporation, Southbridge, Mass.
Filed Dec. 9, 1970, Ser. No. 26,371
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1



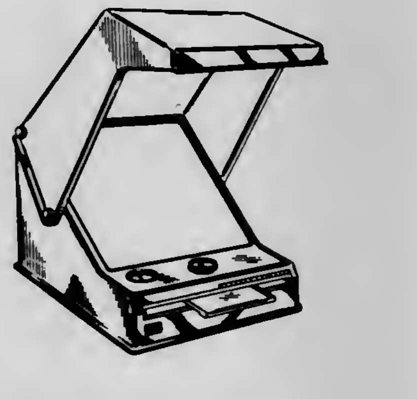
223,124
CAMERA
Denkichi Takata, Tokyo, Japan, assignor to Mamiya Koki Kabushiki (also known as Mamiya Camera Co., Ltd.), Tokyo-to, Japan
Filed Mar. 31, 1970, Ser. No. 22,137
Claims priority, application Japan Oct. 2, 1969
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



223,125
MOTION PICTURE PROJECTOR
James H. Sias, Rochester, N.Y., assignor to Eastman
Kodak Company, Rochester, N.Y.
Filed Sept. 30, 1970, Ser. No. 25,680
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1



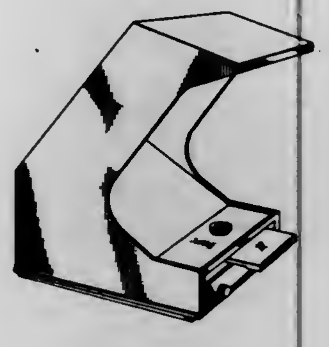
223,126
REAR PROJECTION VIEWER
William A. Andres, Hopkins, Larry F. Becker, Brooklyn Park, and Larry D. Quanrud, Golden Valley, Minn., assignors to Washington Scientific Industries, Inc., Long Lake, Minn.
Filed Nov. 18, 1970, Ser. No. 26,066
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



223,127

REAR PROJECTION VIEWER

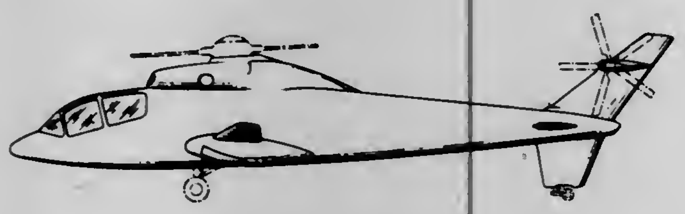
William A. Andres, Hopkins, Larry F. Becker, Brooklyn Park, and Larry D. Quanrud, Golden Valley, Minn., assignors to Washington Scientific Industries, Inc., Long Lake, Minn.
Filed Jan. 8, 1971, Ser. No. 105,152
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



223,128

AIRCRAFT

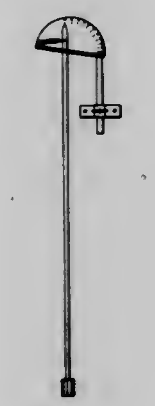
Harold D. Ulisnik, Trumbull, and Andrew C. Whyte, Norwalk, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Sept. 30, 1970, Ser. No. 25,679
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D71—1



223,129

WATER SPEED INDICATOR FOR A TROLLING BOAT

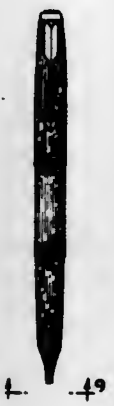
Benjiman L. Wilson, 1827 Los Robles Blvd.,
Sacramento, Calif. 95838
Filed Dec. 7, 1970, Ser. No. 26,344
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D71—1



223,130

FOUNTAIN PEN

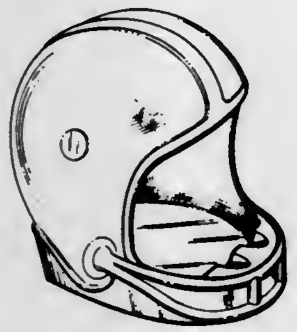
Homer T. Green, Milton, Wis., assignor to The Parker Pen Company, Janesville, Wis.
Filed Apr. 22, 1970, Ser. No. 22,553
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17



223,131

ASH TRAY

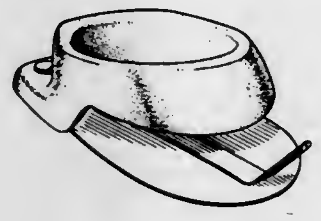
Robert J. Mader, 1218 Arlington Ave.,
Torrance, Calif. 90501
Filed Dec. 28, 1970, Ser. No. 26,682
Term of patent 7 years
Int. Cl. D27—*03*
U.S. Cl. D85—2



223,132

COMBINED COIN AND BILL RECEPTACLE

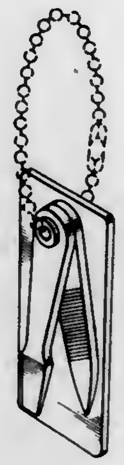
Arthur L. Allred, 929 Norwood Ave.,
High Point, N.C. 27262
Filed July 22, 1970, Ser. No. 24,066
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—3



223,133

POCKET TOOL

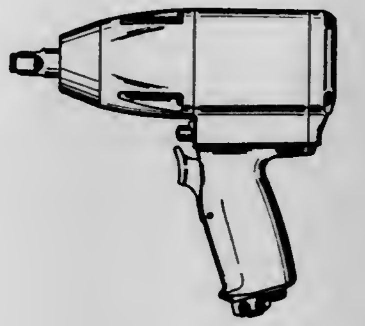
John D. Olt, Sierra Madre, Calif., assignor to Pacific Handy Cutter, Incorporated, El Monte, Calif.
Filed Nov. 16, 1970, Ser. No. 25,984
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D87—8.3



223,134

AIR IMPACT WRENCH

Roderick F. Bunyea, Cockeysville, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed Oct. 1, 1970, Ser. No. 25,290
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—68



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PATENTS WERE ISSUED ON THE 14TH DAY OF MARCH, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Abbott Laboratories: *See—*
Horrom, Bruce Wayne, 3,649,618.
Abbotts, William Edward, to Solartron Electronic Group Limited, The. Methods and apparatus for measuring the densities of fluids. 3,648,512, Cl. 73-32.
Abe, Jinnosuke; Watanabe, Tetsuo; Miyauchi, Kango; Yamaguchi, Tsutomu; Nito, Toshiharu; and Muroya, Noriyuki, to Toyo Jozo Kabushiki Kaisha. Production of lipase. 3,649,455, Cl. 195-66.
Abel, Heinz: *See—*
Toepfl, Rosemarie; Abel, Heinz; Maeder, Arthur; and Deflorin, Alberto,3,649,575.
Academic Dimension Systems, Inc.: *See—*
Knack, John W., Sr., 3,649,152.
Ackermann, Franz; Duennenberger, Max; and Siegrist, Adolf Emil, to Intracolor Corporation, mesne. $\alpha:\beta$ Di-[5-methyl-benzoxazolyl-(2)]-ethylene optical brightening agent. 3,649,623, Cl. 260-240.
Ackilli, Joseph Anthony: *See—*
Cahn, Arno; Ackilli, Joseph Anthony; and Carroll, Frank Emery,3,649,543.
Ackley, James W., to Varian Associates. Large area sputtering target electrode structure. 3,649,512, Cl. 204-298.
Adam, Karl: *See—*
Fuerst, Ernst; Adam, Karl; Hoffmann, Herwig; Pilch, Kurt; Winderl, Siegfried; and Sanne, Walter,3,649,627.
Adams, Kenneth D., to Singer Company, The. Pattern cam removal mechanism for sewing machines. 3,648,633, Cl. 112-158.
Adams, William M.: *See—*
Fueslein, Jerome L.; and Adams, William M.,3,648,780.
Addressograph Multigraph Corporation: *See—*
Miller, Donald J.; and Schmidlin, Raymond J., 3,649,005.
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Marinoff, George, 3,648,816.
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Busch, Edward G., 3,649,823.
Aerojet-General Corporation: *See—*
Weyland, Herman H.; and Hamel, Edward E., 3,649,687.
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Agence Nationale de Valorisation de la Recherche 'Anvar':*See—*
Foch, Henri, 3,649,845.
Agens, Maynard C., to General Electric Company. Electroless copper plating. 3,649,350, Cl. 117-160.
Agfa-Gevaert AG: *See—*
Pfeifer, Josef; and Bickl, Horst, 3,649,120.
Agfa-Gevaert Aktiengesellsvhaft: *See—*
Rinberger, Helmuth, 3,648,599.
Ahlert, Wilhelm; Bungardt, Walter; Brusdeylins, Andreas; Damm, Paul; and Herget, Camillo, to Goldschmidt, Th., A.-G. Aluminothermic reaction mixture. 3,649,390, Cl. 149-37.
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Makela, Aarne Olavi, 3,649,446.
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Ahrens, William L.: *See—*
Merrick, Edward V.; and Ahrens, William L.,3,648,589.
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Rohrberg, Roderick, 3,649,805.
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Arikawa, Toshinori, 3,648,987.
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Ajinomoto Co., Inc.: *See—*
Shirakawa, Tadashi; Inagaki, Tohru; Suzuki, Tadao; and Ogawa, Koji, 3,649,205.
Akamatsu, Takashi: *See—*
Yamada, Eiji; Yamaguchi, Kiichiro; and Akamatsu, Takashi,3,649,645.
Akasaki, Isamu, to Matsushita Electric Industrial Co., Ltd. Process of fabricating electroluminescent element. 3,649,383, Cl. 148-171.
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Fidi, Werner; and Srb, Franz, 3,649,933.
Akiyama, Shinichi; and Minami, Shoichiro, to Japanese Geon Company, Ltd., The. Process for the preparation of methacrylic acid. 3,649,684, Cl. 260-530.
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Rabe, Karl Lars Gunnar; and Hanaeus, Karl Sune Ingemar, 3,648,495.
Aktiebolaget Motala Verkstad: *See—*
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Voss, Siegfried, 3,648,311.
Aktiengesellschaft Brown, Boveri & Cie: *See—*
Friedrich, Edmund; and Strubin, Harald, 3,649,790.
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Arnold, Walter; and Wepner, Gunter, 3,648,554.
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Alkema, Henk J.: *See—*
Medema, Dirk; Alkema, Henk J.; and Van Helden, Robert,3,649,709.
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Allmanna Svenska Elektriska Aktiebolaget: *See—*
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Amchem Products, Inc.: *See—*
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- Stein, Reinhardt P.; and Smith, Herchel, 3,649,621.
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- American Science & Engineering, Inc.: *See—*
  - Orfei, John B.; Davidson, Gilbert; and Walters, John, 3,649,097.
- American Sterilizer Company: *See—*
  - Christianson, Floyd W.; Oakes, William J.; and Sawtelle, James T., 3,648,869.
- American Welding & Manufacturing Company, The: *See—*
  - Winyard, Rodney W.; Fortsch, Francis J.; and Braun, Vincent C., 3,648,424.
- Ametek, Inc.: *See—*
  - Krynski, John E.; and Seggebruch, Ernie G., 3,648,844.
- AMF Incorporated: *See—*
  - Sicard, Marcel Clarence, 3,648,846.
  - Zuercher, John, 3,649,012.
- Amlie, Robert F.: *See—*
  - Morehouse, Clarence Kopperl; and Amlie, Robert F.,3,649,363.
- Amoco Production Company: *See—*
  - Blenkarn, Kenneth A., 3,648,638.
  - Lummus, James L.; and Anderson, Duane B., 3,649,547.
- AMP Incorporated: *See—*
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  - Morrissey, Ronald James; and Crumley, J. A., 3,649,472.
- Amsted Industries Incorporated: *See—*
  - Harz, Edward F., 3,649,036.
- Anaconda Wire and Cable Company: *See—*
  - Volk, Victor F., 3,649,745.
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  - Howell, Charles M.; and Anand, Yoginder,3,649,890.
- Anderegg, Paul; and Graner, Gerhard, to International Standard Electric Corporation. Wrapping machine. 3,649,419, Cl. 156-567.
- Andermac: *See—*
  - Anderson, Edith T.; and Anderson, Clifford M., 3,648,699.
- Anderson, Carl Francis: *See—*
  - Heuser, Leon John; and Anderson, Carl Francis,3,649,625.
- Anderson, Clarence D. Carton closure. 3,648,919, Cl. 229-44.
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  Ford, John A., Jr., and Specht. T896,027.

Snyder, Glenn M., and L. R. Luckenbach, to Landis Tool Co. Automatic plunge and blend pass control system for grinding. T896,028, 3–14–72, Cl. 51—165.77.

Sosis, Paul, and R. D. Katstra, to Continental Oil Co. Controlled foam detergent formulation. T896,025, 3–14–72, Cl. 252—121.

Stephens, Harris N., Jr. Pictorial parallax panoramagram including a cellulose ester hot melt thermoplastic viewing screen. T896,031, 3–14–72, Cl. 117—10.

Tillson, Henry C., to Hercules Inc. Polymer cross-linking. T896,029, 3–14–72, Cl. 260—79.

Westermann, Hans, W. Meckstroth, H. Bures, H. Zobel, and J. Bergmann, to Eastman Kodak Co. Apparatus for the continuous transesterification of aromatic dicarboxylic acids with diols. T896,030, 3–14–72, Cl. 23—260.

Williams, Leslie A., and W. E. Lee. Photographic developer compositions and method. T896,022, 3–14–72, Cl. 96—66.3.

Wilson, John C. : *See—*
  Hamb, Frederick L., and Wilson. T896,033.
  Hamb, Frederick L., and Wilson. T896,034.

Zobel, Hans-Ernst : *See—*
  Westermann, Hans, Meckstroth, Bures, Zobel, and Bergmann. T896,030.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF MARCH, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

DeLalio, George M., assignor to General Motors Corp. and Sundstrand Corp., a fractional part interest to each. Extended range hydraulic transmission. Re. 27,307, 3–14–72, Cl. 74—687.

Dierking, William H. : *See—*
  Polkinghorn, Robert W., Pfeifer, and Dierking. Re. 27,305.

Durso, August J., F. C. Maurer, and G. A. Panczyszyn ; said Maurer and said Panczyszyn assignors to to said Durso. Combination bottle and closure cap unit therefor. Re. 27,303, 3–14–72, Cl. 215—9.

Flowers, Theodore R., to Warner-Lambert Co. Dispenser with heating means. Re. 27,304, 3–14–72, Cl. 222—146.

Fujii, Hiroshi : *See—*
  Oda, Ryohei, Fujii, Moriga, and Higaki. Re. 27,306.

General Motors Corp. : *See—*
  DeLalio, George M. Re. 27,307.

Higaki, Taiji : *See—*
  Oda, Ryohei, Fujii, Moriga, and Higaki. Re. 27,306.

Leonard, John R., to Mobil Oil Corp. Underwater low temperature separation unit. Re. 27,308, 3–14–72, Cl. 166—.5.

Maurer, Frank C. : *See—*
  Durso, August J., Maurer, and Panczyszyn. Re. 27,303.

Mobil Oil Corp. : *See—*
  Leonard, John R. Re. 27,308.

Moriga, Hiroyuki : *See—*
  Oda, Ryohei, Fujii, Moriga, and Higaki. Re. 27,306.

North American Rockwell Corp. : *See—*
  Polkinghorn, Robert W., Pfeifer, and Dierking. Re. 27,305.

Oda, Ryohei, H. Fujii, H. Moriga, and T. Higaki. Phthalide compounds and their preparation. Re. 27,306, 3–14–72, Cl. 260—343.4. ,

Panczyszyn, George A. : *See—*
  Durso, August J., Maurer, and Panczyszyn. Re. 27,303.

Pfeifer, Arthur F. : *See—*
  Polkinghorn, Robert W., Pfeifer, and Dierking. Re. 27,305.

Polkinghorn, Robert W., A. F. Pfeifer, and W. H. Dierking, to North American Rockwell Corp. Field effect transistor driver using capacitor feedback. Re. 27,305, 3–14–72, Cl. 307—251.

Scheuerman, Ronald F. : *See—*
  Scott, Paul R. and Scheuerman. Re. 27,309.

Scott, Paul R., and R. F. Scheuerman, to Shell Oil Co. Process for transporting viscous fluids. Re. 27,309, 3–14–72, Cl. 55—45.

Shell Oil Co. : *See—*
  Scott, Paul R. and Scheuerman. Re. 27,309.

Sundstrand Corp : *See—*
  DeLalio, George M. Re. 27,307.

Warner-Lambert Co. : *See—*
  Flowers, Theodore R. Re. 27,304.

LIST OF DESIGN PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF MARCH, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Allred, Arthur L. Combined coin and bill receptacle. 223,132, 3–14–72, Cl. D87—3.
- American Optical Corp.: *See*—
  - Shindler, Anthony. 223,123.
- Andres, William A., L. F. Becker, and L. D. Quanrud, to Washington Scientific Industries, Inc. Rear projection viewer. 223,126, 3–14–72, Cl. D61—1.
- Andres, William A., L. F. Becker, and L. D. Quandrud, to Washington Scientific Industries, Inc. Rear projection viewer. 223,127, 3–14–72, Cl. D61—1.
- Becker, Larry F.: *See*—
  - Andres, William A., Becker, and Quanrud. 223,126.
  - Andres, William A., Becker, and Quanrud. 223,127.
- Biosonics Corp.: *See*—
  - Palson, Richard C. J. 223,110.
- Black and Decker Mfg. Co., The: *See*—
  - Bunyea, Roderick F. 223,134.
- Brickler, Paul. Bubble forming windmill toy. 223,114, 3–14–72, Cl. D34—15.
- Bunyea, Roderick F., to The Black and Decker Mfg. Co. Air impact wrench. 223,134, 3–14–72, Cl. D8—68.
- Carroll, William M. Flame protector for cooking vessels. 223,119, 3–14–72, Cl. D44—29.
- Creative Creations Inc.: *See*—
  - Feuer, Perry. 223,111.
  - Feuer, Perry. 223,118.
  - Feuer, Perry. 223,121.
- Deets, John L., to Great Western Construction, Ltd., d.b.a. The Deets Mfg. Co. Combined water wheel toy and lawn sprinkler. 223,106, 3–14–72, Cl. D23—10.
- Deets Mfg. Co., The: *See*—
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- Eastman Kodak Co.: *See*—
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- Fedtro, Inc.: *See*—
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- Feuer, Perry, to Creatice Creations Inc. Toy Santa Claus boot with spring-up head. 223,111, 3–14–72, Cl. D34—4.
- Fener, Perry, to Creative Creations Inc. Plastic novelty ice cream cone. 223,118, 3–14–72, Cl. D34—15.
- Fener, Perry, to Creative Creations, Inc. Santa Claus clothes pin. 223,121, 3–14–72, Cl. D49—1.
- Flowers a la Karte, Inc.: *See*—
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- Great Western Construction, Ltd.: *See*—
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- Green, Homer T., to The Parker Pen Co. Fountain pen. 223,130, 3–14–72, Cl. D74—17.
- Hamond, Jack M. Bumper air scoop. 223,105, 3–14–72, Cl. D14—6.
- Harvey, James I., Jr. Automotive vehicle body. 223,103, 3–14–72, Cl. D14—3.
- Hexacon Electric Co.: *See*—
  - Sylvester, Joseph A. 223,101.
- Ishihara, Koji: *See*—
  - Momose, Keigo, Ishihara, and Matsuo. 223,107.
- Kahn, Robert D., to Fedtro, Inc. Circuit test probe. 223,108, 3–14–72. Cl. D26—1.
- King, James R., and G. D. Myers, to King Nutronics Corporation. Parachute actuator test chamber. 223,122, 3–14–72, Cl. D52—1.
- King Nutronics Corp.: *See*—
  - King James R., and Myers. 223,122.
- King, William L., to Nathan E. Knecht. Exerciser. 223,112, 3–14–72, Cl. D34—5.
- King, William L., to Nathan E. Knecht. Exerciser. 223,113, 3–14–72, Cl. D34—5.
- Kingston, Kenneth D. Shag rug comb head. 223,100, 3–14–72, Cl. D4—8.
- Knecht, Nathan E.: *See*—
  - King, William L. 223,112.
  - King, William L. 223,113.
- Komark Inc.: *See*—
  - Purcell, James B. 223,102.
- Looms, Peter, to Flowers a la Karte, Inc. Flower cart. 223,104, 3–14–72, Cl. D14—3.
- Mader, Robert J. Ash tray. 223,131, 3–14–72, Cl. D85—2.
- Mamiya Koki Kabushiki Kaisha: *See*—
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- Matsushita Electric Industrial Co., Ltd.: *See*—
  - Momose, Keigo, Ishihara, and Matsuo. 223,107.
- Momose, Keigo, K. Ishihara, and K. Matsuo, to Matsushita Electric Industrial Co., Ltd. Carbonic electrode bar for gonging purposes. 223,107, 3–14–72, Cl. D26—1.
- Murphy, James V., to Electronic Molding Corp. Electronic terminal. 223,109, 3–14–72, Cl. D26—1.
- Myers, Gerald D.: *See*—
  - King James R., and Myers. 223,122.
- Olt, John D., to Pacific Handy Cutter, Inc. Pocket tool. 223,133, 3–14–72, Cl. D87—8.3.
- Pacific Handy Cutter, Inc.: *See*—
  - Olt, John D. 223,133.
- Palson, Richard C. J., assignor to Biosonics Corp and F. A. Ravreby, fractional part interest to each. Aquarium siphon. 223,110, 3–14–72, Cl. D30—12.
- Parker Pen Co., The: *See*—
  - Green, Homer T. 223,130.
- Purcell, James B., to Komark Inc. Combined bottle and support clip therefor. 223,102, 3–14–72, Cl. D9—10.
- Quanrud, Larry D.: *See*—
  - Andres, William A., Becker, and Quanrud. 223,126.
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- Revreby, Fred A.: *See*—
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- Ronson Corp.: *See*—
  - Soane, Keith. 223,120.
- Shindler, Anthony, to American Optical Corp. Pair of Spectacles. 223,123, 3–14–72, Cl. D57—1.
- Sias, James H., to Eastman Kodak Co. Motion picture projector. 223,125, 3–14–72, Cl. D61—1.
- Soane, Keith, to Ronson Corp. Cigarette lighter. 223,120, 3–14–72, Cl. D48—20.
- Sylvester, Joseph A., to Hexacon Electric Co. Soldering iron stand. 223,101, 3–14–72, Cl. D8—71.
- Takata, Denkichi, to Mamiya Koki Kabushiki, a.k.a. Mimiya Camera Co., Ltd. Camera. 223,124, 3–14–72, Cl. D61—1.
- Taylor, Bill E. Gameboard for parlor games. 223,115, 3–14–72, Cl. D34—5.
- Taylor, Bill E. Gameboard for parlor games. 223,116, 3–14–72. Cl. D34—5.
- Tolomizenko, Walter P. Helicopter kite toy. 223,117, 3–14–72, Cl. D34—15.
- Ulisnik, Harold D., and A. C. Whyte, to United Aircraft Corp. Aircraft. 223,128, 3–14–72, Cl. D71—1.
- United Aircraft Corp.: *See*—
  - Ulisnik, Harold D., and Whyte. 223,128.
- Washington Scientific Industries, Inc.: *See*—
  - Andres, William A., Becker, and Quanrud. 223,126.
  - Andres, William A., Becker, and Quanrud. 223,127.
- Whyte, Andrew C.: *See*—
  - Ulisnik, Harold D., and Whyte. 223,128.
- Wilson, Benjamin L. Water speed indicator for a trolling boat. 223,129, 3–14–72, Cl. D71—1.

CLASSIFICATION OF PATENTS

ISSUED MARCH 14, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

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354	3,648,462
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8	3,648,494
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84	3,648,503
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100	3,649,285
114.6	3,649,287
120	3,649,286
122	3,649,288
123	3,649,289
CLASS 98	
2D	3,648,590
39	3,648,591
107	3,648,592
115R	3,648,593
CLASS 99	
1	3,649,290
2	3,649,291
4	3,649,292
17	3,649,293

18	3,649,294
57	3,649,295
71	3,649,296
77	3,649,297
78	3,649,298
107	3,649,299
	3,649,300
109	3,649,301
139	3,649,302
182	3,649,303
192BB	3,649,304
207	3,649,305
246	3,649,306
331	3,648,594
342	3,648,595
450.7	3,648,596
CLASS 100	
53	3,648,597
118	3,648,598
169	3,648,599
224	3,648,600
CLASS 101	
35	3,648,601
93C	3,648,602
132.5	3,648,603
181	3,648,604
232	3,648,605
375	3,648,606
450	3,648,607
453	3,648,608
471	3,648,609
CLASS 102	
4	3,648,610
13	3,648,611
21	3,648,612
22	3,648,613
23	3,648,614
37.8	3,648,615
40	3,648,616
CLASS 104	
94	3,648,617
170	3,648,618
250	3,648,619
CLASS 105	
63	3,648,620
157	3,648,621
367	3,648,622
376	3,648,623
CLASS 106	
1	3,649,307
	3,649,308
39R	3,649,309
44	3,649,310
54	3,649,311
55	3,649,312
56	3,649,313
	3,649,314
67	3,649,315
89	3,649,316
90	3,649,317
104	3,649,318
111	3,649,319
287	3,649,320
300	3,649,321
	3,649,322
	3,649,323
CLASS 108	
33	3,648,628
42	3,648,626
111	3,648,627
CLASS 110	
8E	3,648,630
8R	3,648,629
CLASS 111	
6	3,648,631
CLASS 112	
130	3,648,632
158R	3,648,633
252	3,648,634
CLASS 114	
.5D	3,648,638
16R	3,648,635
23	3,648,636
29	3,648,637
53	3,648,314
65R	3,648,639
66.5R	3,648,640
123	3,648,641
235B	3,648,642
CLASS 115	
.5R	3,648,643
26	3,648,644
41	3,648,645
CLASS 116	
28A	3,648,646
114R	3,648,647
CLASS 117	
9	3,649,324
11	3,649,325
17	3,649,326
23	3,649,327
33.3	3,649,359
33.5CS	3,649,328
33.5L	3,649,329
36.2	3,649,357
37R	3,649,331
38	3,649,330
	3,649,332
45	3,649,333
62.1	3,649,335
62.2	3,649,334
83	3,649,336
93.31	3,649,337
97	3,649,338
106R	3,649,339
111D	3,649,340
118	3,649,341
123A	3,649,342
130E	3,649,343
135.5	3,649,344
138.8UA	3,649,345
138.8F	3,649,346
144	3,649,347
152	3,649,348
155R	3,649,349
160R	3,649,350
201	3,649,351
	3,649,352
212	3,649,353
217	3,649,354
	3,649,355
	3,649,356
235	3,649,358
CLASS 118	
19	3,648,648
31	3,648,649
123	3,648,650
202	3,648,651
323	3,648,652
416	3,648,653
429	3,648,654
	3,648,655
637	3,648,656
	3,648,657
	3,648,658
CLASS 119	
1	3,648,659
51.11	3,648,660
53	3,648,661
71	3,648,662
75	3,648,663
120	3,648,664
CLASS 122	
4D	3,648,666
4R	3,648,665
406ST	3,648,667
CLASS 123	
3	3,648,668
32AH	3,648,669
43R	3,648,670
55R	3,648,671
119A	3,648,672
140FG	3,648,673
141	3,648,674
149A	3,648,675
191R	3,648,676
196S	3,648,677
CLASS 124	
7	3,648,678
CLASS 126	
25A	3,648,679
38	3,648,680
110B	3,648,681
359	3,648,682
CLASS 128	
1R	3,648,683
2F	3,648,684
2R	3,648,685
2.05D	3,648,687
2.06A	3,648,688
2.06R	3,648,689
2.1R	3,648,686
66	3,648,690
92D	3,648,691
156	3,648,692
214D	3,648,693
214F	3,648,694
225	3,648,695
248	3,648,696
272	3,648,697
276	3,648,698
288	3,648,699
294	3,648,700
321	3,648,701
	3,648,702
335	3,648,705
348	3,648,703
349R	3,648,704
395	3,648,706
419P	3,648,707
422	3,648,708
CLASS 130	
27JT	3,648,709
27T	3,648,710
CLASS 131	
10.5	3,648,712
265	3,648,711
CLASS 136	
86C	3,649,360
86D	3,649,361
102	3,649,362
114	3,649,363
120FC	3,649,364
	3,649,365
161	3,649,366
202	3,649,367
232	3,649,368
CLASS 137	
1	3,648,713
7	3,648,714
62	3,648,715
85	3,648,716
240	3,648,717
269	3,648,718
315	3,648,719
318	3,648,725
351	3,648,720
408	3,648,721
454.4	3,648,722
454.6	3,648,723
467	3,648,724
505	3,648,727
505.41	3,648,726
525	3,648,728
533.13	3,648,729
550	3,648,731
572	3,648,730
624.18	3,648,732
625.69	3,648,733
CLASS 138	
113	3,648,734
CLASS 139	
156	3,648,735
CLASS 140	
1	3,648,736
92.7	3,648,737
93.2	3,648,738
	3,648,739
CLASS 141	
8	3,648,740
9	3,648,741
92	3,648,742
CLASS 143	
39	3,648,743
CLASS 144	
32	3,648,744
CLASS 146	
253	3,648,745
CLASS 148	
1.5	3,649,369
3	3,649,370
6.14A	3,649,371
6.16	3,649,372
6.24	3,649,373
11.5F	3,649,374
11.5R	3,649,375
	3,649,377
12	3,649,376
12.7	3,649,378
	3,649,379
142	3,649,380
156	3,649,381
171	3,649,382
	3,649,383
	3,649,384
186	3,649,385
187	3,649,386
	3,649,387
189	3,649,388
CLASS 149	
19	3,649,389
37	3,649,390
CLASS 151	
33	3,648,749
41.73	3,648,747
CLASS 152	
353	3,648,748
370	3,648,750
CLASS 156	
2	3,649,391
3	3,649,392
	3,649,393
16	3,649,394
	3,649,395
62.2	3,649,396
	3,649,397
79	3,649,398
93	3,649,399
148	3,649,400
175	3,649,401
	3,649,402
197	3,649,403
229	3,649,404
244	3,649,405
245	3,649,406
	3,649,407
272	3,649,408
294	3,649,409
390	3,649,410
391	3,649,411
443	3,649,412
518	3,649,413
521	3,649,414
	3,649,415
523	3,649,416
552	3,649,417
555	3,649,418
567	3,649,419
580	3,649,420
	3,649,421
CLASS 157	
1.17	3,648,751
1.24	3,648,746
13	3,648,752
CLASS 159	
4	3,648,753
13A	3,648,754
CLASS 160	
201	3,648,755
CLASS 161	
2	3,649,422
5	3,649,423
43	3,649,424
	3,649,425
	3,649,426
50	3,649,427
	3,649,428
64	3,649,429
88	3,649,430
112	3,649,431
137	3,649,432
143	3,649,433
	3,649,434
156	3,649,435
160	3,649,436
161	3,649,437
162	3,649,438
165	3,649,439
166	3,649,440
175	3,649,441
184	3,649,442
193	3,649,443
CLASS 162	
198	3,649,444
212	3,649,445
	3,649,446
271	3,649,447
343	3,649,448
365	3,649,449
CLASS 164	
23	3,648,756
138	3,648,757
155	3,648,758
182	3,648,759
244	3,648,760
281	3,648,761
289	3,648,762
301	3,648,763
CLASS 165	
32	3,648,764
39	3,648,765
	3,648,766
106	3,648,767
171	3,648,768
CLASS 166	
.5	Re.27,308
177	3,648,769
252	3,648,770
272	3,648,771
273	3,648,772
	3,648,773
305R	3,648,774
307	3,648,775
	3,648,776
312	3,648,777
CLASS 169	
30	3,648,778
CLASS 172	
19	3,648,779
319	3,648,780
568	3,648,781
804	3,648,782
CLASS 173	
4	3,648,783
93.5	3,648,784
CLASS 174	
15R	3,649,738
21R	3,649,739
43	3,649,740
48	3,649,741
70R	3,649,742
84C	3,649,743
107	3,649,744
	3,649,745
CLASS 175	
4.54	3,648,785
56	3,648,786
	3,648,787
205	3,648,788
292	3,648,789
CLASS 176	
19	3,649,450
37	3,649,451
68	3,649,452
CLASS 177	
137	3,648,790
209	3,648,791
210	3,648,792
	3,648,793
CLASS 178	
5.4HE	3,649,746
	3,649,748
5.4R	3,649,747
5.6	3,649,749
	3,649,750
6	3,649,751
6.6DD	3,649,752
	3,649,753
6.8	3,649,754
7.5DC	3,649,755
23A	3,649,756
69.5R	3,649,757
	3,649,758
CLASS 179	
1A	3,649,760
2DP	3,649,759
2TV	3,649,761
6R	3,649,762
15AQ	3,649,763
15AS	3,649,766
15BA	3,649,764
15A	3,649,765
17E	3,649,778
18ES	3,649,767
22	3,649,768
77	3,649,769
84VF	3,649,770
	3,649,771
99	3,649,772
100.2CA	3,649,773
	3,649,774
100.41K	3,649,775
115.5H	3,649,776
175.31R	3,649,777
CLASS 180	
14R	3,648,794
27	3,648,795
52	3,648,796
89	3,648,797
105E	3,648,798
118	3,648,799
CLASS 181	
31B	3,648,801
33HC	3,648,800
44	3,648,802
48	3,648,803
CLASS 184	
64	3,648,804
CLASS 187	
29R	3,648,805
CLASS 188	
2R	3,648,806
73.3	3,648,807
CLASS 191	
45A	3,649,779
CLASS 192	
3R	3,648,808
6A	3,648,809
26	3,648,810
58B	3,648,811
88B	3,648,812
111A	3,648,813
113B	3,648,814
CLASS 193	
35A	3,648,815
CLASS 195	
51	3,649,453
62	3,649,454
66R	3,649,455
66	3,649,456
68	3,649,457
81	3,649,458
96	3,649,459
100	3,649,460
103.5	3,649,461
127	3,649,462
139	3,649,463
140	3,649,464
143	3,649,465
CLASS 197	
6.2	3,648,816
19	3,648,817
157	3,648,818
CLASS 198	
19	3,648,819
21	3,648,820
33AD	3,648,821
131	3,648,822
160	3,648,823
192	3,648,824
195	3,648,825
213	3,648,826
219	3,648,827
220BA	3,648,828
CLASS 199	
68	3,648,829
CLASS 200	
1V	3,649,780
33B	3,649,781
38C	3,649,783
42T	3,649,784
44	3,649,782
47	3,649,785
61.45R	3,649,787
	3,649,788
61.53	3,649,786
82R	3,649,789
144R	3,649,791
148H	3,649,790
148R	3,649,792
153H	3,649,793
157	3,649,794
166	3,649,795
168R	3,649,796
CLASS 202	
158	3,649,466
160	3,649,467
235	3,649,468
CLASS 203	
10	3,649,469
11	3,649,470
	3,649,471
CLASS 204	
1T	3,649,472
	3,649,473
6	3,649,474
15	3,649,475
20	3,649,476
26	3,649,477
49	3,649,478
51	3,649,479
67	3,649,480
72	3,649,481
	3,649,482
	3,649,483
79	3,649,484
95	3,649,485
99	3,649,486
112	3,649,487
143R	3,649,488
146	3,649,489
	3,649,490
	3,649,491
148	3,649,492
157.1	3,649,493
159.15	3,649,494
159.24	3,649,495
162HE	3,649,496
164	3,649,497
180G	3,649,498
180	3,649,499
188	3,649,500
192	3,649,501
	3,649,502
	3,649,503
195	3,649,504
	3,649,505
	3,649,506
202	3,649,507
212	3,649,508
238	3,649,509
	3,649,510
252	3,649,511
298	3,649,512
299	3,649,513
	3,649,514
300	3,649,515
302	3,649,516
CLASS 206	
4	3,648,830
19.5C	3,648,837
39	3,648,832
45.14	3,648,831
45.31	3,648,833
46R	3,648,834
59C	3,648,835
65R	3,648,836
CLASS 208	
22	3,649,517
59	3,649,518
	3,649,519
93	3,649,520
111	3,649,523
120	3,649,521
	3,649,522
139	3,649,524
210	3,649,525
	3,649,526
217	3,649,527
294	3,649,528
CLASS 209	
74M	3,648,838

121	3,648,839
211	3,648,840
CLASS 210	
4	3,649,529
10	3,649,531
11	3,649,530
48	3,649,532
50	3,649,533
63	3,649,534
224	3,648,841
237	3,648,842
443	3,648,843
487	3,648,844
490	3,648,845
494	3,648,846
500	3,648,847
CLASS 211	
88	3,648,848
126	3,648,849
CLASS 212	
55	3,648,850
CLASS 213	
20	3,648,851
CLASS 214	
1BB	3,648,854
1BE	3,648,852
1BH	3,648,853
1B	3,648,855
1D	3,648,856
6G	3,648,857
14	3,648,858
17DA	3,648,860
17D	3,648,859
25	3,648,861
83.3	3,648,862
136	3,648,864
138	3,648,863
152	3,648,865
450	3,648,866
454	3,648,867
510	3,648,868
515	3,648,869
519	3,648,870
778	3,648,871
CLASS 215	
9	Re.27,303
	3,648,872
11R	3,648,873
42	3,648,874
CLASS 219	
10.75	3,649,804
10.79	3,649,797
	3,649,798
60A	3,649,799
64	3,649,800
68	3,649,801
69C	3,649,802
85	3,649,803
121EB	3,649,807
121EM	3,649,806
121P	3,649,805
216	3,649,808
	3,649,810
228	3,649,809
349	3,649,811
396	3,649,812
492	3,649,813
CLASS 220	
1T	3,648,875
3	3,648,876
4R	3,648,877
	3,648,878
9LG	3,648,879
10	3,648,880
54	3,648,881
63	3,648,882
66	3,648,883
72	3,648,884
85B	3,648,886
85P	3,648,885
94R	3,648,887
97C	3,648,888
CLASS 221	
11	3,648,889
236	3,648,890
248	3,648,891
301	3,648,892
CLASS 222	
3	3,648,893
5	3,648,897
	3,648,898
74	3,648,894
82	3,648,899
107	3,648,895
146HA	Re.27,304
168	3,648,896
168.5	3,648,900
194	3,648,901
207	3,648,902
212	3,648,903
380	3,648,904
402.21	3,648,905
CLASS 224	
5R	3,648,906
25A	3,648,907
25	3,649,921
37	3,648,908
48R	3,648,909
CLASS 225	
53	3,648,910
CLASS 226	
30	3,648,911
97	3,648,912
189	3,648,913
CLASS 227	
156	3,648,914
CLASS 228	
37	3,648,915
CLASS 229	
2.5	3,648,916
7	3,648,917
19	3,648,918
46	3,648,919
49	3,648,920
51TC	3,648,921
62.5	3,648,922
75	3,648,923
CLASS 231	
2R	3,648,925
CLASS 232	
35	3,648,924
CLASS 233	
20	3,648,926
26	3,648,927
CLASS 235	
61.11E	3,649,814
92LG	3,649,815
150.27	3,649,818
151	3,649,819
151.1	3,649,816
151.32	3,649,820
152	3,649,821
153	3,649,817
155	3,649,822
	3,649,823
193	3,649,824
197	3,649,825
	3,649,826
CLASS 239	
97	3,648,928
102	3,648,929
156	3,648,930
248	3,648,931
337	3,648,932
377	3,648,933
391	3,648,934
659	3,648,935
CLASS 241	
5	3,648,936
15	3,648,937
CLASS 242	
1.1E	3,648,938
47.01	3,648,939
54R	3,648,940
55.19A	3,648,941
68.3	3,648,942
71.3	3,648,943
74	3,648,944
74.2	3,648,945
107.4	3,648,946
128	3,648,947
156	3,648,948
159	3,648,949
185	3,648,950
190	3,648,951
197	3,648,952
CLASS 244	
3.24	3,648,953
122AD	3,648,955
122B	3,648,954
CLASS 248	
2	3,648,956
45	3,648,957
105	3,648,958
346	3,648,959
356	3,648,960
CLASS 249	
43	3,648,961
46	3,648,962
65	3,648,963
69	3,648,964
134	3,648,965
176	3,648,966
CLASS 250	
41.9ME	3,649,827
43.17	3,649,828
43.5FC	3,649,829
49.5ZC	3,649,830
51.5	3,649,831
67	3,649,832
71R	3,649,833
83.6FT	3,649,834
108R	3,649,835
209	3,649,836
211J	3,649,837
	3,649,838
215	3,649,839
231R	3,649,840
CLASS 251	
57	3,648,967
	3,648,968
63	3,648,969
104	3,648,970
252	3,648,971
339	3,648,972
CLASS 252	
8.75	3,649,535
32.5	3,649,536
49.3	3,649,538
49.5	3,649,537
56S	3,649,570
62.54	3,649,541
62.9	3,649,539
	3,649,540
63.5	3,649,542
174	3,649,545
181	3,649,547
186	3,649,546
	3,649,548
300	3,649,549
301.2R	3,649,551
301.4R	3,649,550
301.4	3,649,552
301.5	3,649,553
301.6F	3,649,554
301.6S	3,649,555
313S	3,649,556
361	3,649,557
376	3,649,558
416	3,649,559
431R	3,649,561
432	3,649,560
439	3,649,562
459	3,649,563
466PT	3,649,564
	3,649,565
470	3,649,566
514	3,649,567
521	3,649,568
526	3,649,543
530N	3,649,684
543	3,649,569
544	3,649,544
CLASS 254	
67	3,648,973
124	3,648,974
134.3CL	3,648,975
	3,648,976
150	3,648,977
167	3,648,978
	3,648,979
CLASS 256	
12.5	3,648,980
24	3,648,981
65	3,648,982
CLASS 259	
1R	3,648,983
4	3,648,984
	3,648,985
104	3,648,986
CLASS 260	
2.5EP	3,649,572
5	3,649,573
17.4R	3,649,574
21	3,649,575
22CA	3,649,576
22D	3,649,571
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PATENT OFFICE NOTICES

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Miscellaneous Amendments

A proposal was published at 36 F.R. 19315 to revise §§ 2.54, 2.67, 2.87, 2.88, and 2.187. Pursuant to this notice, comments have been received from interested persons. Full consideration has been given to all matter presented and changes in the text of the original proposal have been made in view thereof.

Section 2.54 is being revised to permit the Patent Office to accept substitute drawings in appropriate situations.

The revision of § 2.67 clarifies the situations in which an examiner may suspend action on an application.

Sections 2.87 and 2.88 are being revised to state that both goods and services may be the subject of a single application or certificate of registration in accordance with section 30 of the Trademark Act of 1946. Additionally, § 2.87 requires five specimens be submitted for each class.

The revision to § 2.187 insures that the certificate of registration issues to the current owner of the mark.

Effective date. This revision shall become effective March 17, 1972.

In consideration of the foregoing and pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123) and section 6 of the Act of July 19, 1952 (66 Stat. 798; 35 U.S.C. 6), Part 2 of Chapter I of Title 37 of the Code of Federal Regulations is hereby amended as follows:

1. Section 2.54 is revised to read as follows:

§ 2.54 *Informal drawings.*

A drawing not in conformity with §§ 2.51 to 2.53 may be accepted for purpose of examination, but the drawing must be corrected or a new one furnished, as required, before the mark can be published or the application allowed. The necessary corrections will be made by the Patent Office upon applicant's request and at his expense.

2. Section 2.67 is revised to read as follows:

§ 2.67 *Suspension of action by the Patent Office.*

Action by the Patent Office may be suspended for a reasonable time for good and sufficient cause. The fact that a proceeding is pending before the Patent Office or a court which is relevant to the issue of registrability of the applicant's mark, or the fact that the basis for registration is, under the provisions of Section 44(e) of the Act, registration of the mark in a foreign country and the foreign application is still pending, will be considered prima facie good and sufficient cause. An applicant's request for a suspension of action under this section filed within the 6-month response period (see § 2.62) may be considered responsive to the previous office action. The first suspension is within the discretion of the Examiner of Trademarks and any subsequent suspension must be approved by the Commissioner.

3. Section 2.87 is revised to read as follows:

§ 2.87 *Combined applications.*

An application also may be filed to register the same mark for any or all of the goods and/or services upon or in connection with which the mark is actually used and which fall within a plurality of classes. However, dates of use for each class, five specimens for each class, and a fee equaling the sum of the fees for filing an application in each class are required. A single certificate of registration for the mark may be issued.

4. Section 2.88 is revised to read as follows:

§ 2.88 *Applications may be combined.*

(a) When several applications have been filed by the same applicant for registration on the same register of a mark shown in identical form on the drawings for goods and/or services in different classes and each of the applications has been allowed, a single certificate based on such applications may be issued. A request for the issuance of a consolidated certificate must be made of record in each of the applications involved prior to the allowance of any of the applications.

(b) The issuance of any original certificate may be suspended upon request of the applicant, for a period not exceeding 6 months, to permit such consolidation.

5. Section 2.187 is revised to read as follows:

§ 2.187 *Certificate of registration may issue to assignee.*

The certificate of registration may be issued to the assignee of the applicant provided the assignment is recorded in the Patent Office at least 10 days before the application is allowed, and written notice of the recording of the assignment and the address of the assignee is made of record in the application file by the applicant or assignee.

Dated: February 14, 1972.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 72–2684; Filed 2–23–72; 8:46 a.m.]

Published in 37 F.R. 3897, Feb. 24, 1972

Delayed Printing of Plant Patents

Plant Patents dated to issue on October 5, October 12, and October 19, 1971, were omitted from publication in the OFFICIAL GAZETTE on the above dates due to the unavailability of full color reproductions. Normal publication of Plant Patents will resume with the issue of March 28, 1972.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,784,226, W. H. Willert, INJECTION MOLDING APPARATUS, **filed** Dec. 6, 1971, D.C., S.D. Ohio (Dayton), Doc. 4162, *Egan Machinery Co. and William H. Willert* v. *Trueblood, Inc.*

2,804,401, B. A. Cousino, MAGNETIC SOUND TAPE, **filed** Nov. 8, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2679, *Faraday, Inc.* v. *RCA Corporation.*

2,936,899, P. Tashman, TRAY OR PAN CABINETS, **filed** Dec. 14, 1971, D.C., S.D. Fla. (Miami), Doc. 71–1890–C–JLK, *Precision Metal Products, Inc.* v. *Brunor, Inc. et al.*

2,974,055, W. G. Scharf, LUSTROUS FABRICS AND METHODS OF PRODUCING SAME, **filed** Aug. 19, 1970, D.C., E.D.N.Y. (Brooklyn), Doc. 70C1037, *Metal Film Co., Inc.* v. *Warrior Mfg. Co., Inc.* Order of discontinuance, Dec. 8, 1971.

3,004,422, R. M. Starrett, KEY HOLDER, **filed** Dec. 13, 1971, D.C., S.D.N.Y., Doc. 71–C–5423, *Swank, Inc.* v. *New York Merchandise Co., Inc.*

3,005,038, W. A. Donohue, HIGH TEMPERATURE RADIO FREQUENCY CABLE AND METHOD OF MAKING THE SAME. **filed** Dec. 2, 1971, D.C. Colo (Denver), Doc. C–3575, *Tasker Industries* v. *Kaman Sciences Corporation et al.*

3,032,054, D. W. Irwin, PRESSURE REGULATOR CONSTRUCTION, **filed** Dec. 10, 1971, D.C., S.D. Iowa (Des Moines), Doc. 11–450–C–2, *Rockwell Manufacturing Company* v. *Fisher Controls Company, Inc.*

3,093,578, W. F. Hofmeister, CHAIN ADJUSTMENT FOR TRAVELING WATER SCREENS, **filed** Dec. 22, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–3021–IH, *Compac Corporation* v. *John B. French, doing business as Better Built Engineering.*

3,122,484, H. P. Iskenderian, REACTOR HAVING FUEL ELEMENT COATED WITH BURNABLE POISON, **filed** Dec. 10, 1971, D.C., S.D.N.Y., Doc. 71–C–5404, *Block Drug Company, Inc.* v. *Global Imports, Inc.*

3,228,212, A. Huber, METHOD OF HAND KNITTING AND KNITTING NEEDLE, **filed** Dec. 13, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2965, *The Grant Co. et al.* v. *W. T. Grant Co. et al.*

3,252,587, B. T. Scales, PNEUMATIC-HYDRAULIC SHOCK ABSORBERS, **filed** Nov. 24, 1971, D.C., W.D. Pa. (Pittsburgh), Doc. 71–1112, *Brian T. Scales* v. *Pittsburgh Forgings Company.*

3,265,177, K. Knickerbocker, COIN OPERATED VENDING MACHINES, **filed** Nov. 10, 1971, D.C., M.D. Fla. (Tampa), Doc. 71–508–C, *Kaspar Wire Works, Inc.* v. *LECO Engineering and Machine, Inc., Gulf Machine and Grinding, Inc.*

3,269,862, Lanza and Stivers, CROSSLINKED POLYVINYLIDENE FLUORIDE OVER A CROSSLINKED POLYOLEFIN, **filed** Dec. 10, 1971, D.C. Mass. (Boston), Doc. 71–2939–W, *International Telephone and Telegraph Corporation* v. *Raychem Corporation.*

3,273,090, J. Malin, MAGNETICALLY OPERATED SWITCH, **filed** Dec. 3, 1971, D.C., E.D.N.Y. (Brooklyn), Doc. 71C1562, *Alarm Device Mfg. Co.* v. *Alarm Prod. Intl. Inc. and Orlando Tresorras.*

3,277,234, Dekko and Carter, ELECTRICAL RECEPTACLE FOR MOUNTING IN A PANEL, **filed** Dec. 16, 1971, D.C., N.D. Ind. (Fort wayne), Doc. 71–F–140, *Lyall Electric, Inc.* v. *E.M.F. Corp.*

3,338,059, J. G. Tittle, METHODS AND APPARATUS FOR ENTRENCHING SUBMERGED ELONGATE STRUCTURES, **filed** Nov. 23, 1971, D.C., S.D. Tex. (Houston), Doc. 71–H–1351, *Brown & Root, Inc.* v. *Houston Contracting Company.*

3,382,280, C. W. Huffman, 3′,4′-DICHLOROPROPIONANILIDE, **filed** May 7, 1968, D.C.N.J. (Newark), Doc. 447–68, *Monsanto Company* v. *Chemical Insecticide Corp.* Action terminated administratively, Dec. 3, 1971.

3,395,237, H. S. Orton, ELECTRIC RESISTANCE FURNACE, **filed** Dec. 6, 1971, D.C., W.D. Pa. (Pittsburgh), Doc. 71–1148, *Harold S. Orton* v. *Robicon Corporation.*

3,439,450, S. J. Richards, POROUS BLOCK FOR CONSERVING SOIL MOISTURE, **filed** Nov. 30, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–2838–DWW. *The Regents of the University of California* v. *Gordon A. Chapman, doing business as El Sombrero Sales.*

3,511,036, R. A. Julian, LAWN RAKING TOOL ATTACHMENT FOR ROTARY BLADE TYPE LAWN MOWERS, **filed** Nov. 23, 1971, D.C., E.D. Mich. (Detroit), Doc. 37443, *Robert A. Julian* v. *Mich. Production Grinding Co.*

3,511,464, B. L. Doll, CORNER PAD AND BLANK, **filed** Dec. 14, 1971, D.C., W.D. Va. (Charlottesville), Doc. 71–C–35–C, *Cellu Products Company* v. *Brown Products, Inc.*

3,516,560, J. M. Brighton, POWER SKIDS, **filed** Dec. 2, 1971, D.C., M.D. Fla. (Orlando), Doc. 71–249–Orl–C, *Pemberton-Durham, Inc.* v. *Von Engineering Company.*

3,545,017, H. M. Cohn, ENCAPSULATED LIFE JACKET, **filed** Nov. 22, 1971, D.C., N.D. Ohio (Cleveland), Doc. 71–1155, *H. Marvin Cohn* v. *Kransco Manufacturing Co.*

3,577,763, J. O. Beal, APPARATUS FOR SELECTIVELY PROGRAMMING DIFFERENT TYPES OF SHOCK TESTS, **filed** Nov. 17, 1971, D.C., N.D. Tex. (Dallas), Doc. CA–3–5290, *Frank Kirmse* v. *Jarry S. Oakes, Performa Corporation and Tallyho Plastics, Inc.*

3,611,601, Stropkay and Stropkay, ROTATING WHEEL TIRE DISPLAY, **filed** Dec. 1, 1971, D.C., N.D. Ohio (Cleveland), Doc. C–71–1190, *Product Design & Manufacturing Corp.* v. *McNeil Corporation.*

3,618,895, J. J. Van Gompel, SPREADER FOR DAMAGED CORES, **filed** Dec. 10, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2951, *Brammall, Inc.* v. *W. A. Johns Paper Co.*

Certificates of Correction for the Week of Mar. 21, 1972

D. 221,706
D. 222,309
3,386,945
3,465,461
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Dedications

3,120,482.—*Lynn A. Williams,* Winnetka, Ill. APPARATUS FOR ELECTROLYTIC HOLE SINKING. Patent dated Feb. 4, 1964. Dedication filed Dec. 23, 1971, by the assignee. *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,123,545.—*Lynn A. Williams,* Winnetka, Ill. ELECTRODE FOR ELECTROLYTIC SHAPING. Patent dated Mar. 3, 1964. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,130,140.—*Leonard Malkowski,* La Grange, Ill. ELECTROLYTIC CAVITY SINKING APPARATUS. Patent dated Apr. 21, 1964. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,172,831.—*Lynn A. Williams,* Winnetka, Ill. GRINDING MACHINE. Patent dated Mar. 9, 1965. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,196,093.—*Lynn A. Williams,* Winnetka, Ill. ELECTROLYTIC CAVITY SINKING APPARATUS AND METHOD FOR NON-PARALLEL WORKPIECE SURFACES. Patent dated July 20, 1965. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,214,360.—*Joseph L. Bender,* Wheeling, and *Lynn A. Williams,* Winnetka, Ill. ELECTROLYTIC CAVITY SINKING APPARATUS. Patent dated Oct. 26, 1965. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971

3,218,248.—*Lynn A. Williams,* Winnetka, Ill. ELECTROLYTIC CAVITY SINKING APPARATUS AND METHOD. Patent dated Nov. 16, 1965. Dedication filed Dec. 23, 1971, by the assignee *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,235,475.—*Lynn A. Williams,* Winnetka, Ill. ELECTROLYTIC SHAPING APPARATUS AND METHOD. Patent dated Feb. 15, 1966. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

Corrected Dedications

3,488,616.—*George I. Duncan* and *Robert D. Mees,* Fort Wayne, Ind. DRY TYPE TRANSFORMER WITH IMPROVED ENCAPSULATING COMPOSITION. Patent dated Jan. 6, 1970. Dedication filed Sept. 22, 1971, by the assignee, *General Electric Company.*

Hereby dedicates to the Public the above-identified patent.

3,513,523.—*Armin F. Mittermaier* and *Lowell M. Mason,* Fort Wayne, Ind. MACHINE AND METHOD FOR FORMING LAMINATIONS FOR MAGNETIC CORES. Patent dated May 26, 1970. Dedication filed Sept. 22, 1971, by the assignee, *General Electric Company.*

Hereby dedicates to the Public the above-identified patent.

Disclaimers

3,574,826.—*Thomas H. Shepherd* and *Francis E. Gould,* Princeton, N.J. HYDROPHILIC POLYMERS HAVING VITAMINS ABSORBED THEREIN. Patent dated Apr. 13, 1971. Disclaimer filed Aug. 11, 1970, by the assignee, *National Patent Development Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Apr. 27, 1988.

3,581,487.—*William Charles Loomes* and *Arthur James Marrs,* Derby, and *Peter Heffernan,* Carlisle, Cumberland, England. YARN DRAWING MACHINE. Patent dated June 1, 1971. Disclaimer filed Dec. 28, 1971, by the assignee, *Courtaulds Limited.*

Hereby enters this disclaimer to claims 1 to 8, inclusive, of said patent.

3,615,836.—*John S. Batzold,* Westfield, N.J. FUEL CELL CONTAINING AND A PROCESS OF MAKING AN ACTIVATED FUEL CELL CATALYST. Patent dated Oct. 26, 1971. Disclaimer filed Aug. 12, 1970, by the assignee, *Esso Research and Engineering Company.*

Hereby disclaims the portion of the term of the patent subsequent to Mar. 4, 1986.

Patents Available for Licensing or Sale

3,572,294. COW CONTROLLER. Wallace L. Baker. R.F.D. #1, Box 166A, Burley, Idaho, 83318.

3,102,721. PANTAGRAPH EQUILIBRIUM SPRING MECHANISM. Correspondence to: Paul D. Levie, 2333 N. Central Ave., Phoenix, Ariz., 85004.

3,225,761. FATIGUE SUPPORT. Robert Swensen, 120 Poinciana Drive, Martinez, Ga., 30907.

3,500,558. DEVICE FOR THE TEACHING OF NUMERATION SYSTEMS TO ALL BASES. Blair J. Matejczyk, Alliance College, Cambridge Springs, Pa., 16403.

3,537,220. MASONRY WALL BRACE. James P. Ellis, 1381 Blakely Road, East Aurora, N.Y., 14052.

3,591,242. TRACK FOR TRACKLAYING VEHICLES. Gerlach-Werke GmbH, Homburg, Germany. Correspondence to Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,602,600. WRITING IMPLEMENT. Merz & Krell, Auf der Beune 18, Germany. Correspondence to Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,612,070. POWER-DRIVEN HAND-HELD HAIR CURLER. Robert M. Reyes, 614 Forest Ave., Los Angeles, Calif., 90033.

3,625,439. VEHICULAR TRAILER HAVING FLUENT MATERIAL DISTRIBUTION MEANS. Hans Gisler. Correspondence to: Werner W. Kleeman, Suite 212, Crystal Plaza 1, 2001 Jefferson Davis Highway, Arlington, Va., 22202.

3,625,467. MOVABLE SUPPORT DEVICE FOR AT LEAST ONE INSTRUMENT SERVING TO MEASURE THE DIMENSIONS OF AN OBJECT. Willy Schaerer. Correspondence to: Werner W. Kleeman, Suite 212, Crystal Plaza 1, 2001 Jefferson Davis Highway, Arlington, Va., 22202.

3,635,134. VIBRATORY ROLLERS. H. E. THOMAS, Francis Lane, Chester, N.J., 07930.

3,648,294. ENDOPROSTHESIS, ESPECIALLY FOR HIP JOINTS. Dr. Esfandiar Shahrestani. Correspondence to: Meyer, Tilberry & Body, 20th Floor, Terminal Tower, Cleveland, Ohio, 44113.

The following 2 patents are offered by W. S. Routzahn, Glen Burnie, Md. Correspondence to: Sherman Levy, Suite 635, Washington Bldg., 15th and New York Ave. NW., Washington D.C., 20005.

3,609,893. ADVERTISING AND DISPLAY HOLDER.
3,624,601. VEHICLE SEATBELT WARNING AND IGNITION CONTROL SYSTEM.

General Electric Company is prepared to grant non-exclusive licenses under the following 23 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to: General Electric Co., Laminated Products Dept., 1 Campbell Road, Schenectady, N.Y., 12306.

3,466,360. METHOD OF MAKING FREQUENCY-STABILIZED METAL-CLAD LAMINATES AND ARTICLE.

Applications for license under the following 2 patents may be addressed to: Division Patent Counsel, Switchgear Equipment Business Div., General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,621,109. ELECTRICAL INSULATOR AND METHOD OF MAKING.
3,625,737. PROTECTIVE COATING AND METHOD OF MAKING.

Applications for license under the following 10 patents may be addressed to: General Electric Company, Bldg. 43, Room 529, 100 Woodlawn Ave., Pittsfield, Mass., 01201.

3,365,616. OVERVOLTAGE PROTECTION SYSTEM FOR ELECTRICAL APPARATUS WITH CURRENT LIMITING FUSE AND REMOVABLE OIL FUSE IN SERIES ON LINE SIDE.
3,368,175. VOLTAGE LEAD ENTRANCE FOR ENCAPSULATED ELECTRICAL DEVICES.
3,366,762. ARC CONTROLLING ELECTRODES FOR SWITCHES AND GAPS.
3,414,698. HIGH VOLTAGE TRANSFORMER TYPE HEATER FOR HEATING FLUIDS.
3,417,216. ARC CONTROLLING ELECTRODES FOR SWITCHES AND GAPS.
3,466,593. TERMINATION.
3,471,816. LOADBREAK FUSEHOLDER.
3,562,478. RESISTANCE WELDING APPARATUS FOR PRODUCING SUBSTANTIALLY CREVICE-FREE WELDS.
3,573,553. POWER SUPPLY PROTECTOR WITH RESET MEANS.
3,600,998. TICKET PUNCHING MECHANISM AND STOP ASSEMBLY.

Applications for license under the following 10 patents may be addressed to: Patent Counsel LSTG-I & MT Divisions, General Electric Company, 1 River Road, Bldg. No. 43, Schenectady, N.Y., 12305.

3,515,011. LUBRICATION AND COOLING OF HIGH SPEED GEARS.
3,536,542. ALLOY HEAT TREATMENT.
3,548,592. COMBINATION FUEL NOZZLE AND SPARK PLUG FOR A GAS TURBINE.
3,549,356. HIGH TEMPERATURE CORROSIVE RESISTANT COBALT-BASE ALLOYS.
3,571,635. TURBINE-GENERATOR STATOR FRAMES.
3,574,507. AIR/FUEL MIXING AND FLAME STABILIZING DEVICE FOR FLUID FUEL BURNER.
3,607,663. FLUID PURIFICATION SYSTEM.
3,614,112. FLUID DEFLECTOR APPARATUS.
3,614,457. TURBINE OVERSPEED TRIP ANTICIPATOR.
3,614,493. UNIVERSAL LIQUID COOLED CONNECTION ASSEMBLY.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 27 patents.

Inquiries respecting licenses under RCA patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

3,631,576. METHOD OF PRODUCING A COLOR KINESCOPE.
3,631,593. ASSEMBLY OF FILAMENTARY DISPLAY DEVICES.
3,632,436. CONTACT SYSTEM FOR SEMICONDUCTOR DEVICES.
3,632,864. SIGNAL SEEKING SYSTEM FOR RADIO RECEIVERS WITH TUNING INDICATING CIRCUITRY FOR CONTROLLING THE SIGNAL SEEKING.
3,632,869. PARTIALLY OVERLAPPING HOLOGRAM MOTION PICTURE RECORD.
3,634,612. IDENTIFIER CIRCUITS FOR COLOR BAR TYPE TEST GENERATORS.
3,634,620. NOISE PROTECTED AGC CIRCUIT WITH AMPLITUDE CONTROL OF FLYBACK PULSES.
3,634,869. INTERPULSE TIME INTERVAL DETECTION CIRCUIT.
3,634,876. SIGNAL DETECTING AND LATCHING CIRCUIT.
3,634,933. MAGNETIC HEAD METHOD.
3,365,510. HEAT SEAL OF A GLASS MEMBER TO ANOTHER MEMBER.
3,635,751. LITHIUM SILICATE GLARE-REDUCING COATING AND METHOD OF FABRICATION ON A GLASS SURFACE.
3,636,418. EPITAXIAL SEMICONDUCTOR DEVICE HAVING ADHERENT BONDING PADS.
3,636,461. TRANSFERRED ELECTRON AMPLIFIER WITH OSCILLATION STABILIZATION CIRCUIT.
3,636,475. OSCILLATOR WITH VARIABLE REACTIVE CURRENT FREQUENCY CONTROL.
3,636,527. STORAGE CIRCUIT.
3,636,836. PHOTOGRAPHIC PROCESS FOR PREPARING A SCREEN STRUCTURE FOR A CATHODE-RAY TUBE.
3,637,211. BOWLING SPLIT DETECTOR.
3,637,308. COLOR CORRECTION OF PRISMATIC OFF-AXIS OPTICAL SYSTEM.

3,637,917. HERMETIC HIGH-CURRENT TERMINAL FOR ELECTRONIC DEVICES.

3,637,925. SYSTEM AND FILTER FOR ENCODING COLOR IMAGES ONTO BLACK AND WHITE FILM.

3,637,935. KEYED SUBSTRATE FIELD EFFECT TRANSISTOR FREQUENCY-SELECTIVE CIRCUITS.

3,638,039. OPERATION OF FIELD-EFFECT TRANSISTOR CIRCUITS HAVING SUBSTANTIAL DISTRIBUTED CAPACITANCE.

3,638,067. TRIGGERING CIRCUIT FOR CRT DEFLECTION SYSTEM UTILIZING AN SCR.

3,638,129. CHOPPER STABILIZED AMPLIFIER.

3,638,141. COMPACT, HIGH-POWER, HIGH-EFFICIENCY SILICON AVALANCHE DIODE L-BAND OSCILLATOR.

3,638,214. VECTOR GENERATOR.

Patents Withdrawn from Register

Robert B. Rand hereby withdraws the following patent from the Register of Patents Available for Licensing or Sale. The patent was listed as being available, in the OFFICIAL GAZETTE as indicated below:

3,557,580. SELF-CLEANABLE HAIRBRUSH. Dec. 7, 1971.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 22, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-08-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-04-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; , Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-02-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director Fertilizers; Foods: Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-14-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	6-23-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-11-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-05-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-04-71
PHYSICS, GROUP 280—R. L. EVANS, Director Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	1-04-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	1-04-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	1-06-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	1-04-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-02-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	2-22-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	1-15-71

Expiration of patents: The patents within the range of numbers indicated below expire during March 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents .... Numbers 2,702,901 to 2,705,321, inclusive
Plant Patents .... Numbers 1,855 to 1,373, inclusive

DEFENSIVE PUBLICATIONS

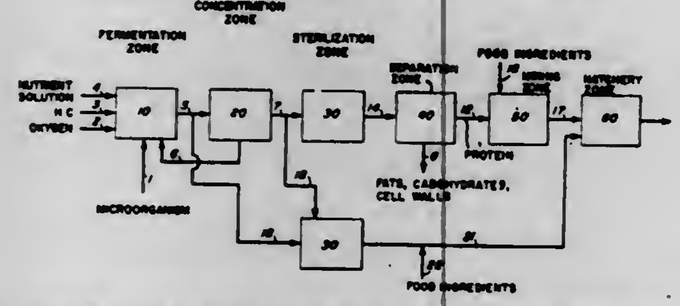
PUBLISHED MARCH 21, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T896,037
FISH, OYSTER AND CRUSTACEAN FOOD COMPRISING PARTICULAR PROTEINS DERIVED FROM HYDROCARBONS

Donald L. Wright, 35 E. 75th St., New York, N.Y. 10021
Filed May 1, 1970, Ser. No. 33,817
Int. Cl. A23k *1/00*
U.S. Cl. 99—3
1 Sheet Drawing. 19 Pages Specification



A unique, high quality protein food composition which is particularly adapted as food for fish, oysters and crustaceans, is prepared in a fermentation process in which a microorganism, such as bacterium, is grown on a mixture of petroleum hydrocarbons. The preparation is conducted in an inorganic salt and water under aerobic conditions. After fermentation, the microorganism cells are harvested, sterilized, and fed as an aqueous solution to fish, crustaceans and the like. Optionally, the protein content of the sterilized, harvested microorganisms can be separated from the cell walls and other non-protein products by extracting the sterilized, aqueous solution at a pH ranging from about 8 to 12. Protein subsequently can be precipitated by acidifying the extract to a pH in the range of from about 5.2 to 3.2. The precipitated protein can then thereafter be fed to fish and the like.

T896,038
EXTERNAL SLITTING AFTER TUBULAR FILM PREPARATION

Donald F. Griffin, Clinton, Iowa, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of abandoned application Ser. No. 796,530, Feb. 4, 1969. This application Dec. 23, 1970, Ser. No. 101,125
Int. Cl. B29c *17/07, 17/14, 17/16*
U.S. Cl. 264—95
1 Sheet Drawing. 7 Pages Specification

In a process for preparing a thermoplastic film such as polyethylene or polypropylene by

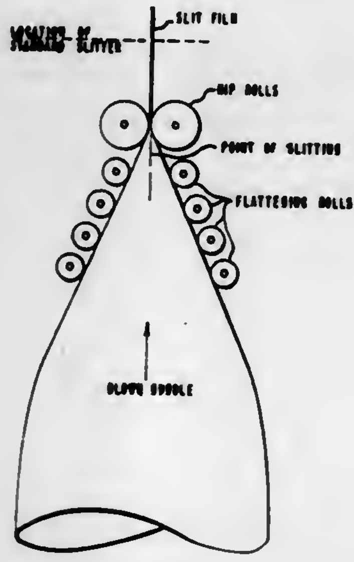
(a) extruding the molten thermoplastic material into a tubular film;
(b) expanding the tubular film by the application of internal pressure, forming a bubble having a hoop stress, mathematically expressed as:

$$S=Pd\div 2t$$

where

S=bubble hoop stress,
P=internal pressure of the bubble,
d=the diameter of the bubble,
t=film thickness;

(c) flattening the tube by external pressure such as a series of rolls on opposite sides of the tube in a converging configuration;
(d) collapsing the tube by passing it through at least one set of nip rolls; and
(e) slitting the edges of the collapsed tube,



the improvement which comprises externally slitting the flattened tube along at least one lateral edge before passing the tube through the nip rolls and at a point where the bubble hoop stress is positive and less than about 10%, preferably less than 5%, of its maximum value, at full expansion, to minimize the amount of wrinkling at the slitting edge of the collapsed bubble thereby minimizing edge losses.

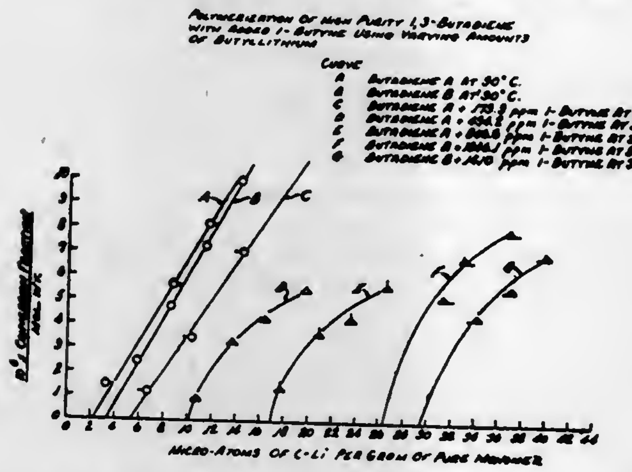
T896,039
PLASTISOLS OF POLYVINYL CHLORIDE AND ITS COPOLYMERS

David L. Valentine, 4508 Chickasaw Road 37664; Don R. Leonard, 1425 Warpath Drive 37664; and Albert D. Beeler, 3320 Grandview 37660, all of Kingsport, Tenn.
Continuation-in-part of application Ser. No. 868,679, Oct. 23, 1969. This application Dec. 28, 1970, Ser. No. 102,243
Int. Cl. C08f *19/14;* **C08h** *9/00*
U.S. Cl. 260—23
No Drawing. 22 Pages Specification

A plasticizer blend for plastisols of polyvinyl chloride, or copolymers of polyvinyl chloride, particularly useful in carpet backings. The blend comprises 2,2,4-trimethylpentane-1,3-diol diisobutyrate, a dialkyl phthalate in which each of the alkyl moieties contain from 6 to 10 carbon atoms, and either (a) 2,2,4-trimethylpentane-1,3-diol monoisobutyrate monobenzoate or (b) a dialkyl phthalate in which each of the alkyl moieties contain from 4 to 6 carbon atoms.

T896,040
PROCESS OF POLYMERIZING BUTADIENE IN THE PRESENCE OF LITHIUM CATALYST

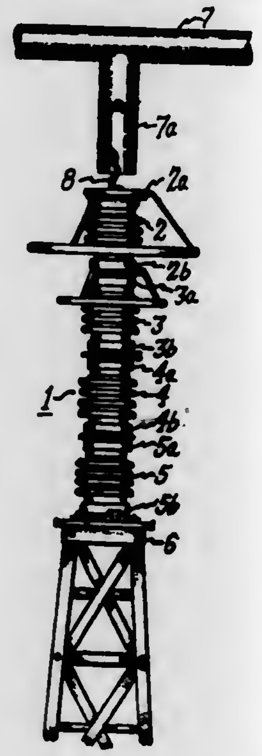
Marlyn J. Brock, Akron, Ohio, assignor to The Firestone Tire and Rubber Company, Akron, Ohio
Continuation of applications Ser. No. 4,444, Jan. 19, 1970, and Ser. No. 58,386, Oct. 3, 1966, which is a continuation-in-part of application Ser. No. 427,415, Jan. 22, 1965. This application Jan. 14, 1971, Ser. No. 106,556
Int. Cl. C08d *3/06, 3/08*
U.S. Cl. 260—94.2
1 Sheet Drawing. 8 Pages Specification



1,3-butadiene is polymerized in the presence of a hydrocarbon lithium catalyst in the presence of 400 to 1500 parts, more or less, of an alpha-acetylene or a lithium acetylide containing 2 to 8 carbon atoms (calculated as ethyl acetylene) per million parts of monomer as a modifier. The amount of catalyst present is in substantial excess over the stoichiometric amount required to react with the alpha-acetylene to produce lithium acetylide. Such excess is sufficient to initiate polymerization and produce polymer of the desired molecular weight.

T896,041
AUTOMATIC DISCONNECT MEANS FOR A LIGHTNING ARRESTER

Arthur A. Olsen, Pittsfield, Mass., assignor to General Electric Company
Filed Feb. 22, 1971, Ser. No. 117,231
Int. Cl. H01h *31/00*
U.S. Cl. 200—48
1 Sheet Drawing. 12 Pages Specification



An automatic disconnect means is provided for mechanically separating, or opening, a circuit connecting a station-type lightning arrester to an overhead bus bar arrangement. The automatic disconnect means is characterized by being responsive to a failure of the arrester that causes the arrester housing to fall away from the overhead bus to which it is connected. The disconnect means operates to prevent mechanical loading of the bus due to the weight of all, or a portion, of the arrester housing remaining connected to it after such a failure.

T896,042
DURABLE PRESS CATALYST SYSTEM

Richard N. Knowles, P.O. Box 302, R.D. 1, Millcreek Road, Hockessin, Del. 19707
Filed Mar. 1, 1971, Ser. No. 119,818
Int. Cl. D06m *9/00*
U.S. Cl. 8—115.7
No Drawing. 14 Pages Specification

An improved catalyst system for reacting durable press resins with fabrics containing both cellulosic and noncellulosic fibers consisting of zinc hydroxyacetate or a mixture of hydroxyacetic acid with magnesium chloride, zinc chloride or zinc nitrate, adjusted to a pH of 4.5 to 6.0. This catalyst system used in the conventional paddry-cure process imparts adequate durable press qualities with less impairment of the tensile strength and abrasion resistance of the fabric than conventional catalyst systems.

T896,043
STABILIZATION OF PHOTOGRAPHIC MULTILAYER COLOR PRODUCTS

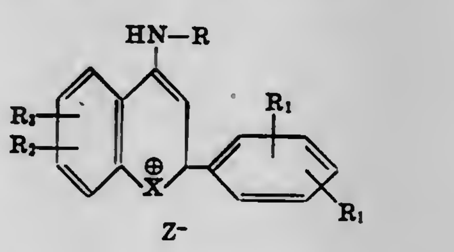
Harry C. Baden, Webster, N.Y. (1669 Lake Ave., Rochester, N.Y. 14615), and Charleton C. Bard and James S. Bruce, both of 1669 Lake Ave., Rochester, N.Y.
Filed Mar. 1, 1971, Ser. No. 120,057
Int. Cl. G03c *1/76*
U.S. Cl. 96—68
No Drawing. 17 Pages Specification

Multilayer color films of the incorporated coupler type are stabilized so as to maintain their sensitometric properties during storage by hardening the emulsion layers with an aldehydic gelatin hardener such as succinaldehyde bis-bisulfite, neutralizing unreacted hardener with, for example, hydroxylamine sulfate, treating the emulsion layers with bromide salt solution and drying the film.

T896,044
SOLID SCINTILLATORS

Lorenzo Federico Costa, Frank Grum, and James Albert Van Allan, all % Eastman Kodak Co., Kodak Park Division, Rochester, N.Y. 14650
Filed Mar. 4, 1971, Ser. No. 121,135
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 R
No Drawing. 15 Pages Specification

This invention relates to solid scintillators which are 2-aryl-4-sec-amino-benzo[b]pyrylium salts or 2-aryl-4-secaminobenzo[b]thiapyrylium salts. The solid scintillators which may be employed according to the invention can be represented by the structural formula:



wherein X is a sulfur or oxygen atom; Z is an anionic function as exemplified by perchlorate, halides, fluoroborate, sulfonate and the like; R is an alkyl or aryl group; each of R_1 can be a hydrogen atom, an alkyl group or an alkoxy group; and R_2 and R_3 each can be a hydrogen atom or when taken together are attached to adjacent carbon atoms and represent the atoms necessary to form a fused cyclic aromatic moiety such as benzo or naphtho and substituted fused aromatic rings. The preferred compounds are 4-butylamino-2-(4-methoxyphenyl)benzo[b] pyrylium perchlorate, 4-butylamino-2-(4-methoxyphenyl) benzo[b]pyrylium fluoroborate and (4-benzylamino)-2-phenylbenzo[b]pyrylium perchlorate.

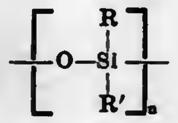
The solid scintillators are advantageously employed in the continuous monitoring of beta-radiation in effluents, particularly in conjunction with liquid column chromatography.

T896,045
DETERGENT BAR
William L. Groves, Jr., 715 N. 7th St., Ponca City, Okla. 74601
Continuation of abandoned application Ser. No. 773,296, Nov. 4, 1968. This application Mar. 15, 1971, Ser. No. 124,432
Int. Cl. C11d *1/14, 9/46*
U.S. Cl. 252—121
No Drawing. 21 Pages Specification

A detergent bar exhibiting excellent curd dispersing characteristics, good lathering properties, and a low wear rate can be prepared from a mixture of about 55–83% of an alkali metal soap having about 15–30% of a C_{12} to C_{18} alpha olefin sulfonate dispersed throughout, and from about 2–15% moisture. The soap may be derived from tallow coconut oil mixtures or the bar may be free of coconut oil soaps. About 25–40 percent of the alkali metal soap may be replaced with a magnesium soap to improve the hardness of the bar. The additional inclusion of up to 10% of an alkyl aryl sulfonate, such as an alkyl benzene sulfonate with a C_5 to C_{18} linear alkyl moiety, further enhances the lime soap dispersion characteristics of the bar.

T896,046
PAPER MATERIALS IMPREGNATED WITH POLYSILOXANES
Robert J. Vetter, 7 Maple Ave., Richmond, Va. 23226
Filed Apr. 15, 1971, Ser. No. 134,449
Int. Cl. B32b *27/34*
U.S. Cl. 117—138.8 N
No Drawing. 15 Pages Specification

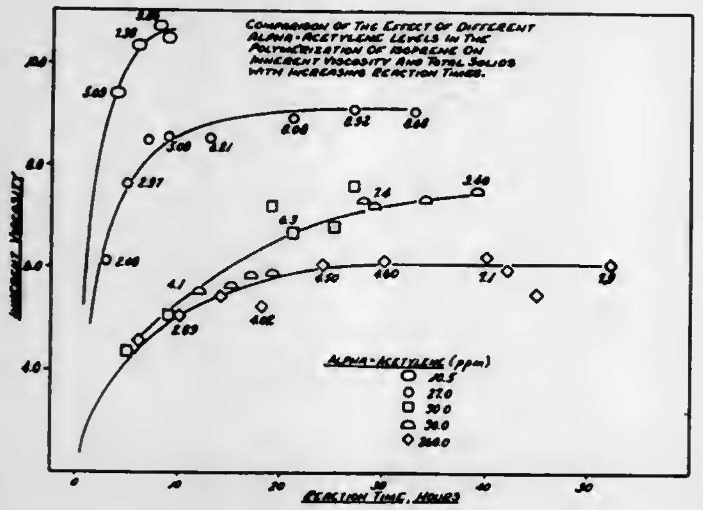
A flexible, coherent sheet material made of fibrids of a non-fusing aromatic polyamide and, optionally, fibers of a non-fusing aromatic polyamide and/or particulate mica, which sheet material is impregnated with a liquid polysiloxane. The sheet materials, which are paper-like, are useful for electrical insulation purposes, especially where high temperatures are encountered. The material contains 10 to 100 parts by weight of the fibrids, 0 to 50 parts by weight of the fibers, 0 to 90 parts of the mica and 1 to 70% of the polysiloxane. The polysiloxane has the formula



$$\left[-O-\overset{\displaystyle R}{\underset{\displaystyle R'}{Si}}-\right]_n$$

where R is hydrocarbon, R′ is hydrogen or hydrocarbon, *n* is at least 10, and the molecule is endcapped with hydroxyl, ester or trimethylsiloxy groups.

T896,047
POLYMERIZATION OF ISOPRENE
Marlyn J. Brock, Akron, Ohio, assignor to The Firestone Tire and Rubber Company, Akron, Ohio
Continuation of application Ser. No. 885,300, Dec. 15, 1969, which is a continuation of application Ser. No. 583,607, Oct. 3, 1966. This application Apr. 20, 1971, Ser. No. 135,788
Int. Cl. C08d *3/00, 3/02*
U.S. Cl. 260—94.2 T
3 Sheets Drawing. 11 Pages Specification

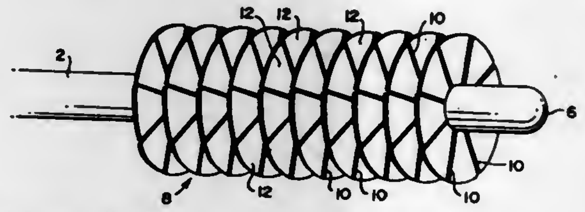


Isoprene is polymerized by a hydrocarbon lithium catalyst in the presence of 15 to 300 parts per million of alpha-acetylene or lithium acetylide or an allene of 3 to 8 carbon atoms as a modifier, the amount of catalyst being in substantial excess of the stoichiometric amount required to react with the modifier, such excess being sufficient to initiate polymerization.

REISSUES
MARCH 21, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,310
CEREBRO-VENTRICULAR CATHETER
Salomon Hakim, 13 Carrera, 48–26 Bogota, Colombia
Original No. 3,516,410, dated June 23, 1970, Ser. No. 695,477, Jan. 3, 1968. Application for reissue Sept. 23, 1970, Ser. No. 74,544
Int. Cl. A61m *27/00*
U.S. Cl. 128—350 R **10 Claims**

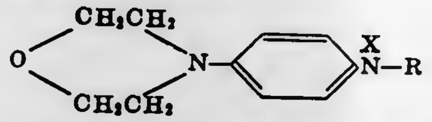


The invention is a ventricular catheter for use with ventriculo-atrial shunting devices, and consists of a tubing of soft, tissue-compatible material with intake apertures positioned in the wall of the tubing at one end thereof, the end of the tubing preferably being closed.

Thin membranes of flexible, tissue-compatible material are attached between the holes and extend outward from the wall of the tube. The flexibility is such that the lightest contact with attached tissue will bend the membrane and protect the underlying hole. The membrane may be radially slit to facilitate collapsing upon passing of the catheter through tissue. The membranes are long enough, so that when the catheter is inserted in tissue, they cover the apertures to prevent scraping of tissue thereby.

27,311
4-[p-(SUBSTITUTED AMINO)PHENYL] MORPHOLINES
John J. D'Amico, Akron, and Sidney T. Webster, Worthington, Ohio, assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Original No. 3,392,170, dated July 9, 1968, Ser. No. 483,294, Aug. 27, 1965. Application for reissue Aug. 27, 1970, Ser. No. 67,638
Int. Cl. C07d *87/40*
U.S. Cl. 260—247.5 R **2 Claims**

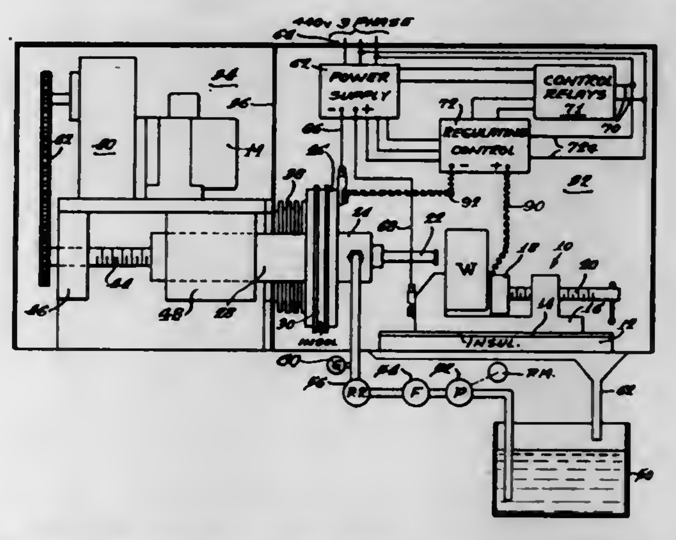
Antiozonants of the formula



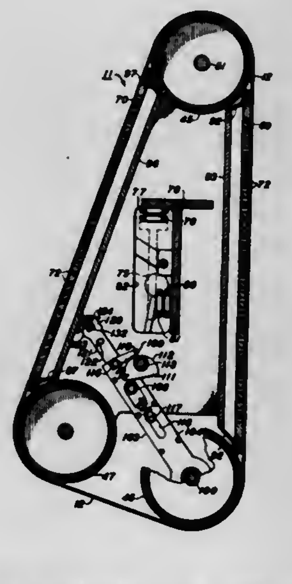
where X is [hydrogen or] nitroso and R is alkyl of 3 to 12 carbon atoms or cycloalkyl of 5 to 12 carbon atoms are new compounds useful for protecting natural and synthetic rubbers from ozone degradation.

27,312
CONTROL SYSTEM FOR ELECTROLYTIC MACHINING APPARATUS
Merlin O. Petroff, Grayslake, Ill., assignor to Anocut Engineering Company, Elk Grove Village, Ill.
Original No. 3,433,728, dated Mar. 18, 1969, Ser. No. 385,746, July 28, 1964. Application for reissue Sept. 4, 1969, Ser. No. 871,489
Int. Cl. B23p *1/04;* **B01k** *1/00*
U.S. Cl. 204—224 **12 Claims**

An electrolytic machining apparatus of the type having an electrode placed opposite an electrode with a power unit to advance the electrode and workpiece toward each other while electrolyte is pumped through the gap between the electrode and the workpiece, an electric circuit for the power unit and the electrolyte pump, a transformer, a current rectifying output stage for electrolyzing current including at least one silicon controlled rectifier connected between the transformer and the electrode and workpiece, a voltage control unit coupled to the rectifier to maintain the electrolyzing current voltage at a predetermined value, and a control unit connected to detect an instantaneous charge in the electrolyzing current voltage to interrupt the firing of the silicon controlled rectifier and to cause the electric circuit to deenergize the power unit and the electrolyte pump.



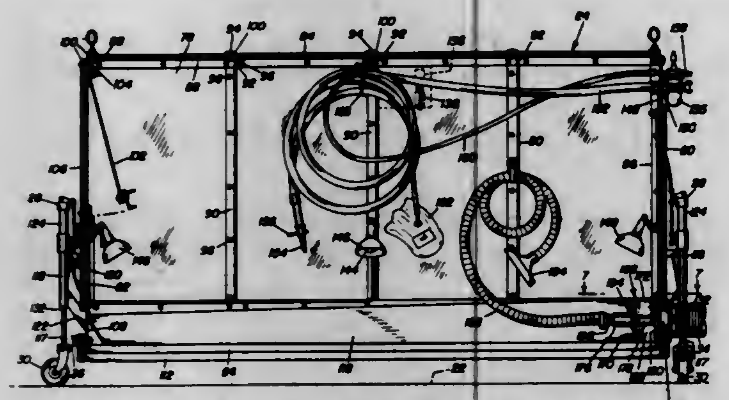
27,313
BELT TRACKING SYSTEM
Hugh L. Jones, Rochester, and David R. Stokes, Webster, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Original No. 3,500,694, dated Mar. 17, 1970, Ser. No. 826,740, Mar. 27, 1969, which is a continuation of Ser. No. 731,755, May 24, 1968. Application for reissue Aug. 3, 1970, Ser. No. 60,396
Int. Cl. F16h *7/18*
U.S. Cl. 74—241 **7 Claims**



A belt tracking arrangement for use with a belt supporting roller wherein the shaft for the roller is mounted for short pivotal movement about an axis normal to its axis and which lies in a plane that bisects the angle of the belt runs on either side of the roller.

27,314
SANDBLASTER FOR FLOORS

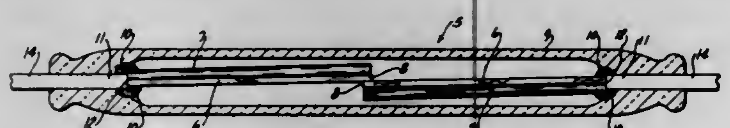
Anthony E. Codina and George C. Punton, San Diego County, Calif., assignors to Marine & Industrial Coatings Co., San Diego, Calif.
Original No. 3,407,538, dated Oct. 29, 1968, Ser. No. 575,616, Aug. 29, 1966. Application for reissue Nov. 26, 1969, Ser. No. 888,175
Int. Cl. B24c *3/06*
U.S. Cl. 51—8 **4 Claims**



The present invention relates to a sandblasting mechanism of the type in which sand is ejected under pressure from the nozzle of a hose.

27,315
REED SWITCH ADAPTED FOR RAPID CYCLING

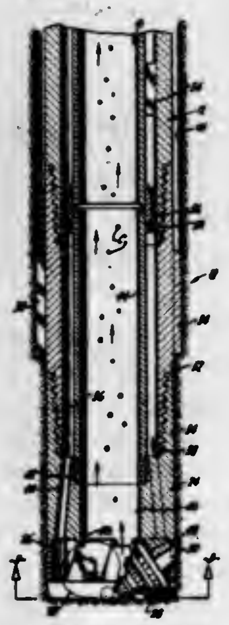
John D. Santi, West Allis, Wis., assignor to Briggs & Stratton Corporation, Milwaukee, Wis.
Original No. 3,315,193, dated Apr. 18, 1967, Ser. No. 482,699, Aug. 26, 1965. Application for reissue July 31, 1970, Ser. No. 60,055
Int. Cl. H01h *51/28*
U.S. Cl. 335—154 **6 Claims**



A reed switch wherein each reed is provided with a relatively thicker post extending along the reed at the side remote from the other reed and the post is secured to the fixed end of its reed only.

27,316
DRILL BIT

Wayland D. Elenburg, Monahans, Tex., assignor to Small Business Administration
Original No. 3,416,617, dated Dec. 17, 1968, Ser. No. 574,054, Aug. 22, 1966. Application for reissue Dec. 16, 1969, Ser. No. 888,176
Int. Cl. E21b *9/08;* **E21c** *13/00*
U.S. Cl. 175—339 **12 Claims**



A drill bit adapted for use with a continuous dual passage drill pipe and including fluid ducts for directing flow from around the inner drill pipe onto the cutting members. A skirt around the cutting members greatly restricts flow to the outside of the bit so that almost all return flow is up through the inner pipe. A radial collar further restricts upward flow.

Delayed Printing of Plant Patents

Plant Patents, dated to issue on October 5, October 12, and October 19, 1971, were omitted from publication in the OFFICIAL GAZETTE on the above dates due to the unavailability of full color reproductions. Normal publication of Plant Patents will resume with the Issue of March 28, 1972.

PLANT PATENTS

GRANTED OCTOBER 5, 1971

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,063
ROSE PLANT

Robert V. Lindquist, Hemet, Calif., assignor to Hemet Wholesale, Hemet, Calif.
Filed July 11, 1969, Ser. No. 841,157
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—17 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a vigorous and upright habit of growth, a unique, star-shaped flower form, better than average flower petal substance, and a distinctive and attractive bright coral orange flower color.

3,064
NECTARINE

Grant Merrill, 416 N. Anderson Road, Exeter, Calif. 93221
Filed Oct. 31, 1969, Ser. No. 873,142
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine substantially as illustrated and described, which is characterized by a heavily productive and regular bearing tree producing very easily ripening fruit with red waxy skin which is large for its season; and which most nearly resembles Sunbright nectarine, U.S. Plant Patent 2,138, but is distinguished therefrom in bearing more heavily and regularly, in blooming earlier making it better adapted to areas of warmer winters, and in bearing fruit which is redder, waxier, and has less russet.

3,065
ROSE PLANTS

J. Benjamin Williams, 2800 Elnora St., Silver Spring, Md. 20902
Filed Nov. 5, 1969, Ser. No. 874,422
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—22 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the Orange Red coloration of the open blooms, changing to soft Coral overlay, the abundant Dark Green Redcast glossy foliage, the strong, stocky habit of growth and the large flower spray and well formed blooms which exhibit a wide range of color variation in Orange Red and Coral tones, varying with the age of bloom, temperature and soil.

3,066
AZALEA PLANT

Carl Pearlstein, San Francisco, Calif., assignor to Nurserymen's Exchange, Inc.
Filed Feb. 17, 1969, Ser. No. 800,009
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—57 **1 Claim**

1. A new and distinct variety of azalea plant of the Belgian Indica class substantially as herein shown and described primarily characterized by its general similarity to "Improved Red Wing" of which it is a sport and by its China Rose color (HCC 024/1), its greater tendency to produce double bloom and its tendency to have fasciated, multiple styles.

3,067
APRICOT TREE

Willard Clayton Hill, Visalia, Calif., assignor to L. E. Cooke Co., Visalia, Calif.
Filed Sept. 18, 1969, Ser. No. 859,216
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—39 **1 Claim**

A large, vigorous, upright, dense, vase-formed apricot tree which is self-fertile and a regular and very productive bearer of large, freestone fruit; the tree having unusually long and progressive blooming and ripening periods, and the fruit being substantially resistant to pit burn.

3,068
ROSE PLANT

Samuel McGredy, % S. McGredy Son, Ltd., Portadown, Northern Ireland
Filed Sept. 9, 1968, Ser. No. 758,634
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—25 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class substantially as herein shown and described primarily characterized by: the extremely well formed, bright orange, small hybrid tea type blooms; the quick repeat-flowering habit; the medium size plant of somewhat spreading habit, profusely covered in medium green foliage.

PLANT PATENTS

GRANTED OCTOBER 12, 1971

3,069
ROSE PLANT

**Robert V. Lindquist, Hemet, Calif., assignor to
Hemet Wholesale, Hemet, Calif.
Filed July 24, 1969, Ser. No. 844,674
Int. Cl. A01h** *5/00*

U.S. Cl. Plt.—29 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a low-growing and vigorous plant habit, excellent foliage, a free flowering habit, dainty "Garnette"-like buds which open to small, flat, perfectly formed, attractive full flowers of over 100 petals per flower on the average, a distinctive and attractive velvety red flower color, good flower color retention even under adverse weather conditions, and an above average lasting quality of the flowers both on the bush and as cut flowers.

3,070
ROSE PLANT

**Samuel McGredy, S. McGredy & Son Ltd.,
Portadown, Ireland
Filed Nov. 17, 1969, Ser. No. 877,535
Int. Cl. A01h** *5/00*

U.S. Cl. Plt.—28 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class substantially as herein shown and described primarily characterized by: the extremely free flowering compact healthy plant; the semi-double bright orange scarlet blooms carried in small trusses close to the foliage.

3,071
ROSE PLANT

**Samuel McGredy, S. McGredy & Son Ltd.,
Portadown, Ireland
Filed Nov. 17, 1969, Ser. No. 877,534
Int. Cl. A01h** *5/00*

U.S. Cl. Plt.—12 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class substantially as herein shown and described primarily characterized by: the tall upright plant allied to the freely produced dark Crimson new shoots; the scarlet and gold bicolor of the blooms turning Crimson with age; the heavily veined deep red foliage turning dark green when mature.

3,072
ROSE PLANT

**Charles B. McCannon, Mount Clemens, Mich., assignor to
Frank J. Munt Flowers, Inc., Mount Clemens, Mich.
Filed July 3, 1968, Ser. No. 742,469
Int. Cl. A01h** *5/00*

U.S. Cl. Plt.—18 **1 Claim**

A new variety of rose plant having very large deep pink blooms borne singly on sturdy thick stems and particularly characterized by a new and different color, a pleasant tea fragrance, numerous large petals, and excellent lasting quality both on the plant and as cut flowers; the new plant being a greenhouse rose of vigorous upright growth which blooms profusely in any season.

3,073
VARIETY OF ROSE

**John W. Patterson, 6518 Kernel, Houston, Tex. 77017
Filed Aug. 22, 1969, Ser. No. 852,516
Int. Cl. A01h** *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of vigorous growing and good flower producing habits, profuse leathery green foliage, relatively large flowers which are borne on strong stems of long length, good flower form, good flower fragrance, average disease resistance, a distinctive and attractive general color tonality of the flowers corresponding to Currant Red, Plate 821/1, in the newly open flowers, and to near Currant Red, Plate 821/3, in the three-days open flowers, and good keeping qualities of the flowers as cut flowers.

3,074
VARIETY OF ROSE

**John W. Patterson, 6518 Kernel, Houston, Tex. 77071
Filed Aug. 4, 1969, Ser. No. 847,474
Int. Cl. A01h** *5/00*

U.S. Cl. Plt.—19 **1 Claim**

1. A new and distinct variety of rose plant of the grandiflora class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of good growing and flower producing habits, profuse glossy green foilage, relatively large flowers which are borne on strong, medium length stems, good flower form, good moderate fragrance, better than average disease resistance, attractive general color tonality of the flowers corresponding Cardinal in the newly open flowers, and to near Tyrian Purple, in the three-days open flowers, and good keeping qualities of flowers as cut flowers.

GRANTED OCTOBER 19, 1971

3,075
ROSE PLANT

**David L. Armstrong, Upland, Calif., assignor to
Armstrong Nurseries, Inc., Ontario, Calif.
Filed Jan. 6, 1970, Ser. No. 1,065
Int. Cl. A01h** *5/00*

U.S. Cl. Plt.—20 **1 Claim**

A bush rose plant of the hybrid tea class which is tall growing and adapted for outdoor cultivation. The flowers are of average size for their class, with double petalage regularly arranged. The flowers are usually borne singly, but may appear in clusters of three or four on medium length stems of normal strength. The overall color effect is a strong reddish orange at first, tending towards a vivid red to strong red after a few days. The fragrance is subdued. The plant blooms abundantly outdoors, and blooms nearly continuously during the growing season. It is of upright-spreading habit, much branched.

3,076
ROSE PLANT

**David L. Armstrong, Upland, Calif., assignor to
Armstrong Nurseries, Inc., Ontario, Calif.
Filed Jan. 6, 1970, Ser. No. 1,066
Int. Cl. A01h** *5/00*

U.S. Cl. Plt.—2 **1 Claim**

A climbing rose plant of the hybrid tea class, which is tall growing and has semi-glossy leaves of leathery texture, comprising three to seven leaflets of medium to large size; the flowers of said plant having a subdued fragrance and being of quite large size. The double petals are arranged regularly when fully open. The flowers are borne usually singly, but sometimes three or four, or even more, appear in irregular clusters on strong medium to long stems. The plant is free blooming outdoors, and blooms nearly continuously during the growing season. Its habit of growth is notably vigorous, tall, upright and branching.

3,077
ROSE PLANT

**David L. Armstrong, Upland, Calif., assignor to
Armstrong Nurseries, Inc., Ontario, Calif.
Filed Jan. 6, 1970, Ser. No. 1,067
Int. Cl. A01h** *5/00*

U.S. Cl. Plt.—18 **1 Claim**

A bush rose plant of the hybrid tea class which is tall growing and adapted for outdoor cultivation. It is a free-growing, upright-spreading bush, much branched, producing large blooms of double petalage, which are generally purplish pink in overall color effect. The blooms are borne in abundance, almost continuously during the growing season, on straight, sturdy stems.

3,078
ROSE PLANT

**Reimer Kordes, Holstein, Germany, assignor to
Jackson & Perkins Company, Newark, N.Y.
Filed Aug. 22, 1969, Ser. No. 852,517
Int. Cl. A01h** *5/00*

U.S. Cl. Plt.—19 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a vigorous and heavily branched plant habit, with the branches originating mostly near the base of the plant, unusually large flowers, a distinctive and attractive flower color ranging between Rose Doree and Scarlet, said color being uniform in the half-open blooms but lightening to Geranium Pink after several days, and a moderately strong and fruity flower fragrance.

3,079
GLADIOLUS PLANT

**Carl H. Fischer, St. Charles, Minn. assignor to
Selected Glads, Inc., Albany, Ind.
Filed Aug. 6, 1969, Ser. No. 848,122
Int. Cl. A01h** *5/00*

U.S. Cl. Plt.—85 **1 Claim**

1. The new and distinct variety of gladiolus plant, substantially as herein shown and described, characterized by its rugged plant, consistent performance, novel blend of blossom colors, and ability to open many florets at once.

3,080
ROSE PLANT

**William A. Warriner, Newark, N.Y. assignor to
Jackson & Perkins Company, Newark, N.Y.
Filed Aug. 6, 1969, Ser. No. 848,124
Int. Cl. A01h** *5/00*

U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a vigorous and well-branched habit of growth, attractive green foliage, with the new foliage being darker in color than in the parent variety, "King's Ransom," and being Victoria Lake in color, a free blooming habit throughout the season, and an ovid bud form, said buds being basically yellow in color but heavily overlaid with Garnet Brown as the sepals unfold, and opening to high-centered flowers of pale Lemon Yellow color in the half-open stage, and said flowers maintaining a distinctive and attractive pale yellow color as they fully open.

3,081
PHILODENDRON PLANT

**Robert H. McColley, Orlando, Fla., assignor to
Yoder Bros., Inc., Barberton, Ohio
Filed Mar. 10, 1969, Ser. No. 805,910
Int. Cl. A01h** *5/00*

U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct variety of philodendron plant substantially as herein disclosed, characterized as to novelty by its robust, compact, upright habit, the firm texture of its leaves, the strong petioles with prominent lenticels, long lastingness in the greenhouse and under home conditions, together with its outstanding resistance to "shotgun fungus."

PATENTS

GRANTED MARCH 21, 1972

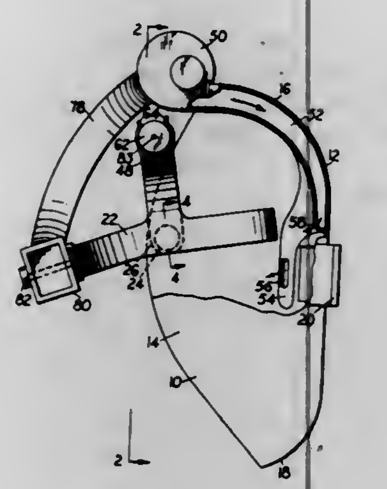
GENERAL AND MECHANICAL

3,649,964

VENTILATED WELDERS FACE MASK

Willy A. E. Schoelz, Portland, Oreg., and John W. Tidland, Vancouver, Wash., assignors to said Schoelz, by said Tidland

Filed June 4, 1970, Ser. No. 43,476
Int. Cl. A61f *9/06*
U.S. Cl. 2—8 **7 Claims**



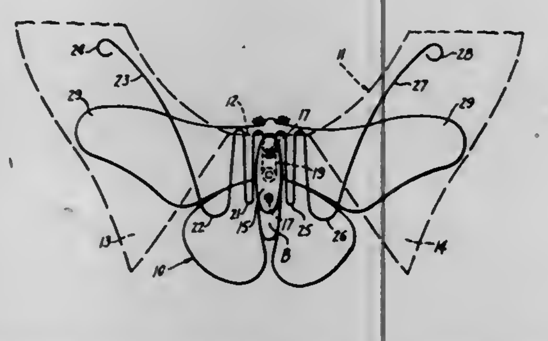
Ventilating means for a welder's face mask employing a battery-operated blower secured on the mask. Air passageways are provided in the mask which lead from the blower to inlet openings interiorly of the mask for ventilating the area between the mask and the welder's face. Batteries for operating the blower are mounted on the head band, and in structures utilizing a mask which can be tipped up on the headband, switch means are employed between the face mask and the headband which activate the blower in the down position of the mask and deactivate the blower in the up position of the mask.

3,649,965

NECKTIE

Alfred Krivda, P.O. Box 1055, Oroville, Calif.

Filed Aug. 11, 1970, Ser. No. 62,918
Int. Cl. A41d *25/08*
U.S. Cl. 2—154 **3 Claims**



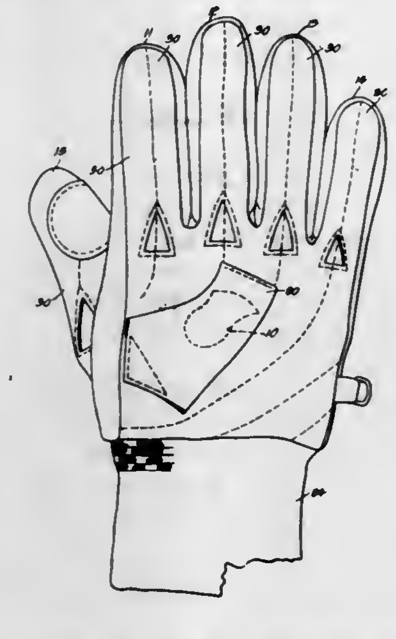
The present invention is directed to a necktie which consists of a body portion detachably secured to the collar of a shirt by a flexible spring wire member which engages over the neckband of the shirt and under the collar tabs of the shirt. The body member is provided with detachable fasteners and second body carrying wings detachably secured to the body member completely covering the body member and supporting wires.

3,649,966

HAND COVERING

Michael Peter Shields, Hollywood, Calif., assignor to Walk-On-Corp., Hollywood, Calif.

Filed Apr. 1, 1970, Ser. No. 24,534
Int. Cl. A41d *19/00*
U.S. Cl. 2—159 **5 Claims**



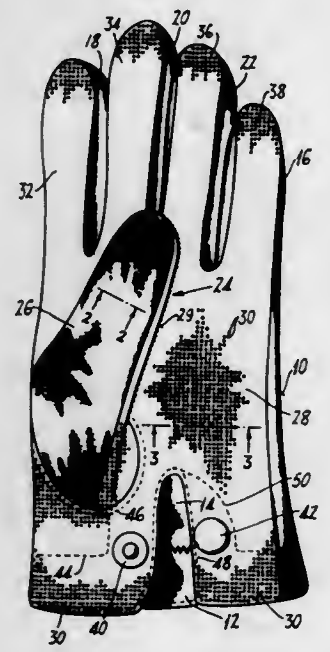
A hand covering having a closeable flap which when opened forms a funnel for the induction of warm air from the mouth and lungs of the wearer into the interior of the hand cover. This funnel is so formed to direct the warm breath toward and around the fingers of the wearer thereby warming them.

3,649,967

NON-SLIP GOLF GLOVE

Sandy K. Millman, 7 Adriance Avenue, Poughkeepsie, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,672
Int. Cl. A41d *19/00*
U.S. Cl. 2—161 A **5 Claims**



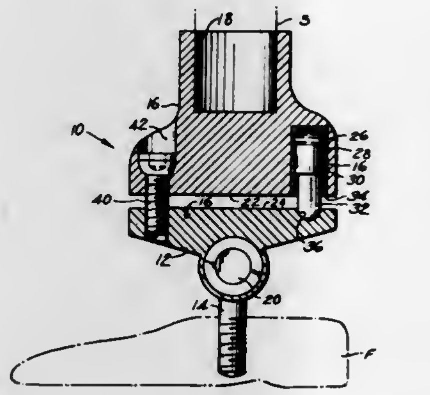
Non-slip golf gloves adapted to be worn by golfers especially when handling clubs for driving, putting, etc. The gloves are constructed of light fabric and the front portions are coated with minuscule, non-slip protuberances regularly arranged in rows and columns, being constituted of a rubber-like substance. The coated portions of the gloves are still pervious and still constitute a breathable fabric, whereby the entire glove is breathable, minimizing the likelihood of causing perspiration of the hand, and also having the ability to absorb and evaporate the natural perspiration. The non-slip surfaces are on those areas needed to reduce slippage when handling clubs, while at the same time the entire glove is fully breathable and perspiration absorbent whereby it is comfortable to wear. In addition, it tends to prevent blisters from forming.

3,649,968

ANGULAR ADJUSTMENT CONNECTOR FOR PROSTHETIC LIMB PARTS

Jan Prahl, Golenhof, Germany, assignor to Wilhelm Julius Teufel, Stuttgart, Germany

Filed Sept. 4, 1970, Ser. No. 69,841
Claims priority, application Germany, Sept. 12, 1970, P 19 46 257.8
Int. Cl. A61f *1/08*
U.S. Cl. 3—21 **14 Claims**



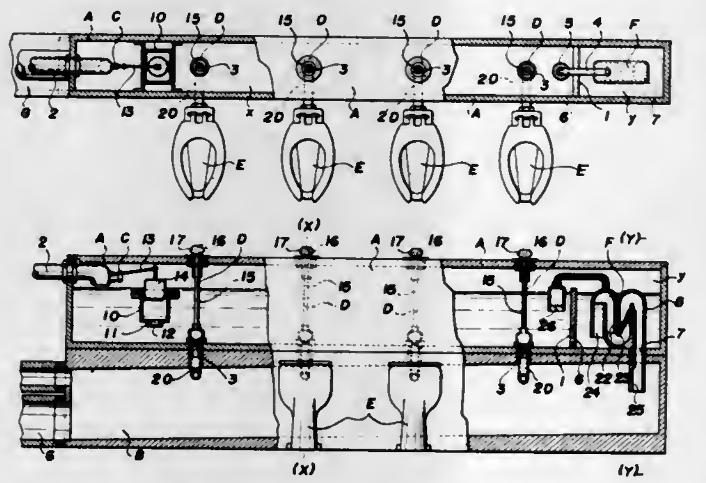
A connector for joining sections of a prosthesis comprising body and base members. The body is provided with a plurality of hydraulic support bearings and means fastening the base to it. The fastening means are adjustable to provide a selected angular relationship between the members. This relationship is maintained by the reaction of the bearing support to the fastening means.

3,649,969

FLUSHING TOILET APPARATUS

Shoken Ueda, Kanagawa-ken, Japan, assignor to The Toyotoki Co., Limited, Fukuoka-ken, Japan

Filed Apr. 2, 1970, Ser. No. 25,085
Claims priority, application Japan, May 10, 1969, 44/35985
Int. Cl. E03d *1/22, 3/00*
U.S. Cl. 4—11 **3 Claims**



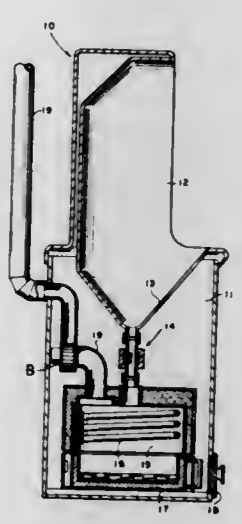
A battery of flush toilets, in which each is provided with separately operable means for admitting thereinto a limited flow of water from the washing chamber of a horizontally disposed water tank. Each toilet has a discharge pipe opening into a generally horizontal drain passage beneath said tank. A drain chamber at one end of the tank communicates through a restricted passage with the wash chamber to receive water from the latter and is provided with normally inactive siphon means operable when active to discharge water from the drainage chamber by gravity into the drain passage, there being means operative in response to repeated fluctuations in the water level of the wash tank for activating the siphon means to discharge its contents into the drain passage to flush out the latter.

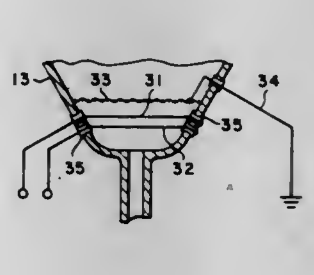
3,649,970

AUTOMATIC INCINERATING URINAL

Ernest Bayne Blankenship, P.O. Box 35164, Irving, Tex.

Filed May 20, 1970, Ser. No. 38,998
Int. Cl. A47k *11/02*
U.S. Cl. 4—131 **2 Claims**





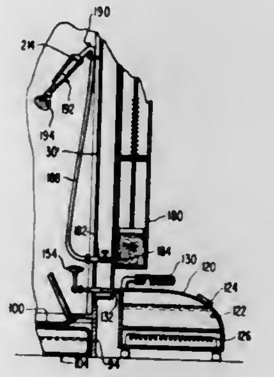
A waterless urinal comprised of a bowl having a drain which opens into an insulated electric incinerator having a pan in the bottom thereof and switch means actuated by use of the urinal for activating the heater of the urinal for a period of time.

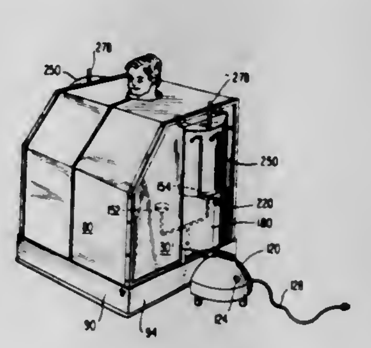
3,649,971

PORTABLE STEAM BATH AND BATHING APPARATUS

Napoleon A. Basa, 46 Cordillera Street, Quezon City, Philippines

Filed May 15, 1970, Ser. No. 37,685
Int. Cl. A61h *33/06*
U.S. Cl. 4—164 **9 Claims**





A portable steam bath and bathing apparatus comprises an enclosure including a collapsable framework and a separate foldable, flexible cover attached thereto as well as base means. Vapor distribution means is supported by the framework for distributing vapor within the enclosure. Bath water dispenser means is supported by the framework and includes a water discharge means disposed within the enclosure and a bath water container portion supported outside of the enclosure and including a spring urged plunger means to force water from the container portion through said water discharge means.

A dispenser device includes a hollow container portion for flowable material and has an outlet means. Plunger means is slidably mounted within the container portion and spring means normally urges the plunger means toward the outlet means. A cock arm is connected to the plunger means and extends through slot means formed in a housing means. The slot means has a part extending longitudinally of the housing and a part extending laterally of the housing. A manually operated control means is provided for controlling movement of the plunger.

3,649,972

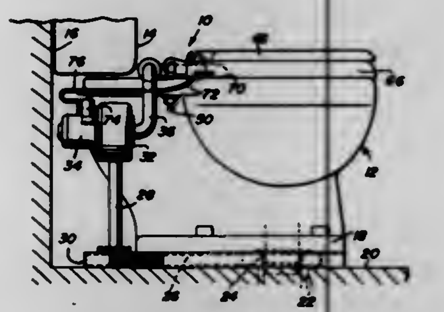
VENTILATING SYSTEM

Edward W. Sowards, Route 1, Box 705, Love Creek Road, Ben Lomond, Calif.

Filed Jan. 30, 1970, Ser. No. 7,100

Int. Cl. E03d *9/04*

U.S. Cl. 4—211 **14 Claims**



Odors are removed from toilet bowls and/or bed pans by a blower through a suction pipe, with the exhaust outlet connected to a drain through which flushing water is conducted from a toilet bowl or wash basin. The blower is operated by a switch controlled electric motor.

3,649,973

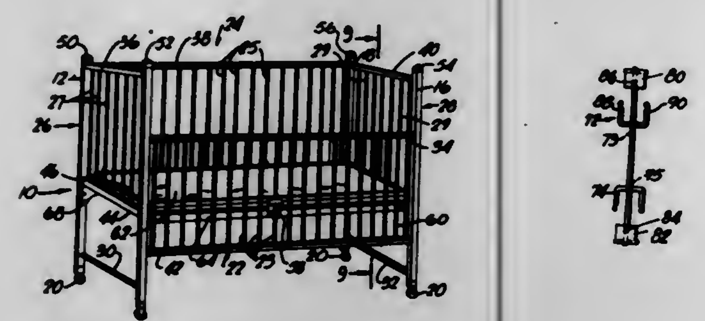
NOVEL CRIB CONSTRUCTION

Roland A. Benoit, Danielson, and John H. Curran, Norwich, both of Conn., assignors to InterRoyal Corporation, New York, N.Y.

Filed May 25, 1970, Ser. No. 40,264

Int. Cl. A47d *7/00, 9/00*

U.S. Cl. 5—100 **3 Claims**



A child's crib constructed almost entirely of aluminum for relatively fault free operation and long life. The crib is provided with hollow aluminum side and end rail members which form the sides and ends of the crib and are secured to respective top and bottom terminating members by a swedging operation. A locking member is provided securing a movable side in any desired vertical position by engaging notches in a respective side rail member. A relatively friction free slide assembly is provided, enabling the sides to be moved upwardly or downwardly. A negator spring, secured to a corner post of the crib, assists the upward movement of the side and serves as an auxiliary safety device.

3,649,974

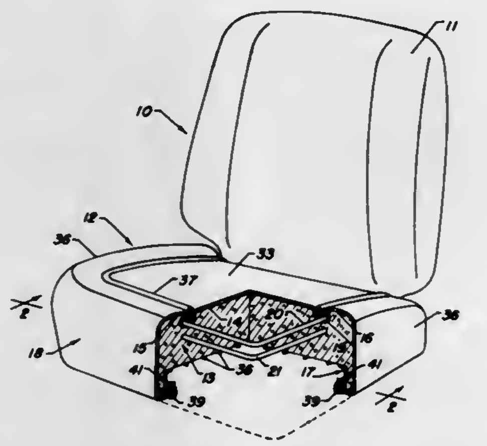
VEHICLE SEAT

Elmore J. Baruth, and Robert M. Smaxwill, both of Milwaukee, Wis., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 15, 1969, Ser. No. 885,200

Int. Cl. A47c *23/00*

U.S. Cl. 5—345 **6 Claims**



In a vehicle seat, the improvement comprising a seat cover positioned on a contoured foam cushion, both being held together by means of upper and lower parallel wires fastened together along their lengths. The lower wire is embedded in the foam cushion parallel to and below the demarcation between the seating portion and bolster portions of the upper surface of the cushion. The upper wire is entrapped within a sleeve fastened to the underside of the seat cover and is generally parallel to the lower wire. The upper and lower wires are fastened together by fastening means which pierce the sleeve.

3,649,975

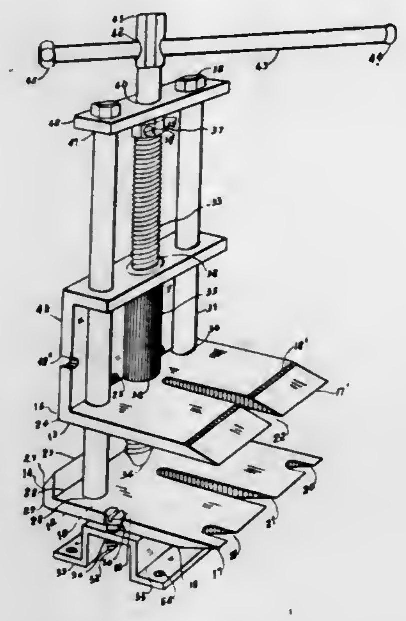
SHOP TOOL

Will Ray Spurgeon, Eminence, Mo.

Filed Dec. 22, 1969, Ser. No. 886,845

Int. Cl. B25f *1/00;* **B66f** *15/00*

U.S. Cl. 7—1 R **2 Claims**



A shop tool of vise-like character which may or may not be secured to a supporting surface during use of the tool comprises a pair of jaws. The jaws are provided with various cutting edges and apertures and slots for reception of nails or wire for performing various work operations thereon.

3,649,976

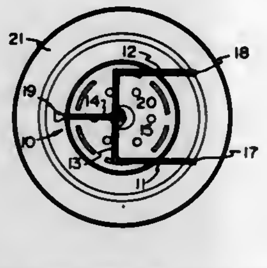
COMBINATION TOOL FOR USE WITH VEHICLE WHEELS

William Isom, General Delivery, Henefer, Utah

Filed Aug. 31, 1970, Ser. No. 68,077

Int. Cl. B25f *1/00*

U.S. Cl. 7—1 E **2 Claims**



A one piece, rigid combination tool which can be used to secure a spare wheel of a vehicle in a storage position and which can be used, even by women, to quickly and easily change a vehicle wheel.

3,649,977

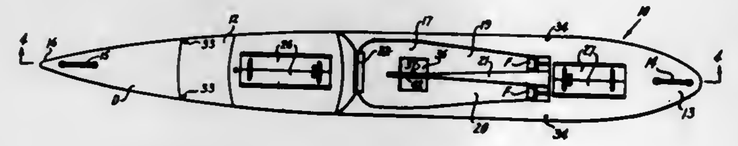
SELF-BAILING FORMED SKIN/SCUBA DIVER'S FLOAT

Roy E. Grabenauer, 5250 Sky Parkway, Sacramento, Calif.

Filed Jan. 27, 1970, Ser. No. 6,226

Int. Cl. B63c *9/06*

U.S. Cl. 9—3 **10 Claims**



A diver's float for moving over the surface of the water to the point at which skin or scuba diving is to take place. The float is propelled by hand or a double ended paddle and has floatation consisting of a water tight compartment and foam to maintain its buoyancy. Compartments are provided both wet and dry for containing the diver's equipment while in transit. The seat for the diver is molded to fit the buttocks and legs and is provided with a hinged backrest for supporting the diver's back.

3,649,978

STABILIZED SEMI-SUBMERSIBLE PLATFORM

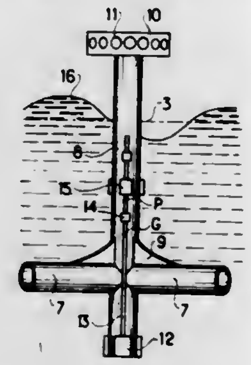
Georges Monnereau, Paris, France, assignor to Compagnie Generale D'Automatisme, Paris, France

Filed Dec. 10, 1969, Ser. No. 883,723

Claims priority, application France, Dec. 10, 1968, 177486

Int. Cl. B63b *35/44*

U.S. Cl. 9—8 P **10 Claims**



Angular stabilization and positioning of a semi-submersible platform is achieved through floating supports whose length is substantially greater than their diameter, closed at their base and vertically oriented with a cylindrical horizontal member on which the swell acts fixed to the base to compensate the angular movement it produces on the vertical supports and to position the platform in relation to the direction of its propagation.

3,649,979

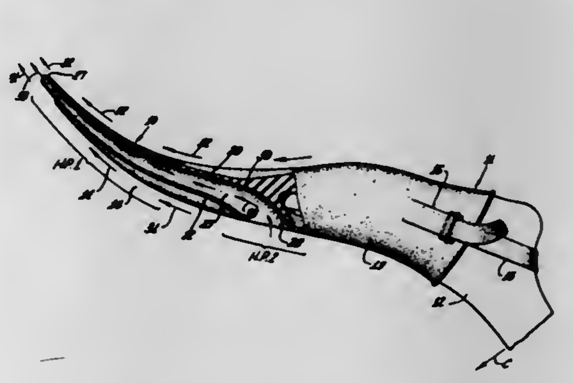
SWIM FIN

Douglas K. MacNiel, Costa Mesa, Calif., assignor to U.S. Divers Co., Santa Ana, Calif.

Filed June 15, 1970, Ser. No. 46,061

Int. Cl. A63b *31/10*

U.S. Cl. 9—309 **17 Claims**



A foot-mounted fin for use by skin divers and other swimmers, and including means to mount the fin on the foot of the swimmer and blade means to propel the swimmer through the water in response to kicking movement of the leg and foot. Water-intake (scoop) or mouth openings are provided in the top of the fin and adjacent the foot pocket or other mounting means. Water-outlet or jet-exhaust openings are provided at the tip of the blade and are directed away from the foot pocket. Wall means are provided to define nozzle passages connecting the water-intake openings with the jet-exhaust openings to thereby cause high-velocity jets of water to emanate from the blade tip, particularly during each downstroke of the foot of a swimmer who is in a face-down position.

3,649,980

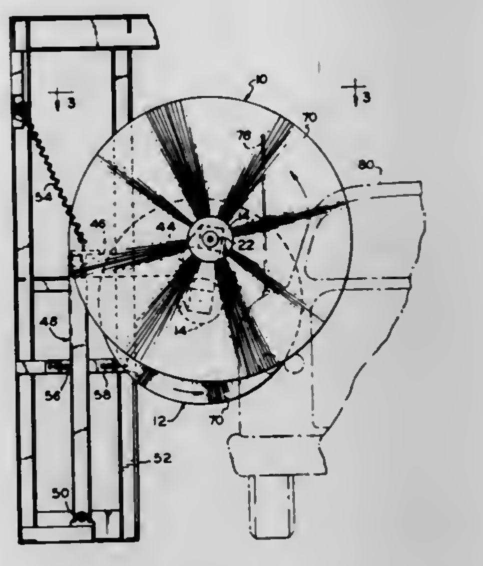
DIRECT DRIVE CAR WINDOW BRUSHING UNIT

Jack F. Ebeling, Portland, Oreg., assignor to Daniel C. Hanna, Portland, Oreg.

Filed Oct. 27, 1969, Ser. No. 869,841

Int. Cl. B60s *3/06*

U.S. Cl. 15—21 D **6 Claims**



Brushes having hollow cores fit over and enclose motors mounted on the end of an arm biased toward a car and downwardly. The cores are connected by hubs to the shafts of the motors.

3,649,981

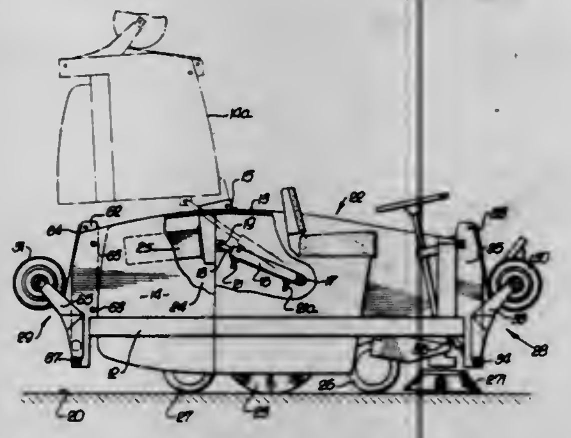
CURB TRAVELLING SWEEPER VEHICLE

Rodney L. Woodworth, Claremont, Calif., assignor to Wayne Manufacturing Company, Pomona, Calif.

Filed Feb. 25, 1970, Ser. No. 14,115

Int. Cl. B60s *9/14*; **B62d** *61/12*

U.S. Cl. 15—83 **17 Claims**



A road sweeper of the three wheel type having forward and rear traveling wheels is adapted for the climbing of curbs or dividers onto raised surfaces by the provision of lifter wheels bodily movable between raised and lowered positions to elevate the vehicle and its traveling wheels for movement onto and off the raised surface.

3,649,982

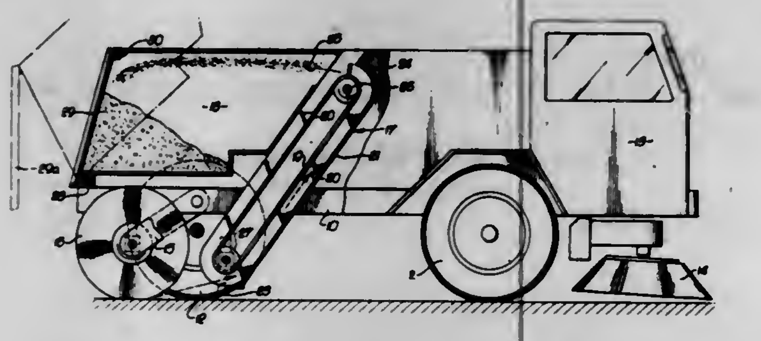
ROAD SWEEPER CONVEYOR SYSTEM

Donald G. Mortensen, Upland, Calif., assignor to Wayne Manufacturing Company, Pomona, Calif.

Filed Dec. 4, 1969, Ser. No. 882,143

Int. Cl. E01h *1/04*

U.S. Cl. 15—84 **2 Claims**



Employing the combination of a road sweeping rotary pickup broom, a shrouded conveyor receiving the broom sweepings and a debris receptacle, the invention departs from the conventional practices of conveying the sweepings for delivery into a receptacle forwardly of the conveyor, by carrying the sweepings over the top of the conveyor into a receptacle more conveniently located for dumping at the rear of the vehicle and conveyor system.

3,649,983

PIPELINE PIG

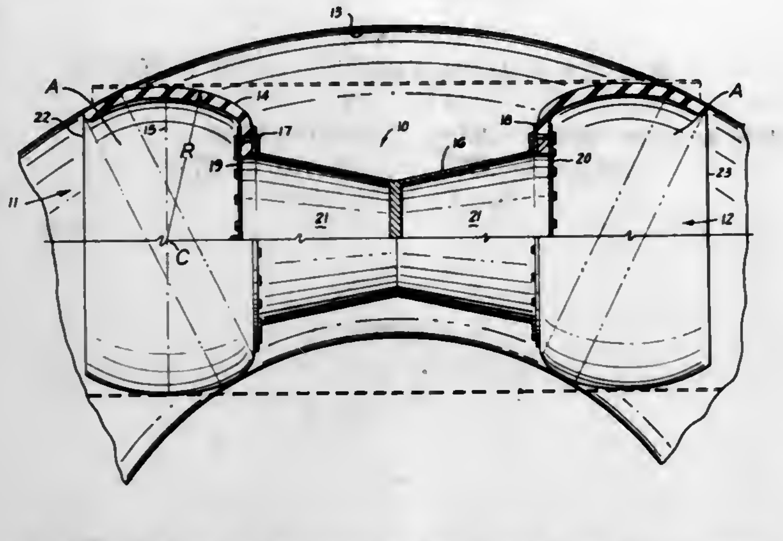
Burton Ver Nooy, Tulsa, Okla., assignor to T. D. Williamson, Inc., Tulsa, Okla.

Filed May 4, 1970, Ser. No. 34,171

Int. Cl. B08b *9/04*

U.S. Cl. 15—104.06 R **5 Claims**

A pipeline pig adapted to be propelled through a pipeline by fluid flowing therethrough wherein the pig has two spaced apart body supporting sections at least one of which has a curved or spherical surface which limits fluid flow past the pig when the pig is traversing a sharp bend (e.g., a 1.5 radius ell) in the pipeline.



3,649,984

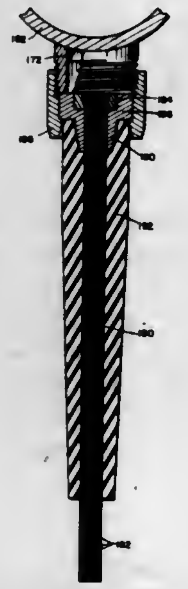
ROADBED BROOM AND BRISTLE

John Knox Kershaw, Knoxville, Tenn., and Edwin S. Pearce, Indianapolis, Ind., assignors to The Marmon Group, Inc., Chicago, Ill.

Continuation of application Ser. No. 745,772, July 18, 1968. This application Aug. 17, 1970, Ser. No. 64,266

Int. Cl. A46b *7/10, 13/00*

U.S. Cl. 15—179 **5 Claims**



A bristle element especially adapted for use in a broom machine for a railway roadbed or track. The bristle elements are replaceably mounted on a mandrel rotatable on a horizontal axis. The bristle elements have a core made of a bundle of parallel straight spring-steel splines or wires fixed together at one end in a detachable coupling and encased in a resilient sheath which binds the splines into mutually supporting relation and distributes flexing stress in them away from their fixed end.

3,649,985

DISPOSABLE ROTARY BRUSH CORE AND FILAMENT ASSEMBLY FOR POWER SWEEPERS

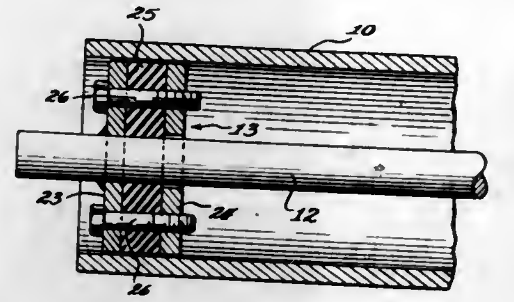
Frederick B. Hunt, 2559 Pasadena Boulevard, Wauwatosa, Wis.

Filed June 27, 1969, Ser. No. 837,052

Int. Cl. A46b *1/00*

U.S. Cl. 15—179 **4 Claims**

A disposable cylindrical brush assembly for use in power sweeping machines such as street sweepers. The cylindrical brush is attached to a drive shaft for the machine through use of expansible elastic coupling elements which are carried by the drive shaft and which frictionally engage the inner surface of a cylindrical core which carries the brush filaments.



3,649,986

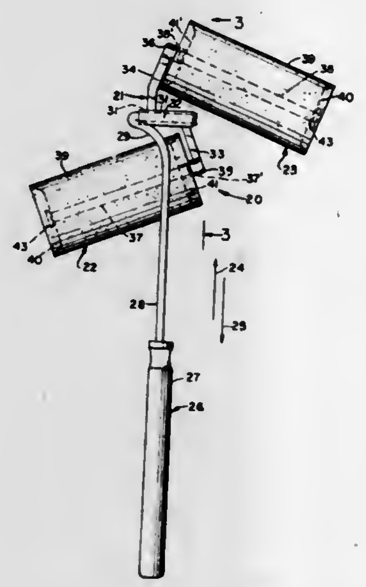
DUAL PAINT ROLLER APPLICATOR

Walter Dahlund, Kenmare, N. Dak.

Filed Dec. 9, 1969, Ser. No. 883,453

Int. Cl. A46b *7/10*; **B05c** *1/08*

U.S. Cl. 15—230.11 **1 Claim**



The invention comprises a dual paint roller applicator having a pair of rollers mounted to a bracket at angles to one another and at angles to their intended lines of travel in applying paint to a surface to create a bristling action as well as a rolling action. A handle is provided pivotally mounted to the bracket for operating the applicator.

3,649,987

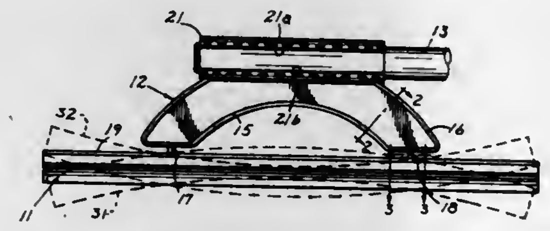
FLEXIBLE VEHICLE WIPER

Henry R. Tomingas, Route 2, Box 633, Golden, Colo., and Ralph P. Zook, 4226 Clay Street, Denver, Colo.

Filed June 8, 1970, Ser. No. 44,318

Int. Cl. A47l *1/06*

U.S. Cl. 15—245 **13 Claims**



A utility wiper tool for use on curved surfaces and particularly the curved body surfaces of motor vehicles includes an elongated, flexible wiper element supported by and preferably releasably connected to an elongated flexible backing strip. The backing strip preferably is formed as a part of a one-piece wiper element support frame including a pair of opposed, relatively rigid support arms having hinge extensions joining the support arms to the back side of the backing strip at spaced points along the backing strip so as to permit the wiper element and backing strip to flex longitudinally as a unit in such a way that the wiper element will conform to curved surfaces over which it is moved. The wiper element may take the form of a relatively thin blade to dry the surface or a wider circular body made of an absorbent material to apply wax and the like.

3,649,988

WINDSCREEN WIPER ASSEMBLIES

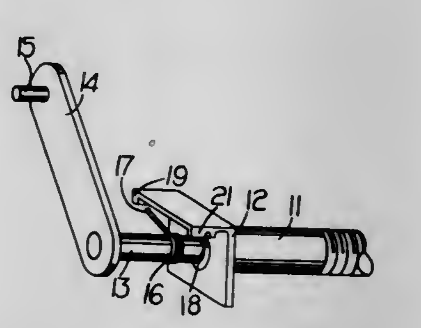
Walter Mellor, Sutton Coldfield, Warwickshire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 31, 1970, Ser. No. 24,296

Claims priority, application Great Britain, Apr. 24, 1969, 21,014/69

Int. Cl. A47l *13/20*

U.S. Cl. 15—250.3 **2 Claims**



In a windshield wiper assembly a bearing sleeve is secured to the vehicle body adjacent the windshield and a spindle is journalled for angular movement in said sleeve, the spindle having a windshield wiper blade at one end and being coupled to a reciprocable member at its other end for moving the windshield wiper blade over the windshield. Possible over-travel on a wet windscreen is prevented by having a part engaged with the spindle for movement therewith, the part being arrested during angular movement of the spindle in either direction from a central position so that the remainder of the movement of the spindle in that direction takes place relative to said part the friction between said part and the spindle minimising the possible over-travel.

3,649,989

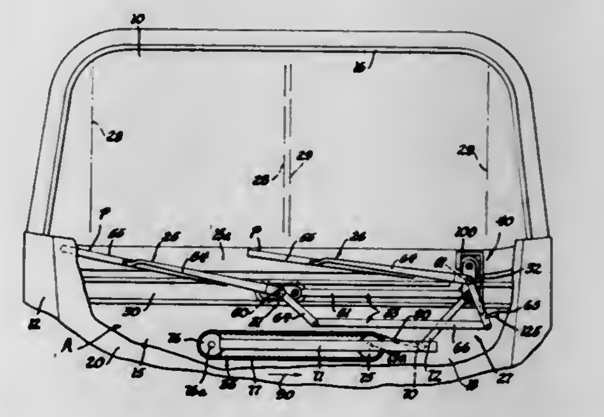
TRANSVERSE WIPER APPARATUS

Eric G. Parker, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1970, Ser. No. 67,514

Int. Cl. B60s *1/32, 1/44*

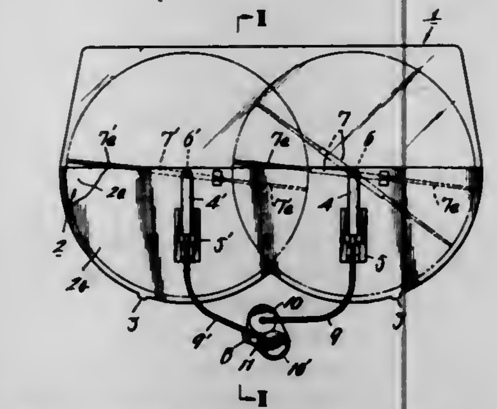
U.S. Cl. 15—250.16 **6 Claims**



In a preferred form, this disclosure relates to a windshield wiping apparatus which includes a windshield wiper and an actuating mechanism operatively connected with the wiper for reciprocating the latter transversely of the windshield while maintaining the wiper in a generally vertical disposition between first and second positions during running operation and for moving the wiper between a parked position adjacent the lower edge of the windshield and its generally vertical run position when operation is initiated and terminated. The actuating mechanism includes a generally horizontally extending guide track, a trolley operatively connected with the wiper and which is supported and guided for reciprocable movement through a first path by the guide track during running operation, and a parking means including an auxiliary guide track pivotally supported by the main guide track. The auxiliary guide track is selectively movable into the path of movement of the trolley and serves to guide the trolley for movement through a second path transversely of the first path to cause the wiper operatively connected therewith to be moved from its generally vertical run position toward its park position when operation is being terminated.

3,649,990
WIPER DEVICE FOR THE FRONT WINDOWPANE OF A MOTOR-VEHICLE

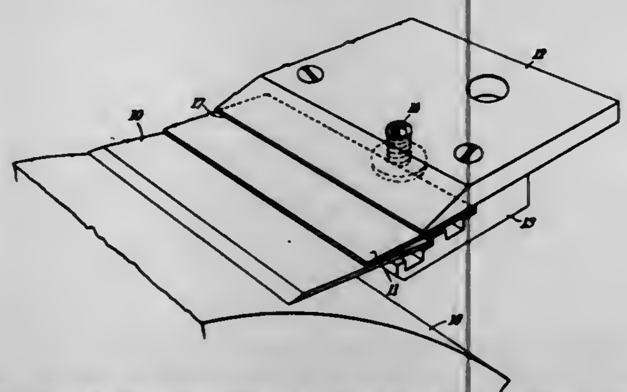
Shosaku Saito, 2, 7 Suruza-cho, Shizuoka, Japan
Filed Jan. 12, 1970, Ser. No. 2,068
Int. Cl. B60s *1/02*
U.S. Cl. 15—250.22 9 Claims



A wiper device for the windshield of an automobile and similar vehicles in which wiper members adapted to rotate across the windshield in frictional contact with the outer surface thereof are carried by rotary stub shafts rotatably supported by hollow members. Flexible shafts are connected at one end to the rotary shafts for rotating the shafts and gears having shafts are connected to the other ends of the flexible shafts and a drive motor for driving the gears.

3,649,991
DOCTORS FOR PAPER MAKING MACHINES

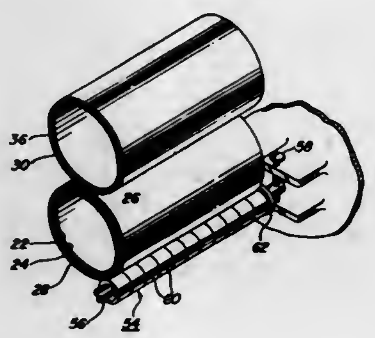
Roger Anthony Grimston, Hemel Hempstead, and Albert Henry John Boyland, London, both of England, assignors to Vickerys Limited, London, England
Filed Sept. 26, 1969, Ser. No. 861,409
Claims priority, application Great Britain, Oct. 1, 1968, 46,588/68
Int. Cl. D21g *3/00, 3/02, 3/04*
U.S. Cl. 15—256.51 7 Claims



The invention provides a doctor for a paper making machine in which the holder for the doctor blade carries a series of spaced members which are individually adjustable, without any distortion of the blade holder itself, to vary the doctoring pressure applied by the blade at different zones along its length.

3,649,992
CLEANING APPARATUS FOR FUSING SYSTEM

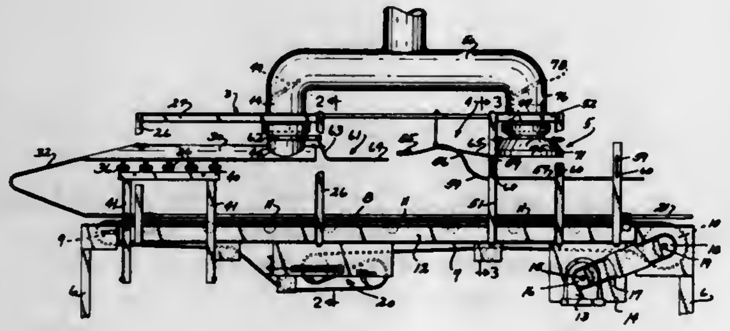
Raghulinga Reddy Thettu, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Dec. 30, 1969, Ser. No. 889,204
Int. Cl. G03g *15/00;* B03b *1/02*
U.S. Cl. 15—256.52 6 Claims



Apparatus for removing extraneous toner particles from a heated fuser roll in a heat-pressure xerographic fusing system. The apparatus includes a fixed cylindrical rod positioned adjacent the fusing roll to be cleaned and a plurality of cylindrically shaped cleaning rollers rotatable about the rod in rolling contact with the fusing roll. The cleaning rollers function to contact and remove toner particles therefrom.

3,649,993
APPARATUS FOR OPENING THE FLAPS OF A CONTAINER AND REMOVING DEBRIS THEREFROM

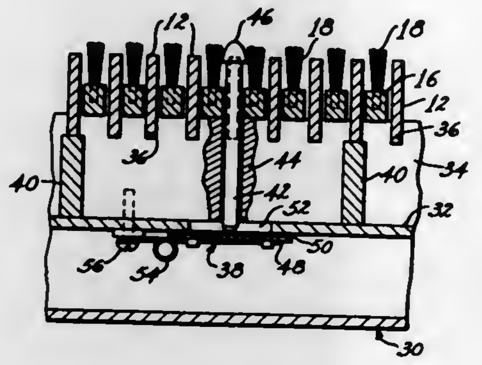
Henry Sauer, Honolulu, assignor to Jos. Schlitz Brewing Company, Milwaukee, Wis.
Filed June 18, 1970, Ser. No. 47,500
Int. Cl. A47l *25/00*
U.S. Cl. 15—304 19 Claims



An apparatus for opening and spreading the top flaps of a carton containing packaged articles such as bottles, and for cleaning the carton after the flaps are opened. The carton containing the articles is moved along a conveyor and the sides of the carton are engaged by pressure members which deform the sides and pivot the flaps, if closed, to a partially open position. The carton then passes beneath a vacuum duct, which acts to raise the flaps. After the flaps have been raised, the carton moves into engagement with a spreader unit which spreads the flaps laterally outward. With the flaps in the spread position, the carton is then conveyed beneath a second vacuum duct which acts to draw lightweight debris from the carton.

3,649,994
PEDESTRIAN FOOTWEAR CLEANER

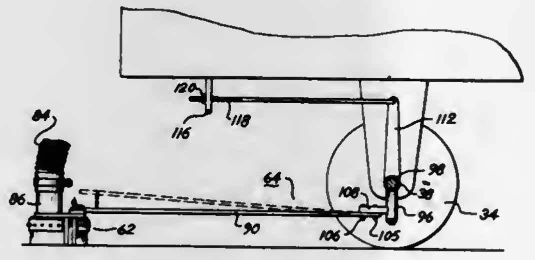
Ewell J. Harris, Sunset Mobile Homes Route #3, Box 135A, Adrian, Mich.
Filed Nov. 9, 1970, Ser. No. 88,009
Int. Cl. A47l *7/02*
U.S. Cl. 15—311 7 Claims



A footwear cleaner utilizing a plurality of foot operated vacuum controls which cause suction to be directed at the foot of a pedestrian. The device comprises a foot support grid and individually operated zoned vacuum directing means and preferably also includes reciprocation footwear contacting elements which project upwardly through the grid to mechanically loosen dirt from the bottom of the pedestrian's feet. Air flow downwardly around the footwear carries the dirt to a vacuum actuated dirt collection system.

3,649,995
FLOOR MAINTENANCE MACHINE

Wayne Ison, Elkhart, Ind., assignor to Keltec, Inc., Elkhart, Ind.
Filed Feb. 16, 1970, Ser. No. 11,506
Int. Cl. A47l *7/00*
U.S. Cl. 15—320 9 Claims



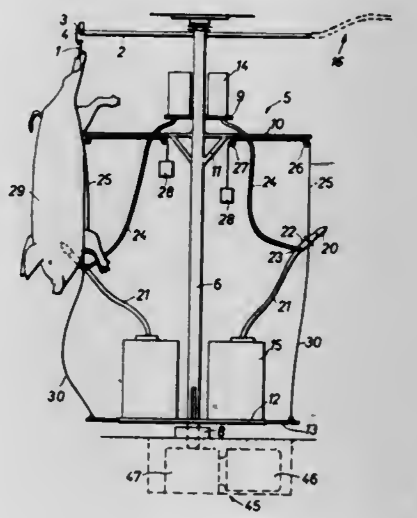
A floor cleaning machine having a scrubbing means near the forward end of the body, a system for supplying a cleaning solution to the scrubbing means, and a system for recovering the used solution, said latter system having in conjunction therewith a squeegee device near the rear end of the machine, and a spring bar connected to a support near the center of the machine on the underside thereof and applying a downward pressure on the device. A means is included in the mechanism for adjusting the downward pressure applied by the spring bar to the device, and the spring bar, while applying pressure to the device, flexes to permit the squeegee device to readily pass over uneven floor areas.

ERRATUM

For Class 16—11 see:
Patent No. 3,649,997

3,649,996
DEVICE FOR WITHDRAWING BLOOD FROM BODIES OF SLAUGHTERED ANIMALS

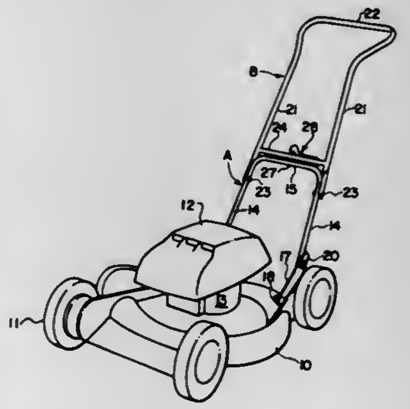
Erich Marti, Hauptstrasse 74, Othmarsingen, Switzerland
Filed July 20, 1970, Ser. No. 56,421
Claims priority, application Switzerland, July 21, 1969, 11127/69
Int. Cl. A22b *5/04*
U.S. Cl. 17—1 C 10 Claims



The device comprises a supporting arm moving synchronously with a conveying device upon which the slaughtered animals are suspended. A hollow sticking knife is adjustably suspended on the supporting arm and the vertical position of the knife is limited by an anchoring cable. A hose connects the knife with a blood collecting container. The conveying device is, at the end of the path for the blood withdrawing operation, directed upwards to that the anchor cable automatically removes the sticking knife from the finished body.

3,649,997
FOLDING HANDLE LATCH

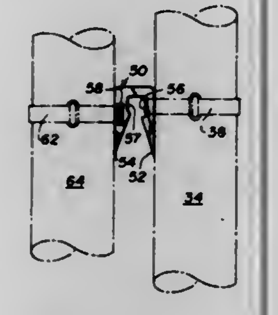
Richard A. Thorud, Minneapolis, Minn., assignor to Toro Manufacturing Corporation, Minneapolis, Minn.
Filed Aug. 22, 1969, Ser. No. 852,296
Int. Cl. A47b *95/02;* A47j *45/00;* B62b *1/08*
U.S. Cl. 16—111 5 Claims



A folding steering handle for a rotary mower, the handle being attached to the rear of the mower and extending upwardly and rearwardly therefrom. The handle consists of a lower section and an upper section pivotally attached thereto, said upper section being capable of being swung forwardly from an upright operating position to a lowered generally horizontal position over the mower housing. Releasable latch mechanism is provided for holding the upper handle section in an upright operative position. This latch mechanism comprises a latch pin which seats in aligned openings in the frame structure of the upper and lower handle sections, said latch pin being held in position and manipulated by a handle attached thereto which is formed of spring wire which biases the pin toward latching position.

3,649,998
COUPLING ADAPTOR

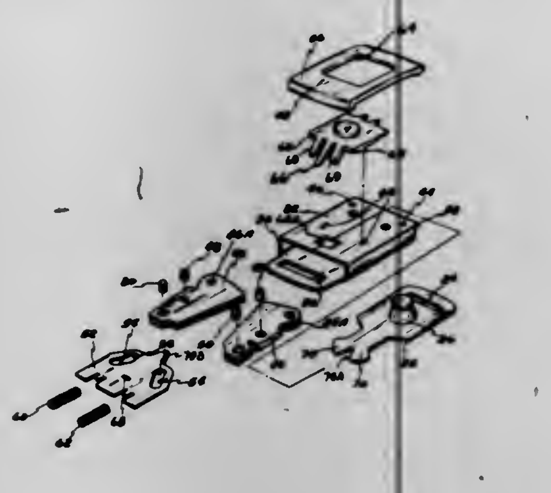
Arthur A. Fiorentino, Piscataway, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Jan. 12, 1971, Ser. No. 105,850
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 PB **17 Claims**



A barbed, conveniently manipulated, integral coupling adaptor wedgingly positionable adjacent a bundled article to permit a further article to be joined thereto. Strap receiving portions suitably contoured to provide selective strap receiving passages are disposed adjacent and contiguous with a generally wedge-shaped portion of the device arranged to facilitate the insertion thereof between a bundling strap and an article bundled therewith, the bundling strap being positionably restricted within an appropriately recessed first strap receiving portion. A second strap receiving portion is disposed either normal to or in aligned relationship with the first strap receiving portion, and is arranged to receive a further bundling strap positionable about a further article generally adjacent the first article, to effect a secure coupling therebetween.

3,649,999
REFLEX SEAT BELT BUCKLE

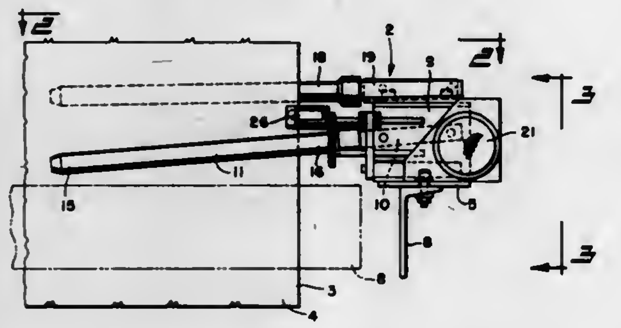
Robert W. Stoffel, Ferndale, Mich., assignor to Jim Robbins Seat Belt Co., Mount Clemens, Mich.
Filed May 22, 1969, Ser. No. 826,965
Int. Cl. A44b *11/26*
U.S. Cl. 24—230 **3 Claims**



A push button seat belt buckle having a tongue which is received in a buckle housing to connect a pair of belts together. As the tongue is being received, it moves a release plate toward a position in which a push button prevents the release plates return motion. The release plate, in turn, pivots a pair of latch members toward the tongue to prevent its removal from the housing. The tongue is released by operating the push button to free the release plate for its return motion which allows the latch members to be disengaged from the tongue by its removal from the housing.

3,650,000
WEB GUIDING AND EXPANDING APPARATUS

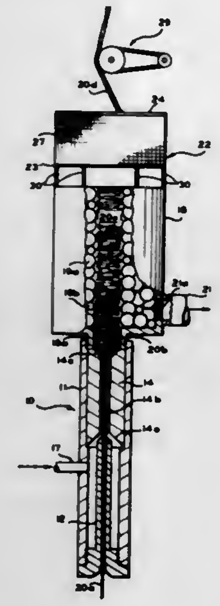
Alexander V. Alexeff, Cleveland, and Harvey Snyder, Bay Village, both of Ohio, assignors to Alexeff-Snyder Enterprises, Inc., Cleveland, Ohio
Filed Apr. 6, 1970, Ser. No. 31,047
Int. Cl. D06c *3/06*
U.S. Cl. 26—65 **20 Claims**



Web guiding and expanding apparatus including a single expander roll adjacent each edge of the web material having one end desirably carried by a pivotal link for raising and lowering of the expander rolls into and out of engagement with such web material. The other end of each expander roll may either be free to move or may be relatively fixed except for annular movement. One end of such expander rolls may also be mounted for lateral movement relative to the other end to permit adjustment of the angle of cant of the rolls, or the entire frame which supports the rolls may be mounted for pivotal movement about an axis perpendicular to the normal path of travel of the web material to permit such adjustment.

3,650,001
YARN TEXTURING APPARATUS

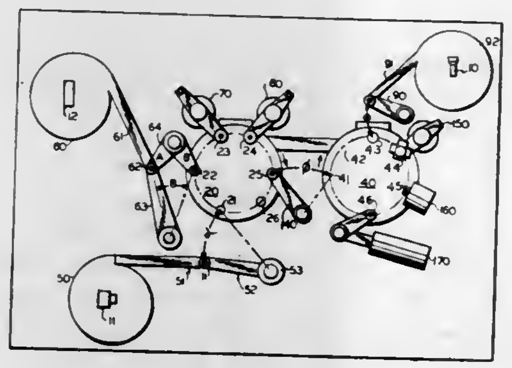
Ronnie D. Nikkel, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Dec. 24, 1970, Ser. No. 101,332
Int. Cl. D02g *1/12, 1/16, 1/20*
U.S. Cl. 28—1.6 **10 Claims**



Yarn is textured by passage at an elevated temperature into a zone of turbulence. The resulting textured yarn is passed through a first chamber which contains a plurality of stacked members, such as balls. These members exert a force on the yarn to produce a confined wad. The wad is directed from the first chamber into a second chamber which contains stacked members and a flexible tapered retaining member to facilitate the breaking up of the yarn wad. Fluid employed to produce the turbulence zone is separated from the textured yarn in the first chamber.

3,650,002
MACHINERY FOR MAKING CRT ELECTRONIC ASSEMBLIES USING TWO INDEXING TABLES

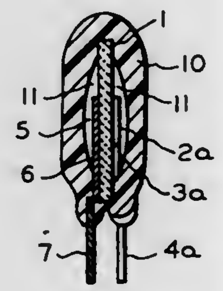
Chester O. Merchant, Owensboro, Ky., assignor to Kentucky Electronics Inc., Owensboro, Ky.
Filed Mar. 4, 1969, Ser. No. 804,077
Int. Cl. H01j *9/06, 9/10, 9/46*
U.S. Cl. 29—25.19 **5 Claims**



Apparatus providing for automatic manufacture of a portion of an electron gun in a cathode ray tube utilizes two conjointly operated indexing tables with an intermediate transfer mechanism to assemble, fit, stake and weld in place a series of parts. At a series of indexing positions parts are loaded, checked and processed with such manufacturing steps as cutting, positioning and welding a lead tab to a cathode cylinder. The use of two tables permits high strength for staking operations, greater production in a given time, and accessible layout of equipment in a small space.

3,650,003
METHOD OF MANUFACTURING AN ENERGY TRAPPED TYPE CERAMIC FILTER

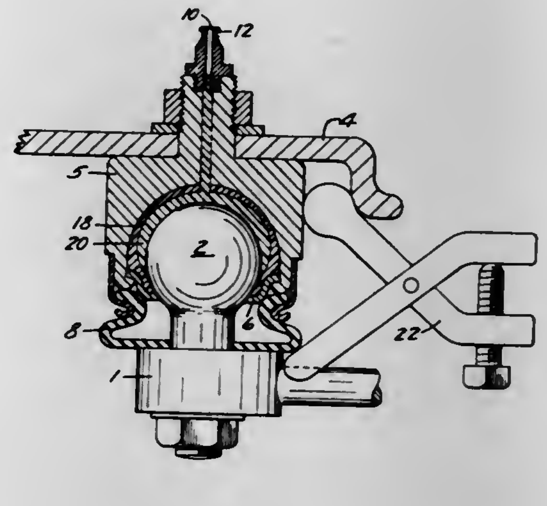
Isao Toyoshima, Kyoto-fu, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan
Filed Mar. 19, 1969, Ser. No. 808,494
Claims priority, application Japan, Mar. 21, 1968, 43/18383
Int. Cl. B01j *17/00;* **H04r** *17/00*
U.S. Cl. 29—25.35 **7 Claims**



Method of manufacturing an energy trapped type ceramic filter. The method comprises forming a thin layer of thermofusing material on and about the resonator electrode portions. Thereafter an insulative resinous outer layer is placed on the thermofusing material to cover all the portions. A gap or gaps between said resonator electrode and said outer layer is formed by heating the assembly for causing the thin layer to be fused and to be absorbed into said outer layer.

3,650,004
BEARING REPAIR

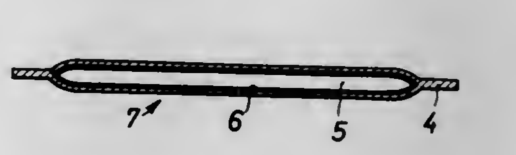
Theodore R. Bergstrom, Little Canada, Minn., assignor to Minnesota Mining and Manufacturing Company
Continuation-in-part of application Ser. No. 678,431, Oct. 26, 1967, now abandoned , and a continuation-in-part of 848,672, Aug. 8, 1969. This application Dec. 22, 1969, Ser. No. 887,431
Int. Cl. B21d *53/10*
U.S. Cl. 29—149.5 B **8 Claims**



A process for the repair of worn ball and socket joints, journal bearings, and the like, in which the bearing parts are prepositioned in operative relationship and, in the case of ball joints, at an extreme of the range of movement in the direction of separation of the parts, lubricating the joint if dry, and then injecting through the greasing orifice, or through an opening at the end of the bearing, a bearing composition comprising a hardenable resin in fluid form, the viscosity of which is at least slightly greater than that of bearing grease, and which on hardening has an impact hardness of the order of not less than about 500 p.s.i.

3,650,005
METHOD FOR PRODUCING TUBE IN SHEETS

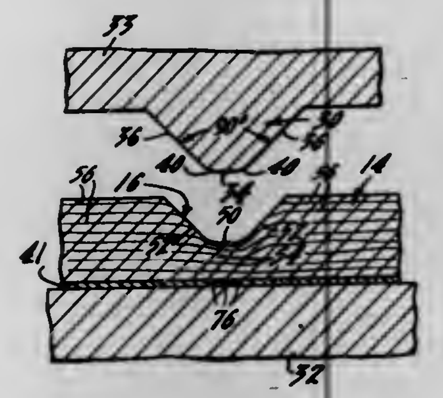
Osamu Kamiya, Osaka; Yuichiro Asano, and Tomiyoshi Kanai, both of Tochigi, all of Japan, assignors to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed Mar. 19, 1970, Ser. No. 20,972
Int. Cl. B21d *53/02;* **B21k** *29/00*
U.S. Cl. 29—157.3 V **5 Claims**



A method for producing tube in sheet is applied a pasty stop weld prepared by adding a solvent to a zinc powder or powdered zinc alloy having a purity of at least about 90 percent and kneading the resultant mixture. This stop weld material is applied, in desired pattern, between at least two aluminum sheets, which are then roll-bonded with part left nonbonded where the stop weld is applied. The coalesced sheets are thereafter annealed, whereby the sheets are softened to the extent suitable for the subsequent treatment while the zinc or zinc alloy serving as the stop weld is diffused into the inner faces of the aluminum sheets to form aluminum zinc layers. In the last step, a highly pressurized fluid is forced into the nonbonded portion, which is therefore distended into a tubular form to provide a passage.

3,650,006
SCORE MANUFACTURE

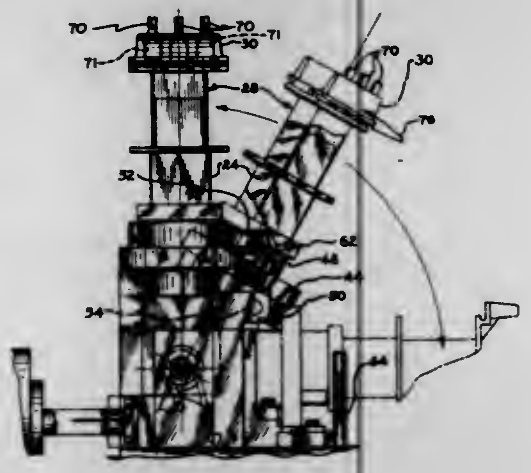
Christian F. Kinkel, Arlington Heights, Ill., assignor to American Can Company, New York, N.Y.
Filed Dec. 11, 1968, Ser. No. 782,919
Int. Cl. B21d *17/02;* **B65d** *17/00*
U.S. Cl. 29—190 **4 Claims**



A score having improved abuse and fatigue resistance qualities is formed by using a scoring punch which is specially profiled to obtain a smooth continuous flow of the displaced metal, thereby eliminating the "dead zone" of compressed, work-hardened metal which exists at the base of conventional scores.

3,650,007
INDEXING DEVICE FOR A BOBBIN

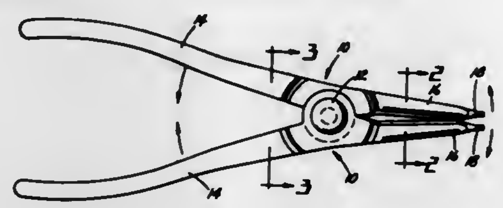
Thomas M. Seltzer, Lewisberry, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.
Filed Oct. 1, 1970, Ser. No. 77,301
Int. Cl. H05k *13/04;* **H01r** *43/04*
U.S. Cl. 29—203 R **10 Claims**



Apparatus for automatically positioning a bobbin relative to a bobbin lugger so that lugs are attached to both sides of the bobbin. The apparatus locates the bobbin in a work position for the reception of lugs in a first part of the bobbin, and then moves the bobbin away from the work position and returns the bobbin to the work position while simultaneously rotating the bobbin to present another part of the bobbin for the reception of lugs.

3,650,008
TOOL FOR SNAP RINGS

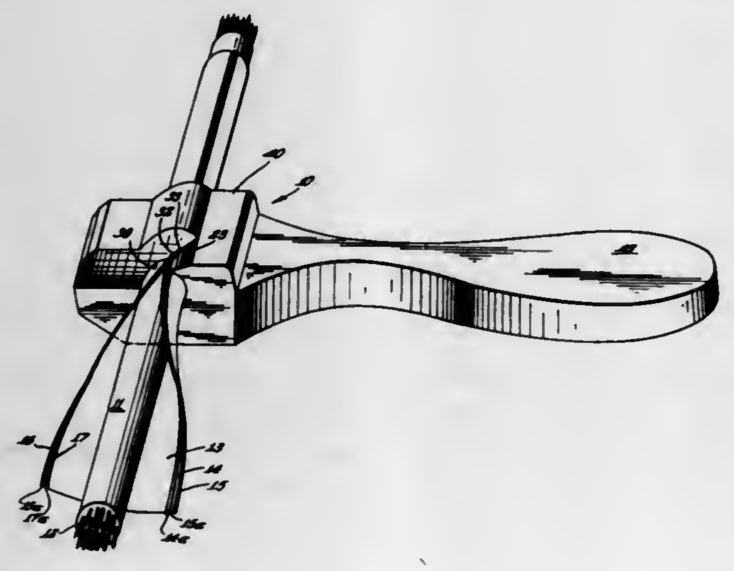
Emile P. Plouffe, Solon, Ohio, assignor to Millar Corporation, Chagrin Falls, Ohio
Filed Feb. 17, 1970, Ser. No. 12,033
Int. Cl. B23p *19/04*
U.S. Cl. 29—229 **3 Claims**



A tool for applying and removing snap rings to and from shafts and bores, wherein the jaws are disposed at an angle with respect to their path of travel.

3,650,009
ZIPPERTUBING CLOSING TOOL

Steven Ausnit, New York; Gunther Max Sommer, Pearl River, both of N.Y., and Helmut Z. Haberle, Northvale, N.J., assignors to Flexigrip, Inc., Orangeburg, N.Y.
Filed Aug. 15, 1968, Ser. No. 752,920
Int. Cl. B23p *19/02*
U.S. Cl. 29—235 **11 Claims**



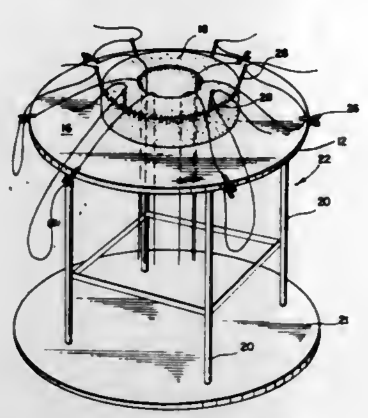
A tool for joining a zippertube (a flat sheet of vinyl with interlocking tracks along its edges which can be formed (zippered) into a tube by joining said edges) around a cable, that has an opening in the shape of the cable to be covered and that lines up the tracks of the zippertube and then engages them by pressing the tracks together between the outer surfaces of the cable jacket being covered and the inner surface of the tool. So that the zippertube can also be attached without the cable being disconnected at both ends, the tool may be made in the shape of a pliers that is opened and then closed around the cable.

3,650,010
BEAD STRINGER

Edgar S. Powell, Jr., 7834 E. Northland Drive, Scottsdale, Ariz.
Filed June 9, 1969, Ser. No. 831,565
Int. Cl. B23p *14/04*
U.S. Cl. 29—241 **2 Claims**

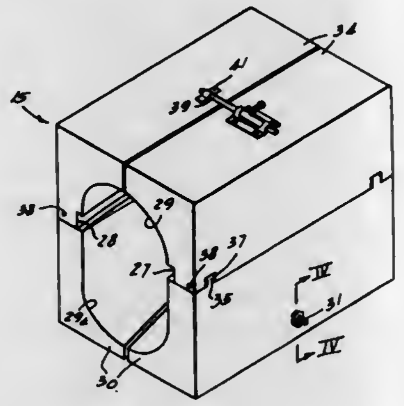
Method for stringing beads wherein a plurality of cords, not less than six, are paired and the cords of each pair are

crisscrossed in a horizontally run through a bead, resulting in a re-pairing, which pair is then vertically run through a bead together with a stand having a central opening for practicing the method and the resultant three dimensional string of beads.



3,650,011
DEVICE FOR CLOSING FASTENERS

Steven Ausnit, 124 East 61st Street, New York, N.Y.
Filed Mar. 24, 1970, Ser. No. 22,243
Int. Cl. A44b *19/14, 19/26*
U.S. Cl. 29—243.57 **8 Claims**

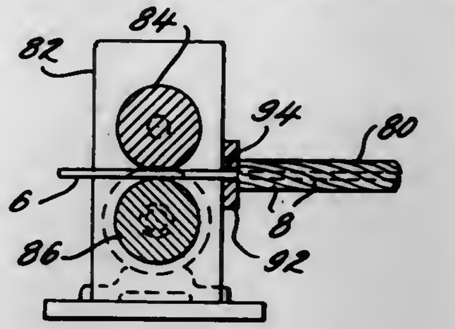


A method of and apparatus for securing an enclosing, wrap-around member applied about an object having pressure-resistant surface, and wherein the member has pressure interlockable, i.e., plastic hook zipper, fastener comprising complementary portions along adjoining edges and wherein one of the portions is backed against the object, the other of the portions being moved into registering alignment with the backed portion and pressure exerted to drive the registering portion into interlocked engagement with the backed portion utilizing the object as the base toward which the pressure is applied. A grooved tunnel slider is provided as the means for effecting the fastener closing.

3,650,012
PROCESS AND APPARATUS FOR RECOVERING METALS FROM CABLES

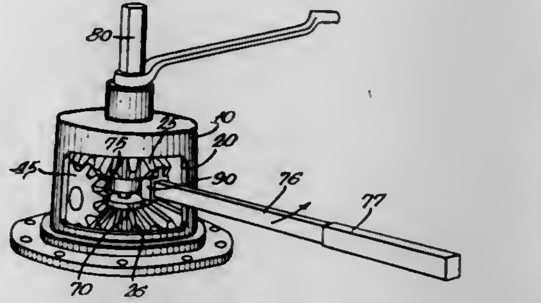
Fred J. Graveman, St. Charles, Mo., assignor to Aluminum Converter Sales & Research, Inc., St. Charles, Mo.
Filed Dec. 17, 1969, Ser. No. 885,676
Int. Cl. B23q *17/00*
U.S. Cl. 29—403 **19 Claims**

Aluminum is recovered from steel reinforced aluminum cable (ACSR cable) by first straightening the cable and thereafter cutting the strands of aluminum away from the steel core at the end of the cable so as to expose a short portion of the core. Next, the cable is severed so that the exposed portion of the core is disposed at the end of a relatively short segment of cable. The steel core is then withdrawn from the surrounding aluminum strands by passing its exposed portion through an opening and pulling it while the ends of the aluminum strands abut against the member in which the opening is formed. Finally, the aluminum strands, freed of the steel core, are introduced into a rotary shear which reduces them to pellet size fragments.



3,650,013
LIMITED SLIP DIFFERENTIAL DISASSEMBLY METHOD AND TOOL THEREFOR

Jan H. Boers; Robert C. Rutherford, and John R. Loquai, all of Owatonna, Minn., assignors to Owatonna Tool Company
Filed July 15, 1970, Ser. No. 54,885
Int. Cl. B23p *19/04;* **B23b** *9/00;* **B25b** *27/00*
U.S. Cl. 29—427 **14 Claims**

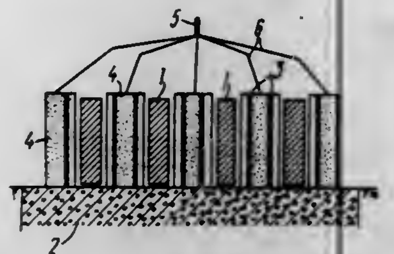


A tool for assembly and disassembly of a limited slip differential including a step plate engageable against one side gear of the differential, an internally-threaded member engageable against the other side gear of the differential, a forcing screw threadable into the threaded member and engageable with the step plate whereby rotation of the forcing screw forces increased separation of the side gears relative to each other by compressing of a Belleville spring between each side gear and the differential case to free the pinion mate gears for inward movement to remove washers associated therewith, and a handle member connected to the internally-threaded member extendable outwardly of the differential case and provided with a pawl engageable with a tooth on a side gear to result in rotation of the engaged side gear and a pair of pinion mate gears of the differential to cause the latter to walk on the other side gear until the pinion mate gears are positioned for removal through openings in the differential case, with the rotation of the handle being about an axis defined by the forcing screw, together with a method of disassembling a limited slip differential by use of a tool as described above.

3,650,014
METHOD OF EXPLOSIVE WELDING OF METAL PLATES

Alexandr Fedorovich Demchuk, Akademicheskoya ulitsa 25, kv. 47; Andrei Andreevich Deribas, ulitsa Pravdy, 1, kv. 20, both of Novosibirsk; Vladimir Mikhailovich Kudinov, ulitsa Filatova 1/22, kv. 51, Kiev; Felix Iovich Matveenkov, ulitsa pravdy, 1, Kv. 24; Valery Alexandrovich Simonov, bulvar Molodezhi, 30, Kv. 19, both of Novosibirsk, all of U.S.S.R.
Filed Aug. 15, 1969, Ser. No. 850,382
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **54 Claims**

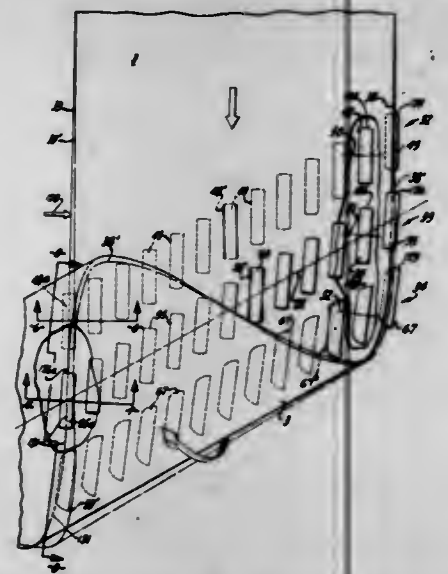
Metal plates are welded together by spacing base plates apart in a horizontal row and interdigitating pairs of plates to



be welded to the base plates along with explosive charges which are placed between the plates of the pairs.

3,650,015
HELICAL PIPE MAKING METHOD

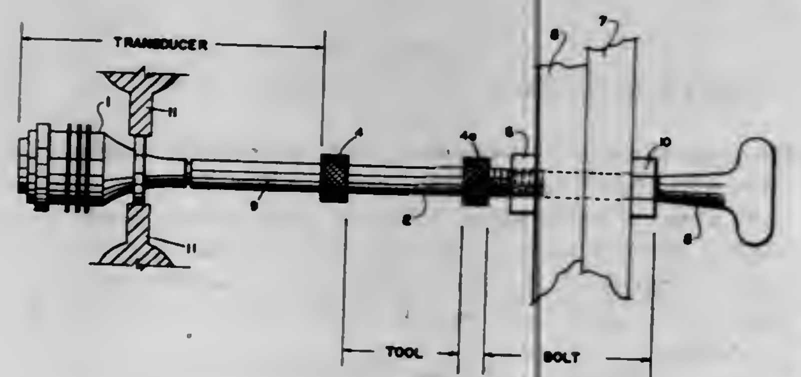
Paul K. Davis, Alameda, Calif., assignor to Pacific Roller Die Co., Inc., Hayward, Calif.
Filed Feb. 4, 1969, Ser. No. 796,437
Int. Cl. B23k *31/02*
U.S. Cl. 29—477.7 **3 Claims**



Apparatus for and method of helically forming pipe from an elongated strip of metal. The elongated strip is curled between the rolls of a three-roll strip curling apparatus into a curved path, with the rolls exerting lateral forces on the strip during curling for guiding the strip so that such curved path is in the form of a helical convolution in which the trailing edge of a preceding portion of the strip converges into contact with the leading edge of a following portion thereof.

3,650,016
PROCESS FOR TORQUING THREADED FASTENERS

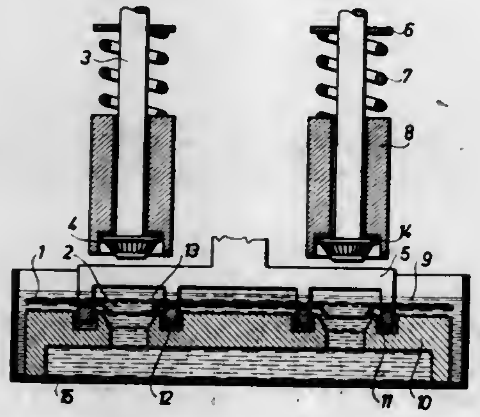
Robert C. McMaster, Columbus, Ohio, assignor to The Ohio State University, Columbus, Ohio
Filed Apr. 28, 1969, Ser. No. 819,885
Int. Cl. B23p *19/00*
U.S. Cl. 29—526 **8 Claims**



The disclosure is a method of applying high-efficiency sonic transducers to torquing threaded fasteners whereby any of a range of desired tension stress levels may be obtained in said threaded fastener. Reference is made to the claims for a legal description of the invention.

3,650,017
METHOD AND APPARATUS FOR COATING A WORKPIECE WITH SOLDER

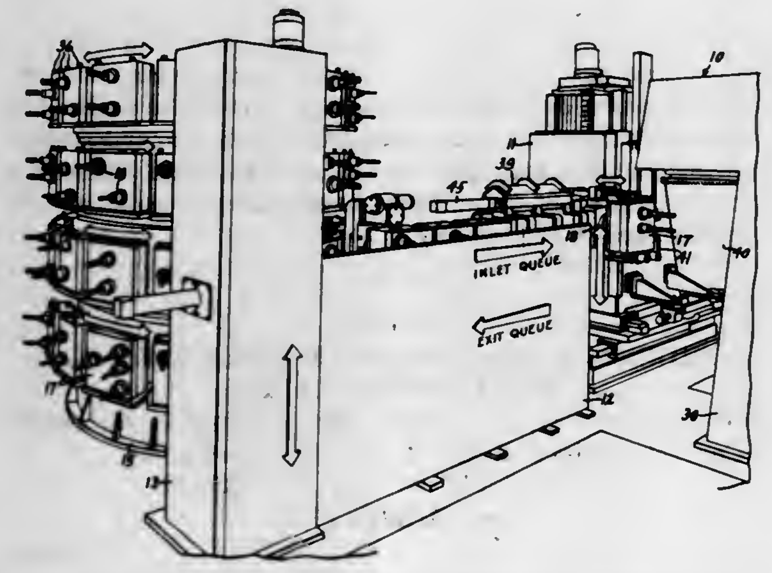
Pal Gal, Budapest, Hungary, assignor to Licencia
Filed Oct. 2, 1969, Ser. No. 863,247
Int. Cl. B23p *17/00, 25/00*
U.S. Cl. 29—527.4 **16 Claims**



A process for coating a workpiece of light metal or light metal alloy with soft-solder which comprises working those surfaces of the workpiece which are to be coated in an oxygen-free medium and while excluding oxygen therefrom contacting said workpiece with a soft solder bath.

3,650,018
MACHINE TOOL WITH TOOL CHANGING AND TRANSFERRING MEANS

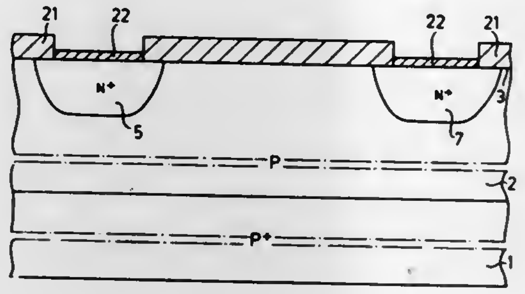
Charles B. Perry, and Lawrence A. Attermeyer, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Continuation of application Ser. No. 690,942, Dec. 15, 1967, now abandoned. This application Aug. 6, 1970, Ser. No. 61,870
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **14 Claims**



This invention relates to a machine tool and, more particularly, to apparatus for use in a manufacturing plant having in storage a number of tool modules which can be attached to and operated by a spindle, the particular module being selected in accordance with the character of a particular workpiece presented to the apparatus.

3,650,019
METHODS OF MANUFACTURING SEMICONDUCTOR DEVICES

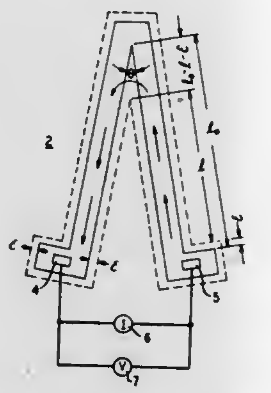
David Phythian Robinson, Stanmore, England, assignor to U.S. Philips Corporation
Filed Dec. 29, 1969, Ser. No. 888,543
Claims priority, application Great Britain, Dec. 31, 1968, 61,953/68
Int. Cl. B01j *17/00;* **H01g** *13/00*
U.S. Cl. 29—571 **20 Claims**



A method of implanting ions in a semiconductor body in which a thin conductive layer is applied on the surface parts or surface adjacent parts at which the ion beam is to be directed. The ions penetrate the thin layer which maintains the surface parts or surface adjacent parts, including metal electrode layers when present, at a common potential. By suitable connection of the thin layer charging of said parts during implantation can be prevented. Subsequent to implantation the thin conductive layer is removed without effecting any substantial removal of the surface parts or surface adjacent parts. The specification describes the manufacture of a tetrode insulated gate field effect transistor, the applied thin conductive layer preventing charging of the gate electrodes and consequent breakdown of the underlying insulating layers during ion implantation.

3,650,020
METHOD OF MONITORING SEMICONDUCTOR DEVICE FABRICATION

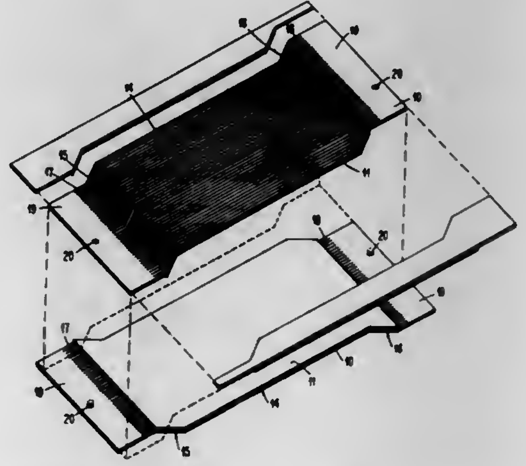
Jerry Mar, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Feb. 24, 1970, Ser. No. 13,488
Int. Cl. B01j *17/00;* **H01l** *7/00*
U.S. Cl. 29—574 **4 Claims**



A method is described for monitoring the extent of lateral and vertical diffusion of the emitter and base regions of transistor elements during the production of integrated circuits. A V-shaped mask pattern is utilized to form a V-shaped resistor in the semiconductor wafer of the circuit. Lateral diffusion will cause a small increase in leg width of the resistor relative to the original pattern, resulting in a shift in the position of the notch of the V-shaped resistor relative to the pattern which thereby results in a correspondingly large decrease in leg length, as measured from the base of the leg to the notch. Measurement of the resistance around the path of the resistor determines the change in leg length from which can be calculated the extent of lateral diffusion. The latter value can then be used to estimate junction depth. Following the teachings of this invention, the extent of oxide etching and photographic mask definition may also be monitored during the fabrication of the integrated circuit.

3,650,021
METHOD OF MANUFACTURING A TUBULAR PRINTED CIRCUIT ARMATURE

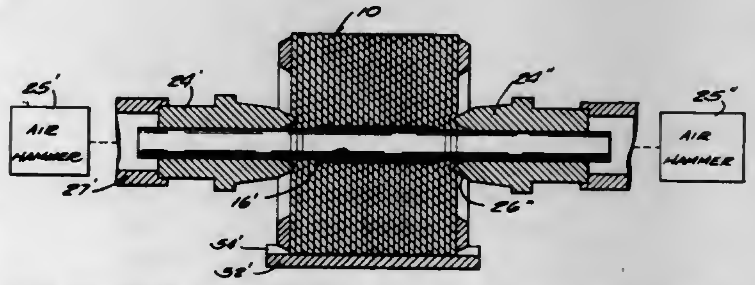
Kenneth N. Karol, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 26, 1970, Ser. No. 66,938
Int. Cl. H02k *15/02, 15/10*
U.S. Cl. 29—598 **14 Claims**



A tubular printed circuit armature, for use in an electric machine, is produced from two flexible cards, each card having a layer of conductive metal and a layer of insulation, such as a fully-cured epoxy-impregnated fiberglass layer. The layer of insulation is patterned in a predetermined manner to expose spaced bands of metal on the insulation side of each card, as by printed circuit techniques, so that interconnecting tabs of the winding conductors extend into the spaced bands of metal. The mating surfaces of the cards are then coated with an adhesive which will subsequently bond the cards together under a heat and pressure environment. The cards are then rolled about a high temperature coefficient mandrel, with the interconnecting tabs of one card in registry with the interconnecting tabs of the other card, and with the cards axially overlapping one another at the ends which form the axial seam of the tubular armature. The mandrel is then placed in a low temperature coefficient shell; and the shell is subjected to an elevated temperature, to thus form a unitary tube out of the two cards. The tube is then removed and the tabs are electrically connected to form the armature winding.

3,650,022
METHOD OF ASSEMBLING THE ROTOR PAD SHAFT OF A DYNAMOELECTRIC MACHINE

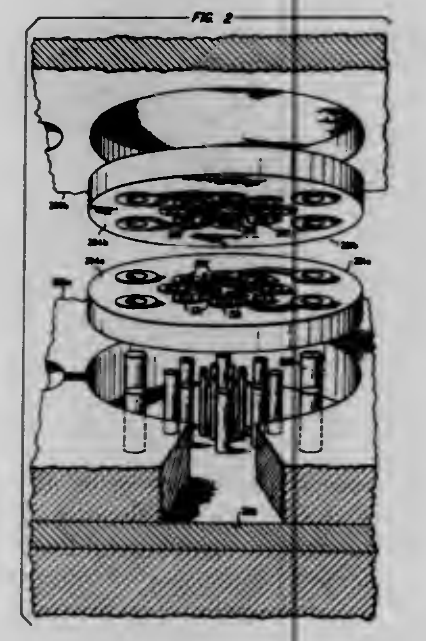
Thomas W. Stone, Owosso, Mich., assignor to The Singer Company, New York, N.Y.
Filed Dec. 12, 1969, Ser. No. 884,499
Int. Cl. H02k *15/02, 15/10*
U.S. Cl. 29—598 **19 Claims**



A laminated rotor core is fastened to a shaft by applying a series of impact blows to an annular area surrounding the core opening into which the rotor shaft extends. This indents the laminations at the annular area and the lamination material within the annular area, i.e., between the annular area and the core opening, expands radially inward to grip the shaft.

3,650,023
METHOD FOR FABRICATING FERRITE CORE PLUG-IN DEVICES

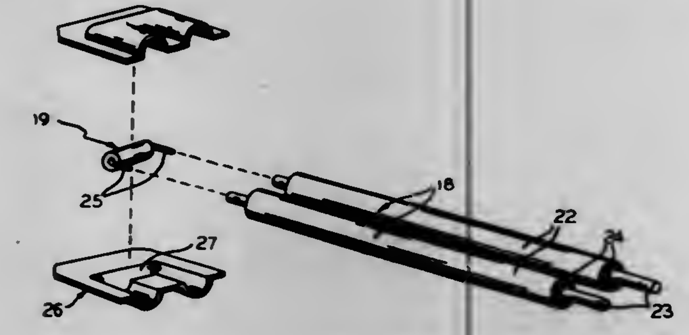
Peter S. Kubik, South Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Aug. 8, 1969, Ser. No. 848,610
Int. Cl. H01f *7/06*
U.S. Cl. 29—602 **10 Claims**



Plastic encapsulated ferrite core plug-in units are fabricated by an injection molding technique utilizing a hollow mold. Conducting paths on and through the units are transferred from the mold to the units such that the conducting paths are in a plane different from the nonconducting surface of the units. Copper plating applied to the entire unit is then removed from the plane established by the nonconducting surfaces only.

3,650,024
TEMPERATURE SENSITIVE CONTROL SENSOR

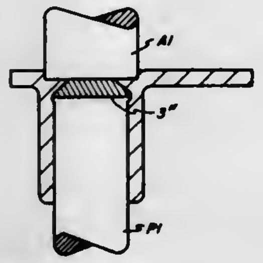
Phillip F. Finney, Villa Park, Ill., assignor to Thermo-Couple Products Company, Inc., Winfield, Ill.
Filed Nov. 21, 1969, Ser. No. 878,832
Int. Cl. H01c *15/04, 17/00*
U.S. Cl. 29—615 **6 Claims**



A sensor for controlling the temperature of a metal, gas or liquid mass including a temperature sensitive resistance element constructed and arranged in a casing or sheath so that it is capable of being cast directly into a metal mass, placed directly into a gas mass, or placed directly into a liquid mass, wherein the elements of the sensor will withstand the high temperatures in casting processes and/or the environs of a gas or liquid mass, and maintain its integrity.

3,650,025
PROCESS OF FORMING ELECTRICAL CONNECTORS

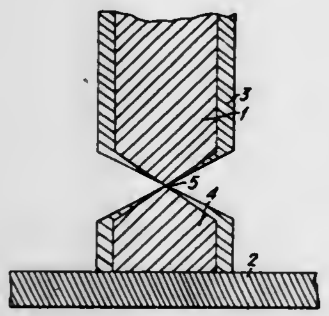
Bernard John McLaughlin, St. Louis, and Arthur Louis Colvis, Hazelwood, both of Mo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Oct. 31, 1969, Ser. No. 872,918
Int. Cl. H02g *15/00;* **H01r** *9/00*
U.S. Cl. 29—629 **6 Claims**



Electrical connector or terminal lugs are provided by using bending, stretching and drawing techniques rather than cold flow methods. To fabricate the terminal lugs, a flat piece of aluminum or copper is first formed as a cup by drawing techniques. Then, the closed end of the cup is sheared free, flattened and wedged within the walls of the cup. Afterward, suitable holes are punched or drilled to accept wires, or cables, and fasteners. The resulting terminal lugs may be used in fastening wires or cable to bus bars.

3,650,026
METHOD OF FORMING A CONTACT

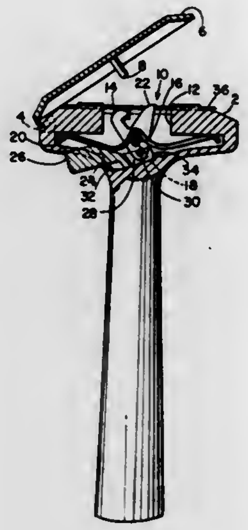
Albert Leslie Freeman, Harlow, England, assignor to International Standard Electric Corp., New York, N.Y.
Filed Aug. 1, 1969, Ser. No. 846,710
Claims priority, application Great Britain, Aug. 21, 1968, 39,925/68
Int. Cl. H01r *9/00*
U.S. Cl. 29—630 C **4 Claims**



Electrical contacts are produced by welding the ends of coated contact wires to strips of springs metal. The welded end of each of the wires is severed from the remainder of the wire leaving a chisel-ended stud welded to the spring strip. This stud is then subjected to a die forming operation to produce a shaped contact.

3,650,027
RAZOR HEAD

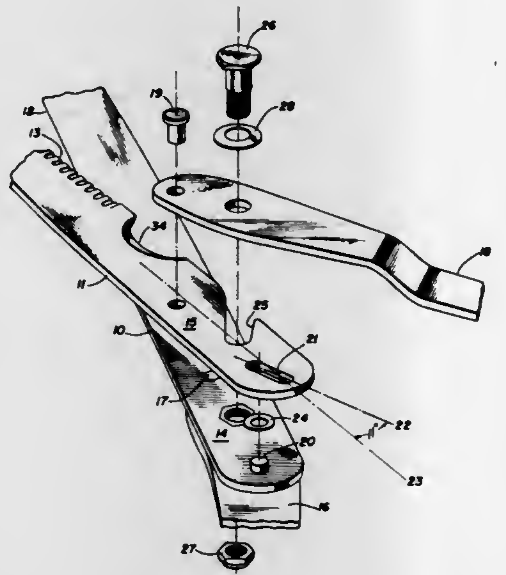
Charles F. Stephenson, Rowayton; Kenneth A. Van Dyck, Weston, and James B. Wyatt, Stamford, all of Conn., assignors to The Gillette Company, Boston, Mass.
Filed Apr. 8, 1970, Ser. No. 26,588
Int. Cl. B26b *21/30, 21/32*
U.S. Cl. 30—58 **9 Claims**



A razor head having a cap portion mounted thereon and adapted to pivot upon one end of the razor head, the cap being held and released by a hook latch means disposed in the razor head.

3,650,028
COMPOUND ACTION SHEARS

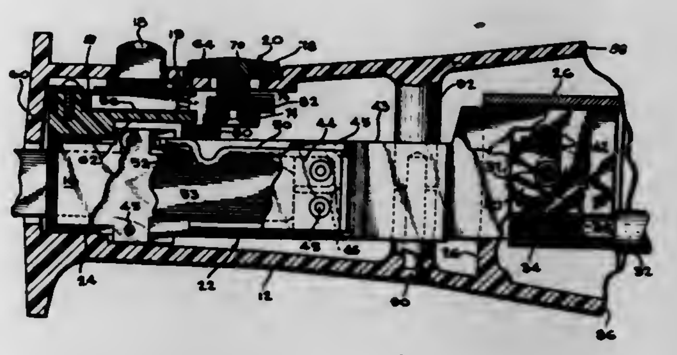
Gabriel M. La Pointe, Worcester, Mass., assignor to Parker Mfg. Company, Worcester, Mass.
Filed Apr. 24, 1970, Ser. No. 31,488
Int. Cl. B25b *7/06;* **B26b** *13/28*
U.S. Cl. 30—238 **5 Claims**



Hedge shears having increased cutting efficiency and operator shock isolation are provided by this invention. Improved cutting efficiency is provided by a cam actuated force multiplier interconnection of the blades. Shock isolation is provided by the use of resilient means to limit the blade travel.

3,650,029
ELECTRIC KNIFE BLADE SECURING AND SAFETY SWITCH DEVICE

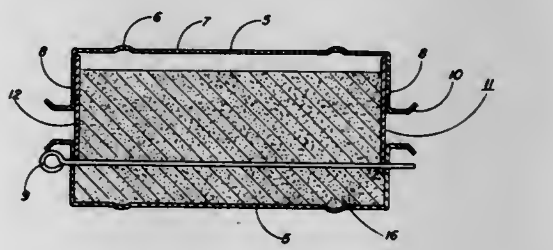
William F. Treic, Boonville, Mo., assignor to McGraw-Edison Company, Elgin, Ill.
Filed May 4, 1970, Ser. No. 34,485
Int. Cl. B26b *7/00*
U.S. Cl. 30—272 **10 Claims**



An electric knife having reciprocating carriages supporting adjacent cutting blades, a flexible blade retainer on each carriage cooperating with a blade recess for releasably holding the blade and carriage together, an on-off switch for powering the knife, and a combination blade and safety switch lock device operable in one position to cooperate with the blade retainer only to preclude blade removal while allowing switch operation and operable in a second position to cooperate with the switch only to preclude powering of the knife while allowing removal of the blades.

3,650,030
CHEESE MOLD

Richard William Delamere, Peterborough, Ontario, Canada, assignor to De Laval Company Limited, Peterborough, Ontario, Canada
Filed Feb. 4, 1970, Ser. No. 8,561
Int. Cl. A01j *25/13*
U.S. Cl. 425—408 **8 Claims**



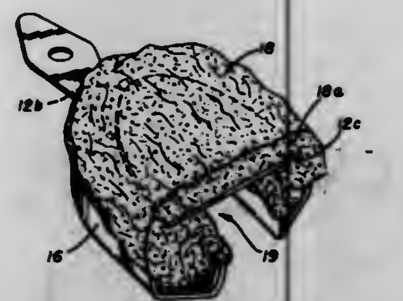
Upper and lower receptacles adapted to define a mold cavity are duplicates of each other so that they are interchangeable. Releaseable means support a sleeve in the lower receptacle above its bottom and with the upper portion of the sleeve adapted to protrude into the upper receptacle to space the latter vertically from the lower receptacle; and after filling the lower receptacle and this sleeve protrusion with the cheese curd and then applying the upper receptacle, the supporting means are released so that the sleeve slides toward the bottom of the lower receptacle as the curd-pressing operation forces the upper receptacle downward relative to the lower one. Handle members integral with the receptacles serve to reinforce their side walls.

3,650,031

MANDIBULAR DENTAL CAST AND METHOD OF MAKING SAME

Douglas J. Shilliday, 1501 London Drive, Upper Arlington, Ohio

Filed July 7, 1970, Ser. No. 52,864
Int. Cl. A61c *19/00*
U.S. Cl. 32—1 **5 Claims**



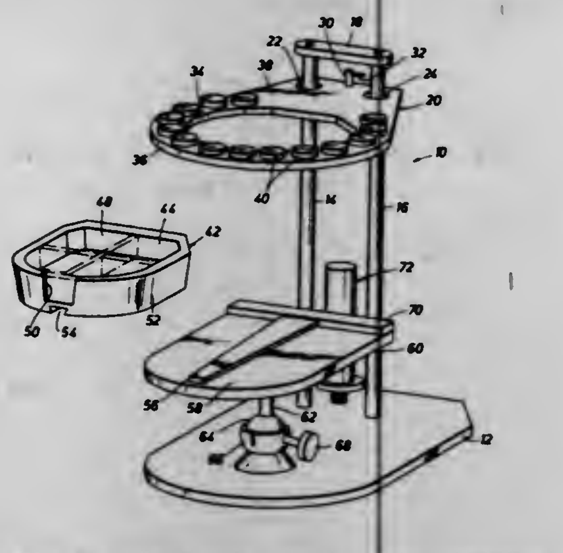
A mandibular dental cast in which a substantially rigid, filler plate or matrix is embedded to fill and smooth the central void or tongue space area of a mandibular arch casting formed in a dental impression mold; the filler plate or matrix being of generally parabolic outline and being at least partially embedded in the plaster or plastic casting as it is being formed in the impression mold.

3,650,032

MAGNETIC TOOL-POSITIONING APPARATUS

Ralph Kestler, Houston, Tex., assignor to Glynn E. Perkins

Filed Feb. 11, 1970, Ser. No. 10,326
Int. Cl. A61c *13/00*
U.S. Cl. 32—11 **13 Claims**



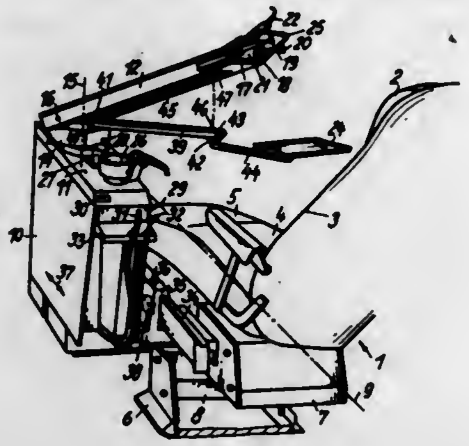
An apparatus for positioning one or more magnetic tools relative to a workpiece. The apparatus includes a base and a magnetic table movably supported relative to the base. Indexing means are provided to roughly position and index the magnetic table. A workpiece-support table is rotatably mounted on the base and is positioned to receive a magnetic tool carried by the magnetic table. The apparatus finds particular utility in the dental art for making replica of teeth.

3,650,033

DENTAL TREATMENT UNITS

Ernst-August Behne, and Otto Fleer, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Oct. 20, 1969, Ser. No. 867,511
Claims priority, application Germany, Oct. 26, 1968, P 18 05 483.6
Int. Cl. A61c *11/00*
U.S. Cl. 32—22 **7 Claims**



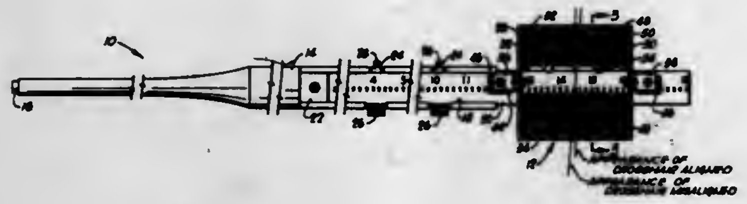
A dental treatment unit comprises a housing, a dental hand appliance support arm connected to the housing for pivotal arcuate movement in a substantially horizontal plane relatively to the housing and a counterbalanced dental instrument tray support arm assembly which is connected to the hand appliance support arm for pivotal arcuate movement therewith.

3,650,034

METHOD AND APPARATUS FOR OPTICAL ALIGNMENT

Robert A. Ruckle, and George E. Shepard, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed May 29, 1969, Ser. No. 828,911
Int. Cl. G01c *15/12*
U.S. Cl. 33—46 R **3 Claims**



A method and apparatus for establishing a line of measurement normal to an optical line of sight, the apparatus including a linear scale and a viewing box adjustably connected to the scale. The viewing box has two sides which diverge from each other in extending outwardly from a planar surface of the linear scale which carries measuring indicia. These sides each carry a series of parallel lines. In the method of the invention, an optical line of sight is established by the use of bench marks and a sighting instrument having a sighting crosshair. One end of the linear scale is then placed against a reference point on structure to be optically aligned, and the viewing box is moved along the scale until the line of sight passes through the viewing box. The scale and box are then pivoted about the reference point in a precise level plane until the parallel lines of the viewing box extend parallel to the crosshair. In this status, the linear scale extends at a right angle to the line of sight.

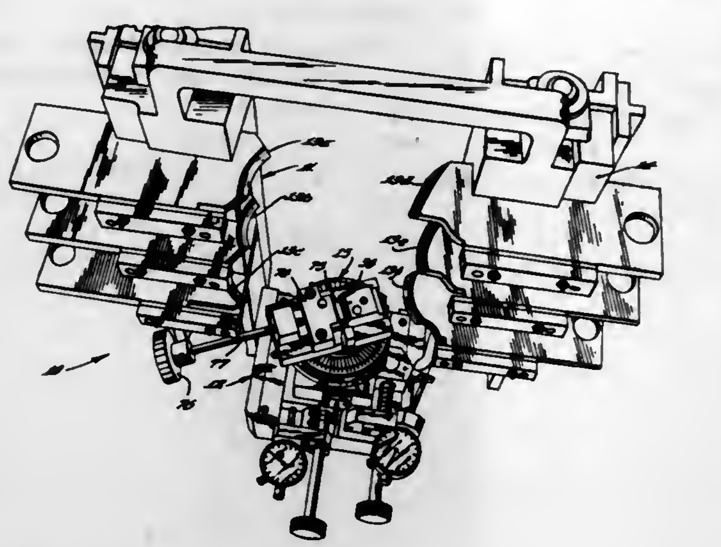
3,650,035

FORM GAGE LEAN ADAPTER

Charles L. Mueller, Harrisburg, Pa., assignor to TRW-Inc., Cleveland, Ohio

Filed July 22, 1969, Ser. No. 843,666
Int. Cl. G01b *5/20*
U.S. Cl. 33—174 PB **19 Claims**

A turbine or compressor blade is held in an adapter for a guillotine gage for checking lean in any direction. The adapter includes a plurality of cylindrical forms which are slidingly intercoupled with keys and keyways on adjacent faces to permit relative movement along an X and a Y axis within the confines of a gap generated with respect to the stacking axis of the airfoil under test. The adapter is provided with a series of indicia markings equally spaced at 2° 30′ so that the adapter generates the aforementioned circle when adjusted to a predetermined lean tolerance. The gap is formed by parallel conically shaped surfaces, one of these surfaces on one of the cylindrical forms and the other on the inside of a threaded adjusting ring. The ring carries the indicia for which each of the markings of 2° 30′ is equal to 0.001 tolerance. Tolerance may therefore be directly set by appropriate adjustment of the ring.

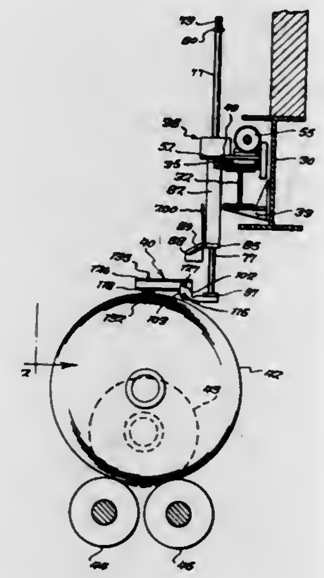


3,650,036

APPARATUS FOR DETECTING SURFACE VARIATIONS

Donald B. Coveney, Ottawa, Ontario, and Ronald J. Ouellette, Gatineau, Quebec, both of Canada, assignors to Canadian International Paper Company, Montreal, Quebec, Canada

Filed Nov. 6, 1969, Ser. No. 874,647
Claims priority, application Canada, July 11, 1969, 056778
Int. Cl. G01b *5/20, 7/24, 7/28*
U.S. Cl. 33—174 P **21 Claims**



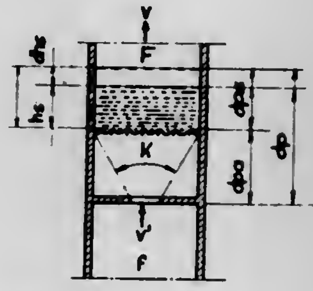
An apparatus for detecting surface variations in large paper rolls in which a sensing mechanism is suspended from an overhead beam and is vertically and angularly movable into engagement with the roll surface, where it is held in place by gravity. The sensing mechanism includes an elongated reference arm and a sensing arm pivotally connected to the reference arm. A spherical contact element on the sensing arm rests on the roll such that there is only a single point of contact between the sensing mechanism and the roll. Upon horizontal movement of the sensing mechanism in a direction parallel to the axis of the roll, the sensing arm pivots relative to the reference arm in response to depressions or bulges in the roll surface. This pivotal movement is detected by a transducer which controls a recorder to provide a continuous visual indication of the surface contour of the roll.

3,650,037

METHOD AND APPARATUS ASSURING THE STEADY FLOW OF TREATMENT GAS THROUGH A MIXTURE OF BULK MATERIALS

Hans Oetiker, St. Gall, Switzerland, assignor to Gebruder Buhler AG, St. Gall, Switzerland

Filed Mar. 31, 1970, Ser. No. 34,753
Claims priority, application Switzerland, Mar. 31, 1969, 4832/69
Int. Cl. F26b *3/08*
U.S. Cl. 34—10 **12 Claims**



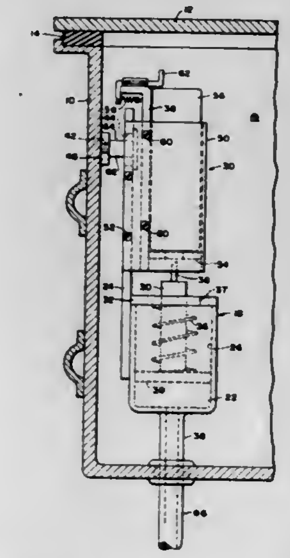
A method for assuring a steady flow of treatment gas through a mixture of bulk materials flowing, in a dense, homogeneous fluidized bed layer of varying height, over a porous, gas-permeable material support, comprises providing a screen-like porous gas-permeable mat as part of the support and carrying the bulk materials, and providing a perforated plate in spaced relation beneath the mat and covered by the treatment gas. The treatment gas, in addition to the effect thereon exerted by the porous mat and the fluidized layer, is subjected to a velocity variation caused by the diaphragm effect of the flow-through area of the perforated plate. The velocity of the gas is controlled within a range assuring maintenance of a dense, homogeneous fluidized bed layer. The diaphragm effect is selected, within the velocity range, at a value inversely proportional to the square root value of the specific surface load of the maximum admissible bulk material layer acting on the material support.

3,650,038

ARTICLE TREATING APPARATUS

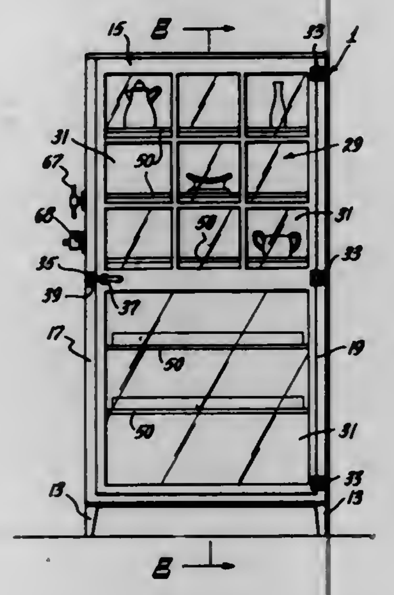
Patrick A. Alessi, Needham, and Joel W. Jansky, Jamaica Plain, both of Mass., assignors to Advanced Instruments, Inc., Watertown, Mass.

Filed Oct. 16, 1969, Ser. No. 867,008
Int. Cl. A61l *3/00*
U.S. Cl. 34—45 **10 Claims**



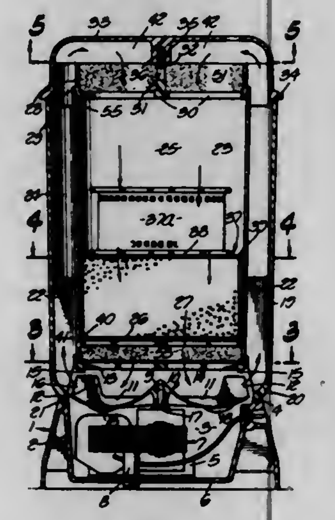
Apparatus for sterilizing articles including means to release gaseous sterilant from cartridge held within the sterilizing chamber, said means actuated by pressure sensing means so as to release the sterilant only after a required degree of vacuum has been attained. May also include time-limit alarm means for the vacuum pulling stage and the sterilant releasing stage.

3,650,039
SILVERWARE CABINET
Joseph J. Harding, 204 Tarrytown Drive, Richmond, Va.
Filed Jan. 13, 1970, Ser. No. 2,495
Int. Cl. F26b *21/14*
U.S. Cl. 34—45 7 Claims



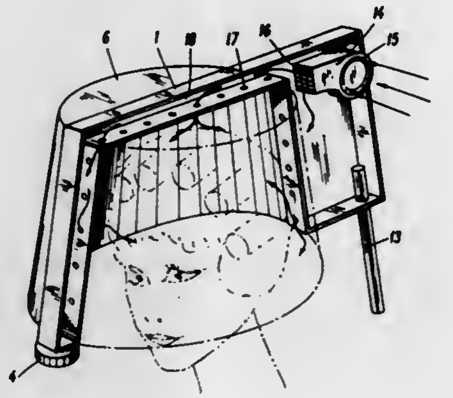
Oxygen is removed from the interior of a housing or chamber adapted to contain silverware so that the silverware will not oxidize or tarnish due to oxidation. The oxygen may be removed from the silverware housing by means, for example, of an oxygen consuming flame burning within the housing, by purging the interior of the housing with a non-oxidizing gas so as to provide therein a non-oxidizing atmosphere, or by evacuating the housing and replacing the evacuated atmosphere with a non-oxidizing gas.

3,650,040
FILM DRYER
Louis D. Statham, and Walter H. Eisele, both of 2230 Statham Boulevard, Oxnard, Calif.
Filed Aug. 28, 1969, Ser. No. 853,750
Int. Cl. F26b *21/06*
U.S. Cl. 34—80 9 Claims



A dryer assembly particularly designed for use by photographers who do their own developing, comprising a closed system isolated from the ambient environment, containing a desiccant space and an article-containing space suitable to receive film strips, and means to circulate the air in closed cycles through the article space, and desiccant contained in said desiccant space.

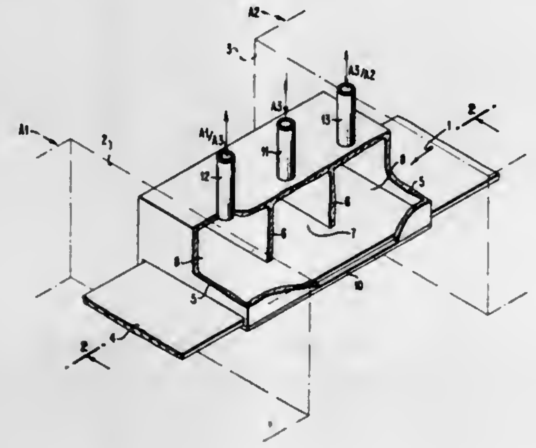
3,650,041
HAIR DRYER
Gotz Florian Strzelczyk, Muhlheim am Main, Germany, assignor to Rowenta-Werke Gesellschaft mit beschrankter Haftung, Offenbach am Main, Germany
Filed July 8, 1969, Ser. No. 839,932
Claims priority, application Germany, July 11, 1968, P 17 82 040.5
Int. Cl. A45d
U.S. Cl. 34—99 3 Claims



A hair dryer of the hood type wherein the hood or bonnet is collapsible into such a position after use so as to take up a minimal of storage space.

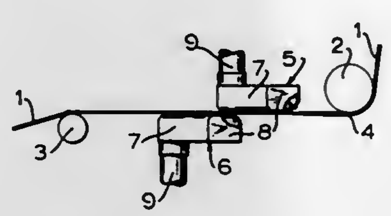
The bonnet is constructed of both stiff and flexible parts arranged on either side of a thin substantially rectangular casing. When the bonnet is used the parts fold outwardly from either side of the case forming a full sized hair dryer. When the bonnet is stored the parts are folded inwardly forming a volume similar to a small attache case.

3,650,042
GAS BARRIER FOR INTERCONNECTING AND ISOLATING TWO ATMOSPHERES
Frank E. Boerger, and William H. White, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 19, 1969, Ser. No. 825,777
Int. Cl. F26b *25/00*
U.S. Cl. 34—148 38 Claims



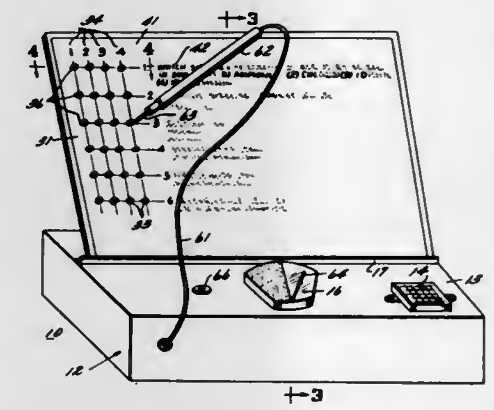
A transition or isolation zone for accommodating continuous free flow of a tier of articles between two distinct and isolated atmospheres. The transition zone includes a series of alternate inlet and outlet compartments for a non-reactive gas wherein the compartments contain inlet and outlet openings interconnecting with each other and the indicated atmospheres. The cross sections of the openings are complementary to the cross section of the tier of articles to provide a restricted orifice-size clearance therebetween, whereby the orifice phenomena can be employed by correlation of pressures to control the flow of gas and conversely to substantially completely isolate the indicated atmospheres without any measurable cross-migration therebetween.

3,650,043
WEB STABILIZER
Wm. F. Overly, Minneconne, and Kenneth J. Pagel, Neenah, both of Wis., assignors to Overly, Inc., Neenah, Wis.
Filed Apr. 3, 1970, Ser. No. 25,505
Int. Cl. F26b *13/00*
U.S. Cl. 34—156 6 Claims



An air foil web stabilizer is constructed with its opposite ends disposed generally at a slight angle to provide a lateral component to the air discharge in the general direction of web movement to thereby remove wrinkles from the web.

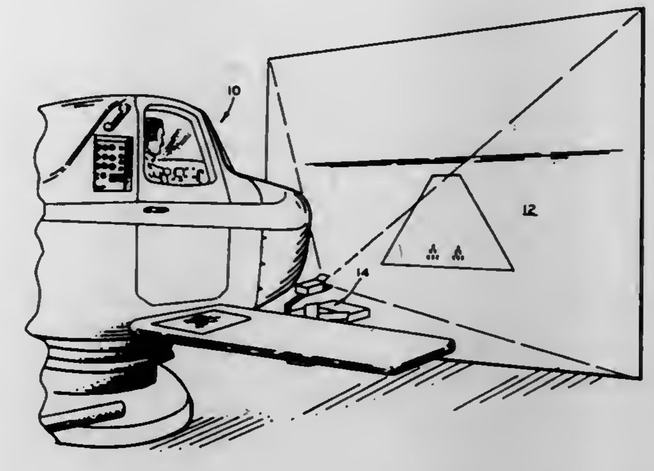
3,650,044
TEACHING DEVICE
Donald R. Burdick, Fairfield, Ohio, assignor to Donald H. Pater, Village of Green Hills, Ohio, a part interest
Filed Sept. 22, 1970, Ser. No. 74,404
Int. Cl. G09b *7/06*
U.S. Cl. 35—9 C 6 Claims



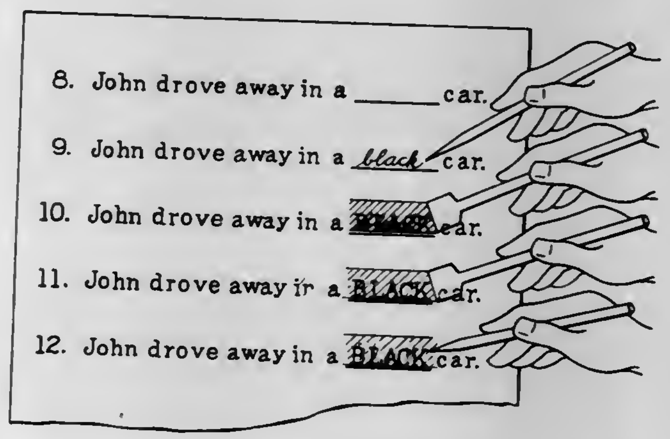
A teaching device which is powered by an exposed light sensitive cell. A galvanometer, a question and answer display, and pupil operated means for indicating a selected answer in the display are connected to the cell, and when a predetermined answer is selected by the pupil and light is being received by the cell, the galvanometer is energized.

3,650,045
PROJECTED VISUAL TRAINING AID
Gerald F. Wood, Vestal, and Paul E. Green, Harpursville, both of N.Y., assignors to Singer-General Precision, Inc., Binghamton, N.Y.
Filed Nov. 10, 1969, Ser. No. 875,255
Int. Cl. B64g *7/00*; G09b *9/08*
U.S. Cl. 35—12 N 8 Claims

Apparatus providing a visual reference to assist in training a student operating a fixed-base aviation trainer in performing runway approaches and landings. The apparatus comprises a plurality of members movable to form cooperatively a two dimensional figure and means for projecting an outline of the figure on a vertically disposed display surface for viewing by the student. The visible outline conforms to a two dimensional projection on a vertical plane of the apparent shape of a runway as seen in perspective from an aircraft making a landing approach. The members are moved in accordance with simulated movement of the trainer so that the projected outline properly reflects apparent changes in the trainee's positional viewpoint with respect to the simulated runway.



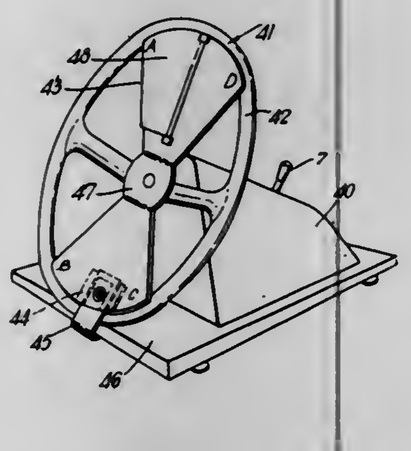
3,650,046
EDUCATIONAL DEVICE WITH SELF-CHECKING ARRANGEMENT
Burrhus F. Skinner, Cambridge, Mass., assignor to Meredith Corporation
Continuation-in-part of application Ser. No. 638,071, May, 1967, now abandoned , and a continuation-in-part of 815,803, Apr., 1969, now abandoned. This application Nov. 10, 1969, Ser. No. 875,057
Int. Cl. G09b *3/02*
U.S. Cl. 35—91 G 23 Claims


8. John drove away in a ______ car.
9. John drove away in a black car.
10. John drove away in a BLACK car.
11. John drove away in a BLACK car.
12. John drove away in a BLACK car.

Educational devices such as workbooks and the like for instructing students include s sheet visibly printed with (a) information or intelligence to which response must be made on the part of the student, and (b) a designated area or series of areas in which the student may give a response or be provided with additional information or "hints" of the correct answer. The student provides a response in the designated area or areas with a first type of writing instrument. The correct answer or further instructions or intelligence for the student are printed in invisible ink in the designated area or areas. The answer or additional information becomes visible upon contact of the area by the student with a developing composition. The writing instrument used by the student with a developing composition. The writing instrument used by the student to write his visible response and the developing composition are both selected so that if the invisible ink is developed prior to the time that the student writes his own response with the writing instrument, his visible marking will have a different appearance than it does when it is made prior to applying the developing composition. Because the sequence of writing and developing can be readily distinguished, the teacher reviewing the student's test paper, workbook, practice sheet, etc. can ascertain at a glance whether an invisible ink area was developed before or after the student wrote his response.

With this method both the student's response and the invisible response must occupy the same area if the order effect is to reveal unauthorized use of the invisible information. It may not be too easy for the student to read the correct response when it has become visible because the two responses overlap. This defect can be remedied if the two responses occupy different but adjacent areas. To prevent the student from developing the correct response before writing his own, he may be required to apply the developing solution in such a way that it leaves a single pattern when applied in one operation, but a visibly overlapping, broken, or disjointed pattern when applied in two or more operations. This can be achieved by using a patterned stamp, roller, or shading pen.

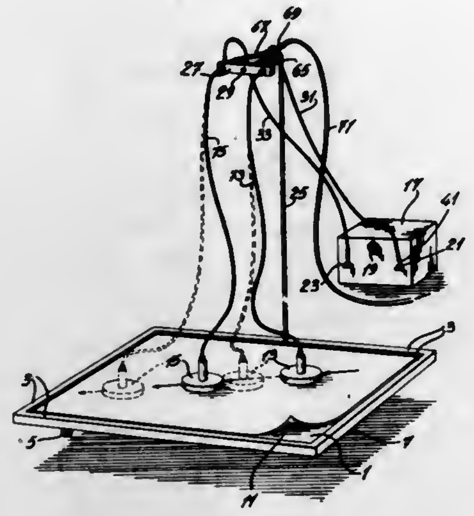
3,650,047
DEVICE FOR USE IN DRIVING INSTRUCTION
George Dennis Ratcliffe, 43 Northhampton Road, Addiscombe, Croydon, Surrey CRO 7HD, England
Filed Dec. 24, 1969, Ser. No. 888,009
Claims priority, application Great Britain, Dec. 24, 1968, 61,467/68; Jan. 17, 1969 3,000/69
Int. Cl. G09b *9/04*
U.S. Cl. 35—11 **5 Claims**



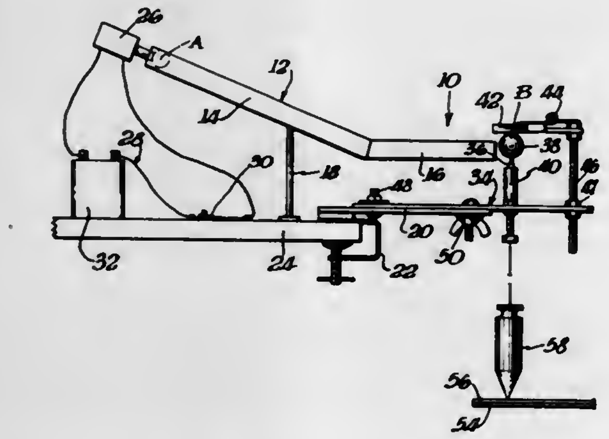
A device for use in driver instruction, intended to be used in combination with a steering wheel, the device comprising stops that prevent a user's hands from passing through upper and lower regions of the wheel while gripping the wheel. A preferred embodiment comprises a plate having instructions for the use of the device and correct steering printed thereon.

3,650,048
EXPERIMENTING TABLE WITH FLOATING DISCS
Eugene Michaud, 2410 Chemin Ste Foy, Que., Canada
Filed Sept. 21, 1970, Ser. No. 73,864
Int. Cl. G09b *23/10*
U.S. Cl. 35—19 R **17 Claims**

This experimenting device comprises a table, at least one, and preferably two movable plates, such as metallic discs, on the table, means to produce a uniform cushion of air between the table and the plate in order to cause floating of the plate above the surface of the table while having a cushion which is independent of the positions of the plate, and a pulse generator electrically connected with the plate. The plate comprises means to transmit sparks produced by the pulse generator and there are means between the surface of the table and the plate or plates to record the sparks when the plate or plates are in movement.

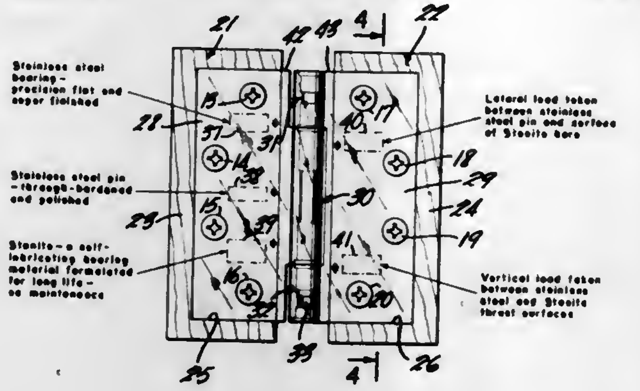


3,650,049
APPARATUS FOR CLASSROOM PHYSICS EXPERIMENTS
Robert F. Chambers, 504 Beverly Road, Newark, Del.
Filed Aug. 13, 1970, Ser. No. 63,466
Int. Cl. G09b *23/10*
U.S. Cl. 35—19 R **9 Claims**



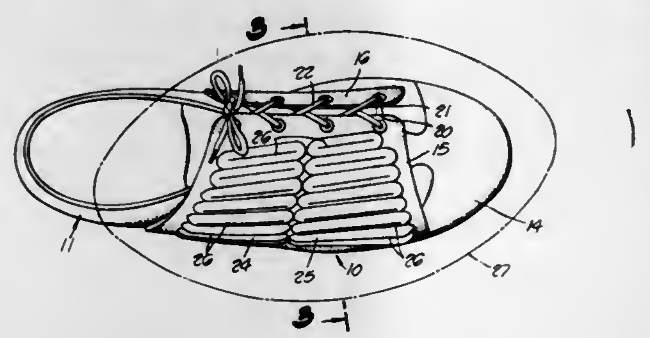
Apparatus for demonstrating Newton's third law of motion comprises first and second substantially spherical masses. Structure is provided for moving first mass along a path of travel that includes substantially horizontal portion. Support structure is provided for locating second mass in alignment with horizontal portion of path of travel of first mass. Support structure includes vertically disposed support pin with flat support surface having area substantially less than diametral cross sectional area of second mass. Sleeve snugly surrounding support pin is mounted for sliding movement relative to pin, and weight is spaced from and directly above flat support surface of support pin for engaging top of second mass when second mass is positioned upon support surface of pin. Sleeve has upper position where upper surface thereof and support surface of pin are close to one another for locating second mass on support surface. Sleeve has lower position spaced from support surface of pin so that second mass is supported by pin between support surface thereof and weight when sleeve is moved to lower position after assisting in locating second mass on support surface.

3,650,050
HINGE EXHIBITOR
Charles R. Suska, Roxbury, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Sept. 29, 1969, Ser. No. 861,706
Int. Cl. G09b *25/02*
U.S. Cl. 35—51 **1 Claim**


21
42
43
4
22
Stainless steel bearing - precision flat and super finished
13
28
31
14
Stainless steel pin - through-hardened and polished
15
23
Stellite—a self-lubricating bearing material formulated for long life - no maintenance
16
32
25
33
4
26
17
40
Lateral load taken between stainless steel pin and surface of Stellite bore
18
29
30
24
19
41
20
Vertical load taken between stainless steel and Stellite thrust surfaces

A hinge exhibitor for apprising prospective users of the hinge's structure and operation includes a demonstration hinge mounted to simulate an application of the hinge. Messages appearing on the hinge leaves are explanatory of hinge components that may be seen through transparent hinge knuckles.

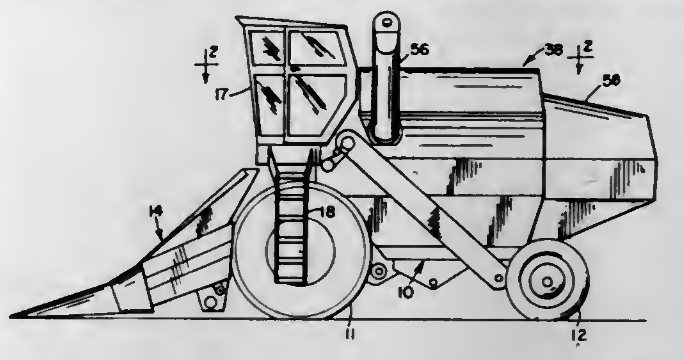
3,650,051
PUNTING ACCESSORY FOR FOOTBALL PLAYER'S SHOE
William H. Sass, 5631 Corning Avenue, Los Angeles, Calif.
Filed June 8, 1970, Ser. No. 44,213
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AG **11 Claims**



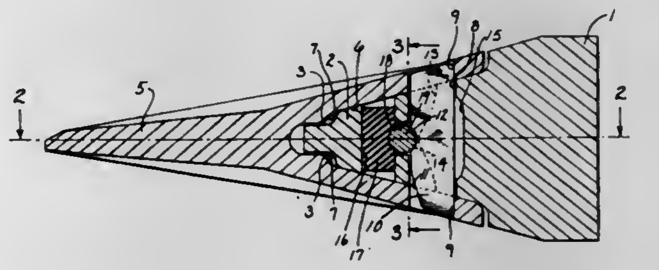
A football player's accessory for attachment to the midlength portion of the player's shoe and designed to spin the ball about its longitudinal axis as it is punted thereby dynamically stabilizing the ball and increasing its range and accuracy. The exterior of the accessory is roughened or otherwise contoured for non-skidding contact with the ball as the punter lofts it to initiate a punt.

3,650,052
CROP HARVESTING COMBINE
Arved Maiste, and Melvin F. Robertson, both of Brantford, Ontario, Canada, assignors to White Motor Corporation of Canada Limited, Brantford, Ontario, Canada
Filed Feb. 24, 1970, Ser. No. 13,271
Claims priority, application Canada, Feb. 24, 1969, 043,795
Int. Cl. A01d *75/00*
U.S. Cl. 56—473.5 **3 Claims**

A crop harvesting combine which has a vehicle frame structure for supporting and housing threshing, separating and cleaning mechanisms and a built-in grain bin which is incorporated as an integral part of the frame structure with the floor of the bin providing a roof over the compartment in which the threshing cylinder, straw walkers, cleaning pans and associated devices are mounted, and the grain bin having co-operating augers in bottom troughs extending longitudinally and transversely of the bin for moving the clean grain to an unloading elevator at one end of the transverse trough.

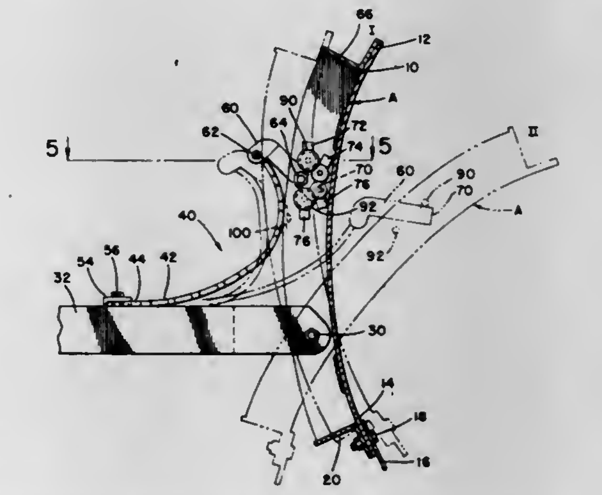


3,650,053
ROLLER LOCK FOR DIGGING TOOTH ASSEMBLY
Josef Baer, South Milwaukee, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.
Continuation of application Ser. No. 825,124, May 7, 1969, now abandoned. This application Apr. 12, 1971, Ser. No. 133,326
Int. Cl. E02f *9/28;* **E21c** *13/00*
U.S. Cl. 37—142 **9 Claims**



This invention relates to a lock for the key which holds a digging tooth point on an adapter. The lock comprises a roller that is engageable with a recess in the key and is mounted in an open-ended cage so that it cannot move laterally or longitudinally with respect to the key but is free to rotate on a transverse axis and to move toward and away from the key. A rubber backup plug biases the roller toward the key, but does not prevent its rotation.

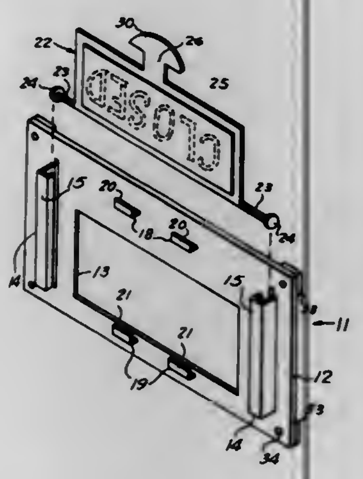
3,650,054
TRIPPING MECHANISM FOR A PLOW BLADE
Harry I. Hanson, Minerva, Ohio, assignor to Meyer Products, Inc., Cleveland, Ohio
Filed Dec. 11, 1969, Ser. No. 884,125
Int. Cl. A01b *61/04*
U.S. Cl. 37—42 VL **8 Claims**



A tripping mechanism for a plow blade including an elongated, transverse flexure spring extending between the plow blade and its support structure for biasing the plow blade into the operative plowing position and forming a resilient support for the blade while it is in the operative position.

3,650,055
REVERSIBLE SIGN

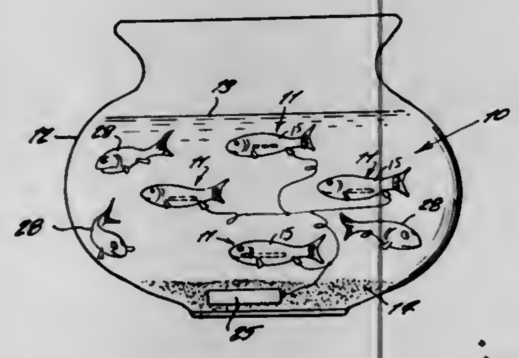
James P. Bult, III, 2924 Jerry Lee Avenue, Lake Charles, La.
Filed Oct. 23, 1970, Ser. No. 82,931
Int. Cl. G09f *19/02*
U.S. Cl. 40—78 **9 Claims**



A changeable sign consisting of a supporting plate having a rectangular exposure aperture, opposing vertical guide channels on the plate adjacent opposite ends of the aperture and pairs of spaced lugs on the plate adjacent the top and bottom edges of the aperture. A sign board having indicia on opposite sides has on one longitudinal edge thereof outwardly projecting headed opposite end arms slidably and rotatably engaging in the guide channels and has a T-shaped member projecting from its other longitudinal edge which is supportably engageable between the top pair of spaced lugs to expose one side of the sign board through the aperture. The sign board may be alternatively supported in an inverted position with said other longitudinal edge resting on the bottom lugs, with T-shaped member received therebetween, to expose the other side of the sign board through said aperture.

3,650,056
ANIMATED AQUATIC DISPLAY

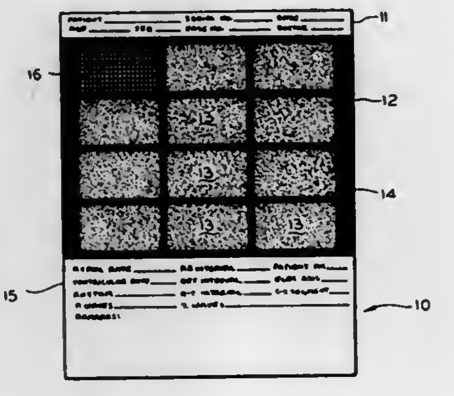
Lorraine J. Walton, Route 4, Innisfail, Alberta, Canada
Filed Apr. 20, 1970, Ser. No. 30,124
Int. Cl. G09f *19/02*
U.S. Cl. 40—106.25 **1 Claim**



A construction employing a plurality of mechanical fish which float together with live fish within a fishbowl, each of the mechanical fish including an electric motor driving a propeller for propelling the fish ahead, the motors being connected by relatively thin wires extending externally of the fish body and connected to batteries positioned within the bottom of the fish bowl, and each mechanical fish including a permanent magnet for positioning the fish relative to other adjacent fish of mechanical type, and each mechanical fish further including a weight for positioning it at a preset elevation within the water.

3,650,057
PRINTED MOUNTING SHEET

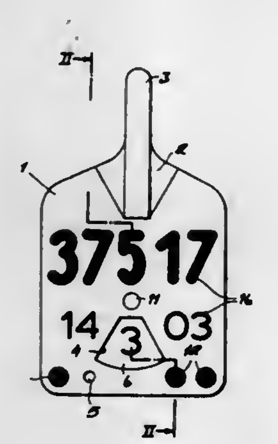
Ralph L. Johnson, Wheaton, and Robert L Henkel, Kenilworth, both of Ill., assignors to Johnson & Quin, Inc.
Filed Sept. 8, 1970, Ser. No. 70,151
Int. Cl. G09f *1/10*
U.S. Cl. 40—158 R **3 Claims**



A mounting card with plural pressure sensitive areas for mounting electrocardiograph diagrams and the like. The card uses a superimposed layer of pressure sensitive adhesive and defined mounting areas through use of an ink imprinted layer defining nonadhesive border areas around the mounting space areas.

3,650,058
IDENTIFICATION AND INFORMATION TAG FOR FARM ANIMALS ESPECIALLY CATTLE

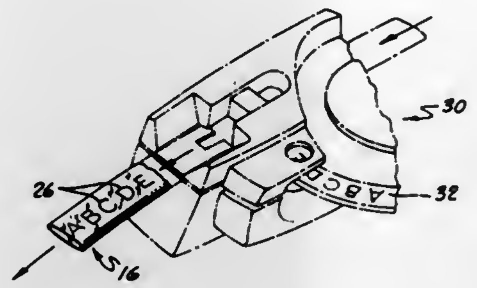
Egon Wittcke, Neufahrland, and Wolfgang Heitsch, Paretz, both of Germany, assignors to Vereinigung Volkseigener Betriebe Tienucht und industrielle Tierproduktion Deutsche Demokratische Republic, Kreis Nauen, Germany
Filed Aug. 20, 1969, Ser. No. 851,651
Int. Cl. G09f *3/00*
U.S. Cl. 40—300 **4 Claims**



An identification tag, affixed to a neck strap or a skin fold of a cow or other farm animal, carries fixed symbols relating to invariable or rarely variable data such as pedigree and ownership, removable markers signifying recurrent events such as gestation, insemination or lactation, and a rotatable and indexable disk bearing indicia pertaining to frequently changing conditions or requirements (e.g., prescribed rate of feeding) selectively viewable through a cutout in the tag body.

3,650,059
EMBOSSED TUBULAR LABEL FOR IDENTIFYING WIRES AND THE LIKE

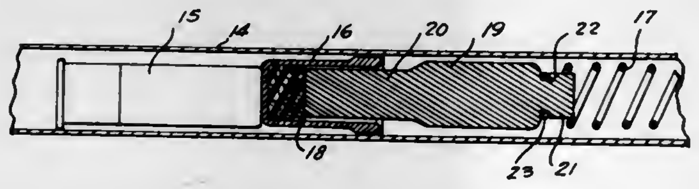
Peter E. Johnson, Martinez, Calif., assignor to Dymo Industries, Inc., Berkeley, Calif.
Filed Sept. 5, 1969, Ser. No. 862,610
Int. Cl. G09f *3/00*
U.S. Cl. 40—316 **5 Claims**



A marking device or label for identifying wires, conduits or the like. The label is made from a flattened tube of a suitable plastic material, preferably one that exhibits stress-whitening characteristics, passed through an embossing tool, such as a hand operated tool which produces on the spot labels so that desired indicia may be embossed thereon, and the embossed material is then returned to its open tubular shape, thereby permitting the same to be telescopically passed over a wire, cable or conduit as a means of identification. Alternatively, the embossed tube may be telescopically inserted over a flexible strap or wire and the strap may then be used to tie the label over an object having a large diameter.

3,650,060
INERTIAL RECOIL REDUCER FOR MAGAZINE FIREARMS

Donald R. Schubert, 3407 4th St. Road, Greely, Colo.
Filed Mar. 13, 1970, Ser. No. 19,227
Int. Cl. F41c *27/00, 25/08*
U.S. Cl. 42—1 R **3 Claims**

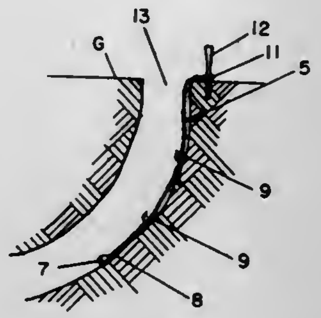


An inertial recoil reducer for magazine firearms which includes a weighted piston interposed between a cushioned magazine follower and the magazine spring. The weighted piston is normally balanced in the magazine and as recoil starts the gun rearwardly, the inertia of the weighted piston causes it to remain in the same position applying pressure to the magazine spring and through it to the magazine and hence to the gun to reduce the recoil of the gun.

3,650,061
TRAP FOR GOPHERS AND THE LIKE

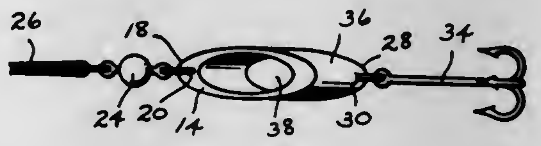
Loie C. Craft, Jr., 2430 Amelia Street, Shreveport, La.
Filed July 16, 1970, Ser. No. 55,402
Int. Cl. A01m *23/00*
U.S. Cl. 43—77 **6 Claims**

This is a trap for eradicating gophers in the form of a chain having a pair of spaced treble fish hooks secured longitudinally to the aforesaid chain in a manner that will prevent the hooks from rotating. The lower end of the chain is provided with a lead fish sinker while the upper end of the same chain is formed into a loop by which the eradicator is secured when placed in position for use in a gopher hole in the ground.



3,650,062
FISHING LURE

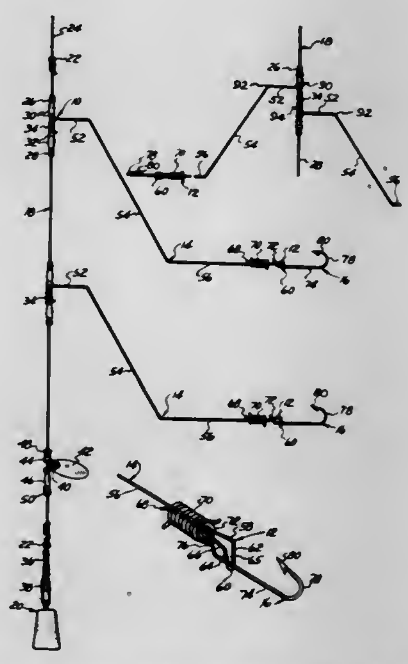
Milo C. Troyer, Route 3, Albion, Ind.
Continuation-in-part of application Ser. No. 679,849, Nov. 1, 1967, now abandoned. This application Dec. 22, 1969, Ser. No. 886,896
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.06 **18 Claims**



A fishing lure having a tubular body with a bore therethrough. The tubular body has a transverse end face extending obliquely to the axis of the body and defining a water-reaction surface which materially influences the fish-alluring movement of the lure as it is pulled through the water.

3,650,063
OUTRIGGER FISHING DEVICE WITH QUICK-DETACHABLE HOOK COUPLING

Irving L. Pierce, 11363 Garfield, and Harold E. Schenavar, 18696 Inkster Road, both of Detroit, Mich.
Filed Sept. 21, 1970, Ser. No. 73,808
Int. Cl. A01k *91/04*
U.S. Cl. 43—42.74 **10 Claims**



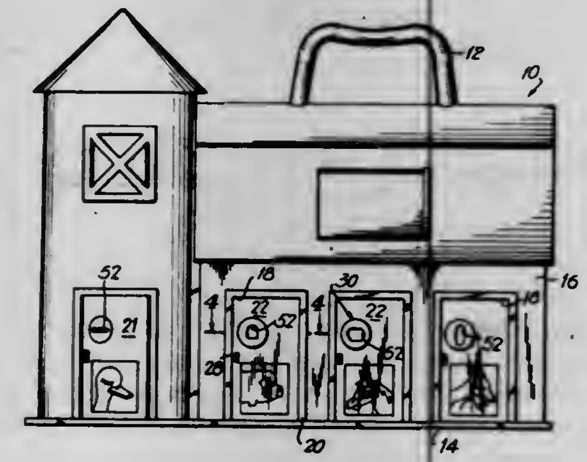
Pivotally mounted between fixed stops on a drop wire or leader weighted at its lower end with a sinker is the coiled-wire hub of an approximately Z-shaped spring wire outrigger. The laterally-bent eye of a horizontal fish hook is quick-detachably interlocked with the laterally-offset V-shaped loop on the outer end of this outrigger with the reversely-bent portion of the loop passing through the eye of the fish hook and detachably secured by a coiled-wire sleeve slidably mounted on the outrigger and yieldably held in place of the laterally-bent detent end thereof. In a modification, arms of the outrigger automatically counterbalance one another for easier swinging, and their hooks disposed in horizontal planes tend to be deflected as they are raised or lowered past obstructions, thereby reducing snagging.

3,650,064
TOY SIMULATING LIVING CREATURES AND AN ENCLOSURE THEREFOR

Franc C. Fusco, Monroe, N.Y., assignor to Louis Marx & Co., Inc.

Filed May 24, 1971, Ser. No. 146,335
Int. Cl. A63h *33/00*

U.S. Cl. 46—12 **10 Claims**



A toy which includes a plurality of FIGS. simulating living creatures and an enclosure simulating a house for these creatures. The figures which simulate the living creatures may represent different animals, birds and the like. The enclosure, which may simulate a barn, for example, has a plurality of door-simulating bodies movable between open and closed positions, and these bodies respectively carry locks provided with key-receiving portions of different configurations. The several figures which represent the various creatures are respectively provided with keys of different configurations to be respectively received in the key-receiving portions of the locks, so that only a figure representing a given creature will be able to lock and unlock a given door-simulating body. The keys which are carried by the several figures are characteristic of different parts of the anatomy of the figures such as the snouts of four-legged creatures or the bills of birds.

3,650,065
DOLL CAPABLE OF PLAYING A GAME WITH A CHILD

Frank T. Johmann, 49 Hampton Drive, Berkeley Heights, N.J.

Filed June 8, 1970, Ser. No. 44,065
Int. Cl. A63h *5/00*

U.S. Cl. 46—118 **8 Claims**

This invention relates to a doll driven by a motor, preferably battery operated, which may move its hands through a number of different positions. The doll may include a sound-reproducing unit and may also move her mouth so as to appear to talk. The doll may also move her head or eyes. Dolls of the invention can be made in varying degrees of complexity to include all or part of any of the preceding activities. Dolls of the invention can be made which can actively participate with a child in playing games such as "Patty-cake," "Simon says," or other similar games involving movement of arms and hands.

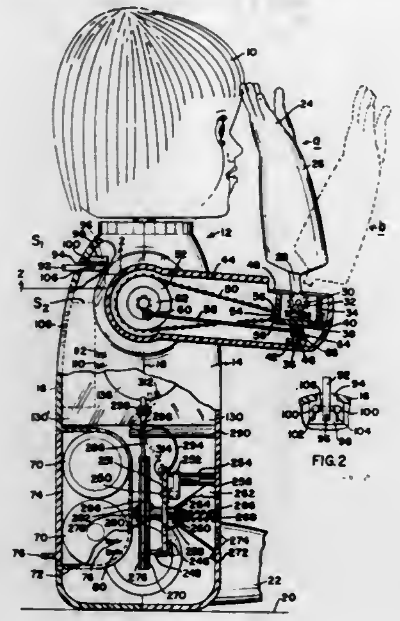


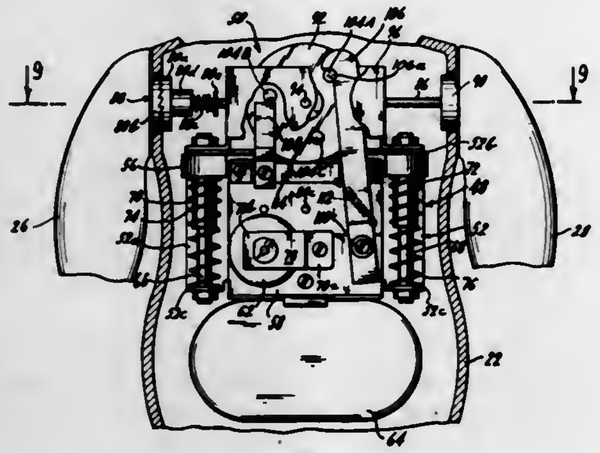
FIG.2

3,650,066
ANIMATED TOY

Francis Robert Amici, Northford, and Robert E. Davis, N. Branford, both of Conn., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed Feb. 26, 1970, Ser. No. 14,562
Int. Cl. A63h *13/02*

U.S. Cl. 46—129 **13 Claims**



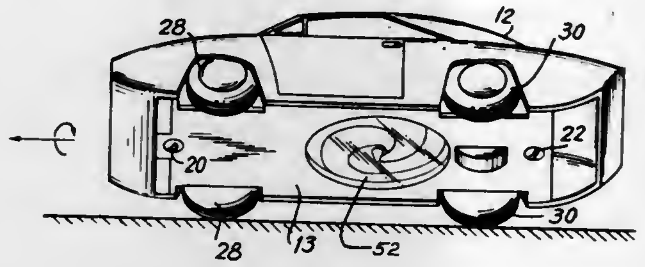
An animated toy in the form of a movable figure which is adapted to stand freely on a support and jump relative thereto which includes a body and depending legs terminating in feet adapted to rest on the support and opposed arms journaled on the body for rotation through a rope-turning cycle and carrying a simulated jump rope. Powered animating mechanisms are provided in the figure for causing the figure to jump relative to the support in a free-standing position and for turning the arms in timed relation to the jumping of the figure such that the jump rope will pass beneath the feet of the figure when they are raised relative to the support such that the figure will simulate a child jumping rope.

3,650,067
GYROSCOPE TOY

Donald Greenwood, Akron, Iowa, assignor to G-L-J Toy Co., Inc., New York, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,157
Int. Cl. A63h *29/20*

U.S. Cl. 46—206 **11 Claims**



Friction driven toys including a gyroscopic stabilizing element.

3,650,068
PROCESS FOR GROWING ALGAE

Colette Meyer, Paris, and Michel Rebeller, L'Etang La Ville, both of France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmaison (Hauts de Seine), France

Filed June 26, 1969, Ser. No. 836,937
Claims priority, application France, July 5, 1968, 158,222
Int. Cl. A01g *7/00*

U.S. Cl. 47—1.4 **9 Claims**

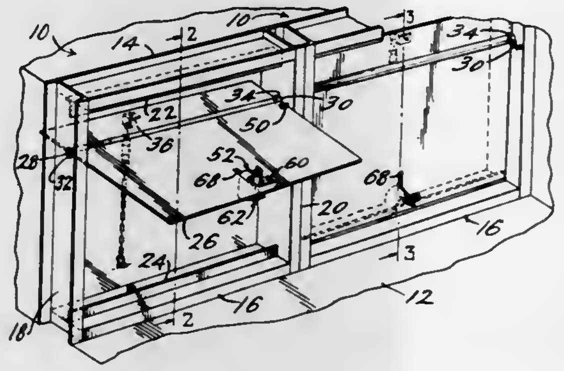
In the open air cultivation of algae, natural brackish water is employed as make-up water instead of softened water. The culture medium is discharged at a rate sufficient to maintain the saline concentration therein at a predetermined concentration compatible with the growth of the algae. The make-up water must have a saline concentration lower than that of the culture medium, preferably at least 10 percent lower.

3,650,069
FIRE DAMPER BLADE LATCH

Raymond L. Alley, Toledo, Ohio, assignor to American Warming & Ventilating, Inc., Toledo, Ohio

Continuation-in-part of application Ser. No. 30,225, Apr. 20, 1970, now abandoned. This application Aug. 31, 1970, Ser. No. 61,268
Int. Cl. E05f *15/20*

U.S. Cl. 49—7 **3 Claims**



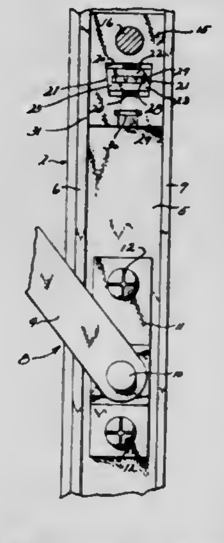
A pivotally mounted latch for a fire damper blade which is mounted to swing on a horizontal axis between an open position and a closed position. The damper is adapted to be mounted across either a horizontal or a vertical duct. The blade is normally held open by a fire responsive release and is weighted to swing by gravity to closed position across the duct when released. The latch is mounted on the outer side of the blade on a pivot axis parallel to that of the blade and extends through a slot in the blade. The latch has a plate with a generally arcuate edge which is eccentric to its pivot and which strikes a catch as the blade closes. The eccentricity of the latch plate weighs the plate to swing it into locked position behind the catch when the damper blade reaches closed position. The latch operates effectively whether the fire damper is mounted in a horizontal or a vertical position.

3,650,070
FRICTION SHOE CONSTRUCTION FOR A PIVOTING WINDOW

John Ringle, III, Wausau, Wis., assignor to Wausau Metals Corporation, Wausau, Wis.

Filed Jan. 26, 1970, Ser. No. 5,865
Int. Cl. E05d *15/44*

U.S. Cl. 49—251 **4 Claims**



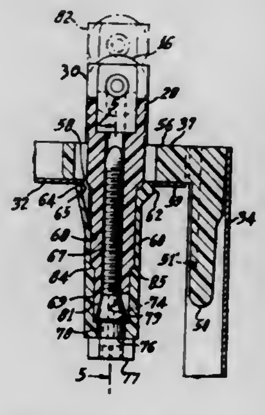
A friction shoe construction for a pivoting type window or closure. The window includes a sash which is mounted for pivoting movement with respect to the frame. The central portions of the sash stiles are pivotally connected to the jambs of the frame by arms, while the ends of the sash stiles are pivotally connected to shoes which ride in guide tracks on the frame jambs. Each shoe is constructed of a flexible material and is provided with a central opening having converging side walls. A wedge block having complementary inclined sides is mounted within the opening. A stud is connected to the wedge block and by tightening down the stud, the wedge block is moved within the opening in the shoe to force the sides of the shoe outwardly into engagement with the guide track to increase the frictional resistance.

3,650,071
PANEL FRAME ASSEMBLY

Homer C. Tanner, Jacksonville, Fla., assignor to Southeastern Aluminum Products, Inc., Jacksonville, Fla.

Filed Sept. 8, 1970, Ser. No. 70,383
Int. Cl. E05d *13/00*

U.S. Cl. 49—411 **30 Claims**



A stile and rail forming a corner, are connected by a unitary corner connector having a first upright portion disposed in a channel of the stile, a laterally extending portion, and a second upright portion spaced from and extending in the same direction as the first upright portion and disposed in an opening in the rail spaced laterally from the stile. The first upright portion includes a shoulder and the channel includes a shoulder, with the shoulders being in engagement to lock the corner connector to the stile. The second upright portion includes a shoulder engaging a shoulder defining the rail opening to lock the corner to the rail. When the connector is an upper connector a member is adjustably connected to the second upright portion which suspends the connector to an upper track. When the connector is a lower connector, an elongated guide element is slidably connected to the second upright portion which guides the connector on a lower track. Other details to the corner connector guide element, and adjustable member are embodied herein.

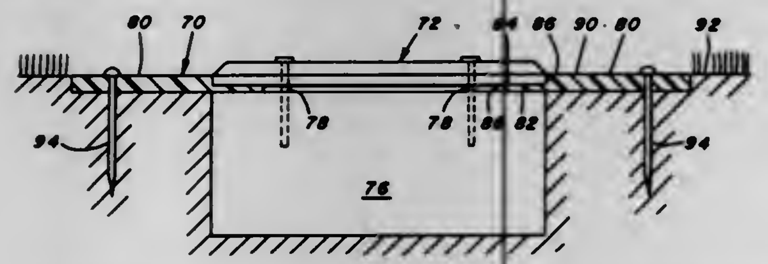
3,650,072
GRAVE MARKING STRUCTURE PROTECTIVE DEVICES

Joseph J. Matvey, 208 Orin Street, Pittsburgh, Pa.

Filed Apr. 27, 1970, Ser. No. 32,198

Int. Cl. E02d *27/50;* **E04h** *13/00*

U.S. Cl. 52—102 **6 Claims**



A protective device for grave marking structures including a unitary generally rectangular frame member having a generally rectangular inner opening. The frame member has two pairs of opposed substantially straight generally parallel sides. Each side is of substantially equal transverse width. Each side has an outer transverse section having a generally uniform thickness and an inner transverse section having an average thickness which is substantially less than the thickness of the outer transverse section. The outer transverse section having a greater transverse width than the inner transverse section. The outer transverse section may have a width of about 1½ to 6 times the transverse width of the inner transverse section. The outer transverse section has a thickness of about 1½ to 11 times the average thickness of the inner transverse section.

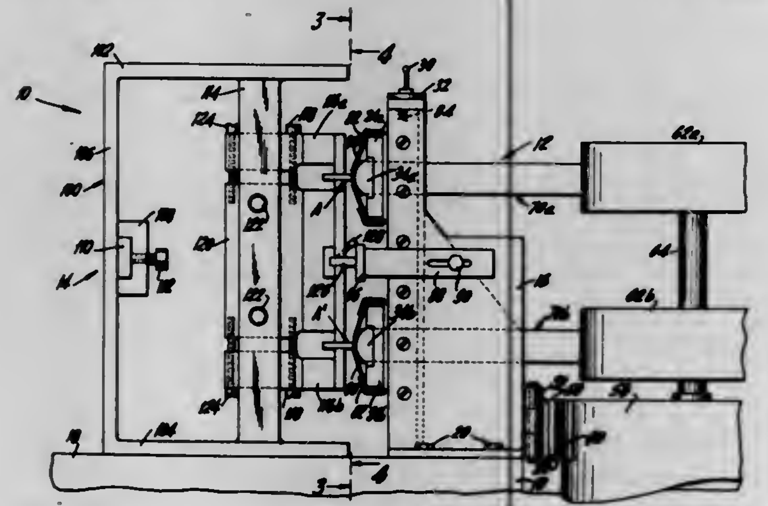
3,650,073
ICESKATE BLADE SHARPENING MACHINE AND METHOD OF USING SAID MACHINE FOR SHARPENING ICESKATE BLADES

Charles Weisman, 125 North Montgomery Street, Valley Stream, N.Y.

Filed Feb. 16, 1970, Ser. No. 11,584

Int. Cl. B24b *21/16*

U.S. Cl. 51—141 **30 Claims**



A pair of iceskate blades are aligned with a templet in a jig. The templet is brought to bear against a rigid fence that is mounted on a structure that includes adjustably positioned endless abrasive belts that are arranged to contact and abrade the bottom surface of the iceskate blades.

3,650,074
METHODS AND APPARATUS FOR CUTTING, GRINDING AND POLISHING SINGLE-CRYSTAL WORKPIECES

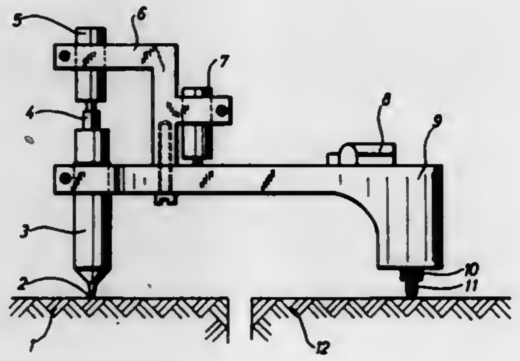
Ernst August Weinz, Idar-Oberstein, Germany, assignor to Ernst Fr. Weinz, Idar-Oberstein, Germany

Filed Apr. 10, 1970, Ser. No. 27,229

Claims priority, application Germany, Apr. 11, 1969, P 19 18 347.2

Int. Cl. B24b *49/00*

U.S. Cl. 51—165 R **10 Claims**



Mechanical vibrations generated during the cutting, grinding and polishing of single-crystal material, such as diamonds, are converted into electrical signals by a transducer; amplified; and used to control the rotation of the workpiece holder. The control is such that the single-crystal material is oriented along its "easy" axis, for ease of cutting, etc.

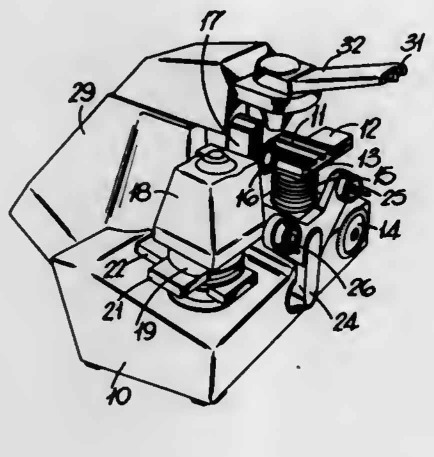
3,650,075
OPTICAL PROFILE GRINDERS

Peter Alan Mason, Kenilworth, England, assignor to Wickman Machine Tool Sales Limited, Banner Lane, Tile Hill Coventry, Warwickshire, England

Filed Feb. 10, 1970, Ser. No. 10,196

Int. Cl. B24b *49/12*

U.S. Cl. 51—165.72 **12 Claims**



An optical profile grinding machine comprising a workpiece support, a grinding wheel support and means for producing relative movement between the grinding wheel and a workpiece, a platform supporting an enlarged layout of a profile to be reproduced on the workpiece, a microscope for viewing the layout through a reducing lens and the grinding wheel in superimposed relationship so that an operator can reproduce the profile on the workpiece.

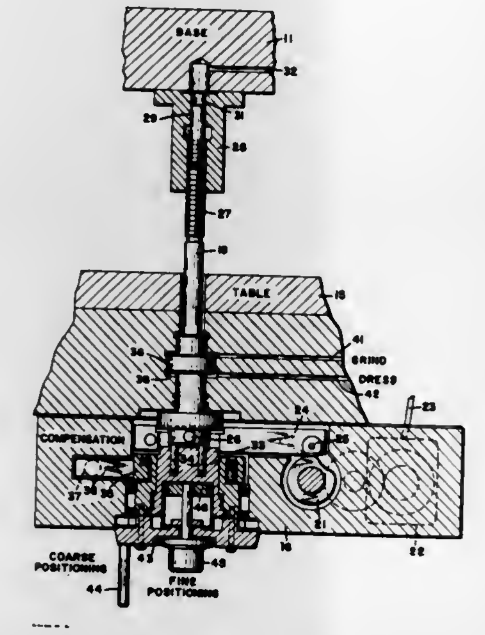
3,650,076
GRINDING MACHINE

Herbert R. Uhtenwoldt, Worcester; William H. Grotewold, Holden, and Bruno E. Straub, Worcester, all of Mass., assignors to The Heald Machine Company, Worcester, Mass.

Filed Apr. 15, 1970, Ser. No. 28,716

Int. Cl. B24b *49/00*

U.S. Cl. 51—165.89 **10 Claims**



This invention relates to a grinding machine and, more particularly, to apparatus for bringing about various cross-feed motions in a machine for finishing workpieces by the abrasive process.

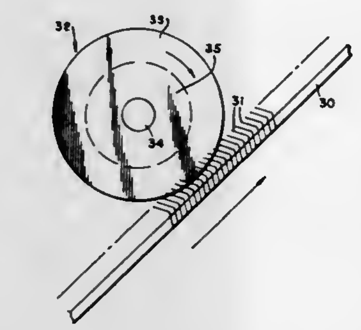
3,650,077
METHOD FOR GRINDING THE SIDES OF THE TEETH OF FLEXIBLE CARD CLOTHING ON A CARD ENGINE

John D. Hollingsworth, P.O. Box 516, Greenville, S.C.

Continuation-in-part of application Ser. No. 739,131, June 21, 1968, now abandoned. This application Oct. 27, 1970, Ser. No. 84,449

Int. Cl. B24b *1/00*

U.S. Cl. 51—327 **1 Claim**



Method for grinding the sides of the teeth of flexible card clothing by continuously grinding the sides of the teeth along the full width of said card engine. The grinder comprises a rotatable shaft on which is mounted a plurality of spaced apart abrasive discs along the entire length of the shaft. The grinder extends the entire width of the card engine and while rotating about the axis of the shaft also reciprocates in the direction of the axis to grind the sides of the teeth along the full width of the card engine.

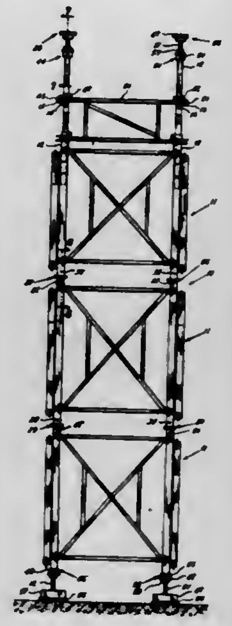
3,650,078
SHORE TOWER ASSEMBLY

Ralph L. Jennings, Des Moines, Iowa, assignor to Economy Forms Corporation, Des Moines, Iowa

Filed Sept. 15, 1970, Ser. No. 72,385

Int. Cl. E04g *5/02;* **E04h** *12/10*

U.S. Cl. 52—122 **10 Claims**



The tower assembly is used in construction work for supporting a load such as girders or concrete form assemblies at varying elevated positions above the ground surface during the building of highway bridge structures and the like and comprises a series of vertically stacked tower sections. Each tower section has four corner posts which in adjacent tower sections are releasably connected together in an end to end relation to provide a desired tower height. The corner posts on the top and bottom tower sections have independently linearly adjustable extension units to accommodate, respectively, varying load engageable surfaces and an uneven ground surface. A frame structure is connectable to each adjacent pair of corner posts in a tower section at selected positions longitudinally thereof to vary the spacing between adjacent pairs of corner posts in accordance with the dimensional requirements of the load to be supported by the tower assembly.

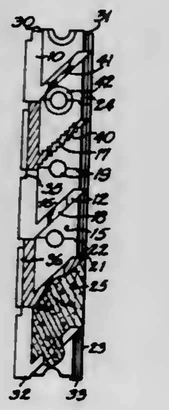
3,650,079
BUILDING BLOCK AND WALL CONSTRUCTION WITH GROUT-RECEIVING LATERAL CELLS

Edward H. Lubin, 10941 Strathmore, Apt. 56, Los Angeles, Calif.

Filed Jan. 14, 1970, Ser. No. 2,788

Int. Cl. E04b *2/32;* **E04c** *1/10*

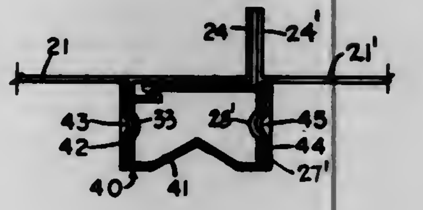
U.S. Cl. 52—316 **10 Claims**



An inclined pocket web extending longitudinally in upwardly diverging relation to a back wall of a building block, cooperates therewith to define one or more grout-receiving cells which are open at the front side of the block, each cell having its bottom area in the form of a pocket below the level of the front edge of the web. In a building wall embodying superimposed courses of the blocks, the open fronts present a plurality of acute edges of the pocket webs which function as screeding guides for accurately developing a flat planar face on the grout filling the cells.

3,650,080
PANEL STRUCTURE AND ASSEMBLY

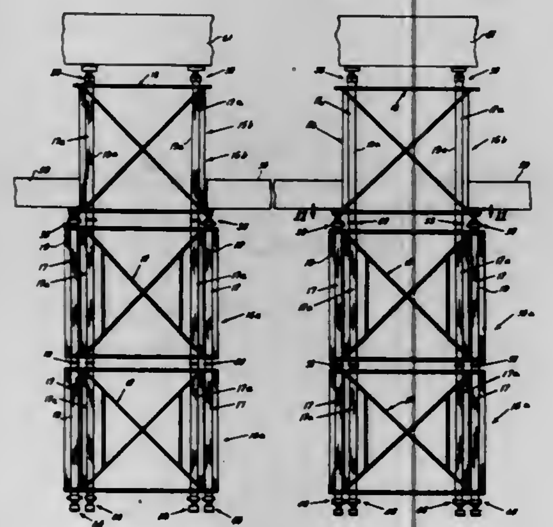
Frank J. Leale, Sr., 52 West Avenue, Malverne, N.Y.
Filed Sept. 19, 1969, Ser. No. 859,301
Int. Cl. E04c *2/40*
U.S. Cl. 52—469 **7 Claims**



The edges of wall panels are designed to interlock when placed side by side. Projections upon the panels cooperate to hold either a spline, a bridging batten, or both. The unique edge structure consequently provides for concealment of the devices which fasten the panel to the wall and permit the addition of splines or bridging battens as decorative and architectural features.

3,650,081
SHORE TOWER ASSEMBLY

Lyde S. McCracken, Des Moines, Iowa, assignor to Economy Forms Corporation, Des Moines, Iowa
Filed Sept. 17, 1970, Ser. No. 73,145
Int. Cl. E04h *12/10*
U.S. Cl. 52—637 **6 Claims**



The tower assembly is comprised of vertically stacked tower sections each of which includes a pair of primary frame structures having end posts and interconnected by frame units in a variable spaced parallel relation so that the end posts constitute corner posts for the tower assembly. A pair of secondary frame structures corresponding to the primary frame structures may be connected to the frame units in a parallel relation adjacent a corresponding primary frame structure, or only one of such secondary frame structures can be so assembled relative to its corresponding primary frame structure. Additionally, the primary and secondary frame structures can be relatively extended upwardly of the tower assembly to support separate loads at varying levels.

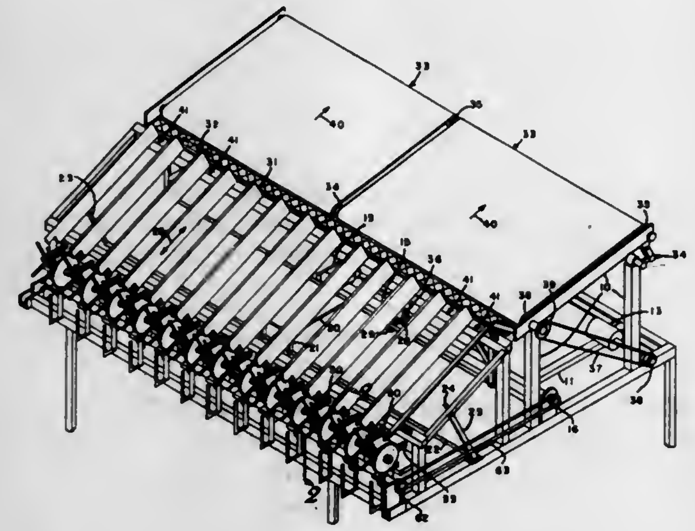
3,650,082
METHOD OF TREATING PACKAGING MATERIALS TO PREVENT DISCOLORATION

Homer Virgil Meek, deceased, late of Wyoming, Ohio (by Katherine L. Meek, executrix), assignor to The Procter & Gamble Company, Cincinnati, Ohio
Continuation-in-part of application Ser. No. 734,197, June 4, 1968, now abandoned. This application Dec. 29, 1969, Ser. No. 888,903
Int. Cl. D21h *5/22, 1/10*
U.S. Cl. 53—5 **7 Claims**

A method of treating packaging materials is disclosed wherein cartonboard or wrappers are treated with a boron-containing compound to prevent discoloration by the contents of the package.

3,650,083
PACKAGING METHOD AND MACHINE

Lloyd D. Riley, Danville, Calif., assignor to Filper Corporation, San Ramon, Calif.
Filed May 14, 1970, Ser. No. 37,131
Int. Cl. B65b *5/10*
U.S. Cl. 53—35 **10 Claims**

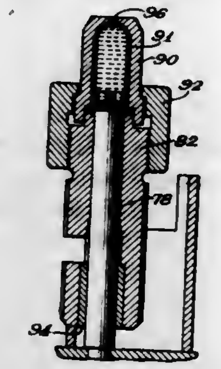


A machine having a row of article supports for supporting a plural succession of corresponding columns or files of articles on said supports in which a leading article at one of the corresponding ends of each succession is positioned for discharge, one at a time, with a container on a support therefor passing said one of said ends, and an article releasing mechanism adjacent said one end of each succession actuatable by movement of the support for each container passing said one of the ends of said successions for releasing articles, one at a time from said one of said ends.

3,650,084
METHOD FOR FILLING AND SEALING PLASTIC AMPOULES

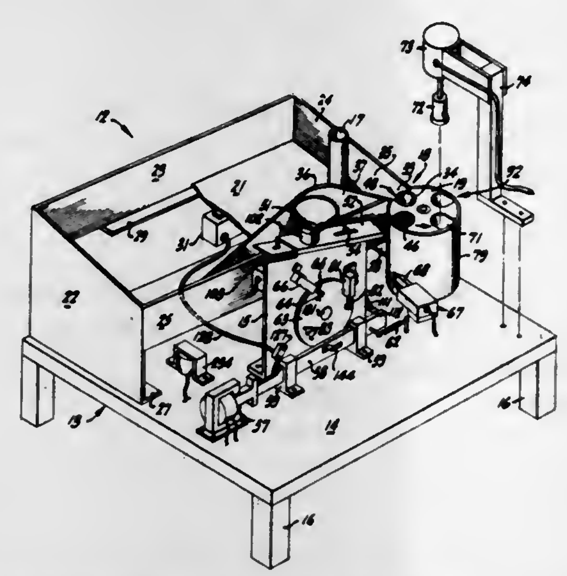
Stephen T. Moreland, Grosse Pointe Woods, Mich., assignor to R. P. Scherer Corporation
Original application Jan. 15, 1968, Ser. No. 697,891, now Patent No. 3,540,444. Divided and this application Jan. 22, 1970, Ser. No. 4,884
Int. Cl. B65b *7/28*
U.S. Cl. 53—37 **1 Claim**

An ampoule for a hypodermic jet injector. The end of the ampoule, through which medicament passes, is constructed of a resilient material. Cross-cuts are scribed in the resilient end so that a plunger driving a plug into the opposite end of the ampoule forces medicament through the cross-cut end by bursting it along lines coincident with the cuts. Alternate end cuts, a storage case, and methods for filling the ampoules are also disclosed.



3,650,085
AUTOMATIC COIN SORTING, COUNTING AND WRAPPING MACHINE

Harry C. Bay, 1108 South Arlington Avenue, Reno, Nev.
Filed Feb. 16, 1970, Ser. No. 11,487
Int. Cl. B65b *57/20*
U.S. Cl. 53—59 **5 Claims**

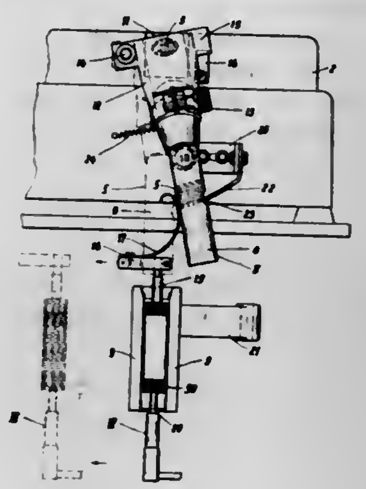


Coins dropped into a hopper are directed one by one down a chute and into a coin wrapping tube located on a turntable. The tube is in vertical attitude and is open at its upper end to receive the coins. When a predetermined number of coins has been loaded in the tube, the machine is programmed to advance the turntable so that the coin-filled wrapper is moved to the next station and is there acted upon by a crimping die to close the open end of the tube. At the next advance, the coin-filled and closed tube progresses to a discharge station where it is ejected from the machine. In the meantime, an empty tube is deposited on the turntable preparatory to being moved ahead to the coin loading station, thereby completing the cycle.

3,650,086
COIN WRAPPING MACHINES

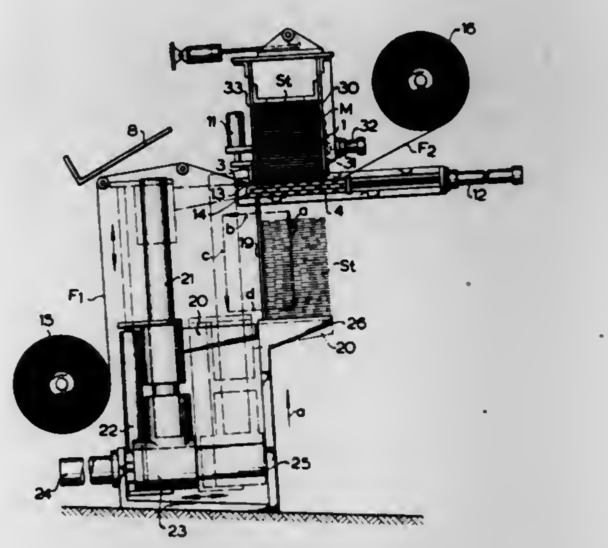
Werner Puhahn, Philippsburg, and Rolf Lampert, Bauschlott, both of Germany, assignors to Standardwerk Eugen, Reis, GmbH, Bruchsal, Germany
Filed Aug. 6, 1970, Ser. No. 61,757
Claims priority, application Germany, Aug. 8, 1969, P 19 40 389.5
Int. Cl. B65b *57/20, 11/04*
U.S. Cl. 53—59 **9 Claims**

Apparatus for feeding money coins from a supply source to a stacking means comprising a delivery tube having a funnel at one end. The funnel is pivotally secured adjacent to the source of supply so that the tube is swingable in an arc between a first position, in alignment between the supply and the stacking unit and a second position out of alignment therewith. Means are provided interconnecting the tube with the grasping means so that the tube is moved into the first position when the grasping means transports a preceding column of coins from the stacking unit and into the second position when the grasping means is returned into alignment with the stacking means.



3,650,087
APPARATUS FOR COMPRESSING AND PACKAGING A STACK OF FLATTENED BAGS OR THE LIKE

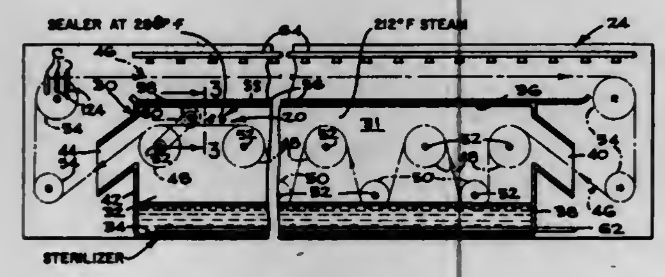
Friedhelm Brinkmeier, Ladbergen, and Hermann Rocker, Hulben via Urach, Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Germany
Filed July 28, 1970, Ser. No. 58,763
Claims priority, application Germany, July 28, 1970, P 19 39 069.3
Int. Cl. B65b *63/02*
U.S. Cl. 53—124 C **7 Claims**



An apparatus for compressing and packing a stack of flattened bags or the like that comprises a compression chamber for receiving the stack, an opening in said chamber through which the said stack can be inserted, a plunger for introducing the stack in said chamber and compressing it against a backing member of the said chamber, two freely rotatable supply rolls of thermoplastic sheets disposed on opposite sides of said opening and welding means for interconnecting said sheets by a transverse weld seam to form a web of packaging material. The web is disposed across said opening to be carried into the chamber by the stack when said stack is introduced. Means are provided for displacing said plunger at right angles to said weld seam after its compression stroke.

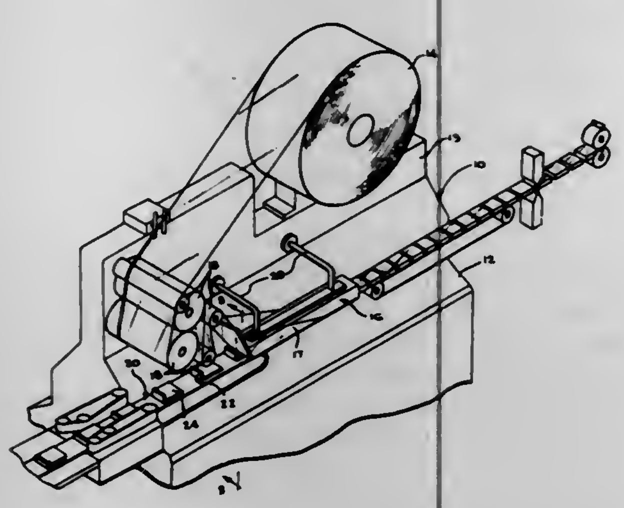
A transversely movable folding device is disposed at the same level as the plunger at the end of its compression stroke. The folding device is effective to maintain compression of the stack after the plunger has been displaced; to close the web about the stack to define a packaging sleeve for said stack from said web; and to bring the sheets of said web together in readiness for forming a second web of packaging material for a second stack. The welding means are also effective in cooperation with said folding device to weld the packaging sleeve closed about the stack and to sever the packaging sleeve from said sheets so that the said sheets remain interconnected to form said second web.

3,650,088
SEALING METHOD AND APPARATUS
Donald C. Wilson, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Sept. 23, 1969, Ser. No. 860,335
Int. Cl. B65b *7/06, 55/06*
U.S. Cl. 53—127 **11 Claims**



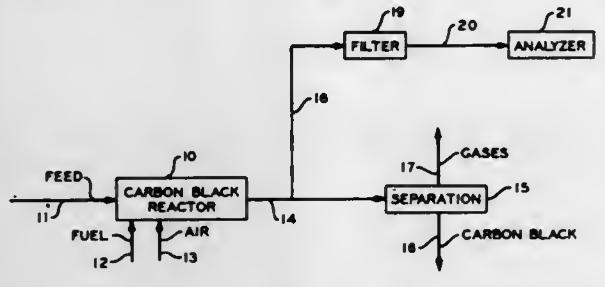
A high-dwell, high pressure, and low temperature method and apparatus for sealing heat sealable flexible containers. The flexible containers are sealed before moving out of a sterilizing chamber maintained at a sterilizing temperature of between about 212° and 250° F. Sealing bars are heated to a temperature of between about 250° and 300° F., and are clamped against the container at a pressure above 100 p.s.i., preferably about 250 p.s.i. for a period of between 2 to 6 seconds, preferably about 4 seconds.

3,650,089
SPEED CONTROL FOR PACKAGING APPARATUS
Roland E. Miller, Orangeville, and Edgar C. Olson, Waukegan, both of Ill., assignors to Kraftco Corporation, Chicago, Ill.
Filed July 30, 1970, Ser. No. 59,593
Int. Cl. B65b *9/12*
U.S. Cl. 53—180 **7 Claims**



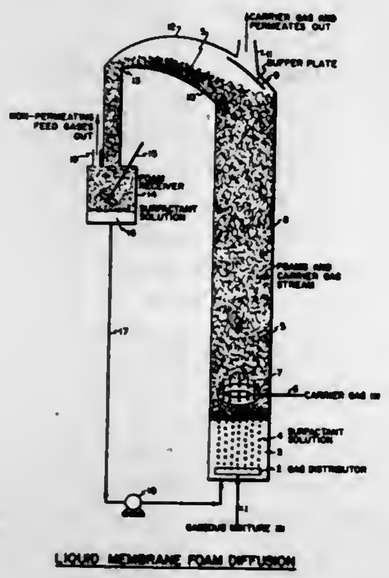
An infeed conveyor for a packaging apparatus including a drive mechanism coupled to a power source for advancing articles into the packaging apparatus. The drive mechanism is operable to convert constant speed of the power source to a periodically varying speed of the conveyor to change the spacing of the articles from a first spacing on the conveyor to a second spacing in the packaging apparatus.

3,650,090
ANALYSIS OF GASEOUS MIXTURES
Harry F. Temple, and Robert L. Thomas, both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed June 19, 1970, Ser. No. 47,254
Int. Cl. B01d *53/04;* **G01n** *31/08*
U.S. Cl. 55—31 **6 Claims**



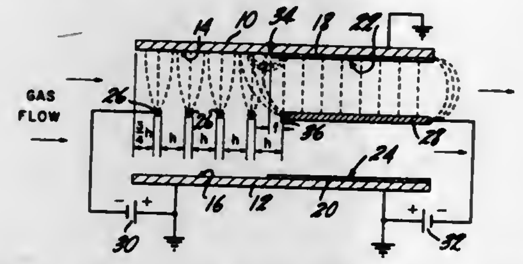
A gaseous mixture containing nitrogen, carbon monoxide, carbon dioxide, hydrogen, water vapor and hydrocarbons is analyzed by injecting a sample of the mixture into a carrier gas. The carrier gas containing the sample is passed through a body of cross-linked organic polymer which retards passage of the water vapor while permitting passage of other constituents. The effluent from the body of polymer is directed to a chromatographic analyzer which contains a molecular sieve adsorbent. The body of polymer is maintained at a temperature sufficiently high to prevent condensation of the water vapor.

3,650,091
LIQUID MEMBRANE FOAM DIFFUSION
Norman N. Li, Edison, N.J., assignor to Esso Research and Engineering Company
Continuation-in-part of application Ser. No. 552,198, May 22, 1966, now Patent No. 3,454,489, dated July 8, 1969. This application Apr. 22, 1969, Ser. No. 818,336. The portion of the term of this patent subsequent to Nov. 12, 1985, has been disclaimed.
Int. Cl. B01d *57/80*
U.S. Cl. 55—83 **14 Claims**



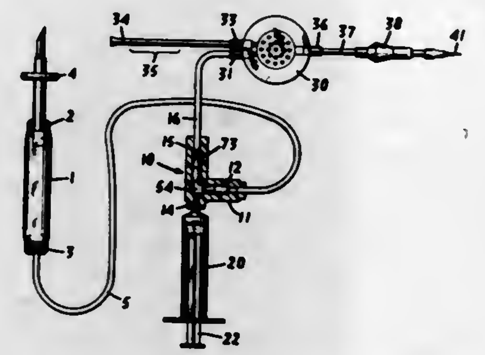
A gaseous mixture is passed through a layer of liquid surfactant membrane; gradually, a foam of bubbles is generated. The bubbles are coated with liquid membrane and have an interior of the gaseous mixture. Component(s) of the mixture permeate more rapidly through the membrane and pass into the foam. To remove the more rapidly permeating components an inert gas is passed through the foam; the inert gas entrains the more rapidly permeating components and serves to transport it out of the system.

3,650,092
ELECTROGASDYNAMIC PRECIPITATOR UTILIZING RETARDING FIELDS
Meredith C. Gourdine, West Orange; Geza Von Voros, Glen Rock, and Ta Kuan Chiang, Berkeley Heights, all of N.J., assignors to Gourdine Systems, Inc., Livingston, N.J.
Filed Aug. 17, 1970, Ser. No. 64,243
Int. Cl. B03c *3/10*
U.S. Cl. 55—114 **48 Claims**



Electrostatic precipitating apparatus in which particles entrained in a gas stream are charged in an ionization zone established between one or more ionizer electrodes and a movable attractor electrode and collected, by reaction with a transverse precipitation field, in an adjacent downstream zone including a movable dielectric collection surface. The dielectric collection surface may be carried by the same conductive member constituting the attractor electrode. Electric fields that are non-attractive to the charged particles, and that have components directed against gas flow, are established in the vicinity of the ionization zone-collection zone interface, thus increasing collection efficiency by retarding downstream movement of the particles, including turbulence in the gas stream, and creating non-linear precipitation field conditions. A series of such collection zones or of additional ionization zones and associated collection zones may be spaced along the gas stream to further enhance precipitation efficiency and to reduce re-entrainment of particles in the gas stream. The ionizer and attractor electrodes and the dielectric collection surfaces are movable to a cleaning zone remote from the gas stream where collected particles are neutralized and removed.

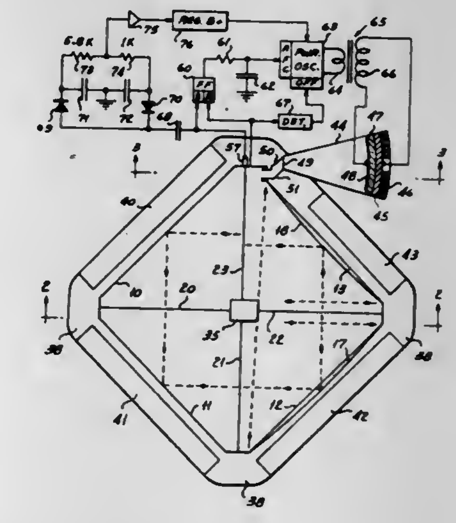
3,650,093
STERILE DISPOSABLE MEDICAMENT ADMINISTRATION SYSTEM
David Rosenberg, Glen Cove, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.
Continuation-in-part of application Ser. No. 643,093, June 2, 1967, now Patent No. 3,447,479, Continuation-in-part of application Ser. No. 710,609, Mar. 5, 1968, now Patent No. 3,572,375, Continuation-in-part of application Ser. No. 718,088, Apr. 2, 1968, now Patent No. 3,523,408, Continuation-in-part of application Ser. No. 787,539, Dec. 27, 1968, now abandoned. This application Jan. 8, 1970, Ser. No. 1,499. The portion of the term of this patent subsequent to Aug. 11, 1987, has been disclaimed.
Int. Cl. B01d *19/00;* **A61m** *5/00*
U.S. Cl. 55—159 **44 Claims**



A medicament administration system is provided that can be used once, and then discarded, and that can be used in conjunction with a syringe pump without danger of an embolism, comprising a twin valve T-connector, an air eliminator, and an administering means such as a needle for connection to a patient. A syringe can also be included as an integral part of the system and an administration system combining the syringe is a preferred embodiment. All interconnected components are sterile, and disposable.

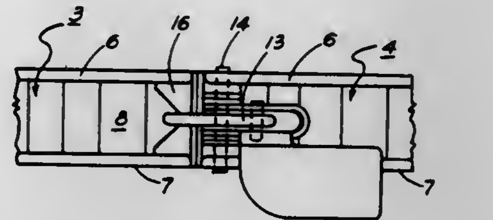
Another optional but preferred feature is an air spring or cushion that absorbs peak pressures arising from pumping action of the syringe plunger, and that is associated with the air eliminator at its upstream side. A visual flow indicator can also be included as a component.

3,650,094
ACOUSTICAL FILTRATION SYSTEM
Raymond Wendell Goodwin, Westport, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Continuation of application Ser. No. 700,827, Jan. 26, 1968, now abandoned. This application Dec. 19, 1969, Ser. No. 882,779
Int. Cl. B01d *50/00*
U.S. Cl. 55—277 **23 Claims**



A fluid medium containing suspended particles is subjected to an asymmetrical sound wave having a high velocity in one direction of movement and a low velocity in the opposite direction of movement. The velocities are sufficiently great to produce square-law drag forces; and the suspended particles will be propelled through the fluid medium in a direction corresponding to the high velocity direction of the fluid medium.

3,650,095
GAS FILTER MOUNTING STRUCTURE
Wilson A. Welch, and William A. Medcalf, both of Louisville, Ky.
Filed Jan. 21, 1969, Ser. No. 792,623
Int. Cl. B01d *27/08*
U.S. Cl. 55—493 **3 Claims**



An improved gas filter comprising at least two arc-like filter housing sectors connected in end-to-end relationship to form an annular ring, the ring including sealing strips cooperable with the peripheral wall and adjacent ends of the sectors to permit gas tight engagement of the filter ring relative an annular passage of a plenum defining housing.

3,650,096

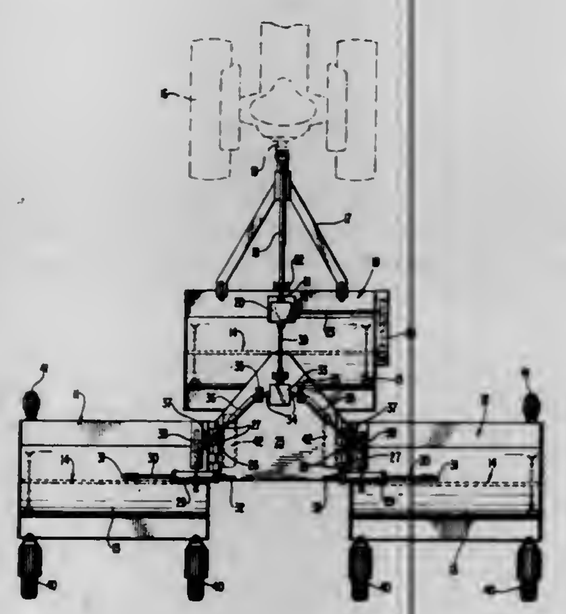
MULTIPLE SECTION FOLDABLE FLAIL-TYPE MOWER OR SHREDDER

Frederick C. Caldwell, Corpus Christi, Tex., assignor to E. L. Caldwell & Sons, Inc., Corpus Christi, Tex.

Filed Sept. 24, 1969, Ser. No. 860,629

Int. Cl. A01d *75/30*

U.S. Cl. 56—7 **6 Claims**



A tractor-drawn multiple section flail machine has its individual flail rotors powered from a single power takeoff shaft of the tractor coupled through suitable transmission means. The outboard flail sections are foldable so that the machine can meet highway specifications or pass through a relatively narrow gate. It is capable of cutting a wide swath when extended and the individual flail sections can follow ground contours. Unlike conventional rotary mowers, the flail rotors do not tend to throw rocks or other debris outwardly, thereby rendering the machine safe for use in public places.

3,650,097

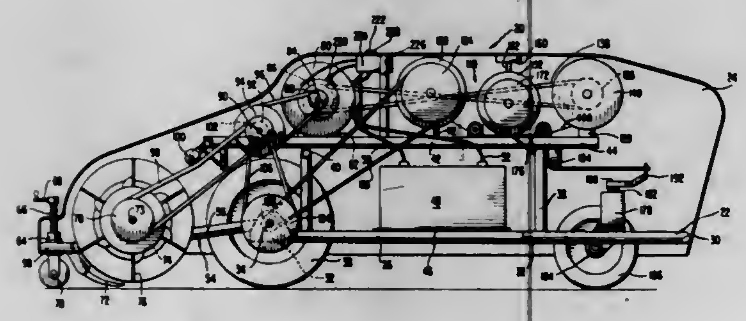
PROGRAMMED STEERING MEANS FOR MOWING APPARATUS OR THE LIKE

Clarence D. Nokes, Washington, D.C., assignor to Warren K. Van Hook, Washington, D.C., a part interest

Continuation of application Ser. No. 650,045, June 29, 1967, now abandoned. This application Mar. 12, 1970, Ser. No. 18,009

Int. Cl. A01d *35/24*

U.S. Cl. 56—10.2 **11 Claims**



Self-contained apparatus in the nature of a lawn mower for movement over a given land area in a pre-planned route, the apparatus having a frame and a steering mechanism with a tape extending between two reels with intermediate elements contacted sequentially by the tape and operating when contacted to turn the machine.

3,650,098

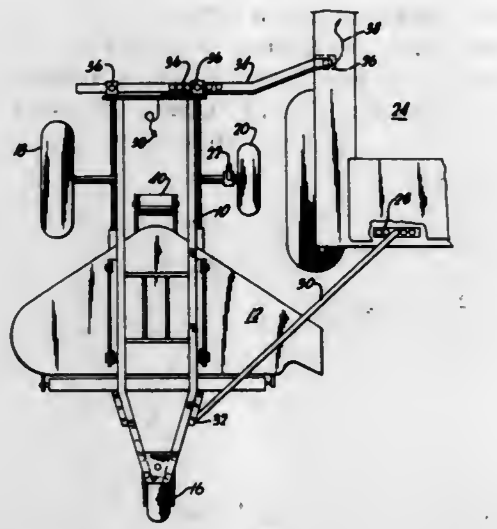
SEMI-MOUNTED MOWER FOR TRACTORS

Ralph D. Folk, R. R. 3, Huntington, Ind.

Filed Nov. 4, 1970, Ser. No. 86,715

Int. Cl. A01d *35/26*

U.S. Cl. 56—15.5 **6 Claims**



A mower frame rests upon three wheels and is adapted to be secured to either side of a garden or yard tractor. The frame supports an engine powering mower blades. One of the three wheels is cranked or otherwise raised above the ground prior to use.

3,650,099

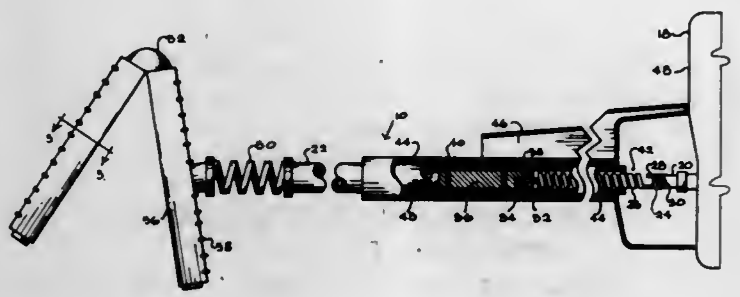
LIMB SHAKER

Spencer B. Sitter, P.O. Box 415, McLean, Tex.

Filed June 23, 1970, Ser. No. 49,077

Int. Cl. A01g *19/00*

U.S. Cl. 56—328 TS **6 Claims**



A tree limb is vibrated to shake the fruit therefrom. A small lightweight internal combustion engine, such as is used for power saws, is used and it is isolated from the boom by a spring and the boom is isolated from the tree engaging finger by a second spring, thereby permitting the boom and limb to have a greater amplitude of movement than the reciprocating exciter of the engine assembly and also the limb engaging finger can move with respect to the boom to accommodate for different angles. The speed of the engine is adjusted to the natural frequency of the limb at which point the limb will have a large amplitude of vibration.

3,650,100

APPARATUS FOR FORMING ROLLS OF HAY

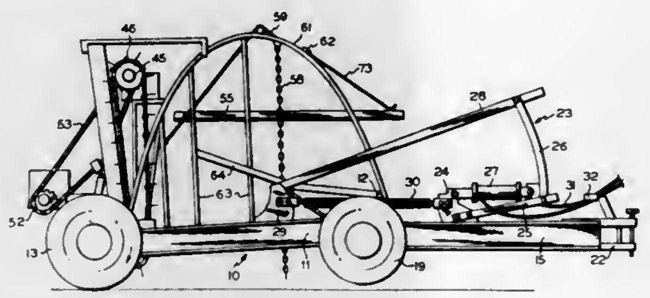
Sherman S. Swan, Jeffersontown, Ky., assignor to Maurice Franklin Swan, Jr., Middletown, Ky. and James V. Naive, Oxon Hill, Md., part interest to each

Filed Dec. 16, 1970, Ser. No. 98,784

Int. Cl. A01d *39/00*

U.S. Cl. 56—341 **16 Claims**

An apparatus for forming rolls of hay from a swath lying in a field. A wheeled frame has a forward frame portion and a main frame pivoted at the forward end thereof to the rear end of the forward frame portion. A vehicle lifting means is mounted on the forward frame portion and is coupled to the main frame for pivoting the main frame around the pivotal mounting on the forward frame portion. A downwardly open hay collecting chamber is provided on said main frame and a hay raking and lifting means is mounted on the rear of the main frame for raking the hay in the swath forwardly of the main frame and at the same time lifting it upwardly into said hay collecting chamber. Drive means on the main frame is coupled to the hay raking and lifting means for driving the hay raking and lifting means. As the apparatus is moved forwardly over a swath of cut hay, the hay is raked and lifted into the hay collecting chamber and rolled up snowball fashion, and when the desired size of roll is achieved, the apparatus is stopped and the vehicle lifting means actuated to raise the rear end of the main frame above the level of the top of the roll of hay, and the apparatus can then be moved forward over the roll of hay.



3,650,101

HAY-MAKING MACHINE

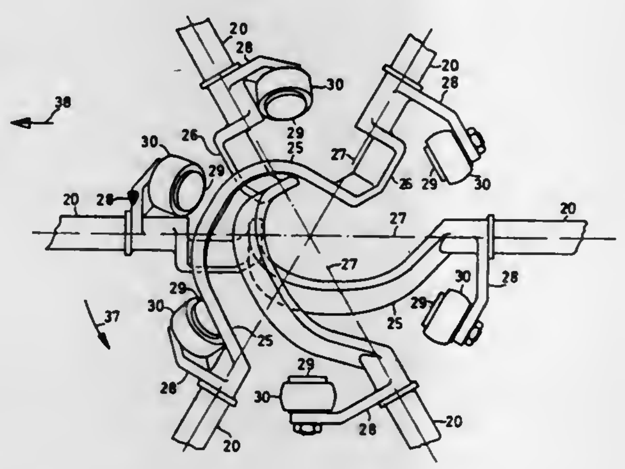
Jerome Aron, Dossenheim/Zinsel, France, assignor to Kuhn Freres & Cie, Societe en commandite simple, Saverne (Bas-Rhin), France

Filed Apr. 10, 1970, Ser. No. 27,260

Claims priority, application Switzerland, Apr. 16, 1969, 5755/69

Int. Cl. A01d *79/02*

U.S. Cl. 56—370 **5 Claims**



A hay-making machine adapted to be attached to and driven by power take-off from a conventional agricultural tractor, and the hay-making machine has at least one rake wheel driven in rotation about a vertical axis, in which rake prongs are controlled by crank arms, connected with prong carriers, on a control track in a section of the rotating movement of the rake wheel in a pivoting movement directed from the ground upwards and contrarily to the direction of rotation of the rake wheel, characterised in that in the case of an even number of radially arranged prong carriers each two mutually diametrically opposed prong carriers have a fixed connection with one another and are controlled commonly by at least one crank arm.

3,650,102

FIBERS FROM NOVOLACS

James Economy, Eggertsville, N.Y., and Rodger A. Clark, Indianapolis, Ind., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Mar. 4, 1968, Ser. No. 710,292

Int. Cl. C08g *5/06;* **D01f** *7/00*

U.S. Cl. 57—140 R **12 Claims**

A novolac melt is fiberized to produce a thermoplastic, uncured novolac fiber, and the novolac is cured by heating the fiber in a formaldehyde environment in the presence of an acid catalyst to obtain an infusible, cured novolac fiber.

3,650,103

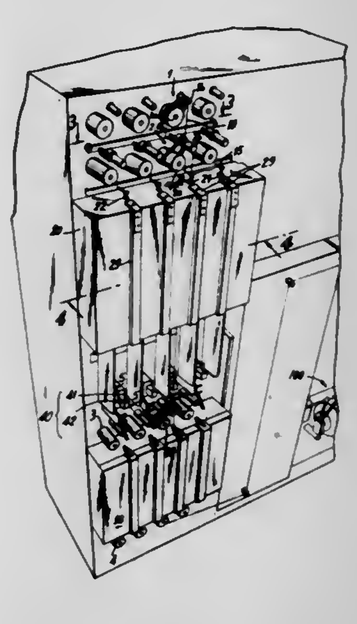
PROCESS AND APPARATUS FOR TEXTURIZING YARN

Henry C. Farrar, Andover; Daniel Shichman, Cedar Grove, and Joseph S. Wos, Ridgefield, all of N.J., assignors to Uniroyal Inc., New York, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,069

Int. Cl. D02j *13/00;* **D01h** *13/28;* **D02g** *1/02*

U.S. Cl. 57—34 HS **50 Claims**



A process and apparatus for texturizing yarn by false twisting. Means supply yarn to a first novel oven at controlled tension and speed. The yarn is then applied to an air jet twisting assembly having two separate upper and lower bodies with a disc insert with slots to direct and provide a whirling air stream within the twister assembly, thereby providing a false twist to the yarn. An air diffuser is placed between the twisting assembly and the first oven and a second oven is provided after the twisting assembly to heat-relax and remove some of the twist. The tension of the yarn is continuously controlled throughout. Novel means are provided for winding and doffing the texturized yarns as well as for controlling the speed and tension of the yarn throughout.

3,650,104

SPINNING OF TEXTILE YARNS

John Michael Shepherd, Ramsbottom, and Robert Greenwood, Whalley, both of England, assignors to T. M. M. (Research) Limited, Oldham, England

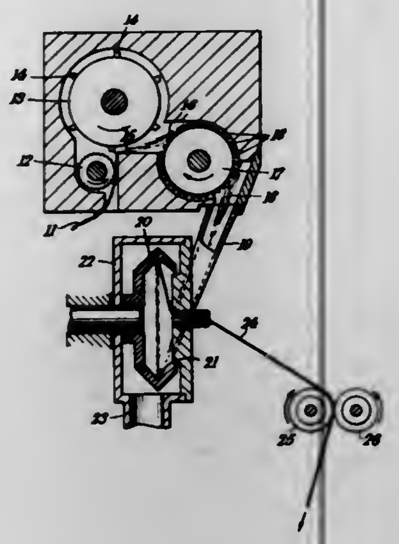
Filed July 18, 1969, Ser. No. 842,924

Claims priority, application Great Britain, July 25, 1968, 35,612/68

Int. Cl. D01h *1/12;* **D01g** *1/06*

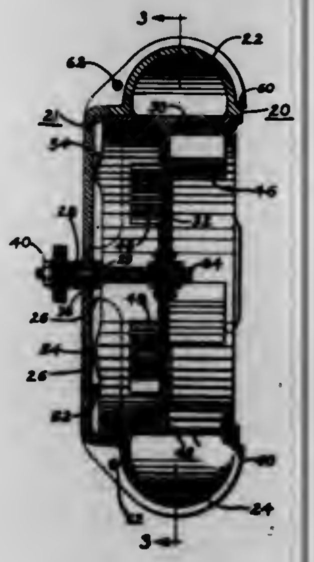
U.S. Cl. 57—58.91 **13 Claims**

A method of and apparatus for the open end spinning of textile yarns from continuous filaments in which a filament or tow of filaments is continuously advanced to a severing station where the filament or tow is severed into fibers of staple length. The staple fibers so formed at the severing station are conveyed in discrete manner to an internal fiber collecting surface of a spinning rotor from which they are continuously removed to form the tail-end of a yarn which is continuously drawn off from the rotor.



3,650,105
INTERNAL COMBUSTION TURBINE

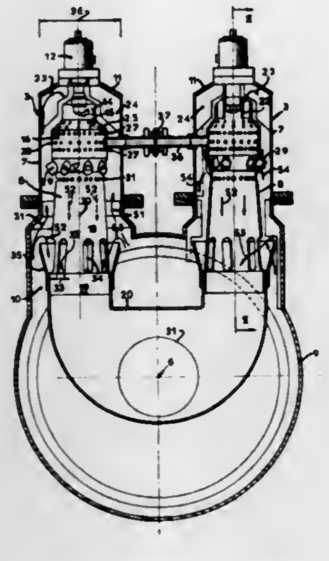
William J. Toye, 3201 Saint Charles Ave., New Orleans, La.
Filed Apr. 6, 1970, Ser. No. 25,706
Int. Cl. F02c *5/02, 3/14, 3/08*
U.S. Cl. 60—39.43 **1 Claim**



An internal combustion turbine comprising a stator with at least one peripheral combustion chamber and a rotor with peripherally mounted and internally extending driving blades or vanes and air compression blades arranged respectively in two transversely offset arrays of one or more groups in line, the two offset arrays being interiorly separated by a center web. The rotor is mounted for rotation in the stator and as it turns the air compression blades and the driving blades sequentially pass under the stator combustion chamber, the compression blades drawing in air from one side of said center web of the rotor and the driving blades exhausting on the other side of said web. A fuel supply system and an ignition system cooperate to inject fuel into the combustion chamber just after the air compression blades have passed under it and compressing air therein, and to provide a spark to ignite the fuel just as the driving blades begin to pass under the combustion chamber, the products of the ignited fuel pushing against the driving blades to drive the rotor in rotation.

3,650,106
COMBUSTION CHAMBER FOR GAS TURBINE

Jack Guillot, Bmanc-Mesni(Seine Saint-Denis), France, assignor to Etablissements Bennes Marrel, Saint-Etienne (Loire), France
Filed Oct. 10, 1969, Ser. No. 865,273
Claims priority, application France, Oct. 18, 1968, 50513
Int. Cl. F02c *7/00, 3/14*
U.S. Cl. 60—39.65 **8 Claims**



Combustion chamber for a gas turbine, comprising two concentric sheet metal casings where the air enters and the compressed gases circulate in contra-current, chiefly notable in that the exterior casing, open at one end to receive the air, is closed at the other end by a cap provided with radial ribs which surround a central jet provided to inject an atomized combustible liquid, this jet opening onto one extremity of the interior casing where it is surrounded by profiled blades fixed slantwise to rotate the air, while this inner casing defines an expanded zone provided with a large number of small slots for the admission of the primary air of combustion, this expanded zone being extended by a short convergent part into which open lateral slots of relatively large diameter for the admission of second air after which the inner casing is continued up to the escape extremity by a divergent zone having wide lateral slots for the admission of coolant air, these slots being surrounded by a deflector fixed on the exterior of the inner shell with a view to prevent the formation of directly opposed currents of air admitted into the combustion chamber.

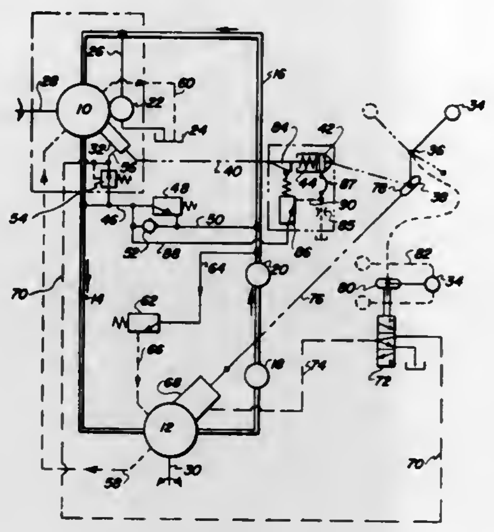
This combustion chamber can, moreover, show the following characteristics envisaged separately or in combination:

1. An odd number of secondary air slots and an also odd number of slots for the mixing of coolant air.
2. Lateral slots for the secondary air are each provided with a tubular portion which is inclined towards the jet in the direction of the general axis of the chamber.
3. Two combustion chambers of this type are used, mounted parallel to one another in the same transverse plane with reference to the general axis of the turbine, their equilibration being assured by means of a by-pass channel which connects the two expanded zones of the two internal casings.

3,650,107
POWER TRANSMISSION

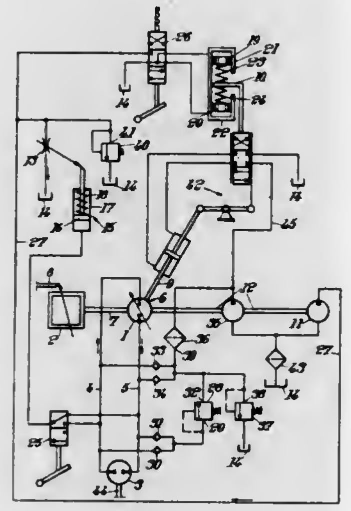
Kenneth Court, Detroit, Mich., assignor to Sperry Rand Corporation, Troy, Mich.
Filed Aug. 12, 1970, Ser. No. 63,137
Int. Cl. F15b *15/18*
U.S. Cl. 60—53 R **13 Claims**

A hydrostatic variable speed and reversible power transmission especially suited for driving mobile equipment has a variable displacement pump with a uni-directional delivery and a variable displacement and reversible hydraulic motor with a single high-pressure delivery line. Coordinated control of the pump and the motor is obtained by a manual control lever shiftable in a U-shaped pattern to progressively increase the transmission speed ratio forwardly when moved up one leg of the U and reversely when moved up the other leg of the U. A followup servomotor controls the displacement of the driving motor, utilizing a feedback mechanism which is sensitive only to the magnitude of the motor displacement and not to its direction. A pilot valve responsive to shifting of the control handle from one leg to the other of the U reverses the action of the servovalve upon the displacement varying mechanism of the driving motor, and when in mid position serves as an anti-creep bypass.



3,650,108
HYDROSTATIC TRANSMISSION CONTROL

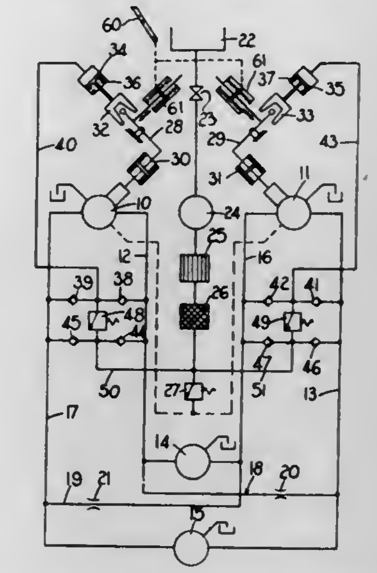
Olivier Isaac, Lyon, France, assignor to Societe Industrielle Generale de Mecanique Appliquee S.I.G.M.A., Paris, France
Filed Sept. 17, 1969, Ser. No. 858,579
Claims priority, application France, Sept. 20, 1968, 167081
Int. Cl. F16d *31/00*
U.S. Cl. 60—53 R **2 Claims**



A hydrostatic transmission of the kind useful in an automotive vehicle is controlled automatically by adjustment of the output of a driven hydraulic generator (i.e., a pump) to maintain the torque absorbed by the generator substantially equal to the vehicle driving motor torque. Such adjustment is effected in accordance with fluid pressure established in accordance with the generator speed but modified in accordance with fluid pressure established between the generator and a receptor (i.e., a hydraulic motor) connected hydraulically thereto and connectable mechanically to one or more traction wheels of the vehicle.

3,650,109
HYDRAULIC POWER TRANSMISSION SYSTEMS

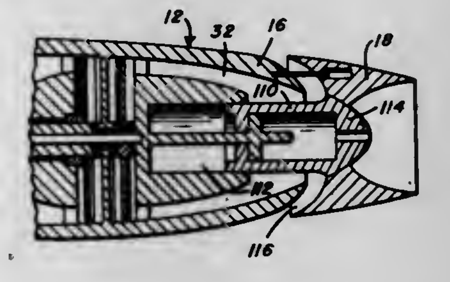
Leslie Bernard Freeman, West Pennant Hill, New South Wales, Australia, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed May 20, 1970, Ser. No. 39,132
Int. Cl. F02b *73/00;* **F16d** *31/00*
U.S. Cl. 60—97 E **9 Claims**



A hydraulic power transmission system has identical pumps and identical motors connected alternately in series. The upstream and the downstream sides of the motors are respectively connected together via flow restrictors. The pumps have a variable stroke and associated with each pump is a means responsive to the pump delivery pressure for limiting the stroke.

3,650,110
REVERSE THRUST DEVICE FOR SUPERSONIC JET ENGINE

John N. Ghougasian, 666 West 188th St., New York, N.Y.
Original application Jan. 10, 1969, Ser. No. 790,256, now Patent No. 3,552,873, dated Jan. 5, 1971. Divided and this application June 2, 1970, Ser. No. 42,723
Int. Cl. F02k *1/20*
U.S. Cl. 60—230 **5 Claims**

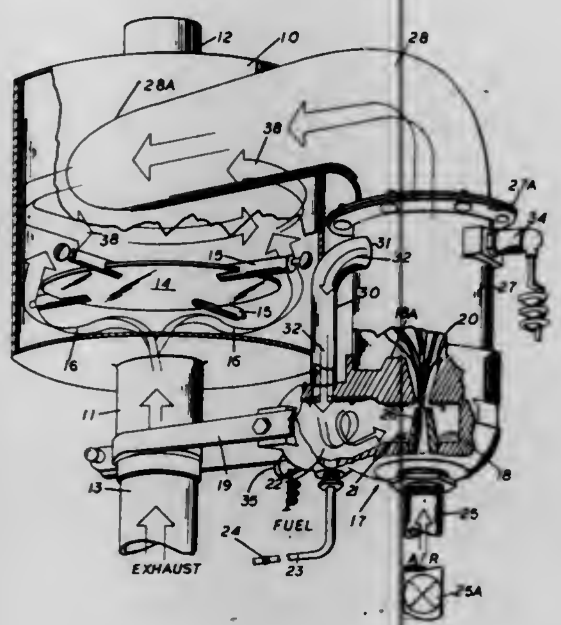


Combustion products exiting from the rear turbine of a jet engine are conducted through an annular passage surrounding a rear internal body section slidably mounting an exhaust nozzle blocking piston. The exhaust nozzle is releasably locked to the engine housing in a normal mode of operation and released for displacement by the piston when extended to its nozzle blocking position for engine starting purposes and to form a reverse thrust discharge passage by rearward displacement of the nozzle.

3,650,111
ANTI-POLLUTION AFTER BURNER

Robert Reichhelm, 155 LePore Drive, Lancaster, Pa.
Filed Feb. 16, 1970, Ser. No. 11,665
Int. Cl. F01n *3/12*
U.S. Cl. 60—30 **11 Claims**

This disclosure is directed to an anti-pollution after burner and method for transforming the carbon particles and/or carbon monoxide found in exhaust gases discharging to atmosphere to carbon dioxide. This is attained by providing an after burner adjacent an exhaust stack and utilizing a liquid fuel which has been transformed into a substantially gaseous state mixed with excess combustion air prior to ignition. The hot products of combustion thus generated by the after burner are co-mingled with the exhaust products flowing through the stack whereby the heat and excess air of the generated hot gases effect the combustion of the carbon particles and/or the transformation of the carbon monoxide constituent to carbon dioxide.



3,650,112

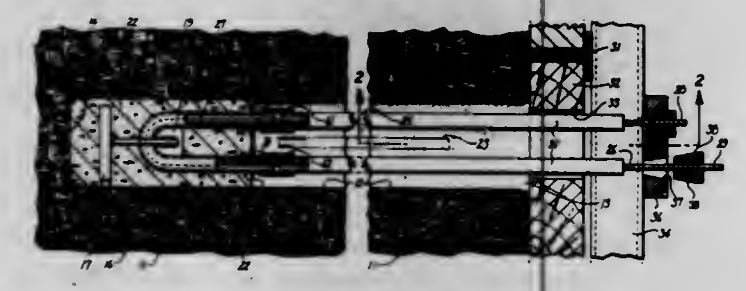
METHOD OF SHORING AND APPARATUS THEREFOR

George H. Howlett, Oakland, and James W. Howlett, Richmond Annex, both of Calif., assignors to Howlett Machine Works

Filed Sept. 21, 1970, Ser. No. 74,061

Int. Cl. E02d *5/16*

U.S. Cl. 61—35 **16 Claims**



A method of shoring earth matter and the like is disclosed in which a looped flexible tendon is used with a tie-back earth anchor. Once the earth anchor is secured at a predetermined depth in a bore, the looped tendon may be secured at the end of the bore to securement means for shoring the earth adjacent the bore. After shoring is no longer required, the tie-back anchorage may be removed by releasing it from the securement means and pulling on one of the tendon ends to cause tendon to slidably pass around the anchorage means and out of the bore. Various apparatus are disclosed for inserting the looped tendon in the bore with the earth anchor and for maintaining the looped tendon in sliding engagement with the earth anchor for later removal of the tendon.

3,650,113

PROCESS FOR REDUCING WATER PERMEABILITY OF POROUS SOILS

Richard L. Ferm, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sept. 23, 1970, Ser. No. 74,852

Int. Cl. E02d *3/12*

U.S. Cl. 61—36 **11 Claims**

A method of treating porous soils to increase their water-holding capacity comprising applying an asphalt-in-water type emulsion having a median asphalt particle size of from about 0.4 to 1.0 microns to the surface of the soil to be treated. Preferably, the soil is prewet and the submicronic emulsion is applied in a dilute form having from about 1 to about 20 percent solid residue.

3,650,114

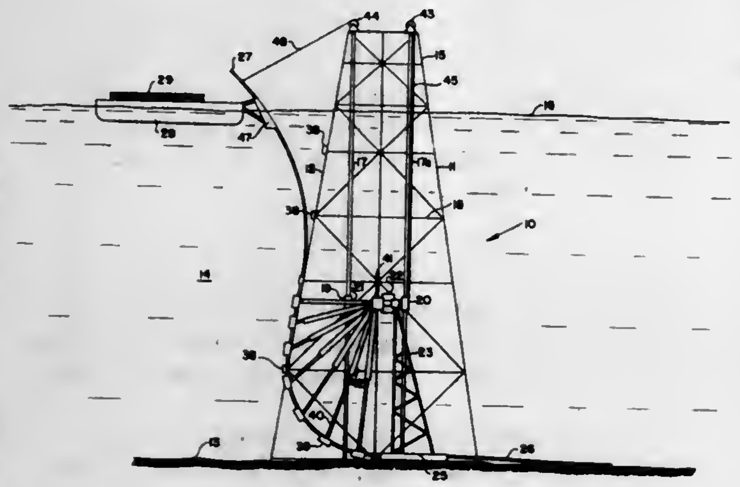
METHOD AND APPARATUS FOR CONNECTING A FLOWLINE TO AN OFFSHORE INSTALLATION

William J. Neal, Manvel, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Feb. 16, 1970, Ser. No. 11,716

Int. Cl. F16l *1/00;* **B21d** *11/02*

U.S. Cl. 61—72.3 **10 Claims**



A method and apparatus for connecting a flowline having a major portion adapted to lie along the floor of a body of water to an offshore installation of the type having a substantially vertical support positioned on the floor of a body of water and a platform carried by the support. The flowline is positioned at the water surface adjacent the installation and terminated a distance beyond the installation approximately equal to the depth of the water. The portion of the flowline adjacent the installation is slidably connected to the support and the flowline is lowered to the floor of the body of water while gradually bending the flowline at a plurality of locations therealong in such a manner that the portion of the flowline between the support and its terminal end is substantially parallel to the support when the flowline reaches the floor of the body of water. The terminal end of the flowline is subsequently connected to the platform. In this manner, the flowline has a sufficient curvature to prevent buckling thereof.

3,650,115

SHIPBUILDING AND LAUNCHING SYSTEMS, METHODS AND APPARATUS

Harry J. Flegel, Jr., and Russell S. Thatcher, both of Galveston, Tex., assignors to Kelso Marine, Inc., Galveston, Tex.

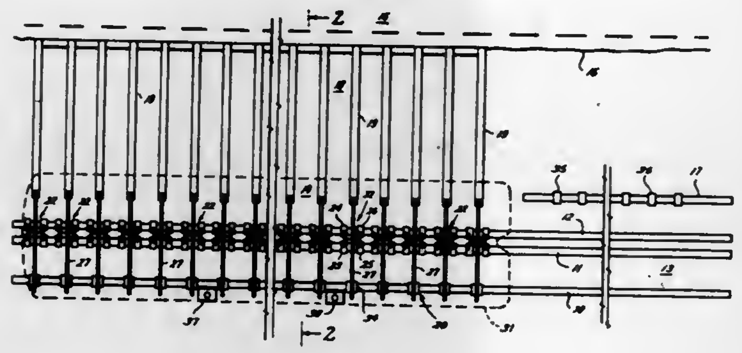
Filed June 25, 1970, Ser. No. 49,607

Int. Cl. B63c *3/08*

U.S. Cl. 61—67 **24 Claims**

Multiple groups of wheeled truck units are located on railroad tracks which extend from a ship construction area to a

ship launching area adjacent a body of water. Each group of truck units carries an elongated support beam or tilt beam which extends transversely across the railroad tracks and is tiltable in such transverse direction. During the construction phase, the truck units are positioned in the construction area, the tilt beams are maintained in a horizontal position and elongated, slidable skid assemblies are positioned on top of the tilt beams in a lengthwise manner. The hull of the ship is then constructed on top of these skid assemblies, the longer dimension of the hull running crosswise to the skid assemblies and underlying tilt beams. Launching is accomplished by moving the loaded truck units to the launching area and alongside an inclined launchway structure which slopes downwardly to the adjacent body of water. The tilt beams are tilted and the ship hull and skid assemblies slide down the launchway and into the body of water, the hull entering the water in a sidewise manner.



3,650,116

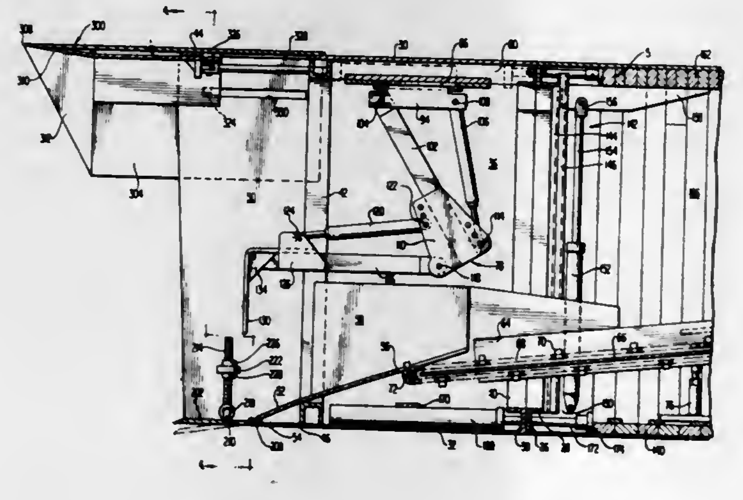
APPARATUS FOR USE IN SUBTERRANEAN EXCAVATION

Isaiah V. Cunningham, P.O. Box 9337 Springhill Station, South Charleston, W. Va.

Continuation-in-part of application Ser. No. 823,407, May 9, 1969. This application Aug. 25, 1970, Ser. No. 66,701

Int. Cl. E01g *3/02*

U.S. Cl. 61—85 **3 Claims**



A multisection shield incorporates means for subterranean excavation and for removal of excavated materials, and provides for the installation of planked lining within the shield. The apparatus is employed in a system of tunnel or conduit lining wherein floor and roof planks are prepositioned, and side wall planks are thereafter wedges in place therebetween. The apparatus further includes a forward safety bonnet operated in advance of excavation, and directional control means.

3,650,117

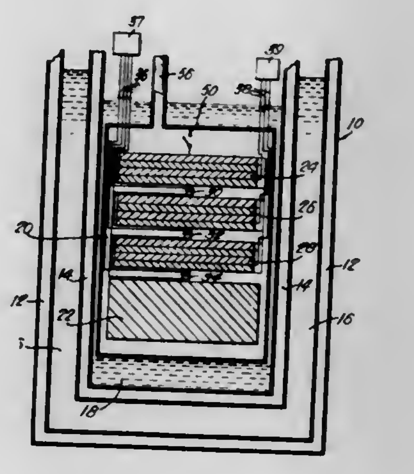
PARAELECTRIC REFRIGERATOR

Max C. Robinson, and Michael R. Wertheimer, both of Montreal, Quebec, Canada, assignors to Canadian Liquid Air Ltd. Air Liquide Canada Ltee, West Montreal, Quebec, Canada

Filed June 8, 1970, Ser. No. 44,432

Int. Cl. F25b *21/02*

U.S. Cl. 62—3 **12 Claims**



A multistage paraelectric refrigerator comprising a plurality of paraelectric refrigeration stages arranged in series between a heat sink and the material to be cooled, each of these stages being connected to or isolated from adjacent stages and the heat sink or material to be cooled by selectively controlled heat switches, the stages themselves being selectively operated.

A method of cooling with a paraelectric refrigerator wherein a plurality of paraelectric refrigeration stages are arranged in a series and are sequentially operated to transfer heat in a quasi-continuous manner from the material to be cooled to a heat sink.

3,650,118

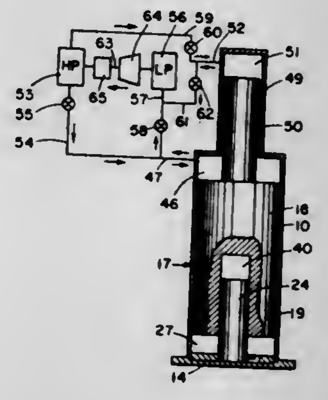
TEMPERATURE-STAGED CRYOGENIC APPARATUS

James A. O'Neil, Bedford, Mass., assignor to Cryogenic Technology, Inc., Waltham, Mass.

Filed Oct. 20, 1969, Ser. No. 867,661

Int. Cl. F25b *9/00*

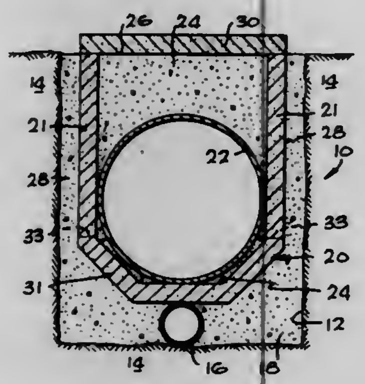
U.S. Cl. 62—6 **24 Claims**



A cryogenic apparatus in which fluid is circulated between fluid chambers through a fluid flow path including two or more regenerators, the coldest regenerator being positioned in a tubing affixed to the cold end and around which a portion of the displacer moves to define a low-temperature refrigeration chamber. An intermediate-temperature refrigeration chamber is defined within the displacer, thus forming a two-staged device with a single displacer. The arrangement is suitable for multistage apparatus and is applicable to several different cycles.

3,650,119
METHOD AND SYSTEM FOR TRANSPORTING OIL BY PIPE LINE

Joseph T. Sparling, 1295 Acadia Road, Vancouver, 8 British Columbia, Canada
Filed Apr. 2, 1970, Ser. No. 25,029
Int. Cl. F17d *1/14*
U.S. Cl. 62—55 **22 Claims**

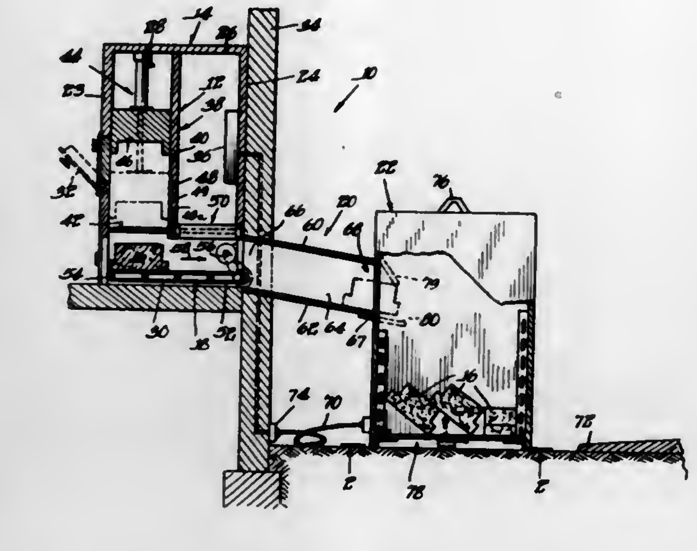


System and method for transporting oil by pipe line under or over frozen ground, e.g., permanently frozen terrain, without melting or softening the ground by heat transfer from the oil, by passing oil through a pipe line supported by such frozen ground or terrain, placing a second pipe line for carrying a fluid refrigerant, particularly liquid natural gas, along and closely adjacent to the oil pipe line but spaced therefrom, the second pipe line also being supported by the frozen ground, and being disposed adjacent to the frozen ground, providing insulation between the oil and refrigerant, e.g., liquid natural gas, pipe lines, as by placing the oil pipe line in an excavation in the ground and positioning the liquid natural gas pipe line in such excavation below and parallel to the oil pipe line, with gravel, for example, filling the spaces in the excavation and between the two pipe lines, passing a liquid refrigerant such as liquid natural gas through the second pipe line at a temperature substantially below the temperature of the adjacent frozen ground, thereby maintaining the ground around the pipe lines frozen without cooling the oil in the oil pipe line down to a temperature which substantially retards flow of the oil in the oil pipe line. As a feature of the invention, a minor portion of the liquid natural gas at each pumping station can be used for operating both the oil pump or pumps and liquid natural gas pump or pumps at the respective stations. The result is that the ground supporting or surrounding the oil pipe line remains in permanently frozen condition to firmly support such pipe line at all times, and at the same time liquid natural gas can be transported to market and a portion thereof employed to operate the pumping stations.

3,650,120
METHOD FOR DISPOSING OF GARBAGE AND REFUSE

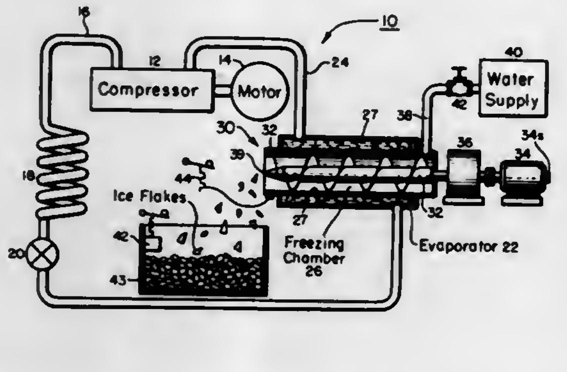
Richard D. Harza, 400 West Madison Street, Chicago, Ill.
Continuation-in-part of application Ser. No. 677,206, Oct. 23, 1967, now Patent No. 3,514,969, which is a continuation of Ser. No. 824,874, May 15, 1969, abandoned. This application Apr. 20, 1970, Ser. No. 30,015
Int. Cl. F25d *25/00*; **100** *93*
U.S. Cl. 62—62 **15 Claims**

A system of disposing of garbage and refuse which comprises in any order or sequence the steps of: wetting the refuse (if it does not already contain significant moisture) with a freezable liquid; compressing the moistened refuse; freezing the moistened, compacted refuse into dense pellets of any size or shape; storing the pellets; removal and ultimate disposal of the pellets for landfill or otherwise through any systematic means.



3,650,121
ICEMAKER PROTECTION SYSTEM

Frank A. Kimpel, and William F. Markley, both of York, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Dec. 22, 1969, Ser. No. 887,260
Int. Cl. F25c *7/00*
U.S. Cl. 62—136 **6 Claims**

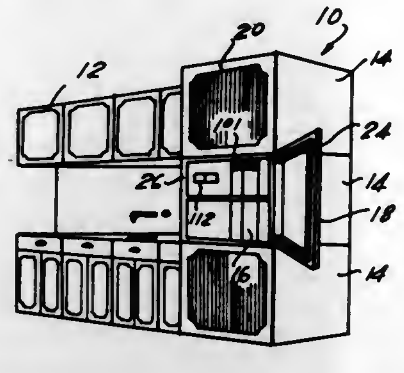


An icemaker protection system for an auger type icemaking machine is disclosed, which system protects against damage to the icemaking auger or to the auger motor that may be occasioned by an excessive accumulation of ice within the auger unit. Control is effected by means of a relay actuated in response to the slowing down of the auger drive motor, which occurs upon excessive ice accumulation, and a thermostatic switch which subsequently keeps the system in the deenergized condition until the excessive ice accumulation has been dissipated.

3,650,122
MODULAR REFRIGERATION UNIT

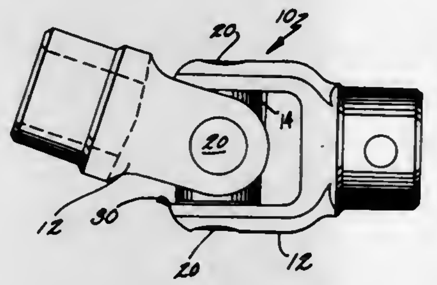
Aharon Lieberman, Ozone Park, N.Y., assignor to Computed Living Space, Inc., Ozone Park, N.Y.
Filed Jan. 15, 1970, Ser. No. 3,168
Int. Cl. F25d *19/00*
U.S. Cl. 62—298 **13 Claims**

A modular refrigeration unit containing a complete refrigeration system is removably mounted in an insulated holding chamber. The holding chamber and refrigeration unit are formed of polyurethane in a stressed skinned construction and a closed air flow cycle is provided between the interior of the holding chamber and the evaporator of the refrigeration system to continuously maintain a relatively low temperature within the chamber.



3,650,123
UNIVERSAL JOINT CONSTRUCTION

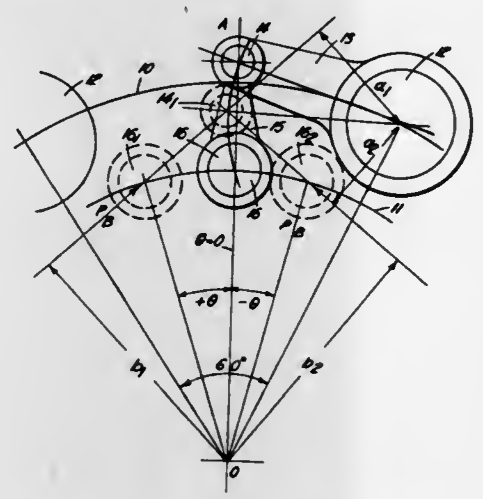
Cecil James Sheppard, Jr., Gobles, Mich., assignor to Compact Tractor Industries, Inc., Allegan, Mich.
Filed Apr. 1, 1970, Ser. No. 24,704
Int. Cl. F16d *3/26*
U.S. Cl. 64—17 SP **10 Claims**



A permanently lubricated and sealed universal joint utilizing an annular element constituting both a thrust washer and a seal for retaining grease, the element having a flexible sealing flange around its outside diameter, a rigid centering flange depending from the internal diameter, and thrust bearing surfaces, one of which has equally angularly spaced grease-retaining pockets.

3,650,124
ROTATABLE COUPLINGS

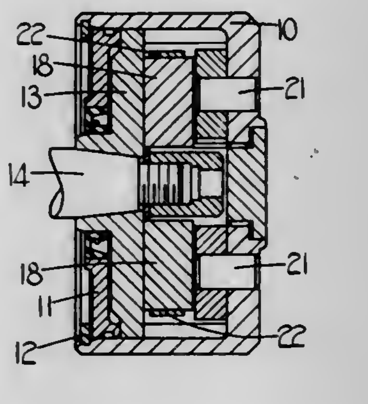
Charles Wallace Chapman, Winchelsea, England, assignor to Twiflex Couplings Limited, Middlesex, England
Filed Nov. 14, 1969, Ser. No. 876,679
Claims priority, application Great Britain, Jan. 3, 1969, 633/69
Int. Cl. F16d *3/14*
U.S. Cl. 64—19 **4 Claims**



A rotatable coupling comprises rotatable driving and driven members between which is pivotally connected one or more linkages each comprising tangential and radial links connected together by a pivotal connection. The distance between the pivotal connections at the ends of the tangential link is not less than 0.35 of the radial distance between the axis of rotation of the coupling and the pivotal connection between the tangential link and the driving or driven member. The linkage is so arranged as to be deformed by relative rotation between the driving and driven members in at least one direction. The deformation is opposed by a resilient bush at the pivot between the two links and at least the major part of the torque transmitted by the coupling, in its normal operating speed range, is transmitted by tension in the links caused by straining the resilient bush.

3,650,125
SPEED RESPONSIVE DEVICES

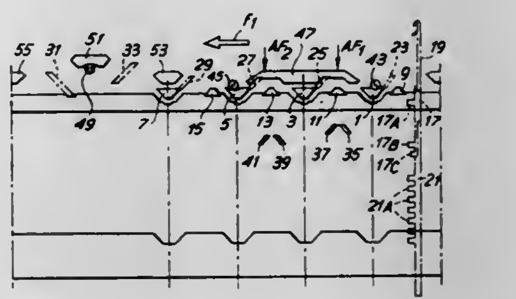
Ronald Phillips, Northolt, England, assignor to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 9, 1970, Ser. No. 79,503
Claims priority, application Great Britain, Oct. 10, 1969, 49,784/69
Int. Cl. F16d *5/00*
U.S. Cl. 64—25 **4 Claims**



A speed responsive device including a pair of rotary members, a mass movable outwardly under the action of centrifugal force such outward movement of the mass imparting relative angular movement of the members and spring means for restraining outward movement of the mass. The spring means comprises a pair of coiled tension springs which are connected to a leaf spring engaging with an outer curved surface of the mass. The initial radius of curvature of the leaf spring is greater than that of the aforesaid surface and means is provided to limit the extension of the tension springs.

3,650,126
PROCESS FOR MANUFACTURE OF STOCKING HEEL POUCHES

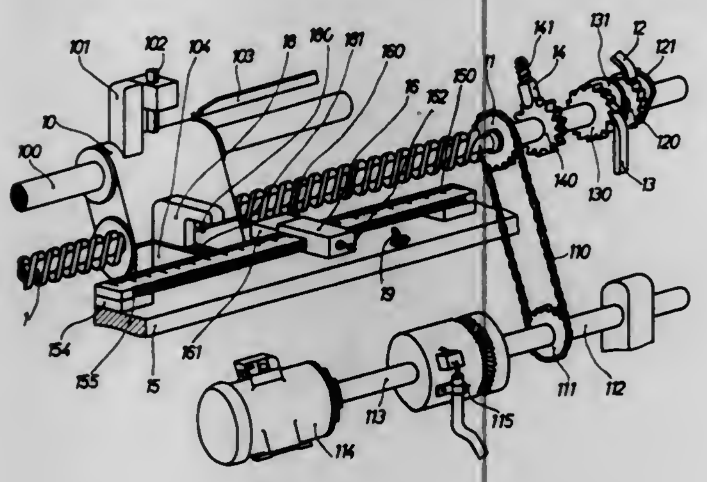
Vinicio Luchi, Via G.F. Mariti 102, Firenze, Italy
Filed Dec. 24, 1968, Ser. No. 786,598
Claims priority, application Italy, Dec. 29, 1967, 4863/67
Int. Cl. D04b *9/20*
U.S. Cl. 66—48 **3 Claims**



A process for manufacture of stocking heel pouches includes the use of a circular knitting machine cylinder with a row of needles and a row of sub-needles overlying one another, and butts and control cams which are arranged in arcs which are staggered with respect to one another. The extent of the arcs can be varied. A group of stitch courses in one direction is reversed in the next group of courses.

3,650,127
THREAD-GUIDE SETTING DEVICE FOR STRAIGHT-BAR KNITTING MACHINES

Heinrich Niestroj, and Hans Tille, both of Ingolstadt, Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengellschaft, Ingolstadt, Germany
Filed Feb. 1, 1968, Ser. No. 702,302
Claims priority, application Germany, Feb. 2, 1967, Sch 40168
Int. Cl. D04b *15/52*
U.S. Cl. 66—126 **23 Claims**

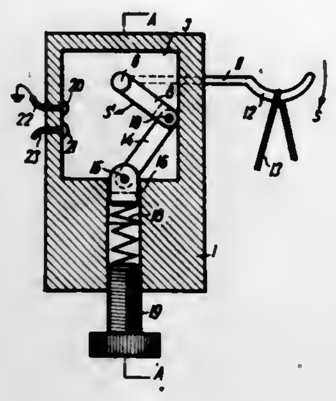


A primary switch of a control circuit is closed to energize a motor and clutch to drive a carriage for relocating positive stops limiting travel of one or more thread guides and to energize a signalling device. The carriage and thread-guide stops are precisely positioned automatically by interposition of a preset blocking member between the source of a light beam, magnetic field or air jet of the signalling device and its signal receiver to open a secondary switch in the control circuit and thereby affect instantaneous deenergization of the motor and clutch and actuation of an auxiliary lock to prevent overtravel of the carriage on its feed screw. Alternatively, the clutch may be disengaged by a photoelectric counter responsive to the angle of rotation of the feed screw. Several signalling devices and receivers may be mounted on the carriage and connected in parallel to open sequentially secondary switches in the control circuit, in which case the primary switch is a sequential or stepping selector switch.

3,650,128
STOP MOTION CONTROL DEVICE FOR KNITTING MACHINES

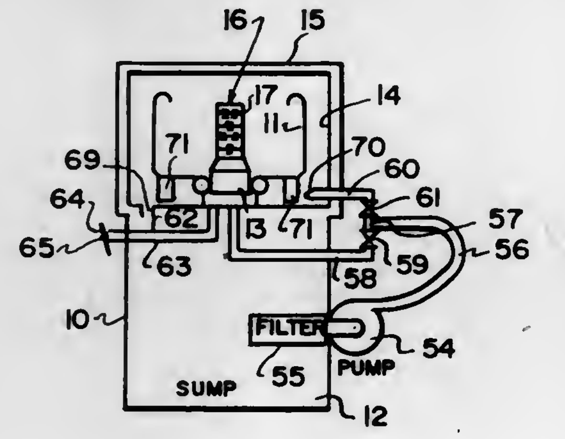
Josef Ferda, Vycepy, and Josef Kotacka, Trebic, both of Czechoslovakia, assignors to Elitex, Zavody textilniho Strojirenstvi, generalni reditelstvi, Liberec, Czechoslovakia
Filed Aug. 15, 1969, Ser. No. 850,613
Claims priority, application Czechoslovakia, Aug. 16, 1968, 5935/68
Int. Cl. D04b *35/10*
U.S. Cl. 66—163 **6 Claims**

Apparatus for controlling the operation of a knitting machine in response to the tension of the yarn comprising a crank member having a yarn guide fixed thereto, and being resiliently biased in one direction, the crank being reversible in response to a predetermined tension to operate control means for stopping the machine.



3,650,129
ARTICLE WASHING APPARATUS

Francis R. Scroop, Albuquerque, N. Mex., and John F. Gebhard, Stevensville, Mich., assignors to Whirlpool Corporation
Filed Nov. 9, 1970, Ser. No. 87,967
Int. Cl. D06f *17/04, 23/04*
U.S. Cl. 68—23.5 **12 Claims**

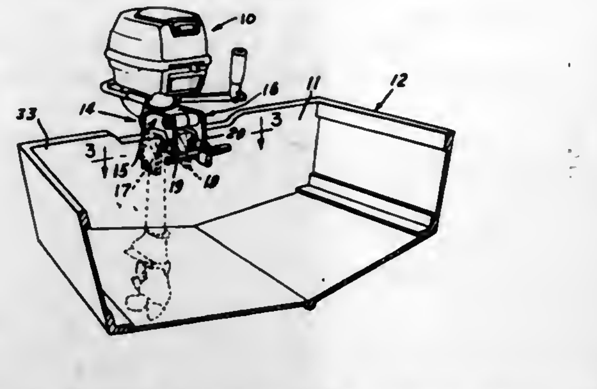


An automatic article washing apparatus including a container for washing liquid and the articles such as articles of clothing being washed, liquid jet means in the container comprising a stacked assembly of a plurality of bistable fluidic switch amplifier elements each having a washing liquid supply port, an interaction chamber receiving liquid from the port, first and second diverging jet nozzle passages leading from each of the assembly of elements, first and second differential fluid pressure control channels leading to the interaction chamber and means for simultaneously supplying liquid under pressure to all the supply ports and means for providing differential fluid pressure to the first control channels and to the second control channels with the result that jets of liquid are projected selectively from the first jet nozzle passages and the jet nozzle passages merely by altering the differential fluid pressure conditions in the control channels.

3,650,130
MOTOR LOCK

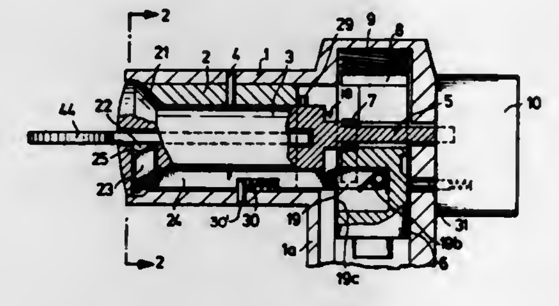
Grady E. Thompson, 10424 Aledo Drive, Dallas, Tex.
Filed Oct. 22, 1970, Ser. No. 82,929
Int. Cl. E05b *73/00*
U.S. Cl. 70—58 **5 Claims**

A lock device for preventing theft of outboard motors which locks the thumb screws of the mount bracket of an outdoor motor against rotation to prevent removal of the outboard motor from the transom of a boat to which it is secured.



3,650,131
IGNITION AND STEERING LOCK FOR MOTOR CAR

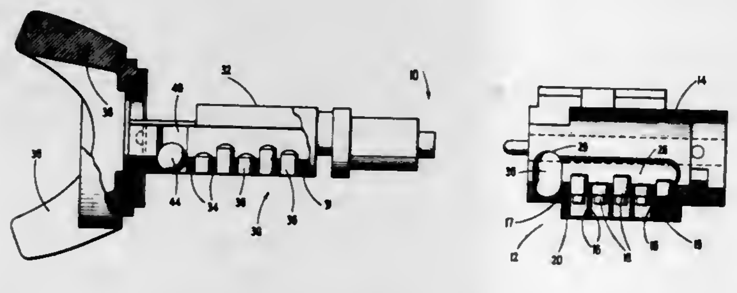
Rudolf Eichenauer, Hollbergstrasse 1, 6 Frankfurt/M, Germany
Filed Dec. 15, 1969, Ser. No. 885,390
Claims priority, application Germany, Dec. 17, 1968, P 18 15 152.5; Feb. 11, 1969, P 19 06 731.7; July 14, 1969, P 19 35 629.7
Int. Cl. B60r *25/02*
U.S. Cl. 70—252 **16 Claims**



A combined ignition and steering lock for automotive vehicles including means for simultaneously actuating the ignition system and a steering mechanism arresting bolt, and means operable on location of a key in the opening to lock the arresting bolt out of engagement with the steering mechanism.

3,650,132
LOCK

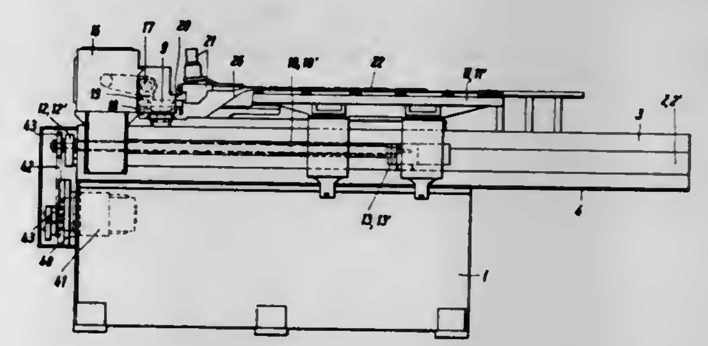
Felix J. Berube, 153 River St., Sanford, Maine
Filed Aug. 6, 1970, Ser. No. 61,611
Int. Cl. E05b *27/00*
U.S. Cl. 70—364 A **5 Claims**



A lock mechanism preferably for use in a motor vehicle is disclosed and includes safety features to prevent an operator from leaving the keys in the vehicle when it is left unattended. One important purpose of the present invention is to provide means for preventing the operator from starting the vehicle after a proper key has unlocked the lock mechanism, without first withdrawing the key from the lock mechanism. After the key has been extracted, the lock mechanism can then be rotated to a vehicle start position, and the key need not be inserted again to thereafter rotate the lock mechanism to its locked position.

3,650,133
LONGITUDINAL CARRIAGE DRIVE FOR CO-ORDINATES TABLES IN MACHINE TOOLS, PARTICULARLY PUNCHING MACHINES

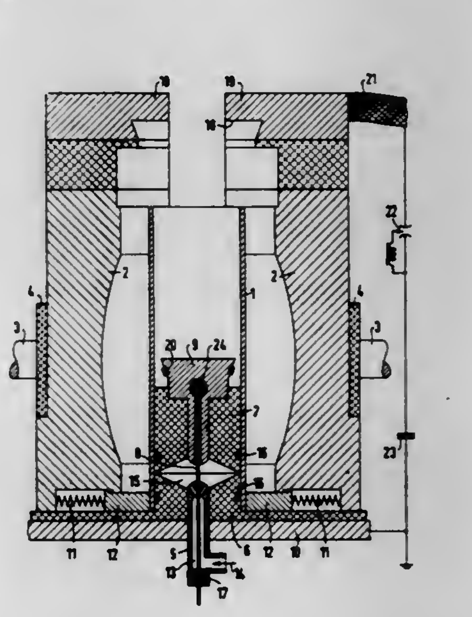
Walter Bredow, Alfeld an der Leine, Germany, assignor to C. Behrens Aktiengesellschaft, Alfeld an der Leine, Germany
Filed Sept. 3, 1969, Ser. No. 854,851
Claims priority, application Germany, Sept. 17, 1968, P 17 77 180.1
Int. Cl. B21d *55/00, 43/00*; **B26d** *7/06*
U.S. Cl. 72—1 **3 Claims**



A longitudinal carriage drive for co-ordinates tables in machine tools for impelling the carriages on co-ordinates tables, particularly the longitudinal carriage, with the transverse carriage moving thereupon transversely to the longitudinal axis of the machine, and to the material to be punched held fast thereto, in which a power transmission by two screw-threaded spindles is provided to the left and right of the center of the machine, which receive their drive synchronously from a motor arranged at about the middle of the table.

3,650,134
DEVICE FOR FORMING WORKPIECES BY LIQUID PRESSURE WAVES

Jochen Haeusler, Nurnberg-Laufamholz, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Dec. 11, 1969, Ser. No. 884,618
Claims priority, application Germany, Dec. 19, 1968, P 18 15 540.3
Int. Cl. B21d *26/10*
U.S. Cl. 72—56 **5 Claims**



A device for forming a workpiece by pressure waves generated in a liquid due to an undersurface spark discharge has a pair of electrodes mutually separated by the liquid and defining a spark gap therebetween. The electrodes are connected to a spark discharge circuit. One of the electrodes has a stationary part and a moveable part. An ignitor is connected to the moveable part and is thereby moveably insertable into the device so that the ignitor extends across the spark gap between the other of the electrodes and the one electrode. A means for holding a workpiece in a position surrounding the ignitor and the spark gap is also provided.

3,650,135
CONTROL FOR ROLLING MEANS HAVING SUCCESSIVE ROLLING STANDS

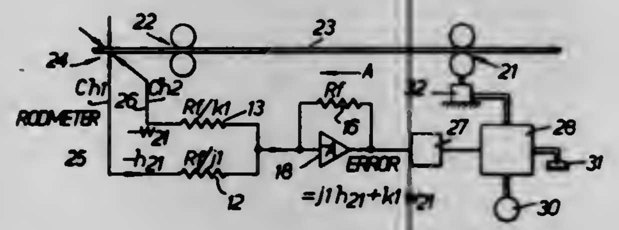
Charles Roger Skelton, Dronfield, Sheffield, and Dalip Tarachand Malkani, Chesterfield, both of England, assignors to The British Iron and Steel Research Association

Filed June 12, 1969, Ser. No. 832,571

Claims priority, application Great Britain, June 14, 1968, 28,562/68

Int. Cl. B21b *37/02*, *37/08*

U.S. Cl. 72—8 **12 Claims**



This invention is concerned with the automatic rolling of stock other than strip, plate, sheet and the like. The rolling is carried out in at least two passes and the rolling operation is controlled by adjusting at least one of the following four parameters: roll speed and screwdown of the first of the passes; roll speed and screwdown of the second of the passes, in response to at least one of: direct stock measurement; direct mill measurement; indirect stock measurement; indirect mill measurement.

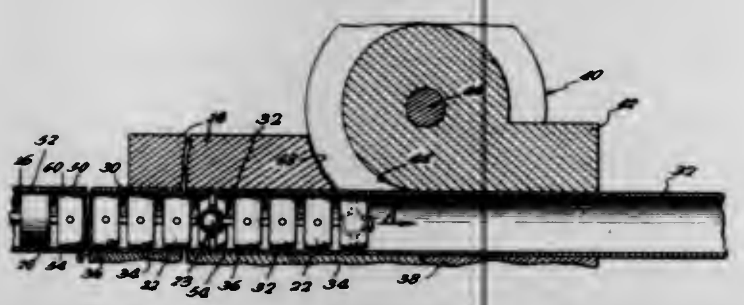
3,650,136
TUBE BENDING APPARATUS

Ernest C. Sindelar, Sugar Grove, Ill., assignor to Pines Engineering Co., Inc.

Filed Oct. 10, 1969, Ser. No. 865,287

Int. Cl. B21d *9/05*, *5/04*

U.S. Cl. 72—150 **10 Claims**



In an apparatus for producing bends in tubing, including a flexible mandrel movable axially into and out of one end of tubing disposed in position on the apparatus for bending. The mandrel has a plurality of mandrel balls universally mounted in a chain whereby the mandrel balls are unsupported against gravity on the end of the mandrel. A cylindrical reload member is disposed adjacent the one end of the positioned tubing for receiving the mandrel and orienting the mandrel balls when outside of the positioned tubing to align the mandrel balls for insertion into the tubing.

3,650,137
LEVELLING MACHINE FOR SHEET AND STRIP METAL

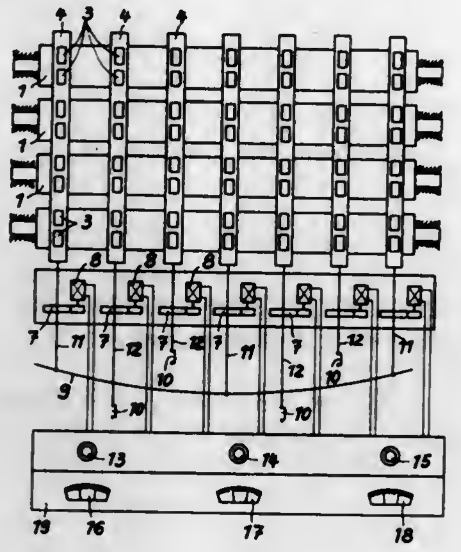
Willi Benz, Neuss, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed July 8, 1970, Ser. No. 53,219

Claims priority, application Germany, July 8, 1969, P 19 34 496.8

Int. Cl. B21d *1/02*

U.S. Cl. 72—165 **7 Claims**



A levelling machine for sheet or strip has two co-operating sets of straightening rolls and backing rolls spaced along each straightening roll of at least one of the sets, the backing rolls being adjustable so that the straightening rolls can be bent. In order to reduce the amount of skill required to adjust the straightening rolls, at least three of the backing rolls can be directly adjusted to bend the straightening roll in a desired manner and the remaining backing rolls can be adjusted automatically to bring them into their correct positions.

3,650,138
MULTIPLE TUBE-ROLLING PILGER MILLS

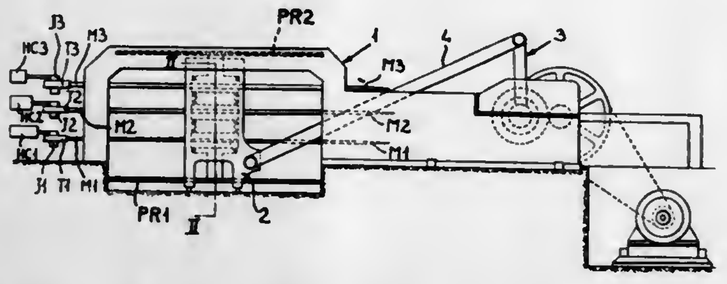
Giuseppe Persico, 69, Via Pio X, Volpago Del Montello (Treviso), Italy

Filed Sept. 23, 1969, Ser. No. 860,297

Claims priority, application Italy, Sept. 28, 1968, 7364 A/68; July 23, 1969, 7198 A/69

Int. Cl. B21b *21/00*

U.S. Cl. 72—189 **6 Claims**



A pilger mill comprising a pair of sizing rolls, each provided with a plurality of facing parallel tube-rolling grooves, mounted on a reciprocating carriage which, during its reciprocation, drives by means of a rack-and pinion transmission the roll pairs at the unison and in opposite directions. Each roll groove comprises a reducing section and an idle section. The reducing sections of each groove pair are angularly offset with respect to the reducing sections of the other grooves of each roll so that, in operation, the reducing of only one tube at a time is effected.

The idle sections of all parallel grooves extend for an angle including an idle angle fraction which is aligned in all grooves. Said idle angle fractions encircle with a certain

clearance the tube sections therebetween, thus permitting the forward stroke of the reciprocating carriage.

At least one pair of roll grooves comprises, in addition to the reducing sector, a tube-smoothing or finishing sector.

3,650,139
ROLLING STAND, PARTICULARLY FOR THE SHAPING OF A CAST BAR IMMEDIATELY UPON LEAVING A CONTINUOUS CASTING PLANT

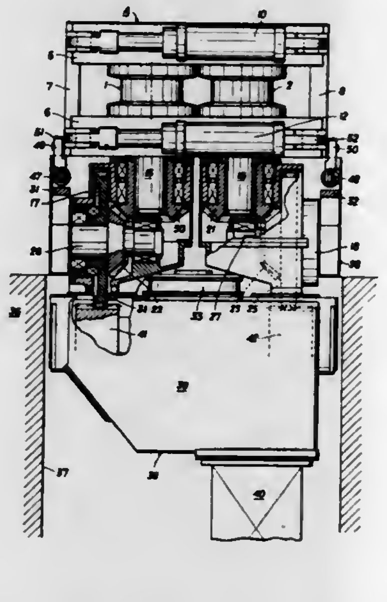
Ernst Hinterholzl, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed July 24, 1969, Ser. No. 844,337

Claims priority, application Austria, Apr. 23, 1969, A 3911/69

Int. Cl. B21b *31/08*, *35/00*

U.S. Cl. 72—249 **2 Claims**



A rolling stand, particularly intended for shaping a cast bar immediately upon leaving a continuous casting plant, is described, comprising two horizontal roll supports having their ends connected by a fixed crossmember on one side and a releasable cap on the other side to form a cage wherein a pair of vertical rolls mounted in inserts is arranged to be horizontally displaceable for adjustment of the roll gap. According to the invention the entire rolling stand including the rolls is detachably mounted on a base frame to be vertically removable therefrom, said base frame containing two transmission gears releasably connected for rotation with the roll shafts and enclosed in suspended casings which are moveable together with said rolls; the drive is located below floor and comprises driving spur wheels which are larger than the meshing drive-off spur wheels of the transmission gears by at least half the adjustment range of the rolls to maintain a stress-transmitting engagement of the gearing irrespective of any shifts occuring on roll gap adjustment.

3,650,140
METHOD AND APPARATUS FOR BENDING TUBING

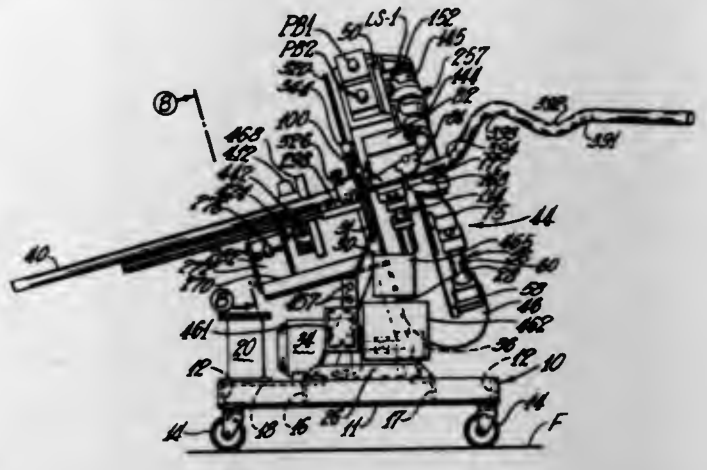
Daniel A. Zmuda, Toledo, Ohio, assignor to Questor Corporation, Toledo, Ohio

Original application June 12, 1968, Ser. No. 736,317, now Patent No. 3,557,586. Divided and this application Nov. 3, 1970, Ser. No. 86,570

Int. Cl. B21d *11/02*

U.S. Cl. 72—296 **9 Claims**

This invention embraces a method of and apparatus for forming or impressing successive bends in tubing, such as exhaust pipes for internal combustion engine exhaust systems, the method and apparatus providing for forming successive bends of various depths and angularities while maintaining positive control of the tubing during the successive operations to assure the proper orientation of the bends in the tubing.



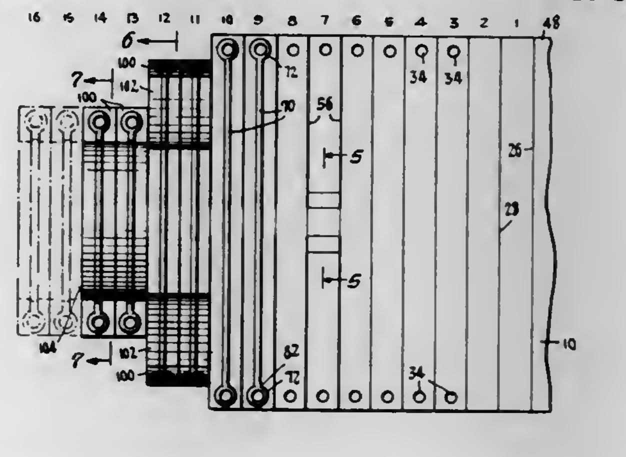
3,650,141
METHOD OF FORMING MULTIPLE HOLE CONDUIT CLAMPS AND HANGERS

Frank W. Pepe, 637 Prospect Drive, Lordship, Conn.

Continuation-in-part of application Ser. No. 680,252, Nov. 2, 1967, now Patent No. 3,461,708. This application Aug. 15, 1969, Ser. No. 850,525

Int. Cl. B21d *21/00*, *28/06*, *53/36*

U.S. Cl. 72—332 **10 Claims**



A method of continuously forming multiple hole conduit clamps and hangers from flat strip stock wherein individual clamps or hangers are blanked in side by side relationship longitudinally of the strip but only partially across the width of the strip so as to leave a central unblanked portion, and subsequently formed in even numbered multiples by intermittent feeding of the strip stock through a progressive die punch press. Individual clamps or hangers are partially severed from each other along their ultimate side edges leaving a central carry through portion of the strip within the clamp blank length, then progressively die formed by deformation from the free ends of each clamp or hanger blank toward the center of the strip, and finally severed from the strip in multiples of adjacent pairs of finished clamps or hangers by punching alternate clamps or hangers in opposite directions.

3,650,142
METHOD OF AND APPARATUS FOR DECREASING THE SPACING BETWEEN ARTICLES

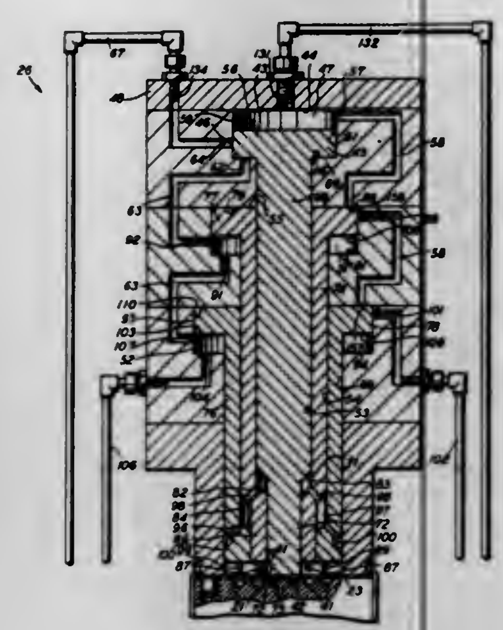
William M. Baldwin, Jr., and Vincent A. Rayburn, both of Baltimore, Md., assignors to Western Electric Company Incorporated, New York, N.Y.

Filed July 18, 1969, Ser. No. 843,107

Int. Cl. B21j *9/12*

U.S. Cl. 72—403 **17 Claims**

The spacing between articles depending from a deformable strip of stock material is decreased by crimping the strip between each adjacent pair of articles. The crimps are formed at spaced intervals starting with the centermost portions of the strip and progressing outwardly therefrom until a crimp is formed between each adjacent article pair. Crimping is accomplished by an arrangement of concentric piston-rams which are sequentially moved to advance pairs of forming tools to crimp and decrease the length of the strip of stock material.



3,650,143
APPARATUS FOR FORGING CRANKSHAFTS AND THE LIKE

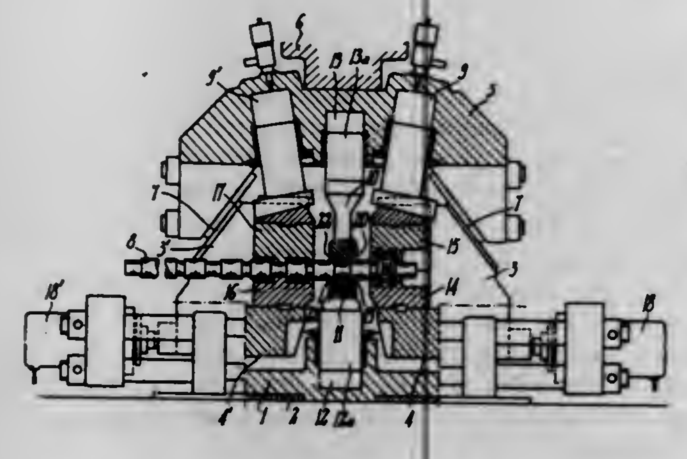
Gabriel Ruget, St. Etienne (Loire), France, assignor to Compagnie Des Ateliers et Forges de La Loire (St. Chamond-Firmidy-St. Etienne-Jacob-Holtzer, Rochefoucauld Paris, France

Filed July 14, 1969, Ser. No. 841,272

Claims priority, application France, July 19, 1968, 159,915;
Feb. 24, 1969, 6,904,677

Int. Cl. B21d *37/00*

U.S. Cl. 72—412 **3 Claims**



Improvement in apparatus for forging crankshafts and like workpieces. This improvement is characterized in that an upper crankpin die is mounted on a piston movable in relation to an upper cross member which is actuated by the ram of a forging press, said piston being responsive to a hydraulic ram having its cylinder carried by said cross member. The pressure developed in said ram is adjustable by means of a discharge valve set according to the dimensions of the workpiece to be forged, said valve permitting of performing the forging operation in two steps, i.e., firstly upsetting the metal while offsetting the crankpin, then forging the crankshaft webs at the end of the upsetting step.

3,650,144
APPARATUS FOR CLADDING ELONGATED ARTICLES WITH STAINLESS STEEL FOIL

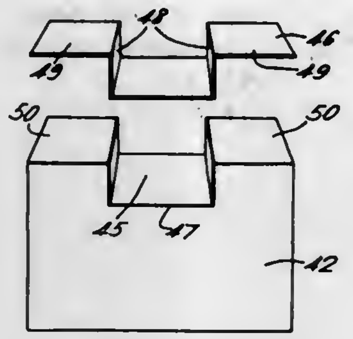
David James, Coychurch, near Bridgend, Glamorgan, Wales, assignor to Drawn & Rolled Sections Limited, Glamorgan, England

Filed July 2, 1969, Ser. No. 838,457

Claims priority, application Great Britain, July 4, 1968, 31,931/68

Int. Cl. B21d *3/00*

U.S. Cl. 72—467 **4 Claims**



In the cladding of elongated articles with a stainless steel foil, the article together with the foil is fed to a wrapping die, which is shaped to progressively fold the foil around the elongated article. Hitherto, it has been the practice to form the die entirely from a ferrous material, which because of the relatively hard nature of the stainless steel foil, wears considerably with the result that swarf or contaminants may become embedded in the die surfaces. The surfaces of stainless steel foils subsequently folded by the die become scored and pitted. Particles which become embedded the damaged foil surfaces can initiate the formation of rust, resulting in rapid detioration of the appearance of the cladded article.

The invention provides a method of cladding an elongated article with a stainless steel foil, which includes the step of feeding the article and the foil through a wrapping or binder die which is provided, at least on the inner surface portion of the die which is in contact with the foil, with a replaceable non-ferrous liner. Apparatus for cladding an elongated article with stainless steel foil is also disclosed.

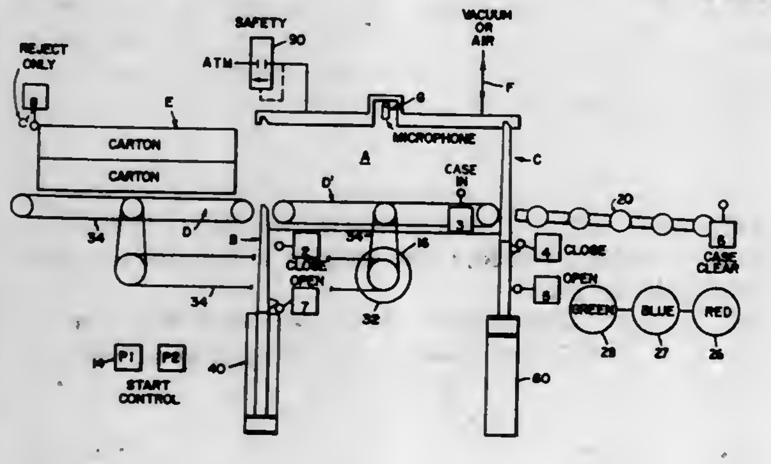
3,650,145
METHOD AND APPARATUS FOR TESTING HERMETICALLY-SEALED CONTAINERS

Lloyd A. Nelson, Fremont, Mich., assignor to Gerber Products Company, Fremont, Mich.

Continuation-in-part of application Ser. No. 694,444, Dec. 29, 1967, now Patent No. 3,513,689. This application Feb. 5, 1970, Ser. No. 8,906. The portion of the term of this patent subsequent to May 26, 1987, has been disclaimed.

Int. Cl. G01m *3/02*

U.S. Cl. 73—37 **15 Claims**



A method for automatically detecting unsatisfactorily sealed containers including sequentially receiving, externally pressure modifying and subsequently testing hermetically sealed containers traveling along a conveyed path. The method includes the detection of any impulse that may be emitted as a result of cover diaphragm movement in those container(s) having insufficient vacuum. When such an audible emission occurs, the containers are rejected. The disclosure is also directed to apparatus for accomplishing this method.

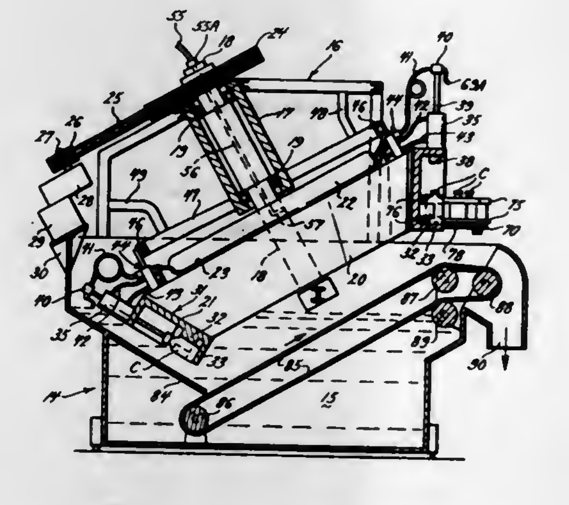
3,650,146
CONTAINER PRESSURE TESTING APPARATUS

Momir Babunovic, Des Peres, Mo., assignor to Barry-Wehmiller Company, St. Louis, Mo.

Filed June 2, 1970, Ser. No. 42,683

Int. Cl. G01m *3/02*

U.S. Cl. 73—37 **11 Claims**



Apparatus for testing containers for load and internal pressure resistance within the requirements of commercial specifications by subjecting a moving stream of containers to axial loading as well as high internal pressure loading while submerged in a shock absorbing bath to control fragmentation upon failures.

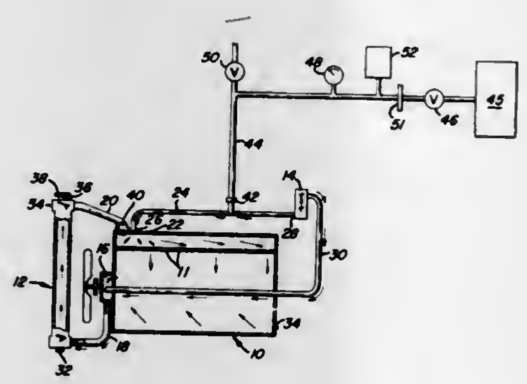
3,650,147
COOLING SYSTEM PRESSURE TESTER

Robert G. Moyer, Ridgefield, Conn., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 26, 1970, Ser. No. 50,202

Int. Cl. G01m *3/04*

U.S. Cl. 73—49.7 **11 Claims**



A cooling system pressure tester for automotive engine cooling systems and a method for pressure testing such systems. The pressure tester comprises a fitting having outlets connected in line with the heater system conduit, a conduit connected between a source of pressurized water and the inlet of the fitting, and means for controlling and means for measuring the pressure in the system. The entire automotive engine cooling system may be pressure tested at one time.

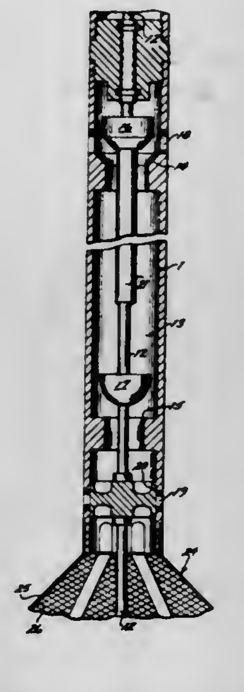
3,650,148
TOOL TO DETERMINE QUANTITY OF OIL

James J. Glenn, Jr., Long Beach, Calif., assignor to Triangle Service, Inc., Long Beach, Calif.

Filed May 23, 1968, Ser. No. 731,445

Int. Cl. E21B *47/12*

U.S. Cl. 73—61.1 R **9 Claims**



A tool for determining the quantity of oil in an oil well comprising a tubular housing having a sample chamber located therein. Remotely controlled valves positioned above and below the sample chamber serve to trap a sample for measurement. An electrode positioned within the chamber and connected to a resistance recording device on the surface measures the amount of oil in an oil-water mixture in the sample chamber.

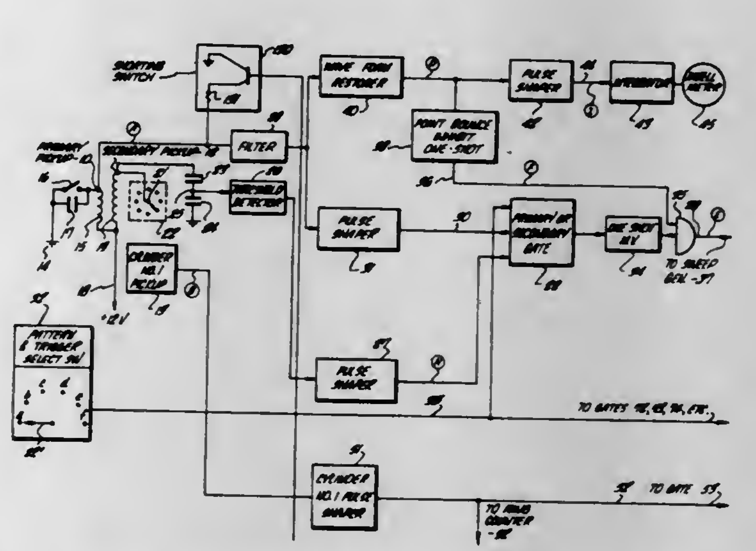
3,650,149
ENGINE IGNITION AND POWER ANALYZER

Peter A. Howes, La Verne, Calif., assignor to Clayton Manufacturing Company, El Monte, Calif.

Filed Jan. 21, 1969, Ser. No. 792,382

Int. Cl. G01m *15/00*

U.S. Cl. 73—117.3 **38 Claims**

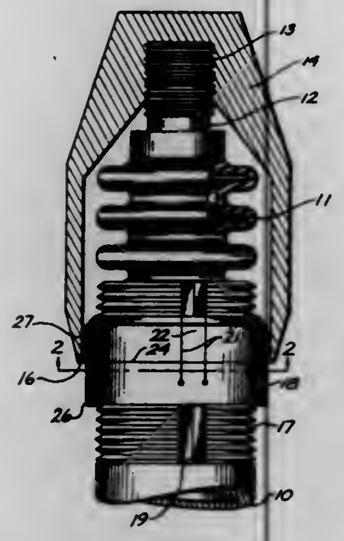


An internal combustion engine performance analyzing system is described for displaying a number of operating characteristics, such as engine ignition and cylinder power, which exists under selectively controlled operating conditions. Simple connections to the engine provide the necessary signals to the solid-state electronic analyzer. Various pattern display modes may be selected. An anticipatory cylinder fire signal, which is related to crankshaft rotational degrees, permits a given cylinder to be shorted for the desired interval, regardless of the engine speed. This anticipatory cylinder fire signal is obtained from a servoed ramp waveform generator. Individual cylinder waveform patterns are synchronously and simultaneously displayed on an oscilloscope.

3,650,150
TIRE PRESSURE INDICATION

Willet Lawrence Eccles, Jr., 1709 Hansconi Drive, South Pasadena, Calif.

Filed Jan. 28, 1970, Ser. No. 6,457
Int. Cl. B60c *23/00*
U.S. Cl. 73—146.8 **11 Claims**

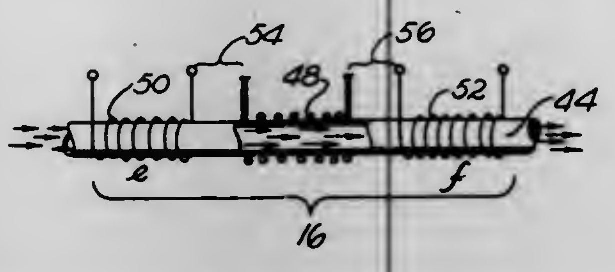


A tire pressure indicator is disclosed in the form of an improved valve stem. A cap is mounted on the valve stem and an elastically extensible member responsive to the pressure within the tire is provided between the rigid portion of the stem and the portion on which the cap is mounted so that the cap moves relative to the rigid portion of the stem in response to tire pressure. A measuring indication or plurality of indications are provided on the stem adjacent the end of the skirt of the cap for indicating proper tire pressure. In one embodiment and the measuring indicator is on a sleeve threaded on the stem and having a detent for locking the sleeve in a selected position indicative of tire pressure. In another embodiment a detent in the cap permits adjustment to a selected pressure as measured in fixed indicia on the valve stem. A rubber or plastic bellows either alone or supplemented by a metal spring is preferably employed as the elastically extensible member.

3,650,151
FLUID FLOW MEASURING SYSTEM

Charles F. Drexel, Rolling Hills Estates, Calif., assignor to Tylan Corporation

Filed Nov. 18, 1970, Ser. No. 90,556
Int. Cl. G05d *11/00*
U.S. Cl. 73—194 M **9 Claims**

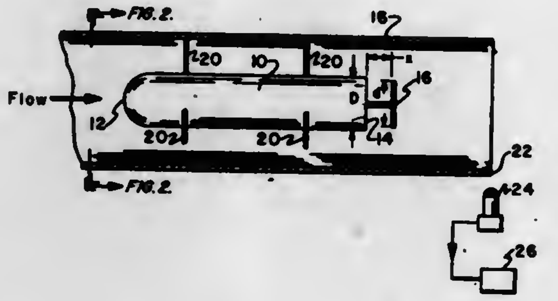


A control system for the vaporization of a liquid by a carrier gas in which the carrier gas passes through a first set of resistance elements in a terminal conductivity cell, then through a mass flow sensor and, via a throttling valve, into a vaporizing tank of diluent where the carrier gas picks up diluent vapor and then passes through a second set of resistance elements in the thermal conductivity cell. The resistance elements are connected in a bridge circuit yielding an output voltage representing the volume ratio of diluent to carrier gas. This voltage is multiplied by the voltage derived from the mass flow sensor to yield a voltage which represents the absolute value of mass flow rate of diluent. This value is compared to a desired value, the differential being amplified and utilized to control the throttling valve.

3,650,152
APPARATUS AND METHOD FOR MEASURING THE VELOCITY OF A FLOWING FLUID

Douglas F. White, Bedminster, N.J., assignor to American Standard Inc., New York, N.Y.

Filed Feb. 13, 1968, Ser. No. 705,061
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 B **12 Claims**

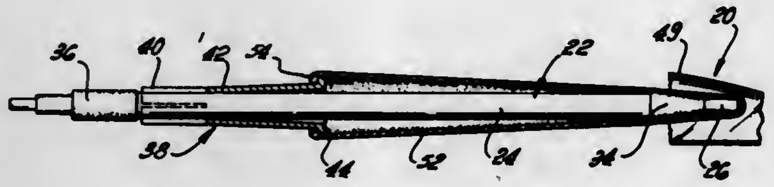


A cylindrical body having a curved nose at one end and a flat base at the other end is connected to a disc of smaller diameter, with the disc being centered coincident with the longitudinal axis of the body and being spaced axially from the base thereof. This assembly, when aligned axially at midstream of a flowing fluid with the nose pointed upstream, generates a downstream wake in which the fluid traces an unsteady, irregular flow pattern, oscillatory in nature but with random, unpredictable variations and extinctions in the amplitude and frequency thereof. Modification of the assembly by an additional element of structure which splits or obstructs the fluid flow at or downstream from the space between the base and disc stabilizes the wake flow pattern into a fixed plane of strong oscillations the amplitude and frequency of which are readily measured. The frequency of the stabilized oscillations varies directly with the volumetric velocity of the fluid flow over a considerable range of velocities, whereby the modified assembly constitutes a simpler, linear, normoving parts, digital-output flowmeter by which the fluid flow velocity can be readily measured with high precision.

3,650,153
APPARATUS AND METHOD FOR APPLYING STERILE COVER TO TEMPERATURE SENSITIVE PROBE

Ardath M. Schwab, 606 Camino Cerrado, South Pasadena, Calif.

Filed Oct. 7, 1969, Ser. No. 864,385
Int. Cl. B65d *85/20;* **G01k** *1/08*
U.S. Cl. 73—343 R **3 Claims**

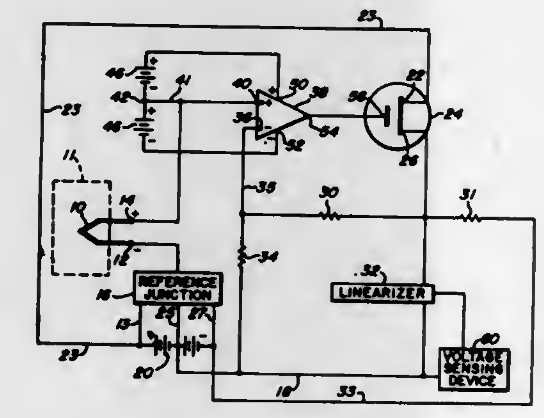


A sleeve is slidably mounted between stop means and in a slight friction fit upon a cylindrical temperature sensitive probe and has a radially outwardly extending rim about an end thereof which is movable beyond the probe end to be inserted into a sterile flexible package. An elastic ring on the end of a latex probe cover fits over said sleeve rim while said sleeve is inserted into the package whereupon sliding movement of the sleeve down the probe places the sterile cover over the probe without manual contamination of the exterior of the cover.

3,650,154
THERMOCOUPLE INPUT TEMPERATURE SENSING CIRCUITRY

Charles J. Arnett, Union, and James M. Hoover, New Carlisle, both of Ohio, assignors to Instrulab, Inc., Dayton, Ohio

Filed Feb. 25, 1970, Ser. No. 13,998
Int. Cl. G01k *7/12*
U.S. Cl. 73—361 **5 Claims**



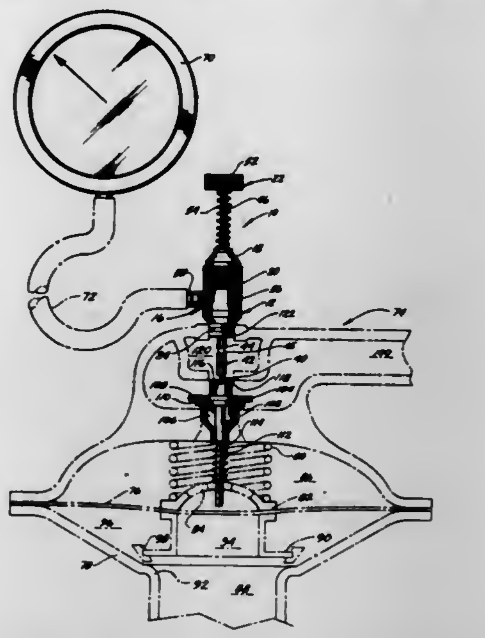
Voltage sensing circuitry for use with a thermocouple having a voltage output which is related to the temperature thereof. The thermocouple output voltage is compared with a reference voltage and the difference is amplified. The reference voltage varies with ambient temperature in order to null out the effects of temperature change on the cold junction of the thermocouple circuit, the cold junction being disposed within the same region as that in which the temperature indicating circuitry is disposed. The differential voltage between the thermocouple output voltage and the reference voltage is amplified by a single-ended amplifier so that the output of the thermocouple has low impedance to a conductor which is common to a power supply, to the reference voltage, and to output receiver means. Thus, the circuitry has high common mode rejection, i.e., there is insignificant effect upon the output voltage of the circuitry if the thermocouple comes into contact with an external voltage.

3,650,155
IDLE ADJUSTING TOOL

Robert W. McJones, 529 Via Del Monte, Palos Verdes Estates, Calif.

Filed Aug. 25, 1970, Ser. No. 66,817
Int. Cl. G01l *19/00*
U.S. Cl. 73—359 **9 Claims**

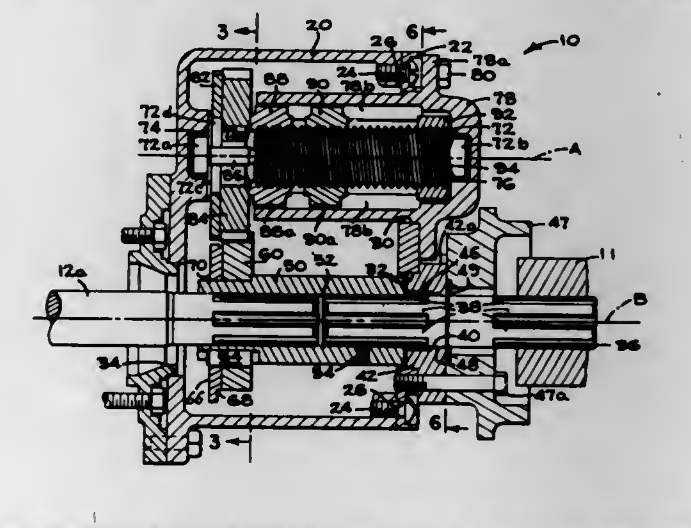
An idle adjusting tool has a body adapted for mounting on a fuel-air mixer with a bore of the body opening into a fuel passage of the mixer. A spring biases a screwdriver blade, received in the bore, away from an idle adjusting screw of the mixer. Upon displacing the screwdriver blade against the force of the spring, it is possible to engage the idle adjusting screw. Gas pressure communication between the fuel passage and a pressure gauge connected to the tool exists through the bore.



3,650,156
ADJUSTABLE STOP FOR INPUT SHAFT

David Carl Thomas, Jenkintown, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed May 20, 1970, Ser. No. 39,941
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.2 **8 Claims**



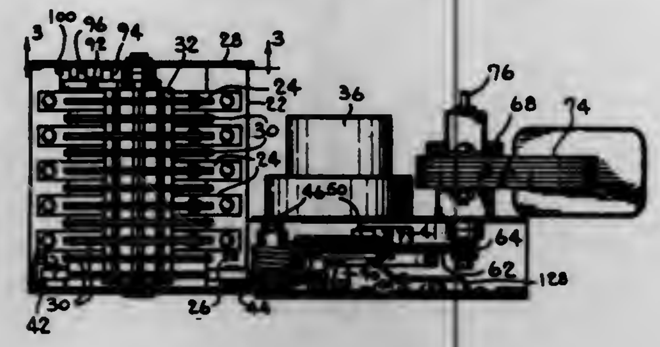
The number of revolutions imparted to a device such as a valve is limited by a mechanism utilizing intermittent gearing between an input shaft and an adjacent threaded shaft. As the threaded shaft is intermittently turned in response to rotation of the input shaft, travelling nuts on the threaded shaft move axially thereon between positive stops at which the threaded shaft and the input shaft are halted from further rotation.

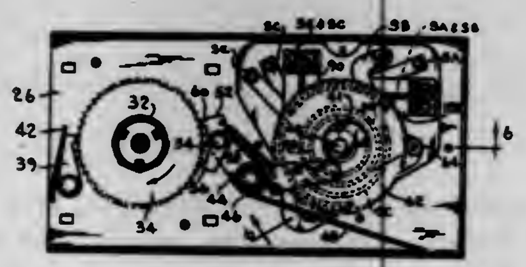
3,650,157
TIMER

Donald M. Strathearn, Arlington Heights; James M. Thornbery, Morton Grove, and Dale F. Willcox, Aurora, all of Ill., assignors to Controls Company of America, Melrose Park, Ill.

Continuation-in-part of application Ser. No. 55,899, Sept. 14, 1960, Original application Mar. 16, 1959, Ser. No. 779,780, now Patent No. 2,995,143. Divided and this application Jan. 26, 1970, Ser. No. 10,690
Int. Cl. F16h *29/00*
U.S. Cl. 74—122 **5 Claims**

Depressing one of the cycle selection switches sets up a circuit through the shaded pole motor to drive the timer at high speed until the wiper on the end of the cam arbor finds an open circuit on the printed circuit board. During the high speed advance of the timer, the machine circuits are de-energized and, upon finding the open circuit, the shaded pole motor is de-energized, the machine circuits are energized, and the timer drive motor is actuated to sequence the timer through the selected cycle. The stepping mechanism is operated by the slow rise fast drop cam operating a pawl which engages the ratchet teeth on the cam arbor. Particularly during high speed advance, there may be a tendency for the arbor to overstep and, therefore, the pawl, in effect, is a double pawl or verge which jams two teeth at the conclusion of a step. This locks the ratchet in the step-completed position. Switching during an interval is accomplished by means of cams associated with the stepping cam and actuating subinterval switches. This enables the performance of various functions during an interval of the timer. This type of timer is generally referred to as a power timer.





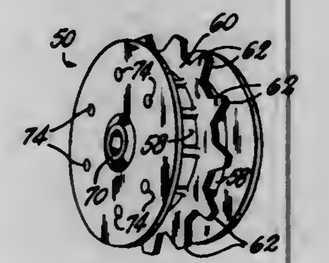
3,650,158
FEED RETURN WHEEL FOR ANIMAL FEEDERS

Robert L. Van Huis, Zeeland, Mich., assignor to U.S. Industries, Inc., New York, N.Y.

Filed May 28, 1970, Ser. No. 41,254

Int. Cl. F16h *55/30, 55/00*

U.S. Cl. 74—243 C **18 Claims**



A feed return wheel having a feed compacting surface, a chain-engaging sprocket, the sprocket being formed integrally with the surface and the surface being provided with spaced raised protrusions for positively engaging returned feed to cause the latter to mix with fresh feed.

3,650,159
COMPOUND HYDROSTATIC TRANSMISSION

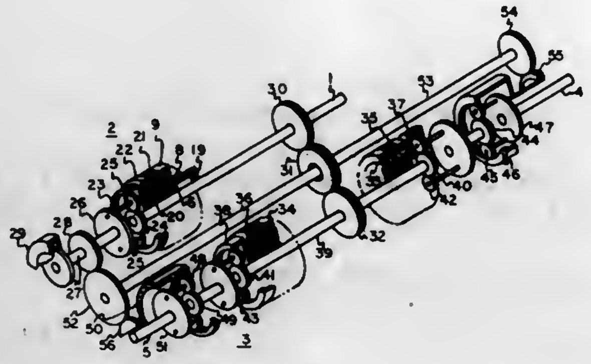
Sanford C. Cockrell, Wyoming, Ohio, and Robert J. Dorgan, Elnora, N.Y., assignors to General Electric Company

Filed Sept. 25, 1970, Ser. No. 75,554

Int. Cl. F16h *37/06, 5/42;* **B60k** *21/00*

U.S. Cl. 74—720.5 **15 Claims**

A compound hydrostatic transmission wherein a speed increaser transmission is added to a steering transmission, the steering transmission including end planetaries whose sun gears are driven by one source from the speed increaser transmission and whose ring gears are capable of being braked or being driven by another source from the speed increaser transmission in producing low speeds with heavy torque and high speeds with lower torques, respectively, the steering transmission, in between the end planetaries, having infinitely variable hydrostatic means and being capable of driving the end planetaries at the same speeds or at different speeds in a steering operation departing from the straightaway.



3,650,160
DRIVING CONNECTION CONTROL SYSTEM

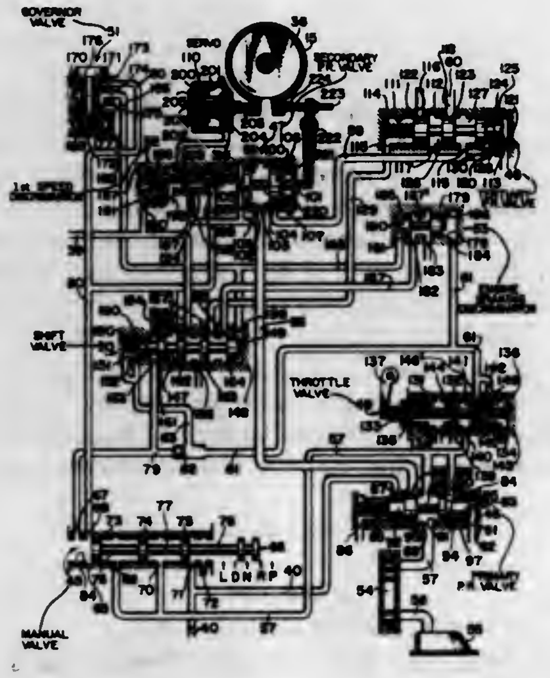
Toshio Higuchi, Suita-shi; Hideyuki Miyabe, and Takeo Hiramatsu, both of Kyoto-shi, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Minato-ku, Tokyo, Japan

Filed Sept. 25, 1969, Ser. No. 860,864

Claims priority, application Japan, Sept. 28, 1968, 43/69971

Int. Cl. F16h *5/42, 3/74;* **B60k** *21/10*

U.S. Cl. 74—752 **7 Claims**



An automatic transmission comprises a hydraulic torque converter, a clutch unit and a planetary gear unit. The clutch unit is provided with a braking unit. Hydraulic pressure corresponding to the reaction torque of the braking unit is produced and used for engaging the braking unit.

3,650,161
AUTOMATIC SHIFT CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

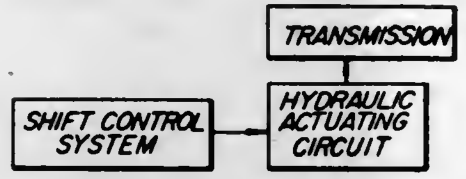
Shin Ito; Seikoku Kubo, and Takakazu Mori, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed June 2, 1970, Ser. No. 42,753

Claims priority, application Japan, Oct. 18, 1969, 44/83411

Int. Cl. B60k *21/00;* **F16h** *5/06, 5/42*

U.S. Cl. 74—866 **9 Claims**



An automatic shift control system for a fluid controlled automatic transmission for a vehicle including a manual valve having a first position for establishing a relatively high forward drive ratio and a second position for establishing a relatively low forward drive ratio, a shift valve for controlling a plurality of fluid passages leading to brake bands and clutches from the manual valve to control the operation of the brake bands and clutches, and a solenoid for controlling the operation of the shift valve so that, in the first position of the manual valve, a low and a high forward drive ratio are obtained respectively, depending on the energization and de-energization of the solenoid, while in the second position of the manual valve, a low and a high forward drive ratio are obtained respectively which is dependent on the de-energization and energization of the solenoid.

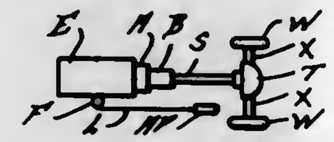
3,650,162
HYDRODYNAMIC TRANSMISSION

Maurice B. Leising, Clawson, and Howard L. Benford, Troy, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 22, 1969, Ser. No. 887,019

Int. Cl. B60k *21/00;* **F16d** *51/06;* **F01b** *7/20*

U.S. Cl. 74—867 **7 Claims**



Automatic power transmission having gearing adapted to be connected in different modes to produce different driving ratios. A hydraulic control circuit is provided with a kickdown servo unit having two pistons. The circuit also includes a control valve for 1-2 shifting of the transmission.

3,650,163
PUNCHES

Christopher Paul Juffs, Toton, England, assignor to I Holland Limited, Long Eaton, Nottingham, England

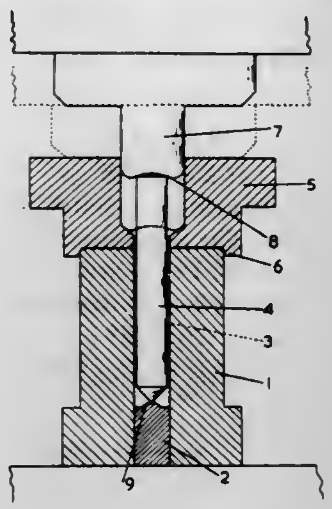
Filed June 8, 1970, Ser. No. 44,028

Claims priority, application Great Britain, June 7, 1969, 28,918/69

Int. Cl. B21k *5/20*

U.S. Cl. 76—107 R **9 Claims**

The tool steel bar which is to form the punch is placed within the oversized cavity of the hollow die and is thereafter deformed under the action of the shaped die slide member. The cavity is provided with a plug having a formed upper surface so as to impart a predetermined configuration to the head of the punch, for example, for impressing a signature or other identification into subsequently formed tablets.



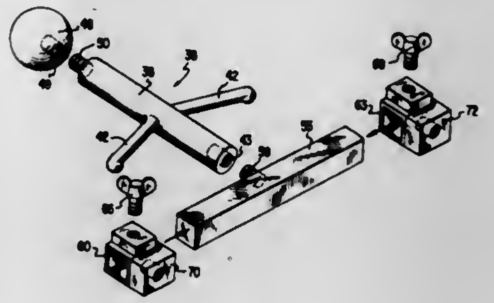
3,650,164
PACKING REMOVAL

George M. McInvale, 164 Little John Drive, Pascagoula, Miss.

Filed Oct. 30, 1967, Ser. No. 678,868

Int. Cl. B25b *27/14*

U.S. Cl. 81—8.1 **2 Claims**



Prying packing rings out of a cavity by sequential use of an array of claw tools having a carrot shape and differently-curved tips.

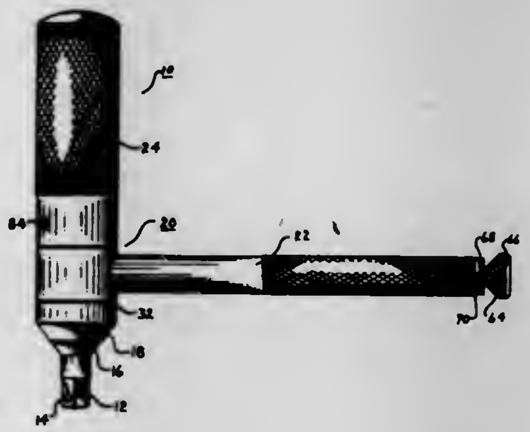
3,650,165
RATCHET TOOL

Paul W. Wolfe, R.R. #1, North Webster, Ind.

Filed Nov. 21, 1969, Ser. No. 878,661

Int. Cl. B25b *13/46, 13/00*

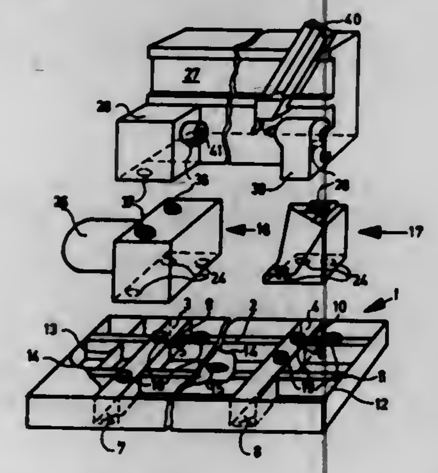
U.S. Cl. 81—63.2 **4 Claims**



A ratchet tool having a radial handle operatable in either direction and adapted to be placed in a neutral position, and an axial handle which can rotate in either direction when the radial handle is in its neutral position and in the effective direction of the radial handle when the latter handle is in operating engagement with the ratchet mechanism. The radial handle contains a longitudinal shaft and a knob at the end thereof for controlling the ratchet mechanism.

3,650,166
LATHES

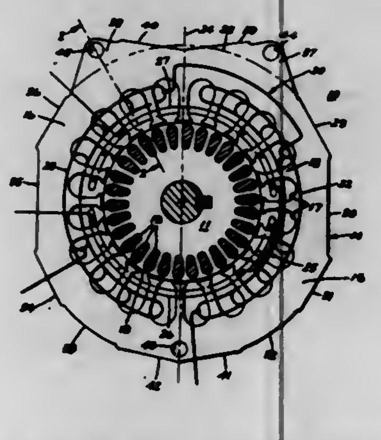
Ernest Jakal Schmid, Marin, Neuchatel, Switzerland, assignor to Edouard Dubied & Cie S.A., Neuchatel, Switzerland
Filed May 18, 1970, Ser. No. 38,051
Claims priority, application Switzerland, May 20, 1969, 7650/69
Int. Cl. B23b *17/00*
U.S. Cl. 82—32 **8 Claims**



The bed head stock and tail stock of a lathe are supported on a support assembly. The support assembly includes a frame on which are adjustably mounted two pedestals. The bed head stock and tail stock are supported by the pedestals at three spaced-apart position. At one position the bed and head stock are rigidly connected to a pedestal, at a second position the bed is freely supported by a pedestal for sliding movement in all directions and at a third position the bed is supported by a pedestal for sliding movement in one direction only, parallel with the longitudinal axis of the lathe.

3,650,167
METHOD OF MANUFACTURING MAGNETIC LAMINATIONS FOR DYNAMOELECTRIC MACHINE

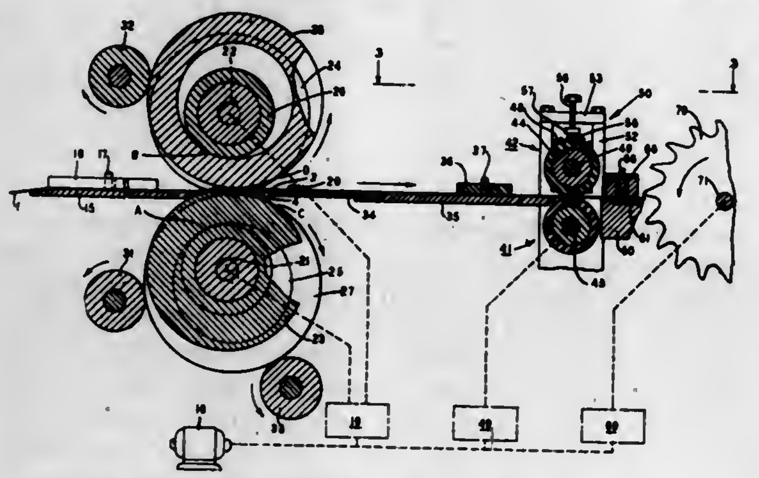
William R. Hoffmeyer, Holland, and Alvin L. Rediger, Zeeland, both of Mich., assignors to General Electric Company
Original application July 9, 1969, Ser. No. 840,188, now Patent No. 3,588,561. Divided and this application July 2, 1970, Ser. No. 52,014
Int. Cl. B26d *3/00*
U.S. Cl. 83—41 **5 Claims**



A method of shaping and forming laminations for a dynamoelectric machine includes severing a number of individual laminations in nested relationship from a single strip of magnetic material. Also disclosed is a dynamoelectric machine stator core of stacked laminations. The core includes a yoke section, a bore inside the yoke section and winding receiving slots extending inwardly from the yoke section. A first mounting opening is formed in the core outside the slots while second and third mounting openings are formed in core material radially outward of the yoke section. The angular distance between the first mounting opening and each of the second and third mounting openings is greater than the angular distance between the second and third mounting openings.

3,650,168
OPERATING UPON STRIPS OF THIN MATERIAL

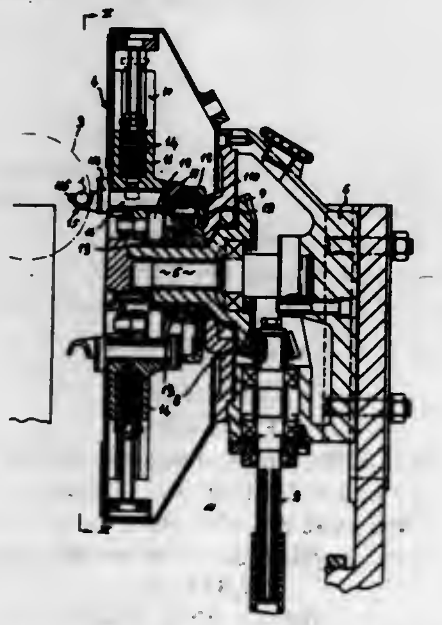
Henry F. Ruschmann, Mine Brook Road, Bernardsville, N.J.
Filed Sept. 8, 1970, Ser. No. 70,220
Int. Cl. B26d *7/06, 9/00*
U.S. Cl. 83—114 **4 Claims**



A rotary slitter, for slitting a strip of thin material into narrower ribbons and establishing the speed of travel of those ribbons, is provided with output-disengaging means of dynamic nature, moved by and with the elements of the slitter, enabling the minimization of tension on the exiting ribbons. A pair of ribbon-engaging rollers, driven at a peripheral speed slightly greater than the speed of travel of the ribbons, receives the ribbons from the slitter in side-by-side relationship and under slight tension. From the rollers the ribbons may optionally pass to an anvil member with which a cutter cooperates to cut the ribbons into discrete small pieces.

3,650,169
CIGARETTE ROD CUTOFF DEVICE

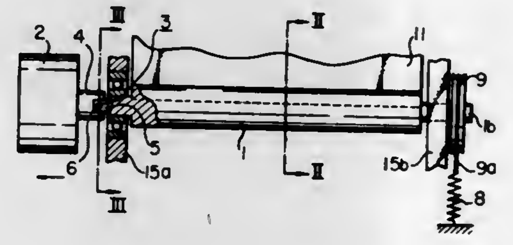
Goffredo Gianese, Bologna, Italy, assignor to AMF Incorporated
Filed Nov. 6, 1969, Ser. No. 874,457
Claims priority, application Italy, Nov. 12, 1968, 7468 A/68
Int. Cl. B26d *1/56*
U.S. Cl. 83—310 **3 Claims**



A cradle-shaped support for a continuous cigarette rod that is to be cut is driven continuously in one direction along a generally circular closed path that is tangential to the rod and at a peripheral speed equal substantially to the speed of the rod to periodically support and guide the rod each time the rod is cut with a blade.

3,650,170
CUTTING DEVICE OF A COPY MACHINE

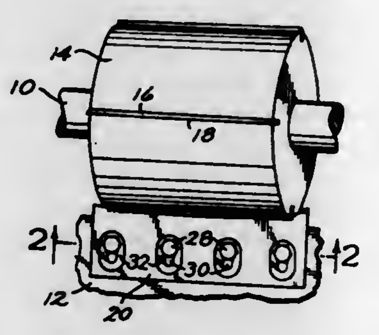
Satoshi Hisabayashi, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Sept. 29, 1970, Ser. No. 76,443
Claims priority, application Japan, Apr. 15, 1970, 45/35712
Int. Cl. B26d *1/56*
U.S. Cl. 83—349 **4 Claims**



An improved cutting device of a copy machine provided with a counter mechanism which eliminates play between drive engagement of elements so that jamming of paper at each time of feeding a fresh piece of paper to the cutting position of the device can be completely eliminated and temperature elevation of drive means can be prevented.

3,650,171
ROTARY CUTTING DEVICE

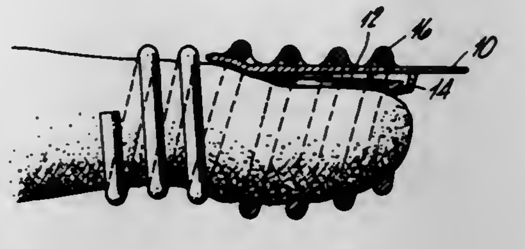
Gaylard O. Reed, Portland, Oreg., assignor to Salem Equipment, Inc., Salem, Oreg.
Filed Dec. 3, 1969, Ser. No. 881,644
Int. Cl. B26d *1/20*
U.S. Cl. 83—355 **2 Claims**



A rotary head mounts a straight cutter blade the working edge of which intercepts the plane of an associated flat anvil to form an acute included angle. The anvil is provided with a longitudinally concave working edge which is contiguous to the working edge of the blade uniformly throughout their cooperative lengths, and preferably with a longitudinally concave and transversely sinusoidal working face, the opposite longitudinal edges of which are reverse images of each other, whereby the anvil is reversible. This anvil construction is provided by traversing the working face with a rotary cutting tool which defines a cutting arc having the same radius as the rotational radius of the blade, with the intercepting planes of the anvil and direction of relative movement of the anvil and cutting tool being arranged to form the aforementioned acute included angle.

3,650,172
GUITAR PICK

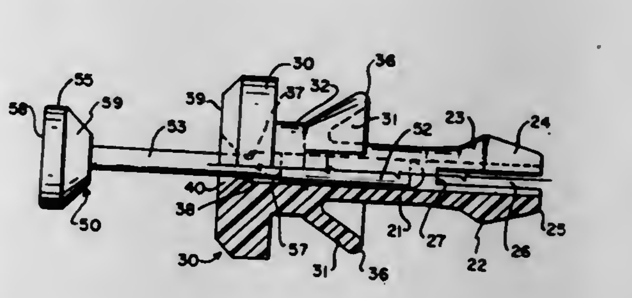
Robert D. Osborne, Saltville, Va., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Jan. 27, 1971, Ser. No. 110,135
Int. Cl. G10d *3/16*
U.S. Cl. 84—322 **4 Claims**



A guitar pick comprising an artificial nail for picking securable by a nail chuck to a natural nail and held in place by a spiral thimble.

3,650,173
POSITIVE LOCKING SNAP-FASTENER

Istvan Mathe, Cicero, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Jan. 2, 1970, Ser. No. 237
Int. Cl. F16b *13/06*
U.S. Cl. 85—81 **7 Claims**

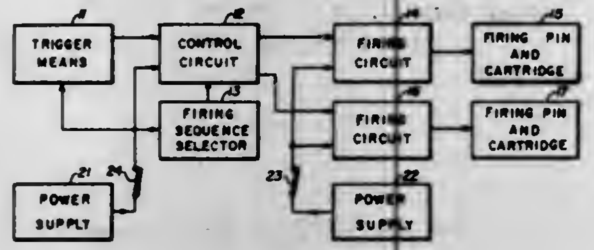


A snap-fastener of two parts, provided by pin and plug members, for retention within apertures of loose tolerance requirements. The pin member includes, at one end, a head with integral conical washer, and at the other end, a boss which has a slot for a closing of the boss together to pass through an aperture. The plug member is received within an axial bore through the pin and is slidable within the slot to spread the boss and an inward taper thereof against an aperture edge. As the boss spreads, the taper rides by the aperture edge to force the pin inwardly against resistance of the washer. Tension, provided by the washer resistance, urges the aperture edge against the taper to clamp the interior of the boss about the plug, which then prevents closing of the slot for a positively locked retention until manual removal of the plug from the slot.

3,650,174
ELECTRONIC IGNITION SYSTEM FOR FIREARMS

Thomas Sloan Nelsen, 616 Foothill Road, Sanford, Calif.
Continuation-in-part of application Ser. No. 820,932, May 1, 1969, now abandoned. This application Jan. 12, 1970, Ser. No. 2,274
Int. Cl. F41c *19/12;* F41f *13/08*
U.S. Cl. 89—28 **11 Claims**

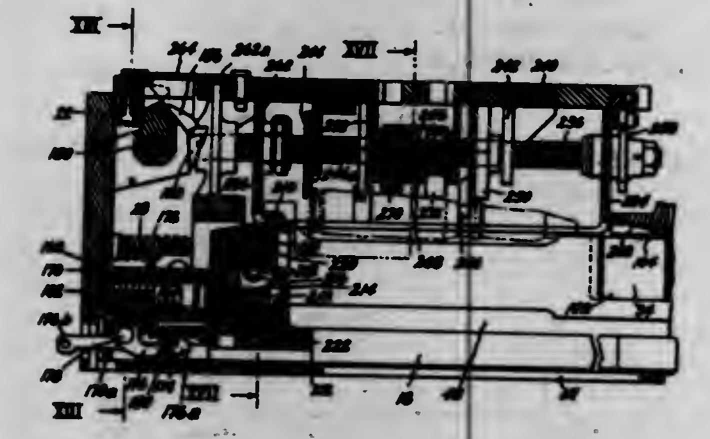
An electronic ignition system for firing electrically primed ammunition in a firearm. The system includes a trigger for converting mechanical movement to electrical signals without the need of electrical contacts, and logic circuitry which permits selective firing of multiple barrels with a single trigger. Various electrical and mechanical safety features, including retractable firing pins, are provided to prevent accidental discharge of the weapon.



3,650,175
ROTARY SPROCKETED FEEDER FOR BELTED AMMUNITION

Richard H. Colby, Hamden, Mass., assignor to General Electric Company

Filed Apr. 7, 1969, Ser. No. 814,085
Int. Cl. F41d *9/02*
U.S. Cl. 89—33 CA **4 Claims**

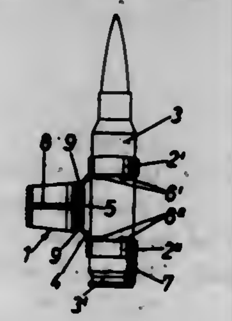


A machine gun is disclosed with a top located, recoil operated, two source feed mechanism with two, alternatively functional, spaced apart sprocket shaft assemblies disposed over an ammunition tray having a central aperture onto which the round to be chambered is delivered during recoil and held in place by springs, so that the round may be displaced vertically by the rammer of the bolt in recoil.

3,650,176
METAL BELT MEMBER FOR ARRANGING IN SERIES OF CARTRIDGES FOR RAPID FIRE ARMS

Gustav Lindner, Iserlohn, Germany, assignor to Firma Heinrich Hulter, Jr., Iserlohn, Germany

Filed Jan. 6, 1969, Ser. No. 789,234
Int. Cl. F42b *39/08*
U.S. Cl. 89—35 A **2 Claims**

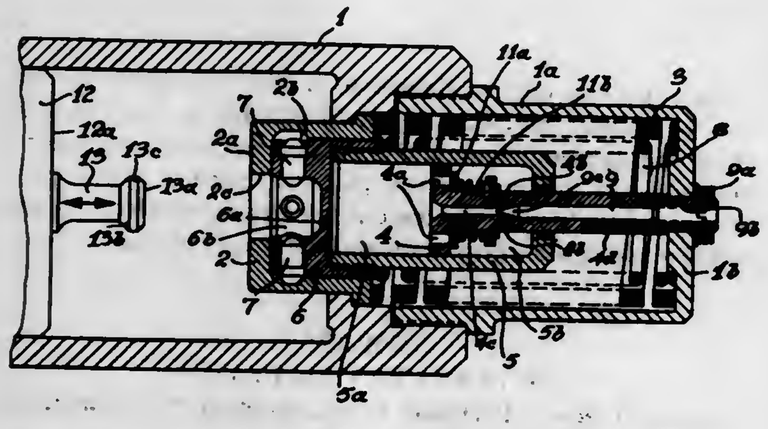


A metal belt member for aligning of cartridges on belts for rapid fire weapons which comprises two resilient loops open towards the same side. One of the loops forms the center zone of the belt surrounding with play one of the cartridges, while the other of the loops formed in a pair clampingly surrounds the next adjacent of the cartridges. The other of the loops has a resilient tongue for entrance into a channelure of the cartridge and includes further angularly bent wings, projecting from the marginal edges of the two loop parts forming the loop in pairs and defining a slot therebetween. A rib extends in longitudinal direction of the cartridge belt and projects towards the inside of the loop out of the face of the loop and assumes the tensile stress of the belt, as well as being reduced towards its free end, all loops having slots oriented cross-wise to the longitudinal direction of the belt and aligned on one side of the belt spaced from and parallel to the longitudinal axis of the belt.

3,650,177
DEVICE FOR CONTROLLING THE FIRING FREQUENCY IN AUTOMATIC FIREARMS

Gerhard Hupp, Oberndorf, Neckar, and Helmut Mader, Rottweil, Neckar, both of Germany, assignors to Mauser-Werke AG, Oberndorf, Neckar, Germany

Filed July 1, 1970, Ser. No. 56,012
Int. Cl. F41d *11/12*
U.S. Cl. 89—130 **4 Claims**



A device for changing the firing frequency of rapidly firing automatic firearms in which a buffer case attached to the housing of the firearm contains a buffer spring urging the head of the buffer case into the housing of the reciprocating breech block. A hydraulic cylinder is surrounded by a recoil spring and the latter is disposed within the buffer spring and has a cylinder head arranged within the buffer head. A number of radially slidable locking pins in the cylinder head is adapted to be locked to an axial locking bolt on the breech block when the latter moves in one direction in which the two mentioned springs are put under higher tension while the buffer head and cylinder are moved with the breech block in the same direction. The piston and piston rod are stationary and the pressure fluid in the hydraulic cylinder is displaced by the moving cylinder through bores in the piston from one side to the other side thereof until an axially slidable seal closes the bores in the piston. The pressure fluid can now return the one side of the piston only through radial throttling bores in the piston rod which has an axial bore extending through the center of the piston and this causes a delay in the return of the breech block in the other direction.

Preferably, an axially adjustable needle valve in the piston rod controls the discharge ends of the radial bores into the axial bore of the piston rod and permits a predetermined continuous change in the firing frequency of the firearm down to a very low number of shots per minute.

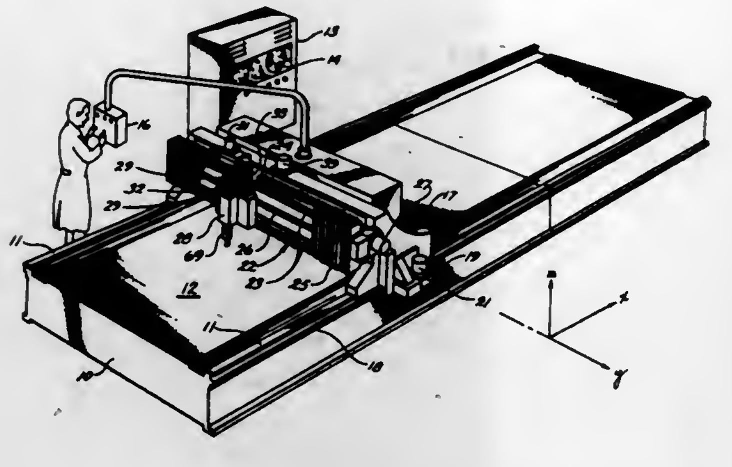
3,650,178
MULTI-PURPOSE MULTI-MOTION MACHINE TOOL

Joe S. Appleton, 1865 West 120th, Los Angeles, Calif.

Filed Jan. 8, 1970, Ser. No. 1,465
Int. Cl. B23c *1/06*
U.S. Cl. 90—15 **15 Claims**

A gantry type of milling machine capable of traversing in x, y and z directions over a large work table or bed and tilting about the x and y axes is described. The y direction tilt is

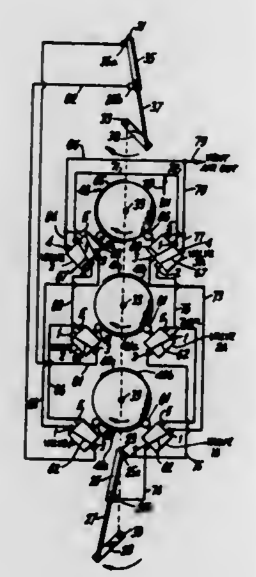
provided by pivoting a crossbeam extending across the gantry by means of a worm and sector. The crossbeam is supported at its ends by thrust bearings so as to be in tension for minimized weight. A saddle mounted on the crossbeam supports a tool holder pivotable about the x direction which may be employed for conventional milling tools, grinding tools, or the like or for a special tape laying apparatus for laying boron filament tapes or the like on the machine bed, or a workpiece thereon. The tool is indexable and may be pivotable in the z direction.



3,650,179
COMPRESSED GAS OPERATED ENGINE

Joseph D. Stenger, 458 Eighth St., Brooklyn, N.Y.

Filed May 28, 1970, Ser. No. 41,418
Int. Cl. F01b *15/04*
U.S. Cl. 91—176 **6 Claims**

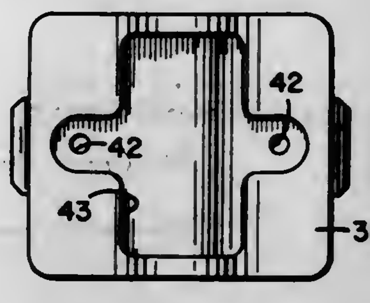


This engine is operated by compressed gas and comprises two cylinders with pistons therein, on piston rods that are pivoted to cranks fixed to a control shaft. This shaft carries a gear meshing with direction reversible gearing. The shaft also carries cams for operating valves that connect opposite ends of the cylinders to compressed gas supply and to vent. Means is provided to block off the compressed gas supply and vent to both ends of each cylinder and to interconnect both ends of each cylinder, to permit one cylinder to be under power while the piston in the other cylinder idles and is dragged by the piston in the powered cylinder. Both cylinders are never devoid of power at the same time.

3,650,180
COMPOUND HYDROSTATIC BEARING FOR ROTARY RADIAL PISTON HYDRAULIC MACHINES

Gottfried K. Gantschnigg, and Richard F. Wameling, both of Annapolis, Md., assignors to Arinc Research Corporation, Annapolis, Md.

Filed Sept. 30, 1969, Ser. No. 862,293
Int. Cl. F01b *13/06*
U.S. Cl. 91—488 **4 Claims**

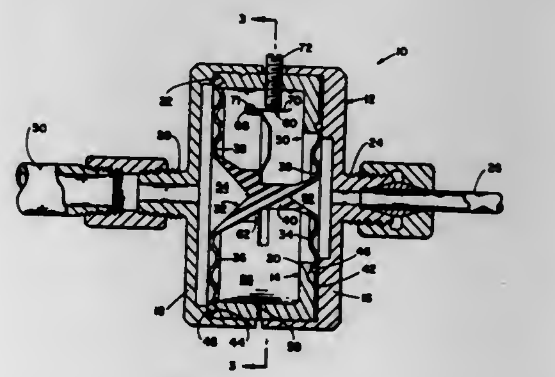


A compound hydrostatic bearing for use in radial piston machines, such as hydraulic motors, pumps, transmissions and the like which operate at high speeds and under high fluid pressures comprising a bearing race which reacts the radial piston forces and rotates free with the cylinder block on a pressurized fluid film in the stationary housing. Swivel mounted pads, at the top of the pistons, transmit the radial forces of the pistons in the bearing race and adjust themselves for misalignment due to housing displacement. Friction between the pads and the bearing race provide the force to rotate the race with the cylinder block. Pressurized fluid is supplied through passages in each piston to a recess on top of the associated pad. The size of the recess is equal to the cylinder area, and therefore the force due to the pressure in the recess is a reacting force from the pressure in the cylinder. Pressurized fluid from the pad recess is then supplied through orifices to recesses at the outer side of the multirecess bearing ring providing pressurized lubrication to the bearing surfaces. Spacing of the race orifices and recesses is arranged so that at any displacement of the bearing housing and at any position of the pads, one or two race recesses communicate with a pad recess. The size and location of a recess is selected to react and damp bearing loads with the pressurized lubricating fluid.

3,650,181
CONTROLLER RESPONSIVE TO VARIATION IN PRESSURE IN ONE SOURCE FOR VARYING PRESSURE IN ANOTHER SOURCE

Edward L. Parr, El Cajon, Calif., assignor to Wendell L. Thompson, Burbank, Calif.

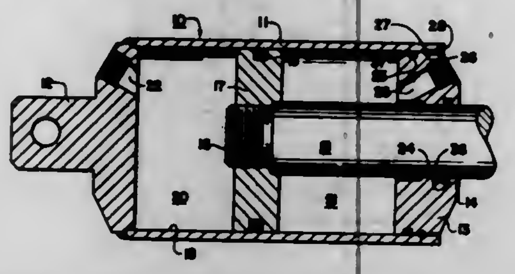
Filed Mar. 27, 1970, Ser. No. 23,195
Int. Cl. F01b *19/00*
U.S. Cl. 92—48 **9 Claims**



A controller having an integral element including two flexible diaphragms forming, with a casing, two separate chambers, one of the diaphragms having a larger pressure-subjected area than the other. One of the chambers is connected to a motivating source of fluid and the other is connected to a motivated source of fluid. A spring is connected to one of the diaphragms and the force of the spring is controlled.

3,650,182
CLOSURE FOR FLUID PRESSURE VESSEL

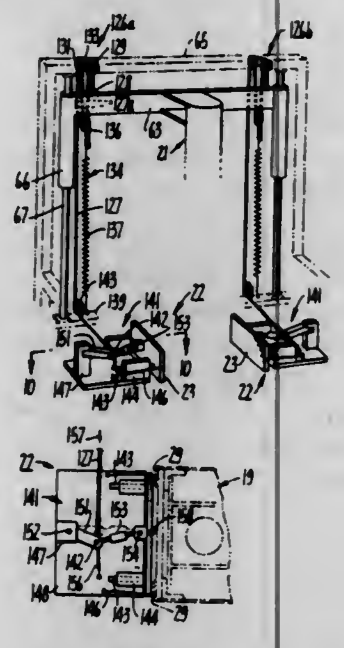
John F. Phillips, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.
Filed Sept. 17, 1969, Ser. No. 858,801
Int. Cl. F01b *29/00;* **F16j** *13/14*
U.S. Cl. 92—128 **12 Claims**



A mechanical joint for securing the head or bearing end of a linear hydraulic cylinder to the barrel. A fastening member axially secures the end member to the barrel and forms an interference fit therewith to cause slight radial deflection of the barrel or end member, which then acts as a spring to radially load the barrel and end member together. A tapered surface is included on the end member to facilitate assembly and disassembly of the fastening member.

3,650,183
CARTON FORMING MACHINE

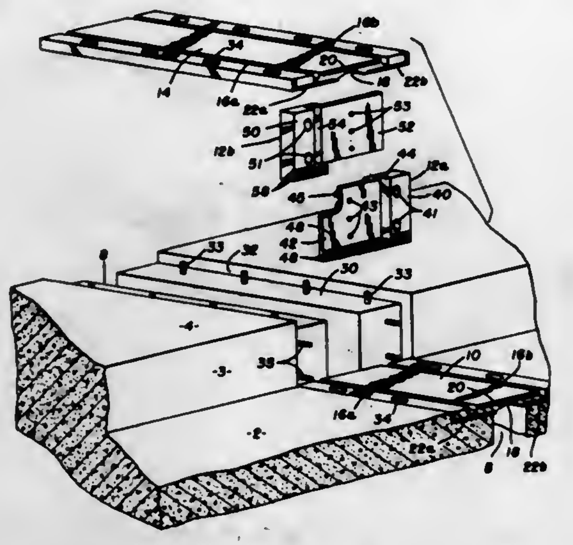
Charles D. Striplin, Box 515, Benica, Calif.
Filed June 24, 1970, Ser. No. 49,293
Int. Cl. B31b *1/54, 1/62, 7/02*
U.S. Cl. 93—36.3 **3 Claims**



A machine for forming a carton by folding a carbon blank around a pair of end panels and compressing the side tabs of the blank against the end panels wherein the feeding and folding functions are performed by cables driven by the ram.

3,650,184
CURB EXPANSION JOINT

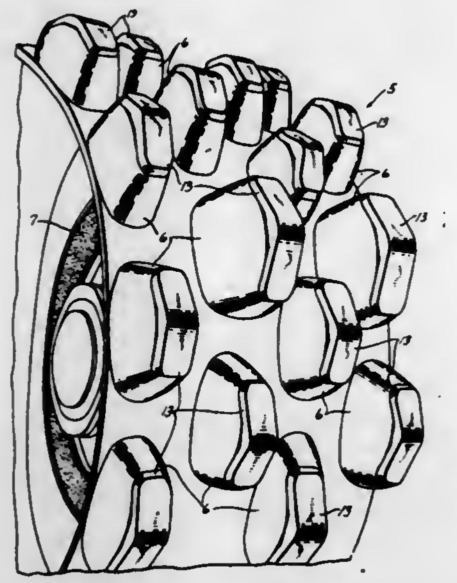
Ernest L. Kolm, 419 West Cambridge, Alliance, Ohio; Roger P. Schwartz, 346 Mark Drive, Tallmadge, Ohio, and John A. Welch, 197 Chart Road, Cuyahoga Falls, Ohio
Filed Aug. 18, 1970, Ser. No. 64,712
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 **13 Claims**



A curb expansion joint is used in combination with a shear-type elastomeric expansion joint to seal the expansion slot extending across a bridge or similar structure. The expansion slot allows for relative movement of the various components of the bridge caused by thermal expansion and contraction. The curb expansion joint is typically fabricated in two sections. Each section comprises a first portion which is fastened to the curb by studs or the like, and a second portion comprising a wing extending laterally outwardly from the first portion in overlapping engagement with the wing portion of the other section. The two sections are bolted or otherwise secured together, and when assembled, contain vertical expansion grooves which permit the assembled joint to expand and contract jointly with the bridge deck expansion joint. A suitable cement can be used to form a waterproof seal between the bridge expansion joint and the curb expansion joint.

3,650,185
FOOT FOR COMPACTING ROLLER

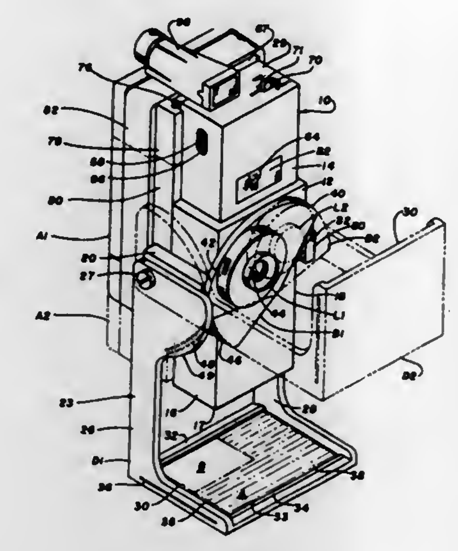
Harry H. Takata, Golden Valley, Minn., assignor to Raygo, Inc., Minneapolis, Minn.
Filed Aug. 12, 1970, Ser. No. 63,075
Int. Cl. F01c *19/23*
U.S. Cl. 94—50 PR **12 Claims**



An earth compacting roller having toothlike feet projecting from its cylindrical surface, the feet being arranged in circumferentially and axially spaced staggered relationship and the feet having an elliptical cross section with the major axis of the ellipse normal to the roller axis and the surfaces of the feet so shaped that the leading and trailing edge surfaces of at least the base portions of the feet are defined by curved lines that are substantially involutes generated from a base circle the radius of which is no larger than that of the cylindrical surface of the roller.

3,650,186
CAMERA PROVIDING EXPOSURES OF MULTIPLE AREAS OF A PHOTOGRAPHIC MEDIUM

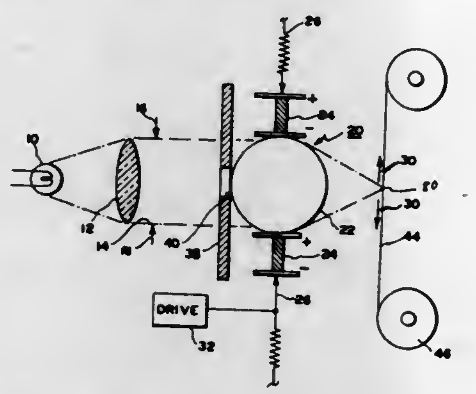
Lionel L. Steick, Motley, Minn., assignor to Multi-Photo Camera Corporation, Eden Prairie, Minn.
Filed Aug. 3, 1970, Ser. No. 60,362
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 **10 Claims**



A camera assembly for making a composite photograph of different images positioned at different predetermined areas of a light sensitive medium comprising a camera body having a lens carrier rotatably disposed on its front wall; a vertically movable film holder at the rear of the camera body and a data card holder rotatably mounted at the sides of the camera body and coupled to the lens so that when the card holder is raised the lens shifts laterally. The film holder is adapted to be shifted vertically to a different position for producing another composite photograph. A lamp for illuminating the object being photographed is inside the camera body. The level of illumination is automatically varied upon operation of a switch by the lens carrier when it is rotated. Another switch is provided for switching between external and internal power supplies for the lamp.

3,650,187
PHOTO-OPTICAL OSCILLOGRAPH AND HIGH FREQUENCY SOUND RECORDER

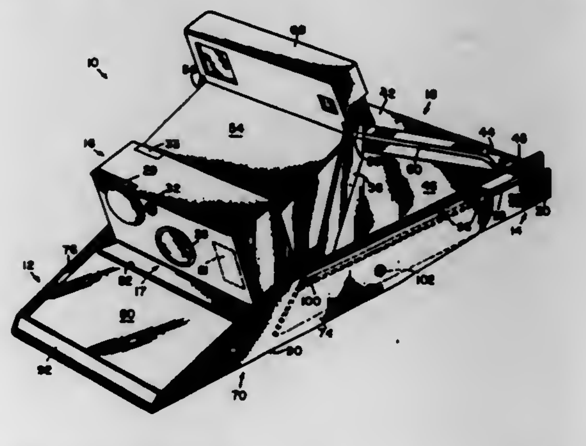
Herbert Judin, Dix Hills, N.Y., assignor to Areoptix Technology Corporation, Plainview, N.Y.
Continuation-in-part of application Ser. No. 727,384, Feb. 26, 1968, which is a continuation-in-part of Ser. No. 41,763, June 3, 1970, which is a Division of Ser. No. 419,512, Dec. 18, 1964, now Pat. No. 3,379,832
Int. Cl. B41b *19/00*
U.S. Cl. 95—4.5 **19 Claims**



An oscillating ball that is piezo-electrically driven, or by other electrical means or by acoustical control caused to oscillate upon application of impulses so that by using the rotatable or oscillating member electrical treatment of optical energy is achieved, the oscillation being sufficiently rapid to achieve undulation for recording audio signals, called "optical sound," upon a recorder such as a film strip or the like. When a laser beam input is employed directly on the oscillating ball, a new printing mode is at hand. The vibrating ball is a small miniature spherical lens system forming the microprojection system, such as the balls that are disclosed in Judin U.S. Pat. No. 3,379,832 and other Judin patent applications.

3,650,188
DETACHABLE FILM CHAMBER FOR PHOTOGRAPHIC APPARATUS

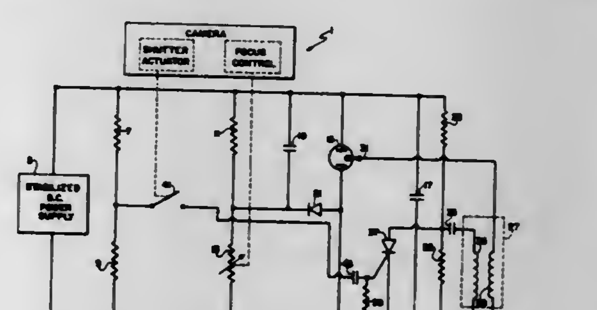
James M. Whall, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 803,629, Mar. 3, 1969, now abandoned. This application June 26, 1970, Ser. No. 50,240
Int. Cl. G03b *19/10, 17/52*
U.S. Cl. 95—11 R **17 Claims**



A camera of the self-developing type including an enclosure or chamber coupled to the camera for movement between a compact, inoperative position wherein at least a portion of the chamber is located against a wall of the camera and an extended, operative position in which it forms an extension of the camera and is adapted to receive an exposed film unit as it exits from the camera. The camera includes a pair of rolls for advancing an exposed film unit into the chamber. A switch is located between a source of power and the rolls and is adapted to be closed by movement of the chamber into the extended, operative position thereby insuring that the chamber is in position to receive the exposed film unit prior to the exposed film unit being moved out of the camera.

3,650,189
LOW ENERGY LEVEL ELECTRONIC FLASH MODULATOR

Conrad H. Biber, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Nov. 28, 1969, Ser. No. 880,795
Int. Cl. G03b *9/70*
U.S. Cl. 95—11.5 R **10 Claims**



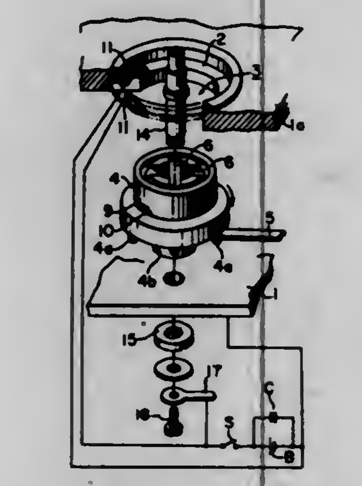
A device is provided for modulating actinic radiation emanating from a gas discharge lamp in response to the focus setting of a camera.

Plural energy storage sources are provided with one such source having relatively low storage capacity and storing energy of sufficiently high potential to fire the lamp in response to a trigger signal.

Another source, having a relatively high capacity for storing energy of a potential sufficient to maintain a discharge from said lamp, but insufficient for initiating such discharge with an acceptable frequency of success, is provided.

3,650,190
CAMERA HAVING BUILT-IN SOCKET FOR FLASHCUBES OR OTHER FLASH APPARATUS

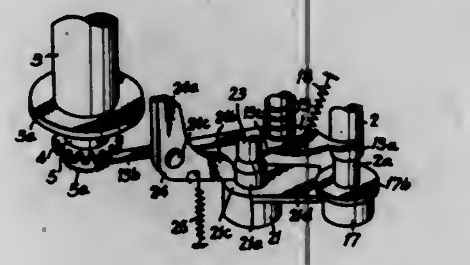
Fumihiro Miyagawa, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed June 18, 1969, Ser. No. 834,393
Claims priority, application Japan, June 20, 1968, 43/52035
Int. Cl. G03b *19/00*
U.S. Cl. 95—11 R **4 Claims**



A camera having a built-in flash synchronization socket for flashcubes in which a post disposed at the center of said socket for guiding the insertion of the flashcubes into the socket comprises two electrically insulated outer and inner tubes so that a connector of a flash cord or cable of an ordinary type flashbulb holder may be electrically connected to said two tubes which in turn are electrically connected to a flash synchronization switch operable in response to the shutter operation. Not only the flashcubes but also ordinary large-sized flashbulbs may be used.

3,650,191
CAMERA FOR MAKING MULTIPLE EXPOSURES

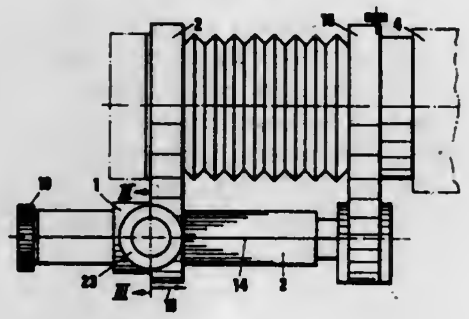
Katsuhiko Nomura, Kawagoe; Keichiro Watanabe, and Fumio Urano, both of Tokyo-to, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Jan. 20, 1971, Ser. No. 107,885
Claims priority, application Japan, Jan. 26, 1970, 45/6266
Int. Cl. G03b *15/00, 17/42*
U.S. Cl. 95—31 R **10 Claims**



A camera capable of making multiple exposures. The camera includes a rotary film spool on which film is wound as well as a film-transporting element for transporting film in the camera. A film advancing mechanism is actuated in order to advance film and cock the shutter, and this latter mechanism frictionally engages the film spool to transmit rotary movement thereto frictionally. The film-transporting structure is capable of being coupled to and uncoupled from the filmeadvancing mechanism, and a restraining member is provided to be displaced from a non-restraining position to a restraining position engaging the spool to prevent the latter from being frictionally rotated by the film-advancing structure. A manually operable structure is accessible to be actuated by the operator for placing the restraining member in its restraining position preventing rotation of the film spool and for simultaneously uncoupling the film-transport structure from the film-advancing drive, so that with the parts in this condition the film-advancing structure can be actuated only to cock the shutter, while the film remains stationary in the position it had during the previous exposure, thus enabling a multiple exposure to be made.

3,650,192
FOLLOW FOCUS BELLOWS FOR PHOTOGRAPHIC CAMERAS

Ferdinand Kellner, 8941 Hart 14 1/4 near Memmingen/Bavaria, Germany
Filed Mar. 17, 1969, Ser. No. 807,808
Claims priority, application Germany, Apr. 6, 1968, P 17 72 163.0
Int. Cl. G03b *3/02*
U.S. Cl. 95—45 **8 Claims**



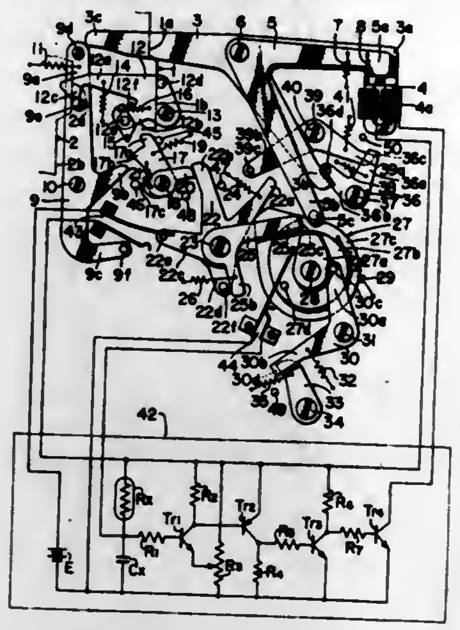
A focusing means for a bellows-type photographic camera, having both coarse and fine adjustment means. An outer guide sleeve is longitudinally movable relative to a stationary central spindle by means of a fine-adjustment screw thread; the forward end of the bellows includes a sliding carriage which may be slidably movable longitudinally relative to the guide sleeve for coarse adjustment, and which may be selectively locked relative to the guide sleeve by a radial set-screw to thereby partake of the fine-adjustment movement of the sleeve.

3,650,193
BULB AND TIME EXPOSURE CONTROL DEVICE FOR PHOTOGRAPHIC CAMERA

Munetaka Shimizu, Tokyo-to, Japan, assignor to Kabushiki Kaisha Kopara
Filed Dec. 8, 1969, Ser. No. 882,936
Claims priority, application Japan, Dec. 23, 1968, 43/94379
Int. Cl. G03b *7/08*
U.S. Cl. 95—53 EB **8 Claims**

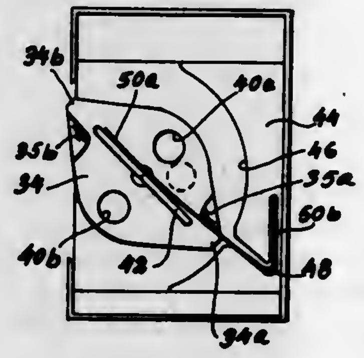
An electronically controlled camera shutter of the type in which exposure time is automatically controlled by an electronic circuit, in which the power switch of said circuit is controlled so as not to close when the shutter is set to

operate for either bulb exposure or time exposure, whereby bulb and time exposures are performed by only mechanical elements of the shutter, by passing the electronic circuit, whereby use of the power source battery can be minimized.



3,650,194
DISPOSABLE CAMERA

Penick Ib, New York, N.Y., assignor to Simpro Corporation of America, County of Bergen, N.J.
Filed Apr. 16, 1969, Ser. No. 816,499
Int. Cl. G03b *9/20*
U.S. Cl. 95—61 **7 Claims**

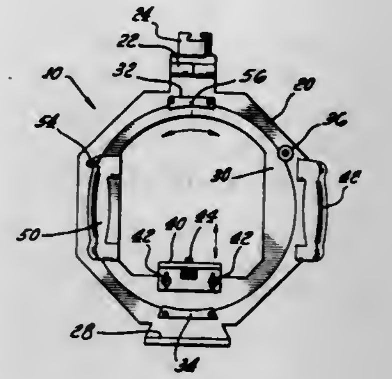


A camera comprising the combination of a box camera which is open on one side, and a self-contained film cartridge which is detachably secured to the camera to close its open side and thereby form a light tight enclosure. The camera has a photographic lens to expose the film in said cartridge, and a spring-urged apertured diaphragm shutter which is rotatably mounted between the lens and the cartridge. The camera is of simple, inexpensive construction and may be discarded following use with only a single cartridge, or it may be repeatedly used with other cartridges.

3,650,195
FLASH ADAPTER FOR PRESS CAMERA

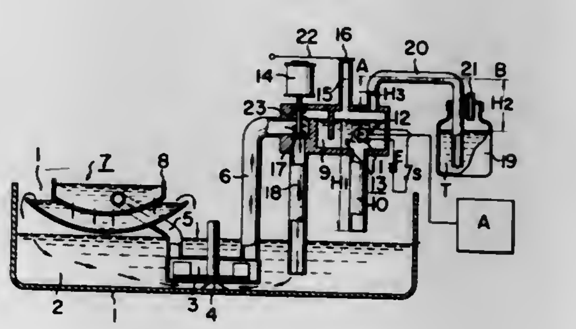
Richard B. Jones, 2932 Belle St., San Bernardino, Calif.
Filed Apr. 25, 1967, Ser. No. 633,527
Int. Cl. G03b *17/56*
U.S. Cl. 95—86 **3 Claims**

Light cast metal outer and inner rings, the opening in the latter being about 8 inches in diameter, said inner ring journaling in said outer ring, for ready coaxial rotation therein. Two vertical horizontally diametrically opposed handles are provided, each being fixed to one of said rings, said handles being simultaneously gripped by the right and left hands in supporting the adapter and rotating said inner ring in said outer ring. Said inner ring supports a camera in its opening. The top of said outer ring rockably supports a flasher unit pivoted thereon on a transverse axis. A cable shutter release is thumb actuatable by a hand gripping one of said handles. A device locking said inner ring against rotation, and while variously rotationally positioned, relative to said outer ring is located for thumb actuation by the other hand while gripping the other handle. A platform adjustably mounted on said inner ring at the bottom of said opening provides a rigid support for a camera variously positioned in said opening.



3,650,196
DEVICE FOR AUTOMATICALLY REGULATING THE CONCENTRATION OF DEVELOPING SOLUTION

Kazuya Hosoe, and Yoshimasa Kimura, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 23, 1969, Ser. No. 868,791
Claims priority, application Japan, Nov. 5, 1968, 43/80779
Int. Cl. G03d *3/00*
U.S. Cl. 95—89 R **8 Claims**



A device for automatically regulating the concentration of a developing solution, consisting of toner dispersed in a carrier solution, maintains developing solution having a predetermined concentration in a wet type developing device. The concentration of the solution is photoelectrically detected, and, when the concentration decreases to less than the predetermined valve concentrated toner from a container is supplied by negative pressure generated by the falling of developing solution then remaining in a concentration regulating device into a developing solution reservoir under the action of gravity. Such concentration adjustment occurs in response to the interruption of the circulation of the solution and disconnection of the concentration regulating device from the surrounding atmosphere.

3,650,197

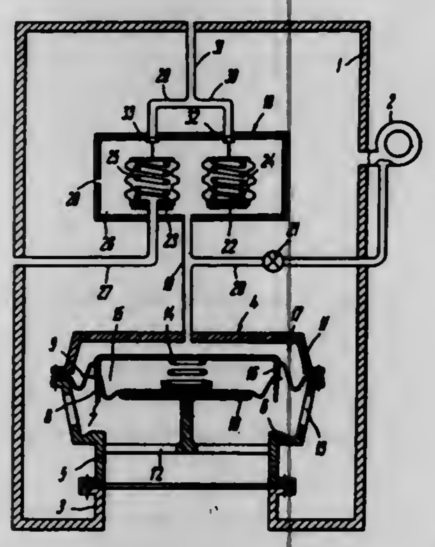
APPARATUS FOR CONTROLLING AIR PRESSURE INSIDE THE CABIN OF AN AIRCRAFT

Grigory Ivanovich Voronin, Ploschad Vosstania, 1, kv. 447; Mikhail Ivanovich Vzorov, 1 ulitsa Yamskogo polya, 24, kv. 34; Ilya Lvovich Karasik, ulitsa Festivalnaya, 14, korpus 2, kv. 318; Jury Dmitrievich Lyagushkin, ulitsa Lavochkina, 48, korpus 2, kv. 496; Leonid Yakovlevich Perepletchikov, ulitsa Dm. Ulyanova, 9/11, korpus 2, kv. 42; Nina Dmitrievna Khokhlova, Prospekt Mira, 45, kv. 12, and Jury Mikhailovich Petrov, ulitsa B. Cherkizovskaya, Kvartal 8/11, korpus 20, kv. 44, all of Moscow, U.S.S.R.

Filed Sept. 16, 1969, Ser. No. 858,435

Int. Cl. B64d *13/00*

U.S. Cl. 98—1.5 **1 Claim**



An apparatus for controlling air pressure inside the cabin of an aircraft, the cabin being provided with a means for supplying pressurized air thereinto and an air-operated valve, installed in the path of communication of the cabin with the atmosphere and controlled by a governor, the valve being so adapted to open in case there is no control signal and to close under the action of this signal.

3,650,198

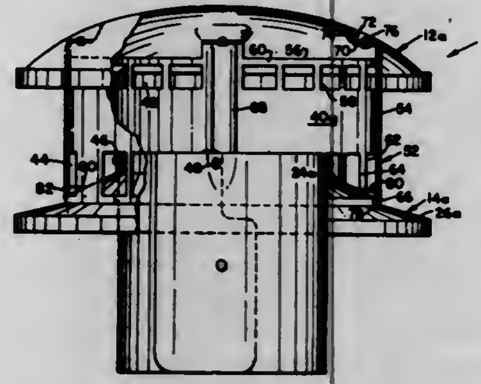
DOME TYPE VENT TOP

Richard L. Stone, Los Altos Hills, Calif., assignor to Wallace-Murray Corporation, New York, N.Y.

Filed June 4, 1969, Ser. No. 830,268

Int. Cl. F23l *17/02*

U.S. Cl. 98—84 **3 Claims**



A dome type top or terminal device for vent or flue pipes comprising a dome-shaped sheet metal top member vertically spaced from and connected by supporting legs with a skirt having substantially the same diameter. An intermediate air flow divider member is fixed to the supporting legs and provides upper and lower cylindrical discharge openings which can be optimized for maximum air flow efficiency.

3,650,199

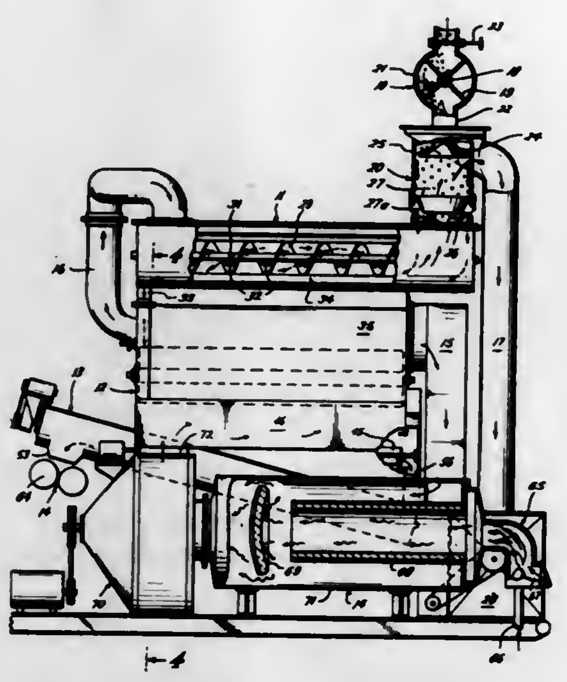
MATERIAL TREATING APPARATUS

Norman H. Sachnik, San Angelo, Tex., assignor to Range Engineering Development Corp., San Angelo, Tex.

Filed Jan. 13, 1969, Ser. No. 790,577

Int. Cl. A23l *1/18*

U.S. Cl. 99—235 R **14 Claims**



This patent discloses a method and apparatus for treating material such as grain, manure, alfalfa, lightweight aggregate, etc. Hot air circulates throughout the entire system. Heat is first added where desired to the product in a preheater. Additional heat is then added in a heater section where the material is further heated and material such as grain may be popped if desired. The grain may then be passed through conventional rollers.

3,650,200

APPARATUS FOR FERMENTING BREWER'S WORT

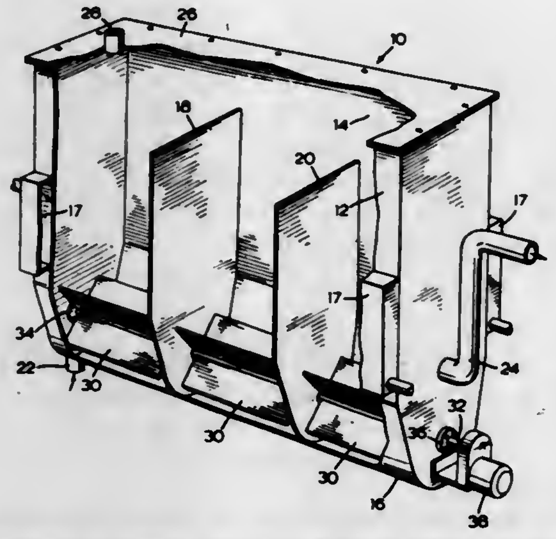
Orland Otto Schaus, Don Mills, Ontario, Canada, assignor to Canadian Breweries Limited, Toronto, Ontario, Canada

Filed Oct. 10, 1969, Ser. No. 865,238

Claims priority, application Canada, Dec. 30, 1968, 038922

Int. Cl. C12h *1/22*

U.S. Cl. 99—277.2 **2 Claims**



This invention relates to the manufacture of alcoholic brewery beverages on a continuous basis and is concerned with a novel fermenting vessel and novel fermentation process involving its use. The fermenting vessel has a series of compartments through which the brewer's wort flows in use. The bottom of the vessel has a rounded bottom in cross-section and a longitudinally extending paddle rotates close to the rounded bottom at a slow rate sufficient only to keep yeast from settling on the bottom during the fermentation process. This limited agitation has been found to be as effective as the rapid agitation from a time point of view and produces end product that is superior in taste to one that is rapidly agitated.

3,650,201

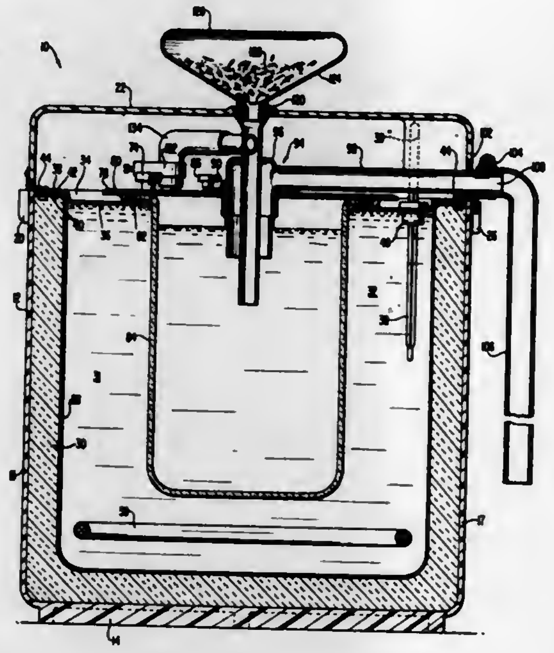
TEA AND COFFEE BREWER

Dragomir M. Jovanovic, 17, Rue St. Michel, Lyon 7, France

Filed Sept. 3, 1969, Ser. No. 854,829

Int. Cl. A47j *31/00*

U.S. Cl. 99—279 **14 Claims**



Disclosed is a brewer for brewing and dispensing coffee, tea, soup or the like. A brewing chamber is surrounded by a reservoir of hot water with the reservoir in fluid communication with a standpipe extending downwardly into the brewing chamber. A metered charge of cold water supplied to the reservoir drives a like amount of hot water from the reservoir into the standpipe where it is mixed with particles of coffee, tea or the like. The pressure head in the standpipe forces beverage mixed with particles out of the brewing chamber and this outflow of beverage is sustained and subsequently cutoff by a siphon effect to deliver a metered amount of beverage.

3,650,202

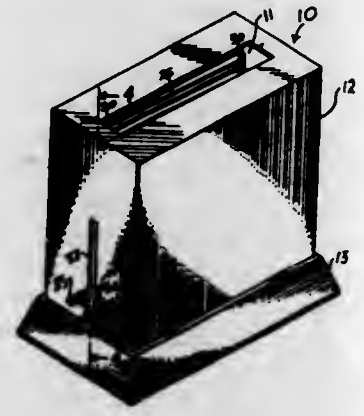
PORTABLE TOASTER

Veldon A. Monson, Box 128, Hammond, Wis.

Filed Aug. 13, 1969, Ser. No. 849,763

Int. Cl. A47j *37/08*

U.S. Cl. 99—391 **3 Claims**



A housing having a generally upwardly directed slot therein for receiving a slice of bread, with rechargeable battery-powered heating elements therein for toasting a slice of bread inserted within said slot.

3,650,203

ARRANGEMENT IN HEAT PRESSES

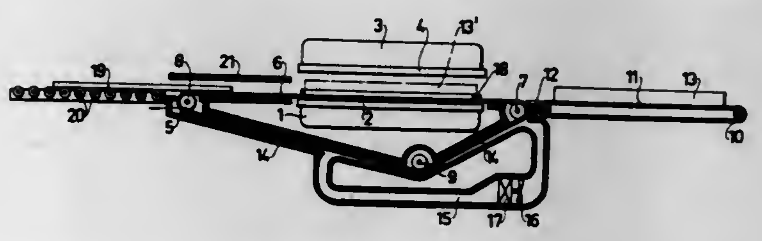
Bengt J. Carlsson, and Mauritz R. G. Sundberg, both of Motala, Sweden, assignors to Aktiebolaget Motala Verkstad, Motala, Sweden

Original application Oct. 9, 1968, Ser. No. 766,175, now Patent No. 3,602,134. Divided and this application Nov. 12, 1970, Ser. No. 88,882

Claims priority, application Sweden, Oct. 19, 1967, 14346/67

Int. Cl. B02c *11/08;* **B30b** *15/34*

U.S. Cl. 100—93 P **7 Claims**



Apparatus for use in heat presses is provided and includes an endless conveyor belt drawn through a press opening between two hot plates. Goods to be pressed are placed on the upper part of the conveyor belt and the section of the conveyor belt receiving goods for immediate movement into the press is heated. Apparatus is provided for heating the conveyor belt and the goods thereon immediately prior to movement of the goods into the press for processing therein.

3,650,204

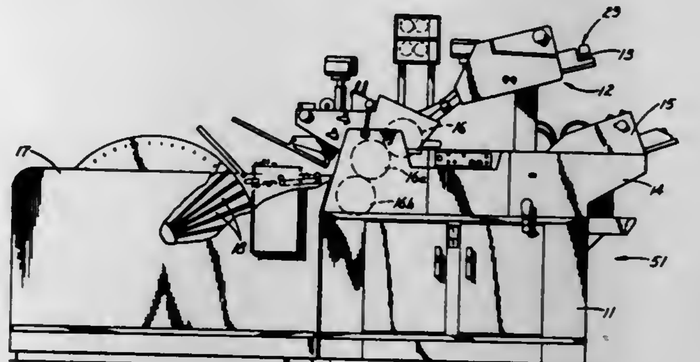
REPROGRAPHY MACHINE CONTROLLED BY INFORMATION ON MASTER

Jack E. Burger, Moreland Hills; Fritz A. Deutsch; Warren B. Howe, and William Kyle, all of Euclid, Ohio, assignors to Addressograph-Multigraph, Cleveland, Ohio

Filed Jan. 22, 1970, Ser. No. 5,035

Int. Cl. B41l *9/00;* **G06k** *17/00*

U.S. Cl. 101—45 **9 Claims**

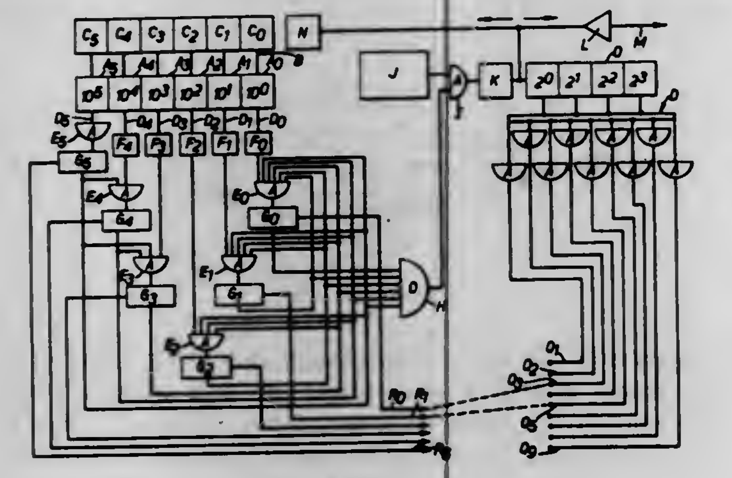


Automatic control of reproduction and sorting of reproduced copies is accomplished in a printing or duplicating machine, a reprography machine, of the type which utilizes masters or originals from which copies are made and which has a hopper, magazine, bunker or chamber for masters, with provision for feeding them in succession to a cylinder associated with inking, duplicating and cleaning mechanisms. Masters are employed which are formed with indicia or coded markings along one or two edges which provide signals for causing a desired number of copies of each successive master to be produced and for sorting the produced copies in a desired manner, for example according to the number of copies to be sent to each of a plurality of different destinations. A scanner is provided for examining the code marks to produce signals, and circuits responsive thereto serve to actuate parts of the duplicating machine. A digital memory device is utilized to store information supplied by the code of one master while reproduction from a previous master is going on.

3,650,205
SERIAL NUMBER PRINTING MACHINES

Patrick S. Wybrow, Truro, and Philip Muzlish, North Harrow, both of England, assignors to said Wybrow, by said Muzlish

Filed Feb. 25, 1970, Ser. No. 13,936
Int. Cl. B41j *3/00;* **G06k** *19/00*
U.S. Cl. 101—72 11 Claims

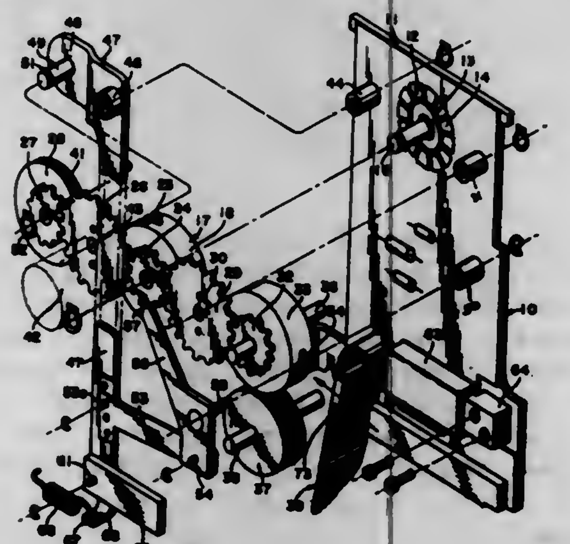


Machine having means for printing serial numbers and means for printing check digits. The check digit printer is controlled by means including counting means having one counting unit for each digit of the serial number to be printed, the advancement of a counting unit transmitting pulses to operate the check digit printer. The means for controlling the check digit printer may be electromechanical or electronic. The counting units may be cold-cathode gas filled decade counters.

3,650,206
PRINT STORAGE UNIT FOR DATA RECORDING SYSTEMS

William A. Seabury, III, Ulster Park, N.Y., assignor to Varifab, Inc., Old Greenwich, Conn.

Filed Feb. 25, 1970, Ser. No. 14,152
Int. Cl. B41j *1/40*
U.S. Cl. 101—93 C 13 Claims

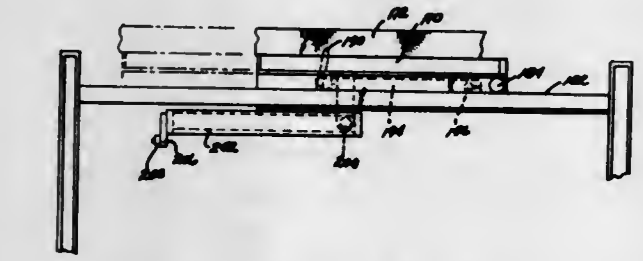


A print storage unit (PSU) for providing a visual read-out and a hard copy print-out of the contents of an electronic memory wherein a solenoid is energized by an operator striking a key on a keyboard. Energization of the solenoid activates an arm which simultaneously causes withdrawal of a detent from a display wheel and engagement of a pick-up wheel with a rotating power roll to enable a drive means to rotate the display wheel and a print wheel, which are in mesh engagement, until an electric signal from the keyboard is compared with a display wheel signal found on a commutator segment, after which the solenoid is deenergized to release the arm to simultaneously disengage the pick-up wheel from the power roll and engage the detent with the display wheel to lock the display wheel and print wheel into a stationary position, the display wheel exhibiting the selected character and the print wheel then being engaged by a platen to record the selected character on a suitable medium.

3,650,207
FLAT BED WEB PRESS INDEX AND REGISTRATION

James A. Black, 13700 Sparta, N.W., Kent City, Mich.

Original application Feb. 23, 1967, Ser. No. 617,885, now Patent No. 3,499,233, dated Mar. 10, 1970. Divided and this application Sept. 24, 1969, Ser. No. 870,720
Int. Cl. B41f *15/04, 15/10*
U.S. Cl. 101—115 2 Claims



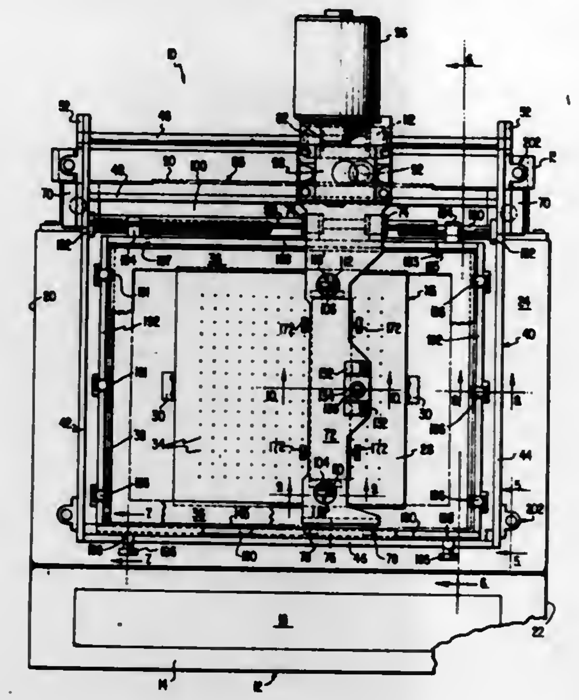
Index and registration means for a continuous web printing apparatus having a web indexing apparatus to create index indicia at predetermined intervals along the web and web index register means at each printing station adapted to cooperate with the index indicia to cause momentary registry of the web with each printing unit for accurate printing. Specifically, the web indexing means punches holes in the web and the web index register means at each printing station includes a shiftable projection reciprocally movable toward the web holes to interengage the holes thereby holding the web in position at each printing station.

3,650,208
SCREEN PRINTING MACHINE WITH SINGLE-SIDED RACK-AND-PINION DRIVE

Daryl Gene Lambert, 1231 West Vista Avenue, Phoenix, Ariz.

Filed Nov. 17, 1969, Ser. No. 877,322
Int. Cl. B41f *15/08*
U.S. Cl. 101—123 12 Claims

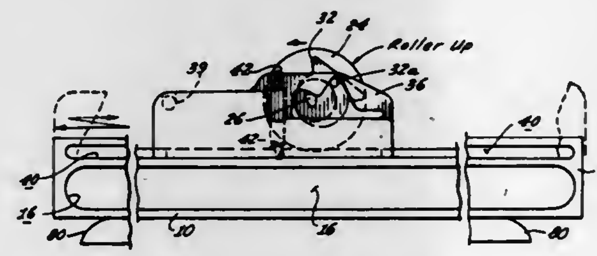
A squeegee holding bar is pivotally coupled to a longitudinally moving squeegee drive bar which extends transversely across an overlying screen, the blank to be printed, and the table supporting the same, and has its pivot axis eccentrically adjustable by separate eccentrics at opposite ends of the squeegee assembly to facilitate complete parallelism between the platen (or blank thereon) and the movable squeegee during machine operation. The transversely extendable movable squeegee drive bar which holds the squeegee assembly is in turn supported at the front and rear by strong, vertically taut bars which are relatively fixed. A longitudinally extending rack is carried on the rear side of the rear squeegee drive support bar, a drive motor is fixed to the drive bar from which extends a spur drive gear in mesh with the rack. On the opposite side of the vertical squeegee support bar, there is a ball bushing assembly whose open face is directed towards the rack to take up the reaction force. The front support bar is F-shaped in configuration to receive within the groove facing the squeegee drive bar, a plurality of roller bearings carried by the squeegee drive bar. The frame assembly which includes the squeegee drive bar may be raised and lowered relative to the table, and, when raised, allows the screen and its support frame to pivot downwardly at one end to facilitate cleaning, removal, and replacement of the screen.



3,650,209
TRAVELING CYLINDER IMPRINTER WITH OVER CENTER PLATEN CYLINDER ACTIVATING MECHANISM

Davies Allport, La Jolla, Calif., assignor to Cubic Corporation, San Diego, Calif.

Filed Nov. 17, 1969, Ser. No. 877,260
Int. Cl. B41f *3/04*
U.S. Cl. 101—269 4 Claims



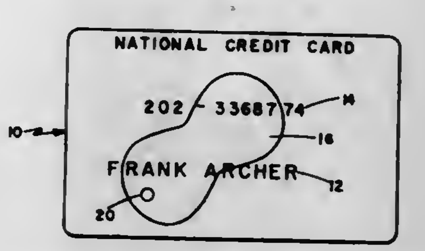
The present invention relates to hand-operated imprinting machines, of the type used in gasoline stations, for example, for completing invoices from credit cards. The imprinter of the present invention is of the type in which a roller is drawn over an invoice, which is placed in the machine over the credit card, and which includes carbon paper, or other means, so that the embossments on the credit card may be printed on the invoice. The imprinter of the present invention includes a simple mechanism whereby the roller is lowered down into an operating position for one direction of movement of the carriage of the imprinter across the base, and which is lifted up out of the plane of the invoice and credit card for the other direction of motion of the carriage.

3,650,210
METHOD OF MAKING THEFT-PROOF CREDIT CARD

Frank Archer, 7826 Prospect Place, La Jolla, Calif.

Filed June 12, 1970, Ser. No. 45,710
Int. Cl. B41l *47/02*
U.S. Cl. 101—369 2 Claims

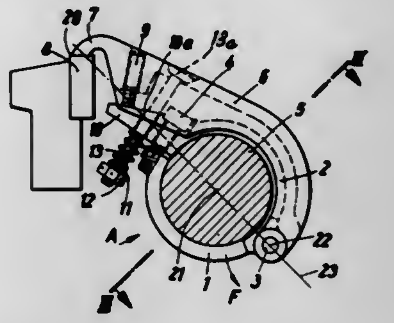
A credit card or similar identification card is constructed in the form now commonly accepted with the added step of making one segment easily separable from the card to be carried separately usually in the pocket or on a key chain and reinserted upon presentation. The segment carries a portion of the owner's name and a portion of the serial number of the card, and the segment is not completely separated from the card as originally submitted to the owner. This feature facilitates production and handling of the card and the owner can use the card without detaching the segment if he is not concerned with achieving the extra protection resulting from carrying the parts separately.



3,650,211
A SHEET GRIPPING DEVICE FOR A ROTARY PRINTING PRESS

Wilhelm Nentwich, Offenbach, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher A. G., Offenbach am Main, Germany

Filed Feb. 16, 1970, Ser. No. 11,688
Claims priority, application Germany, Feb. 19, 1969, P 19 08 181.3
Int. Cl. B41f *21/04*
U.S. Cl. 101—409 7 Claims



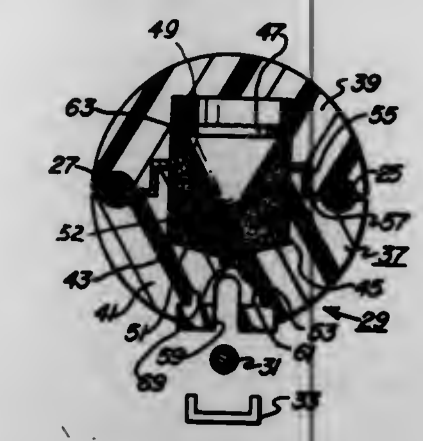
A sheet gripping device for a rotary printing press includes a pivotal gripper finger which is moved into and out of gripping engagement with an abutment surface by reciprocating movements of a gripper shaft on which the gripper finger is supported. The surface area engageable by the gripper finger in its gripping position and the rotational axes of the shaft and the gripper finger are located on a substantially rectilinear line when the gripper finger is in engagement with the abutment surface.

3,650,212
ECONOMICAL, TOUGH, DEBRIS-FREE SHAPED CHARGE DEVICE AND PERFORATING GUN ASSEMBLY EMPLOYING SAME

Clarence Gerald Bauer, Albany, Tex., assignor to Western Dynamics, Inc., Forth Worth, Tex.

Filed May 11, 1970, Ser. No. 36,301
Int. Cl. F42b *3/08*
U.S. Cl. 102—20 17 Claims

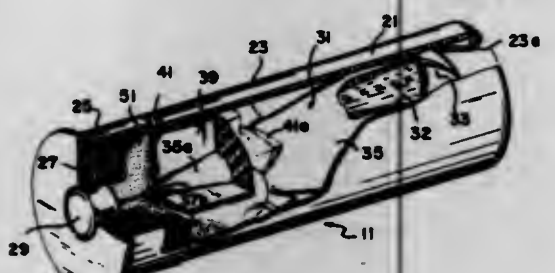
A shaped charge device, and perforating gun assembly employing same, characterized by an economical case made of a thermosetting plastic containing a critical proportion of macerated material to induce a strength and toughness that enables resisting temperature, pressure, and impact deformation and breakage and invasion of fluids under conditions of use to depths in excess of 10,000 feet; yet that will disintegrate into small particles upon detonation, leaving no harmful debris in a well being perforated. Through the use of the plastic containing the critical proportion of macerated material, thicker case walls may be employed yet still obtain



detonation therethrough. The critical thickness of walls adjoining a detonation means, and preferred construction features, plastics, and macerated materials are also disclosed.

3,650,213
FRANGIBLE FILLED-PROJECTILE AMMUNITION

David D. Abbott, and Irwin R. Barr, both of Baltimore, Md., assignors to AAI Corporation, Cockeysville, Md.
Filed June 19, 1969, Ser. No. 835,313
Int. Cl. F42b *5/02*
U.S. Cl. 102—38 **20 Claims**

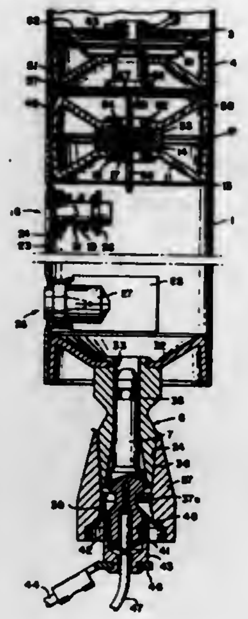


Ammunition is disclosed in which a generally teardrop shaped hollow projectile is formed of frangible plastic or other suitable material, the rear end of the projectile is finned and the forward rounded or ogive shaped end is scored or grooved for ease of rupture on impact, the projectile carries a payload of a desired flowable material such as a liquid, powder, or a gas, and preferably a liquid, for dispersion on impact at target, the projectile is carried in a cartridge case in which ignitable propellant powder is disposed adjacent the rear end of the projectile and adjacent a primer, there being a blanket of soft resilient flexible polyurethane foam surrounding and behind the rear finned area of the projectile and disposed between the fins and the propellant powder to retain the powder in place in a compact zone adjacent the finned rear of the projectile.

3,650,214
TOY ROCKET AND GAS PROPELLANT SYSTEM

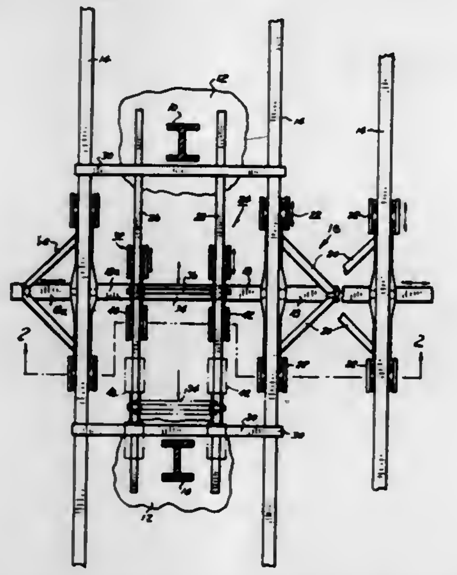
Charles J. Green, Vashon Island, Wash., assignor to Vashon Industries, Inc., Vashon Island, Wash.
Continuation-in-part of application Ser. No. 700,822, Jan. 26, 1968, now abandoned. This application Jan. 21, 1969, Ser. No. 814,484
Int. Cl. F42b *13/00*
U.S. Cl. 102—49.4 **11 Claims**

A model rocket propelled by a non-flammable liquefied gas is disclosed which is capable of realistic performance as well as appearance. The rocket has (1) a novel structural arrangement for separation of the nose portion of the rocket from the rocket body once the gas pressure in the pressure chamber has dropped and thrust is dissipated, (2) a novel valving arrangement for initiating the thrust which may be triggered remotely by means of an electrical current, and (3) a liquefied gas propellant which forms a gas-liquid mixture as it flows through the rocket nozzle, the specific impulse of the gas-liquid mixture being considerably higher than the specific impulse obtainable from the pure liquid.



3,650,215
MOVABLE CROSSTRACK FOR BRIDGE CRANE

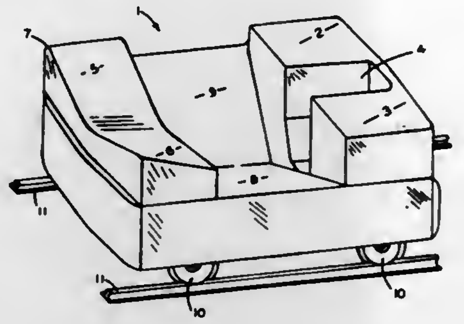
Nicholas H. Werthessen, Fort Lauderdale, Fla., assignor to Behring Corporation, Fort Lauderdale, Fla.
Filed May 18, 1970, Ser. No. 38,250
Int. Cl. E01b *25/22*
U.S. Cl. 104—98 **4 Claims**



A bridge crane installation including at least one bridge crane and preferably two oppositely disposed and independently movable bridge cranes located between adjacent parallel rows of structural columns, and a movable crosstrack disposed on intermediate fixed runways located between the bridge cranes and between two columns in the same row of columns, adapted to be lined up with either or both bridge cranes to transfer a load from one bridge crane to another, or to pick up or deposit a load from or onto the floor space between the two columns not covered by the two bridge cranes. The crosstrack is supported by end trucks having wheels for riding on the intermediate runways and a brake is provided to stop the movable crosstrack at a desired location relative to the position of either or both of the bridge cranes with which the crosstrack is to be aligned. The movement of the crosstrack can be controlled from the floor, either manually by means of pull lines or by power means such as electric, pneumatic or hydraulic means.

3,650,216
RAILWAY CAR SPEED CONTROL TRANSPORTATION SYSTEM

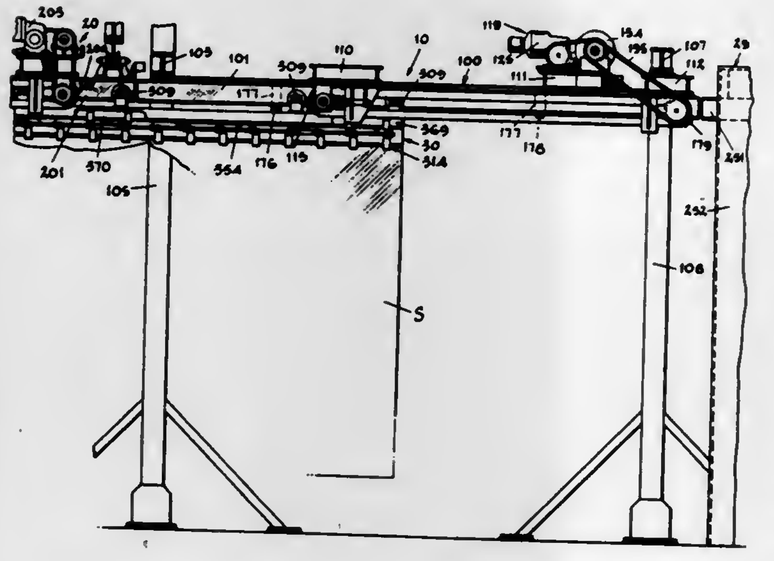
Warren J. Harwick, and Joseph Wesley Broome, both of Milwaukee, Wis., assignors to Rex Chainbelt Inc., Milwaukee, Wis.
Filed Aug. 11, 1969, Ser. No. 849,083
Int. Cl. B61b *13/12;* **B61c** *11/00, 13/00*
U.S. Cl. 104—166 **12 Claims**



Individual cars of an operator-less railway transportation system are driven along a pathway by cooperation of a motor driven drive tube in each car that cooperates with angularly positioned reaction wheels spaced along the pathway. Controls are included for varying, in response to external signals, the angular position of selected reaction wheel assemblies to bring a car smoothly to a stop at a predetermined point, to bring a car past a particular point at a predetermined speed at a predetermined time, to insert a car from a side path into a gap in traffic on a main path, or to selectively delay cars to create gaps in the traffic to accept cars from a branch path.

3,650,217
SHEET HANDLING APPARATUS

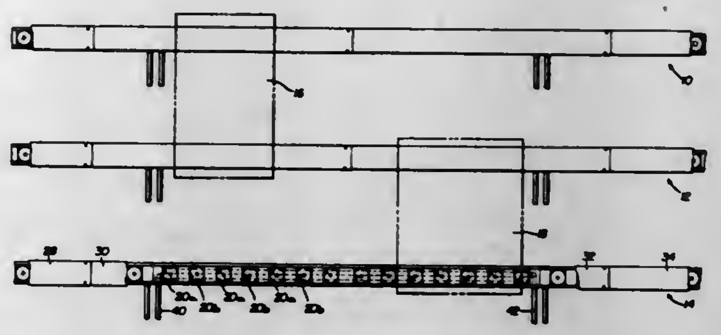
Kenneth N. De Rose, Toledo, Ohio, assignor to Libbey-Owens-Ford Glass Company, Toledo, Ohio
Original application Aug. 30, 1967, Ser. No. 664,440, now Patent No. 3,495,724, which is a continuation-in-part of application Ser. No. 568,514, July 29, 1966, now abandoned. Divided and this application Jan. 19, 1970, Ser. No. 3,650
Int. Cl. B65g *17/46*
U.S. Cl. 104—172 S **4 Claims**



Conveyor means for moving sheet material along a conveyor system comprised of aligned units. The conveying means includes a carrier having connector means and each of the conveyor units is provided with endless driving belts. The connector members are arranged at the opposite ends of the carrier and are adapted to engage the endless driving belts by magnetic attraction.

3,650,218
AIR CONVEYOR

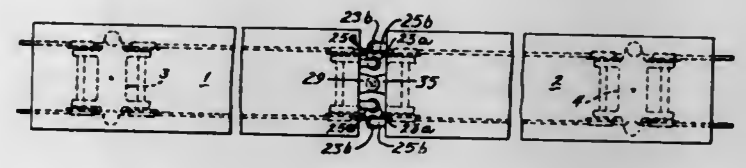
Wendell E. Losey, Lauderdale Lakes, Fla., assignor to Behring Corporation, Fort Lauderdale, Fla.
Filed Mar. 9, 1970, Ser. No. 17,692
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **6 Claims**



An air conveyor including air flotation cells spaced serially along a conveying path, a conveying pallet on the cells to be floated by air flowing from the cells, and means for supplying air to the cells to allow movement of the pallet along the conveying path. The pallet spans a plurality of cells, and preferably alternate cells communicate with different air supply ducts to provide alternate flotation systems. In a preferred embodiment, guides for guiding the movement of the pallet are included.

3,650,219
RESILIENTLY SUPPORTED ARTICULATED RAILWAY VEHICLE

Robert M. Seely, Florissant, Mo., assignor to General Steel Industries, Inc., St. Louis, Mo.
Filed Nov. 24, 1969, Ser. No. 879,082
Int. Cl. B61f *3/12, 5/08, 5/18*
U.S. Cl. 105—4 R **17 Claims**

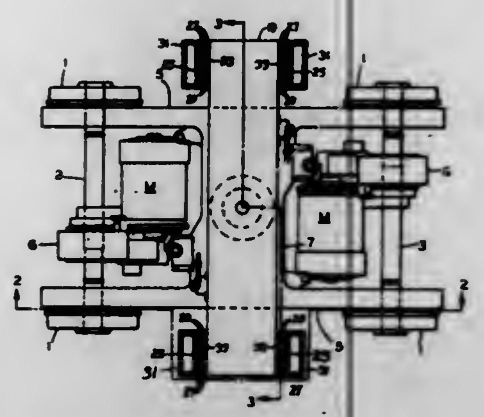


An articulated railway vehicle includes a truck having at least two wheeled axles, a truck frame supported on the axles, pairs of transversely spaced upright springs centered longitudinally of the truck and supported on the truck frame, a pair of body units aligned longitudinally of the truck and spaced apart longitudinally of the truck, elements projecting longitudinally from one of the body units and spaced apart transversely of the truck corresponding to the outer pair of springs and seated respectively thereon, and additional elements projecting longitudinally from the other body units and spaced apart transversely of the truck corresponding to the inner pair of springs and seated respectively thereon, the springs being distortable in shear generally longitudinally of the truck to accommodate relative swivel between the car bodies with each other and the truck, and transversely of the truck to cushion lateral forces. The bodies are connected to each other by a pivot structure above the center of the truck, which is connected to the truck frame to transmit longitudinal forces therebetween while accommodating relative swivel, transverse and vertical movements of the bodies with respect to the truck frame as are permitted by the springs.

3,650,220
RESILIENT RAILWAY VEHICLE SUSPENSION

Richard L. Lich, Town and Country, Mo., assignor to General Steel Industries, Inc., St. Louis, Mo.

Filed Aug. 20, 1969, Ser. No. 851,672
Int. Cl. B61f *3/08, 5/14, 5/20*
U.S. Cl. 105—199 F **7 Claims**

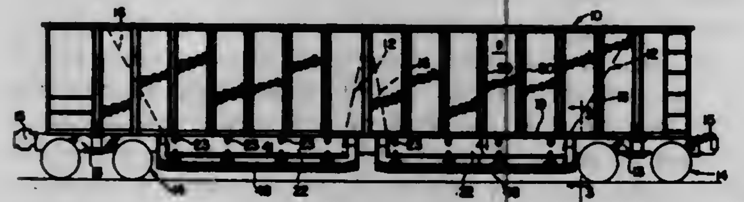


A railway vehicle suspension including a truck of the type having a transverse load supporting bolster swivelly supported on the truck framing and resiliently supporting the vehicle underframe for relative vertical and lateral cushioning movements only is constructed and arranged so that tractive forces are transmitted from the truck to the underframe at a desirable level below the bolster and at points laterally outboard of the truck frame without locating draft-transmitting devices in these regions where it would interfere with apparatus such as third rail current collection means. The vertical and lateral cushioning means and the draft-transmitting means comprise pairs of opposing transverse surfaces on the bolster and underframe at both sides of the truck inwardly and upwardly steeply inclined longitudinally of the truck, with similarly inclined flat elastomeric pad devices interposed between them, the normals of the surfaces and pads converging at a level below the bolster so that the lines of action of the resultants of the vertical and longitudinal forces, applied to the bolster through the pad devices, converge at a still lower level to provide the desirable low level effective traction transmission point. Vertical and lateral cushioning movements of the underframe on the truck are accommodated and yieldingly resisted respectively by the resilience in shear and compression, and transverse shear of the elastomeric pads and longitudinal tractive and retardation forces are transmitted from the truck to the underframe principally by the resistance of the pad devices to compression by forces acting longitudinally of the truck.

3,650,221
HOPPER CAR CLOSURE ACTUATING MECHANISM

Ernest J. Nagy, Munster, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Sept. 19, 1969, Ser. No. 859,325
Int. Cl. B61d *7/02, 7/18, 7/26*
U.S. Cl. 105—240 **7 Claims**

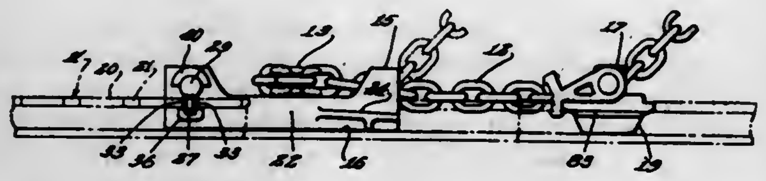


An open top hopper car is provided with a plurality of hoppers having lower discharge openings. Underneath each hopper, a pair of hinged doors are swingable downwardly and outwardly to a discharging position by motor actuated mechanism. The actuating mechanism includes vertically extending levers pivotally connected to the hopper and interconnected to so that hinging movement of one lever causes hinging movement of the other lever and the levers are moved out of supporting engagement with the doors whereby the doors are opened by gravity. The levers are also provided with camming means at their lower edges which engage cams provided on the doors for moving the doors to the closed position upon rotation of the levers. The camming arrangement provides for an effective closing of the doors and maintains the same in their closed position.

3,650,222
LOW PROFILE TIE-DOWN WINCH

Keith W. Broling, Olympia Fields, and Richard A. Tatina, Chicago, both of Ill., assignors to Portec, Inc., Oak Brook, Ill.

Filed Jan. 9, 1970, Ser. No. 1,625
Int. Cl. B61d *45/00;* **B60p** *7/08*
U.S. Cl. 105—369 A **14 Claims**

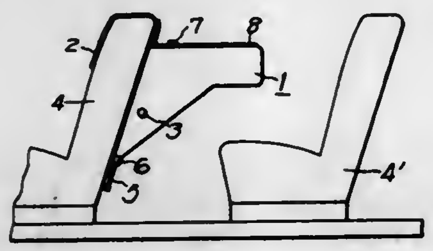


Low height tie-down ratchet winch for automobile rack cars arranged to increase the clearance between the winch and the vehicle tied down. The winch is adjustable along a channel having inwardly extending retainer flanges and facing locking notches carried in the flanges. The base for the winch has flanges extending in opposite directions from one end of the base beneath the retainer flanges of the channels and has a releasable locking lug at its opposite end, adapted to lockingly engage within a notch, to retain the base in position in the channel. A vertical axis winch block accessible from the top of the base is mounted in the winch block and is detachably retained thereto, as by a segment and notch connection between the base and a downwardly spaced flange portion of the winch block. A tie-down chain is secured to an arm extending from the winch block by a vertical pin, which may be removed without removing the base from its channel, or the winch block from the base. The chain extends under an idler in the form of an arched bar extending across the base, and where required, may extend under a second idler spaced from the base and independently held in position in the channel.

3,650,223
AIR BAG TABLE

Yasusaburo Kobori, Tokyo, Japan, assignor to Techikawa Spring Co., Ltd., Tokyo, Japan

Filed Sept. 4, 1970, Ser. No. 69,582
Int. Cl. A47b *23/00, 37/00*
U.S. Cl. 108—44 **7 Claims**

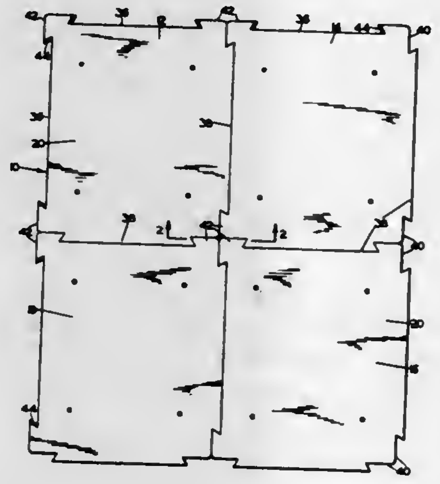


An air bag table for use in vehicles having an air bag which can not stand by itself but is capable of being inflated with gas and forming a substantially flat plane at one portion thereof, a fixture for mounting the air bag on a desired portion in a vehicle compartment, a device for sealing gas in the air bag, and a pressure regulator, whereby when a vehicle passenger strikes against the inflated air bag, it automatically discharges the sealed gas from the air bag to safely protect the vehicle passenger.

3,650,224
WAREHOUSING PALLET

Robert F. Petix, Beaverton, Oreg.; Joseph A. Aquino, Mission Hills, and Frank J. Aquino, Agoura, both of Calif., assignors to William C. Holden, a part interest

Filed Aug. 25, 1969, Ser. No. 852,619
Int. Cl. B65d *19/00, 19/12*
U.S. Cl. 108—51 **3 Claims**

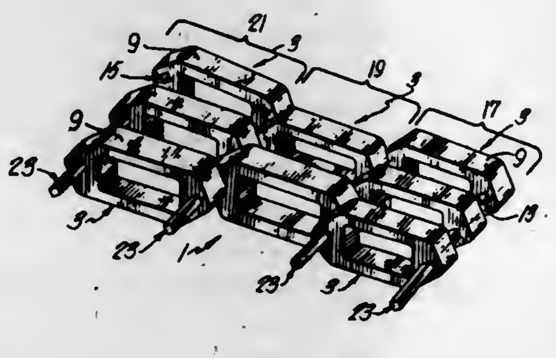


A warehousing pallet made up of two or more sections and having foot means projecting from each of the sections defining lateral openings for receiving the forks of a lift truck. Each of these sections has releasable attaching means arranged for releasably attaching one section to another. The releasable attaching means comprise dovetail joints formed in the side edges of the sections.

3,650,225
PALLETS

Brian Ball, 4982 Trenholme Avenue, Montreal 29, Quebec, Canada

Filed Dec. 15, 1969, Ser. No. 885,392
Int. Cl. B65d *19/18*
U.S. Cl. 108—51 **7 Claims**

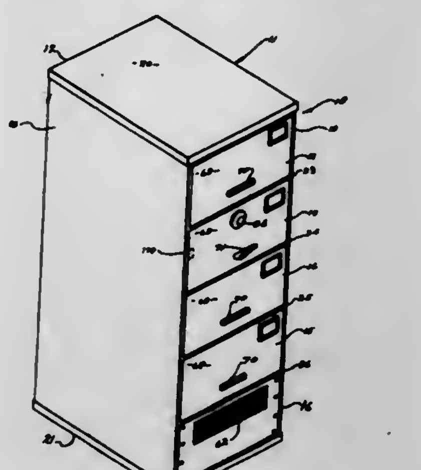


A pallet constructed from a plurality of block units nonrotatably connected together to form a rigid pallet platform surface.

3,650,226
DOCUMENT DESTRUCT FILE

John P. Conroy, Cincinnati; Kendall H. Grimes, Oxford, and Robert W. Maynard, Cincinnati, all of Ohio, assignors to The Mosler Safe Company, Hamilton, Ohio

Filed Nov. 12, 1970, Ser. No. 88,671
Int. Cl. E05g *1/00*
U.S. Cl. 109—25 **28 Claims**

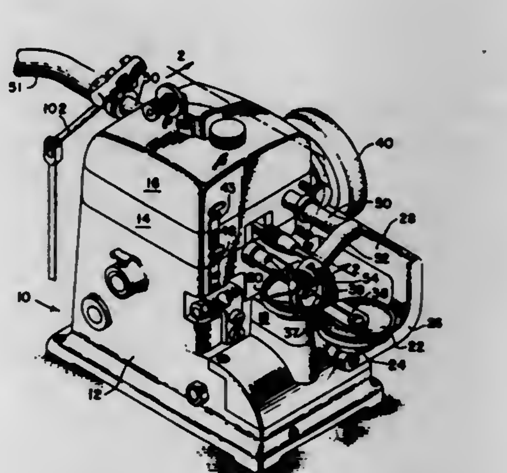


A security file so constructed as to facilitate expeditious destruction of documents and materials contained in the file. The file contains oxidizing panels which, upon ignition, burn and destroy the contents of the file. A flue extends along the back or the side walls and along the bottom of the cabinet. Containers of water are located in the bottom of the cabinet. The containers are made from a relatively low melting temperature material so that ignition of the oxidizing panels causes the containers to melt and the water contained in the containers to spill out and fill a portion of the flue chamber through which the gases of combustion must pass and be cooled before exiting from the cabinet.

3,650,227
FUR SEWING MACHINE

Fred L. Olday, 505 Bogart Place, Scranton, Pa.

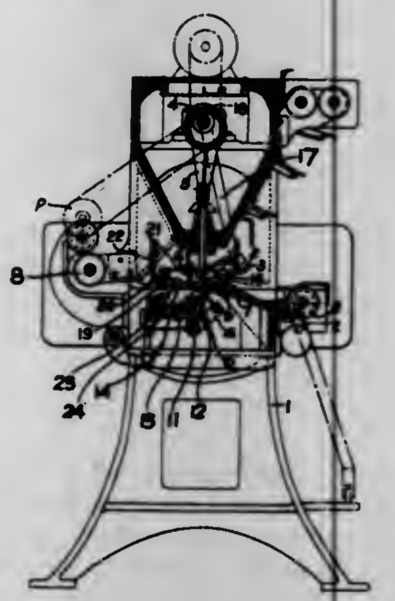
Continuation-in-part of application Ser. No. 30,622, Mar. 31, 1970, now abandoned , which is a division of application Ser. No. 852,413, Aug. 22, 1969, now Patent No. 3,572,268, dated Mar. 23, 1971. This application Dec. 8, 1970, Ser. No. 96,095
Int. Cl. D05b *23/00, 35/00, 35/10*
U.S. Cl. 112—20 **15 Claims**



An improved apparatus for sewing strips of fur having a camming mechanism to maintain a guide shoe mechanism in a variably positioned medial plane between a feed wheel pair. The apparatus of this invention also lifts the guide mechanism to alternate positions within the vertical medial plane to facilitate starting material into the nip of the feed wheels and to allow the material to be guided by hand without interference by the guide mechanism, if so desired.

3,650,228
TUFTING MACHINES

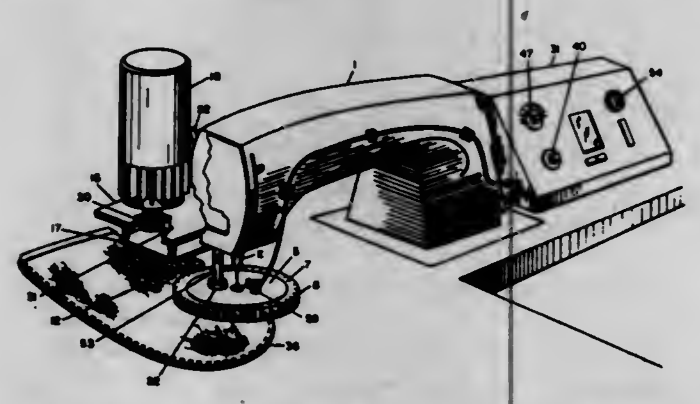
Robert Douglas Lynch, Cleveleys, England, assignor to D. C. One Limited
Filed Jan. 8, 1968, Ser. No. 699,987
Claims priority, application Great Britain, Jan. 12, 1967, 1,653/67
Int. Cl. D05c *15/28*
U.S. Cl. 112—79 R 9 Claims



A tufting machine of the cut pile type in which a pair or more of eccentrically operated needle bars are spaced apart, two or more series of eccentrically operated looping hooks and knife cutters co-operate respectively with the sets of needles, the spacing of the needle bars and amplitude of sideways traverse of the fabric is a number of times greater than the pitch of the needles for forming symmetrical cross-over patterns of stitching, and the patterns are changeable by for example removing equally spaced needles and/or adjusting the feed of the fabric and/or adjusting the amplitude of sideways traverse of the fabric, by the use for example of differently shaped cams and differently sized pulleys, with common or separate operating mechanisms for the needles and associated parts.

3,650,229
FEED GUIDE FOR SHEET MATERIAL

Herman Rovin, Norwalk, Conn., assignor to Ivanhoe Research Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 659,096, Aug. 8, 1967, now abandoned. This application July 23, 1969, Ser. No. 854,333
Int. Cl. D05b *19/00, 27/14*
U.S. Cl. 112—121.11 34 Claims



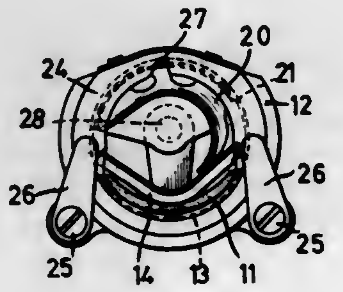
Apparatus such as a sewing machine, having means, e.g., a feed dog cooperating with a presser foot, to pass sheet material over a work surface through a work point, is improved by adapting it to automatically steer or guide the sheet material through the machine. A rotatable gripping means such as a contact ring about the work point is arranged to intermittently engage the sheet material, synchronously with the action occurring at the work point. Associated therewith is means for actuating the gripping means into contact with the sheet material and for imparting a controlled rotational movement to the gripping means so that it moves arcuately with respect to the work point thus exerting a guiding action on the sheet material.

The gripping means can be located above or below the sheet material and can have opposed to it a cooperating surface to assist it in its clamping and guiding action. The rotational motion of the gripping means can be controlled by means of an optical edge sensor or it can be preprogrammed as by computer techniques.

The fact that the rotatable gripping means contacts the sheet material at least over a series of points, preferably over an area at least in part surrounding the work point, and the fact that the position of the gripping means in contact with the sheet material moves relative to the work point in the plane of the sheet material while it is exerting its guiding action, are considered distinguishing characteristics of the invention.

3,650,230
DUST REMOVING EQUIPMENT FOR A SHUTTLE RACE

Masataka Nishikawa, Hikone-shi, Japan, assignor to Chiyoda Sangyo Co., Ltd., Shiga Prefecture, Japan
Filed Dec. 1, 1969, Ser. No. 881,004
Claims priority, application Japan, Dec. 26, 1968, 43/114028
Int. Cl. D05b *57/12*
U.S. Cl. 112—192 3 Claims

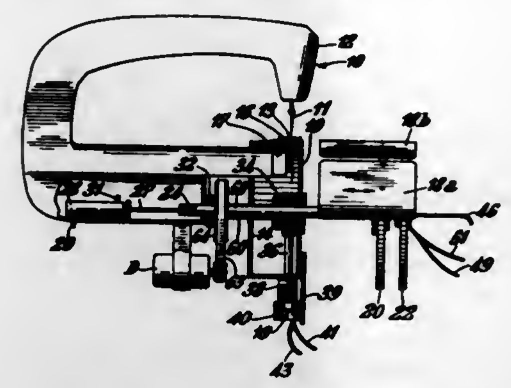


Dust removing equipment on the inside of the shuttle race of a lock stitch sewing machine. The shuttle race has a guide groove to receive the sliding part of the semirotary shuttle, and a driver is provided which reciprocates the shuttle along the shuttle race. A dust remover has a middle part which is fixed to the external center of the driver means, which dust remover is made of an elastic material with a low coefficient of friction. It has knife edges at both ends in contact with the bottom of the guide groove of the shuttle race which are retained by the elasticity of the material.

3,650,231
ROTATABLE WORK SUPPORT FOR A SEWING MACHINE

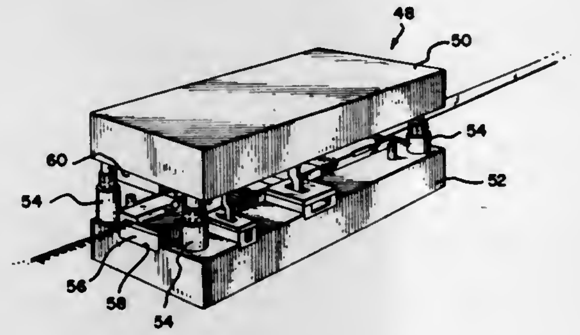
Louis E. Tinari, 40-25 Hampton Street, Elmhurst, N.Y., and David H. Kamena, 3 Peach Tree Court, Parsippany, N.J.
Filed Aug. 11, 1969, Ser. No. 848,966
Int. Cl. D05b *75/00*
U.S. Cl. 112—260 9 Claims

An improved sewing machine including a rotatable sewing table having a curved surface for supporting the material to be sewn and for moving the material into the path of the sewing needle. A novel material supporting member is adapted to be moved axially toward and retracted away from registry with the curved surface of the sewing table.



3,650,232
METHOD AND APPARATUS FOR MANUFACTURING LEAD FRAMES

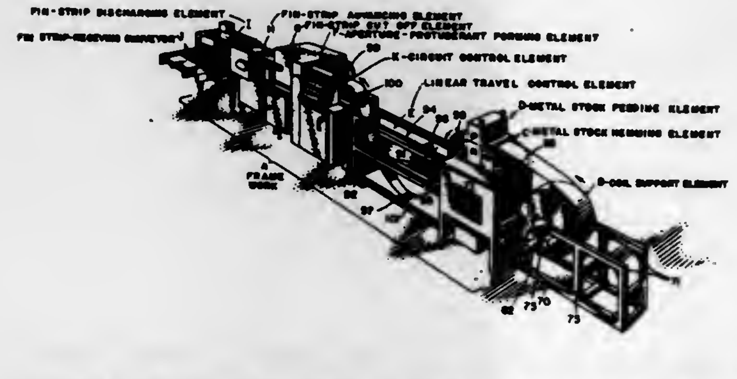
Frederick Jay Heinlen, Etters, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Sept. 8, 1970, Ser. No. 70,034
Int. Cl. B01j *17/00;* H01l *1/10*
U.S. Cl. 113—1 R 7 Claims



Lead frames having plate-like heat sink portion and three leads, one of which is integral with heat sink, are manufactured by blanking heat sink and leads, bending the integral lead relative to the heat sink, forming ends of the remaining leads, and again bending integral leads so that leads are in a plane which is parallel to, and spaced from, the heat sink.

3,650,233
APPARATUS FOR FORMING SHEET-METAL FIN-STRIPS FOR HEAT-EXCHANGERS

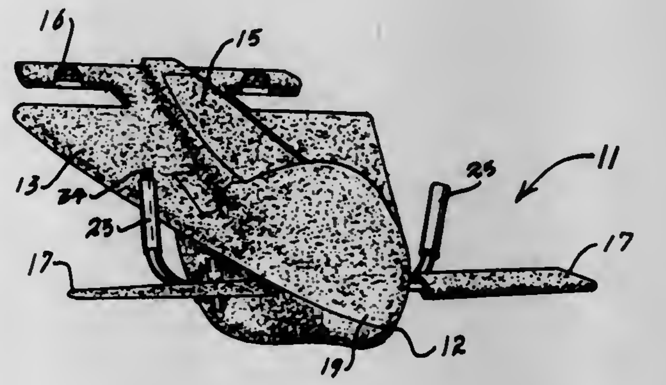
Fred M. Young; William V. Astrup, and Ronald E. Jones, all of Racine, Wis., assignors to Young Radiator Company, Racine, Wis.
Filed May 12, 1969, Ser. No. 823,925
Int. Cl. B21d *53/02*
U.S. Cl. 113—1 C 17 Claims



Apparatus for the automatic transformation of thin metal-stock into fin-strips of predetermined widths and lengths with groups of associated apertures and protuberances, for use in structuring core-units for heat exchangers required for controlling temperature conditions in various kinds of enclosures. The apparatus has juxtaposed elements, including one element for forming tube-embracing apertures and intermediate protuberances in the metal-stock and another element for recurring cut-off of predetermined lengths of finished fin-strips. All elements are arranged in series with antecedent elements for hemming the metal-stock, controlling the feeding and linear travel thereof, and with subsequent series of elements for advancing, discharging and stacking the finished fin-strips subject to later use in the structuring of desired types of heat-exchanger core-units. All of the elements are powered by a series of motors under the control of a manually and automatically operated switch mechanism.

3,650,234
WATER VEHICLE

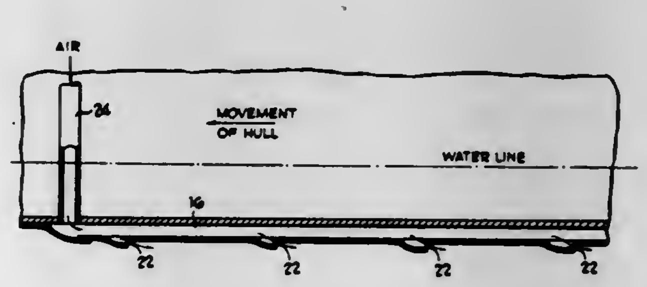
Clarence H. Goudy, 8440 Pillsbury Avenue S., Minneapolis, Minn.
Filed Nov. 5, 1969, Ser. No. 874,331
Int. Cl. B63g *8/00*
U.S. Cl. 114—16 A 3 Claims



An underwater vehicle is disclosed which is intended for use by scuba divers and underwater swimmers. The vehicle has a streamlined, elongated body which the rider mounts in prone position. The vehicle is propeller driven by a battery powered electric motor, and is steered by a single control member which effects right, left, upward, downward and rolling vehicular movement.

3,650,235
HULL CONSTRUCTION

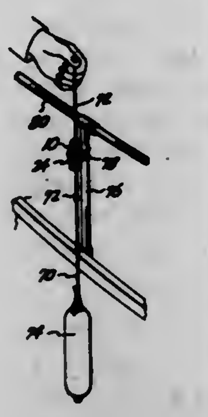
Norman Swanson, Conover, Wis., assignor to Veritas International
Filed July 31, 1969, Ser. No. 846,521
Int. Cl. B63b *1/38*
U.S. Cl. 114—67 A 2 Claims



A hull construction for watercraft wherein means are provided for inducing the flow of a plurality of bubbles along the outer surface thereof to reduce frictional resistance to the passage of the watercraft through the water.

3,650,236
MARINE LINE HOLDER

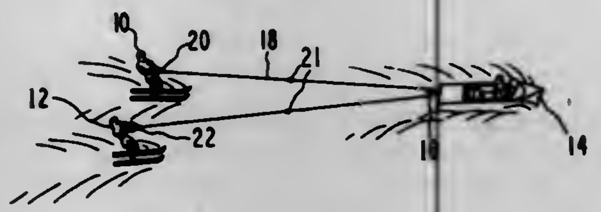
Bob B. McFarlane, 5816 24th Avenue N.W., Seattle, Wash.
Filed Nov. 4, 1969, Ser. No. 873,838
Int. Cl. B63b *21/04*
U.S. Cl. 114—218 **9 Claims**



A unitary device for adjustably retaining or holding a knotted line to a marine craft or the like, having a shallowly tapered, generally cylindrical knot receiving and clamping channel which is provided with means for affixing the channel to the marine craft, having outwardly diverging ears to guide entry of the line therein.

3,650,237
TOWING DEVICE

Philip L. Hartman, 3117 Maddux Drive, Palo Alto, Calif.
Filed Feb. 3, 1970, Ser. No. 8,264
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 WS **10 Claims**

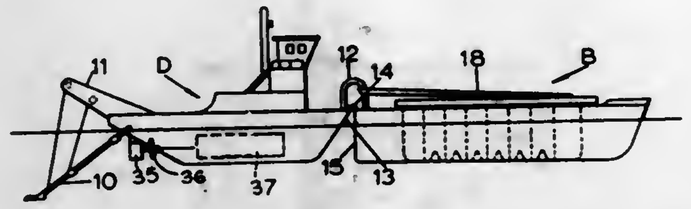


A towing device for use behind a boat to tow a pair of water skiers. Pulley apparatus is provided through which a tow rope is provided. Locking means is provided for preventing rotation of the pulley and relative movement between the pulley and the tow rope during initial start up of the water skiers and at other times. Engaging means are provided for engaging the locking means with the pulley and rope when desired. The pulley apparatus is secured to the boat by a swivel which permits rotation of the pulley apparatus relative to the boat. Desirable, biasing means are included to maintain the locking means in a normally nonengaging position.

3,650,238
SYSTEM OF WATERBORNE UNITS FOR DREDGING PURPOSES

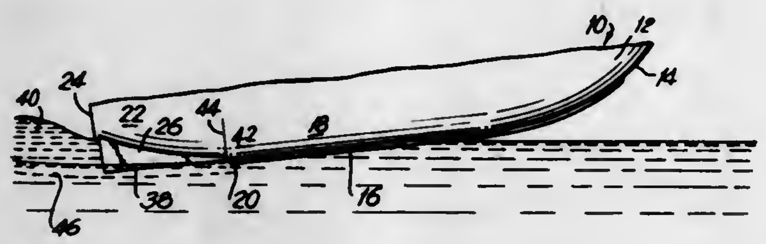
Geoffrey Stockdale, 57 Greenleas Road, Wallasey, England
Filed Feb. 13, 1970, Ser. No. 11,081
Claims priority, application Great Britain, Feb. 13, 1969, 7,797/69
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 R **3 Claims**

The invention provides a system of waterborne units for dredging purposes and comprises a dredger unit consisting of a relatively small self-powered vessel having normal ship form but with the forepart squared-off above the water-line, a stern propulsion and navigating unit the forepart whereof terminates at a flat bulkhead, and at least two hopper bow units the aft ends whereof terminate at flat sterns or bulkheads. The dredger unit and either of the two hopper bow units may be coupled and navigated for dredging operations, and the stern propulsion unit and either of the hopper bow units may be coupled and navigated as a unitary vessel for the rapid disposal of spoil. Box type hopper barges may be provided for interposing between the above referred to navigable arrangements of units.



3,650,239
VEHICLE

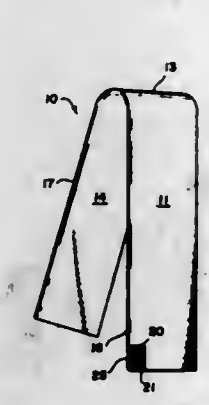
Stewart P. Gast, 4600 Warrington Drive, New Orleans, La.
Filed Dec. 29, 1969, Ser. No. 888,386
Int. Cl. B63h *5/16*
U.S. Cl. 115—39 **9 Claims**



Vehicle, particularly for water travel, having two generally parallel spaced apart fins extending downwardly on either side of the central line of the hull to define a tunnel wherein the screw is mounted so that the relative water flow therethrough is substantially similar to water flow past a displacement-type hull and a pair of transverse steps extending oppositely transversely outwardly of the forward end of the fins so that relative water flow laterally of the tunnel will be substantially that produced by a planing type hull whereby water resistance is minimized while prop submersion is maximized.

3,650,240
CORRECT PRINTING INDICATOR

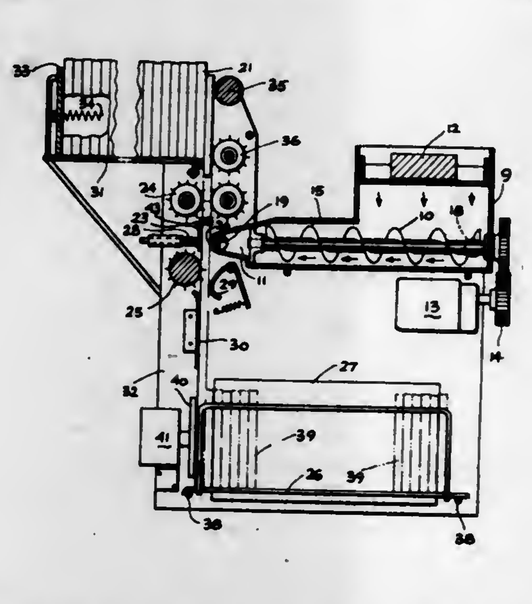
Richard Douglas Russell, deceased, late of 314 East Avenue, Newark, N.Y. (by Ada Gwennola Russell, administratrix)
Filed Oct. 17, 1969, Ser. No. 867,425
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 **7 Claims**



The correct printing of both faces of a folded sheet is indicated by an opening formed in a printed region of an obverse panel visible when the sheet is folded, and a registering, inked region of a reverse panel of the sheet visible through the opening when the sheet is folded. Incorrect printing or absence of printing on the reverse face of the sheet is indicated by blank paper visible through the opening. The inventive indicator is particularly significant for printed drug information sheets.

3,650,241
SPREAD APPLICATOR

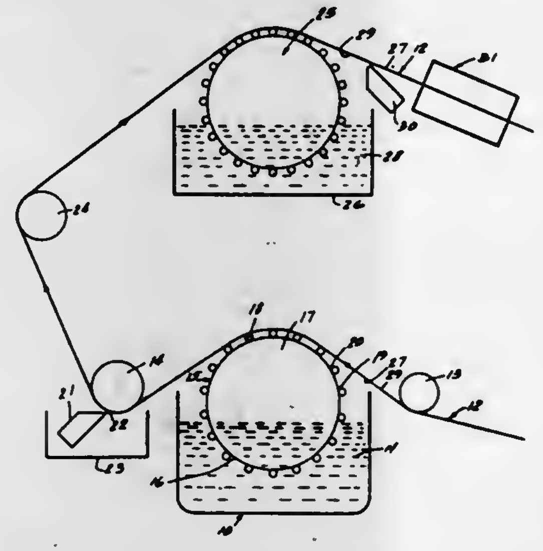
Donald Edward North, 7 Rupert Terrace, Ascot, Queensland, Australia
Filed May 22, 1968, Ser. No. 731,131
Claims priority, application Australia, May 23, 1967, 22177/67
Int. Cl. A21c *9/04;* **B05c** *5/02*
U.S. Cl. 118—2 **4 Claims**



A spread applicator having means for feeding slices a bread past an applicator containing spread and arranged to dispense the spread onto the bread and for stacking the latter after the application of the spread.

3,650,242
COATER WITH APPLICATOR RODS

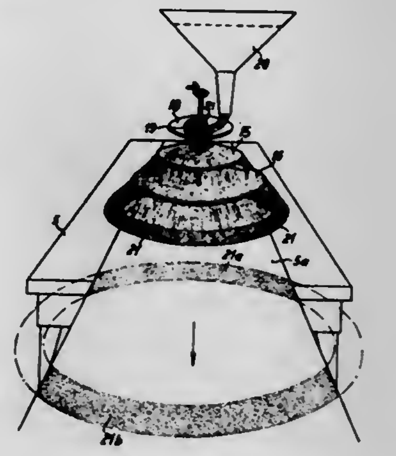
Ralph P. Mahoney, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Continuation of application Ser. No. 775,466, Nov. 13, 1968, now abandoned. This application Oct. 14, 1970, Ser. No. 80,808
Int. Cl. B05c *1/12*
U.S. Cl. 118—246 **5 Claims**



A device for applying coating material to the surface of a moving web of material such as paper or the like wherein a drum is rotatably mounted to have a portion thereof pass beneath the surface of a coating fluid bath and to have a portion thereof extend above the fluid bath. The coating drum has a series of rod-like members disposed longitudinally along the outer surface thereof. The rod-like members have a diameter which is substantially less than the diameter of the cylindrical drum and are arranged to pass beneath the coating fluid bath and to carry fluid above the surface of the bath into contact with the moving web. The web of material rides against the outer surface of the rod-like members and is coated uniformly as the cylindrical drum is rotated.

3,650,243
DEVICE FOR THE UNIFORM APPLICATION OF SMALL AMOUNTS OF A POWDERY MATERIAL ONTO SURFACE CONFIGURATIONS

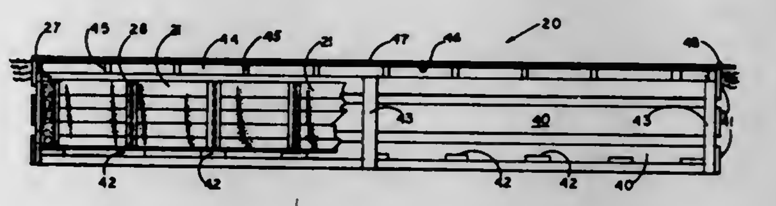
Hans Brehm, Fuerth/Odenwald, Germany, assignor to Carl Freudenberg, Weinheim/Bergstrasse, Germany
Filed Aug. 8, 1969, Ser. No. 848,505
Claims priority, application Germany, Apr. 9, 1969, P 19 18 033.7
Int. Cl. B05b *7/14*
U.S. Cl. 118—308 **4 Claims**



Apparatus for depositing particulate material onto a textile fabric, particularly thermoplastic adhesive particles onto a non-woven substantially continuous fabric, including means for depositing the particulate material onto a feeder disc with an inwardly directed spiral bead thereon and an aperture in the center thereof, a centrifugal spreader disc disposed beneath the feeder disc, means for, rotating the discs, and means for passing the fabric beneath the spreader disc whereby only part of the annular centrifuged particles are deposited on the textile fabric. 15

3,650,244
METHOD AND APPARATUS FOR PROTECTING AND ENHANCING THE GROWTH OF YOUNG SHELLFISH SETS

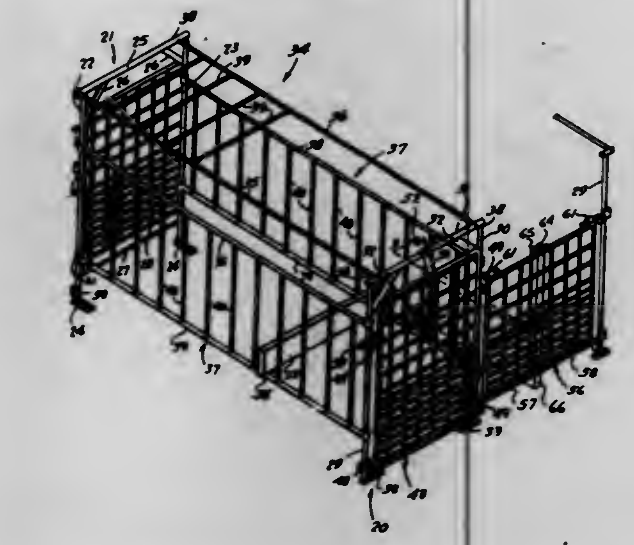
Edwin C. Fordham, 336 Park Street, Stratford, Conn.
Filed Dec. 18, 1969, Ser. No. 886,125
Int. Cl. A01k *61/00*
U.S. Cl. 119—4 **14 Claims**



This disclosure is directed to a method and apparatus for protecting and enhancing the growth of young oysters or shellfish sets in their natural environment. This is attained by placing "clutchless sets" into trays constructed to entrap the "clutchless sets" therein while permitting the free flow of sea water therethrough to supply the contained "clutchless sets" with natural food, and by floating the trays in groups adjacent the warmer upper strata of the sea water. The arrangement protects the "clutchless sets" from their natural enemies, and renders them readily movable from place to place as may be required until such time that they may be safely placed into their permanent bed to grow naturally to maturity.

3,650,245
FARROWING PEN

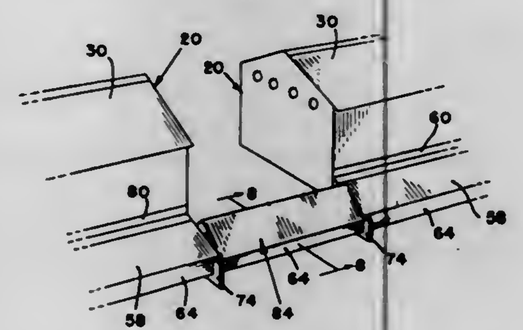
Wayne D. Karnes, Studley, Kans.
Filed Jan. 2, 1970, Ser. No. 133
Int. Cl. A01k *01/02*
U.S. Cl. 119—20 **10 Claims**



A farrowing pen which can be assembled and disassembled and when disassembled may be stored in a relatively small area. The sow is confined to a relatively small space while the baby pigs are permitted to move about outside of the space in which the sow is confined so that they may avoid being crushed to death by the sow. THe sides of the pen are adjustable in height and the pen is provided with an entry gate reversibly hinged in its opening and a pivoted tailboard to facilitate the movement of the sow into and out of the confined area. The floor area is unobstructed for ease of cleaning the pen.

3,650,246
AUTOMATIC EGG COLLECTION SYSTEM FOR POULTRY NESTS

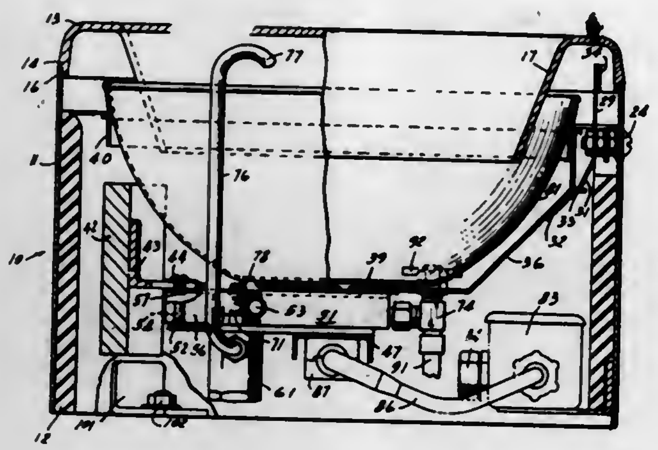
Grady C. Fowler, Route 7, P.O. Box 235, and Ben F. Venable, Route 8, P.O. Box 640, both of Mt. Airy, N.C.
Filed Mar. 18, 1970, Ser. No. 20,498
Int. Cl. A01k *31/16*
U.S. Cl. 119—48 **12 Claims**



A system for gathering eggs from a plurality of nesting units and conveying the eggs to a collection area for grading. A conveyor having a resilient surface with egg-receiving indentations spaced therealong is completely covered within the nesting area to prevent egg damage. The eggs are dispensed automatically from the nests onto the conveyor and from the conveyor to a grading table.

3,650,247
AUTOMATIC WATERER

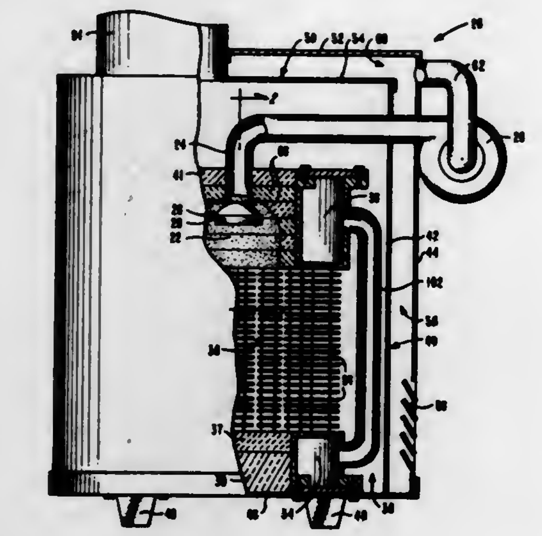
James E. McKinstry, Cedar Rapids, Iowa, assignor to Nelson Manufacturing Company, Cedar Rapids, Iowa
Filed May 14, 1970, Ser. No. 37,137
Int. Cl. A01k *07/00*
U.S. Cl. 119—81 **6 Claims**



An automatic waterer which utilizes a self closing valve which is vertically installed and in which spring and hydraulic pressure work to seat the valve and in which a pivoted beam which utilizes a weight of substantial mass at one end and which carries a drinking bowl on the other end is provided. As animals drink from the bowl the mass overcomes the weight of the liquid in the bowl and lowers the beam on the valve actuator so as to replenish the liquid supply in the bowl thus rebalancing the beam and allowing the valve actuator to return to the closed position.

3,650,248
HEATING SYSTEM

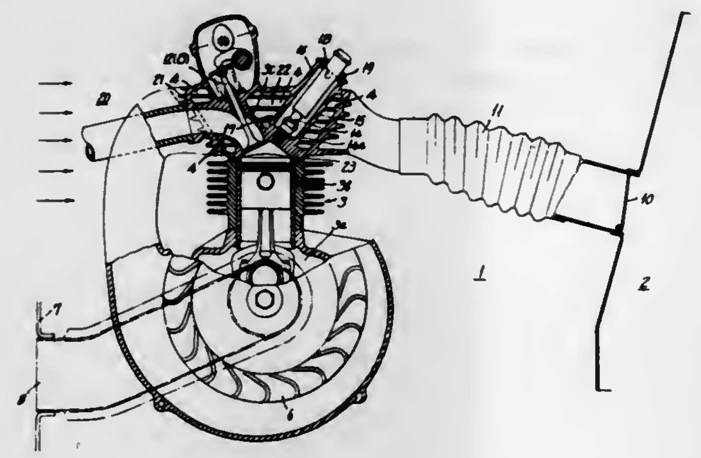
Avy Lewis Miller, 4090 Valley Meadow Road, Encino, Calif.
Filed June 8, 1970, Ser. No. 44,335
Int. Cl. F22b *21/04*
U.S. Cl. 122—235 R **7 Claims**



An improved compact heating system, particularly adapted for heating water and for steam generation, includes a combustible gas supply zone, a combustion chamber therearound in the form of a burner element comprising a refractory cup in heat exchange relation with an array of heat exchange elements spaced peripheral therefrom, and gas ignition means. The system is adapted to efficiently burn a high velocity stream of combustible gases and develop a wide range of B.t.u. outputs per hour, including multi-million B.t.u. outputs, while providing advantages of larger types of heating systems, including easy access for maintenance, repair, replacement and clean-up.

3,650,249
APPARATUS FOR UTILIZING COOLING AIR FOR AN INTERNAL COMBUSTION ENGINE FOR HEATING A PASSENGER COMPARTMENT

Soichiro Honda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed June 12, 1970, Ser. No. 45,775
Claims priority, application Japan, Sept. 4, 1969, 44/69727
Int. Cl. F01f *1/32;* **F01p** *1/10;* **B60h** *1/02*
U.S. Cl. 123—41.32 **10 Claims**

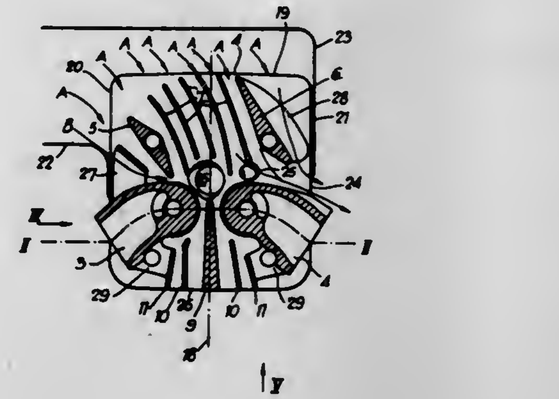


An internal combustion engine for a motorcar has, at the outer surface of at least its cylinder head portion, a forced cooling air passage which is in communication at its outlet with the interior of the passenger compartment. The spark plugs are positioned within this passage and a tubular partition wall surrounds each plug to isolate the plug in airtight manner from the interior of the passage. Each partition wall has an opening at its upper end in communication with the external air. The tubular wall may be provided at its base portion with an opening extending into the interior of the passage, so that a portion of the cooling air within the passage flows into the interior of the tubular wall and out through the opening at the upper end. The upper end of the tubular wall may be provided with a cover and the opening at the upper end extends laterally beneath the cover.

3,650,250
AIRCOOLED CYLINDER HEAD

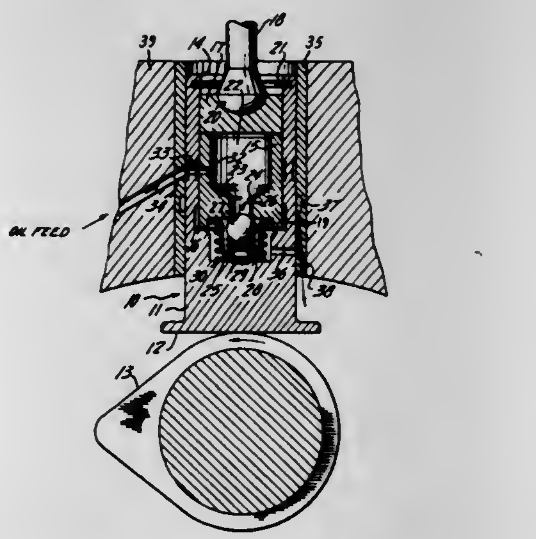
Ludwig Lohr, Lampertheim, and Karl Hellwig, Weilheim, both of Germany, assignors to Farymann Diesel, Farny & Weidmann, Lampertheim, Germany
Filed Dec. 16, 1970, Ser. No. 98,764
Int. Cl. F02f *1/32, 1/34, 1/42*
U.S. Cl. 123—41.69 **7 Claims**

A cylinder head for a twin overhead valve air-cooled internal combustion engine comprising an upper plate and a lower plate so interconnected by valve ports, ribs and walls to define passages through which cooling air can flow. The ribs and walls extend from air inlet places to the vicinity of an injection nozzle and said valve ports substantially parallel to the cylinder axis and obliquely to a plane of symmetry of the cylinder head passing parallel to said cylinder axis through a central cooling air duct in the cylinder head. The valve ports extend transversely to the said plane of symmetry substantially over the entire width of the cylinder head. Cooling air guide walls surround the cylinder head on sides thereof adjacent said air inlet places and extend at least approximately as far as said valve ports. These guide walls are arranged so that cooling air flows partly over the sides of the valve ports which are nearest to said ribs and walls but otherwise is forced to flow through said central cooling air duct.



3,650,251
HYDRAULIC VALVE LIFTER

Winton J. Pelizzoni, Hagerstown, Md., assignor to Mack Trucks, Inc., Allentown, Pa.
Filed May 11, 1970, Ser. No. 36,335
Int. Cl. F01l *1/24, 1/14*
U.S. Cl. 123—90.57 **9 Claims**

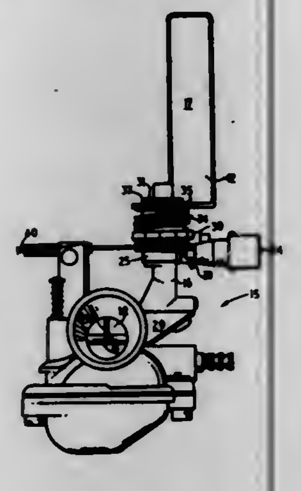


A hydraulic lifter with bleed provisions opening near the end of every lift (valve opening) stroke to pump down the lifter's high pressure oil chamber. A lifter body, centrally bored, houses a plunger which is movable to expand and contract the high pressure chamber. Plunger movement adjusts the lifter length. The lifter rides in a close fitting sleeve. An oil feed opening through the sleeve supplies oil, once per cycle, to a reservoir through aligned openings in the lifter body and plunger. Near the end of each lift stroke, when the compression on the lifter is great, a bleed hole through the lifter body aligns with a bleed passage in the sleeve. Oil is repeatedly forced from the high pressure chamber, assuring the removal of all air accumulated in the chamber and stopping initial valve lash and clatter.

3,650,252
ENGINE GOVERNORS

Peter David Glover; Richard Forshaw, and William Henry Steele, all of Milpera, New South Wales, Australia, assignors to Victa Limited, New South Wales, Australia

Filed Mar. 31, 1970, Ser. No. 24,129
Claims priority, application Australia, Mar. 31, 1969, 52793/69
Int. Cl. F02d *31/00*
U.S. Cl. 123—103 B **7 Claims**

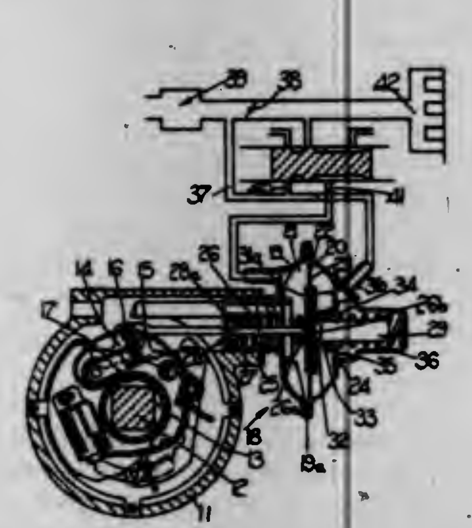


Means for governing the speed of an engine by providing attached to the carburetor butterfly spindle an air vane deflected by a stream of engine-cooling air produced by the engine to close the butterfly against spring action, and accelerator control means for the engine operating to increase tension on the spring with its advancement and to decrease the tension with retarding of the accelerator.

3,650,253
VACUUM OPERABLE UNITS FOR USE WITH IGNITION DISTRIBUTORS

William Harold Cooksey, Walsall, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Oct. 3, 1969, Ser. No. 863,504
Claims priority, application Great Britain, Oct. 14, 1968, 48,524/68
Int. Cl. F02p *5/04*
U.S. Cl. 123—117 A **2 Claims**

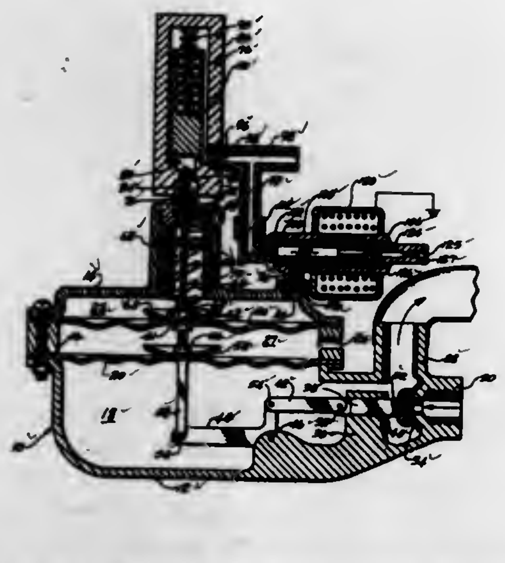


A vacuum-operable unit for use with an ignition distributor in which a casing is divided into first and second chambers by a resilient diaphragm. A plunger is slidably received in the first chamber, with the plunger being secured at one end to the diaphragm and extending at its other end from the first chamber for connection to a distributor. Axial movement of the plunger varies the ignition timing of the distributor. First and second conduits are provided in communication with the first and second chambers respectively, and resilient means within one of the chambers resists movement of the diaphragm in a direction to reduce the volume of that chamber. Sealing means acts between the wall of the first chamber and the plunger to fill the first chamber while allowing relative movement between the plunger and the wall of the first chamber, with the sealing means being constituted by a pair of annular members secured to the plunger and the wall of the chamber respectively, and interconnected by a flexible tubular member. The diameter of the flexible tubular member of the sealing means tapers from a maximum diameter adjacent one annular member to a minimum diameter adjacent of the other annular members and the tubular member is turned inside out intermediate its ends so that part of the tubular member surrounds a further part of the member, and the tubular member together with said annular members constitutes a rolling seal.

3,650,254
METHOD AND APPARATUS FOR RAPIDLY CHANGING THE AIR-FUEL RATIO OF AN INTERNAL COMBUSTION ENGINE FROM A LEAN CONDITION TO A RICH CONDITION

Robert W. McJones, 529 Via Del Monte, Palos Verdes Estates, Calif.

Continuation-in-part of application Ser. No. 858,816, Sept. 17, 1969. This application Mar. 16, 1970, Ser. No. 19,884
Int. Cl. F02m *21/02;* **F02n** *17/00*
U.S. Cl. 123—120 **31 Claims**



A regulator in the fuel system of a vehicle's internal combustion engine regulates the fuel pressure of a gaseous fuel, such as natural gas, to a fuel-air mixer. The regulator maintains a predetermined fuel pressure for idle and cruise conditions and increases fuel pressure to effect an enriching of the air-fuel ratio for full throttle conditions. The degree of enriching is sufficient to pass through a region where there is a threat of exhaust valve burning and where the maximum amount of the oxides of nitrogen are produced. The change in air-fuel ratio is extremely rapid to avoid operation for any material amount of time in this region. The regulator also effects a change from a rich air-fuel ratio to a lean one at a predetermined point in throttle setting below the point at which enriching occurs.

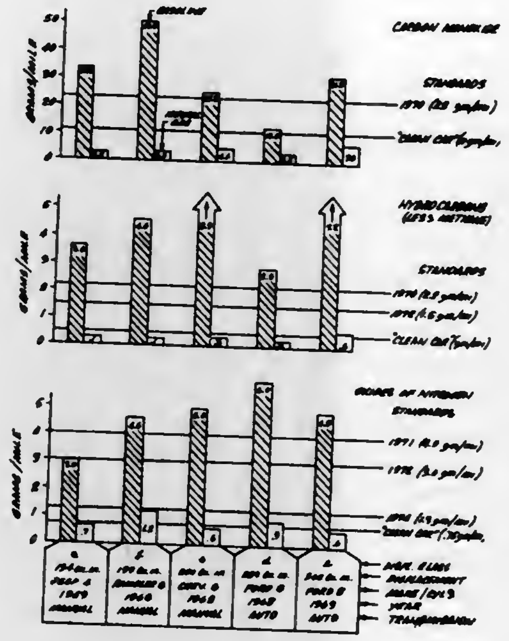
3,650,255
METHOD AND SYSTEM FOR REDUCING OXIDES OF NITROGEN AND OTHER POLLUTANTS FROM INTERNAL COMBUSTION ENGINES

Robert W. McJones, 529 Via Del Monte, Palos Verdes Estates, Calif.

Filed Sept. 17, 1969, Ser. No. 858,816
Int. Cl. F02m *21/02, 13/08*
U.S. Cl. 123—120 **12 Claims**

Oxides of nitrogen (NO_x) in the exhaust gas emissions of an internal combustion engine are reduced, as measured on a

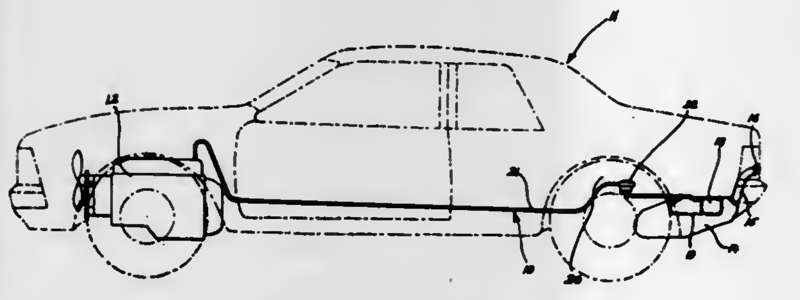
standard 7-mode driving cycle, by utilizing natural gas as a fuel and operating with an equivalence ratio from about 1.25 to about 1.35. The 1.25 value corresponds to the maximum permissible amounts of NO_x as measured in parts per million. The 1.35 value corresponds to the value where unacceptable power loss would result if exceeded. A gas-air mixer having a metering pin modified to operate with a natural gas inlet pressure of from −0.5 inches of H_2O to +0.5 inches of H_2O and within the specified range of equivalence ratios is employed. A modulator produces a fuel-rich condition at full throttle to increase power.



3,650,256
FUEL EVAPORATIVE CONTROL SYSTEM

Charles J. Marshall, Detroit, Mich., assignor to American Motors Corporation, Kenosha, Wis.

Filed Aug. 14, 1970, Ser. No. 63,699
Int. Cl. F02m *25/08*
U.S. Cl. 123—136 **7 Claims**

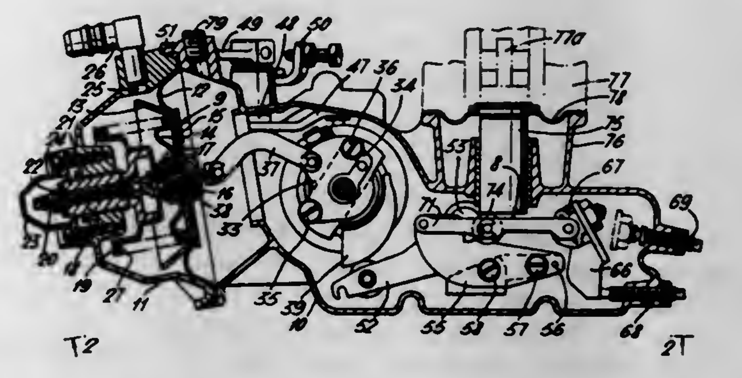


A system designed to prevent raw fuel vapors from entering the atmosphere from the carburetor fuel bowl and the fuel tank of a motor vehicle. The carburetor is internally vented and the fuel tank vent line routes the vapors from the tank through a float type liquid-vapor separating valve to the cylinder head cover of the engine. The vapors are stored in the crankcase of the engine while the engine is not operating and combusted during engine operation with the blow-by products by use of the positive crankcase ventilation system.

3,650,257
FUEL CONTROL APPARATUS

John Peter Soltau, 5 Lightwood Close, Copt Heath, and Robert Edward Kelly, 45 Featherstone Crescent, Shirley, both of Solihull, Warwickshire, England

Filed Apr. 2, 1970, Ser. No. 25,228
Claims priority, application Great Britain, Apr. 14, 1969, 18,905/69
Int. Cl. F02d *1/00*
U.S. Cl. 123—139 BG **13 Claims**

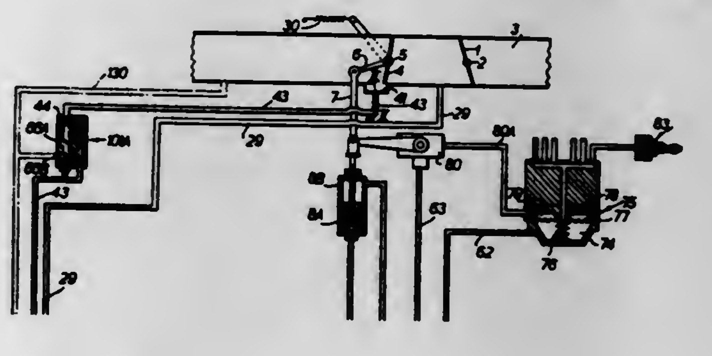


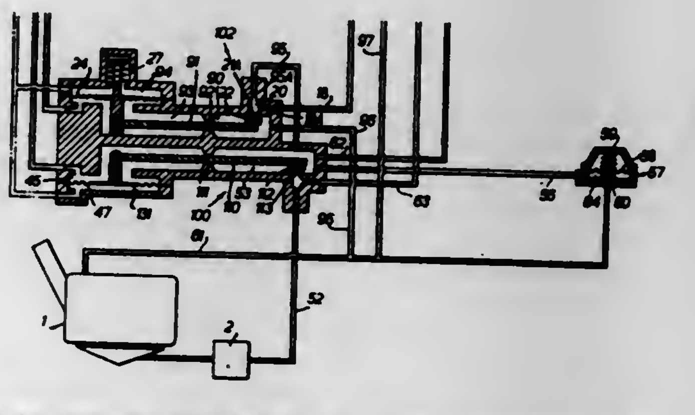
An apparatus for controlling the fuel supply to an engine by adjustment of the control stop of a fuel injection metering pump has a three-dimensional cam whose angular and axial positions are variable in response to engine operating conditions, for example intake manifold pressure and throttle lever position. A cam follower for the three-dimensional cam in turn rotates a two-dimensional cam. A further cam follower, for the two-dimensional cam, can be moved along the two-dimensional cam in response to a third engine operating condition, for example the position of the engine choke control. The resultant position of the further cam follower is transmitted to the control stop of the metering pump.

3,650,258
FUEL INJECTION SYSTEMS

Harold Ernest Jackson, Plympton St. Mary, England, assignor to Petrol Injection Limited, Plymouth, Devon, England

Filed Apr. 23, 1970, Ser. No. 31,316
Claims priority, application Great Britain, June 27, 1969, 32,530/69; Dec. 1, 1969, 58,515/69
Int. Cl. F02m *69/00*
U.S. Cl. 123—139 AX **28 Claims**



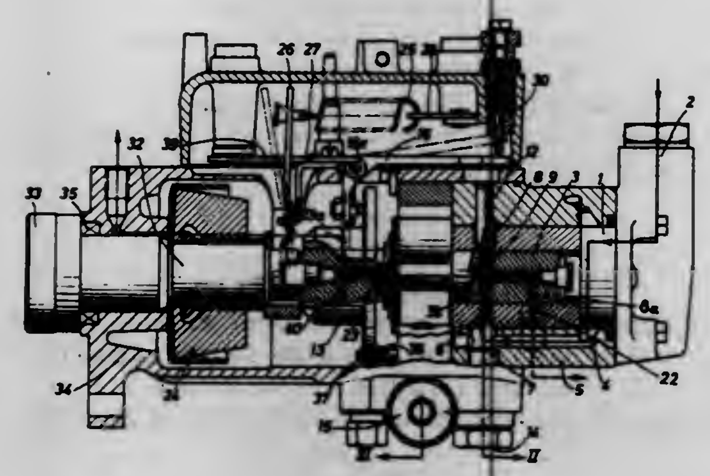


A fuel injection system for an internal combustion engine, including a fuel motoring device and/or a fuel pressurizing device. The or each device operates in response to adjustment of an air valve located in the engine air intake conduit (for example, upstream of the throttle valve), such adjustment being effected by a control mechanism in the following manner. The air valve produces a control pressure differential in the air intake conduit, which is sensed by the control mechanism. Any change in the pressure differential from a predetermined control value (caused, for example, by an increase in the engine air intake) causes the control mechanism to adjust the fuel flow path which feeds the fuel injector devices. The air valve is connected to the fuel control circuit and the position of the air valve is thereby adjusted to return the control pressure differential to the predetermined control valve. This adjustment is accompanied by a change in the fuel flow or pressure of fuel flow to the injector devices.

3,650,259
FUEL INJECTION PUMPS FOR COMBUSTION ENGINES

Georges Garnier, Blois, France, assignor to Roto-Diesel, Clichy (Hauts-de-Seine), France

Filed July 6, 1970, Ser. No. 52,182
Claims priority, application France, July 10, 1969, 6923487
Int. Cl. F02d *31/00*
U.S. Cl. 123—140 **6 Claims**

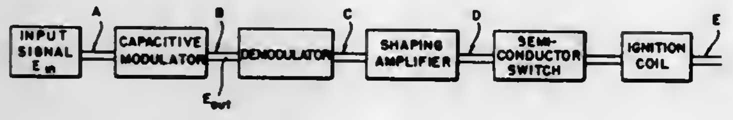


A fuel injection pump of known type, wherein the metering means consist of a nonrotating metering ring which is slidably mounted on the rotary distributor in leaktight manner and has a discharge orifice which is capable of communicating in a variable manner with radial discharge passages formed in the rotary distributor and extending from the axial duct of the said distributor in order that the fuel should be discharged in a variable manner both in time duration and in flow rate according to the axial position taken up by the said metering ring on the said distributor and according to the relative angular position of the said passages, the said ring being on the one hand thrust back elastically by oppositely acting springs towards a position corresponding to zero discharge and on the other hand thrust back axially in the discharge position by all-speed regulating means comprising a bell-crank lever actuated hydraulically by a push-rod plunger in dependence on the supply pressure which exists periodically between two successive injections within the axial duct of the distributor, the movement of the said lever under the action of the said plunger being limited by an adjustable stop and controlled in dependence on a manually adjustable elastic push-rod, the said metering ring being also controlled in the discharge position by means which are responsive to the speed of rotation of the engine and to the controlling action of the accelerator.

3,650,260
BREAKERLESS IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Raffaele Vittorio Silvera, 2046 Ocean Parkway, Brooklyn, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,084
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 E **17 Claims**

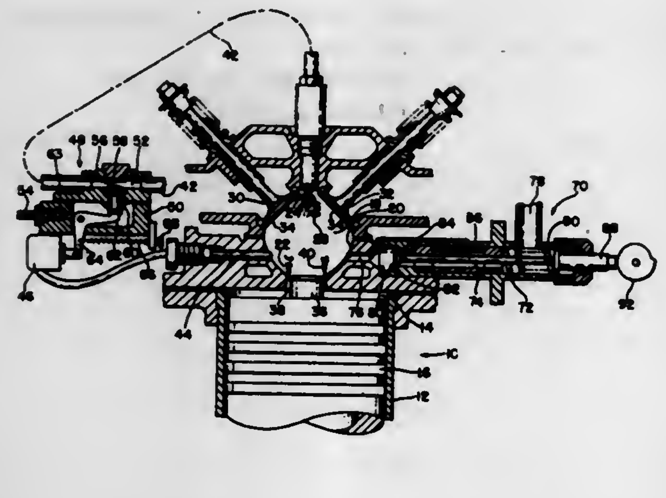


In a distributor device for an internal combustion engine having spark plug means for initiating combustion, an ignition signal generating unit for supplying the ignition pulses to the plug means comprising a first plate having at least one electrically conductive surface, a second plate rotatably supported with respect to the first plate with a predetermined gap therebetween for allowing a capacitive action to take place between the plates, the second plate having a configuration permitting variation of the capacitive effect between a maximum and a minimum value, whereby an input voltage to the unit is amplitude modulated as an output voltage.

3,650,261
DIESEL ENGINE

Thomas A. Hutsell, 1220 Carpenter, Mount Vernon, Wash.

Filed Nov. 18, 1970, Ser. No. 90,743
Int. Cl. F02b *77/00, 3/00*
U.S. Cl. 123—198 DB **11 Claims**

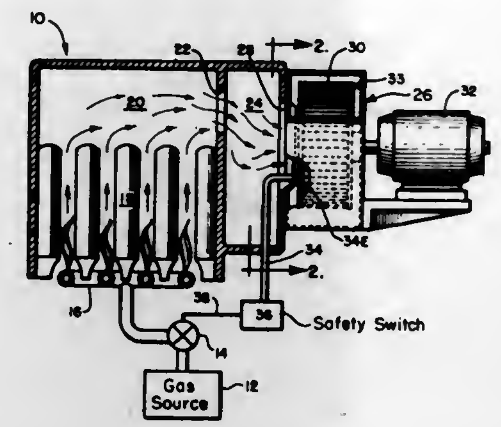


A diesel engine having a piston chamber and a combustion chamber communicating through a port with the piston chamber; a temperature sensing means which is responsive to temperature in the combustion chamber and which controls a valve to permit fuel flow to the combustion chamber only when the temperature in the combustion chamber has reached a predetermined level to support combustion; a supercharger responsive to engine speed and arranged to deliver pressurized air to the combustion chamber when the engine is operating; and a protrusion mounted on the piston and arranged to extend into the port so as to form an annular passageway through which air blows from the piston chamber into the combustion chamber to cause better mixing of fuel and air in the combustion chamber.

3,650,262
FORCED DRAFT FURNACE SAFETY SYSTEM

Warren W. Root, and William W. Frank, both of York, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed June 25, 1970, Ser. No. 49,886
Int. Cl. F23n *1/06;* **F24h** *3/02*
U.S. Cl. 126—110 R **5 Claims**

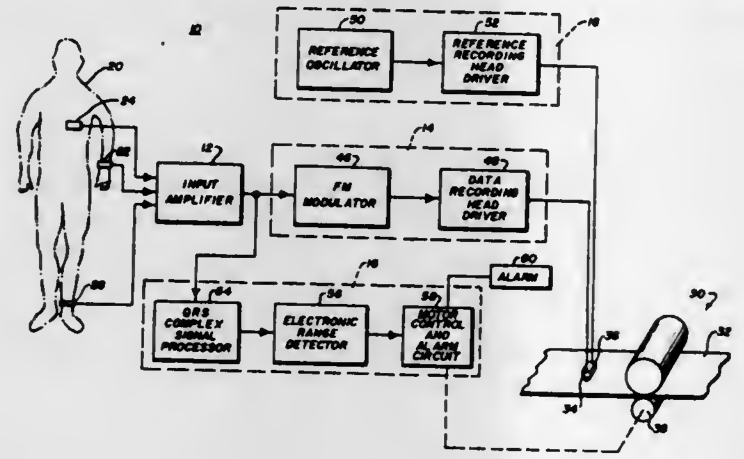


A safety system for sensing the air flow through a forced draft furnace and using that sensed flow to operate a switch which prevents gas fuel from being supplied to the furnace in the absence of such flow is disclosed in which a vacuum sensing tube is positioned at the edge of the inlet to a centrifugal blower within a specific range of angular positions to obtain a sufficiently large magnitude of pressure differential to operate the switch.

3,650,263
MONITORING SYSTEM

William W. Kowalski, and James R. Ricketts, both of Milwaukee, Wis., assignors to Marquette Electronics, Inc., Milwaukee, Wis.

Filed Nov. 3, 1969, Ser. No. 873,293
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 G **25 Claims**

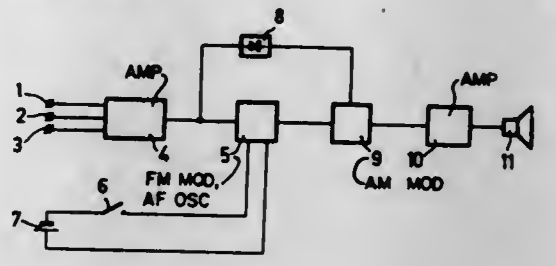

REFERENCE OSCILLATOR
REFERENCE RECORDING HEAD DRIVER
INPUT AMPLIFIER
FM MODULATOR
DATA RECORDING HEAD DRIVER
ALARM
QRS COMPLEX SIGNAL PROCESSOR
ELECTRONIC RANGE DETECTOR
MOTOR CONTROL AND ALARM CIRCUIT

The electrocardiographic signals are continuously recorded along a track on an endless magnetic tape within the portable magnetic tape recorder as the subject goes about his normal activities so that the most recently occurring electrocardiographic signals are always on the tape unless the frequency of the QRS complex signals departs from a range previously set into an electronic range detector, in which case the motor is stopped after a predetermined time delay that causes the tap to contain the signals occurring prior to the time of the departure from the range on half of the tape and the signals occurring after the departure from the range on the other half of the tape. An audible alarm is sounded when the motor stops so that the subject may change magnetic tapes and may make a note of his activities at the time the ORS complex signals departed from the range set on the detector.

3,650,264
APPARATUS FOR ELECTRO-MEDICAL INVESTIGATION

Frits Jacques Janssen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,462
Claims priority, application Netherlands, Dec. 4, 1968, 6817326
Int. Cl. A61l *5/04*
U.S. Cl. 128—2.06 A **4 Claims**

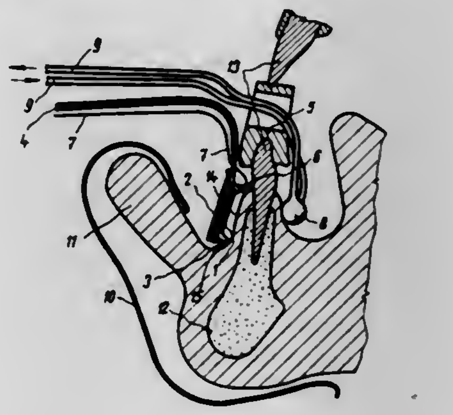


A medical diagnostic apparatus for producing an audible indication of the nature of electric signals produced in the human body by the action of the heart. An audio frequency carrier wave is modulated both in frequency and in amplitude in accordance with the aforesaid applied electric signals. The level of the fundamental tone normally remains below the limit of audibility. This limit is exceeded only when an electric heartbeat signal occurs.

3,650,265
PICK-UP DEVICE DETECTING CHANGES OF THE VOLUME OF MUCOUS MEMBRANES IN THE MOUTH

Stephan Figar, Prague, Czechoslovakia, assignor to Ceskoslovenska Akademie ved, Prague, Czechoslovakia

Filed Nov. 10, 1969, Ser. No. 875,277
Int. Cl. A61b *5/05*
U.S. Cl. 128—2.1 E **7 Claims**



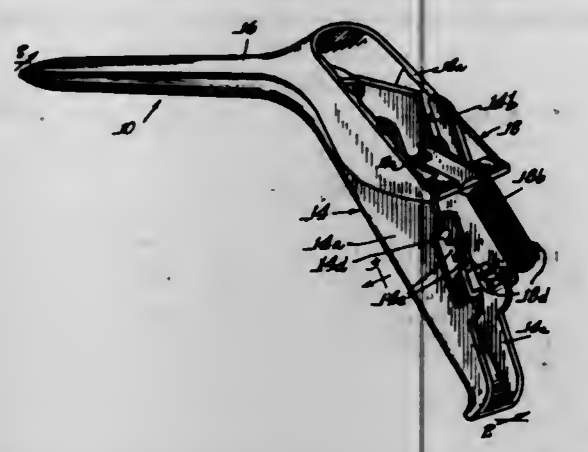
A pick-up device for detecting changes in the volume of mucous membranes in the mouth consisting of a plate shaped electrode provided with an insulating coating. The electrode is supported by a holder adapted to be clamped between teeth of the upper and lower jaw so that one side of said electrode faces the investigated tissue. The other side is electrically screened. The insulated coating of the pick-up electrode facing the investigated tissue is provided with at least two extension for securing a correct predetermined distance from said tissue.

3,650,266
SPECULUM

John A. Pestka, Park Ridge, and James A. Huggins, Racine, both of Wis., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 2, 1970, Ser. No. 7,921
Int. Cl. A61b *1/00*
U.S. Cl. 128—17 **6 Claims**

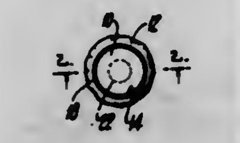
The present invention relates generally to improvements in inspection instruments or speculums used for dilating passages in the human body. And more particularly, to instruments of the above-mentioned type which may be plastic molded and hence produced at an extremely low cost. An embodiment of the invention disclosed herein comprises a pair of upper and lower pivotally coupled elongate jaw members and a handle section integral with each jaw member and extending generally laterally therefrom. A series of notches in one of the handle sections is adapted to interlock with lug means on the other handle section, said lug means being maintained in interlocking position as an incident to external pressures tending to close the jaw members.



3,650,267
SURGICAL DRAPE

Dale L. Anderson, Roseville, Minn., assignor to Johnson & Johnson

Filed Feb. 12, 1970, Ser. No. 10,944
Int. Cl. A61f ***13/00*****; A61b** ***19/00***
U.S. Cl. 128—132 **9 Claims**



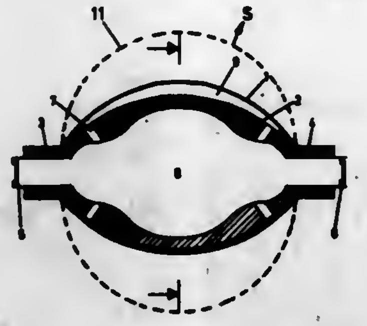
A surgical drape collects the purulent material and body fluids released from an incised wound while effectively preventing spillage into areas adjacent the incision. The drape may resemble in appearance a light weight flexible type of inverted shower cap having a substantially flat bottom and made of a plastic film sheet which is resistant to the absorption of body fluids. An opening in the drape has a size adequate to permit a working area in the interior of the drape for the fingers of the surgeon. A pressure sensitive adhesive coating is applied exteriorly to the wall (bottom) of the drape opposite the opening in order to enable the drape to be releasably affixed to the skin of the patient over the area where an incision is to be made. A protective liner or peel patch covers the adhesive coating until such time as it is desired to attach the drape to the patient.

3,650,268
APPARATUS FOR ARTIFICIAL RESPIRATION OR NARCOSIS

Henning M. Ruben, Copenhagen, Denmark, assignor to Ruth Lea Hesse, Copenhagen, Denmark

Filed July 7, 1969, Ser. No. 839,592
Claims priority, application Sweden, July 8, 1968, 9387/68
Int. Cl. A61m ***16/00***
U.S. Cl. 128—145.7 **8 Claims**

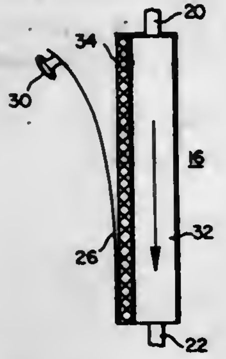
An insufflation apparatus for performing artificial respiration or narcosis of the type including a pumping means for moving gas from a gas source to a patient, inlet means for connecting the pumping means to the gas source, outlet means for connecting the pumping means to the air ducts of the patient, and check valve means in each of the inlet means and outlet means for preventing back flow of gas is improved by forming one wall of the pumping means with a resilient membrane. The resilient membrane serves as an elastic means for resisting increases in gas pressures up to a predetermined pressure which will not harm the patient so that gas will be pumped from the pumping means to the patient below that pressure. However, once that predetermined pressure is reached the resilient membrane expands and serves as elastic means compensating forces tending to further increase the gas pressure thereby limiting the overpressure in this system to said predetermined pressure.



3,650,269
EMERGENCY OXYGEN REBREATHER SYSTEM

Daniel L. Curtis, Manhattan Beach, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Sept. 25, 1970, Ser. No. 75,428
Int. Cl. A61m ***15/00*****; B01d** ***53/00*****; F28c** ***1/00***
U.S. Cl. 128—212 **10 Claims**



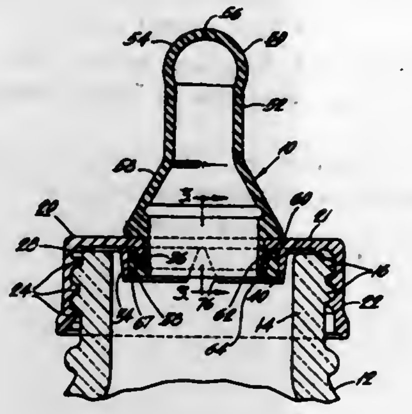
An emergency rebreathing apparatus is disclosed which includes a mouthpiece to be worn by the user for receiving exhaled breath from the user and for supplying reusable air to the user. A chemical conversion unit such as a potassium superoxide bed is provided for converting the exhaled breath into air having a suitable oxygen content, and a breathing bag is provided for receiving such air from the potassium superoxide bed. A conventional check-valve arrangement is provided for allowing the breath exhaled into the mouthpiece to pass into the potassium superoxide bed and for allowing inhaled breath to be drawn from the breathing bag to the mouthpiece. A hermetically sealed evaporative cooler is provided which is in thermal contact with the bed for maintaining its temperature below a predetermined maximum temperature, and control means are provided for actuating the cooling means only when it is desired to use the rebreathing apparatus.

3,650,270
NIPPLE-RETAINING RING ASSEMBLY

Thomas A. Frazier, Williamsport, Pa., assignor to The West Company, Phoenixville, Pa.

Filed Feb. 18, 1970, Ser. No. 12,292
Int. Cl. A61j ***11/00***
U.S. Cl. 128—252 **8 Claims**

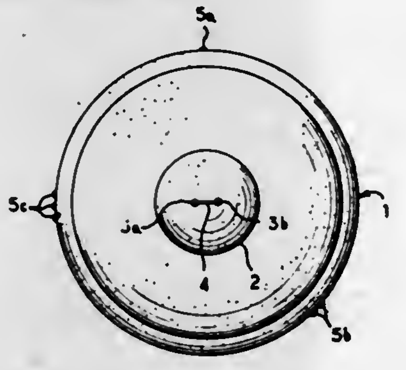
In combination, a retaining ring and nipple ring assembly for application to a container, said retaining ring including a top, a skirt depending from the outer edge of the top having means for securing the retaining ring to the container, an inner wall depending from the inner edge of the top defining an opening through which the nipple engages, an outer wall depending from the top and spaced radially from the inner wall to define a circumferentially extending channel therebetween, means defining at least one cut in said outer wall, said nipple including a feeding tip at one end and an upstanding locking rib at its opposite end adapted to engage in said channel in the assembled relation, said locking rib and inner and outer walls of said retaining ring being so dimensioned to provide a first circumferentially extending passageway adjacent the lower edge of said inner wall and a second circumferentially extending passageway between said locking rib and the channel.



3,650,271
NIPPLE FOR BABY BOTTLE

Pierre Pelli, Paris, France, assignor to L'Oreal

Filed June 5, 1970, Ser. No. 43,697
Claims priority, application France, July 29, 1969, 6925828
Int. Cl. A61j ***11/00***
U.S. Cl. 128—252 **4 Claims**



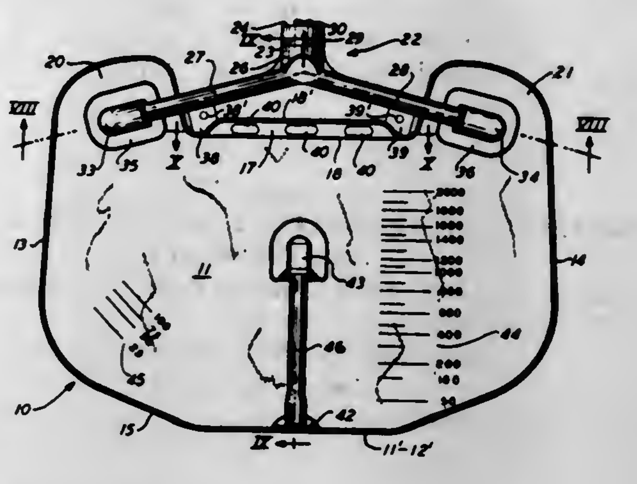
Nipple for baby bottle has at least one slot in the portion sucked by the baby. At least one end of at least one slot terminates in a hole having a diameter greater than the width of the slot.

3,650,272
DRAINAGE BAG

Richard E. Ericson, Keene, N.H., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Sept. 25, 1970, Ser. No. 75,506
Int. Cl. A61f ***5/44***
U.S. Cl. 128—275 **9 Claims**

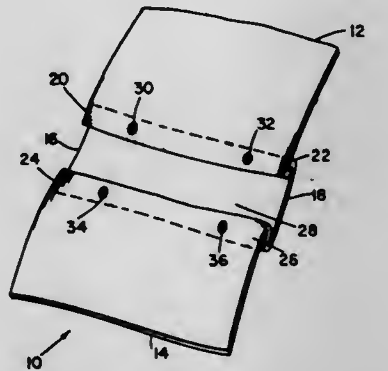
A closed system urine collection bag having a rigid combined drip chamber and bifurcated inlet tubes having their ends communicating with the bag adjacent opposite upper corners thereof and firmly secured thereto, thereby acting as a spreader to stabilize the form of the bag, the drip chamber and tubes constituting a carrying handle, and the medial upper edge of the bag being further stabilized by a rigid bar extending horizontally between spaced points of fixation to the inlet tubes.



3,650,273
BABY PANTY

Charles H. Schaar, Lake Zurich, Ill., assignor to The Kendall Company, Walpole, Mass.

Continuation-in-part of application Ser. No. 41,377, May 28, 1970. This application Aug. 13, 1970, Ser. No. 63,509
Int. Cl. A61f ***13/16***
U.S. Cl. 128—287 **4 Claims**

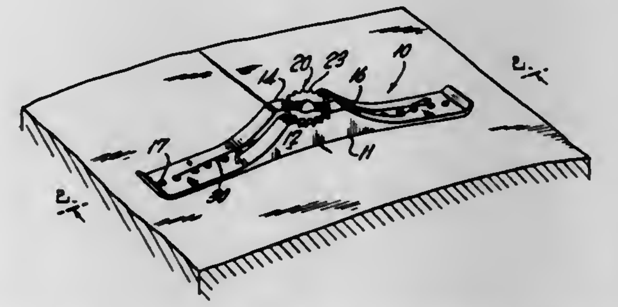


A panty comprising a sheet of drapable, water-impervious material having at least one tuck in the central portion thereof, in order to define an expandable crotch area is disclosed.

3,650,274
RETENTION SUTURE BRIDGE

Leon C. Edwards, Somerville; Harvey B. Mandel, North Brunswick, and Carl R. Tillstrom, East Windsor Twps., Mercer City, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Oct. 20, 1970, Ser. No. 82,255
Int. Cl. A61b ***17/04***
U.S. Cl. 128—335 **6 Claims**

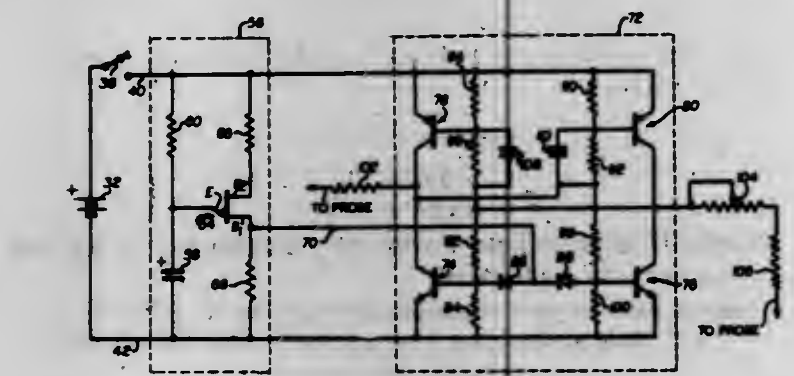


Apparatus for controlling and distributing the tension of retention sutures used in abdominal surgery has a bridging element that may be placed across the surgical incision underneath the loosely tied suture. The surgeon obtains the desired suture tension by placing the tied suture within a slot in a positive locking capstan that is mounted on the bridging element, and rotating the capstan to take up the slack. An increase in the suture tension caused by swelling of the wound may be released by turning the capstan in the reverse direction.

3,650,275
METHOD AND APPARATUS FOR CONTROLLING ANAL INCONTINENCE

Hans A. Von Der Mozel, Cliffside Park, N.J., assignor to Bio-Controls Corp., New York, N.Y.

Filed Aug. 13, 1968, Ser. No. 752,352
Int. Cl. A61n *1/34*
U.S. Cl. 128—407 **6 Claims**

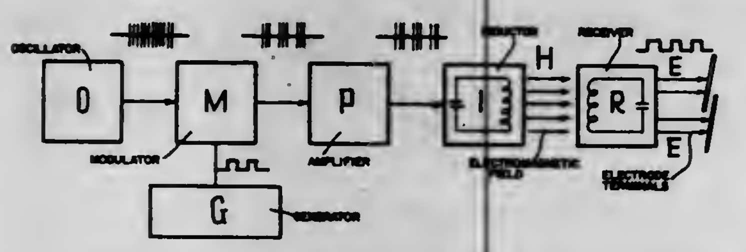


An electrostimulation probe comprising a suppository body formed with a rounded bulbous head, a reduced neck, and a broadened hilt, is inserted into the anus of a patient suffering from incontinence. The rounded bulbous tip and reduced neck facilitate anal insertion and subsequent retention. The rounded neck is clasped by the *sphincter rectalis*, and is provided with a pair of spaced electrical contacts which rest against the sphincter. The broadened hilt limits insertion of the suppository body, and has a substantially flat base so as to permit the patient to sit or lie down comfortably with the device inserted. A pair of electrical leads are connected respectively to the contacts, which are energized by a square wave signal having an average value of zero volts, a peak potential between 1 and 2 volts, and in the frequency range from about 18 to Hertz. 20 hertz. Such electrostimulation causes tonic and physiological contraction of the sphincter muscle, with significant results in the control of incontinence.

3,650,276
METHOD AND APPARATUS, INCLUDING A FLEXIBLE ELECTRODE, FOR THE ELECTRIC NEUROSTIMULATION OF THE NEUROGENIC BLADDER

Theodor Burghele; Vasile Ichim, and Mihai Demetrescw, all of Bucharest, Romania, assignors to Institutul DeMedicina Si Farmacie, Bucharest, Romania

Filed Mar. 25, 1969, Ser. No. 810,167
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 E **10 Claims**

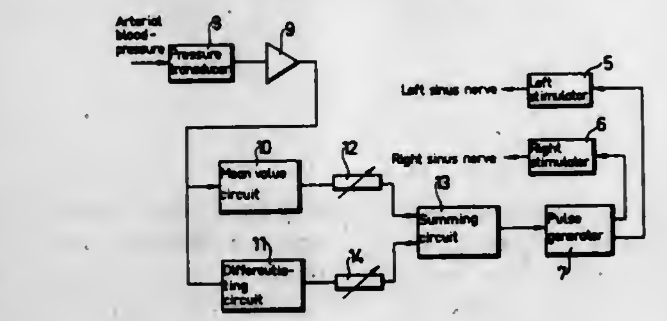


A method for artificial voiding of the bladder involves the introduction of electrodes onto the motor nerves of the bladder, and placing on the anterior wall of the sacrum a receiver means for producing an electric current within such electrodes when excited by an electromagnetic field, and periodically applying an electric and an electromagnetic field from the exterior of the body to said receiver means to induce voiding of the bladder.

3,650,277
APPARATUS FOR INFLUENCING THE SYSTEMIC BLOOD PRESSURE IN A PATIENT BY CAROTID SINUS NERVE STIMULATION

Ulf Hakan Sjostrand, Uppsala, and Per Ake Oberg, Brunna, both of Sweden, assignors to LKB Medical AB, Bromma, Sweden

Filed Feb. 17, 1970, Ser. No. 12,062
Claims priority, application Sweden, Feb. 4, 1969, 2528/69
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 C **6 Claims**

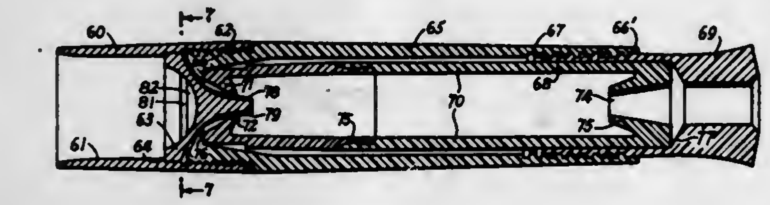


A system for reducing and controlling the blood pressure of a hypertensive patient has electrical pulse stimulation of the carotid-sinus nerves controlled by the arterial blood pressure of the patient in such a manner that the number of stimulation pulses within each heart cycle is determined by the arterial means blood pressure whereas the distribution of stimulation pulses over the heart cycle is a function of the arterial pulse wave shape with the pulse frequency being greater during the first portion of the heart cycle.

3,650,278
ADJUSTABLE TAR REMOVING FILTER FOR SMOKERS

W. Roland Cook, W. Roland Cook Ass., Co. 20 Intervale Place, Greenwich, Conn.

Filed Jan. 5, 1970, Ser. No. 563
Int. Cl. A24f *13/04*
U.S. Cl. 131—215 B **1 Claim**

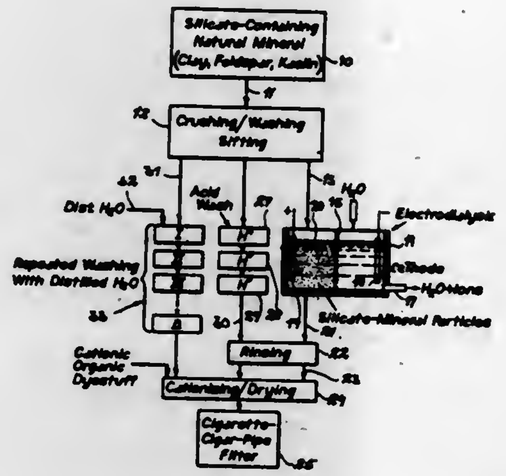


A smoke filter for cigarettes, cigars or pipes employs a manually adjustable needle valve stem in combination with a restricted orifice valve seat axially disposed in one end of a cylindrical condensation chamber. Smoke drawn through the needle valve is compressed and accelerated by its passage through the restricted orifice, and then it expands upon entering the condensation chamber where condensed tars are trapped. One or more lateral grooves formed in the exterior surface of the valve stem prevent complete closure of the needle valve. One disclosed embodiment is in a cigarette holder wherein the condensation chamber is removable and disposable. An alternative embodiment discloses an inexpensive form of the filter attached directly to the tip of a cigarette. A third embodiment discloses a cigarette holder wherein the condensation chamber and mouthpiece are formed of inexpensive molded plastic and are removable as a unit and entirely replaceable.

3,650,279
TOBACCO-SMOKE FILTER AND METHOD OF MAKING SAME

Helmut Gansloser, Constance, Germany, assignor to Otto Wachs, Trostbrucke, Germany

Filed Feb. 13, 1970, Ser. No. 11,182
Int. Cl. A24f *13/06*
U.S. Cl. 131—262 **8 Claims**


Silicate-Containing Natural Mineral (Clay, Feldspar, Kaolin)
10
11
12
Crushing/Washing Sifting
Acid Wash
Dist H₂O
H₂O
Electrodialysis
Cathode
Repeated Washing With Distilled H₂O
Silicate-Mineral Particles
Cationic Organic Dyestuff
Rinsing
Cationizing/Drying
Cigarette-Cigar-Pipe Filter

A filter for tobacco smoke consisting of clay, kaolin or feldspars or like aluminum silicate minerals which have been rendered substantially electropositive by an initial cleaning step, preferably by electrodialysis or electrolytic treatment, followed by a cationizing step in which the cationic material is adsorbed onto the mineral particles.

The particles may also be rendered suitable for the filtration of tobacco smoke by subjecting them to an electrophoresis or electrolysis whereby the electronegativity is reduced.

3,650,280
COSMETIC TREATMENT OF HAIR WITH THIOUREA OR UREA AND GLYOXAL

David Roberts, New York, and Leo S. Nasarevich, Jackson Heights, both of N.Y., assignors to David Roberts, New York, N.Y.

Filed Dec. 3, 1969, Ser. No. 881,886
Int. Cl. A61k *7/06*
U.S. Cl. 132—7 **10 Claims**

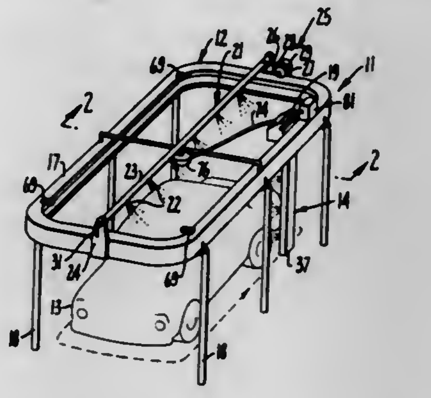
Non-alkaline compositions to beautify hair containing thiourea or urea, glyoxal and an inert cosmetic carrier; and also, preferably, benzyl alcohol and diethylene glycol monoethyl ether. Thin hair is thickened, the molding of thick hair is facilitated and hair is elasticized when treated with the compositions.

3,650,281
AUTOMATIC CARWASH APPARATUS

Mowatt M. Hurst, Menlo Park, Calif., assignor to Malsbary Manufacturing Company, Oakland, Calif.

Filed Dec. 24, 1968, Ser. No. 786,591
Int. Cl. B60s *3/04*
U.S. Cl. 134—58 R **18 Claims**

An automatic carwash apparatus of the type having a spray carriage moving around the vehicle on an oblong overhead track, with part or all of the spray onto the car being applied from a spray manifold attached to the carriage. All forms of the invention apply the spray in varying spray volume according to the particular surface portion of the vehicle being sprayed, and all are adapted to change from one spray fluid to another as the carriage circumnavigates the vehicle, for such steps as pre-wetting, soaping, rinsing and waxing. In a number of the embodiments, the spray means used for the top portions of the vehicle is independent of the spray means used for the sides and ends, with one such form having a reciprocal pivoting motion, another having a separate carriage reciprocating along a second track, and then having a second carriage moving along the same track as the first, and still another having spray arms rotating in a horizontal plane about a fixed point. In still another form, a single spray manifold is used, attached to the spray carriage and extending in a straight line in a plane generally normal to the path

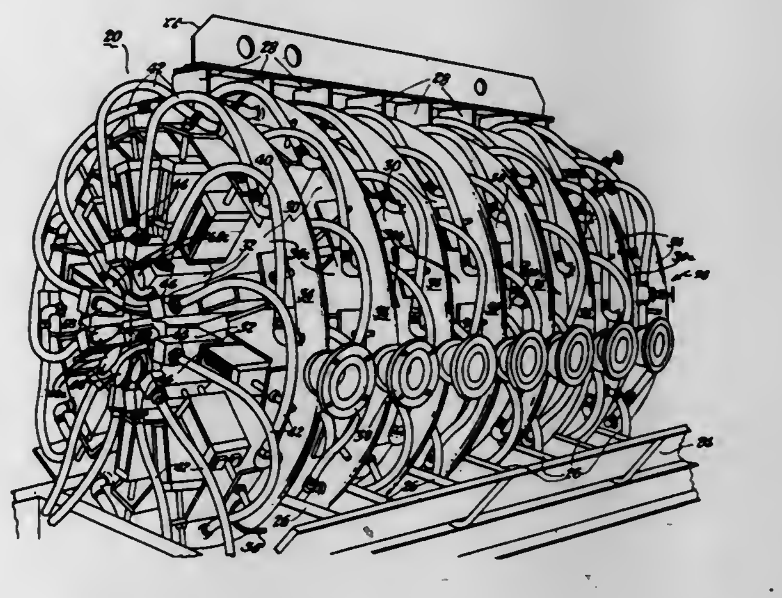


of the portion of the track being traversed. In the single straight line manifold form, the manifold may be horizontal, vertical, slanted, or swingable between vertical and horizontal positions. The straight line manifold is adapted in all forms of the invention to be pivoted for swinging reciprocation about its longitudinal axis to produce a swashing action of the spray against the car.

3,650,282
CONTINUOUS QUENCHING APPARATUS

John R. Hollyer, Warrington, Pa., and Robert A. Andreas, Homewood, Ill., assignors to Drever Company, Huntington Valley, Pa.

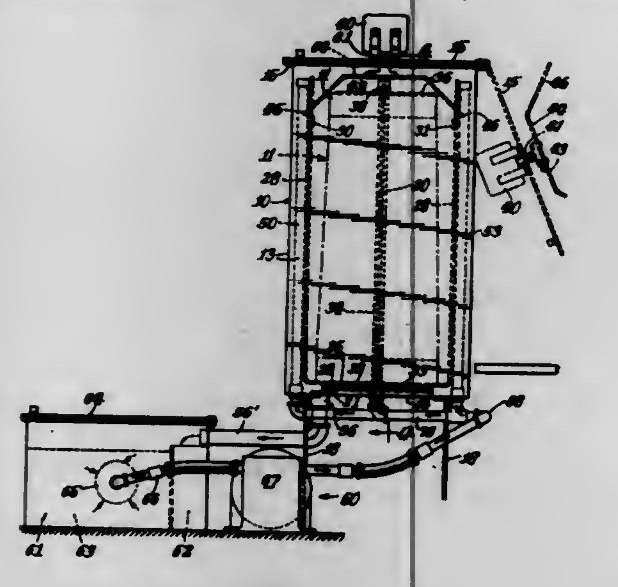
Filed Nov. 12, 1969, Ser. No. 875,769
Int. Cl. B05b *3/14*; B08b *3/02*
U.S. Cl. 134—122 **10 Claims**



A quenching apparatus that comprises a support circumferentially and spacedly disposed relative to an object to be quenched, with a relatively closely spaced array of jet structures to which cooling fluid is supplied being slidably mounted on the support. Anti-friction means on each of the jet structures are biased into contact with the object for adjustably moving the corresponding jet structures on the support to maintain a selected clearance relative to the object. The jet structures may be selectively adjusted relative to each other to accommodate different sized objects to be quenched. The individual jet structures consisting of a jet opening and a fluid directing spoon are disposed at a relatively small angle to the adjacent surface of the object. An axial series of supports, each provided with an array of jet structures, has the angle of direction of the jet increasingly inclined to the surface of the object going from the entrance support to the exit support.

3,650,283
FILTER CLEANER HAVING ROTATABLE SUPPORT AND SPRAY MEANS

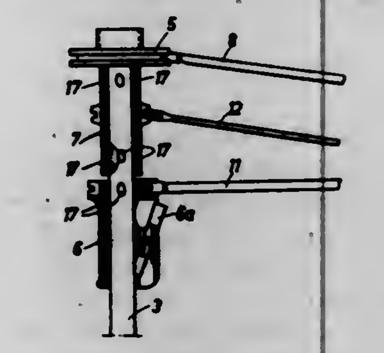
David C. Lang, 9956 Fairfield Avenue, Chicago, Ill.
Filed Mar. 23, 1970, Ser. No. 21,962
Int. Cl. B08b *3/02, 9/00*
U.S. Cl. 134—143 **5 Claims**



A cleaning apparatus for filters of the cylindrical type used with carburetors of internal combustion engines comprising a tank for receiving cleaning fluid and a plurality of spray means for discharging cleaning fluid therein extending axially into the tank, a turntable adapted to support the filters rotatable about an axis concentric with one of the spray means and the turntable having axially extending means terminating adjacent the upper end of the tank, a cover adapted to close the upper end of the tank with a drive motor mounted thereon and a drive shaft extending into the upper end of the tank with means associated therewith for engaging the axially extending means of the turntable to effect rotation of the turntable.

3,650,284
COLLAPSIBLE UMBRELLA FRAME

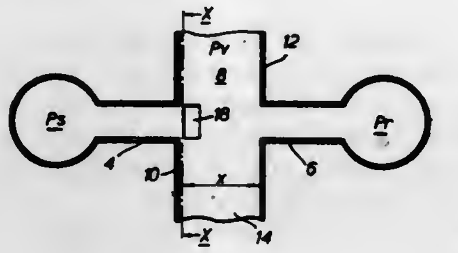
Heinz Weber, Hilden, Germany, assignor to Bremshey & Co., Solingen-Ohligs, Germany
Filed Feb. 20, 1969, Ser. No. 800,852
Claims priority, application Germany, Feb. 27, 1968, P 16 32 500.1
Int. Cl. A45b *19/06*
U.S. Cl. 135—26 **2 Claims**



A telescopic umbrella frame comprises at least two telescopic stick parts, the upper of which is nearest to the crown of the umbrella and has the smallest cross-section, and the lower of which is nearest to the handle end of the umbrella and has the greatest cross-section, and a main and an auxiliary slider which slide on the stick and which support a canopy frame, the auxiliary slider sliding on the stick between the main slider and the crown, and the main slider being able to be locked to the stick when the canopy frame is open and having an internal cross-section corresponding to the external cross-section of the lower stick part. The upper stick part is provided with projections or a sleeve adjacent the crown, these projections or sleeve being arranged to fit into the bore of the main slider when the main slider is in its locking position with the canopy frame open so that the main slider is held steady on the upper stick part. The sleeve may be provided by an extension on the lower end of the auxiliary slider.

3,650,285
FLUIDIC JET COLLECTORS

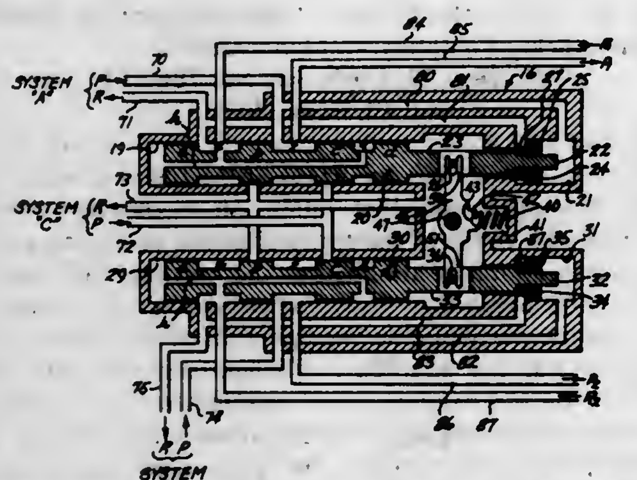
Guy Edward Davies, and Charles Michael Fitzmaurice, both of Ilford, England, assignors to The Plessey Company Limited, Ilford, England
Filed Mar. 25, 1970, Ser. No. 22,576
Claims priority, application Great Britain, Nov. 14, 1969, 55,810/69
Int. Cl. F15c *1/06*
U.S. Cl. 137—81.5 **3 Claims**



The invention relates to a fluidic device comprising a channel of rectangular section having a rectangular inlet orifice in one of the walls and a rectangular outlet orifice in the opposite wall; the channel acts as a vent. When fluid enters the channel through the inlet orifice, an unrestrained and irreversible expansion takes place. The expansion is accompanied by variation in local pressure due to the interaction of multiple expansion and compression waves which provide the device with a desired input/output pressure characteristic.

3,650,286
HYDRAULIC SELECTOR VALVE

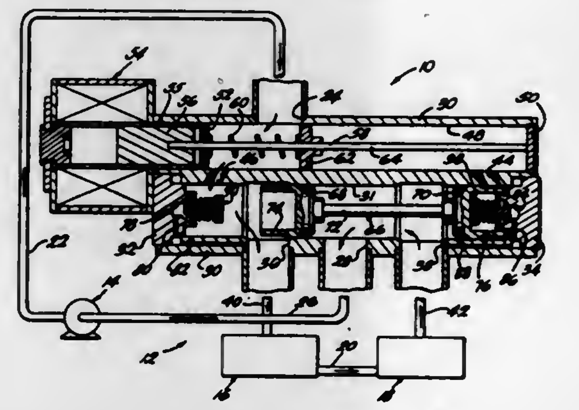
George B. Armstrong, Claremont, Calif., assignor to The United States Government as represented by the Administrator of the Federal Aviation Administration
Filed May 13, 1970, Ser. No. 36,745
Int. Cl. G05d *16/10*
U.S. Cl. 137—87 **5 Claims**



An automatic pressure responsive selector valve for automatically supplying pressure from three independent hydraulic systems, one of which is maintained in a standby status, into two working systems such that in the event of a failure of one of the supply systems the selector valve activates the standby system into a working system; and upon the further failure of a second supply system, the selector valve divides the fluid flow from the remaining pressurized system into the two working systems.

3,650,287
REVERSING VALVE ASSEMBLY

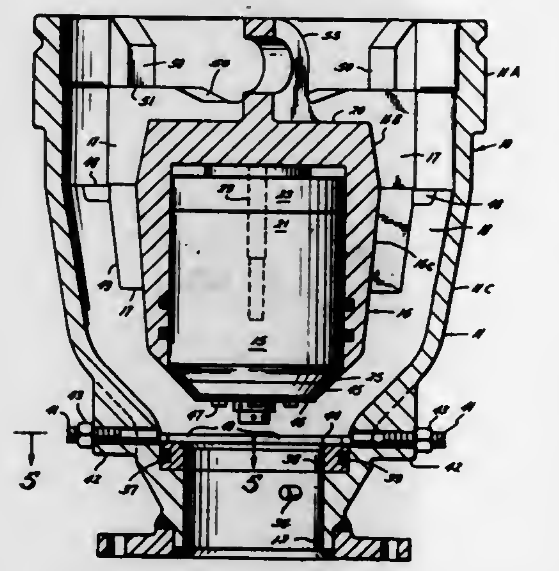
Fred A. Greenawalt, Fort Lauderdale, Fla., assignor to Venture Products Corporation, Fort Lauderdale, Fla.
Filed Jan. 20, 1970, Ser. No. 4,366
Int. Cl. G05d *16/10*
U.S. Cl. 137—106 **6 Claims**



A reversing valve for refrigeration and air conditioning systems which is operable to reverse the flow of refrigerant through the heat exchangers which function as the condenser and evaporator in the system. A solenoid plunger assembly is utilized to control the reversing action, and it is mounted on the reversing valve in an arrangement which minimizes heat loss from the coil and which improves the armature action. An arrangement is also provided to assure desired pressure conditions on opposite sides of moving parts so that more effective operation of the valve occurs.

3,650,288
SAFETY RELIEF VALVE

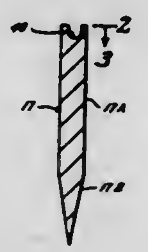
Billy R. Bruton, and Joe B. Locke, both of Longview, Tex., assignors to U.S. Industries, Inc., New York, N.Y.
Filed Feb. 5, 1970, Ser. No. 8,812
Int. Cl. F16k *1/06, 1/12*
U.S. Cl. 137—219 **8 Claims**



A safety relief valve comprises an outer annular body with a relief port through one end, an outlet at the other end, and an annular seat about the relief port. An inner body having ribs extending outwardly therefrom is removably insertable through the outlet into a position within the outer body in which the ribs are seated therein to support the inner body generally concentrically within and spaced from the outer body to provide an annular flow passage between the inner and outer bodies. The end of the inner body facing the relief port is spaced from the seat to provide an annular opening connecting the flow passages, and a closure member is mounted on the inner body for reciprocation between a position seated on the seat to close communication between the flow passages and a position spaced from the seat to open communication therebetween.

3,650,289
SAFETY RELIEF VALVE

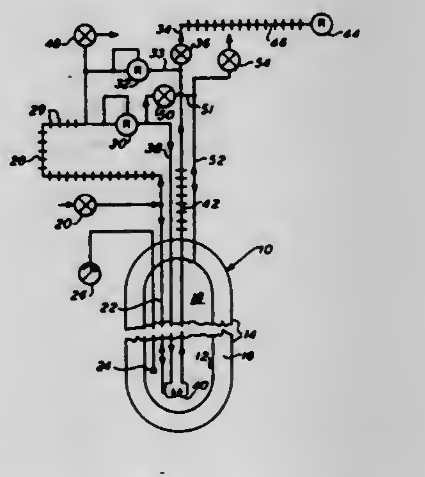
Joe B. Locke, Longview, Tex., assignor to U.S. Industries, Inc., New York, N.Y.
Filed Feb. 5, 1970, Ser. No. 8,820
Int. Cl. F16k *1/06, 1/12*
U.S. Cl. 137—219 **6 Claims**



A safety relief valve comprises an outer annular body with a relief port through one end, an outlet at the other end, an annular seat about the flow passage through the relief port, and an inner body supported concentrically within and spaced from the outer body to provide an annular flow passage between the inner and outer bodies. The end of the inner body facing the relief port is spaced from the seat to provide an annular opening connecting the annular flow passage with the flow passage through the relief port, and a closure member is mounted on the inner body for reciprocation between a position seated on the seat to close communication between the flow passages and a position spaced from the seat to open communication therebetween.

3,650,290
PRESSURE CONTROL SYSTEM FOR CRYOGENIC FLUIDS

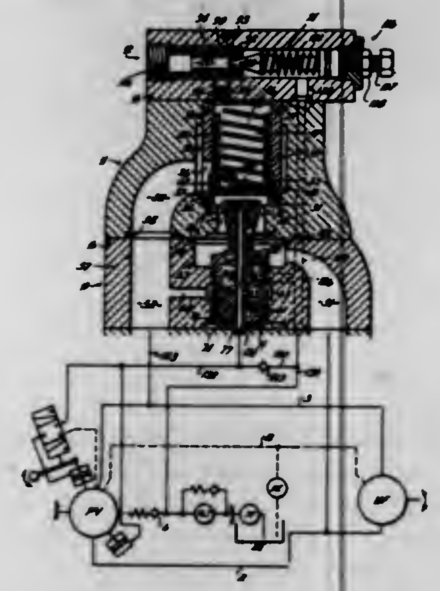
Walter B. Moen, Berkeley Heights, and George R. Spies, Murray Hill, both of N.J., assignors to Air Reduction Company, Incorporated, New York, N.Y.
Filed Nov. 19, 1968, Ser. No. 777,048
Int. Cl. F16k *49/00*
U.S. Cl. 137—339 **3 Claims**



Heat for maintaining operating pressure in a single phase cryogen fluid at or above the critical pressure is provided by controllably circulating a portion of the warmed delivery fluid in heat exchange with the storage fluid. The circulated delivery fluid is reheated and recombined with the remainder of the delivery fluid. A regulator device having a double acting valve element movable between two opposite positions controls flows respectively to a pressuring heat exchanger coil and to a by-pass leading directly to delivery.

3,650,291
COMBINATION RELIEF AND SHUTTLE VALVE

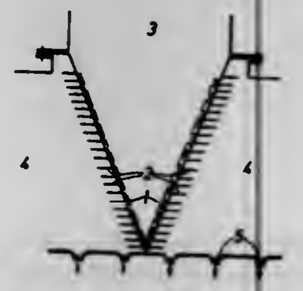
Cecil E. Adams, and Leo H. Dillon, both of Columbus, Ohio, assignors to Abex Corporation, New York, N.Y.
Original application Oct. 6, 1969, Ser. No. 863,908, now Patent No. 3,583,157. Divided and this application Dec. 9, 1970, Ser. No. 96,506
Int. Cl. F16k *17/22;* **F15b** *15/18*
U.S. Cl. 137—491 **8 Claims**



A closed loop hydrostatic transmission for transmitting rotary power from a reversible fluid pump to a reversible fluid motor. The transmission includes a novel combination dual relief and shuttle valve operable to relieve excessive pressure from whichever is the higher pressure of two main lines of the loop circuit and to connect whichever is the lower pressure or pump inlet line of the two main lines to a replenishment oil circuit. Two different hydrostatic transmissions are disclosed; one a full boost transmission in which all of the flow from a booster pump is inserted into the closed loop circuit and the other a partial boost transmission in which only makeup oil required for replenishment of oil leakage is inserted into the closed loop circuit.

3,650,292
DEVICE FOR DEFLECTING LIQUID OR GASEOUS MEDIA IN RECTANGULAR DUCTS

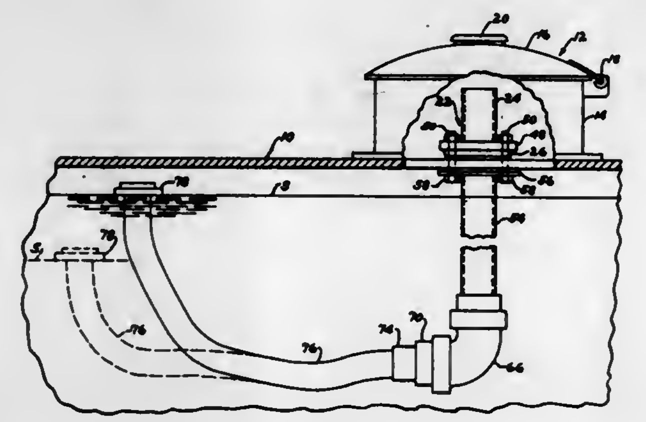
Stephan Platz; Peter Herzhoff, both of Leverkusen, and Hans Gref, Cologne, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed June 22, 1970, Ser. No. 48,038
Claims priority, application Germany, July 12, 1969, P 19 35 487.1
Int. Cl. F15d *1/04*
U.S. Cl. 137—561 **3 Claims**



Fluid is uniformly distributed from spaced apertures along a distributing duct supplied by a perpendicular feed duct by inserting a perforated angular extension of the feed duct within and across the distributing duct with its central pointed edge in contact with the apertured wall of the distributing duct. A series of uniformly spaced short vanes are mounted parallel to the distributing duct on the outside of the angular extension, which is conveniently made of screen material and attached within the connected ducts by flanges.

3,650,293
FLOATING VENT FOR RAILWAY TANK CAR SAFETY RELIEVE VALVE

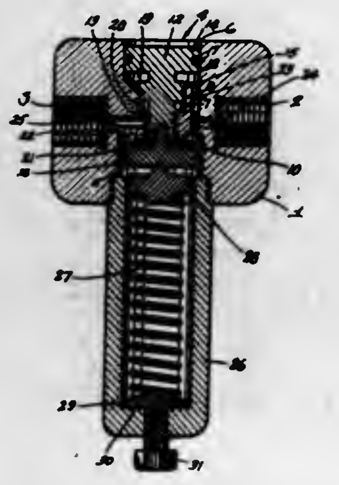
Eugene L. Kunz, Florissant, and Ronald P. Bolte, St. Louis, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed Nov. 25, 1970, Ser. No. 92,575
Int. Cl. E03b *11/00*
U.S. Cl. 137—578 **4 Claims**



A railway tank car for the transport of liquids has a safety relief valve which is actuated at a predetermined pressure. A float on the outer end of a flexible conduit which communicates with the relief valve permits the flexible conduit to be exposed to gases in the void volume of the tank even when the tank is overturned and the safety valve is on the bottom of the tank shell instead of the top of the tank shell. Excessive gaseous pressures in the tank shell which might occur upon derailments with the tank shell tilted or overturned is communicated or vented directly to the safety relief valve by the end of the flexible conduit which is exposed to the void volume of the tank shell.

3,650,294
PRESSURE RETAINING VALVE

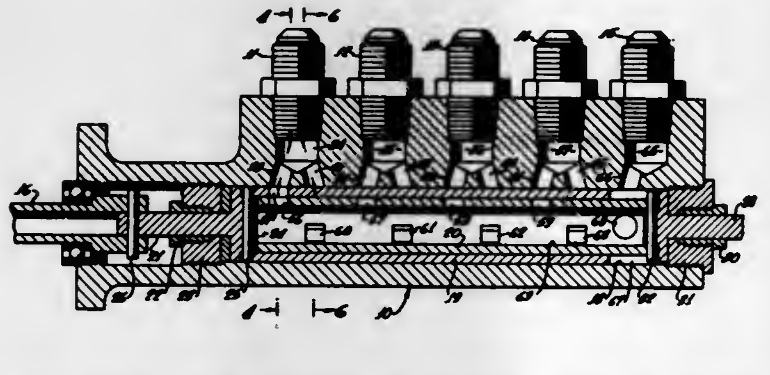
Kichiro Satoh, 29 Uguisudoni-machi, Tokyo, Japan
Filed Oct. 20, 1969, Ser. No. 867,444
Int. Cl. F16k *31/12*
U.S. Cl. 137—509 **2 Claims**



A pressure retaining valve adapted to retain correctly any predetermined pressure of any fluid and serve as a safety valve which discharge the fluid to the second side for counter balance when the pressure of the fluid at the first side exceeds the predetermined pressure. The valve comprises a valve casing having an inlet and an outlet for fluid, a vertically disposed axial bore having stepped portions, and an uniquely shaped valve body fitted in the vertical bore, an adjustable spring loaded cylindrical member installed beneath the casing and connected to the vertical bore.

3,650,295
ROTARY VALVE

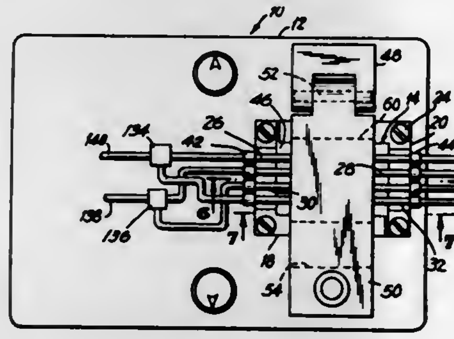
Richard J. Smith, 8591 Pyle Way, Midway City, Calif.
Continuation of application Ser. No. 677,223, Oct. 23, 1967, now abandoned. This application Apr. 20, 1970, Ser. No. 31,815
Int. Cl. F16k *11/20*
U.S. Cl. 137—614.17 **11 Claims**



A rotary valve including a housing having a chamber within which rotates a sleeve having at least one port for intermittent communication with a discharge port in the chamber, and a second sleeve within the first having a port adapted for communication with the port in the outer sleeve, the second sleeve being adjustable in its rotational position to control cutoff. An adjustable ported sleeve may be provided outside the rotor sleeve for controlling the timing.

3,650,296
APPARATUS FOR SIMULTANEOUSLY CONTROLLING THE FLOW OF FLUIDS IN A PLURALITY OF FLOW PATHS

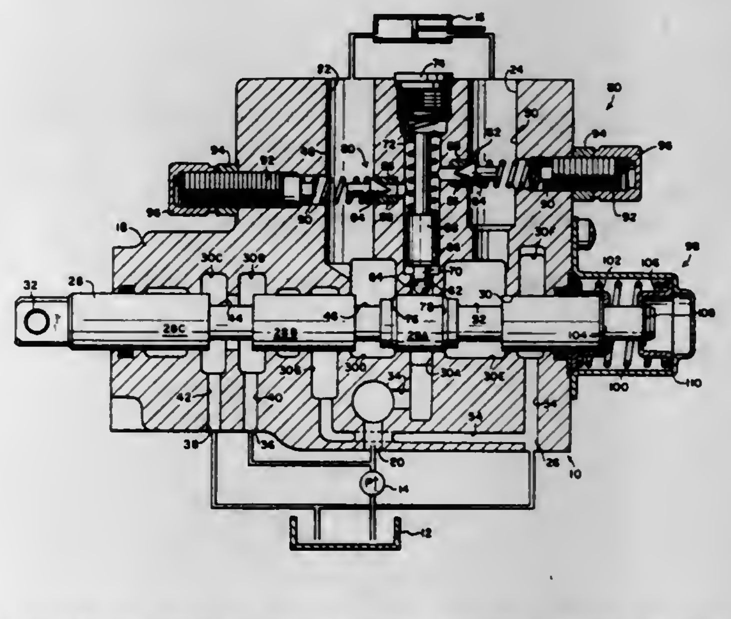
Carl V. Johnson, Baldwin, and Reino Leisio, Bronxville, both of N.Y., assignors to Technicon Corporation, Tarrytown, N.Y.
Filed Sept. 22, 1969, Ser. No. 864,262
Int. Cl. F16k *11/00*
U.S. Cl. 137—624.18 **2 Claims**



New and improved method and apparatus for simultaneously controlling the flow of fluids in a plurality of flow paths are provided and take the form of valve means having a plurality of low volume, separate flow paths therethrough, means to control the flow of fluids through a first plurality of said flow paths, means to control the flow of fluids through a second plurality of said flow paths, and actuation means to actuate said fluid flow controlling means in such manner that said respective pluralities of fluid flow paths are never simultaneously closed, and are simultaneously opened only for the briefest period of time to respectively prevent pressure build-up upstream of the valve means and to insure an extremely low hold-up volume within the valve means resultant near perfect fluid flow cut-off or separation characteristics through the valve means.

3,650,297
SPOOL RELEASE AND SEQUENCE VALVE

Glenn R. Hubbard, Racine, Wis., assignor to Webster Electric Company, Inc., Racine, Wis.
Filed Sept. 30, 1970, Ser. No. 76,686
Int. Cl. F15b *13/01*
U.S. Cl. 137—624.27 **12 Claims**

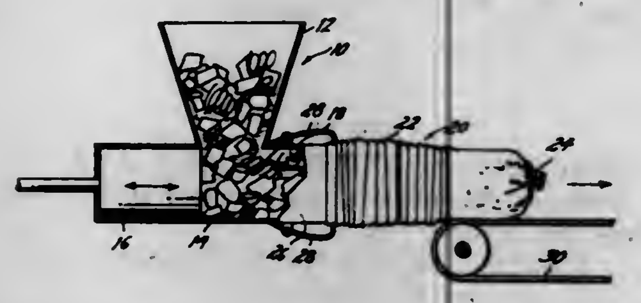


A hydraulic valve includes a spool movable from an inactive position to a pair of operating positions in each of which one of a pair of motor ports is pressurized. A detent latches the spool in its operating positions, and a spring biased plunger normally urges the detent into engagement with the spool. One side of the plunger is exposed to valve inlet pressure, and normally the plunger is maintained in hydraulic balance by means of restricted communication between its two sides. A pair of pressure responsive valves communicate between the second side of the plunger and the motor ports, and are independently adjustable to open at predetermined pressures thereby to unbalance the plunger and release the spool from the operating positions. The valve may be provided with a centering spring so that upon release the spool returns to its inactive position. Alternatively, the valve is provided with a reversing spring arrangement serving to reverse the operation of the valve when the spool is released from a first operating position so that a pair of operations are automatically carried out in sequence. A system including two or more valves carries out several hydraulic operations in sequence.

3,650,298
CARTRIDGE PACK FOR TRASH COMPACTION MACHINE

John Kenneth Delmar, Havertown, Pa., assignor to Crystal-X Corporation, Darby, Pa.
Filed Aug. 6, 1970, Ser. No. 61,693
Int. Cl. F16l *55/00*
U.S. Cl. 138—103 **5 Claims**

A cartridge comprising a compressed plastic tube for mounting on the tapered end of a hollow cylindrical member into which solid waste or refuse is rammed so that the tube can subsequently be tied and cut into relatively small units containing slugs of compacted refuse. The plastic tube comprises elongated sections, generally about 2 ft. in length, interconnected by external folds, sealed at their bases, so that after a length of tube, such for example as 32 ft., is filled with slugs of compacted refuse, the folds can be readily pulled

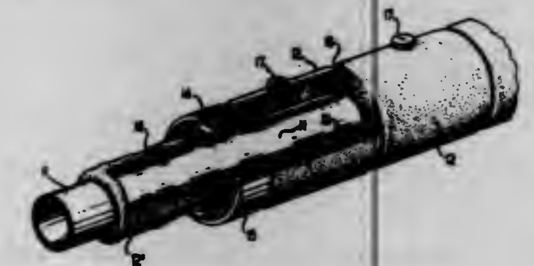


open, tied, and severed between the ties to form 2 ft. plastic containers of compacted refuse.

3,650,299
INSULATION APPARATUS AND TECHNIQUES FOR FLUID-TRANSMITTING PIPES

Edwin Nail Seiler, 80 Hunterdon Boulevard, and Weaks Gardner Smith, 48 Southgate Road, both of Murray Hill, N.J.

Filed Dec. 14, 1970, Ser. No. 97,587
Int. Cl. F16l *55/16, 9/14*
U.S. Cl. 138—149 **5 Claims**



Pipes for transmitting petroleum across permafrost earth are insulated by a succession of inflatable tubular bag members. The bag members are inflated by forcing into them insulative material under air pressure. When the pipes transmit petroleum, the average density of the pipe and inflated bag members is smaller than that of the permafrost earth. Thus, if the permafrost should melt, the insulated pipe would float rather than undergoing serious stresses that would otherwise occur.

3,650,300
FIRE RETARDANT POLYOLEFINS

Gregory Julius Listner, Kendall Park, N.J., assignor to Johnson & Johnson

Continuation-in-part of application Ser. No. 706,986, Feb. 20, 1968. This application Oct. 31, 1968, Ser. No. 774,222
Int. Cl. C08f *45/58;* **C09k** *3/28*
U.S. Cl. 139—420 **24 Claims**

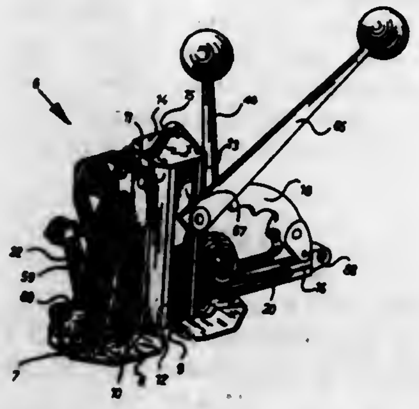
This invention relates to poly-α-olefin compositions made fire retardant by the addition thereto of an antioxidant, a bromine or a chlorine phosphate, a free radical initiator, and a dispersant.

3,650,301
COMBINATION TOOL FOR AFFIXING A SEAL TO STRAPPING

Thomas J. Karass, 411 Kindersley Avenue, Mount Royal, Quebec, Canada

Filed Jan. 6, 1970, Ser. No. 1,009
Int. Cl. B21f *9/02*
U.S. Cl. 140—93.4 **8 Claims**

A manually-operable tool which tensions a strap around a package or container and applies and crimps a seal around the strapping and which, finally, cuts the strapping behind

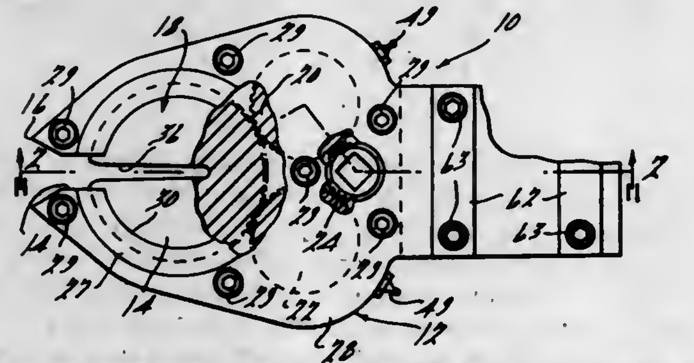


the seal. The seals or connector elements are automatically fed from a magazine.

3,650,302
WIRE TWISTER

Joseph X. Palms, 873 Notre Dame, Grosse Pointe, Mich.

Filed Mar. 4, 1970, Ser. No. 16,395
Int. Cl. B21f *15/04*
U.S. Cl. 140—119 **6 Claims**

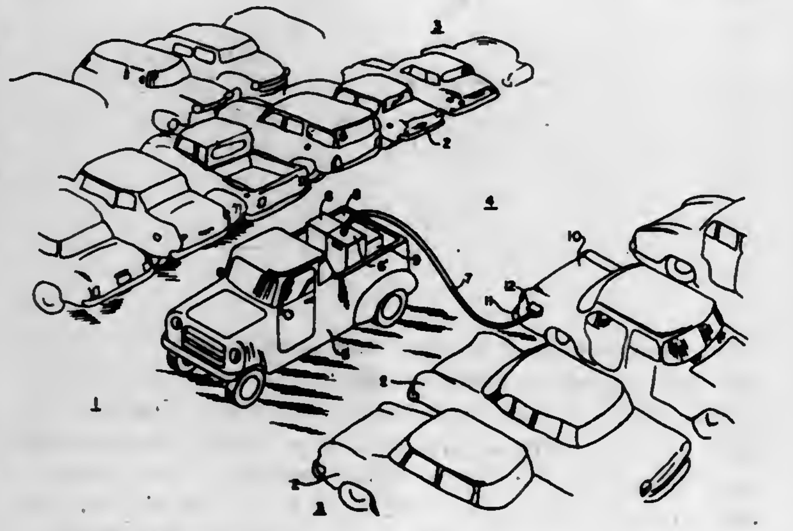


A wire twisting tool that is used with and powered by a standard nutrunner. The twisting tool bolts onto the nutrunner and has a radially slotted twisting gear to receive the wires to be twisted. The slotted gear is rotated through intermediate gearing driven by the driver of the nutrunner. The nutrunner is of the right angle drive type, so that the axis of its driver is parallel to the axis of the twisting gear.

3,650,303
METHOD AND APPARATUS

Robert R. Chambers, Scarsdale, N.Y., and Rudolph S. Stokan, Harvey, Ill., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Jan. 2, 1970, Ser. No. 19
Int. Cl. B67d *5/00*
U.S. Cl. 141—1 **15 Claims**

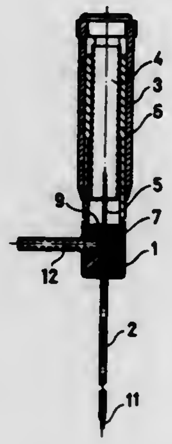


A new method and apparatus for filling a vehicle gasoline tank and automatically recording the identity of the vehicle and the amount of gasoline added is disclosed. These systems are further useful in a method for periodically maintaining a group of vehicles which are parked for a relatively long time as in a daily parking lot. The vehicles can thus be maintained with gas, oil, etc., without the necessity for the owner or driver being present.

3,650,304
MERCURY DOSAGE DEVICE

Aito Kasimir Airola, and Martti Kaarlo Johannes Saarinen, both of Helsinki, Finland, assignors to Oy Airam Ab, Helsinki, Finland

Filed Apr. 13, 1970, Ser. No. 27,599
Claims priority, application Finland, Apr. 18, 1969, 1138/69
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—2 **7 Claims**

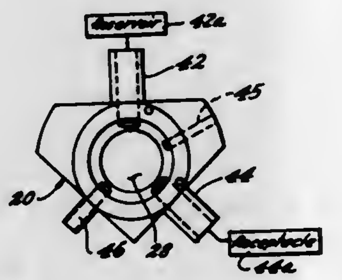


The mercury dosage device consists of a supporting tube in a holder and a capillary tube fitted inside this supporting tube and in which the upper end of the capillary tube has been connected to means for producing combined suction and blowing action. The magnitude of the dose is determined by the position of the lower end of a stem movable longitudinally within the capillary tube. The outer diameter of the stem is smaller than the inner diameter of the capillary tube in such amount that the suction and blowing effect on the mercury is easily produced but that the mercury cannot enter the space between the stem and the capillary tube.

3,650,305
VALVE FOR DISPENSING MEASURED QUANTITIES OF LIQUID

Richard E. Hendershot, Los Angeles, Calif., assignor to Harvey Dental Specialty Company, Gardena, Calif.

Filed Jan. 29, 1970, Ser. No. 6,827
Int. Cl. B65b *31/00;* **B67c** *3/00*
U.S. Cl. 141—50 **11 Claims**

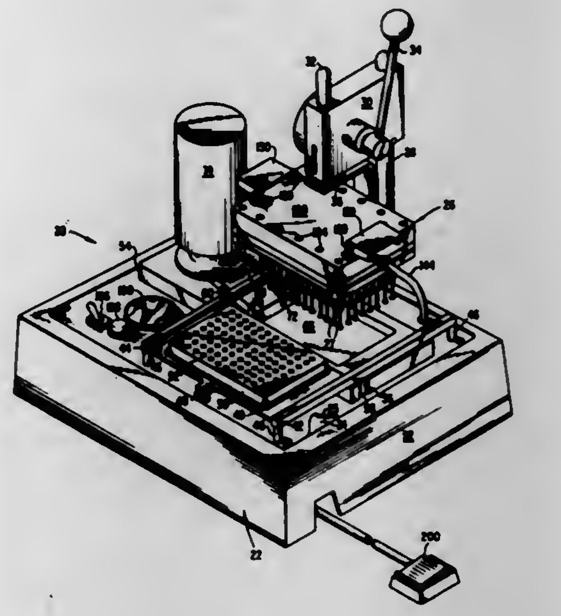


A valve is equipped with a measuring chamber to release predetermined increments of liquid into a pressurized receptacle, the valve having a first limit position for filling the metering chamber from a liquid reservoir, a second opposite limit position for emptying the measuring chamber into the receptacle, a third intermediate position to vent the metering chamber and a fourth position in its range of positions to vent the receptacle.

3,650,306
LABORATORY DISPENSING APPARATUS

Jesse F. Lancaster, Great Falls, Va., assignor to Cooke Engineering Company, Alexandria, Va.

Filed Sept. 18, 1970, Ser. No. 73,505
Int. Cl. B65b *3/30;* **B01j** *4/02*
U.S. Cl. 141—238 **18 Claims**



Laboratory dispensing apparatus including a base, a liquid reservoir and well assembly mounted on the base, and a microtitration plate carrier device mounted on the base for reciprocating movement between a forward retracted position and a rearward operative position overlying a portion of the well. A vertically movable pipette dispensing assembly is positioned above the base in operative alignment with the portion of the liquid well so that with the carrier in the forward retracted position the plural pipettes may withdraw microquantities of liquid from the well and then dispense the same into the microtitration plate wells when the carrier is moved to the rearward position. The plural pipettes are supported and contained in a head unit which is readily removable from the dispensing assembly to permit quick changing of heat units for cleaning purposes.

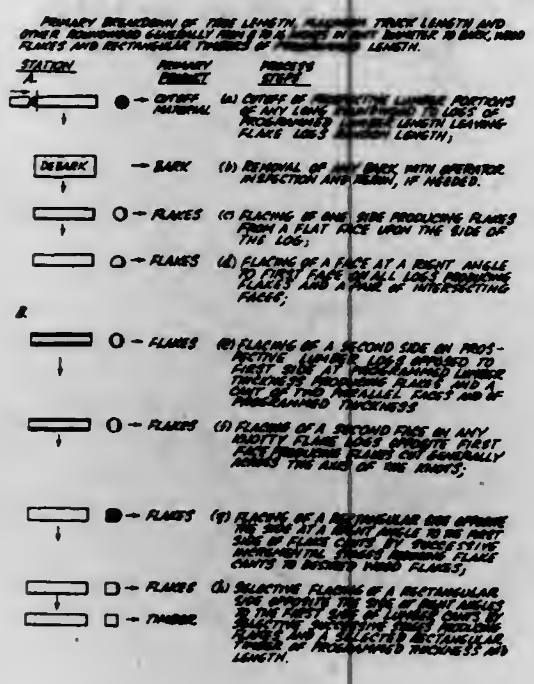
A liquid agitator assembly is associated with the liquid reservoir and well assembly to circulate and stir the liquid and thereby insure uniformity and homogeneity of the liquid being dispensed by the plural number of pipettes. An electrical and pneumatic control system operates the stirring assembly and dispensing assembly, with the various control elements and components being mounted within the base structure of the dispensing apparatus to provide a compact self-contained portable system.

3,650,307
APPARATUS FOR PRIMARY BREAKDOWN OF ROUNDWOOD

Donald L. Johnson, 1816 N. Lenore Drive, Tacoma, Wash.

Original application Apr. 12, 1967, Ser. No. 635,639, now Pat. No. 3,472,296. Divided and this application Sept. 25, 1969, Ser. No. 860,970
Int. Cl. B27c *9/00*
U.S. Cl. 144—3 R **23 Claims**

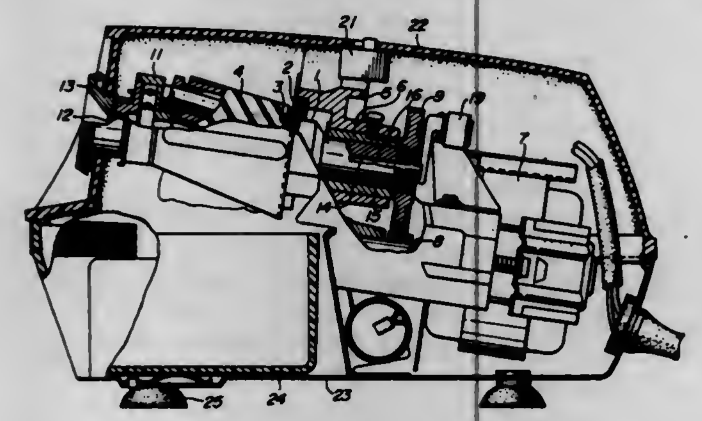
A unified primary flacer mill for the selective reduction of roundwood to bark, bolts for decorative veneer, wood flakes or chips, lumber and timbers for use as such or for subsequent reduction to flat sliced rectangular veneer. The mill consists of two independent systems for producing bark and flakes or chips. Thinnings and other small wood to 8 inches in diameter are delivered to one station. Larger roundwood possibly suitable for lumber or timbers is delivered to other stations. Flaking or chipping and surfacing heads replace saws for all outside cuts. Apparatus provides adequate sup-



port for the wood during flacing and parting and good operator view of the work for selective breakdown.

3,650,308
ELECTRIC PENCIL SHARPENER

Takeo Hori, Fukuoka-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 16, 1969, Ser. No. 858,469
Claims priority, application Japan, Sept. 20, 1968, 43/69026
Int. Cl. B43l *23/02*
U.S. Cl. 144—28.5 **4 Claims**

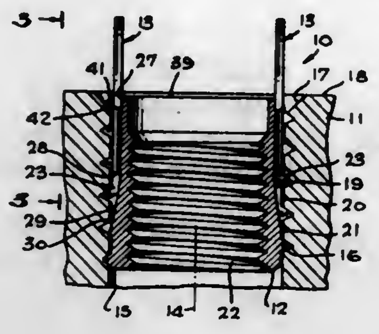


An electric pencil sharpener including an ON-OFF switch by means of which the sharpener can be adjusted to sharpen a pencil to a desired sharpness. The pencil sharpener is provided with a slidable rod which is adapted to be displaced by the pencil lead tip as the pencil is being sharpened, the slidable rod being so arranged that its displacement is effective to actuate another switch to automatically stop the motor of the sharpener.

3,650,309
STRUCTURE AND USE OF FASTENERS HAVING LOCKING KEYS

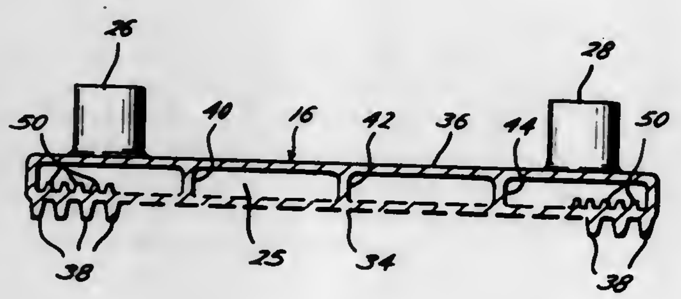
Robert Neuschotz, 1162 Angelo Drive, Beverly Hills, Calif.
Filed Feb. 12, 1969, Ser. No. 798,686
Int. Cl. F16b *39/06*
U.S. Cl. 151—23 **12 Claims**

A fastener including a threaded body to be connected to a coacting part, and a locking key received at least partially within a groove formed in the body, with the key being adapted to be driven generally axially relative to the body to a locking position, and with the groove being shaped to direct the key radially with respect to the axis of the thread and toward the material of the coacting part as the key advances generally axially, in a relation deforming the material of the coacting part by the key and thereby locking the thread against detachment from that part.



3,650,310
COMBINATION BOAT TRIM TAB AND HEAT EXCHANGER

Ezra E. Childress, Houston, Tex., assignor to Stewart & Stevenson Services, Inc., Houston, Tex.
Filed July 16, 1970, Ser. No. 55,427
Int. Cl. F28f *7/00*
U.S. Cl. 165—44 **5 Claims**



A combination boat trim tab and heat exchanger for an engine driven boat in which the trim tab body is hollow and has an inlet and outlet connected to the hollow interior and is adapted to be connected to the boat engine cooling system with elongate fins secured to the bottom of the outside of the body and axially aligned with the longitudinal axis of the boat. The hollow interior of the body including a serpentine passageway between the inlet and outlet thereby increasing the heat exchange area in contact with the engine cooling liquid. Elongate cooling fins secured to the interior of the bottom of the body for increasing the cooling surface.

3,650,311
METHOD FOR HOMOGENEOUS REFINING AND CONTINUOUSLY CASTING METALS AND ALLOYS

Gale Ray Fritsche, Bradfordwoods, Pa., assignor to Sandel Industries, Inc.
Filed May 14, 1969, Ser. No. 824,589
Int. Cl. B22d *27/02*
U.S. Cl. 164—52 **20 Claims**

A process and apparatus for electroslag remelting to metallurgically refine and cast metal alloys in a controlled environment and confined area under electroslag, consisting of an electro-energized molten flux bath blanketing the molten metal bath. The original constituents of the metal alloys are fed, in a heated or unheated state, to the area of the molten bath until they have been melted and converted into a metallurgically refined molten alloy, and then the refined molten

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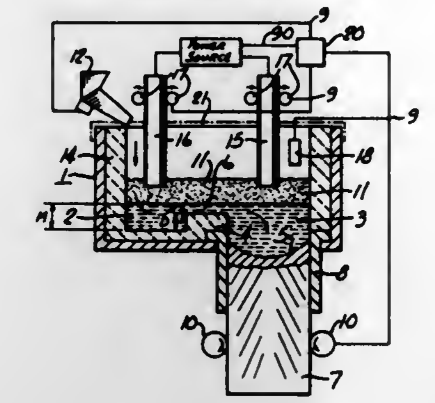
alloy is withdrawn from the confined feeding area to form a product such as by continuous casting.



The principal feature, therefore, is the continuous blending and refining to produce a super alloy ingot that possesses low impurity level and has good grain structure.

The confined, offset or laterally disposed feeding of the metal alloy entraps any unmelted materials and insured only the casting of the liquified molten metal and permits more accurate control of the different areas of the melt as well as the control of the thermodynamics of the liquid-solid interface formed in the continuous casting area.

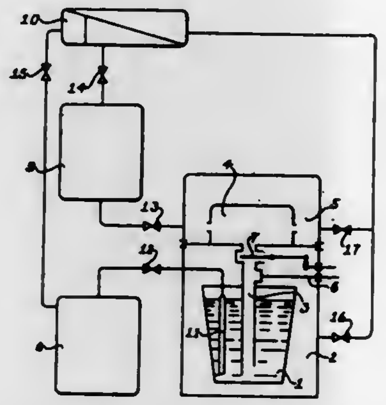
3,650,312
HYBRID CASTING-HOT WORKING PROCESS FOR SHAPING MAGNESIUM, ALUMINUM, ZINC AND OTHER DIE CASTING METALS

Lloyd R. Allen, 480 Pleasant Street, Belmont, Mass.
Filed Sept. 14, 1970, Ser. No. 72,214
Int. Cl. B22d *27/20*
U.S. Cl. 164—55 **10 Claims**

Molten metal is thickened by addition of high surface area aerogel powder to produce a thixotropic mass which is workable at low working forces and retains its worked shape after removal of the applied working forces. Cooling to below melting temperatures solidifies the mass into a product having the metallurgical-structural characteristics of a forged metal notwithstanding the use of casting methods in fabrication.

3,650,313
METHOD FOR THE PRODUCTION OF CASTINGS FROM ALLOYS OF METALS AND GASES

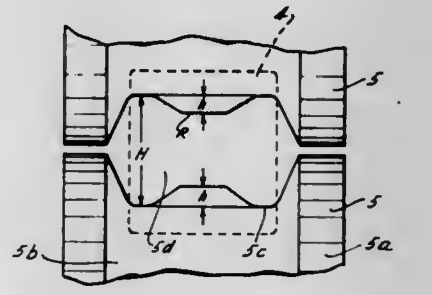
Angel Tontchev Balevski, and Ivan Dimov Nikolov, both of Sofia, Bulgaria, assignors to Institut po Metaloznanie i Technologina Metalite, Sofia, Bulgaria
Filed Oct. 2, 1969, Ser. No. 863,153
Claims priority, application Bulgaria, Oct. 9, 1968, 10785
Int. Cl. B22d *27/20*
U.S. Cl. 164—55 **4 Claims**



Method of and apparatus for dissolving a gas in molten metal and casting the metal in that condition. During the casting process a reservoir with the melt and the mold for the casting are disposed in separate chambers, such chambers being subjected to the pressure of an atmosphere composed by the gas to be dissolved in the molten metal and some other gas which is inert to the metal, the gases being present in such proportion that the partial pressure of the gas to be dissolved in the chamber with the mold is higher than that in the chamber with the reservoir for the melt. Thus, the solubility of the gas, which depends upon its partial pressure, may be equal in the melt, as well as in the solidifying metal; the total gas pressure in both chambers may be chosen in accordance with the requirement of the casting process, so that the melt may be conveyed to the mold.

3,650,314
APPARATUS FOR MANUFACTURING STRETCH-FORMED PRODUCTS OF HIGH-MELTING METALS

Bruno Tarmann, and Heinrich Vonbank, both of Kapfenberg, Austria, assignors to Firma Gebr. Bohler & Co. Aktiengesellschaft, Vienna, Austria
Continuation-in-part of application Ser. No. 586,494, Oct. 13, 1966, now Patent No. 3,491,823, and a continuation-in-part of 632,001, Apr. 13, 1967, now abandoned. This application Nov. 19, 1969, Ser. No. 878,064
Int. Cl. B22d *11/12*
U.S. Cl. 164—270 **7 Claims**

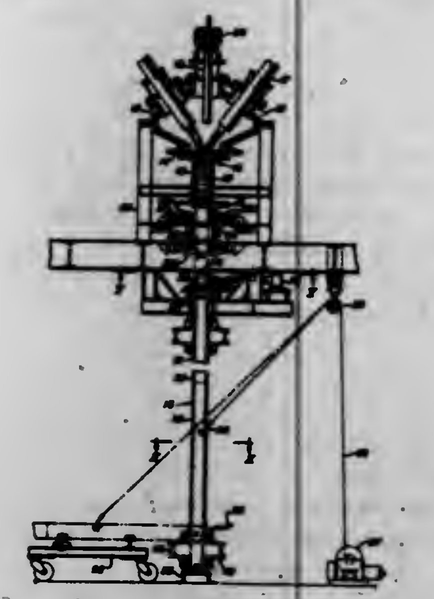


An apparatus for the manufacture of strands of molten metal, in particular nonalloyed and alloyed steels, by continuous casting, comprising a mold for continuously casting a strand and means for simultaneously withdrawing the cast strand from the mold. The cast strand which exits from the mold is in a partially solidified state and has a molten core. The withdrawing means comprise a pair of spaced grooved rollers which define a box-pass therebetween. The bottom of the groove of each roller includes a convexedly curved portion, the camber of convexity of which amounts to 10–25 percent of the height of the box-pass. Pressure producing means are operatively connected to the pair of grooved rollers. This pressure producing means being selectively variable in applying pressure at ratios ranging from 1:4 to 1:8.

3,650,315
APPARATUS FOR WITHDRAWING A CASTING FROM A MOLD

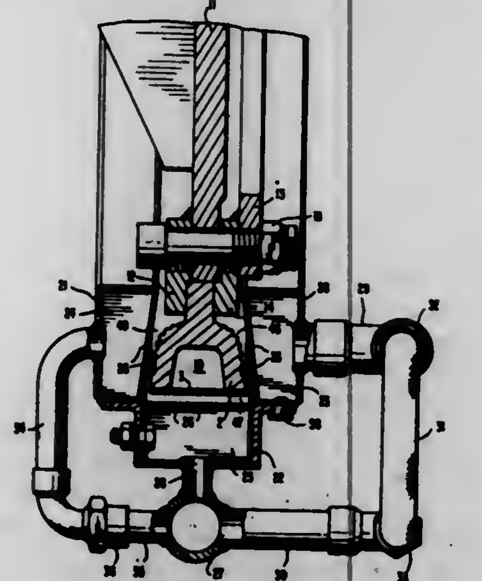
Eugene V. Abarotin; Thomas E. Nicely, both of Franklin Township, Westmoreland County, and Robert A. Wilshire, Jr., Monroeville Borough, all of Pa., assignors to United States Steel Corporation
Filed May 22, 1970, Ser. No. 39,749
Int. Cl. B22d *11/12, 11/08*
U.S. Cl. 164—274 **6 Claims**

A method and apparatus for withdrawing a casting from an open-ended mold. The apparatus comprises a starter bar connected to a platform movable along platform guides, and a platform propelling mechanism. The apparatus has electrical connections through the starter bar, and it is capable of precise control. The method comprises inserting a starter bar in the mold, starting the casting process, connecting the product to the starter bar, withdrawing the product and severing the product from the starter bar.



3,650,316
COOLING APPARATUS FOR CONTINUOUS CASTING WHEEL

Robert Petit, Rosny-sous-Bois, France, assignor to Societe Nouvelle Spidem, Paris, France
Filed Sept. 22, 1969, Ser. No. 859,720
Claims priority, application France, Sept. 25, 1968, 167603
Int. Cl. B22d *11/06, 11/12*
U.S. Cl. 164—278 **5 Claims**

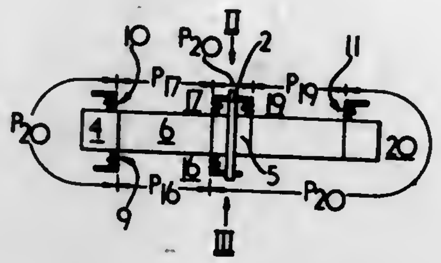


A U-shaped, multi-compartment casing surrounds a grooved rim of a rotating casting wheel which cooperates with a metal belt to define a continuous casting cavity on the rim periphery with the compartments subjected to a continuous flow of cooling fluid.

3,650,317
ROTARY REGENERATIVE HEAT EXCHANGER

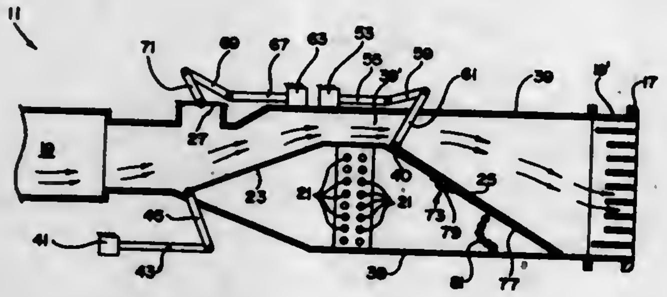
Mark Carey Sedgwick Barnard; Hugh Christopher Bramley, and Peter Jacobus Collet, all of c/o Leyland Gas Turbines Limited, Meteor Works, Lode Lane, Solihull, Warwickshire, England
Filed June 8, 1970, Ser. No. 44,259
Claims priority, application Great Britain, June 11, 1969, 29,487/69
Int. Cl. F28d *19/04*
U.S. Cl. 165—9 **3 Claims**

A rotary regenerative heat exchanger in which inlet and outlet seals defining a path for one or other of the fluids between which heat is to be exchanged enclose respective areas of inlet and outlet end faces of the matrix of the heat exchanger of different magnitude, thereby to reduce the magnitude of the resultant axial force on the matrix. In this way forces due to fluid pressure acting on opposed end faces of the matrix can be balanced thereby to reduce stress within the matrix and also to avoid wear on the seals due to an unresolved end thrust on the matrix. Additionally, the areas of the seals can be adjusted to avoid tipping of the matrix about its axis of rotation.



3,650,318
VARIABLE VOLUME CONSTANT THROW TERMINAL RE-HEAT SYSTEM

Gilbert H. Avery, 1475 Central Avenue, Memphis, Tenn.
Filed Nov. 19, 1970, Ser. No. 91,072
Int. Cl. F24f *3/06*
U.S. Cl. 165—22 **10 Claims**



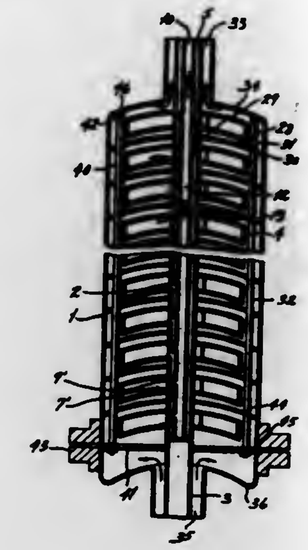
A system for temperature conditioning the air of a room in a building. The system is particularly directed towards eliminating drafty conditions and/or uncomfortable temperature variations, predominantly noticeable heretofore as the typically conventional system cycles during the summer months in operable response to a thermostatic switch located in the room. Some of the features of the present invention contributing towards the accomplishment of the above include structure for by-passing variable volumes of the supply air away from the room while forcing the remaining volume of air into the room with the same velocity as when the total volume of air was directed into the room, structure for reheating a portion of the aforementioned reduced volume of cool air so that the confluence of cooler air and re-heated air is forced into the room, again with the same velocity as when the total volume of cool air was directed into the room, and structure for admitting varying volumes of re-heated air into the room, i.e., up to 100 percent re-heated air, for warming an overcold room, e.g., a room having been cooled to a comfortable summer daytime temperature which is considered too cool for comfort in the evening or nighttime, and for heating the room during the winter months.

ERRATUM

For Class 165—44 see:
Patent No. 3,650,310

3,650,319
HEAT EXCHANGE DEVICE

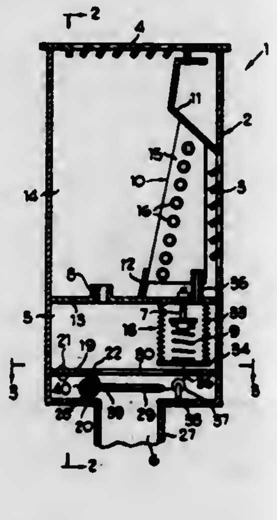
George B. Boon, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Apr. 24, 1970, Ser. No. 31,467
Int. Cl. F28d *11/00*
U.S. Cl. 165—88 **5 Claims**



A heat exchanger for a product fluid comprises a rotor and a shell, one of which rotates. The rotor comprises a hollow shaft and hollow disk-like members attached to and communicating with the shaft which members and shaft form a tortuous conduit for a heat transfer fluid. The hollow disk-like members are not flat but have their central openings which attach to the shaft displaced above their distal edges. Similarly shaped disk-like partitions attached to the shell by support means and interleaved with the hollow disk-like members form together with the shell, rotor shaft, and hollow disk-like members a second tortuous conduit for a product fluid which product fluid is separated from the heat transfer fluid by the heat conductive walls of the rotor shaft and hollow disk-like members. The heat exchanger is particularly useful for conducting a reaction of a high viscosity liquid under closely controlled temperature conditions and continuous agitation.

3,650,320
INDUCTION UNIT CONTROL SYSTEM

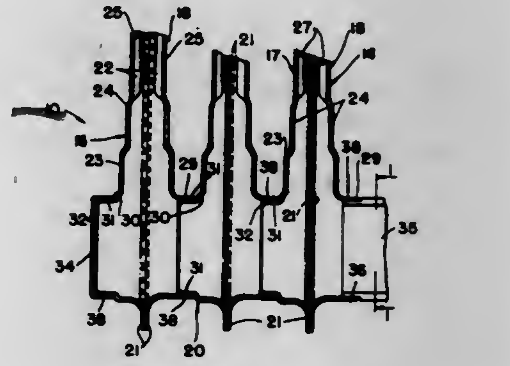
Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Apr. 30, 1970, Ser. No. 33,448
Int. Cl. B60h *1/00*
U.S. Cl. 165—40 **10 Claims**



The individual induction units employed in a multi-room air conditioning system are each provided with a damper for varying the flow of the primary air into the induction unit. This damper is automatically controlled in response to the pressure differential across the nozzle plate, that is between the pressure existing inside the primary air supply plenum, and the ambient pressure.

3,650,321
SHEET METAL RADIATOR ASSEMBLY

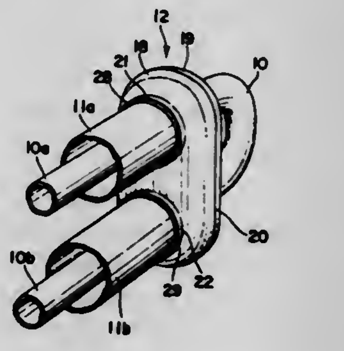
Kenneth L. Kaltz, Lansing, Mich., assignor to Tranter Manufacturing, Inc., Lansing, Mich.
Continuation of application Ser. No. 679,398, Oct. 31, 1967. This application Nov. 21, 1969, Ser. No. 872,454
Int. Cl. F28d *15/00*
U.S. Cl. 165—106 **8 Claims**



A multi-plate radiator assembly features a longitudinally spaced series of hollow, generally flat heat transfer plates, each provided with integral formations which afford circulating headers at opposite ends of each plate, the plate and header units being composed of a pair of sheet metal stampings. The two component stampings of each unit differ from one another in that one thereof is formed at its header-affording ends with a male flange of cylindrical shape and predetermined outer diameter; while the other stamping of the pair is formed in axially aligned comparable zones to provide a female cylindrical flange of an internal diameter equaling the O.D. of the male flange of the next adjacent plate and header-forming unit of the series. Successive units are telescopingly associated with one another at the male and female flanges thereof, and a union of male and female flanges is completed and made liquid tight by a copper solder connection.

3,650,322
HEAT EXCHANGER

Nicholas Marie De Munnik, 450 Walmer Road, Apt. 409, Toronto, Ontario, Canada
Filed June 22, 1970, Ser. No. 48,160
Int. Cl. F28f *9/26*
U.S. Cl. 165—143 **6 Claims**



The following specification discloses an improved heat exchanger for cooling semi-solids and particularly provides a coolant jacket connector means constructed of stainless steel sheet metal capable of withstanding the expansion and contraction forces caused by the heat transfer from a mash tube to the jackets at the attachment point of the tube and jackets.

The connector comprises a pair of oval-shaped sheet metal stampings each being dished to form an upwardly curved edge. The curved edges are mated and welded together to form a rounded hollow elongated body. Each of the pair of oval-shaped dished sheets has a pair of circular openings with a flanged collars punched outwardly from the bottom of the dished sheet remote from the upwardly dished edge.

The pair of flanged openings on one side of the connector are dimensioned to fit over the ends of a pair of jackets and the pair of flanged openings on the other side of the connector are dimensioned to fit over adjacent lengths of a twist or turn of the mash tube.

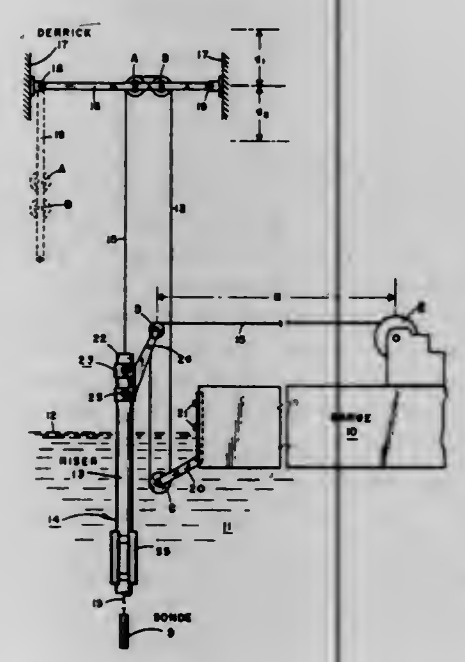
3,650,323
APPARATUS FOR OFFSHORE OPERATIONS

William E. Kanady, Houston, Tex., assignor to Esso Production Research Company

Filed Mar. 13, 1970, Ser. No. 19,368

Int. Cl. E21b *47/00*

U.S. Cl. 166—.5 **11 Claims**



Apparatus is provided for use in a well from a floating vessel involving suspension means mounted on a vessel above the well in fixed relationship to the well such that flexible means may run into the well from the vessel over the suspension means and over first and second means which are attached to the vessel and the well respectively to provide parallel vertical runs between the first means and the suspension means, between the suspension means and the well, and between the second means and the first means, the vessel having a well tool such as a logging tool suspended from the flexible means in the well and running from the second means horizontal to means on the vessel operating the tool.

3,650,324
WELL PUMPING SYSTEM CONSTRUCTION

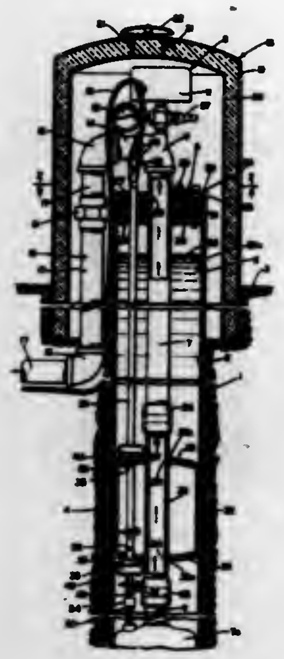
Paul R. Randles, 831 Fourth Street, S. W., and Edward R. Wisintainer, Route 4, both of New Philadelphia, Ohio

Filed Oct. 12, 1970, Ser. No. 80,014

Int. Cl. E21b *43/00*; F04b *49/08*

U.S. Cl. 166—68.5 **11 Claims**

A well pumping system construction having top and bottom seals spaced within a well casing or well shaft forming a combination water storage and air pressure tank chamber therein. A water delivery pipe communicates with and extends through the tank chamber and is connected at the lower end to a pump and is connected at the upper end to a water supply line above the well casing. Pump controls are located at top of the delivery pipe above the well casing and are enclosed by a protective housing. A conduit within the well casing provides the means for inflating the bottom seal, provides a well breather passage, and contains the electrical wires for the pump.



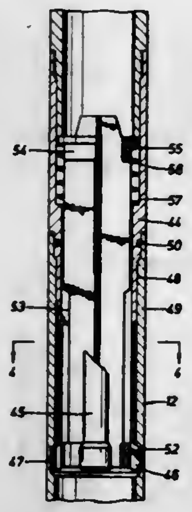
3,650,325
WELL BRIDGING APPARATUS HAVING A DETACHABLE SETTING MEANS

Nevyl G. Owens, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Original application Apr. 22, 1969, Ser. No. 819,515, now Patent No. 3,556,215, dated Jan. 19, 1971. Divided and this application Apr. 20, 1970, Ser. No. 38,621

Int. Cl. E21b *23/06*

U.S. Cl. 166—182 **3 Claims**



An illustrative embodiment of the present invention in through tubing bridge plugs includes a body member carrying an expansible bridging element, a pump and receptacle assembly releasably coupled to the body member and adapted to contain a cementitious material that can be displaced from the receptacle to expand the bridging element, a vent passage through the body member to enable fluid movement within the well bore without disturbing the cementitious material as it hardens, and valve means automatically operable after a pre-selected time delay for closing off the vent passageway.

3,650,326
HYDROCARBON RECOVERY EMPLOYING AQUEOUS MEDIUM DRIVING FLUID HAVING INCREASING VISCOSITY

Donald O. Hitzman, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 25, 1970, Ser. No. 40,412

Int. Cl. E21b *43/22*

U.S. Cl. 166—246 **11 Claims**

Hydrocarbons are recovered from a subterranean hydrocarbon containing formation by injecting an aqueous medium driving fluid through said formation to displace hydrocarbons therefrom. The aqueous medium driving fluid comprises a bacterial cellular solution that has been treated for providing a driving medium whose viscosity increases during displacement to the formation.

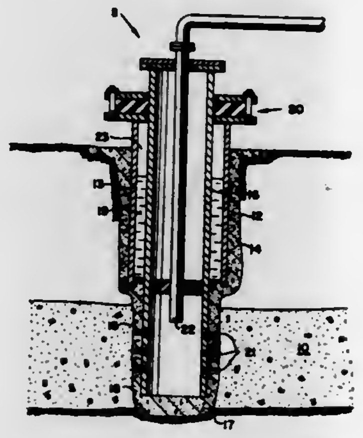
3,650,327
THERMAL INSULATION OF WELLS

Floyd D. Burnside, Littleton, Colo., assignor to Shell Oil Company, New York, N.Y.

Filed July 14, 1970, Ser. No. 54,720

Int. Cl. E21b *33/14*, *43/24*

U.S. Cl. 166—303 **5 Claims**



A method for thermally insulating a well, such as a steam injection well or a well which produces oil through permafrost formations, by filling an annular space between two strings of casing in the wells with heat insulating vermiculite slurry.

3,650,328
DEVICE FOR AUTOMATICALLY ACTUATING A GAS DISCHARGE VALVE OR THE LIKE

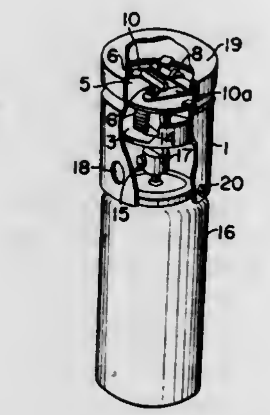
Yu Fujiki, and Hiroshi Tsubaki, both of Tokyo, Japan, assignors to Ricoh Watch Co., Ltd., Nagoya-shi, Aichi-ken, Japan

Filed Apr. 15, 1970, Ser. No. 28,613

Claims priority, application Japan, Apr. 18, 1969, 44/35617

Int. Cl. A62c *37/06*

U.S. Cl. 169—19 **5 Claims**



Actuating means for actuating a discharge valve of a gas tank or the like is normally held in a stationary valve deactuated position by detent means. The detent means is normally held in a retaining position by a fusible metal link. When the link is fused, by an environmental temperature rise, the detent means is displaced to a releasing position at a right angle to the direction of movement of said actuating means, thereby permitting said actuating means to actuate the valve.

3,650,329
REFILLABLE FIRE EXTINGUISHER

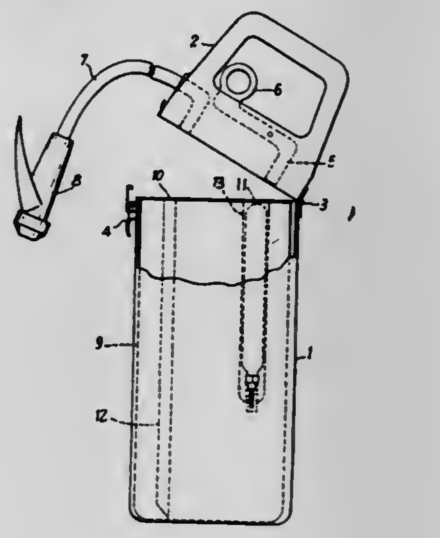
Frederic Sachs, Neuilly-sur-Seine, France, assignor to Compagnie Centrale Sicli Societe Anonyme, Seine Saint-Denis, France

Filed Aug. 18, 1970, Ser. No. 64,686

Claims priority, application France, Aug. 20, 1969, 6928523; July 17, 1970, 7026356

Int. Cl. A62c *13/40*

U.S. Cl. 169—31 P **2 Claims**



A fire extinguisher or the like spraying apparatus wherein a mechanically resistant container is adapted to receive through its upper or lower end a cartridge made of a sheet showing no great mechanical resistance and enclosing a refill mass of material to be sprayed and/or a bottle of compressed gas the container being provided with means for perforating the bottle whether inside the cartridge or adjacent the latter inside the container. The gas pressure when released causes the diaphragms to burst, allowing the escape of the mixture to be sprayed, to burst. A fire extinguisher of this type can be refilled speedily several times in succession.

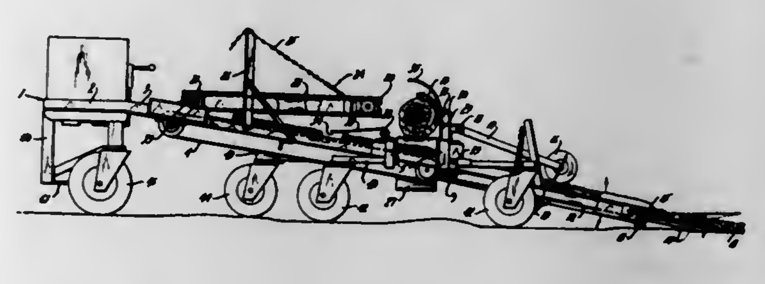
3,650,330
SOD PICK-UP MACHINE

Robert G. Gieringer, 6508 N. Sunny Point Road; Robert H. Gieringer, and William A. Gieringer, both of 5485 N. Port Washington Road, all of Milwaukee, Wis.

Filed Aug. 6, 1969, Ser. No. 847,898

Int. Cl. A01b *45/04*

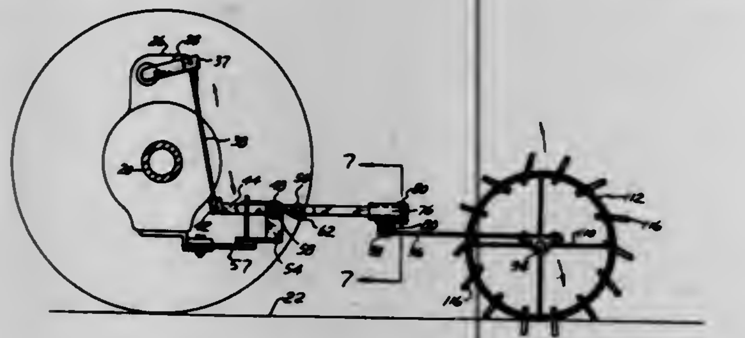
U.S. Cl. 172—19 **6 Claims**



A sod pick-up machine having a floating sod pick-up unit comprising independently pivotable elements including a tongue, inclined conveyor and sod hold-down wheel. A fixed conveyor cooperates with a hanging pivotal conveyor to roll a length of sod and move the latter downwardly to a transverse discharge conveyor. The hanging conveyor may be adjusted as to height. A separator plate permits downward movement of a sod roll over a length of flat sod. The discharge conveyor includes a channel having a rear curb wall and an adjustable front rail. Tandem wheels are mounted on arms which are pivotally mounted beneath the discharge conveyor. A separate tractor drives the machine and is connected thereto by a floating shock-absorbing system at the front and fixed pivot at the rear. Relative vertical movement is permitted at the front, and relative pivotal movement on a longitudinal axis is permitted.

3,650,331
TRACTOR HAVING HITCH ASSEMBLY FOR MOUNTING A PLURALITY OF IMPLEMENTS

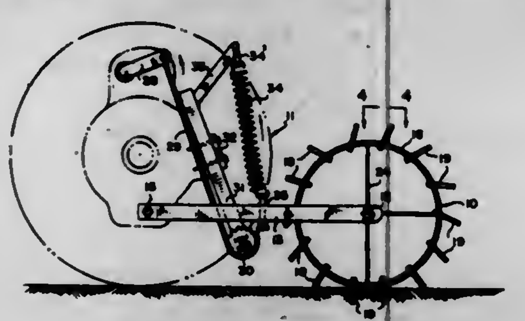
Arnold A. Dedoes, 2070 W. Eleven Mile Road, Berkley, Mich.
Continuation-in-part of application Ser. No. 795,853, Feb. 3, 1969, and a continuation-in-part of 2,582, Jan. 13, 1970.
This application Mar. 23, 1970, Ser. No. 21,905
Int. Cl. A01b *45/02, 59/06, 65/06*
U.S. Cl. 172—21 **9 Claims**



A draw bar and hitch connection for coupling a plurality of substantially identical implements to a tractor, and including means for permitting independent vertical movement of each implement relative to the ground as the tractor traverses the ground. The draw bar and hitch connection includes means for utilizing a power lift apparatus carried by the tractor to transfer a portion of the weight of the tractor to the implements and also includes means for disconnecting the plurality of implements from the tractor without disturbing the weight transfer means.

3,650,332
SOIL CORING APPARATUS ASSEMBLY

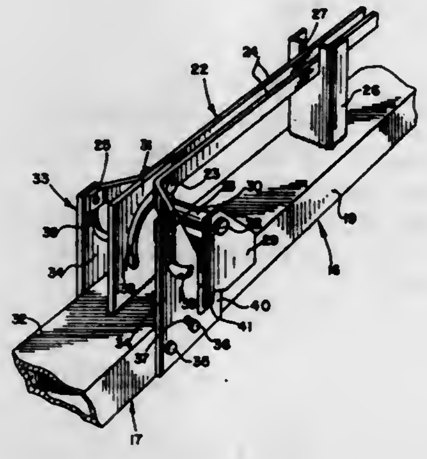
Arnold A. Dedoes, 2070 W. Eleven Mile Road, Berkley, Mich.
Filed Feb. 3, 1969, Ser. No. 795,853
Int. Cl. A01b *45/02*
U.S. Cl. 172—22 **5 Claims**



This invention relates to soil penetrating implements of the kind for removing soil plugs of earth for the purpose of aerating, watering and fertilizing the soil or for any other agricultural purpose of treating the subsurface, and the particular improvement resides in the manufacture assembly, repair and operation of the several parts of the implement in a more efficient manner. The features are accomplished by, clamping the flexible steel ground engaging rim with its coring elements around separate spaced apart parallel wheel supports which are loosely mounted on a shaft journaled in a frame which may be coupled to a tractor and raised or lowered by the tractor hydraulic mechanism.

3,650,333
HINGE MECHANISM FOR FOLDING DISK HARROW GANGS

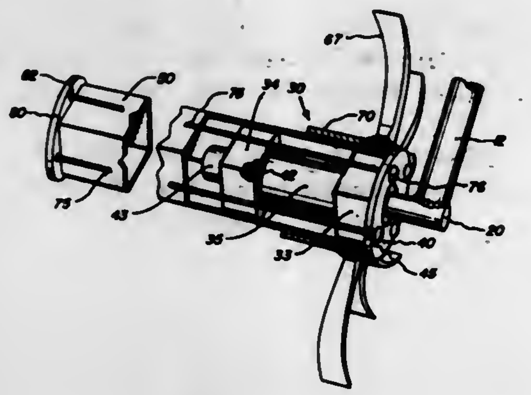
Jerome L. Fueslein, Stockton, Calif., assignor to International Harvester Company, Chicago, Ill.
Filed Sept. 14, 1970, Ser. No. 71,775
Int. Cl. A01b *63/32, 65/02;* **E05d** *11/10*
U.S. Cl. 172—311 **12 Claims**



Mechanism for folding the extension wings of a disk harrow utilizing a hydraulic cylinder connected to each wing section, wherein the connection between the cylinder and each of the wings provides maximum leverage throughout the extension and retraction strokes of the cylinder to swing the wing section between its operating position and its folded inoperative position.

3,650,334
ROTARY CULTIVATOR ASSEMBLY

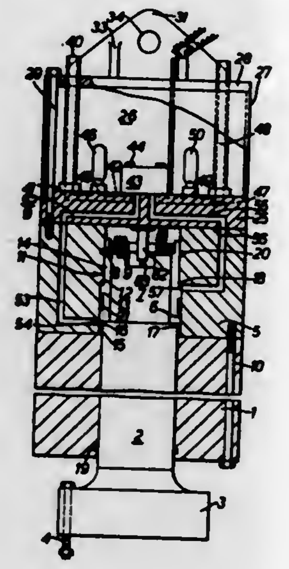
Roy W. Hagenstad, Crosslake, Minn.
Filed Jan. 2, 1970, Ser. No. 241
Int. Cl. A01b *21/04*
U.S. Cl. 172—540 **11 Claims**



A rotary cultivator assembly comprising a support having an attachment extremity and a shaft extremity with a bearing assembly mounted on the shaft. The bearing assembly has a predetermined cross section and mounts tubular hubs in varying lengths in a cantilever manner to permit the mounting of a variable number of spider units or cultivator wheels on the same with the entire assembly being held in assembled relationship by means of an end cap and a flange on the bearing assembly and tie bolts extending therebetween.

3,650,335
APPARATUS FOR DRIVING AND/OR EXTRACTING PILES

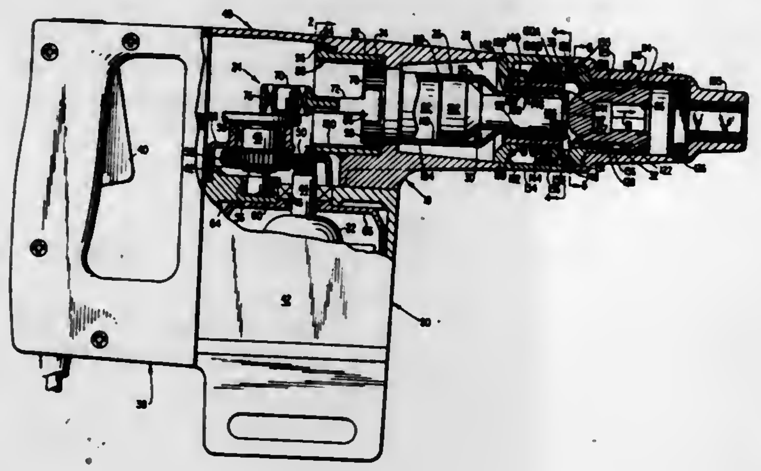
Norman Lee, Coventry, and Francis Benjamin Levetus, Abingdon, both of England, assignors to Keelavite Hydraulics Limited, Allesley, Coventry, Warwickshire, England
Filed Oct. 8, 1969, Ser. No. 864,781
Claims priority, application Great Britain, Oct. 11, 1968, 48,337/68
Int. Cl. E02d *7/00*
U.S. Cl. 173—91 **6 Claims**



A method and apparatus for the vibratory driving of piles in which a hydraulic cylinder-and-ram assembly is arranged to impart a vibration of asymmetric waveform to the pile. The apparatus includes a closed-loop servo control system by which the movement of the ram relative to the cylinder is according to an input signal of the desired waveform.

3,650,336
POWER DRIVEN DEVICE

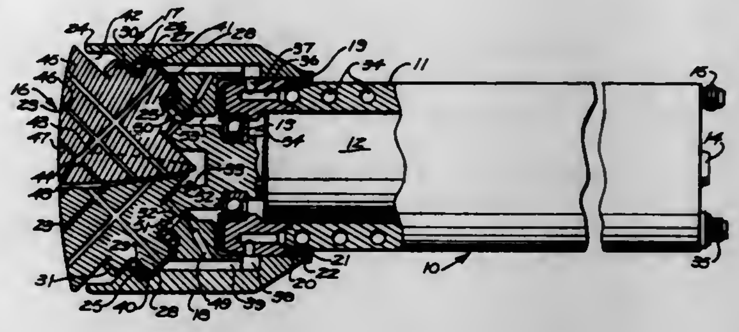
Heinrich P. Koehler, Camillus, N.Y., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 847,294, Aug. 4, 1969. This application May 5, 1970, Ser. No. 34,844
Int. Cl. B25d *11/00*
U.S. Cl. 173—110 **21 Claims**



Power driven devices in which a closed type, cushioned tool holder is axially impacted by a free-floating driver mounted in a reciprocably driven, non-rotatable piston and also intermittently rotated and in which the mechanism producing intermittent rotation has two components which slip relative to each other when a rotation restraining force of a predetermined magnitude is exerted on the tool holder.

3,650,337
CRYOGENICALLY COOLED DRILL

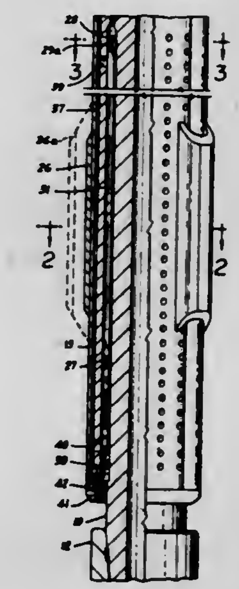
Donald W. Andrews, Eldorado Hills; Eugene L. Kessler, and Roland A. Newton, both of Sacramento, all of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
Filed July 31, 1969, Ser. No. 846,478
Int. Cl. E21b *3/10*
U.S. Cl. 175—17 **20 Claims**



This discloses a drilling unit in which the drill bit mechanism is placed at the end of the rotor shaft of a motor either by direct attachment to the shaft or by gear. Cryogenic cooling is provided by sending cryogenic fluid into the rear portion of the motor and causing it to flow toward the front end of the motor for cooling the motor, effluent from the motor being conveyed into and through the drill bit and through bearings and gearing, for cooling and cleansing. The coolant effluent from the drill bit mechanism and motor passes into the bore hole thereby cooling it and carrying cuttings and debris upwardly through the hole.

3,650,338
ROTARY BIT GUIDE

Branch M. McNeely, Jr., 5313 Pine, Houston, Tex.
Filed May 25, 1970, Ser. No. 40,059
Int. Cl. E21b *7/06, 7/10*
U.S. Cl. 175—76 **10 Claims**

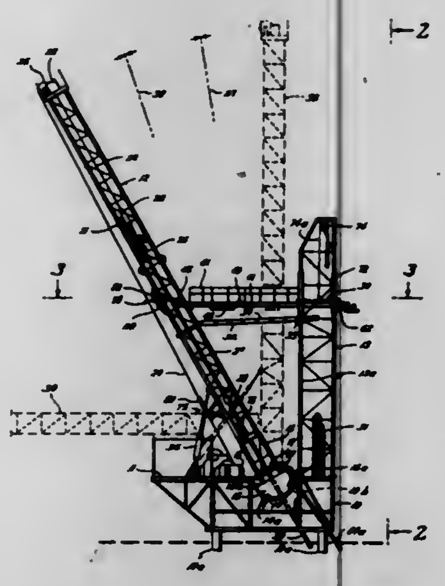


A device for controlling the directional deviation of a well bore. An outer member is concentrically spaced around a mandrel which is connectable at opposite ends to form part of a drill string, the outer member having longitudinal ribs extending from its outer surface to frictionally engage the walls of the well bore and thereby restrict rotation of the outer member in the well bore. A first set of deformable pressure chambers which preferably comprise part of a rotary pump are located between the outer member and the mandrel. A second set of deformable pressure chambers, located between the outer member and the mandrel, communicate via fluid passageways with the first set of pressure chambers. A fulcrum means is located between and in contact with said outer member and said mandrel whereby when fluid is transferred from the first set of chambers to the second set of chambers thereby causing the second set of chambers to apply a force against the mandrel in a lateral direction, the mandrel can pivot relative to the outer member.

3,650,339
SLANT HOLE DRILLING RIG

Richard J. Selfe, and Donald L. Bleyl, both of c/o Pyramid Derrick and Equipment Co., P.O. Box 40338, Houston, Tex.

Filed Sept. 15, 1969, Ser. No. 858,043
Int. Cl. E21b *19/00*
U.S. Cl. 175—85 **21 Claims**



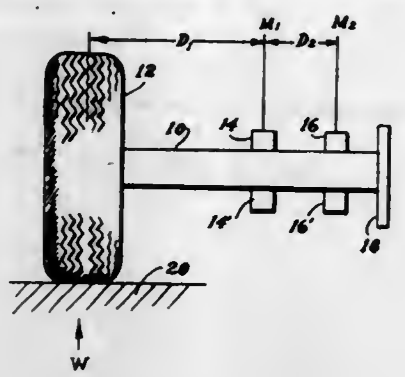
A drilling mast is mounted on a support means which is pivotally mounted in an arcuate well formed in a drilling rig base structure whereby the mast may be tilted. A vertical self-supporting setback tower is mounted on the base structure adjacent the well for racking lengths of drill pipe. An adjustable strut or tie member extends between the drilling mast and the setback tower for maintaining the drilling mast at a desired angle of inclination. A catwalk structure is pivotally connected to the drilling mast and movably coupled to an upper portion of the setback tower so that it will always be horizontal, regardless of the angle of the drilling mast relative to the tower. A pipe pullback mechanism is supported for movement between the drilling mast and tower for use in transferring drill pipe back and forth between the drilling mast and the setback tower.

3,650,340
STRAIN GAGE WEIGHING DEVICE

Richard S. Bradley, Upper Saddle River, N.J., assignor to Art's-Way Manufacturing Company Incorporated, Armstrong, Iowa

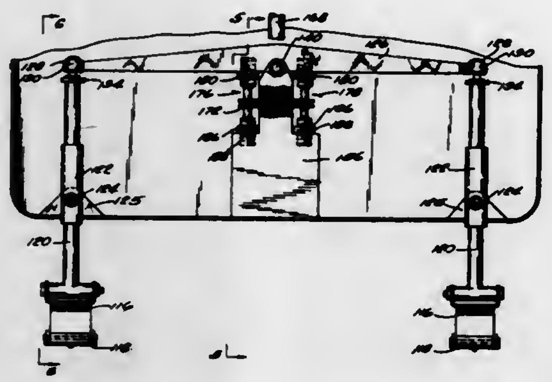
Filed July 2, 1969, Ser. No. 838,438
Int. Cl. G01g *19/08*
U.S. Cl. 177—136 **13 Claims**

An electromechanical weight-measuring system for weighing successive and cumulative loads deposited in a load-receiving medium which utilizes one or more cantilevered, resilient or elastic deformable elements. Supporting the load-receiving medium are one, or preferably a plurality of crucial load points, wherein the cantilevered elements are interposed between the receiving medium and ground or other supporting base; pairs of strain gage sensing elements are mounted on and under each of the cantilevered elements. The sensing elements can be a variable resistance type connected together to form a bridge circuit, coupled to amplifying means and an indicating device for the measurement of the magnitude of bridge unbalance.



3,650,341
SNOWMOBILE WITH BANKING CONTROL

Hans P. Asmussen, 2126 North 26th Street, Milwaukee, Wis.
Continuation-in-part of application Ser. No. 795,648, Jan. 31, 1969, now abandoned. This application Jan. 6, 1970, Ser. No. 953
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **6 Claims**



The skis are mounted on the lower ends of support columns or posts connected to a transverse beam pivoted on the centerline. In one modification the beam is a leaf spring and, when the steering column is turned, the control cages between the leaf spring and the ramps are moved in opposite directions to tilt the beam and retract the inside ski while moving the outside ski away from the body. This forces the body to bank or lean into the turn. In the other modification the beam is rigid and the turning motion is transmitted by a chain to jackscrews to tilt the beam.

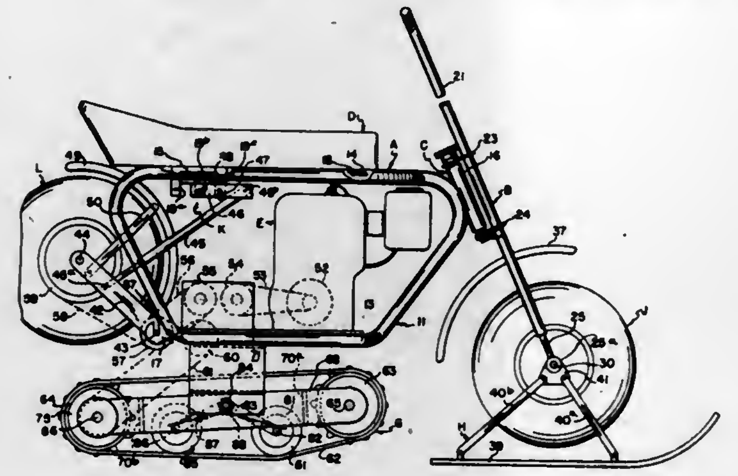
3,650,342
CONVERTIBLE SNOW TRACK-WHEELED SCOOTER TYPE VEHICLE

Godfrey Pushnig, 121 E. 226th Street, Euclid, Ohio, and Nicola Battistone, 16026 St. Clair Avenue, Cleveland, Ohio

Filed Feb. 24, 1970, Ser. No. 13,586
Int. Cl. B62d *61/02;* **B62m** *27/02*
U.S. Cl. 180—5 R **17 Claims**

A motor scooter type vehicle convertible between two-wheeled and ski and snow-belt-driven functional forms and further transportable in relatively compact form. A light weight vehicle frame weldment includes left and right hand tubular trapezoids having inwardly bent top front corners embracing a steering fork mounting head tube, spacer bars between seat-supporting, straight parallel major portions of horizontal upper reaches, and an engine and transmission gear box support plate between lower parallel horizontal reaches. With a snow tracking endless belt assembly and a

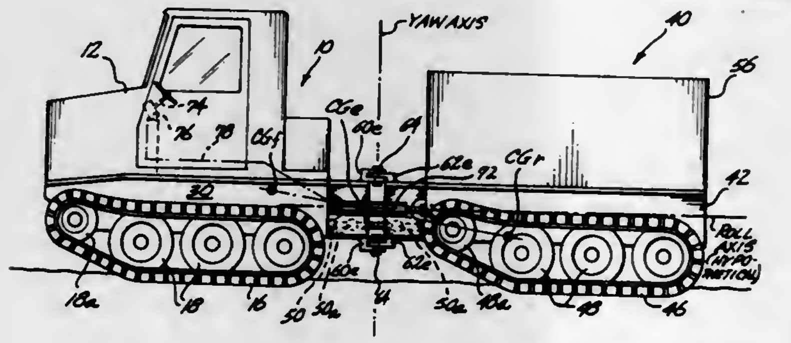
steering runner removably attached respectively to the frame bottom and to the axle of the front wheel in a steering fork detachably pivoted in the head tube, the belt chain driven from the engine through the gear box, a snow scooter type vehicle is available. A rear driving wheel, supported by a rearwardly extending fork pivoted at the rear bottom of the frame and by paired shock absorber struts between respective rear fork arms and selected points on the frame upper reach region, has a permanent drive chain connection to the gear box, so that upon runner and snow belt assembly removal and rear wheel shift, from an upwardly retracted inoperable location downwardly into a driving position, a wheeled motor scooter vehicle arises.



3,650,343
SKI SLOPE TRAVERSING AND CONDITIONING VEHICLE

John B. Helsell, 4601-91st Place, N. E., Bellevue, Wash.

Filed Mar. 12, 1970, Ser. No. 18,907
Int. Cl. B62d *11/20;* **B62m** *27/02*
U.S. Cl. 180—5 R **8 Claims**



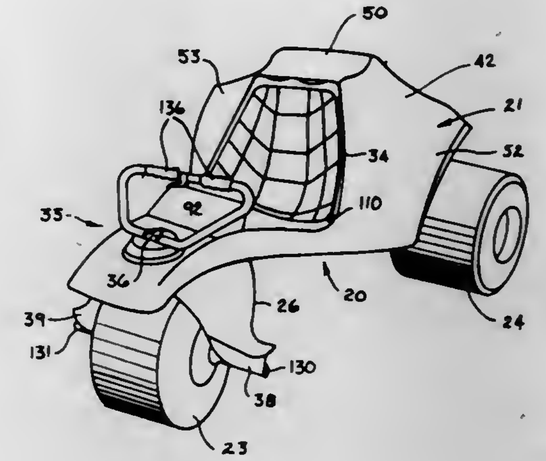
An articulated multi-unit track-type vehicle is disclosed for traversal, packing and leveling of snow on a ski slope and similar applications. The interconnected, relatively wide and narrow units of the special-purpose vehicle are structurally constrained by their coupling against relative pitch and relative roll motion while being permitted relative yaw motion. Relative angular positioning of the units in the yaw plane is produced directly by hydraulic jacks or equivalent means to effect steering of the vehicle without reliance on track slippage therefor. By reason of constraint of the units to monoplanar relative motion combined with the means to steer, the vehicle can be maneuvered safely and in controlled manner on steep slopes, and can be made to climb steeper grades and to level out moguls more effectively than conventional vehicles.

3,650,344
RECREATIONAL VEHICLE

John A. Plessinger, 1725 Wesleyan Road, Dayton, Ohio, and Franklin Moore, Jr., 902 McBurney Drive, Lebanon, Ohio

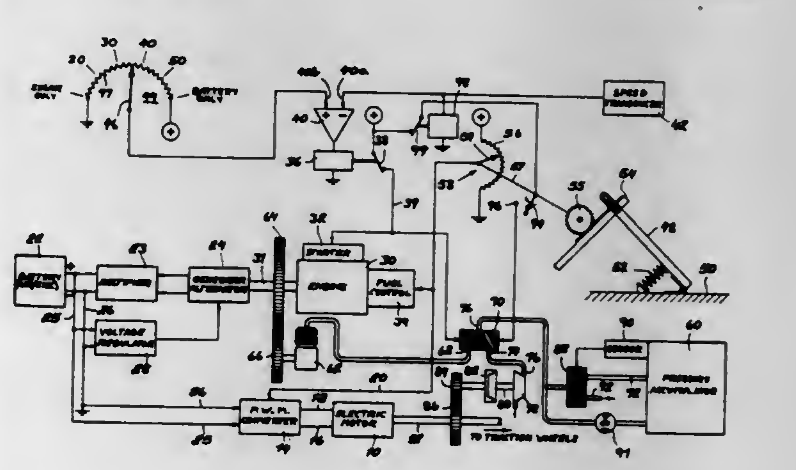
Filed Apr. 6, 1970, Ser. No. 25,816
Int. Cl. B62k *5/06*
U.S. Cl. 180—27 **12 Claims**

The vehicle comprises a body with two rear driving wheels and a front steering wheel. The body comprises a forwardly narrow main frame with an intermediate bucket seat and an engine and axle supporting member extending rearwardly from around the seat for positioning the engine and drive wheels to the rear of the seat. A closed handle is attached to the front wheel for hand steering and stirrups are mounted on each side of the front wheel for foot steering by the driver with his legs on the opposite sides of the narrow front of the main frame.



3,650,345
CONTROL SYSTEM FOR ALTERNATELY BATTERY-OPERATED AND ENGINE-POWERED VEHICLE

Michel N. Yardney, 366 Central Park West, New York, N.Y.
Continuation-in-part of application Ser. No. 710,347, Mar. 4, 1968, now Patent No. 3,503,464. This application Dec. 9, 1969, Ser. No. 883,462
Int. Cl. B60l *11/12;* **B80l** *11/14*
U.S. Cl. 180—65 A **16 Claims**



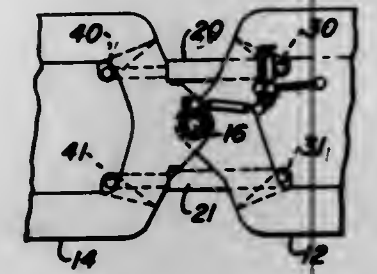
Automotive vehicle of the hybrid-powered type wherein the traction wheels are driven at low speeds by electric energy stored in a battery and at high speeds by an internal-combustion engine simultaneously recharging the battery. The engine, when running, may also load a mechanical force storer, such as an air pressure accumulator, used to assist in the starting of the vehicle to conserve battery power; in the absence of such a stored force, the engine is used for starting and then ceases to operate until a certain minimum speed is reached.

3,650,346
STEERING CONTROL

Joseph C. B. Desmarais, RFD #2 Bible Hill, and Richard W. Beaumont, 3 Clifton Avenue, both of Claremont, N.H.

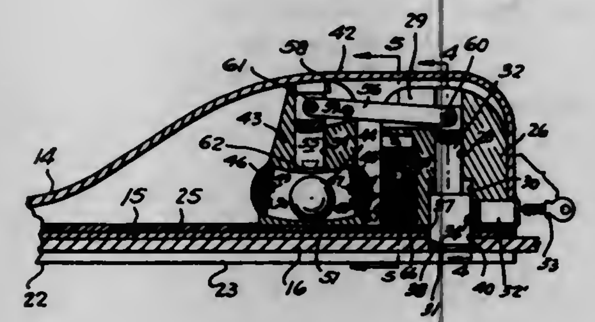
Filed Mar. 12, 1969, Ser. No. 806,460
Int. Cl. B62d *5/08*
U.S. Cl. 180—79.2 B **5 Claims**

A steering control for center pivot or frame steering vehicles wherein the vehicles are steered by hydraulic cylinders interposed between relatively pivotable front and rear portions of the vehicle frame. Fluid flow to these cylinders is controlled for extension and retraction by a steering valve having a handle or tiller mounted in mechanical connection with the pivotable frame portions so that steering is accomplished by pushing the tiller in the direction toward which it is desired to steer and the angle of the tiller with respect to the front frame portion is the same as the angle of the rear frame portion with respect to the front frame portion and consequently the tiller position constantly indicates the steering attitude of the two frame portions.



3,650,347
AUTOMOBILE SAFETY AND ANTI-THEFT DEVICE

Adolph J. Campos, 905 McCarter Highway, Newark, N.J.
Filed Oct. 3, 1969, Ser. No. 863,449
Int. Cl. B60r *25/10*
U.S. Cl. 180—114 **4 Claims**

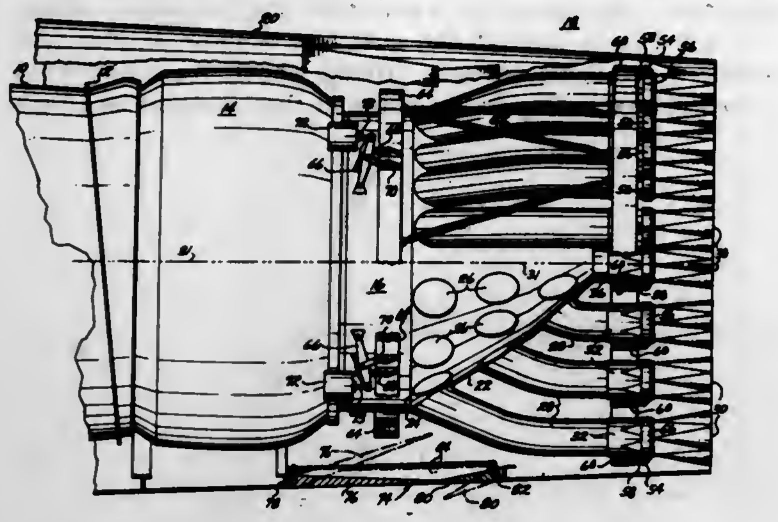


An automobile safety and anti-theft device consisting of a housing portion on a driver's seat located between the driver's thighs. The housing contains a normally closed switch with a transverse sliding operating bar projecting on opposite sides of the housing and being operatively engageable by the driver's thighs to open the switch responsive to excessive lurching of the driver's body. The switch is connected in the ignition circuit of the automobile. The housing also contains a tilt-responsive alarm switch connected in an alarm circuit to energize an alarm when the automobile is tilted for towing by an unauthorized person. Also contained in the housing is a key-operated seat lock to lock the driver's seat in a position too close to the steering wheel for a person to occupy the seat. Releasing the seat lock also de-activates the alarm switch.

3,650,348
SUPERSONIC NOISE SUPPRESSOR

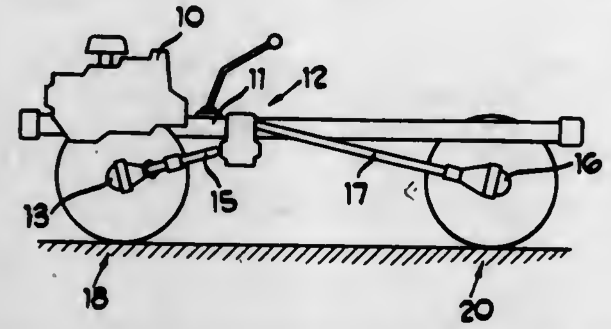
Ross W. Colebrook, Seattle, Wash., and Peter H. Ellis, Chula Vista, Calif., assignors to The Boeing Company, Seattle, Wash. and Rohr Corporation, Chula Vista, Calif.
Filed Feb. 19, 1970, Ser. No. 12,660
Int. Cl. B64d *33/06;* **F01n** *1/14, 1/16*
U.S. Cl. 181—33 HC **7 Claims**

A jet exhaust nozzle having articulated variable geometry segments attached to the downstream end of an exhaust duct and an actuator to articulate the segments between a corrugated subsonic noise suppression configuration and a divergent expansion surface supersonic cruise configuration. When applied to a multi-tube exhaust nozzle, closeable apertures are provided in a surrounding nacelle shroud to ventilate the spaces between the tubes.



3,650,349
FOUR WHEEL DRIVE VEHICLE INCORPORATING LIMITED STRIP INTERAXLE DIFFERENTIAL

Richard E. Cleveland, Garrett; Jack M. Fisher, Muncie; Jack G. Glaze, Auburn, and William G. Jeakle, Muncie, all of Ind., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed June 1, 1970, Ser. No. 42,172
Int. Cl. B60k *17/34*
U.S. Cl. 180—44 **6 Claims**



A torque transfer mechanism incorporated in a multiple path drive system for a vehicle having plural pairs of traction wheels, the torque transfer mechanism being disposed between a source of input torque and at least a pair of drive axles, each associated with a pair of traction wheels in which the torque transfer mechanism includes an input member having a central axis, a casing member driven by the input member, a bevel gear system driven by the input member and a pair of output shafts coaxial with the input member, extending from an opposite side of the casing said output shafts being coaxial and telescoped one within the other.

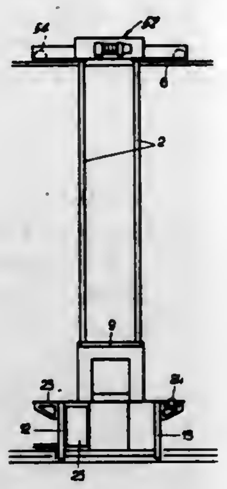
ERRATUM

For Class 181—33 see:
Patent No. 3,650,348

3,650,350
SHELF HANDLING DEVICE

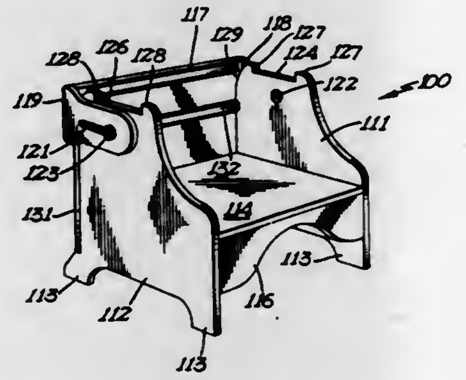
Willy Frick, Wallisellen, Switzerland, assignor to Demag Aktiengesellschaft, Duisburg, Germany
Filed July 7, 1970, Ser. No. 52,795
Claims priority, application Switzerland, July 16, 1969, 10849
Int. Cl. E04g *1/18;* **B66b** *9/20*
U.S. Cl. 182—14 **7 Claims**

A shelf handling device includes vertically extending masts with either top or bottom guide wheels which are adapted to move along trackways between shelves and which includes a lower base with a basket stand providing a reinforcement for the mast and which includes four columns interconnected by longitudinal and transverse beams which carry a load receiving means such as a lift truck or extendible load receiving table.



3,650,351
STEP CHAIR

Robert O. Schmidt, St. Paul, Minn., assignor to Richard O. Bartz, Minneapolis, Minn.
Continuation-in-part of application Ser. No. 808,926, Mar. 20, 1969, now Patent No. 3,530,954. This application June 3, 1970, Ser. No. 43,087
Int. Cl. A47c *13/00*
U.S. Cl. 182—33.3 **15 Claims**

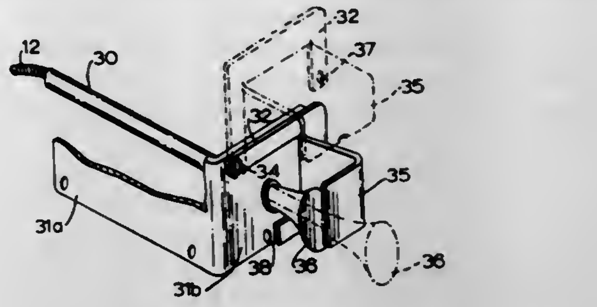


A step chair having a fixed seat secured to upright side members. A movable panel is slidably mounted on the side members adjacent the seat for movement to a top step position. The panel can be elevated in response to movement of a back rest. When the back rest is in a down step position, the movable panel is held in an up step position. An elevating mechanism, operable in response to pivotal movement of the back rest, selectively moves and holds the movable panel to an up step position and to a down seat position.

3,650,352
REMOTELY OPERATED OIL DRAIN VALVE FOR MOTOR VEHICLES

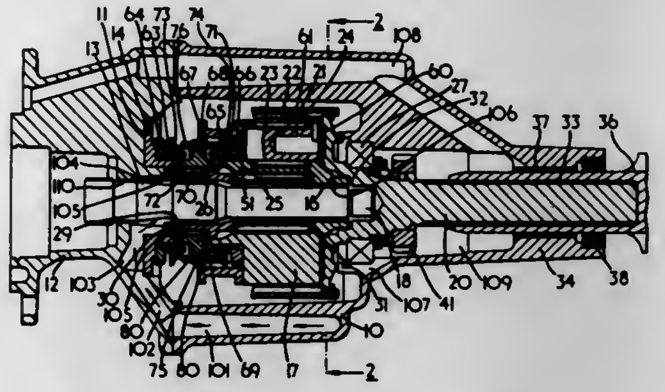
Richard L. Schwary, 2105 N. W. Couch Street, Camas, Wash.
Filed Nov. 14, 1969, Ser. No. 876,753
Int. Cl. F01m *11/04*
U.S. Cl. 184—1.5 **1 Claim**

A remotely operated oil drain valve for internal combustion engine crankcases having a valve attached to the bottom of the crankcase, a cable for operating the valve extending to a location remote from the valve and at an easily accessible location for manual operation thereof, and a member for receiving and holding the remote end of the cable in the easily accessible location, which said member operates to keep the valve closed in one position thereof and operates to keep the valve open in the other position thereof.



3,650,353
LUBRICATION SYSTEM FOR CHANGE-SPEED EPICYCLIC GEARING

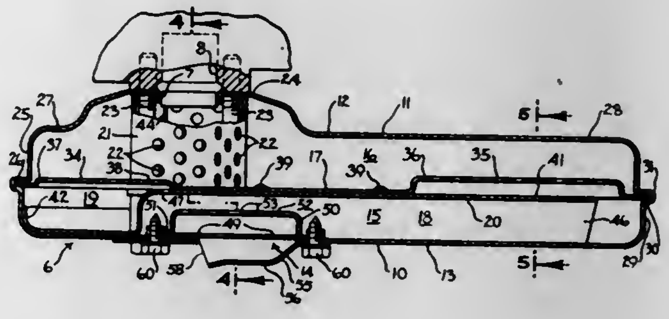
Randle Leslie Abbott, 96 Radford Road, Leamington Spa, England
Filed Feb. 2, 1970, Ser. No. 7,839
Claims priority, application Great Britain, Feb. 19, 1969, 8,880/69
Int. Cl. F16n *7/20*
U.S. Cl. 184—6.12 **3 Claims**



A change-speed epicyclic gearing in which lubricant is directed along two different paths according to the operative condition of the gearing. In direct drive ratio the lubricant passes along one path to a thrust bearing between the sun gear and the casing and in the epicyclic ratio the lubricant passes along another path to the planet gear bearings. In this way those parts of the gearing which require lubricant only receive it when needed.

3,650,354
MUFFLER FOR INTERNAL COMBUSTION ENGINES

Douglas Gordon, Hartford, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.
Filed Apr. 12, 1971, Ser. No. 133,101
Int. Cl. F01n *1/08, 7/10, 7/20*
U.S. Cl. 181—40 **9 Claims**

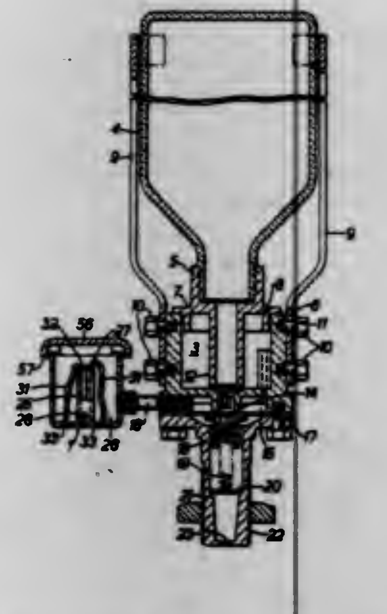


A muffler for a single cylinder engine comprises a shallow, elongated shell having a rear wall with an inlet port near one end of the shell and a front wall with an outlet port. A baffle plate clamped between the shell members divides the shell interior into front and rear compartments, communicated through spaced apart openings in the baffle plate. A front baffle member subdivides the front compartment into two communicated chambers, from one of which the outlet port opens and the other of which surrounds said one.

3,650,355
OILING MEANS

Gordon H. Boswell, Pakuranga, New Zealand, assignor to Mason & Porter Limited, Panmure, Auckland, New Zealand

Filed July 9, 1970, Ser. No. 53,379
Int. Cl. F16n *17/06*
U.S. Cl. 184—59 **6 Claims**

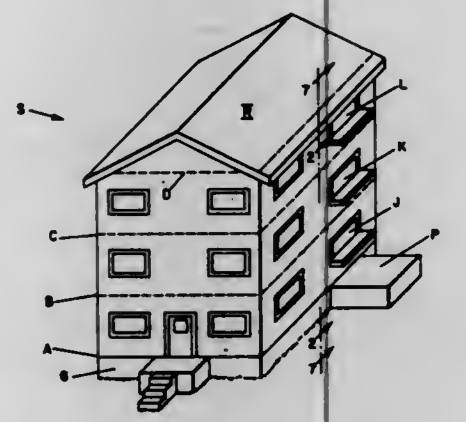


A pump oiler has a supply maintaining a constant level of oil in a bowl wick take up oil from the bowl and pass the oil through a tube which is connected through sight feed indicators to the bearings of a vacuum pump. An air bleed is provided in the connections and by adjustment of the air bleed a suitable rate of air is caused to flow through the bearings from the bowl and this flow of air entrains oil from the bowl for lubrication of the pump.

3,650,356
HYDRAULICALLY-ACTUATABLE ELEVATOR SYSTEM

Rchard L. Brown, 1812 Pelton Avenue, Bellevue, Nebr.

Filed Dec. 18, 1969, Ser. No. 886,101
Int. Cl. B66b *11/04*
U.S. Cl. 187—17 **7 Claims**

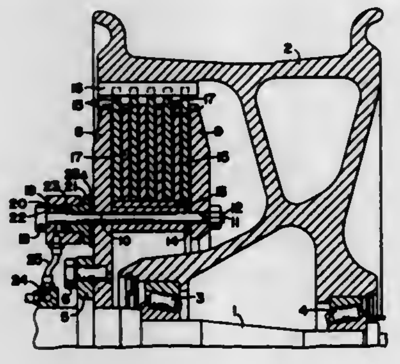


A hydraulically-actuatable elevator system wherein the vertically reciprocatable cargo-carrying carrier component is suspended from a lofty superstructure by at least one hydraulically-actuatable elongate piston of the generic casing-plunger type. Forceable introduction of hydraulic fluid into the piston will decrease the piston overall elongate length causing the carrier component to ascend toward the overlying superstructure while controlled withdrawal of hydraulic fluid from the piston will increase the piston overall length allowing the weighty carrier component to descend. Novel control means enable the carrier component to be temporarily stationable at any selected elevation within the piston length range.

3,650,357
DISC BRAKE WITH HOMOGENEOUS BRAKE STACK

John P. Nelson; Joseph F. Dernovshek; Hal E. Miller, all of Akron, and Clifton A. Byers, Cuyahoga Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of application Ser. No. 739,836, June 25, 1968, now abandoned. This application May 8, 1969, Ser. No. 833,836
Int. Cl. F16d *55/36*
U.S. Cl. 188—71.5 **20 Claims**

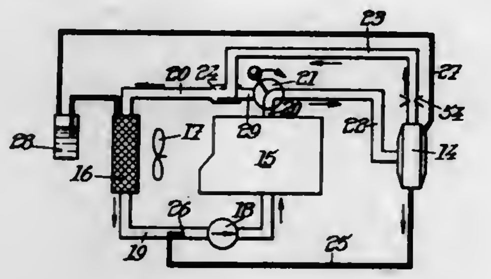


A lightweight disc brake utilizing homogeneous brake discs to provide heat absorbing characteristics superior to steel. The brake discs are made from graphite and/or carbon materials where the graphite and/or carbon acts as the primary heat sink and with the graphite-carbon disc itself acting as the basic friction material. The discs are preferably in the shape of flat annular rings. Straps may be utilized in a segmented design or to reinforce drive lugs for torque transmittal. Strengthening and anti-oxidizing agents can be added to the discs.

3,650,358
DECELERATING SYSTEM FOR TOURING VEHICLES

Pierre Etienne Bessiere, Golf-De-Saint-Nom-La-Breteche, France, assignor to Labavia-S.G.E., Paris, France

Filed Sept. 16, 1969, Ser. No. 858,321
Claims priority, application France, Sept. 17, 1968, 166527
Int. Cl. F16d *57/02*
U.S. Cl. 188—296 **19 Claims**

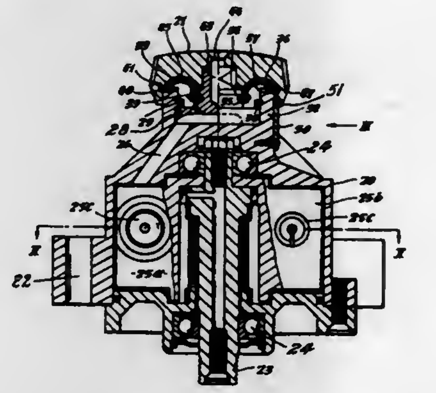


This system is intended for touring vehicles driven at a high speed corresponding to an engine shaft speed above 3,000 r.p.m. and preferably above 5,000 r.p.m. The engine is cooled by forced water circulation in a circuit comprising in series a pump, the engine and a radiator having a high heat dissipation capacity. The system comprises a hydraulic decelerator whose rotor runs permanently at a speed of at least the same order as engine shaft speed and whose diameter is less than 20 centimeters. The decelerator is connected in parallel to a part of the engine cooling circuit by means of a three-way two-position valve which when in one position sends all the water it receives to said part of the circuit isolating the decelerator, while when in its other position the valve sends all the water it receives to the decelerator inlet, isolating said circuit part.

3,650,359
OSCILLATING PISTON-TYPE DASHPOTS

Alan Richard Brine Nash, 39 Abbot's Ride, Farnham, England

Filed Feb. 3, 1970, Ser. No. 8,165
Claims priority, application Great Britain, Mar. 17, 1969, 13,962/69
Int. Cl. F16d *57/02*
U.S. Cl. 188—310 **8 Claims**



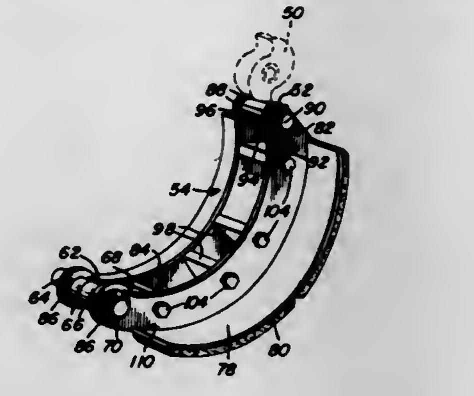
The specification describes a dashpot having a vane member pivotably mounted in a fluid-filled body to be rotatable through an angle of less than 360°. Movement of the vane member displaces the dashpot fluid through a valve that has an adjustable throttling effect and the damping rate of the dashpot is controlled thereby. The valve is mounted in a recess of a necked end of the dashpot body concentric with the pivot axis of the vane member and a control knob having a lip that overlaps said necked end is fixed to the valve to rotate it. A ring-form sealing member has an inner peripheral region secured to the valve and an outer peripheral region secured to the necked end of the body. A supplementary sealing member is compressed between said outer peripheral region and the control knob lip to provide a further seal at this position. A resilient clamping band at the inner peripheral region assists the seal there. Calibration means are also provided between the control knob lip and said necked end of the body to facilitate adjustment of the valve and these calibration means are further employed to set limits to the rotational adjustment of the valve.

3,650,360
TRUCK BRAKE

Robert L. King, and Eloyce M. King, both of 610 Shore Pines Lake, Coos Bay, Gold Beach, Oreg.

Filed Dec. 30, 1969, Ser. No. 889,270
Int. Cl. F16d *51/22, 69/00*
U.S. Cl. 188—330 **12 Claims**

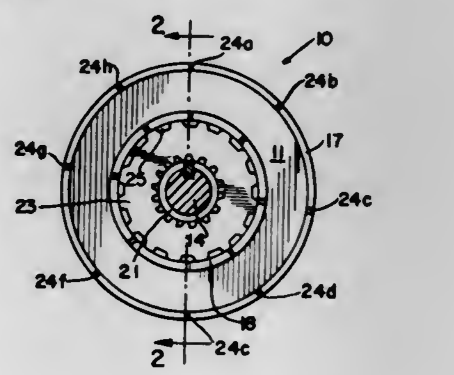
A wheel brake system for a truck or the like including a brake shoe having the usual semicylindrical band with a brake lining secured over its outer convex surface, but being provided with generally radially inwardly projecting apertured mounting lugs spaced along its arcuate extent. Each shoe further includes a pair of registered inner and outer arcuate plates over whose outer edge surfaces the concave inner surface of the band is disposed with the lugs carried by the band sandwiched and clamped between the plates by through bolts secured therethrough. The inner side plate, independent of the through bolts, is removably mounted in position whereby after the through bolts have been removed the inside plate may be axially withdrawn from the associated drum and the lining may thereafter also be axially withdrawn from the drum.



3,650,361
QUIET OPERATING ELECTROMAGNETIC CLUTCH OR BRAKE

Eric R. Fossum, Simsbury, Conn., assignor to General Time Corporation

Filed May 28, 1970, Ser. No. 41,521
Int. Cl. F16d *27/10;* **F16f** *15/12*
U.S. Cl. 192—30 V **6 Claims**

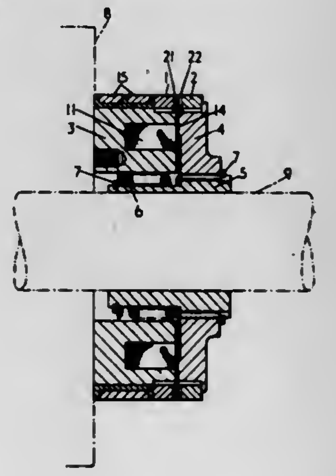


This invention is directed to an electromagnetic drive mechanism comprising an armature, a rotor having a flange extending from the outer periphery thereof, and a shaft wherein the flange has randomly spaced slots therein and resilient drive means connect the rotor and shaft.

3,650,362
TORQUE LIMITING DEVICES

John Bruce Davidson, Angus, Scotland, assignor to Coventry Gauge & Tool Company Limited, Coventry, England

Filed July 13, 1970, Ser. No. 54,131
Int. Cl. F16d *43/20*
U.S. Cl. 192—56 R **2 Claims**



A torque limiting device is provided in which a pair of opposed driving and driven toothed members or rings are normally held in meshing engagement by magnetic or electromagnetic means and an armature to the latter, generally V-form teeth of the rings riding out of engagement on excess torque which causes movement of the rings apart and in turn creates an air gap between the magnet and armature whereby the magnetic field is greatly weakened to prevent re-engagement of the toothed rings until resetting action is taken by closing a switch in parallel with a resistor so as to increase current flow to the coil of the electromagnetic means for obtaining re-engagement of the toothed members or rings which engagement is maintained by reduced current flow via the resistor when the switch is opened for normal operation of the device. The resistor may be variable for obtaining variation in the torque limiting action.

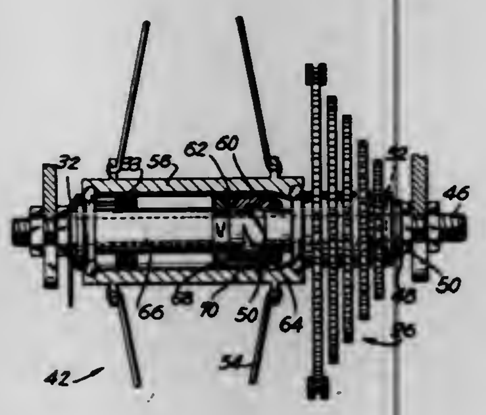
3,650,363
BICYCLE CLUTCH AND PARTS ASSOCIATED THEREWITH

Martin Cristie, Brooklyn, N.Y., assignor to Stelber Industries Inc., Brooklyn, N.Y.

Filed Mar. 24, 1970, Ser. No. 23,082

Int. Cl. F16d *23/00*

U.S. Cl. 192—64 **4 Claims**



A bicycle in which a drive wheel is driven through a pedal-operated drive. A clutch is provided for transmitting the drive to the bicycle drive wheel, and this clutch is constructed so that it will respond only to operation of the drive in the direction which will propel the bicycle forwardly for assuming an engaged position to transmit motion to the drive wheel. Under any other conditions such as when the drive is operated in a reverse direction or when the drive is stationary the drive wheel is free to turn either in a forward or in reverse direction so that, for example, it is possible to freely roll the bicycle rearwardly when the drive is not operating or is operated in a reverse direction. This reverse direction can occur when the pedals are turned rearwardly, and a brake structure brakes the movement of the bicycle in response to such rearward turning of the bicycle pedals.

3,650,364
FRICTION COUPLING WITH DUAL PISTONS

James Morrison Laing, Letchworth, England, assignor to Borg-Warner Limited, Letchworth, England

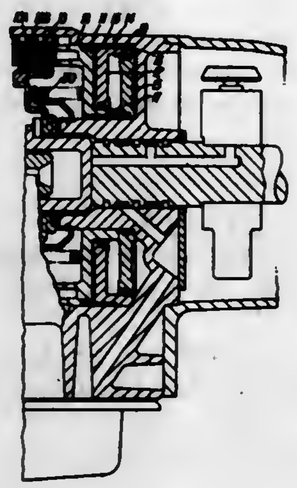
Filed July 15, 1970, Ser. No. 54,968

Claims priority, application Great Britain, July 18, 1969, 36,417/69

Int. Cl. F16d *25/06*

U.S. Cl. 192—85 AA **5 Claims**

A clutch or brake actuating assembly, e.g., for use in a vehicle automobile transmission to engage a friction device in which first and second pistons are axially slidable in a cylinder. A reaction member is mounted by axially sliding it into place between the two pistons and is provided with a small orifice. Hydraulic fluid enters through a port between the first piston and the member, to move the first piston and begin engagement of the friction device, and subsequently bleeds through the orifice to act on the second piston to increase the engaging force.



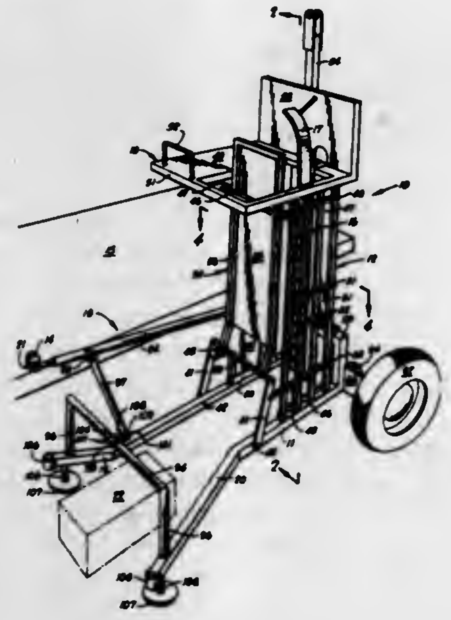
3,650,365
HITCHING ASSEMBLY

Jack K. Vassar, P.O. Box 460, and Boby J. Henigman, P.O. Box 452, both of Perkins, Okla.

Filed Feb. 16, 1970, Ser. No. 11,669

Int. Cl. B65g *65/06*

U.S. Cl. 198—7 BL **6 Claims**



The present invention relates to apparatus for hitching a movable frame to a vehicle and is primarily useful in combination with a bale loader. When used with a bale loader, the present invention may comprise a tension member which bears the primary pulling tension and which is secured at one of its ends to a towing vehicle, such as the side of a truck, while the other of its ends is pivotally secured to the rear portion of the bale loader. At the point of contact between the tension member and the vehicle there is provided a universal type coupling to allow limited, relatively free motion between the tension member and the towing vehicle. Near the front of the frame which carries the bale loader there is provided an elongated guide means which in a preferred embodiment is shaped in the form of an inverted "U" with the downwardly pointing arms of the "U" being rigidly secured to opposite sides of the bale loader frame. Connecting means are provided between the upper portion of the guide means and a point on the tension member immediately behind the point at which the tension member is secured to a vehicle. The point of connection between the connecting means and guide means may be varied and for this purpose there may be provided a sleeve which is slidably mounted upon the guide means and which carries an outwardly projecting connecting stub which fits into an aperture formed in the connecting means. Means, such as a threaded bolt, is provided in combination with the sleeve to allow the sleeve to be securely locked into place at a given point upon the guide means and thereafter, upon loosening the bolt, moved to another point thereon without removing the sleeve therefrom.

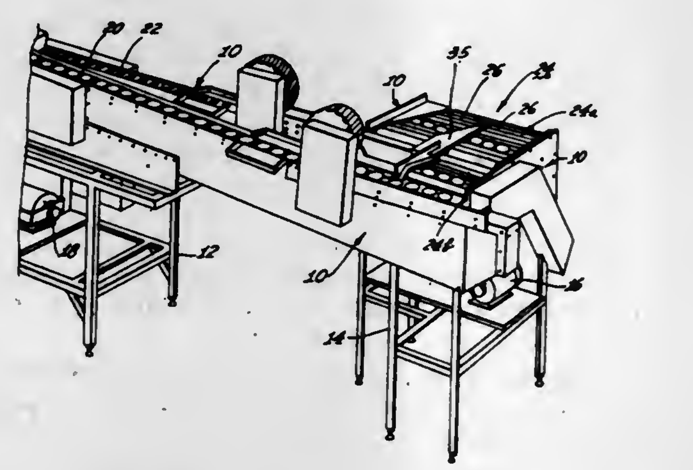
3,650,366
EGG HANDLING CONVEYOR EQUIPMENT

Roy Bruce Wyland, Arcadia, Calif., assignor to J. W. Wyland & Sons, Inc., San Gabriel, Calif.

Filed June 26, 1969, Ser. No. 836,703

Int. Cl. B65g *47/26*

U.S. Cl. 198—30 **4 Claims**



An improved egg handling machine is provided on which eggs are loaded and are conveyed in successive rows of, for example, six eggs abreast, and in which each row is subsequently separated into two longitudinally spaced rows of three eggs abreast each, for example, with the eggs from the two longitudinally spaced rows being fed to corresponding tandem conveyors so that the eggs may be conveyed to other egg handling machinery in each of the tandem conveyors in single file and with a longitudinal orientation.

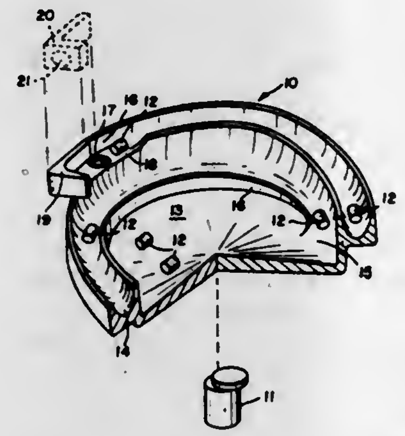
3,650,367
VIBRATORY BOWL FEEDER

Dennis E. Mead, Cazenovia, N.Y., assignor to Lipe-Rollway Corporation, Liverpool, N.Y.

Filed Feb. 26, 1970, Ser. No. 14,347

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AA **11 Claims**



A vibratory bowl feeder for cylindrical objects is improved by having an upwardly inclined trough that is uninterrupted and has a generally uniform cross section approximately in the shape of a conic section, preferably that of a parabola or hyperbola. Cylinders that are at least nearly as long as their diameters are accurately jiggled into end-to-end alignment in such trough without any jamming, mis-alignment, or rejection, and a single size trough can accommodate many sizes of cylinders.

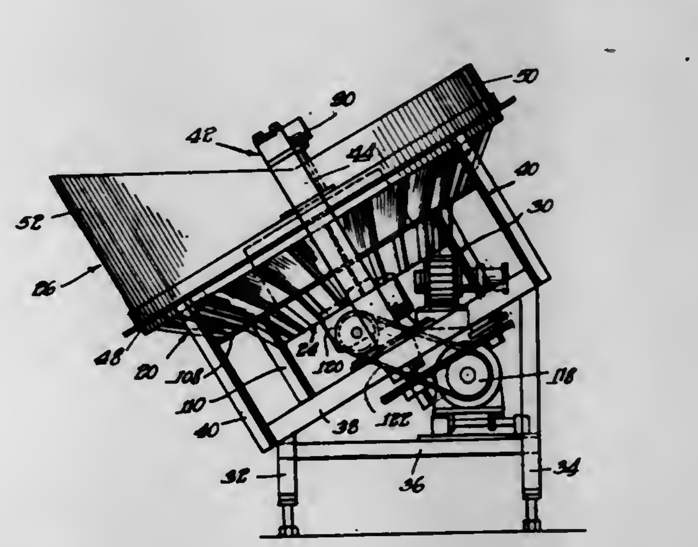
3,650,368
ARTICLE-ORIENTING APPARATUS

John C. Nalbach, Village of La Grange Park, Ill., assignor to John R. Nalbach Engineering Co., Inc., Chicago, Ill.

Filed Nov. 30, 1970, Ser. No. 93,623

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AA **21 Claims**



An apparatus for orienting and feeding lightweight articles, such as, empty plastic bottles. The apparatus includes a hopper for receiving and holding plastic bottles. The floor of the hopper is defined by a stationary cover which is spaced from the hopper's side wall to allow a bottle to be positioned between the side wall and the cover. A rotary drum having its axis of rotation offset from the vertical is positioned below the cover and extends beyond the periphery of the cover to the side wall of the hopper. The rotary drum has a plurality of chutes fixed thereon. Each chute has a portion movably positioned between the edge of the cover and the hopper side wall for receiving bottles. Since the axis of rotation of the drum is offset from the vertical, the chutes carry bottles from a lower portion of the hopper to an upper point, where each bottle falls down its respective chute onto a shelf. The chutes move the respective bottles along the shelf until the bottles come to the end of the shelf and the bottles drop to a second shelf. The chutes move the bottles along the second shelf until the bottles come to the end of the second shelf, when the bottles transfer onto a moving conveyor. The conveyor and the drum move at a speed such that the speed of the bottle is not changed when it is deposited on the conveyor.

3,650,369
CLOSURE FEEDING AND ORIENTING APPARATUS

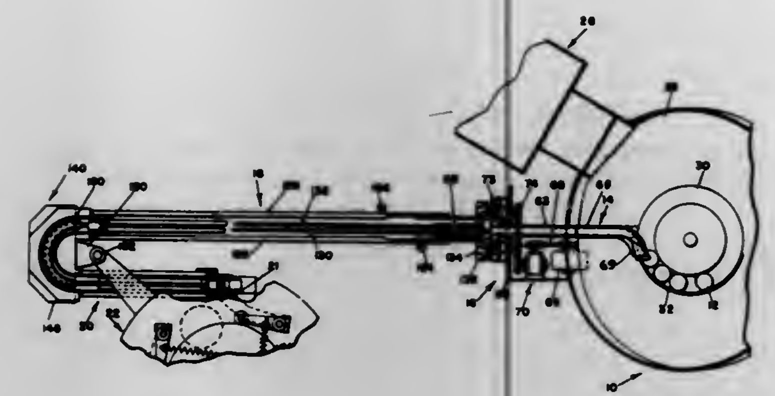
Robert W. Vergobbi, Braintree, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Filed June 27, 1968, Ser. No. 740,517

Int. Cl. B65g *47/24, 53/00*

U.S. Cl. 198—33 AA **9 Claims**

Comprises a feeding device for initially aligning randomly arranged closures edge to edge in a row facing in either one direction or the other, and an orienting device for thereafter arranging all of the closures thus aligned to face in the same direction.



3,650,370

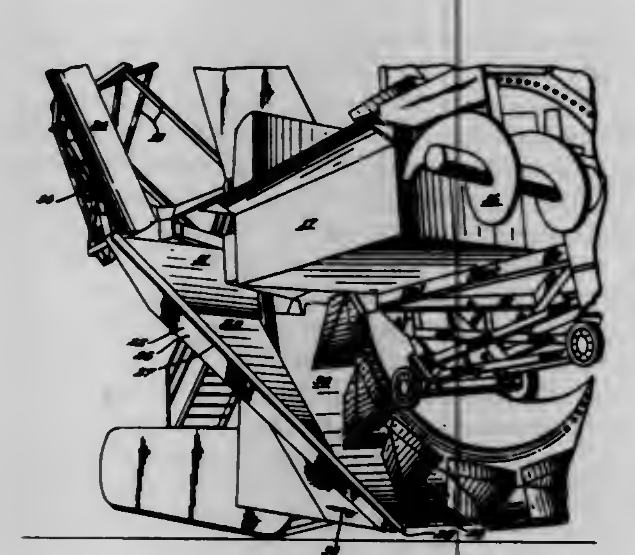
MATERIAL RECLAIMER

Fred T. Smith, Aurora, Ill., assignor to Barber-Greene Company, Aurora, Ill.

Original application Apr. 3, 1968, Ser. No. 718,466, now Patent No. 3,595,371. Divided and this application Jan. 19, 1971, Ser. No. 107,652

Int. Cl. B65g *65/28*

U.S. Cl. 198—36 **10 Claims**



A self-propelled reclaimer for moving material from a stockpile. The reclaimer has a sloper for removing material from the face of the pile and a bucket wheel for removing material from in front and to the side of the reclaimer and a common conveyor receiving both streams of material. The sloper is carried by a tiltable boom which carries means for directing material which avoids the conveyor to a second means carried by the reclaimer which directs the material to the bucket wheel. The sloper is angled so that the top thereof leads the conveyor. The conveyor extends to the face of the stockpile and has a projecting edge associated therewith to seal into the stockpile. The second means also contours the slope of the stockpile below the sloper.

3,650,371

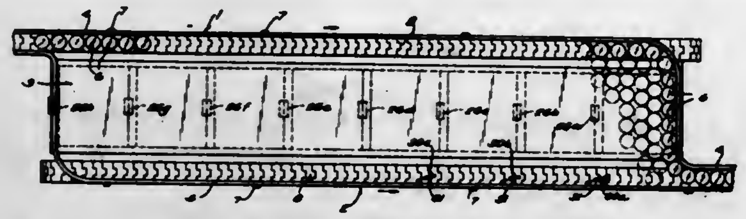
ACCUMULATOR TABLE FOR A CONVEYING SYSTEM

Charles F. Constable, South Milwaukee, and Robert F. Risley, Wauwatosa, both of Wis., assignors to Jos. Schlitz Brewing Company, Milwaukee, Wis.

Filed Nov. 5, 1969, Ser. No. 874,325

Int. Cl. B65g *47/00*

U.S. Cl. 198—45 **16 Claims**



A conveying system, including a conveyor and an accumulator table located adjacent the conveyor and sloped downwardly toward the conveyor. When a blockage occurs in the conveyor system, the articles being conveyed accumulate on the inclined table, and when the blockage is cured, the articles will move downwardly across the plate and back onto the conveyor. A vibrating unit can be associated with the inclined accumulator table to vibrate the table and increase the speed of movement of the articles on the table.

3,650,372

MACHINE FOR AUTOMATICALLY STACKING JOURNALS COUNTED IN PREVIOUSLY SELECTED NUMBERS

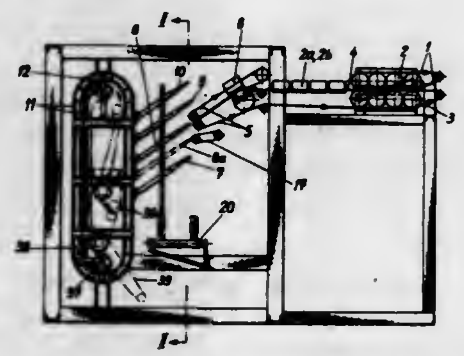
Ernst Guggisberg, Berne, Switzerland, assignor to Graphicart Internationale Ausrustungsgesell-schaft fur graphische Kunst AG, Berne, Switzerland

Filed Feb. 20, 1970, Ser. No. 12,992

Claims priority, application Switzerland, Feb. 28, 1969, 3145/69

Int. Cl. B65g *37/00*

U.S. Cl. 198—75 **2 Claims**



The machine has a first horizontal conveyor belt for all the copies pressed at the fold to the same thickness, which transfers the copies to a second downly moving conveyor belt, passing a counting station with a preselector which transmits pulses to a stacking installation. The latter has stack-bearing arms led by rollers into a vertical endless belt having guide rails and passing through guided stop devices. Arrest means are provided for the roller cages, operationally coupled to the stop devices.

3,650,373

CONVEYOR TRACK FOR ASSEMBLY LINE PRODUCTION

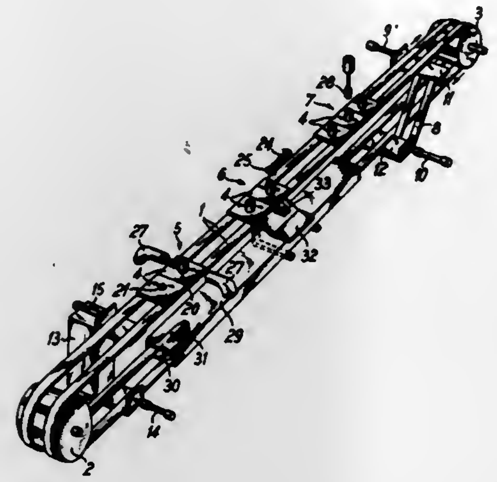
Georg Kern, Bad Salzdetfurth, and Heinz Wilke, Hildesheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 19, 1969, Ser. No. 851,277

Int. Cl. B65g *37/00*

U.S. Cl. 198—85 **8 Claims**

The invention relates to a conveyor system having spaced, parallel horizontally extending continuously traveling endless belts having upper and lower flights arranged to feed workpieces to work stations spaced along the conveyor. The system also includes transfer devices for shifting work carriers between the respective flights of the conveyor subsequent to passing the last work station and preparatory for the next cycle of operation.



3,650,374

ACCELERATOR FOR CONTAINER CONVEYING EQUIPMENT

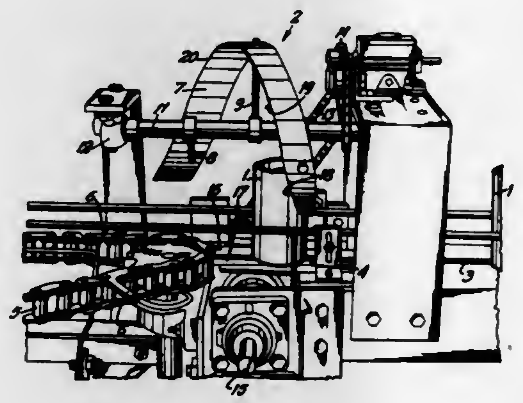
Tom Mansfield, Wilrijk, Belgium, assignor to International Machinery Corporation, S.A., St. Niklaas-Waas, Belgium

Filed Apr. 29, 1970, Ser. No. 33,020

Claims priority, application Belgium, May 9, 1969, 49090

Int. Cl. B65g *47/31*

U.S. Cl. 198—104 **5 Claims**



An accelerator for containers on container conveying equipment, said accelerator comprising a rotating container engaging cam having a generally helical profile.

3,650,375

DRIVE FOR ROLLER CONVEYORS

Fred J. Fleischauer, Oakmont, Pa., and Theodore A. Hammond, Grand Haven, Mich., assignors to Ermanco Incorporated, Grand Haven, Mich., by said Hammond and General Logistics Corporation, Oakmont, Pa., by said Fleischauer

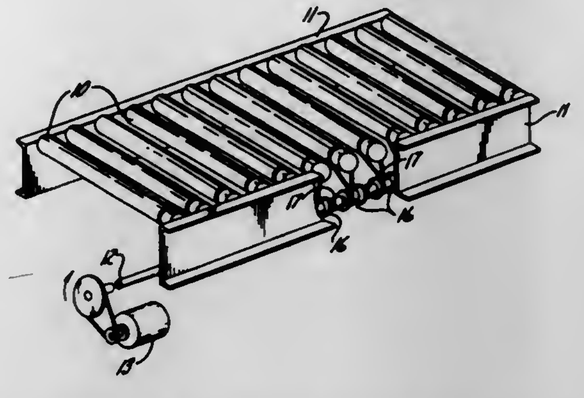
Filed May 5, 1969, Ser. No. 842,043

Int. Cl. B65g *13/02*

This application filed under Rule 47

U.S. Cl. 198—127 R **6 Claims**

A drive for a live-roller conveyor system is described in which individual rollers are driven from a powered cross-shaft through an elastomeric belt having a circular cross-section. A spool-shaped sliding pulley is provided for one shaft which floats axially to seek its optimum driving position, with the spool preferably being in the shape of a hyperboloid of revolution, broken at its center striction line with the end sections spaced apart by a cylindrical portion of a length sufficient to accommodate the helical wrap of the driving band.



3,650,376

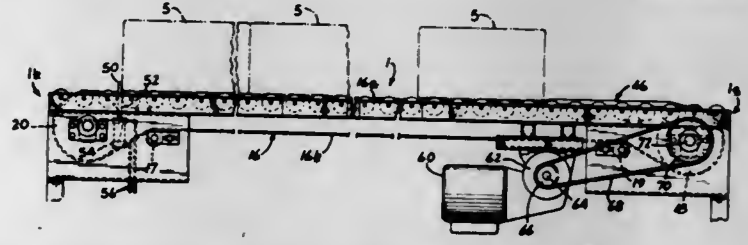
ACCUMULATING CONVEYOR

William J. Burgis, Park Ridge, and Marvin H. Coleman, Winnetka, both of Ill., assignors to Conveyor Systems, Inc., Morton Grove, Ill.

Filed Aug. 17, 1970, Ser. No. 64,202

Int. Cl. B65g *15/30*

U.S. Cl. 198—129 **10 Claims**



An accumulating conveyor having laterally spaced roller means for supporting articles for movement along a conveying path and means for stopping articles on the conveyor where desired. The articles are most advantageously impelled along the laterally spaced roller means by one or more longitudinally spaced projecting portions preferably on a continuous belt whose upper section moves in the space between the laterally spaced roller means. EAch projecting portion of the belt rises slightly above a plane tangent to the top of the roller means and has an upwardly and rearwardly inclining leading edge portion which provides a shoulder which pushes the rear of an article along the laterally spaced roller means and readily slips beneath the article when the article is held against further movement along the laterally spaced roller means.

3,650,377

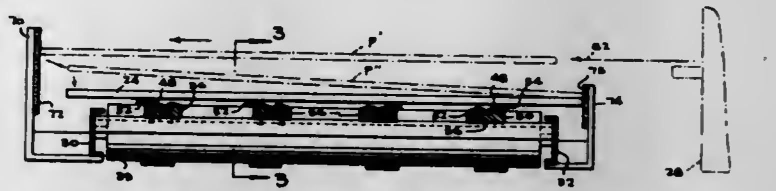
DRYER CONVEYOR MEANS

James T. Rash, Las Vegas, Nev., assignor to Mouldings, Inc., Marion, Va.

Filed Nov. 19, 1970, Ser. No. 91,099

Int. Cl. B65g *15/12*

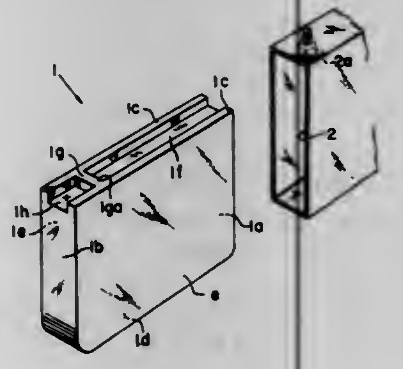
U.S. Cl. 198—190 **3 Claims**



A belt type conveyor is provided in which the upper flights of plural conveyor belts ride in an elongated slot canted with respect to the axis of the belt so that line contact is provided for supported articles on the flights by a corner edge of each belt with strip elements being projected above the conveyor to engage a first abutment and rebound against a second abutment for positioning the strip elements on the conveyor for movement through a dryer.

3,650,378
FAULTY INSERTION PREVENTIVE DEVICE FOR CARTRIDGES

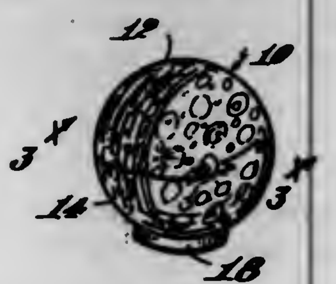
Tokusaburo Kakiuchi, and Hideaki Akiyama, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed July 8, 1969, Ser. No. 839,873
Claims priority, application Japan, July 13, 1968, 43/59916
Int. Cl. B65d *85/00;* **G11b** *1/00, 23/12*
U.S. Cl. 206—1 **5 Claims**



A faulty insertion preventive device for a cartridge insertable into a chamber having an opening of the same size as the cartridge. A key projects into the opening and a slot is formed on the top of the cartridge by spaced rows. For proper positioning the cartridge must be inserted so that the key fits within the slot for abutment against transverse stop adjacent the end of the rows.

3,650,379
TOY BANK

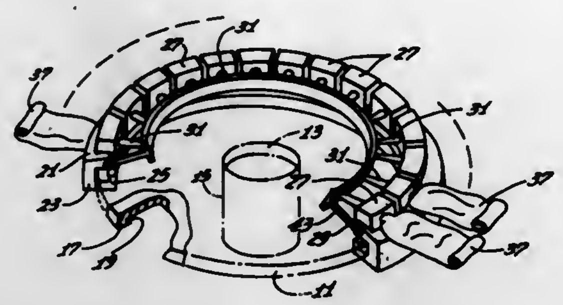
Marshall J. La Montagne, 106 Connolly Road, Avon, Mass.
Filed Jan. 2, 1970, Ser. No. 367
Int. Cl. A45c *13/10*
U.S. Cl. 206—1.5 **13 Claims**



A spherical structure embodying two hollow hemispherical shells which collectively provide a chamber, said shells being held with their diametrical sides engaged for sliding movement in the plane of their diametrical sides between closed and open positions, internally disposed locking means adapted to be shifted by manipulation of the structure to a position to release the parts to permit moving the parts to an open position, said parts when displaced to said open position providing a slot through which coins may be deposited into the chamber, and a normally closed closure adapted to be opened when the parts occupy a predetermined position to enable removing the content of the chamber therefrom.

3,650,380
ARTIST'S PALETTE

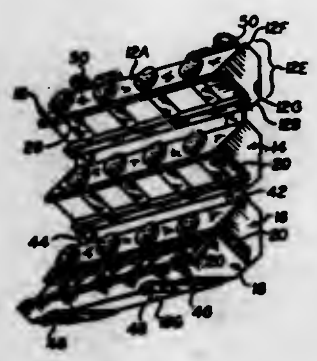
Richard C. Hutchison, 10418 Inglewood Avenue, Inglewood, Calif.
Filed Jan. 19, 1970, Ser. No. 3,751
Int. Cl. B44d *3/02*
U.S. Cl. 206—1.8 **6 Claims**



An artist's palette having a paint tube rack movably mounted thereon for depositing selected colors of paint in a predetermined position on the palette. The plurality of paint tubes are threadably attached to the rack so as to be individually connected to extension members which are tiltably mounted on the rack. The extension members are normally held against a sealer which is fixedly mounted on the rack. When paint is to be dispensed from the tube, the applicable extension member may be tilted about a pivot point so that the end of the extension is placed in close proximity with the palette; the tube is then squeezed for extrusion of paint.

3,650,381
DISPLAY RACK

Frederik Weindling, 205 Southfield Avenue, Stamford, Conn.
Filed June 2, 1970, Ser. No. 42,663
Int. Cl. B65d *25/00;* **A47b** *73/00*
U.S. Cl. 206—45.11 **14 Claims**

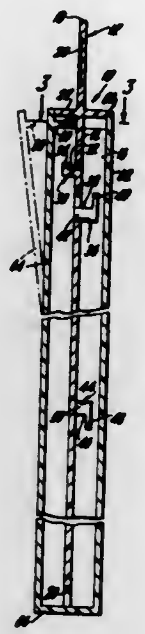


A display rack comprising a plurality of individual sections, each having a plurality of spaced openings which receive containers therein. Connecting means connects the sections together for movement between an open position wherein the sections are spaced from each other to permit access to the containers, and a closed position wherein one section covers the containers in an adjacent section to prevent their removal. Fastening means is provided to maintain the rack in the closed position.

3,650,382
MOLDED PLASTIC DISPLAY PACKAGE

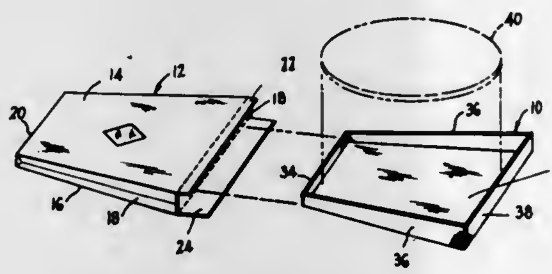
Samuel Braun, Rye; Robert Witkoff, Glen Cove, and George Northrop, Wantagh, all of N.Y., assignors to Cellu-Craft Inc., Lake Success, N.Y.
Filed Aug. 12, 1970, Ser. No. 63,188
Int. Cl. B65d *25/10, 11/00*
U.S. Cl. 206—45.14 **17 Claims**

An improved molded plastic display package is comprised of a first elongated member having an I-beam type cross section and a second U-shaped member that is slidable onto and off of the first member and which includes releasable latch means for engagement with a portion of the first member. Terminal means are provided for mounting and displaying an article of jewelry, for example, with the aid of an elastic extension. The present invention is very low in cost and requires a relatively shallow mold.



3,650,383
PIZZA CONTAINER

Michael A. Nigro, 420 Church St., Wethersfield, Conn.
Filed May 8, 1970, Ser. No. 35,742
Int. Cl. B65d *25/00*
U.S. Cl. 206—45.31 **7 Claims**

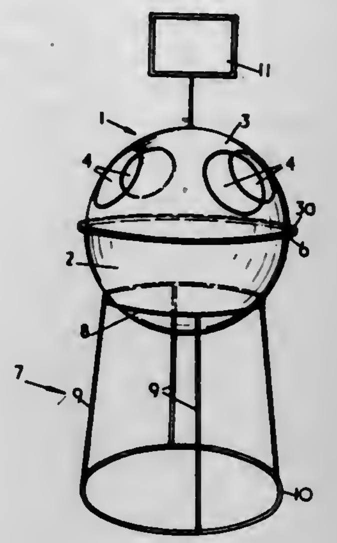


A container assembly has a tray member with a generally planar trapezoidal bottom wall and upstanding sidewalls. A bag member is cooperatively dimensioned and configured to accommodate snugly the tray member. In its preferred form, the bag member is provided with an upstanding front flap to facilitate stacking of a plurality of the containers and a window to allow observation of the contents of the package.

3,650,384
BULK DISPLAY SELF SERVICE BIN UNIT

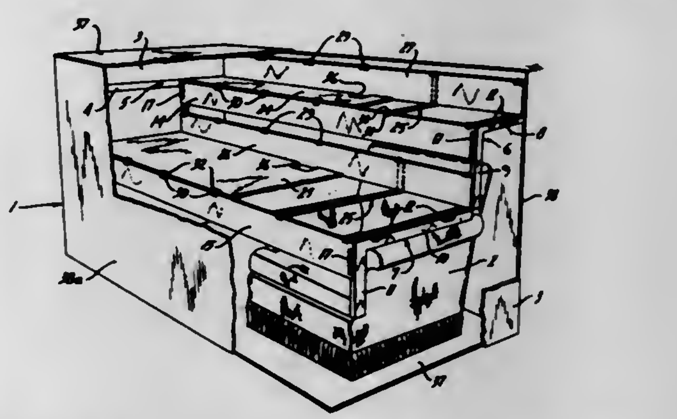
Frank Raymond Pegg, 4. Holbrook Lane, Coventry, Warwickshire, England
Filed July 25, 1969, Ser. No. 844,899
Int. Cl. B65d *25/00*
U.S. Cl. 206—45.34 **1 Claim**

A bin unit for the eye catching and protective bulk display of commodities for sale and consisting of a substantially semi-spherical plastic receptacle having a transparent dome of complementary substantially semi-spherical shape openable from the receptacle and when closed onto the latter together providing a container of generally spherical form, the dome having openings spaced around its side for manual access into the interior of the bin for self service withdrawal of commodities therefrom, the unit including a stand having an upper opening in which the receptacle freely seats.



3,650,385
KNOCKDOWN PACKAGING UNIT

Maynard W. Eickhoff, 4124 W. Kiehnau Ave., Milwaukee, Wis.
Filed May 5, 1970, Ser. No. 34,748
Int. Cl. B65d *81/00, 85/00, 9/00*
U.S. Cl. 206—46 FN **10 Claims**



The invention is directed to a packaging unit which can be readily assembled and disassembled. Under one embodiment of the invention, two separate frame members of different widths are secured to the inside of the ends of a packing box by hooks engaging apertures in metal strips secured to the inside of the box ends so that the frame members are readily removable and supported by the box ends. The frame members are located at different heights with the frame member located at the greatest height being at the rear portion of the ends of the box. The frame members are interchangeable to change the width of the frames at each respective height to accommodate furniture of different configuration within the packaging unit. The frames support the ends of horizontal protective panels and the panels are additionally supported between the frames by intermittent, readily removable brackets secured to base plates and backing plates which are of the same lengths as the panels. The furniture may be located in the packing box before the packaging unit is assembled, although after the unit is assembled, the rear part of the unit is open so that furniture, such as a davenport or overstuffed chairs may be inserted upon removal of the back panel, or before the panel is located in place. In another embodiment, the end frames are of one-piece, stepped construction and support themselves inside a packing box, but are also devised so that the panels at the two levels of the respective end frames may be interchanged.

3,650,386

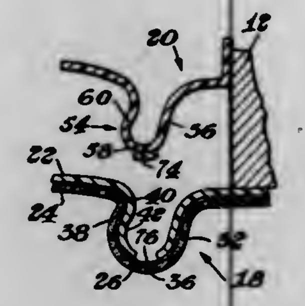
RESEALABLE CONTAINER

Ruben A. Tigner, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of application Ser. No. 750,111, Aug. 5, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 639,213, May 17, 1967, now Patent No. 3,454,158. This application Aug. 19, 1969, Ser. No. 851,309

Int. Cl. B65d *17/00, 85/76*

U.S. Cl. 206—46 F **16 Claims**



A resealable container including a hermetic seal joining together components of the container and which seal is so constructed that when broken, a pressure sensitive adhesive layer is exposed to provide a tacky surface for resealing purposes. Specifically, one of the components is a laminate. The seal causes a preferential separation of the plies of the laminated component with the adhesive layer being located at the interface of preferential separation.

3,650,387

CANS

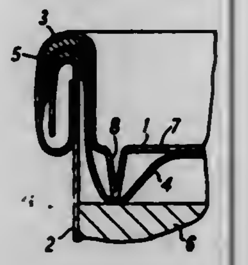
John M. Hornsby, Oakham, and William G. Wood, Melton, both of England, assignors to Petfoods Limited, Leicester, Leicestershire, England

Filed Dec. 2, 1969, Ser. No. 881,542

Claims priority, application Great Britain, Dec. 12, 1968, 59,237/68

Int. Cl. B65d *17/20, 85/72*

U.S. Cl. 206—46 F **5 Claims**



A can has a metal end and a side wall of a different metal. Self-supporting sheet material which is water-impervious and electrolytically inert with respect to the metal of the side wall isolates the end from the contents of the can and serves to provide electrolytic corrosion of the end. Where the end is a tear-off end, the sheet also serves to preserve the contents from contamination if the tear-off end is damaged.

3,650,388

TAPE CANISTER

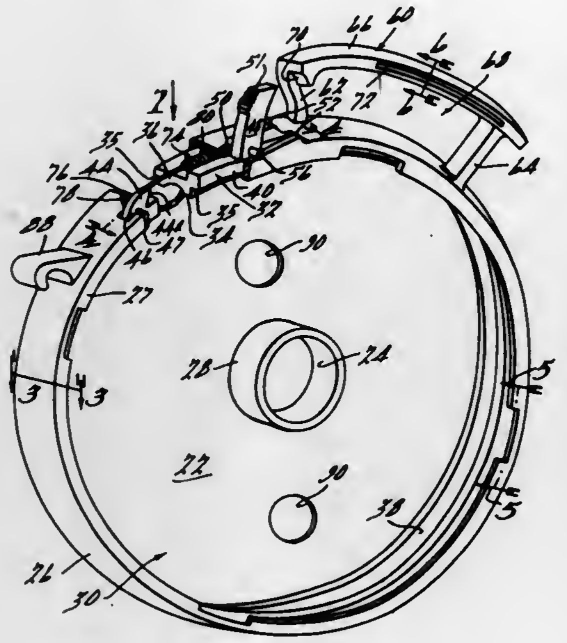
Boris M. Osojnak, Birmingham, Mich., assignor to Engineered Data Products, Inc., Ferndale, Mich.

Filed July 28, 1969, Ser. No. 845,298

Int. Cl. B65d *45/32, 85/67*

U.S. Cl. 206—52 F **16 Claims**

A canister for storing a tape reel, comprising a support or shell member of generally cup-shaped configuration and a split sealing ring positioned on the inner periphery of the rim portion of the support member and having a handle portion at one end projecting outwardly through the rim portion for manipulation by an operator so that the ring may be selectively expanded and contracted; the radially inner peripheral portion of the split ring has a width approximating the internal distance between the spaced reel flanges so that the ring may be expanded to allow passage of the leading flange of the reel and thereafter contracted to seat the radially inner peripheral portion of the sealing ring between the spaced flanges and thereby positively but readily releasably secure the reel within the canister.



3,650,389

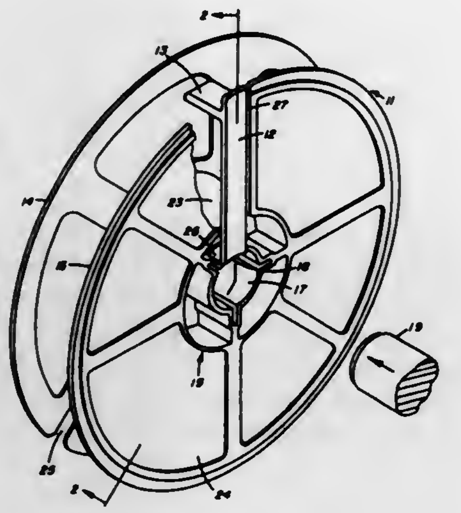
DEVICE FOR THE STORAGE AND HANDLING OF PHOTOGRAPHIC FILM OR THE LIKE

Dan Gilbert Mook, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 22, 1970, Ser. No. 5,039

Int. Cl. B65h *75/28*

U.S. Cl. 206—53 **3 Claims**



A device for the storage and handling of photographic film or the like including retaining means for holding the film securely to the device and release means for releasing the retainer means from its film-retaining position. In one embodiment the device may be in the form of a reel which includes retainer means for retaining the film on the reel and pivotable release means which may be actuated by positioning the reel on a spindle to pivot the retainer means from its film-retaining position to permit the film to be wound upon or unwound from the reel.

3,650,390

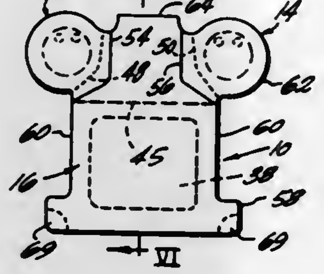
COMPOSITE PACKAGE AND METHOD OF FORMING SAME

Chung, Yun Hoon, Perrysburg, Ohio, assignor to International Automated Machines, Inc., Perrysburg, Ohio

Filed Aug. 14, 1970, Ser. No. 63,690

Int. Cl. B65d *51/16*

U.S. Cl. 206—56 AA **6 Claims**



A composite package having three separably connected containers. The containers are initially formed integrally as receptacles in a base sheet of a self-supporting plastic material, each receptacle being open at its upper end and closed at the bottom. A cover sheet is bonded to the upper face of the base sheet to overlie the open ends of the receptacles. The cover sheet is formed with small product dispensing apertures which register with the open ends of two of the receptacles. The cover sheet completely overlies the open end of the third receptacle. A top sheet is applied over the cover sheet to complete the containers. The cover sheet is peelable from the base sheet and the top sheet is more easily peelable from the cover sheet. The three sheets are severed in a predetermined manner and along predetermined lines to facilitate separation of the containers from one another and to provide lift tabs facilitating peeling the sheets from one another when it is desired to dispense the product. The receptacles are filled with a product through the open upper ends thereof before the cover sheet is applied thereto. In one form of the invention the top sheet overlies only the receptacle where the cover sheet is provided with the small dispensing openings.

3,650,391

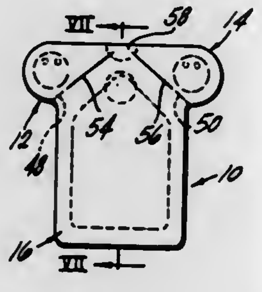
COMPOSITE PACKAGE AND METHOD OF FORMING SAME

Yun Hoon Chung, Perrysburg, Ohio, assignor to International Automated Machines, Inc., Perrysburg, Ohio

Filed Aug. 14, 1970, Ser. No. 63,819

Int. Cl. B65d *51/16*

U.S. Cl. 206—56 AA **7 Claims**



A composite package having three separably connected containers. The containers are initially formed integrally as receptacles in a base sheet of a self-supporting plastic material, each receptacle being open at its upper end and closed at the bottom. A cover sheet is bonded to the upper face of the base sheet to overlie the open ends of the receptacles. The cover sheet is formed with small product dispensing apertures which register with the open ends of the receptacles. A peelable top sheet is applied over the cover sheet to cover the dispensing openings. The three sheets are severed in a predetermined manner and along predetermined lines between the receptacles to facilitate separation of the containers from one another and to provide lift tabs facilitating peeling of the top sheet from the cover sheet when it is desired to dispense the product. The receptacles are filled with product through the open upper ends thereof before the cover sheet is applied thereto.

3,650,392

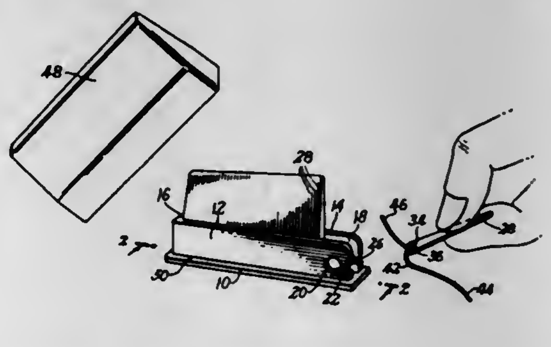
DENTAL BRIDGE CLEANER DISPENSER

Anton F. Haagedoorn, Gina Lane, Box 245, RFD #2, Bedford, N.Y.

Filed Jan. 14, 1971, Ser. No. 106,491

Int. Cl. A61c *15/00;* **B65d** *83/08, 85/62*

U.S. Cl. 206—56 AC **7 Claims**



A dental bridge cleaner dispenser comprising a channel-shaped member in which a plurality of vertically arranged cleaner members are mounted on and slidably arranged in respect to a supporting rod having a resilient loop at one end. The walls of the channel have guide openings aligned with said resilient loop whereby a length of dental floss can be passed therethrough. Upon removal of a cleaner member it is automatically threaded with the floss. The cleaner member is provided with a notch for securing the floss against movement in respect to the cleaner member.

3,650,393

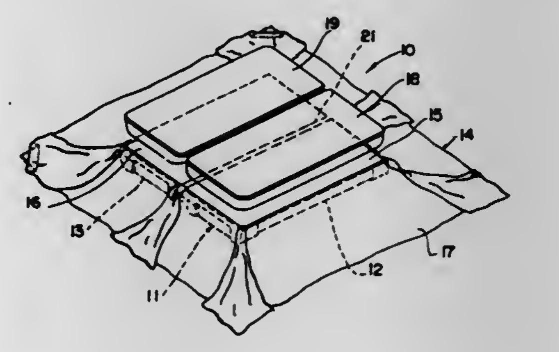
PACKAGE STRUCTURE

Robert Edward Reiss, Kirkwood; Fritz Deuschle, Shrewsbury, both of Mo.; Wayne E. Moll, Villa Park, Ill., and Jack D. Merry, Bloomington, Minn., assignors to Sherwood Medical Industries Inc., Chicago, Ill.

Continuation of application Ser. No. 707,165, Feb. 21, 1968, now abandoned. This application Mar. 3, 1970, Ser. No. 16,266

Int. Cl. A61b *19/02;* **B65d** *77/30*

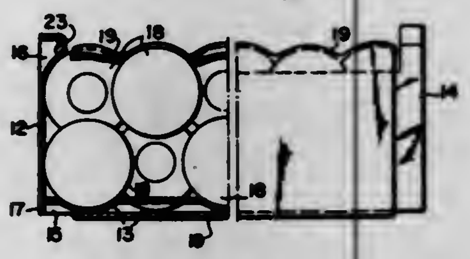
U.S. Cl. 206—63.2 **16 Claims**



A packaged kit including an openable enclosure which is sealed in closed packaged arrangement with a set of articles compactly retained therein in sterile condition. The package structure further includes a flexible sheet enveloping the set within the closed package and arranged to define a passive sterile surface on which the articles are disposed when the package is opened. The articles may comprise a set of medical instruments, medicants, and the like suitable for performing a medical procedure such as a spinal anesthesia operation. The package structure is adapted to be delivered in a hospital pneumatic conveyor system. The package portions are retained in the sealed closed package arrangement by a removable tape. A label cooperates with the flexible sheet to define a hinge between the two portions for opening the enclosure in the manner of a book to make the articles therein accessible in the open arrangement. The label is placed on the outside of the package overlying the tape to further serve as a means for indicating the maintained closed condition of the package. The package is permeable for introduction of a sterilizing gas thereinto in the closed package arrangement.

3,650,394
PACKAGING DEVICE

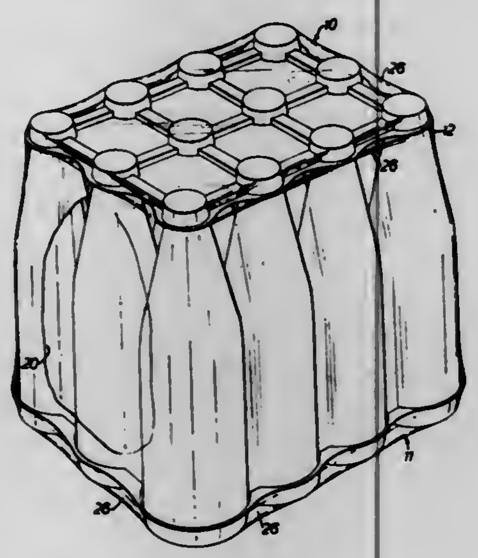
De Cazenove, 28 rue de l'Orangerie, 78 Versailles, France
Filed Dec. 19, 1969, Ser. No. 886,482
Claims priority, application France, Dec. 20, 1968, 179425
Int. Cl. B65d *71/00, 85/62*
U.S. Cl. 206—65 S **8 Claims**



An array of bottles are held tightly on a support plate by a shrinkable plastic film enrobing the pack, the support plate having an array of retaining portions to position the bottles in tight contact with each other.

3,650,395
SHRINK WRAP PACKAGE HAVING THE CONTAINERS THEREIN IN CONTACTING RELATION

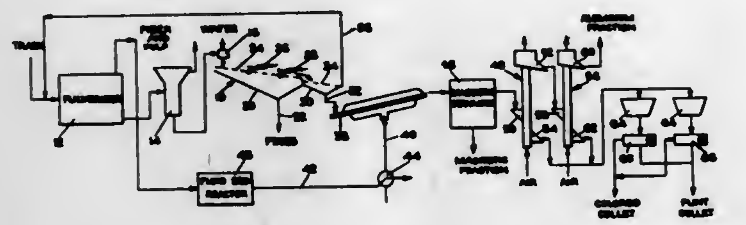
Reginald John Hobbs, Granville Works, Emery Road, Brislington Trading Estate, Bristol, 4, England
Filed Jan. 22, 1970, Ser. No. 4,993
Int. Cl. B65d *71/00*
U.S. Cl. 206—65 E **3 Claims**



A package comprises a number of separate containers, the adjacent ends of which are located by a number of depressions or locating formations formed in a tray, and a taut sheet wrapping layer extending externally around both the containers and the tray: there may be top and bottom trays formed to locate the tops and bottoms of the containers, the wrapping layer extending around the containers and the two trays.

3,650,396
REFUSE SEPARATING AND SORTING METHOD AND APPARATUS

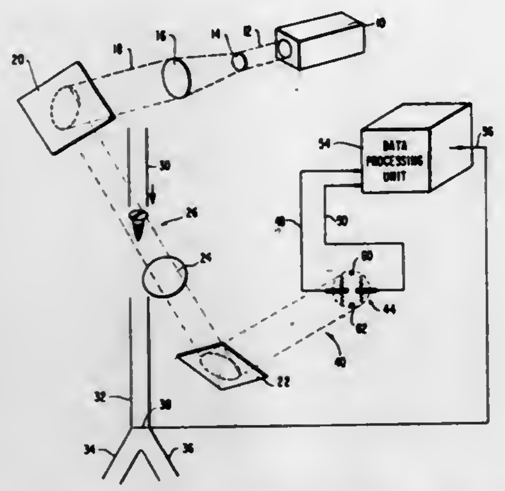
Robert M. Gillespie, and Hugh R. Rhys, both of Grand Rapids, Mich., assignors to Sortex Company of North America, Inc., Lowell, Mich.
Filed Nov. 18, 1970, Ser. No. 90,663
Int. Cl. B07c *5/342*
U.S. Cl. 209—3 **25 Claims**



A method and apparatus for sorting refuse into its components for recycle. The refuse, which contains glass, metals, paper, etc., is first comminuted and a fibrous pulp fraction is removed. Magnetic materials are removed by magnetic separation and lighter metals such as aluminum are separated from a glass containing concentrate by entraining the light metal fraction in an upwardly moving air column. A glass containing fraction, which has been sized, washed, and dried, is then sorted according to color to separate one kind of glass, such as flint glass, from other kinds or colors of glass by sensing an optical property of the glass and thereafter mechanically separating the glass particles according to the value of the optical property sensed.

3,650,397
SYSTEM FOR INSPECTING AND CLASSIFYING OBJECTS SUCH AS SCREWS, BOLTS AND THE LIKE WHILE IN MOTION

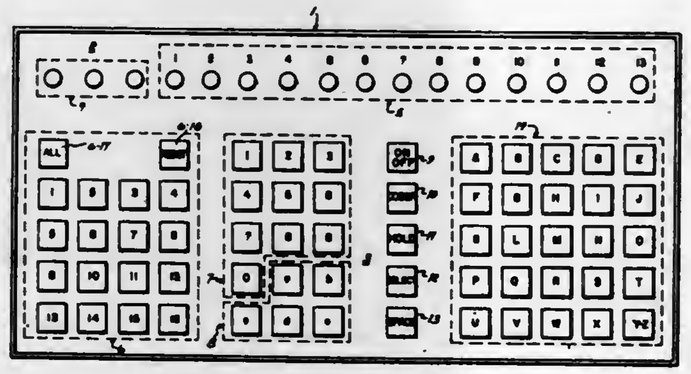
Dwight D. Bornemeier, Ann Arbor, Mich., assignor to Sensors, Inc.
Filed Nov. 19, 1970, Ser. No. 90,886
Int. Cl. B07c *5/00*
U.S. Cl. 209—80 **12 Claims**



Inspection and grading system for threaded objects comprising sequential detection, measurement, and comparison of major and minor diametral values of a threaded object while in motion. Such values are determined along the pitch angle of the threaded object throughout its longitudinal length. Measurements are made cyclically as the object is guided through the detection zone. The measured values are evaluated e.g., by sequential comparison to computer stored values of a standard threaded object and accepted or rejected based on the selective discrimination level. The objects are counted and classified.

3,650,398
CONSOLE AND CONTROL CIRCUIT

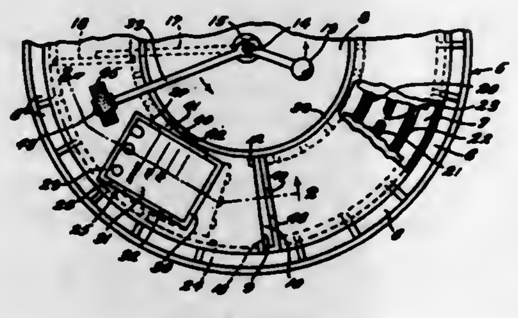
Robert J. Kalthoff; Frederic R. G. Sanborn, and Daniel J. Bandenburg, all of Cincinnati, Ohio, assignors to O. K. Partnership, Cincinnati, Ohio
Original application Apr. 4, 1966, Ser. No. 539,792, now Patent No. 3,534,904. Divided and this application Apr. 13, 1970, Ser. No. 32,489
Int. Cl. B07c *5/00*
U.S. Cl. 209—80.5 **21 Claims**



A console and control circuit is disclosed for controlling document retrieval apparatus utilized in a retrieval system of the type wherein one or more documents notched in adjacent character fields arranged along one or more edges in accordance with a predetermined code are selected from a plurality of like documents randomly stored in a document storage compartment. The console and control circuit includes a keyboard unit having a plurality of selectively operable keys for generating character code signals corresponding to the coded data notched in the character fields of the edge of a document to be retrieved; means for generating a stepping signal each time one of the character keys is actuated; and means for transmitting the character code and stepping signals to character entry means associated with the retrieval system, to effect the sequential entry of the keyed characters into the character fields of the entry means as the entry means moves from field to field in response to said stepping signals. Additionally, included are a plurality of character field indicating means responsive to the stepping signals for visually indicating the character field at which the entry means, at any given time, is positioned. Also provided is a detachably mounted key indicating plate having labeled key receiving apertures therein for visually correlating the console keys with the character code signals thereby.

3,650,399
CODED CARD ASSORTING DEVICE AND SYSTEM

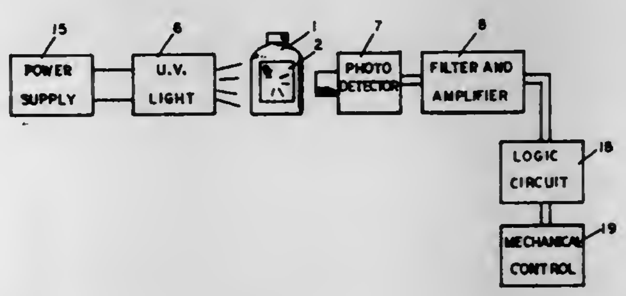
Joseph D. Shaw, 508 Church St., Brownsville, Pa.
Filed Nov. 4, 1970, Ser. No. 86,712
Int. Cl. B07c *3/04*
U.S. Cl. 209—80.5 **9 Claims**



The disclosure describes a coded card assorting device and system that processes one coded card at a time taken from a stack of such cards indiscriminately mingled in a pack, said device and process including a single, card transferer and a gravity operated discriminating means synchronized with the transferer; said device and system being adapted to intermittently take coded cards from the stack and deliver them into predestined bins.

3,650,400
OPTICAL SENSING SYSTEM USABLE IN AMBIENT LIGHT

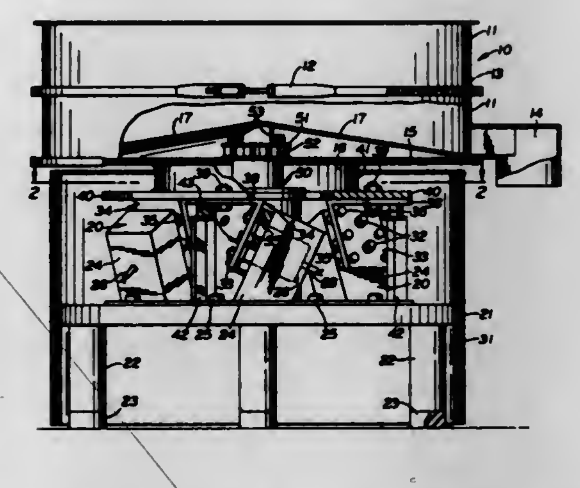
Charles W. Warren, Basking Ridge, and Richard J. Izdebski, Somerset, both of N.J., assignors to American Cyanimid Company, Stamford, Conn.
Filed Feb. 9, 1970, Ser. No. 9,589
Int. Cl. B07c *5/342*
U.S. Cl. 209—111.5 **21 Claims**



A detection system, unaffected by ambient light, is provided for sensing the presence of luminescent material on labels, packages, and other articles. An ultraviolet light is pulsed at a predetermined frequency, and a photo-detector system is filtered to respond only to resulting radiations having that same pulse rate frequency. Control circuitry is provided for sorting packages and the like in response to readings of the detector.

3,650,401
APPARATUS FOR VIBRATING A MATERIAL SEPARATOR

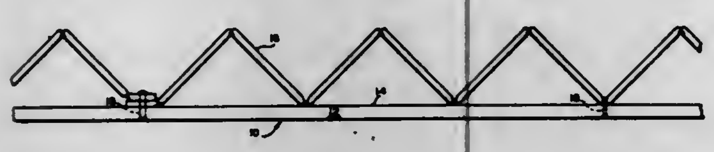
Laverne J. Riesbeck, Canton, and Wilson G. Mushrush, Carrollton, both of Ohio, assignors to Midwestern Industries, Inc., Massillon, Ohio and Wilson G. Mushrush, Carrollton, Ohio, part interest to each
Filed Nov. 28, 1969, Ser. No. 880,708
Int. Cl. B07b *1/28, 1/42*
U.S. Cl. 209—325 **9 Claims**



An apparatus for vibrating a material separator provides selective horizontal and vertical high frequency vibratory forces to the separator. The amplitude of the forces can be individually controlled while the machine is operating. The precise direction of the horizontal force can be set to obtain the desired pattern of material travel over the screen. Also disclosed is a manner in which the vibratory motion caused by the vertical component force can be utilized to prevent screen blinding.

3,650,402
STRATIFIER BELT ASSEMBLY

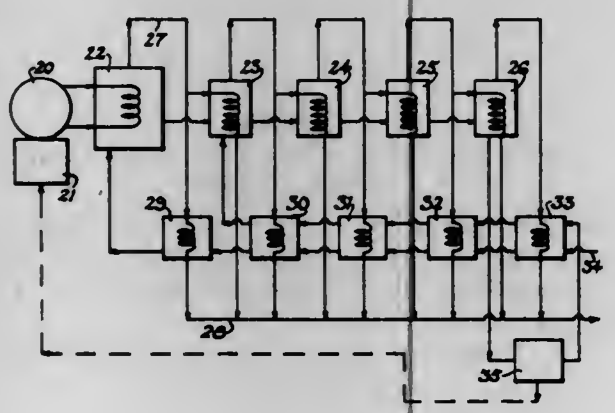
William A. Caldwell, Olathe, Kans., assignor to Phillips Petroleum Company
Filed Dec. 10, 1969, Ser. No. 883,687
Int. Cl. B03b *3/36*
U.S. Cl. 209—430 **9 Claims**



A classifying conveyor belt assembly comprising an elongated base belt having a generally flat upper mounting surface, and a carrying cover mounted thereon. Said carrying cover has a plurality of alternating ridges and valleys formed in and extending transversely across same.

3,650,403
TREATMENT OF BIOLOGICAL SLUDGE

Anthony Peter Aldridge, Stockport, England, assignor to Simon-Carves Limited, Cheshire, England
Filed May 4, 1970, Ser. No. 34,177
Claims priority, application Great Britain, May 22, 1969, 26,151/69
Int. Cl. C02b *1/02*
U.S. Cl. 210—180 **2 Claims**

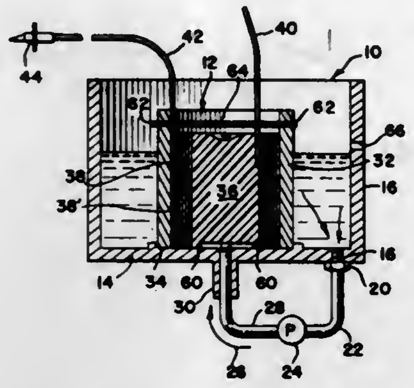


A method of treating an aqueous biological slurry comprising the steps of feeding the slurry through an evaporator plant where it is subjected to heat treatment and where a part of its water content is removed by evaporation, filtering the slurry which has passed through the evaporation plant and recycling the aqueous filtrate for further treatment with the slurry in the evaporator plant and an installation for performing same.

3,650,404
DISPOSABLE DIALYSIS APPARATUS

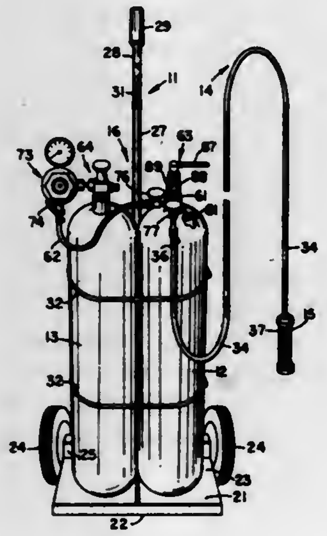
Antonio A. Versaci, 650 Franklin St., Schenectady, N.Y.
Filed Feb. 27, 1970, Ser. No. 15,155
Int. Cl. B01d *31/00*
U.S. Cl. 210—238 **8 Claims**

A dialysis device that is adapted to be disposed of after a single use. A closed cell foam core is used as a support for a dialysis membrane and may be located in a chamber associated with a reservoir also of closed cell foam, with the core occupying a major portion of the chamber. A pump circulates dialyzing fluid from the reservoir to the chamber from which the fluid overflows back into the reservoir. The use of a foam core and reservoir permits the structure to be fabricated sufficiently economically to permit it to be disposed of after a single use and the use of a closed cell structure occupying a major portion of the chamber minimizes the amount of dialyzing fluid required to perform a dialysis operation.



3,650,405
APPARATUS FOR CHLORINATING SWIMMING POOLS

Robert L. Morrison, 18219 Van Ness Ave., Torrance, Calif.
Filed Oct. 2, 1969, Ser. No. 863,104
Int. Cl. C02b *1/36*
U.S. Cl. 210—241 **5 Claims**

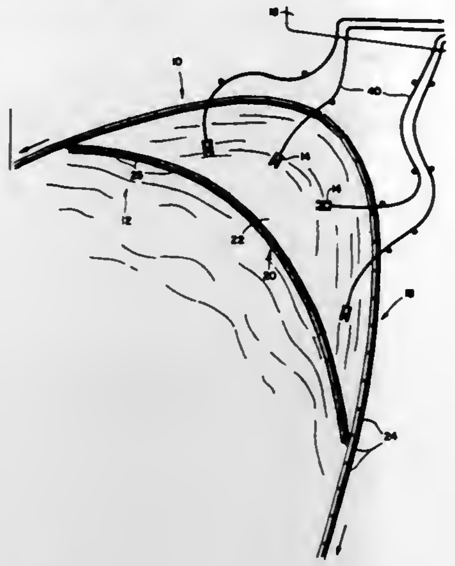


Portable apparatus for treating swimming pool water with chlorine gas wherein a source of chlorine gas is connected to a dispersion head adapted for introducing gas into water in the form of small bubbles. A source of carbon dioxide is also connected to the dispersion head, and valves are provided for successively delivering chlorine gas and carbon dioxide to the head for chlorinating the water and purging the system of chlorine gas.

3,650,406
OIL COLLECTION RETRIEVAL SYSTEM

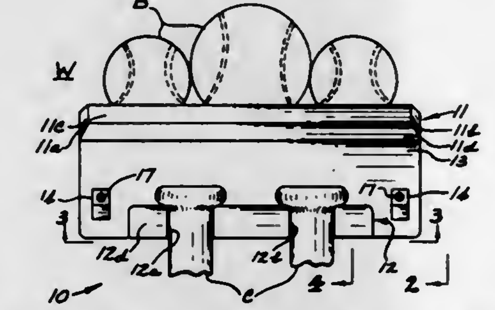
Louis Stanislaus Brown; Frank Adams March, both of Reston; Richard Patten Bishop, Vienna, and Bruce Calvin Gilman, Annandale, all of Va., assignors to Ocean Systems, Inc., New York, N.Y.
Filed Oct. 12, 1970, Ser. No. 80,044
Int. Cl. C02b *9/02*
U.S. Cl. 210—242 **9 Claims**

A system for collecting and retrieving a liquid of low density from the surface of a body of liquid of higher density which includes a catch basin having a floating weir as one section thereof through which the lower density liquid flows, and means for retrieving the liquid from the interior of the basin. The floating weir consists of a buoyant upper section and a water absorbent lower section representing the ballast for the upper section.



3,650,407
RACK FOR SPORTING EQUIPMENT

Oliver C. Benham, Jr., 7614 Romney, Houston, Tex.
Filed July 9, 1970, Ser. No. 53,467
Int. Cl. A47f *7/00*
U.S. Cl. 211—14 **6 Claims**



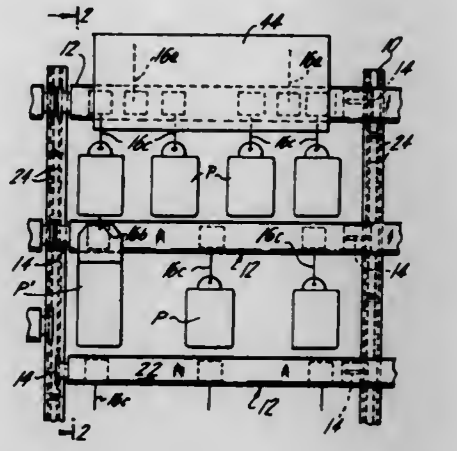
A wall mountable rack for storing small balls, baseball bats, baseball gloves and related accessories such as baseball caps and uniforms. The rack includes a single piece body with vertically spaced, upper and lower shelf-like projections extending away from a connecting backing structure. The top projection includes an upstanding, three-sided wall surrounding an inclined ledge. The lower shelf is indented to receive and hold the handle end of ball bats. The rack is adapted to be connected to a supporting wall by bolt or screw means. Two separable hooks employed to support gloves, caps, jackets and the like are secured to the main rack body below the upper shelf by the same screws or bolts employed to mount the body against the wall.

In a modified form, the rack is integrally formed in a single piece with pegs projecting from the backing structure of the rack body. The pegs include bores extending through their lengths through which a bolt or screw means may be employed to simultaneously secure the rack to the wall and provide reinforcing for the pegs.

3,650,408
DISPLAY APPARATUS

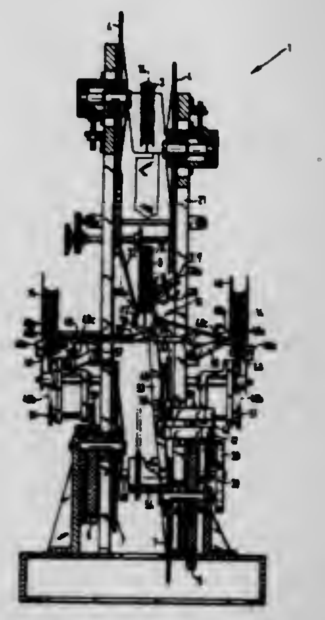
Robert Fisher, Whitestone, and Milton W. Herzog, Valley Stream, both of N.Y., assignors to H. Goodman & Sons, Inc., Kearny, N.J.
Filed Oct. 6, 1969, Ser. No. 863,844
Int. Cl. A47f *7/00*
U.S. Cl. 211—57 **11 Claims**

Display apparatus here includes vertical supports carrying plural horizontal channels. There are display carriers easily assembled to the channels and individually adjustable along the channels. Each display carrier includes a mounting plate and a rod for supporting merchandise or for acting with another rod for supporting a display card. The channel has in-turned lips, the upper lip being wider than the lower lip, and the mounting plate of the display carrier is of the proper width to be tucked under the upper lip, swung against the wall of the channel between the lips and shifted into the groove formed between the bottom lip and the wall of the channel, then being captive behind the upper lip. The lips extend from the rear of the channel, so that the wall of the channel has an unobstructed front appearance, and it can be used for signs, etc. The rods of the display carriers extend from the plates at the rear of the channel, across the top or bottom edge of the channel, to the display space in front of the channel.



3,650,409
APPARATUS FOR UNLOADING CONVEYED BOOKS

Heinz Klostermann, Wehdem, Germany, assignor to Rahdener Maschinenfabrik August Kolbus, Rahden, Germany
Filed Sept. 30, 1970, Ser. No. 76,951
Claims priority, application Germany, Oct. 4, 1969, P 19 50 186.1
Int. Cl. B65g *29/00*
U.S. Cl. 214—1 QA **14 Claims**



Books conveyed by a conveyor are unloaded by a pair of pockets having common inner lateral wall means and bottom means, and outer lateral wall means which are mounted for independent movement on the bottom means. During operation, one of the pockets is moved transversely to the conveyor movement from a receiving position receiving a book to a holding position for removing a book from the conveyor, while the respective other pocket assumes the receiving position whereupon the outer wall means of the pocket in the holding position is moved further to a horizontal or downwardly inclined position for transferring the books by a transfer rake to a conveyor of two other conveyors respectively cooperating with the two outer movable wall means.

3,650,410

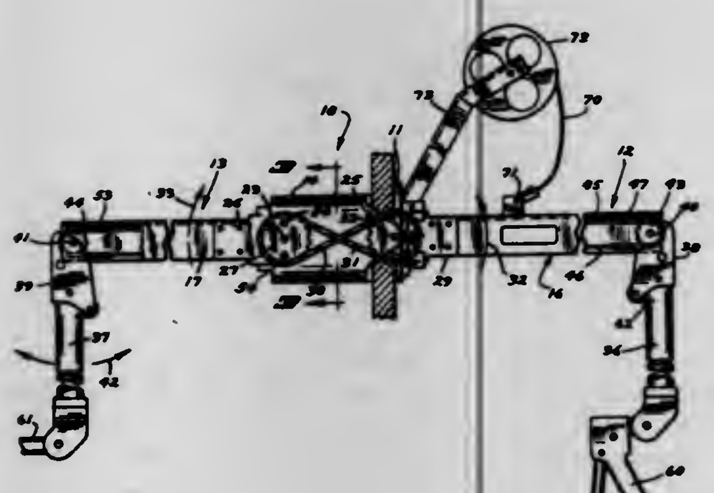
TRUE MOTION MINIATURE MANIPULATOR

Robert W. Wiesener, Roseville, Minn., assignor to Programmed & Remote Systems Corporation, St. Paul, Minn.

Filed Nov. 25, 1969, Ser. No. 879,838

Int. Cl. B25j *3/00*

U.S. Cl. 214—1 CM **10 Claims**



A compact or miniature master-slave manipulator which is made primarily for light duty work, and which is inexpensive to manufacture. Structure is employed which permits the true motion of the arms of the manipulator, so that when the master side is raised, the slave side will also be raised, for example.

3,650,411

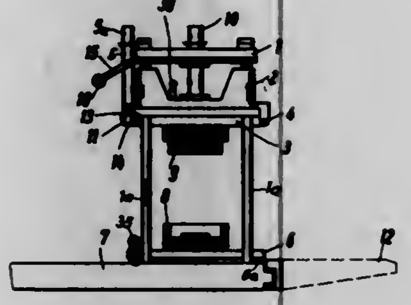
DEVICE FOR FINISHING COMPLEMENTARY PARTS

Walter Reis; Helmut Pfenning, both of 8753 Obernburg/Main, and Dietmar Boll, Schippach, all of Germany, assignors to said Reis, by said Pfenning and said Boll

Filed Dec. 23, 1969, Ser. No. 887,500

Int. Cl. B21j *13/10*

U.S. Cl. 214—1 QD **15 Claims**



A device for finishing complementary die or mold parts and similar complementary parts has a base plate for supporting a part to be finished in upwardly facing position. The support plate is slidable between a lowered position in which the two parts complement or otherwise coact with each other and a raised position in which the two parts face each other spaced apart, and is also swingable into a position in which the parts are in substantially planar alignment both facing upwardly, whereby both parts are conveniently accessible for finishing.

3,650,412

BAR STOCK FEED MECHANISM

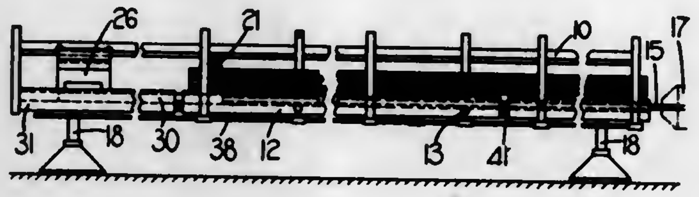
Richard William Neary, Bromsgrove, England, assignor to Atlantis Machine Tool Developments Limited, Belbroughton, near Stourbridge, England

Filed Feb. 5, 1970, Ser. No. 9,013

Claims priority, application Great Britain, Feb. 7, 1969, 6,639/69

Int. Cl. B23q *5/22*

U.S. Cl. 214—1.5 **2 Claims**



Mechanism for feeding bar stock to machine tools in which the feeding is effected by a linear motor. The linear motor is arranged for movement parallel to means for supporting the bar to be fed in alignment with the headstock of the machine tool, the movable part of the motor being connected to a pusher arranged to bear against a bar supported on the means.

3,650,413

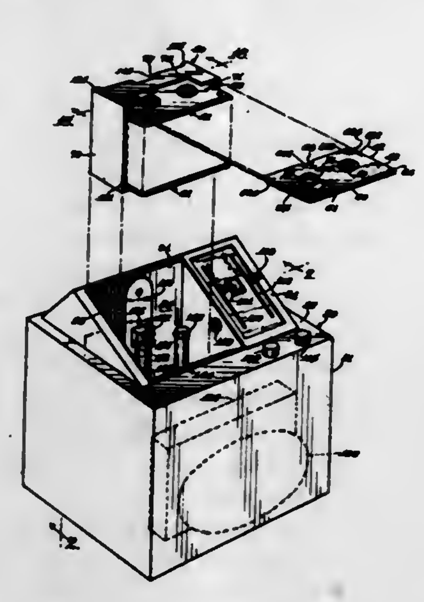
AUTOMATIC TAPE CARTRIDGE CHANGING MECHANISM

Morton L. Weigel, Bloomington, Ind., assignor to Sarkes Tarzian, Inc., Bloomington, Ind.

Continuation of application Ser. No. 389,014, Aug. 12, 1964, now abandoned. This application Sept. 25, 1969, Ser. No. 861,207

Int. Cl. G11b *5/00, 15/24, 23/04*

U.S. Cl. 274—4 F **104 Claims**



A removable or detachable magazine is provided which receives and stores a plurality of flat rectangular magnetic tape cartridges. Each cartridge is provided with two reels on which a short length of tape is wound, the ends of the tape being secured to the reels. An automatic cartridge changing mechanism is provided with a magazine receiving well into which the loaded magazine may be placed with either one of two orientations. When the magazine is placed in the well in one orientation a driveshaft is positioned within the central aperture of one group of reels of the cartridges positioned within the magazine, and when the magazine is positioned with the reverse orientation, the driveshaft is positioned within the central apertures of the other reel in each cartridge.

When the end of a particular tape is reached, means are provided responsive to the increase in tension in the tape for initiating an automatic tape changing cycle during which the transducer head is automatically withdrawn from the tape which has been played, the magazine is moved upwardly in the well to position another cartridge for engagement by the driveshaft, and the transducer head is then moved into engagement with the new tape which is wound on the reel surrounding the driveshaft during the next playing cycle. This automatic changing cycle takes place within approximately one second and without rewinding the tape in the previously played cartridge. The magnetic tape cartridges which are positioned within the magazine are thus played in rapid succession in the order in which they are placed in the magazine.

A tape cartridge reject means is provided for manually shifting from one magnetic tape cartridge to another at any time so that if the user does not wish to start or continue playing one cartridge he may manually reject this tape and immediately bring the next tape cartridge into playing position, in a manner comparable to the manual reject action of a conventional disc record changer.

The magazine is locked in its selected position in the well at all times during which the transducer head is in contact with one of the cartridges so as to prevent inadvertent movement of the tape while the head is in engagement therewith. However, when all of the cartridges in the magazine have been played, the transducer head is moved away from the tape in the last cartridge, the machine is automatically turned off, and an indication is made that the magazine may be bodily removed from the machine. The magazine may now be inserted into the well with the opposite orientation so that the driveshaft is arranged to rewind the tapes within the respective cartridges back onto the reels on which they were originally wound. The selections on the other sound channel of each cartridge are thus each played in rapid succession but in the reverse order.

3,650,414

AUTOMATIC CONTROL SYSTEM FOR A TEMPERATURE MEASURING DEVICE UTILIZING AN EXPENDABLE IMMERSION THERMOCOUPLE UNIT

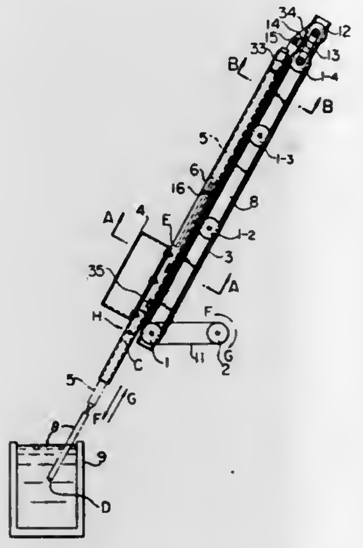
Yutaka Asada; Tatsuichi Obinata, and Kamematsu Matsuda, all of Kitakyushu, Japan, assignors to Osaka Sanso Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 26, 1970, Ser. No. 22,843

Claims priority, application Japan, Apr. 5, 1969, 44/26000

Int. Cl. B65g *59/06*

U.S. Cl. 214—8.5 F **4 Claims**



A holder for removably holding a member to be immersed into a molten metal bath in a furnace or a vessel, such as a ladle, is mounted on a fixed frame so as to be moved reciprocally toward and away from the furnace. Along the path of the holder are provided means for supplying said members one by one in the path of the holder, and means which is adapted to automatically mount the member thus supplied onto the holder during the movement of the holder toward the furnace and to automatically dismount the same from the holder during the return stroke of the holder to its original position.

3,650,415

ARRANGEMENT FOR UNLOADING MATERIAL FROM A DREDGE

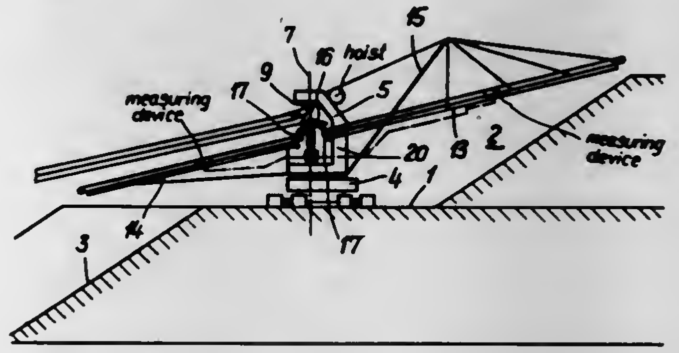
Alfred Krumrey, Rheinhausen, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Mar. 2, 1970, Ser. No. 15,805

Claims priority, application Germany, Feb. 28, 1969, P 19 10 242.2

Int. Cl. B65g *65/28*

U.S. Cl. 214—10 **9 Claims**



An arrangement for dumping dredged material on an elevated bank and a below grade bank by means of a removing device, the superstructure of which is mounted on the understructure so as to be tiltable about a vertical axis and which receives the dredged material through the intervention of a belt bridge in close vicinity of the vertical pivot axis, the superstructure comprising two dumping beams for the dumping on an elevated and a below grade bank, which dumping beams are pivotable together with the superstructure, while below the discharge end of the belt bridge there is provided an adjusting device for the two dumping beams for varying the material to be dumped thereby.

3,650,416

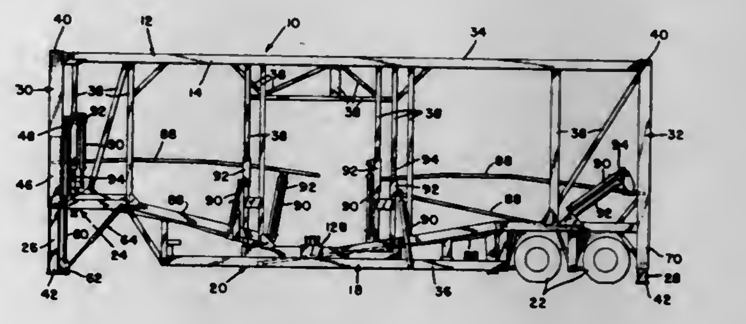
VEHICLE CARRIER

Bert A. Bodenheimer, Stamford, Conn., assignor to Sea-Land Service, Inc., Elizabeth, N.J.

Filed Jan. 22, 1970, Ser. No. 4,972

Int. Cl. B65g *1/14*

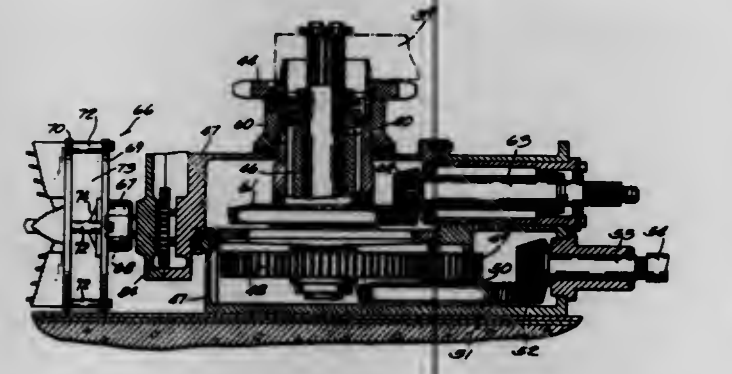
U.S. Cl. 214—10.5 R **9 Claims**



A wheeled cargo carrier adapted for over-the-road travel as well as for stacking interchangeably with other cargo carriers aboard a ship includes a single or a plurality of adjustable ramps for supporting a number of vehicles thereon. The irregular shaped frame of the carrier includes supports displaceable from a retracted position when the carrier is adapted for over-the-road use, to extended positions for defining a stackable unit when the carrier is to be stored aboard a ship.

3,650,417
ENTRY TOOL FOR UNLOADING MECHANISM

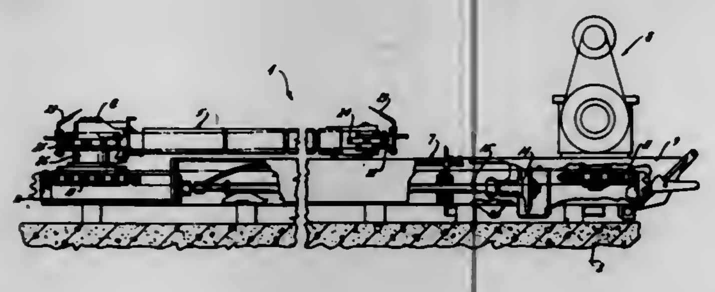
Fred W. Dissmeyer, Elgin, and George E. Olson, Arlington Heights, both of Ill., assignors to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.
Filed Apr. 15, 1970, Ser. No. 28,850
Int. Cl. B65g *65/42*
U.S. Cl. 214—17 DA **12 Claims**



An entry tool incorporated with an unloading mechanism for unloading stored material from a sealed storage structure. The storage structure is supported on a foundation having a radially extending trough extending from the center of the structure to the exterior and conveyor members are located in spaced parallel relation within the trough, while a stationary backbone or frame of a separate cutter arm assembly is located within the trough between the conveyor members. An entry tool is associated with a center post assembly at the inner end of the backbone, and as the cutter arm assembly is installed in the structure, the entry tool dislodges the stored material located within the trough between the conveyor members and throws the dislodged material laterally outward to the conveyors so that the cutter arm assembly can be installed within the trough.

3,650,418
BOTTOM UNLOADER WITH OVERRUNNING CLUTCH

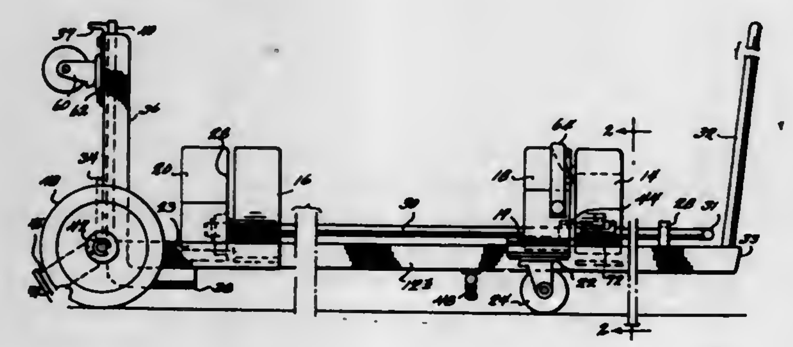
Fred W. Dissmeyer, Elgin, and George E. Olson, Arlington Heights, both of Ill., assignors to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.
Filed Nov. 9, 1970, Ser. No. 87,878
Int. Cl. B65g *65/42*
U.S. Cl. 214—17 DA **4 Claims**



A bottom unloading mechanism operating on the floor of a silo includes a cutter arm which is journaled on a central post at the center of the silo for rotation over the floor of the silo. The cutter arm has an endless cutter chain that dislodges the stored material and moves it toward the center of the silo where it is delivered to a discharge conveyor unit disposed in a radially extending trough in the silo floor. The cutter chain is driven by the conveyor unit when operating in one direction only and for that purpose a transmission in the central post includes a driven sprocket powered by the conveyor unit and transferring rotation in one direction to a second drive sprocket for the cutter chain by means of an overrunning clutch mechanism.

3,650,419
CLOTH DOFFING MECHANISM

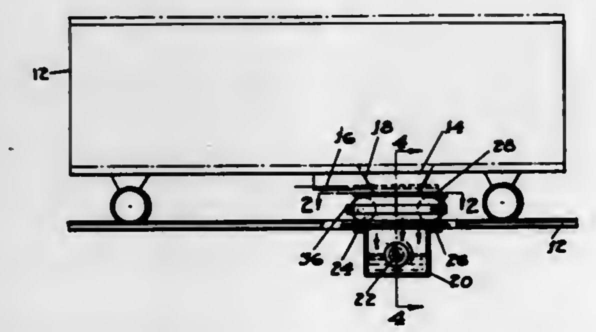
Littleton Upshur, Greensboro, N.C.; Burton P. Franklin, Danville; Asa E. Roane, Redford, both of Va., and Kenneth Y. Wang, Greensboro, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.
Filed Feb. 25, 1970, Ser. No. 13,968
Int. Cl. B65g *67/02*
U.S. Cl. 214—38 B **8 Claims**



A mechanism is described for removing a filled cloth roll from a loom and for transporting a plurality of said removed said filled cloth rolls away from the loom area. A doffing cart is provided which is adapted to be placed adjacent the horizontally extending filled cloth roll on the loom and includes means for lifting the roll, when detached, horizontally onto the cart. The doffing cart with the filled cloth roll secured thereto may then be lifted to an upright position, where the filled cloth roll extends vertically, and the doffing cart may then be rolled away from the loom in the narrow aisles generally provided between looms. A receiving cart is provided which is adapted to receive the filled cloth roll from the doffing cart, store a plurality of said rolls and transport said plurality of rolls away from the loom area. Further, the receiving cart may store a number of empty rolls for installation in the looms when the filled rolls are removed therefrom. The doffing cart includes a tongue means adapted to be engaged with a coupling bar on the receiving cart placing the platform which supports the vertical filled cloth roll on the doffing cart substantially flush with the floor of the receiving cart so that the filled cloth roll need only be slid from one cart to the other.

3,650,420
REMOVABLE CHUTE FOR A HOPPER

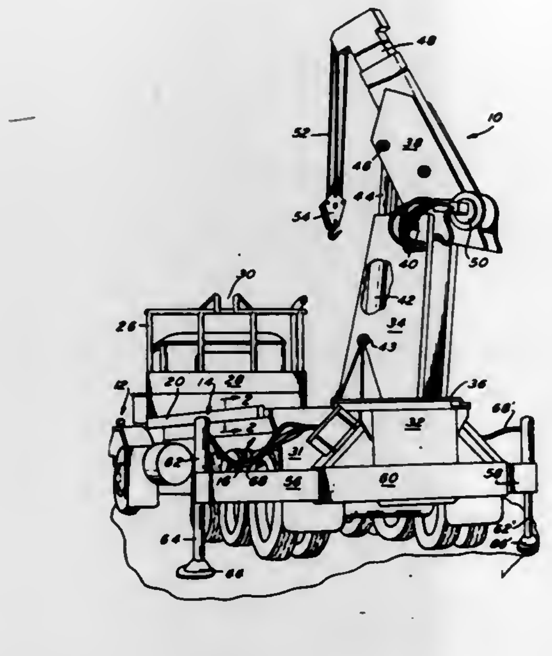
Joseph Francis Mahaney, Chickering Road, Spencer, Mass.
Filed Feb. 6, 1970, Ser. No. 9,226
Int. Cl. B65g *67/24*
U.S. Cl. 214—44 R **5 Claims**



An inflatable member in the form of a synthetic or rubber annulus for application to the lower end of a hopper, providing a tight connection between the hopper and a receiving vessel below it.

3,650,421
HYDRAULIC UNLOADER

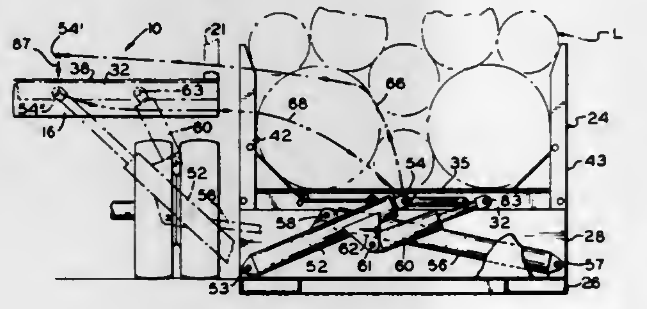
William H. Miller, Flowing Springs Road, Birchrunville, Pa.
Filed Apr. 17, 1970, Ser. No. 29,580
Int. Cl. B66f *1/54*
U.S. Cl. 214—77 **3 Claims**



A hydraulic unloader is disclosed for attachment to the chassis of a truck. The unloader includes a turret having an extensible boom and rotatable through 360° at the rear end of the truck. The unloader includes a box frame welded to the chassis. The box frame is provided with horizontally extensible and vertically adjustable outriggers.

3,650,422
SIDE TRANSFER APPARATUS

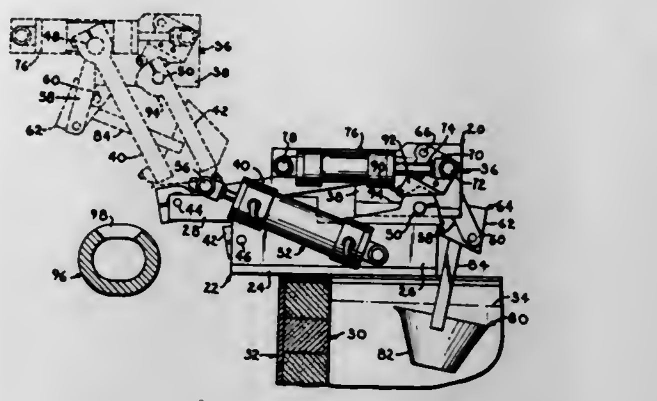
Dossie M. Batson, Milwaukie, Oreg., assignor to Logging Systems, Inc., Portland, Oreg.
Filed Sept. 2, 1969, Ser. No. 854,591
Int. Cl. B65g *67/12*
U.S. Cl. 214—146.5 **14 Claims**



A side transfer apparatus for transferring a load to or from a vehicle load support. The apparatus includes a pair of load-supporting bunks spaced longitudinally from one another alongside the vehicle to be loaded or unloaded. The bunks are supported on base members which house multiple fluid cylinders connecting the bunks to the base members. The cylinders move the bunks simultaneously upwardly and laterally toward the vehicle load support along a curved path to clear the vehicle. Then the bunks pass generally vertically through the horizontal plane of the vehicle load support to either deposit a load on the vehicle support or lift a load therefrom as desired.

3,650,423
MECHANICAL LADLE

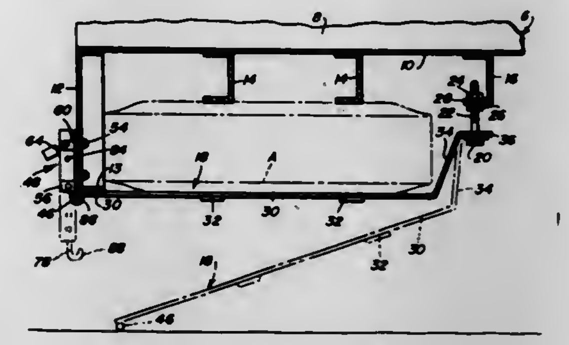
John W. O'Brien, 607 South Kelly, Harrison, Ark.
Filed July 23, 1970, Ser. No. 57,583
Int. Cl. E02f *3/42*
U.S. Cl. 214—149 **10 Claims**



A ladle mounted on non-parallel linkage which is, in turn, carried by parallel linkage. Articulation of the parallel linkage provides translatory movement for the ladle between a loading and unloading station and the ladle is tipped for filling and emptying by articulation of the non-parallel linkage. Power units separately operate to articulate the respective linkages.

3,650,424
PICKUP TRUCK SPARE TIRE CARRIER

Hugh D. Dumas, Box 1121, Havre, Mont.
Filed Dec. 19, 1969, Ser. No. 886,456
Int. Cl. B62d *43/00*
U.S. Cl. 214—454 **4 Claims**

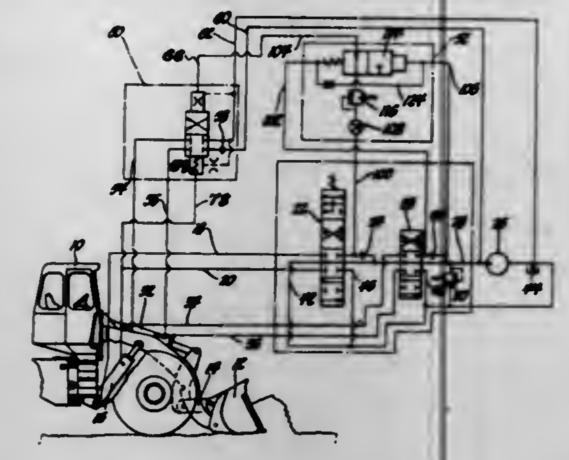


An underslung spare tire carrier for a pickup truck structurally designed and adapted to take the spare tire out of the box-type body and suspend it under the bed or bottom of the box where it can be conveniently unlatched and readily removed for use. No tools, special or otherwise, are needed. A yieldable rack cradles and clampingly stores the tire. This rack is hinged and the rearward end is freed when unlatched, swings down and unloads the tire at will.

3,650,425
BUCKET LOADER CONTROL SYSTEM

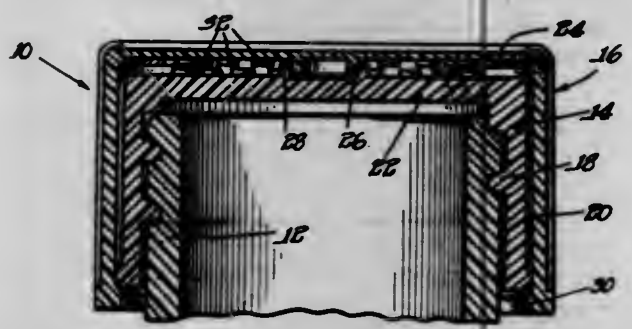
Russell H. Hallman, Royal Oak; John B. Keir, Birmingham, and Lawrence J. Patritto, Madison Heights, all of Mich., assignors to Sperry Rand Corporation, Troy, Mich.
Filed June 12, 1970, Ser. No. 45,741
Int. Cl. B66f *9/00*
U.S. Cl. 214—762 **3 Claims**

A material handling bucket loader with hydraulic boom lifting and bucket curling has an automatic control for bucket curling during the loading operation to assure filling of the bucket. The pressure developed in the boom lift system is utilized to open a normally closed curl valve when the load on the boom reaches a predetermined value which is manually adjustable. Manual override of the automatic curl valve is achieved by sensing the flow which occurs when the manual curl valve is operated and by shifting a shuttle valve in response to such flow.



3,650,426
SAFETY CAP

Christian F. Miller, Palos Park, Ill., assignor to V.C.A. Corporation
Filed Mar. 30, 1970, Ser. No. 23,730
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **11 Claims**

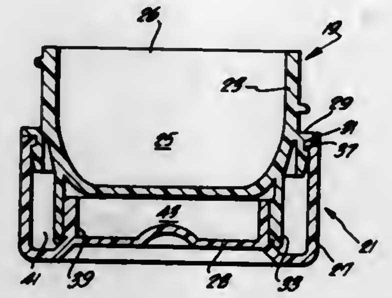


The present invention relates generally to closure members or caps for containers and more particularly to closure members embodying a safety feature to prevent unauthorized removal thereof from containers such as medicine receptacles and the like. The embodiment of the invention disclosed herein includes an inner inverted cup-shaped internally threaded closure member and an outer inverted cup-shaped member adjacently superimposing the inner member. These parts are secured against unintentional axial separation and the outer member is normally freely rotatably with respect to the inner member. The top of the outer member is axially deflectable and protuberance means is arranged to releasably couple the inner and outer members upon deflection of the outer member.

3,650,427
TWO PIECE DOUBLE WALLED CONTAINER

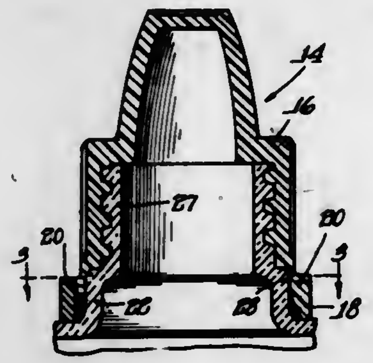
Ernest Franklin, Beverly Hills, Calif., assignor to VCA Corporation, Greenwich, Conn.
Filed Aug. 19, 1970, Ser. No. 64,964
Int. Cl. A41j *41/00*
U.S. Cl. 215—13 R **12 Claims**

A two piece double walled container is disclosed comprising a first and second element. The first element is a cup-shaped member having a cylindrical wall and a bottom wall forming a compartment for receiving cosmetics or the like. The second element is also of a cup-shaped configuration having a cylindrical and bottom walls of slightly larger dimensions in order to extend over the first element in a spaced relationship to form an insulative thermal air pocket therebetween. The coupling means for uniting the two elements comprises a grooved annular collar formed on the periphery of the cylindrical wall of the first element for receiving a plurality of projections extending inwardly from the rim of the second element. A pair of tightly fitting frictionally interengaging tubular extensions are formed on the bottom walls of both elements in a coaxial relationship with respect to the cylindrical walls. The interengaging tubular extensions function to absorb any bending or axial loads applied to the two elements and to increase the frictional interengagement therebetween upon the application of the loads in order to prevent the two elements from being separated.



3,650,428
TAMPERPROOF CLOSURE DEVICE

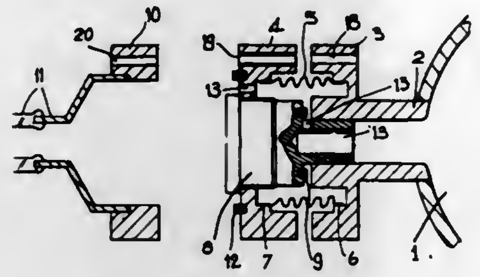
Christian F. Miller, Palos Park, Ill., assignor to V.C.A. Corporation (formerly k/a Valve Corporation of America), Greenwich, Conn.
Filed Apr. 9, 1970, Ser. No. 27,062
Int. Cl. B65d *41/32*
U.S. Cl. 215—42 **8 Claims**



The present invention relates generally to closure members for application to external thread convolutions of a container and more particularly to an improvement in such closure members whereby unauthorized or unintentional unscrewing of the closure may be readily detected. The embodiments of the present invention disclosed herein include an internally threaded closure member or cap and a locking ring fracturably connected with the lower margin of the cap. Ratchet teeth provided along the inner surface of the locking ring are adapted to interlock with complementary external teeth or protuberances on the container to resist forces tending to unscrew the cap after it has been finally tightened in place. If the cap is subjected to sufficient force tending to unscrew the cap while the ratchet teeth abut the external container protuberances, the fracturable connection will rupture, thereby affording a clear indication that the cap may have been tampered with.

3,650,429
SYSTEMS FOR SEALING ENCLOSURES

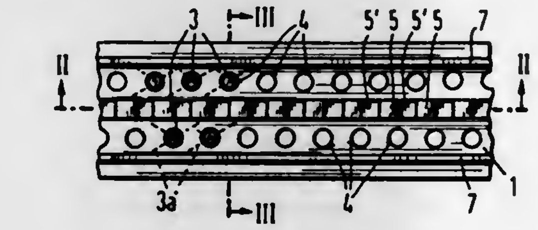
Pierre Ribout, Paris, France, assignor to Thomson-CSF
Filed Jan. 23, 1970, Ser. No. 5,315
Claims priority, application France, Feb. 4, 1969, 6902398
Int. Cl. H01j *61/30*
U.S. Cl. 220—2.1 R **9 Claims**



A closing arrangement for closing the exhaust tip of evacuated enclosures comprising two flanges, one of which is associated with the tip and a central plug associated with the other flange and which closes the tip. Ducts are provided for connecting the tip with the outside. A joint is provided between the plug and the tip and flexible bellows interconnect the two flanges.

3,650,430
HOLDER FOR MASS-PRODUCED MINIATURE ELECTRICAL COMPONENTS, ESPECIALLY SEMICONDUCTOR MEMBERS

Wolfgang Siegmar, and Hans Wissinger, both of Regensburg, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Aug. 27, 1969, Ser. No. 853,360
Claims priority, application Germany, Sept. 3, 1968, P 17 64 913.7
Int. Cl. B65d *73/02, 75/22*
U.S. Cl. 220—23.8 **5 Claims**

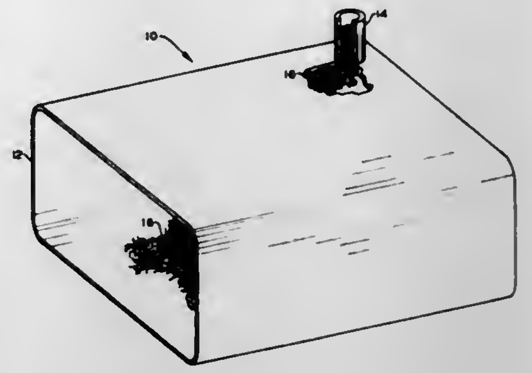


Holder device for mass-produced miniature electrical components includes at least two profiled bands of elastic plastic material disposed substantially parallel to one another, one of the bands being formed with at least one recess for receiving a respective electrical component therein, both of the bands having at least one row of pushbutton-like hollow projections, the hollow projections of one of the bands being inserted in respective ones of the other of the bands so as to hold the bands so tightly together that the component received in the recess is held firmly therein by both of the bands.

3,650,431
SAFETY CONTAINER

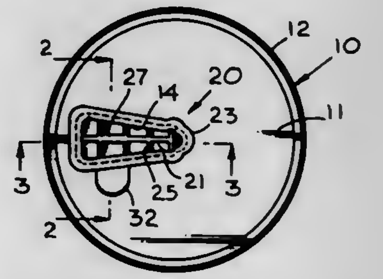
Dan F. Stewart, Memphis, Tenn., assignor to Phillips Petroleum Company
Filed Dec. 19, 1969, Ser. No. 886,663
Int. Cl. B65d *25/14*
U.S. Cl. 220—88 R **10 Claims**

A bulked or textured filamentary plastic material is employed in a fuel tank or other container as a means for reducing explosion hazard and/or as an anti-sloshing means.



3,650,432
RE-USABLE SEAL FOR TAB OPENING CANS

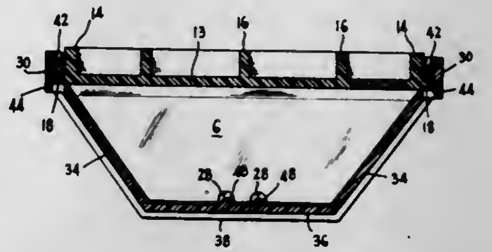
Waldron Albert Easton, 1850 Camden Ave., Los Angeles, Calif., and Mark Allan Haidy, 14108 Tahiti Way, Marina Del Rey, Calif.
Filed Apr. 2, 1970, Ser. No. 25,041
Int. Cl. B65d *41/00*
U.S. Cl. 220—42 B **20 Claims**



A re-usable seal for cans of the pull-tab type. The seal consists of a unitary structure of an abrasion-resistant elastomer. The structure has a dependent skirt portion forming a small angle such as 10° with a line perpendicular to the edge of the can to facilitate insertion of the seal. Within the skirt portion and a flat base portion is disposed a system of reinforcing ribs which preferably intersect each other at right angles for reinforcing the structure while permitting it to be deformed into the aperture of the can. A flat tab may extend from the seal structure to facilitate removal of the seal.

3,650,433
VERTICALLY MOUNTED DISPENSER WITH SLIDABLE COVER

John C. Robertson, Orange, N.J., assignor to The Stanley Works, New Britain, Conn.
Filed Feb. 9, 1970, Ser. No. 9,593
Int. Cl. B65d *83/08*
U.S. Cl. 221—65 **13 Claims**



A dispenser for replaceable knife blades has a support member with a shelf portion providing a shelf surface extending generally horizontally and a cover member which is slidable over the shelf portion. The cover member is secured in engagement with the support member and has apertures therein for effecting movement of the uppermost blade outwardly through the side thereof. As the blades are dispensed, the cover member slidably descends relative to the shelf portion.

3,650,434

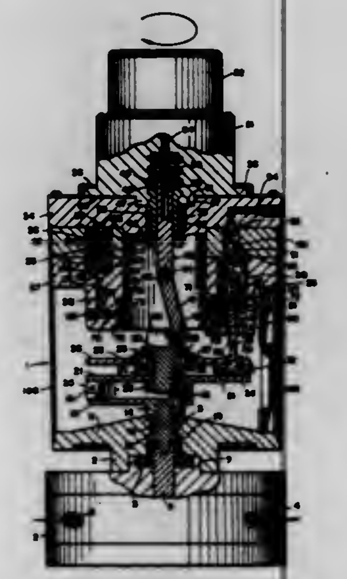
LIQUID PROPORTIONING DEVICE

Jay Johnson, La Canada, and Charles R. Gardner, Glendale, both of Calif., assignors to Republic Corporation, Century City, Calif.

Continuation-in-part of application Ser. No. 708,131, Feb. 26, 1968, now abandoned. This application Apr. 6, 1970, Ser. No. 25,964

Int. Cl. B67d *5/22*

U.S. Cl. 222—31 **1 Claim**



A device for accurately maintaining a constant volumetric proportion between liquids delivered to a mixing point. The device includes means for positively metering the volume of a principal liquid; means for controllably pumping a secondary liquid, means for utilizing the output of the metering apparatus to operate and control the pumping apparatus; means for passing the secondary liquid to and away from the pumping apparatus; means for manually establishing a desired volumetric proportion between the principal and secondary liquids, and means for registering the volume of primary liquid which has passed through the positive metering apparatus. The device is particularly useful in applications wherein the volumetric proportion of a principal liquid to a secondary liquid in a mixture must be accurately controlled.

3,650,435

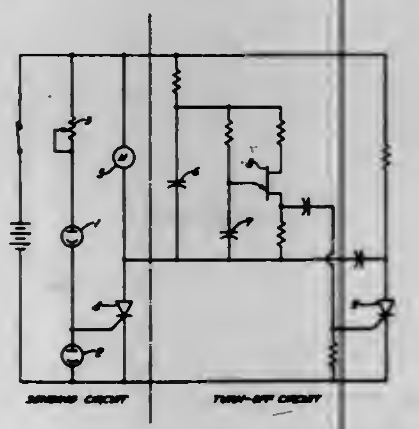
PHOTOELECTRIC CONTROLLED DISPENSER

William E. Kleefeld, Columbia Station, Ohio, assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Apr. 3, 1970, Ser. No. 25,445

Int. Cl. B67d *5/08*

U.S. Cl. 222—52 **3 Claims**



A device is disclosed for dispensing materials such as detergents without manual control. It is operated by blocking the passage of light to one of two photoelectric cells, as by a hand, which actuates an SCR circuit. The pump is turned off automatically preferably by a pulse generating circuit which interrupts the SCR. The two photocells are connected in series and together function as a voltage divider, comparing ambient light to proximate light.

3,650,436

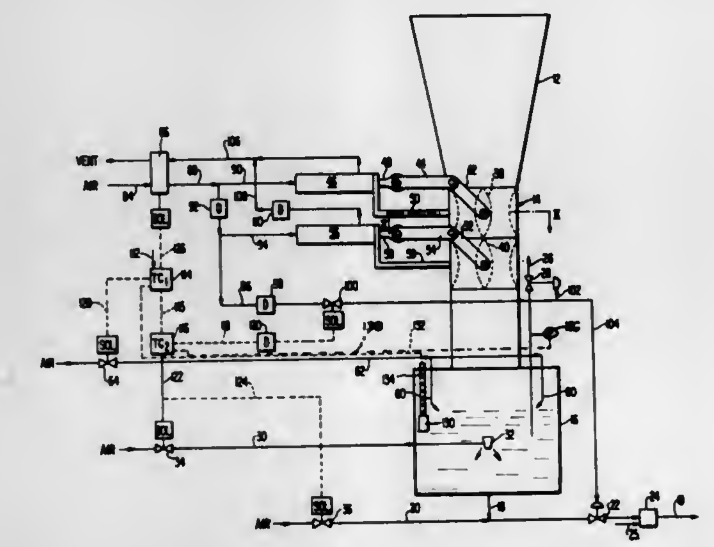
PNEUMATIC CONVEYOR AND BLENDER

Edgar A. Barber, Newaygo, Mich., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 19, 1970, Ser. No. 3,886

Int. Cl. B67d *5/08*

U.S. Cl. 222—70 **15 Claims**



This disclosure relates to a system for fluidizing and transporting particulate material. The particulate material is fed into a fluidizing container from a hopper through two independently operated, serially arranged valves. The valves are controlled such that the closest valve to the container is opened first and closed last, after a charge has been delivered to the container to prevent flow of pressurized air through the hopper. Special blending nozzles are disclosed for an optional blending operation during the fluidizing and transporting process, particularly of certain materials. The outlet conduit from the container has an isolating valve, upstream from a fluid conveyor means, to permit the container to be filled with a new charge while the previous charge is being transported to its destination. Special control means are provided to operate the valves in proper timed sequence to minimize the time cycle for each charge.

3,650,437

AUTOMATED BIOLOGICAL REACTION INSTRUMENT

Gerald F. Binnings, Arcadia; Theodore N. Meyer, Westminister, and Mel J. Riley, Covina, all of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

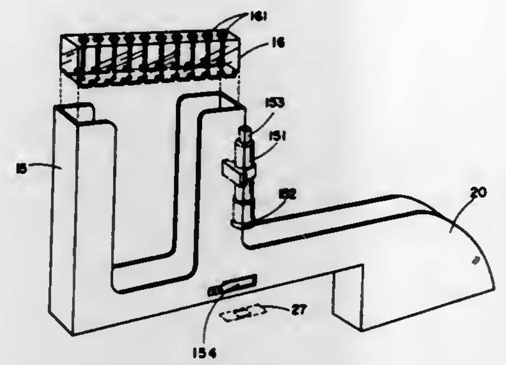
Original application May 9, 1968, Ser. No. 727,859, now Patent No. 3,574,064. Divided and this application Apr. 23, 1970, Ser. No. 43,283

Int. Cl. B67d *5/52*

U.S. Cl. 222—136 **1 Claim**

This disclosure describes apparatus for automatically processing special laboratory slides carrying specific antigenic material with samples of blood serum taken from patients to detect the presence of specific antibodies in the serum as an indication of previous exposure to the antigen. Specifically, the disclosure describes the apparatus as applied to the fluorescent treponemal antibody (FTA) test for syphilis using an indirect fluorescent antibody technique with T. pallidum (Nichols strain) as the antigen. The apparatus of the invention includes a mechanism for discharging from a magazine a number of antigen carrying laboratory slides onto

a rotating carrier and the dispensing of samples of patients serum onto the laboratory slides. This is followed by the incubation of the slide carrying the previously fixed antigen and the patients serum for several minutes to allow the reaction of any specific antibodies in the serum with the fixed antigen. The apparatus further includes means for washing to remove excess serum, means for injecting a conjugate which reacts with the human serum affixed to the antigen and carries a fluorescent tag such as fluorescein isothiocyanate. The apparatus includes means for further incubation to insure the reaction between the antigen-antibody complex and the conjugate followed by further washing and discharging of the reacted slides to an off-loading mechanism for subsequent examination under a laboratory microscope.



3,650,438

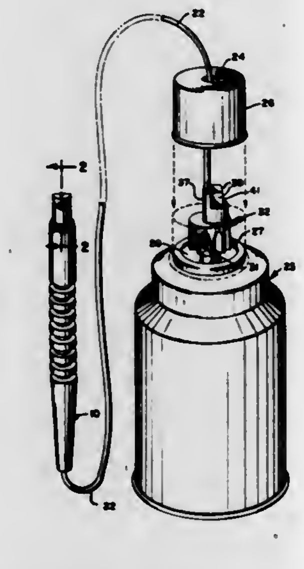
REMOTE DELIVERY NOZZLE AND PRESSURIZED CONTAINER ASSEMBLIES

George M. Stephenson, R.D. No. 1, Honey Hill Road, Georgetown, Conn., and Charles A. Soriano, Fairfield, Conn., assignors to said Stephenson, by said Soriano

Filed Dec. 9, 1969, Ser. No. 883,551

Int. Cl. B65d *83/14*

U.S. Cl. 222—402.22 **7 Claims**



A pressurized container, incorporating a tiltable upstanding valve stem in a top release valve, is provided with a rotatable cap having an eccentric camming aperture aligned to cause tilting and re-erection of a mating eccentric sleeve telescopingly mounted on the tiltable valve stem, and thereby arming and disarming a remote release nozzle by supplying pressure from the pressurized container through an elongated length of flexible tubing to the remote release nozzle upper command. The remote release nozzle is provided with a manual actuator tip for sensitive manual control of the pressurized gas delivered therethrough.

3,650,439

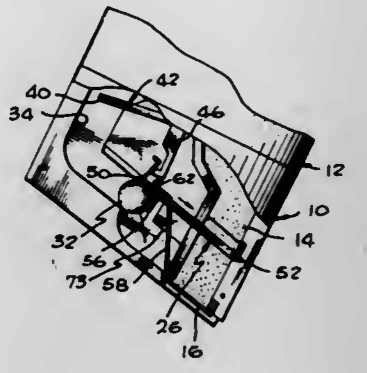
AUTOMATIC SUGAR DISPENSER

Mike S. Shimooka, 2612 Kaaha St., Honolulu, Hawaii

Filed Nov. 25, 1969, Ser. No. 879,744

Int. Cl. G01f *11/28*

U.S. Cl. 222—445 **11 Claims**



A dispensing mechanism that fits on a sugar jar, which dispenses exactly one teaspoon of sugar every time the jar is tilted. The mechanism includes a measuring chamber which holds one teaspoon, the chamber having an inner end leading to the sugar in the jar and an outer end leading to the outside, each end of the chamber having a cover. A ball which moves through a passageway in the mechanism operates the covers when the jar is tilted. As the jar is tilted, sugar pours into the chamber to fill it, then the cover on the inner end of the chamber closes, and then the cover on the outer end of the chamber opens to dispense the sugar therein.

3,650,440

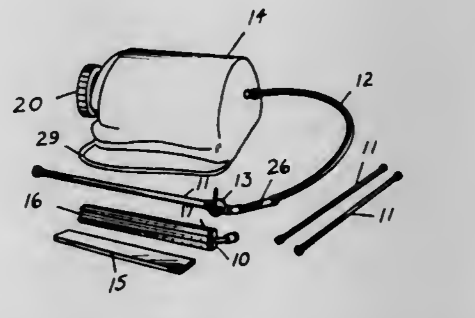
APPLICATOR FOR FLOORING MATERIALS

Jerry T. Gorniak, 2317 East 43rd St., Erie, Pa.

Filed Apr. 7, 1970, Ser. No. 26,238

Int. Cl. B65d *25/42*

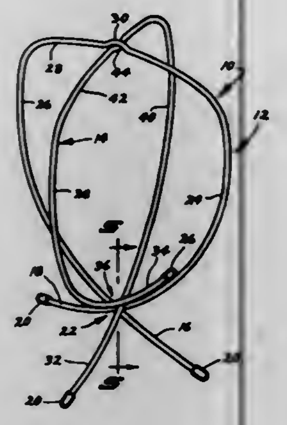
U.S. Cl. 222—565 **2 Claims**



A device for applying a floor covering in the liquid state made up of a tank suitable to be carried on the shoulders of an operator. A hose is connected to the bottom of the tank. A hollow wand or pipe is connected to the hose and a dispenser head is connected to the wand. The wand extends upward from the dispenser head at an angle of approximately 30°. The liquid can flow from the tank to the head when a valve is opened. The dispenser head in its preferred form is approximately 12–24 inches long and 2 inches wide, and 1 inch deep. The dispenser head is generally rectangular in cross section and has three parallel grooves extending across its bottom. The grooves are V-shaped and each has a row of holes at its apex extending from one end of the dispensing head to the other. The wand is connected to one end wall of the dispensing head. The holes in each row are staggered from the holes in the other so that streams of liquid from the holes are evenly distributed over the floor and a smooth coating results. The method of applying liquid flooring by applying parallel streams is also part of the invention.

3,650,441
WIG SUPPORT

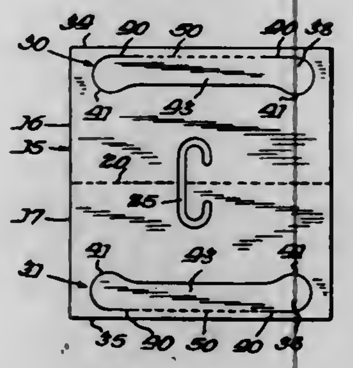
Edwin A. Lindgren, Osseo, Minn., assignor to Wire Specialty Manufacturing, Inc., Brooklyn Park, Minn.
Filed Nov. 17, 1970, Ser. No. 90,353
Int. Cl. D06c *15/00*
U.S. Cl. 223—66 **10 Claims**



A wig support formed from two wire members is disclosed where the members releasably interfit to define a hollow three-dimensional figure and are separable with gentle pressure to thereby form two individual pieces which occupy a lower volume for more compact storage than the three-dimensional figure.

3,650,442
DISPLAY HOLDER FOR UNPACKAGED TEXTILE ITEMS

Peter M. Berns, Wilmette, and Ely Simonoff, Northfield, both of Ill., assignors to Opelike Manufacturing Corporation, Chicago, Ill.
Filed Apr. 8, 1970, Ser. No. 26,634
Int. Cl. A47j *51/08*
U.S. Cl. 223—87 **6 Claims**

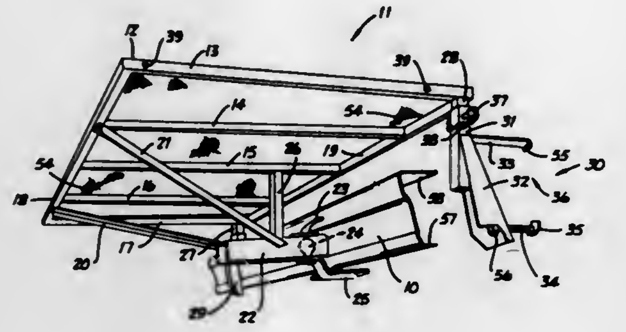


A display support for a textile product wherein the textile item passes through a die cut and slot arrangement in a thinly constructed header which supports the stem and acts as a hanger. The die cut slot provides a passage for attaching the textile product to the support, and flaps formed by the die cut bend inward and add further support and stability for the textile product.

3,650,443
CARRIER CONNECTABLE TO AUTOMOBILE BUMPER AND TRAILER HITCH

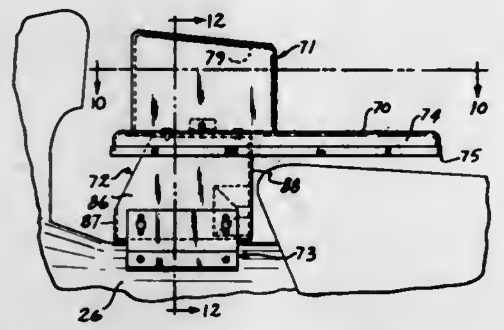
Harlan G. Haskett, 5050 West 11th St., Indianapolis, Ind., and Timothy B. Willoughby, 5811 Bar Dell, Indianapolis, Ind.
Filed Nov. 23, 1970, Ser. No. 91,882
Int. Cl. B60r *9/06*
U.S. Cl. 224—42.03 A **6 Claims**

A wheelless carrier connectable to an automobile bumper and trailer hitch. A rectangular grid frame having a mesh screen fixed to its top surface is positioned above and extends out from the automobile bumper. A pair of bumper mounts mounted to the bumper are positioned on either side of a trailer hitch extending out beneath the bumper. Legs fixedly attached to the frame are lockingly received by the bumper mounts. A pair of cross struts have top ends fixed to the outer edge of the frame and extend downward and inward in a general V-shape having lower ends connected to a trailer hitch receiving device. A vertical member connected to the underside of the frame is fixedly mounted atop the trailer hitch receiving device. An animal house having air vents and a hinged door is removably mounted atop the frame.



3,650,444
COMMUNICATIONS EQUIPMENT MOUNTING ASSEMBLY

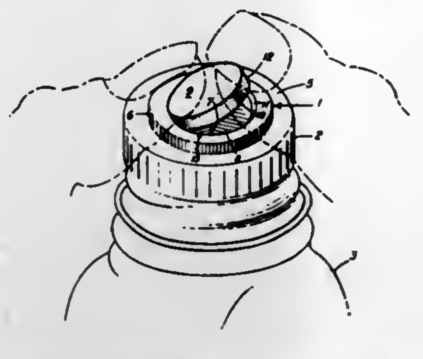
Elmer B. Gibson, Northbrook, and Eric K. Stark, Palatine, both of Ill., assignors to SCM Corporation, New York, N.Y.
Filed Mar. 10, 1970, Ser. No. 18,147
Int. Cl. B60r *11/02*
U.S. Cl. 224—42.42 R **4 Claims**



There is disclosed a mounting assembly for mounting teleprinter equipment and communications control equipment such as radio, selective call, and siren controls. The mounting assembly, which can be secured to the floor of a vehicle such as an automobile, has support means in the form of a shelf which extends into overlying relationship with respect to seat structure. In one embodiment of the invention, the mounting assembly is provided mainly by a contoured plastic shell constructed of two plastic shell sections, and in another embodiment of the invention the mounting assembly is provided by a plate-like member and upper and lower sections secured to opposite sides of the plate-like member, the lower section being secured to the vehicle floor.

3,650,445
MEDICINAL TABLET BREAKER

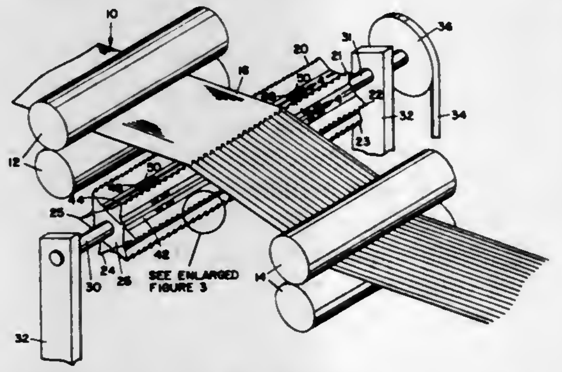
Charles J. Heitzman, Honolulu, Hawaii, assignor to Wilmer Mechlin, Chevy Chase, Md., a part interest
Filed Sept. 19, 1969, Ser. No. 859,377
Int. Cl. B26f *3/02*
U.S. Cl. 225—93 **8 Claims**



A device readily formable in a bottle cap for breaking medicinal tablets into parts suitable for reduced dosages.

3,650,446
BEATER BAR WITH DISSIMILAR EDGES

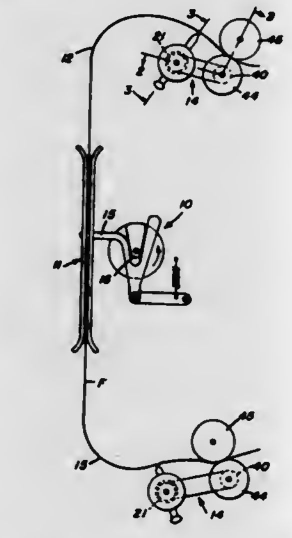
Stanley D. Samluk, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Aug. 3, 1970, Ser. No. 60,682
Int. Cl. B26f *1/20*
U.S. Cl. 225—97 **5 Claims**



A rotatable beater bar, used for fibrillating film, comprises dissimilar serrated edges mounted thereon for improving fibrillating efficiency.

3,650,447
LOOP CONTROL DEVICE

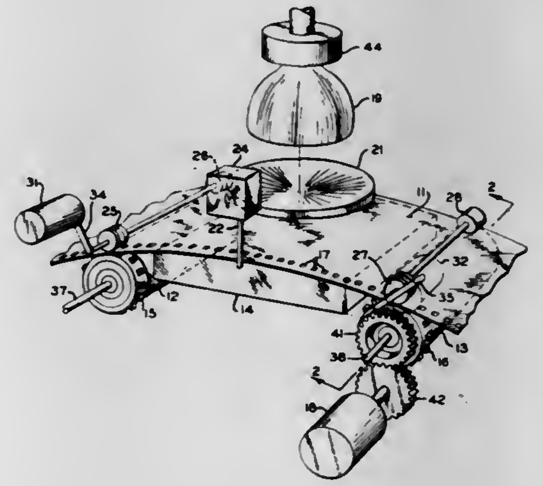
Edward Muka, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 19, 1970, Ser. No. 38,716
Int. Cl. B65h *23/18*
U.S. Cl. 226—34 **8 Claims**



A drive system that normally moves a web of material at a generally constant linear speed includes a device for controlling the size of a loop formed by the web as it is moved through a preselected path. The sensing orifice of a flapper amplifier is positioned relative to the loop and in a preset spaced relation to a surface of the web. Any change in this spaced relation due to a change in the loop size causes the bellows of the amplifier, through an appropriate linkage, to exert a force on a drive control roller having a variable effective diameter. As the roller diameter changes, the linear speed of the web changes and the normal linear speed is attained when the preset spaced relation between the web and sensing orifice is restored.

3,650,448
FILM TRANSPORT AND FILM POSITIONING DEVICE

Howard I. Jarmy, San Francisco, Calif., assignor to Singer-General Precision, Inc., Binghamton, N.Y.
Original application Sept. 16, 1966, Ser. No. 580,336, now Patent No. 3,531,591. Divided and this application June 4, 1970, Ser. No. 57,407
Int. Cl. G03b *1/24*
U.S. Cl. 226—45 **4 Claims**

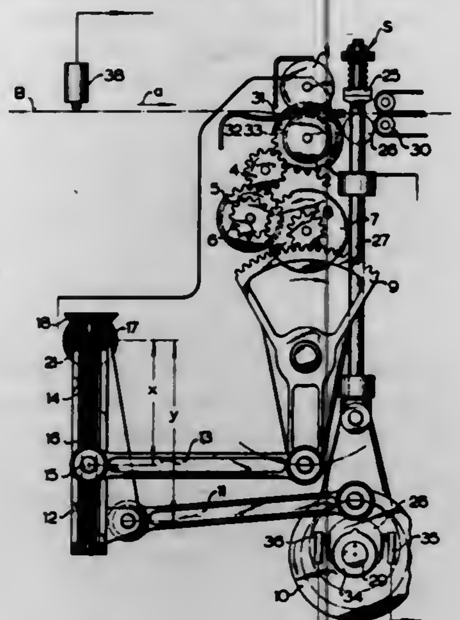


The disclosed embodiment of the present invention is a film transport which includes à pair of capstan rollers for translating the film, a pair of sprockets associated with the capstan rollers for edge guiding the film, and a curved platen for supporting the film at a flying spot scanner station. An encoder is connected to one sprocket for sensing longitudinal movement of the film and a finger engages and senses the position of an edge of the film. A signal corresponding to the position of the edge of the film is supplied to the deflection circuitry of the flying spot scanner to alter to raster position thereof accordingly.

3,650,449
INTERMITTENT FEEDING APPARATUS FOR A WEB OF PAPER OR PLASTICS MATERIAL

Friedhelm Mundus, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of West phalia, Germany
Filed Jan. 27, 1970, Ser. No. 6,152
Claims priority, application Germany, Feb. 4, 1969, P 19 05 454.7
Int. Cl. B65h *17/22*
U.S. Cl. 226—142 **1 Claim**

Apparatus for intermittently feeding a web of material, comprising a pair of feed rollers, intermittent rotating means for the feed rollers including a reciprocatable rack coupled to the feed rollers by transmission gears and a clutch, and means for reciprocating the rack, said reciprocating means comprising a reciprocating drive for rocking a rocker arm about a pivot of fixed location by means of a first link hinged to the rocker arm, a second link hinged to the rocker arm and to the rack, and adjusting means on the rocker arm for

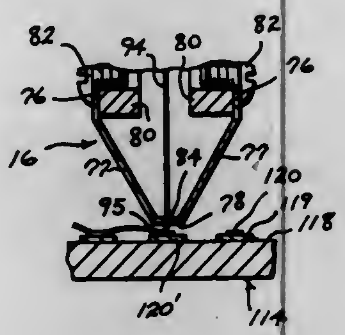


altering the spacing between the pivot of the rocker arm and the hinge point to the rocker arm of one of the links.

3,650,450
MEANS FOR FORMING ELECTRICAL JOINTS BETWEEN INTERMEDIATE PARTS OF AN ELONGATED CONDUCTOR AND SELECTED CONDUCTIVE ELEMENT ON AN ELECTRICAL ASSEMBLY

Raymond B. Larson, and Frank W. Wegoman, both of South Bend, Ind., assignors to Wells Electronics, Inc., South Bend, Ind.

Filed Nov. 24, 1969, Ser. No. 879,234
Int. Cl. B23k *1/00, 5/22*
U.S. Cl. 228—46 **5 Claims**

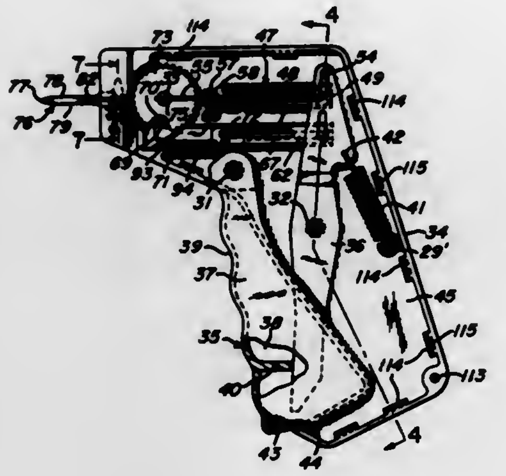


A method and means for forming electrical joints between intermediate parts of an elongated conductor and selected conductive elements on an electrical assembly. The electrical assembly is mounted upon a shiftable support means. A shiftable soldering assembly is positioned above the support means and carries an intermediate part of the elongated conductor. The soldering assembly and support means are shifted relative to each other to cause the intermediate conductor part to be held against a selected conductive element. The intermediate conductor part is then heated to cause the stripping or melting of the insulation, if any, from the conductor part and the melting of the solder on the conductive element in contact with the conductor part. The conductor part is then cooled to permit the melted solder to adheringly solidify to the conductor part. With the conductor part so anchored to the electrical assembly the soldering assembly and support means are shifted relative to each other to cause another intermediate part of the conductor to be held against another selected conductive element. This last mentioned intermediate conductor part is heated and cooled to cause its adherence to the contacting conductive element in the manner previously described for heating and cooling the first mentioned intermediate conductor part.

3,650,451
TAG ATTACHER

Norman R. Weiland, Englewood, and Eugene W. Finke, Miamisburg, both of Ohio, assignors to The Monarch Marking System Company, Dayton, Ohio

Filed Sept. 30, 1970, Ser. No. 76,840
Int. Cl. B26f *1/32*
U.S. Cl. 227—67 **10 Claims**



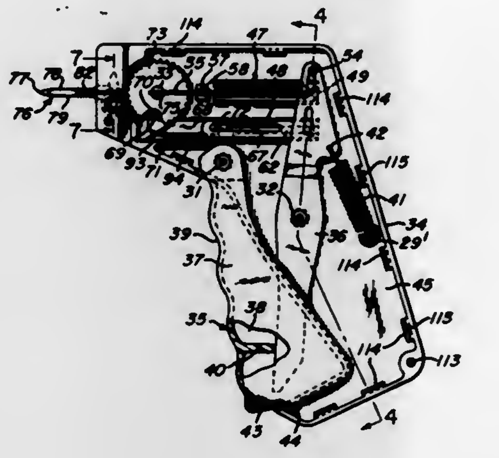
There is disclosed apparatus for attaching tags to a variety of articles by means of fasteners. A typical fastener useable in a connection with the apparatus has a bar section at one end, a head or button section at the other end, and these sections are joined by a filament section. The fasteners can be interconnected to provide a unitary fastener assembly. The tag attaching apparatus is illustrated as including a body in which a tubular member such as a needle is mounted. The needle has an elongated bore, a side opening or slot communicating with the bore, a sharp piercing end at one end, a cutting edge at its other end and another slot through which a bar section can enter the bore. The needle has a rack which meshes with a segment of a pinion by which the needle can be driven into or out of the body. The body mounts operating and drive levers, and a one-piece ratchet wheel and feed wheel. A push rod in alignment with the bore is guided for reciprocatable movement in the body and is connected to the drive lever by a pin-and-slot connection. A pawl cooperates with the ratchet wheel and a slide interconnects the pawl with the drive lever. There is a pin-and-slot connection between the drive lever and the slide and there is a pin-and-slot, lost-motion, connection between the slide and the pawl. The slide and the pawl are guided for reciprocatable movement relative to each other and relative to the feed wheel. A spring is used to return the push rod and the levers to their initial positions and to cause the ratchet wheel to be driven to advance the fasteners when the operating handle is released.

3,650,452
TAG ATTACHER

Eugene W. Finke, Miamisburg, Ohio, assignor to The Monarch Marking System Company, Dayton, Ohio

Filed Sept. 30, 1970, Ser. No. 76,842
Int. Cl. B65c *5/06*
U.S. Cl. 227—67 **16 Claims**

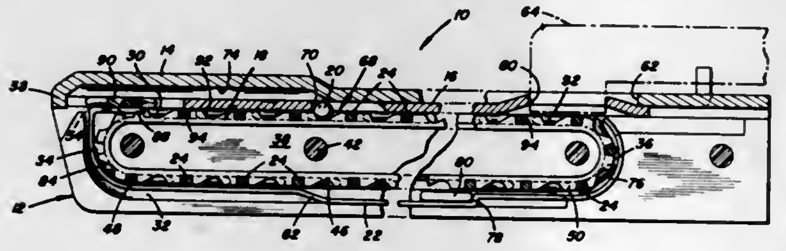
There is disclosed apparatus for attaching tags to a variety of articles by means of fasteners. A typical fastener useable in connection with the apparatus has a bar section at one end, a head or button section at the other end, and these sections are joined by a filament section. The fasteners can be interconnected to provide a unitary fastener assembly. The tag attaching apparatus is illustrated as including a body in which a tubular member such as a needle is mounted. The needle has an elongated bore, a side opening or slot communicating with the bore, a sharp piercing end at one end, a cutting edge at its other end and another slot through which a bar section can enter the bore. The needle has a rack which meshes with a segment of a pinion by which the needle can be driven into or out of the body. The body mounts operating and drive levers, and a one-piece ratchet wheel and feed wheel. A push rod in alignment with the bore is guided for reciprocatable movement in the body and is connected to the drive lever by a pin-and-slot connection. A pawl cooperates with the ratchet wheel and a slide interconnects the pawl with the drive lever. There is a pin-and-slot connection between the drive lever and the slide and there is a pin-and-slot, lost-motion, connection between the slide and the pawl. The slide and the pawl are guided for reciprocatable movement relative to each other and relative to the feed wheel. A spring is used to return the push rod and the levers to their initial positions and to cause the ratchet wheel to be driven to advance the fasteners when the operating handle is released.



3,650,453
STAPLE CARTRIDGE WITH DRIVE BELT

Forrest P. Smith, Jr., Northport, Long Island, N.Y., assignor to United States Surgical Corporation, Baltimore, Md.

Filed Aug. 13, 1970, Ser. No. 63,584
Int. Cl. B25c *5/02*
U.S. Cl. 227—138 **21 Claims**



A staple-housing cartridge suitable for use in a surgical arena, adapted to be mounted on a powering unit, and suitable for suturing the skin or fascia of a patient. A plurality of staples are guided and are driven by a continuous belt adapted for rotation in the cartridge housing. When the powering unit is activated, a pusher element integral with the cartridge ejects and form a staple and simultaneously advances the continuous belt, with its supply of staples, to ready the cartridge for the next stapling operation.

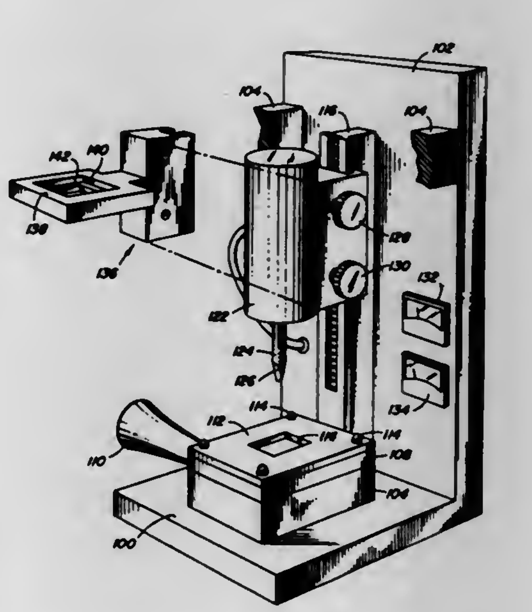
ERRATUM

For Class 228—1 see:
Patent No. 3,650,450

3,650,454
DEVICE FOR BONDING WITH A COMPLIANT MEDIUM

Alexander Coucoulas, Bridgewater Township, Somerset County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Original application July 6, 1967, Ser. No. 651,411, now Patent No. 3,533,155, dated Oct. 13, 1970. Divided and this application Nov. 21, 1969, Ser. No. 877,562
Int. Cl. B23k *1/06*
U.S. Cl. 228—1 **15 Claims**



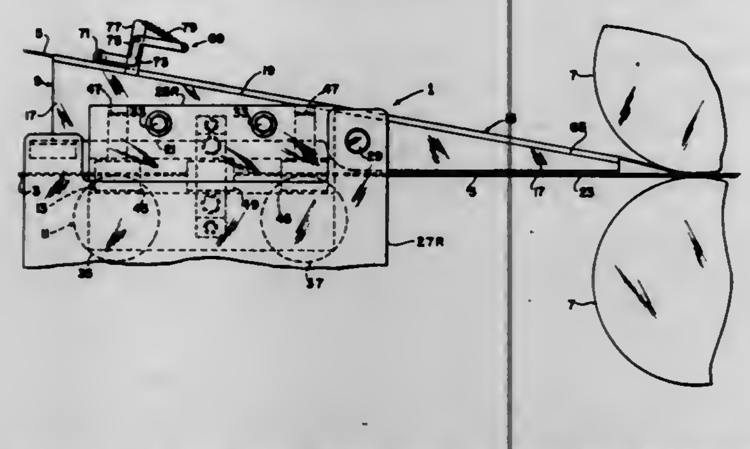
The bonding of two workpieces by ultrasonic or thermocompression techniques requires the use of a rigid bonding tip or ram to transmit the bonding energy, whether it be vibratory, mechanical and/or thermal. In time, such a rigid medium is subject to wear, to mis-alignment and to pickup of material from the workpieces, the latter causing the upper workpiece to stick to the tip. Further, such a rigid medium cannot be used reliably to make a number of bonds simultaneously, because minor size differences in the workpieces can prevent a good couple for energy transmission from being established to every workpiece. It has been discovered that a compliant or deformable medium can be employed to hold the workpieces during bonding. By deforming around the workpieces, the compliant medium eliminates the problem of size differences, as well as wear, mis-alignment and the like, and a good bond is achieved in each instance. In one aspect, the bonding energy is transmitted through the compliant medium to make the bond. In a second aspect, the bonding energy is transmitted through the support for the workpieces. The quality of individual bonds is improved because, for a given set of bonding conditions, there is less deformation of the workpieces than with conventional techniques. The invention is particularly applicable to the bonding of beam-lead transistors and integrated circuits to substrates, to bonding a plurality of leads to integrated circuit and thin film devices, and to bonding brittle single crystal chips to substrates.

3,650,455
STRIP GUIDE

Carlton G. Rutter, Seekonk, and Joseph R. Malone, Norton, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed July 17, 1970, Ser. No. 59,774
Int. Cl. B23k *1/00*
U.S. Cl. 228—6 **8 Claims**

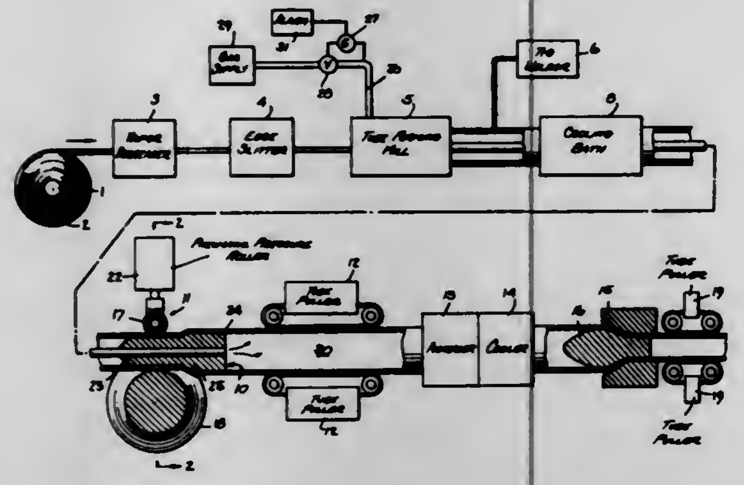
A guidance system for guiding a relatively wide metal strip and one or more relatively narrow metal strips to be roll bonded as they travel to the bonding rolls for accurately laying the narrow strip or strips on the wide strip. It comprises a carriage mounted for lateral sliding movement relative to the path of the strips, the wide strip and the narrow strip or strips being guided through the carriage for travel to the bonding rolls. The carriage is movable laterally in response to lateral deviation of the wide strip from a vertical longitudinal reference plane accurately to maintain the narrow strip or strips in position relative to the wide strip. It also acts in response to variations in the width of the wide strip accurately to maintain the narrow strip or strips in position relative to a side edge of the wide strip.



3,650,456
APPARATUS FOR WELDING

Douglas W. Rowell, North Woodbury, Conn., assignor to Anaconda American Brass Company

Filed May 20, 1969, Ser. No. 826,198
Int. Cl. B23k *1/00, 5/22*
U.S. Cl. 228—19 **12 Claims**



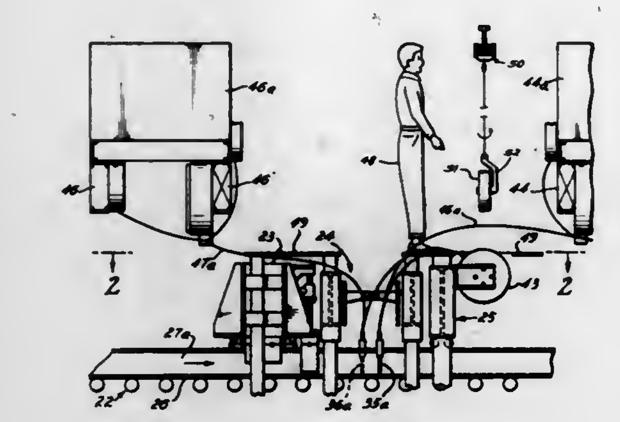
A method and apparatus for the continuous production of welded tube from a continuous length of strip material wherein the welded seam is cold worked and wherein the physical nature of the welded seam is continuously monitored to insure that a proper weld is produced is described herein.

3,650,457
PANEL FITTING AND WELDING MACHINE

Harry J. Fiegel, Jr.; Russell S. Thatcher, and Richard L. Linam, all of Galveston, Tex., assignors to Kelso Marine, Inc.

Filed Jan. 28, 1969, Ser. No. 794,615
Int. Cl. B23k *19/00*
U.S. Cl. 228—44 **16 Claims**

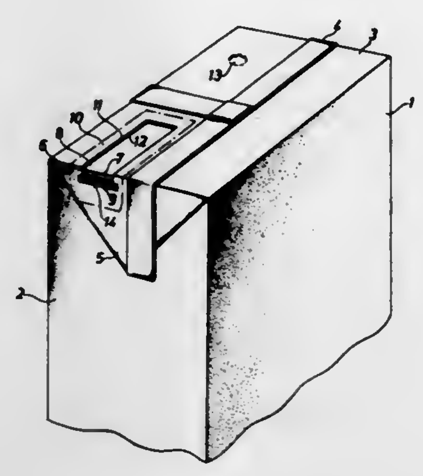
A machine for manufacturing reinforced structural panels wherein a conveyor system moves successive loads, each comprising a group of structural shapes and a structural plate, past cooperating positioning and hold-down apparatus, welding apparatus and secondary hold-down apparatus. The positioning and hold-down apparatus maintains the shapes in a desired upright position with a desired spacing between shapes and holds the shapes tightly against the plate. The welding apparatus includes a series of side-by-side welding units for simultaneously welding each group of shapes to its plate. The secondary hold-down apparatus prevents warping of the shapes and plates and keeps the weldment from raising off of the conveyor because of heat distortion during the welding operations.



3,650,458
OPENING ARRANGEMENT ON PACKAGES

Hans Anders Rausing, Lund, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Oct. 20, 1970, Ser. No. 82,346
Claims priority, application Sweden, Oct. 20, 1969, 14.336/69
Int. Cl. B65d *5/72*
U.S. Cl. 229—17 **10 Claims**

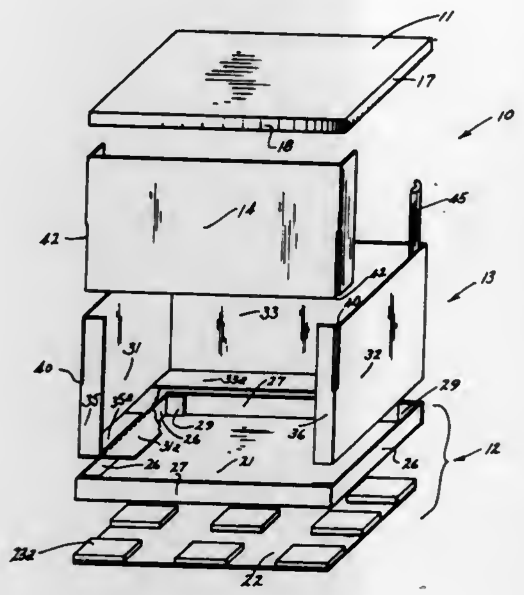


The invention relates to an opening arrangement on a package consisting of a tube sealed at its ends and preferably of parallelepiped shape with double-walled triangular flaps which project from the ends of the package and are folded in against its walls, one of the flaps forming part of an opening arrangement and exhibiting a sealing strip which extends onto the top end wall of the package and which is intended to cover a discharge opening. The discharge opening is a slot formed in the upper end wall of the package which slots extends beyond the end edge of the package which adjoins the said flap, and provides a pouring edge which is constituted by an edge of the package.

3,650,459
PALLET TYPE SHIPPING CONTAINER

Roger A. Tucker, Blue Island, Ill., assignor to The Mead Corporation, Dayton, Ohio

Filed Dec. 11, 1969, Ser. No. 884,233
Int. Cl. B65d *13/04, 19/20, 85/64*
U.S. Cl. 229—23 A **2 Claims**

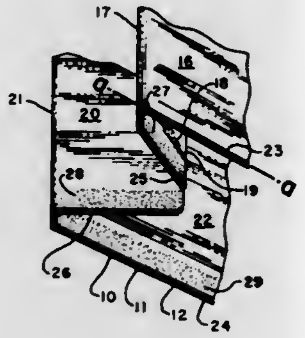


A pallet type light weight container for maximized utilization of available cargo space in freighter aircraft or other carriers includes provision for ease in loading and/or unloading of articles into and/or from the container with the front and top thereof open. The container requires on other fastening means except for customary tapes which are tightened and secured around the container after it has been erected and filled with articles to be shipped. The container can be shipped and/or stored in knocked-down form for assembly by the user and comprises essentially flat basic elements formed from flat sheets or blanks of material such as corrugated paper board or the like which are bent to form, respectively, bottom and top portions, a body portion, and a front panel readily detachably securable to the body portion. The container includes the provision of resilient elements in the bottom portion, and optionally at the corners of the container, for protectively cushioning articles within the container against impact loads and/or against compressive stresses to which the container may be subjected in connection with its shipment, handling, and/or storage.

3,650,460
PAPER BAG

Burke P. Lokey, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 13, 1962, Ser. No. 216,388
Int. Cl. B65d *31/02*
U.S. Cl. 229—55 **2 Claims**

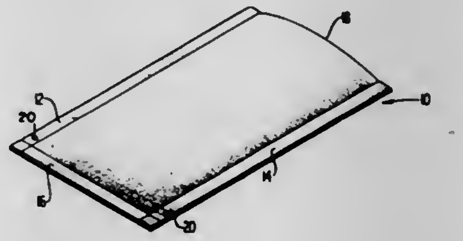


A gusseted, multi-ply bag having a rear surface and gusset portions adhered to a front surface of the bag to form an end closure and a longitudinal seam formed by the longitudinal edges of each ply being bonded together in overlapped relation.

3,650,461
EASY OPEN POUCH CONSTRUCTION

James L. Hutcheson, Richmond, Va., assignor to Rernolds Metals Company, Richmond, Va.

Filed Feb. 16, 1970, Ser. No. 11,459
Int. Cl. B65d *31/02, 5/54*
U.S. Cl. 229—66 **2 Claims**

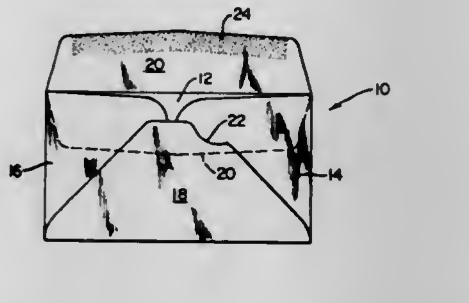


An easy open pouch construction and a method of and apparatus for making same. Flexible packaging material is formed into a strip of pouches joined along their longitudinal side seams and fed intermittently through guide means adjacent a reciprocable hole puncher. The feeding means includes means such as an electric eye assembly for detecting the mid-point of the longitudinal side seam between adjacent pouches whereby the reciprocable hole puncher is actuated to punch a hole spaced a slight distance from the mid-point of the longitudinal seam. The strip of pouches is then cut to form an individual pouch which is filled conventionally. The resultant pouch is found to have improved easy opening characteristics.

3,650,462
NOTCHED FLAP ENVELOPE

Richard S. Klover, Portland, Oreg., assignor to Pak-Well Corporation, Denver, Colo.

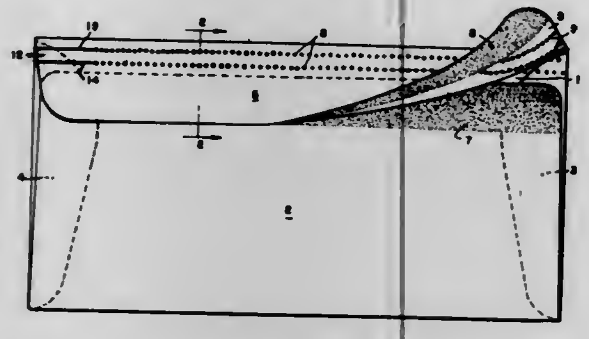
Filed Oct. 27, 1969, Ser. No. 869,637
Int. Cl. B65d *27/00*
U.S. Cl. 229—68 R **4 Claims**



A paper envelope of conventional form comprising a rectangular front face, inwardly folded end flaps, an upwardly folded bottom flap, and a downwardly folded top or closure flap, characterized by a cutout portion in one of the flaps, preferably the bottom flap, which provides a printing area on the front face which is of uniform three thicknesses of paper throughout such area and permits printing of a return address in such area without resort to the make-ready printing procedure.

3,650,463
SELF-CONTAINED ENVELOPE OPENING STRIP

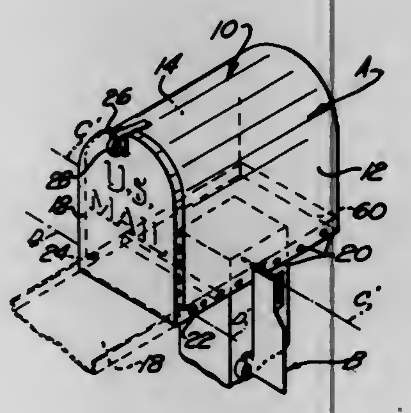
Deryl R. Christiansen, Salem, Oreg., and Jack R. Christiansen, 1081 D. River Road, Sweet Home, Oreg., assignors to said J. R. Christiansen, by said D. R. Christiansen
Filed Feb. 18, 1970, Ser. No. 12,261
Int. Cl. B65d *27/34*
U.S. Cl. 229—81 **1 Claim**



A mailing envelope having self-contained opening means comprising at least one row of perforations extending through the front face, the end flaps and the closure flap. The perforations extend along the top marginal edge of the envelope closely adjacent the fold line which forms the closure flap, and terminate in a pull tab formed along a line cut inwardly from one end of the envelope.

3,650,464
DOOR OPERATED SIGNAL FOR MAILBOXES

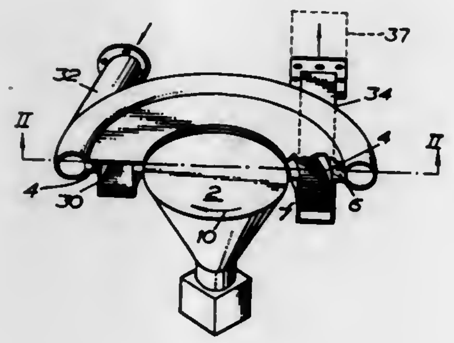
John William Lewis, 17228 Shumer Road, Strongsville, Ohio
Filed Mar. 30, 1970, Ser. No. 23,731
Int. Cl. B65d *91/00*
U.S. Cl. 232—35 **2 Claims**



A door operated delivery signal is disclosed for a mailbox which has an opening at one end, and a door pivotally mounted at substantially its lower edge to the lower portion of the box for pivotal movement between a door open position and a door closed position for covering the opening. The signal includes an elongated member which is adapted to be pivotally secured to one side of the box for pivotal movement about a horizontal axis located rearwardly of the opening, and extending parallel to the door axis between a substantially horizontal latched position where the member extends longitudinally alongside one side of the box from its pivot axis toward the opening, and a downwardly directed substantially vertical unlatched position for signaling mail delivery. A resilient curved member extends from the elongated member in such a manner that in the latched position a curved surface of the resilient member bears against the forwardly facing surface of the door to latch the signal in place. The door cams against the curved surface as it is being opened and the signal is pivotally displaced to its unlatched position.

3,650,465
DISCHARGE OF SOLID PARTICLES FROM CENTRIFUGAL MACHINES

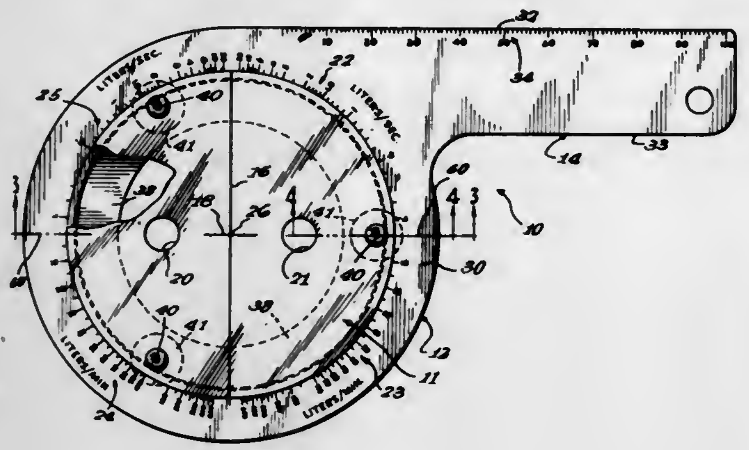
Geoffrey L. Grimwood, Holmfirth, and Duncan C. Ferrier, Tiverton, both of England, assignors to Thomas Broadbent & Sons Limited, Huddersfield, Yorkshire, England
Filed Nov. 13, 1969, Ser. No. 876,229
Claims priority, application Great Britain, Nov. 16, 1968, 54,475/68
Int. Cl. B04b *15/08*
U.S. Cl. 233—13 **22 Claims**



A method and apparatus for modifying the flight of particles discharged from the lip of the basket of a centrifugal machine. A pneumatic zone is created around the lip of the basket, and a series of gaseous jets are directed into this zone so as at least to reduce the radial component of velocity, considered in a direction radially outwardly of the basket, of particles discharged from the basket lip. The particles may be allowed to fall, under the influence of gravity, from the pneumatic zone, or alternatively may be pneumatically conveyed from the centrifugal machine.

3,650,466
SLOPE CALCULATOR

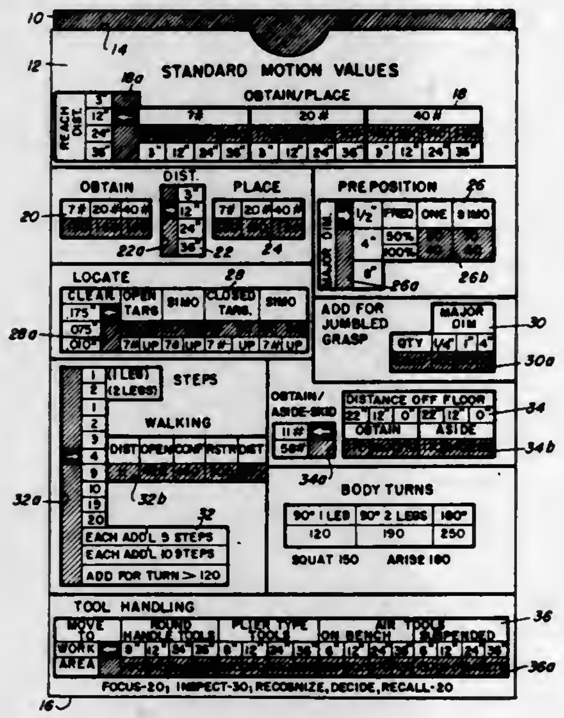
Daniel A. Talonn, University City, Mo., assignor to Sherwood Medical Industries Inc.
Filed Aug. 8, 1969, Ser. No. 849,608
Int. Cl. B43l *7/00, 13/00*
U.S. Cl. 235—61 B **11 Claims**



A manually operable computer for slope calculations and in particular for calculating air flow rates from a patient's spirogram including a circular indicating disc with a diametral line thereon positionable coincident to the slope of the spirogram tracing to be measured and a scale member with an annular portion surrounding and pivotally mounted with respect to the circular disc, there being provided a projection from the annular portion that is adapted to be aligned with one of the coordinates of the spirogram after the circular disc line is positioned, there being also provided cooperating indicator and scales on the members that give a direct visual readout of the patient's respired air flow rate in volume per unit time.

3,650,467
TIME-MOTION CALCULATOR

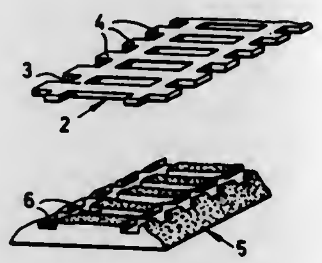
Clifford Seille, Northbrook, Ill., assignor to International Standards Incorporated S.A.
Filed Sept. 17, 1970, Ser. No. 73,031
Int. Cl. G06c *3/00*
U.S. Cl. 235—89 R **5 Claims**



Times required to perform various work tasks are obtained quickly and easily by reading a printed card which slides within an open-ended envelope having windows at particular locations.

3,650,468
TRACK ASSEMBLY FOR TOY AND MODEL RAILROADS

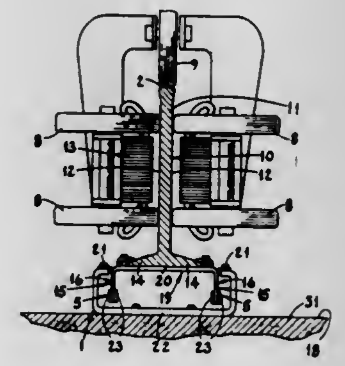
Gerhard Ewe; Hugo Dennerlein; Heinrich Schmidt, all of Nurnberg; Horst Hirschmeier, Heilsbronn, and Willi Fechter, Nurnberg, all of Germany, assignors to Gebr. Fleischmann, Nurnberg, Germany
Filed July 24, 1969, Ser. No. 844,256
Claims priority, application Germany, Aug. 10, 1968, G 67 50 358; Nov. 15, 1968, G 68 07 028; Jan. 24, 1969, G69 02 692.2
Int. Cl. A63h *19/30*
U.S. Cl. 238—10 E **10 Claims**



A track assembly for toy and model railroads comprises a tie assembly and a ballast bed assembly separately produced by injection molding and fixedly joined by gluing, heat sealing or other suitable means. The rails are secured to the upper side of the tie assembly by formfitting engagement at the foot of each rail with grooves in the tie assembly.

3,650,469
LINEAR MOTOR REACTION RAIL ASSEMBLY

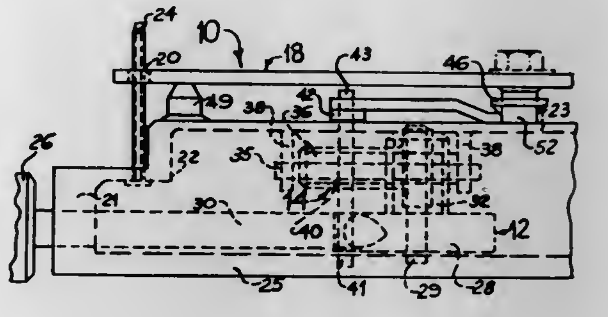
Brian John Nicholson, Milton, England, assignor to Tracked Hovercraft Limited, London, England
Filed Feb. 20, 1970, Ser. No. 12,996
Claims priority, application Great Britain, Feb. 21, 1969, 9,536/69; May 5, 1969, 22, 900/69
Int. Cl. E01b *9/30*
U.S. Cl. 238—264 **11 Claims**



A mounting for attaching to a prepared track a reaction plate for cooperation with a double-sided linear induction motor stator carried by a vehicle arranged for operation along the track whereby to propel the vehicle. The mounting has two spring arrangements which are disposed one to either side of the reaction plate and each of which comprises first and second leaf spring means each comprising a leaf spring which lies in a plane parallel to the plate. In each spring arrangement the leaf springs of the two leaf spring means extend in the same direction to a mutual connection. The mounting is such that a side force on the plate causes the plate to undergo lateral movement with little or no other movement, rotational or translateral.

3,650,470
LIQUID SPRINKLING SYSTEM

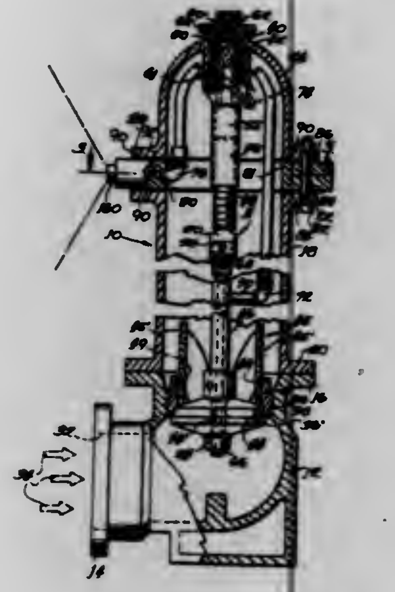
Charles A. Wertman, 14266 Young, Detroit, Mich.
Filed Jan. 28, 1971, Ser. No. 110,545
Int. Cl. B05b *17/00*
U.S. Cl. 239—1 **6 Claims**



Improvements in liquid sprinkling systems are disclosed including means and method comprising passing liquid through a plurality of flexible tubings and for cyclicly moving said tubings in unison while liquid is passing therethrough to produce a predetermined liquid sprinkling pattern formed by continually moving liquid streams which evenly distribute the liquid thereover.

3,650,471
FIRE HYDRANT SPRAY DEVICE

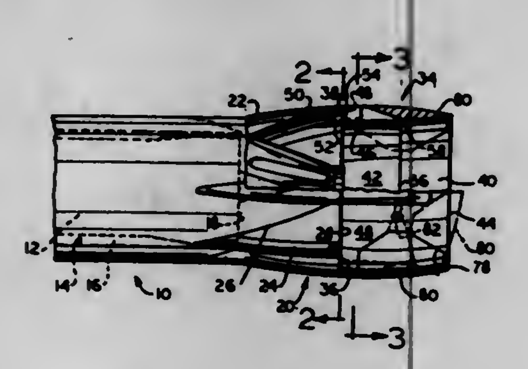
Raymond Sutton, 1104 Crest Lane, Western Springs, Ill.
Filed Jan. 22, 1971, Ser. No. 108,930
Int. Cl. A01g *27/00*
U.S. Cl. 239—67 **15 Claims**



A recreational spray device is adapted to be installed on a conventional fire hydrant and comprises spray passage means and a spray valve. The spray passage means is connected at one end to the hydrant inlet and has a spray head at its other end. The spray passage means is arranged so that the spray device is operable even though the main hydrant valve is closed. The spray valve controls the flow in the spray passage means and is normally closed, but the spray valve may be manually opened and will automatically close after a period of time. Thus, the spray device uses only a small amount of water and prevents an excessive pressure drop in the hydrant water system.

3,650,472
THRUST CONTROL AND SOUND SUPPRESSION APPARATUS

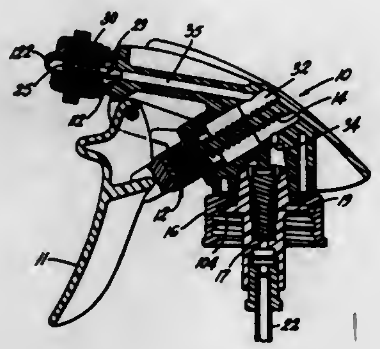
Remo Tontini, San Diego, and Raymond K. Johnsen, La Jolla, both of Calif., assignors to Rohr Corporation, Chula Vista, Calif.
Filed Oct. 16, 1970, Ser. No. 81,263
Int. Cl. B64d *33/06*
U.S. Cl. 239—265.13 **11 Claims**



Engine of either turbo fan or turbojet type is provided with multiple lobed exhaust nozzle. An ejector barrel defining a mixing zone is adapted to be connected at its leading edge to the lobe tips adjacent to the nozzle exit plane to receive engine gases and free stream air. A plenum chamber in the forward portion of the barrel has inlet ports in flow communication with tip portions of lobes, and guide vanes extend forward into lobes to split the mixed engine gases and guide outer streams into plenum chamber inlet ports while inner streams flow directly to mixing zone. An annular control nozzle at aft end of plenum chamber discharges high pressure gases into intermediate section of mixing zone to form a gaseous ring surrounding the other gases. The high velocity flow at inner wall increases total flow and makes velocity profile more uniform, and further mixing with adjacent gases reduced sound level. Design of control nozzle determines profile of gaseous ring which becomes virtual aerodynamic profile of aft portion of ejector barrel, which may be convergent-divergent nozzle shape for optimum cruise conditions of a high subsonic aircraft. Nozzle may also be adjustable to produce varying profiles for varying flight regimes. Basic design makes it possible to incorporate thrust reverser in aft portion of ejector barrel.

3,650,473
LIQUID DISPENSING APPARATUS

Carl E. Malone, Fort Lauderdale, Fla., assignor to The AFA Corporation of Florida, Miami Lakes, Fla.
Filed Mar. 13, 1970, Ser. No. 19,401
Int. Cl. B05b *11/00*
U.S. Cl. 239—333 **15 Claims**

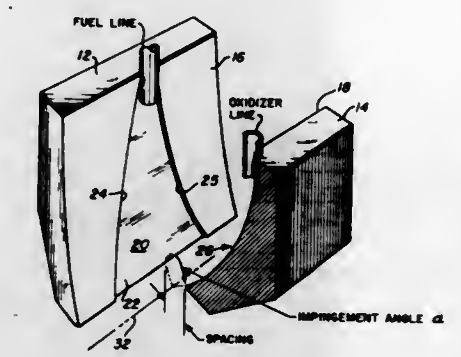


A combined closure and liquid pumping device for a container having a cap adapted to screw onto a threaded spout of the container. The closure also includes a pump mechanism having a liquid ejection nozzle orifice connected by a liquid conduit to an inlet within the container. The pump has inlet and outlet check valves in the conduit and a pump chamber connected to the conduit between the valves. The outlet valve is spaced from the orifice and is lightly biased to closed position thus to define an air chamber between the outlet valve and the orifice. An openable seal blocks communication between the orifice and the exterior of the closure for disabling liquid pumping operation of the pump and also serves as a static seal to prevent leakage from the container via the liquid conduit.

3,650,474
BIPROPELLANT INJECTOR

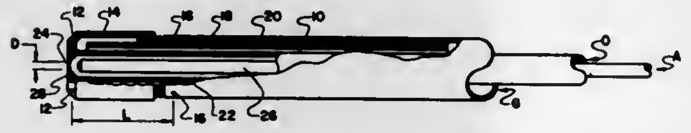
Robert W. Riebling, LaCanada, Calif., assignor to James E. Webb, Administrator of the National Aeronautics and Space Administration
Filed Sept. 25, 1967, Ser. No. 670,829
Int. Cl. F23d *11/10*
U.S. Cl. 239—418 **8 Claims**

A bipropellant injector consisting of a pair of concave deflector blocks with their concave surfaces facing one another. The concave surfaces diverge downwardly with a fixed spaced relationship between them at the base of the injector. A triangular "shute" is formed in each concave surface, by a pair of diverging sidewalls. The two shutes are opposite one another. A circular orifice is located at the apex of each shute to provide an inlet for propellant, such as fuel or oxidizer to enter the injector. Propellant, forced through each orifice as a circular jet, is directed downwardly along the shute spreading out against the concave shute surface. The propellant spreads to form a sheet which is limited between the shute's sidewalls. It finally clears the shute's lower edge, and mixes with the propellant flowing from the opposite shute along the centerline of the space between the injector's blocks.



3,650,475
CARBON BLACK BURNER CONSTRUCTION

Charles David Stubblefield, Baton Rouge, La., and John Lee Wells, Borger, Tex., assignors to J. M. Huber Corporation, Borger, Tex.
Filed Jan. 7, 1970, Ser. No. 1,092
Int. Cl. F23d *11/16*
U.S. Cl. 239—419.3 **4 Claims**

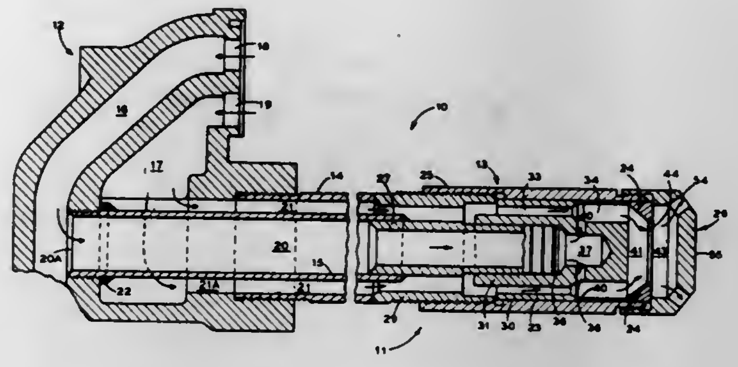


An improved carbon black burner construction utilizing multiple arrays of gas jets spaced from the oil discharge orifice and including a venturi atomizing tip just prior to the oil discharge orifice improves the light transmittance of a benzene extract from nonstaining large particle size, high structure carcass carbon blacks.

3,650,476
LIQUID FUEL BURNER

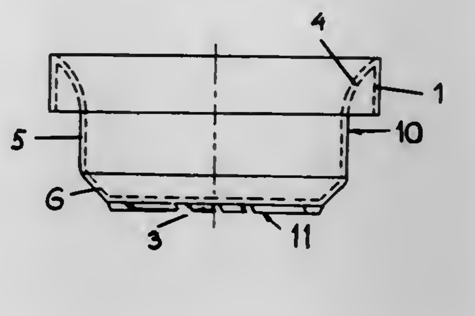
John M. Rackley, and Ralph H. Merryman, both of Alliance, Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.
Filed Jan. 16, 1968, Ser. No. 698,332
Int. Cl. A62c *31/00*
U.S. Cl. 239—431 **2 Claims**

A liquid fuel burner equipped with an improved atomizer head wherein the liquid fuel is mixed with an atomizing fluid to be discharged as a finely atomized spray. Improvements to the atomizer head include a mixing portion, a flow-diverting portion and a spraying portion serially arranged to provide three stages of atomization. The first stage occurs as the fuel stream is sheared by high velocity steam in the mixing portion, the second stage is the impingement and re-directing of the mixture discharging from the mixing portion into the flow-diverting portion and the third stage takes place as the fluid mixture is expanded through the discharge ports of the spraying portion.



3,650,477
CHOKE

Karl Ivar Ake Gulliksson, Norrkoping, Sweden, assignor to Sovereign Finanz A.G., Zurich, Switzerland
Filed Nov. 2, 1970, Ser. No. 86,086
Claims priority, application Sweden, Nov. 4, 1969, 15076/69
Int. Cl. B05b *1/35*
U.S. Cl. 239—490 **9 Claims**

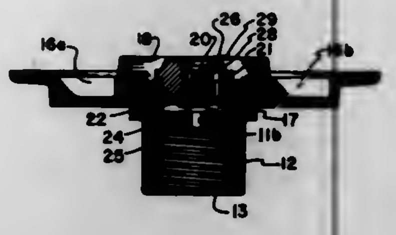


A choke for the burner head in an oil-fired unit, comprising a cylindrical support adapted to fit over the orifice of an air-supply pipe, a flame-stabilizer funnel extending from the external rim of said support obliquely inwards, which stabilizer funnel, at its internal end, supports a turbulence-producing device having inclined blades and a central opening for an oil jet, the portion of the flame-stabilizer funnel which is adjacent to the support having an arcuate cross-sectional form whose tangent at the point of contact with the support makes an acute angle with said support, the flame-stabilizer funnel having a series of openings axially spaced from the turbulence-producing device and whose inner edges are offset radially outwards so that air jets passing through the openings are directed obliquely inwards.

3,650,478
ARCUATE SPRINKLER

Adrian L. Jones, 73 West Truman Ave., Salt Lake City, Utah
Filed Jan. 21, 1971, Ser. No. 108,341
Int. Cl. B05b *1/26*
U.S. Cl. 239—516 **10 Claims**

A sprinkler having a body with an outwardly extending flange and an upstanding ring which acts as guard for a nozzle. The nozzle has an orifice arranged to spray a pattern of water over a segmented area. A deflector wire is mounted on the nozzle, adjacent to and above the orifice where it will deflect a part of the water passing through the orifice upwardly and outwardly from the nozzle so as to effectively distribute water to points closely adjacent to the sprinkler head itself, thereby eliminating the need for excessive pattern overlap in sprinkler distribution systems.



3,650,479
SPRAY GUN WITH HANDLE MEANS

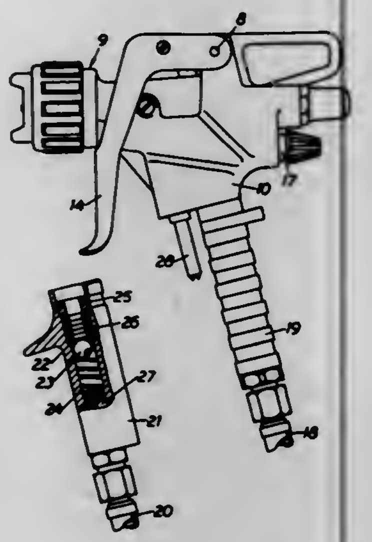
Kurt Herman Liedberg, Skara, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Oct. 26, 1970, Ser. No. 83,950

Claims priority, application Sweden, Oct. 31, 1969, 14951/69

Int. Cl. B05b *7/02*

U.S. Cl. 239—527 **8 Claims**



A spray gun has longitudinally divided or bisected handle means one-half of which provides a fixed hand grip portion on the spray gun body while the other half is a separable hand grip portion fixedly connected to the fluid supply hose of the spray gun. The separable hand grip portion is a female coupling member which incorporates a self closing discharge valve and is quickly attachable and detachable respectively to and from a male coupling member. The latter is disposed adjacent the fixed hand grip portion on the gun body and adapted to open the discharge valve and to receive fluid from the hose when the female coupling member is attached thereto to form together with the fixed hand grip portion of a complete handle means for the spray gun.

3,650,480
METHOD AND AN APPARATUS FOR PRODUCING WOOD WOOL

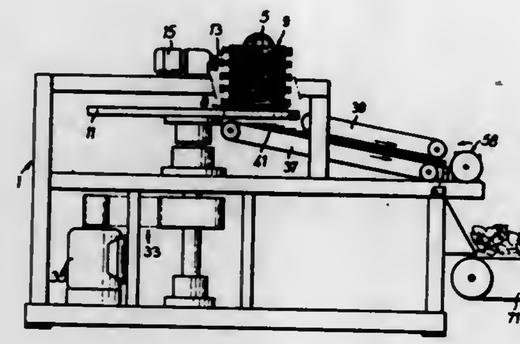
Gerrit Jan Van Elten, Voorthuizen, Netherlands, assignor to Thermoform, A.G., Fribourg, Switzerland

Filed Apr. 27, 1970, Ser. No. 32,025

Claims priority, application Germany, Apr. 29, 1969, P 19 21 867.8

Int. Cl. B27c *11/00*

U.S. Cl. 241—28 **16 Claims**



Thin sheets are sliced from a block of wood by means of a continually moving planing tool. As each sheet is separated from the block it is deposited on a slowly moving conveyor. On this conveyor the sheets are superimposed in staggered relationship like fish scales and form a steady stream conveyed to a wool cutting station where a cutter cuts the wood wool from the superimposed sheets transversely thereto.

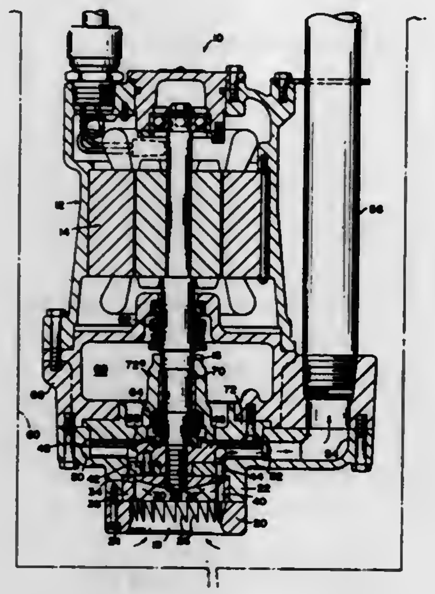
3,650,481
GRINDER PUMP

William J. Conery, and Donald A. Kaessen, both of Ashland, Ohio, assignors to Hydr-O-Matic Pump Company, Hayesville, Ohio

Filed Apr. 1, 1971, Ser. No. 130,276

Int. Cl. B02c *18/40*

U.S. Cl. 241—46.11 **11 Claims**



The grinder pump includes an electric motor drive, cooperating cutter blade and grinder members one of which is secured to the motor shaft at an inlet for the grinder pump unit, an axial flow inducer impeller axially inwardly of and immediately adjacent to the cooperating cutter blade and grinder members, and a centrifugal pump means having an inlet directly connecting to and receiving the discharge from the axial flow inducer impeller, all of the driven members being controlled by and carried on the shaft of the electric motor.

3,650,482
MATERIAL-TREATMENT MACHINES

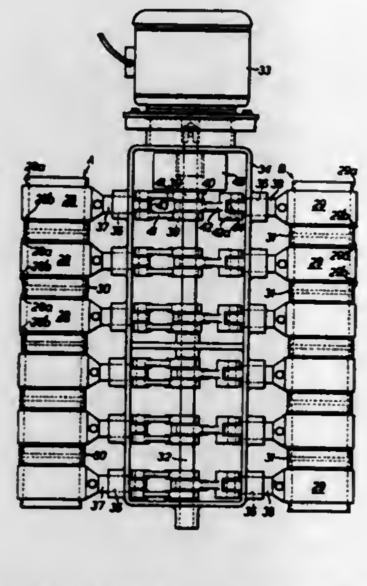
Robin Desmond Radcliffe Andrews, "Green Acre," Daisy Bank Road, Leckhampton, Cheltenham, England

Filed Jan. 26, 1970, Ser. No. 5,871

Claims priority, application Great Britain, Jan. 30, 1969, 5,533/69; Mar. 29, 1969, 16,576/69

Int. Cl. B02c *17/06, 17/14*

U.S. Cl. 241—153 **10 Claims**



A machine for the treatment of material, for example for the size reduction of solid materials, comprises carrier means for supporting the material and means for suspending and positively driving the carrier means so as to vibrate the latter at a fixed amplitude and frequency. A plurality of the carrier means is provided, suspended and positively driven in such manner that the two or more carrier means and driving means are inherently balanced.

3,650,483
SCRAP MILL

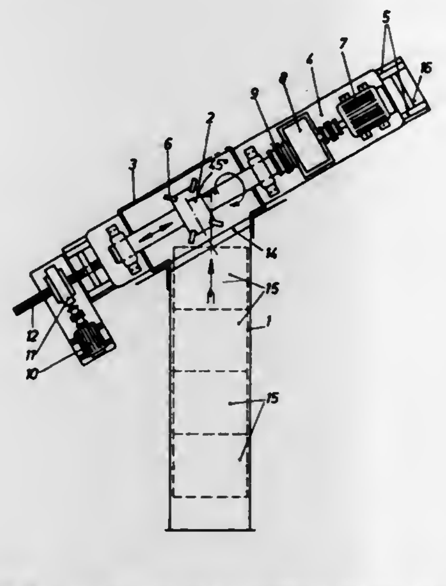
Helmut Galter, Kassel, Germany, assignor to Rheinstahl Henschel Aktiengesellschaft, Kassel, Germany

Filed Apr. 6, 1970, Ser. No. 26,073

Claims priority, application Germany, Apr. 10, 1969, P 19 18 123.8

Int. Cl. B02c *13/02, 13/286*

U.S. Cl. 241—186 R **5 Claims**



A scrap mill for crushing pre-pressed scrap packets to form smaller scrap pieces for further processing, in which the respective scrap packet to be crushed is fed toward the beater or crusher drum at an angle of approximately 45° with regard to the axis of rotation of said beater or crusher drum while said drum is reciprocable in the direction of its axis of rotation selectively toward and away from the scrap packet to be crushed.

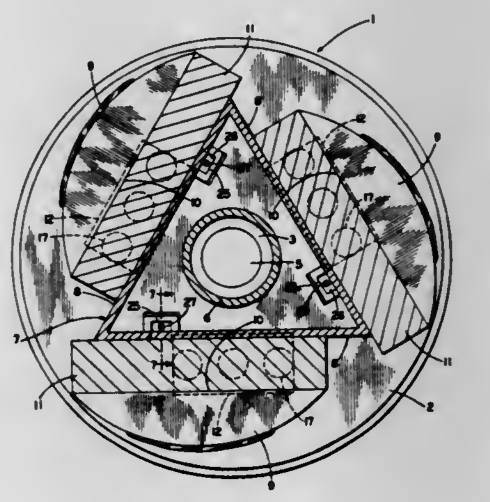
3,650,484
ROTOR CONSTRUCTION FOR IMPACT CRUSHER

Floyd E. Kimble, R.D. #1, Dover, Ohio, and Richard H. Buchsieb, Cambridge, Ohio, assignors to said Kimble, by said Buchsieb

Filed Apr. 3, 1970, Ser. No. 25,354

Int. Cl. B02c *13/06, 13/28*

U.S. Cl. 241—192 **11 Claims**



A rotor for an impact crusher in which the hammers comprise breaker bars disposed tangentially to a common circle, with means for adjusting the breaker bars tangentially to compensate for wear. The rotor Comprises a tubular member having at least three flat sides of uniform width, with an end disc welded or otherwise secured to each end thereof. A preferably half-moon shaped block is secured to the inner face of each end disc with the flat faces thereof spaced from and parallel with each flat face of said tubular member. This forms grooves within which the ends of the breaker bars are adjustably mounted. Slots of greater widths than the breaker bars are formed in the discs intermediate the flat faces of the tubular member and the flat faces of the corresponding half-moon shaped members. An adjusting block is slidably mounted in each slot and has a trunnion on its inner side received in an aperture in the adjacent end of the corresponding breaker bar. As an alternative, the apertures may extend entirely through the breaker bars, and shear rods may be located therethrough and in openings in the adjusting blocks. Removable shims may be secured in each slot on each side of the corresponding adjusting block. Wedges are inserted in pockets in the tubular member for forcing the breaker bar against the half-moon blocks.

3,650,485
CHOPPING DEVICE

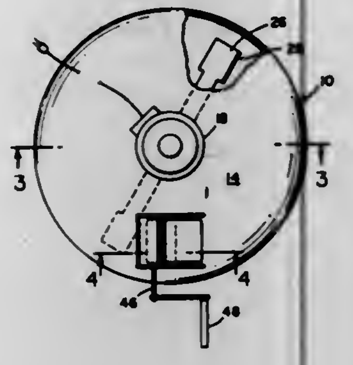
George K. Brokaw, 110 Forest Ln., Berkeley, Calif.

Filed Feb. 17, 1970, Ser. No. 12,010

Int. Cl. B02c *18/10*

U.S. Cl. 241—245 **10 Claims**

A device for chopping or cutting up brush garden trimmings and other waste material to a size suitable for use as a mulch or compost comprises a mounting plate with edge means for securing it like a removable cover on a container. An opening on one side of the plate is spaced radially from its center and feed means are provided around the opening for directing the material through it. Centrally mounted on the plate is a motor whose shaft extends to the underside of the plate. A cutting blade is fixed to the shaft and operates with a fixed blade near the opening to cut up materials forced through it.



3,650,486

YARN TRAVERSING METHOD AND APPARATUS OF A ROTARY BLADE TYPE

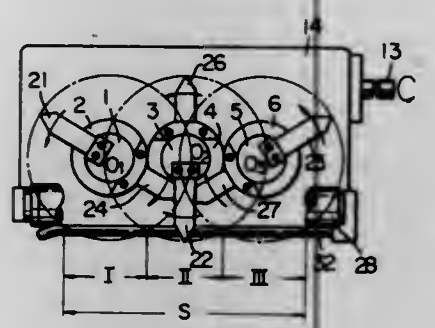
Katsumi Hasegawa; Akio Ando, both of Otsu-shi; Morio Okada; Yukio Kohno; Norihiro Aoi; Tadasu Kamo; Shiniti Hikita, all of Okazaki-shi, and Atsushi Fukuda, Otsu-shi, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed May 19, 1969, Ser. No. 825,903

Claims priority, application Japan, May 20, 1968, 43/33914; Feb. 27, 1969, 44/14907; Mar. 10, 1969, 44/18116; 44/18117

Int. Cl. B65h *54/28*

U.S. Cl. 242—43 **12 Claims**



A yarn traversing system of a rotary blades type is disclosed wherein an effective yarn traversing width is divided into two or more groups. Each group is provided with two superimposed and coaxially arranged blades rotating in opposite directions. The yarn is alternately moved in one traversing direction by the rotating blade and transferred from a blade of one group to a blade of the neighboring group. Directional change of the yarn traverse is performed by the cooperation between the two blades in the terminal groups of the effective yarn traversing width. The point shape of the rotary blade is so designed as to effect a smooth and stable transfer and the directional change of the yarn. Location and dimensions of the blades within the groups are so selected that the rotation thereof should not interfere with the rotation of the blades of the neighboring groups.

3,650,487

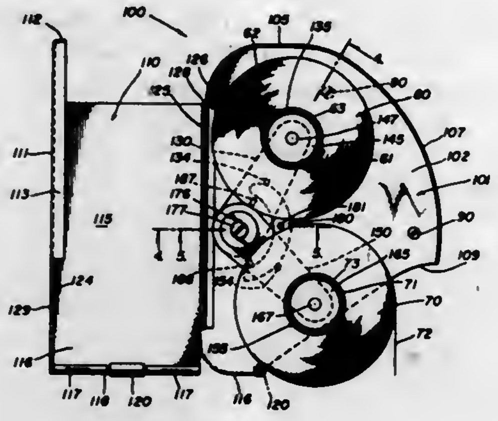
TWO-ROLL TISSUE DISPENSER

Erwin B. Bahnsen, Oakbrook, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah

Filed Mar. 6, 1970, Ser. No. 17,069

Int. Cl. B65h *19/00, 19/04*

U.S. Cl. 242—55.3 **20 Claims**



A two-roll tissue dispenser comprising a housing having a dispensing opening and a door providing access into the housing, two support arms pivotally mounted in the housing and each carrying a post for tissue rolls disposed normal to the support wall for the housing each of the support arms being pivoted at a common axis and sequentially pivotal only in one direction from a storage position to a dispensing position and then to an exhaust position and then back to the storage position, and latch mechanism automatically controlling the sequential pivoting of the support arms through the four positions named automatically to deliver a tissue roll from the storage position to the dispensing position upon the exhaustion of the tissue roll in the dispensing position; an improved and simplified lock mechanism for such a dispenser has also been provided.

3,650,488

MACHINE FOR WINDING TAPELIKE STRIP ONTO REELS

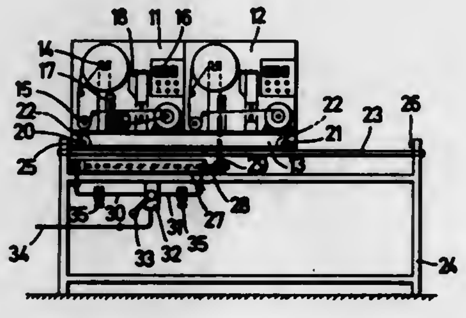
Max Norbisrath, Solingen, Germany, assignor to Spezialpapiermaschinenfabrik August Alfred Krupp, Hilden, near Duesseldorf, Germany

Filed Jan. 27, 1970, Ser. No. 6,126

Claims priority, application Germany, Jan. 25, 1969, G 69 02 873

Int. Cl. B65h *17/02*

U.S. Cl. 242—67.3 **6 Claims**



A machine for winding tape or other narrow strip such as typewriter ribbon onto reels includes two separate winding units each of which is arranged to wind the strip from a storage reel onto another reel. The two winding units are mounted on a carriage which is movable to and fro by a driving mechanism along a rail track so that either one unit or the other can be brought alternately into a servicing position near the middle of the track where the unit is in front of an operator who is able to remove a wound reel and replace it with an empty reel during the time that the other unit is in operation winding the strip onto a reel.

3,650,489

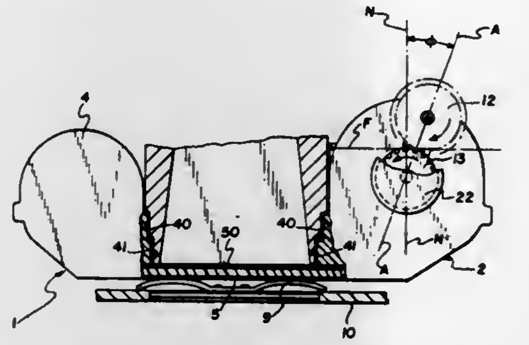
GEAR DRIVE FOR A CAMERA AND FILM CARTRIDGE

Richard J. Bresson, and James E. Dierks, both of Rochester, N.Y., assignors to Eastman Kodak Company, St. Louis, Mo.

Filed Apr. 6, 1970, Ser. No. 26,014

Int. Cl. B03b *1/10*

U.S. Cl. 242—71.2 **5 Claims**



A film cartridge housing encloses a core which is rotatably mounted therein. The housing extends over a gear carried by the spool and defines an opening through which a camera driving gear is insertable for engaging the spool gear and rotating the spool. In a preferred embodiment, the gear axes define a plane which is offset from a normal to the film plane by an angle equal to the pressure angle of the gears, thereby creating a line of force parallel to the film plane. By arranging for such line of force to pass through a cartridge-supporting surface in the camera at a position where the film cartridge contacts the surface, any tendency of the cartridge to be unseated from the supporting surface in response to the creation of a force component normal to the film plane is negated.

3,650,490

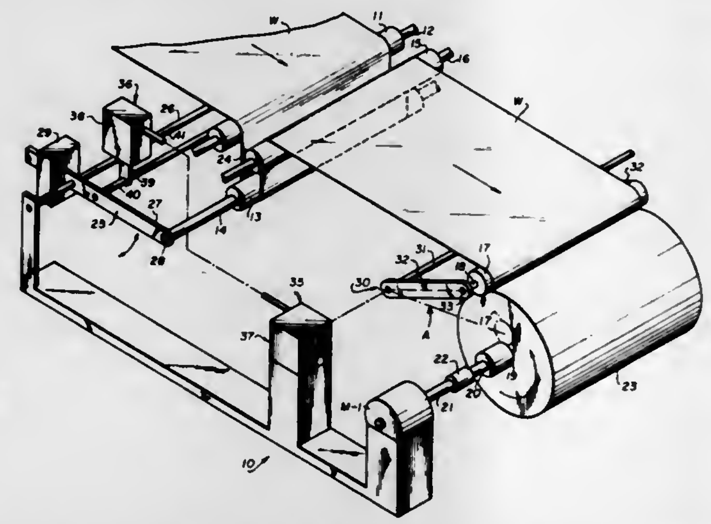
CONTROLLED TENSION WEB WINDING APPARATUS

Alan J. Saunders, Somerville, N.J., assignor to Egan Machinery Company

Filed May 7, 1970, Ser. No. 35,326

Int. Cl. B65h *59/38*

U.S. Cl. 242—75.3 **12 Claims**



Web winding apparatus in which a web of flexible material is adapted to successively pass over a first idler roll, under a dancer roll, over a second idler roll, over a lay-on roll and then be wound on a wind-up roll. The dancer roll is movable bodily through the medium of a first pair of arms which are pivotal about a first axis and the lay-on roll is movable bodily through the medium of a second pair of arms which are pivotal about a second axis. A mechanism, including a cam and a variable fluid pressure system, is connected to both pairs of arms and is so constructed and arranged as to effect application of programmed tension to the web by the dancer roll in response to bodily movement of the lay-on roll about the second axis during winding of the web on the wind-up roll.

3,650,491

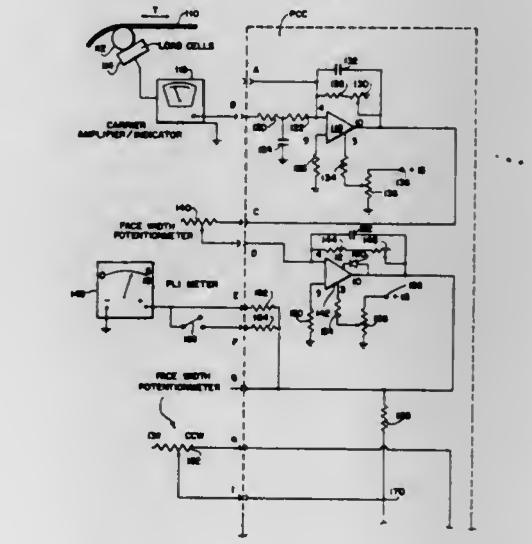
ELECTRONIC WEB TENSION MEASURING AND CONTROLLING SYSTEM

John David Pfeiffer, Downingtown, Pa., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 16, 1969, Ser. No. 885,443

Int. Cl. B65h *25/22, 23/20*

U.S. Cl. 242—75.51 **16 Claims**



An electronic web tension measuring and controlling system is provided which is stable, fast-responding, and convenient to operate, and which produces an output in meaningful units, the system displaying the actual operating web tension directly in units of pounds per lineal inch (p.l.i.). The actual p.l.i. signal is compared with a set point tension signal dialed in by the operator in p.l.i. units. Any error signal produced is multiplied by a signal proportional to the face width of the web so that a "pounds" error signal is produced. Brake operating time is minimized by utilizing an E/P converter located at the brake.

3,650,492

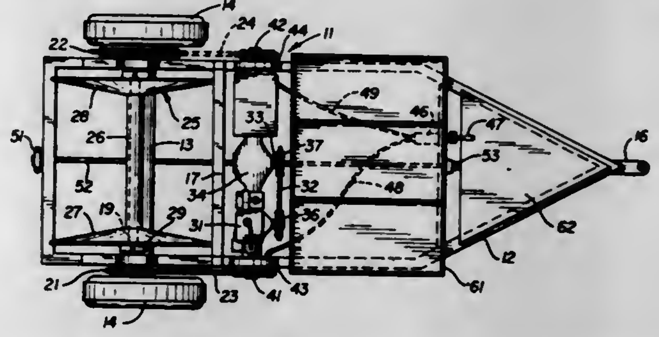
REEL FOR FENCE WIRE, ETC.

Linly R. Stum, Towner, Colo.

Filed Mar. 5, 1970, Ser. No. 16,753

Int. Cl. B65h *75/40*

U.S. Cl. 242—86.7 **4 Claims**



A winding reel support and drive apparatus disposed on a trailer type frame for the placement and retrieval of fence wire and the like. Powered drive apparatus rotates the reel at selected or regulated speeds with a brake system being provided for further control of said reel. Level wind apparatus is used for distributing wire across the reel. Individual reels are removable, and additional reels may be selectively mounted on a drive and support axle for use.

3,650,493

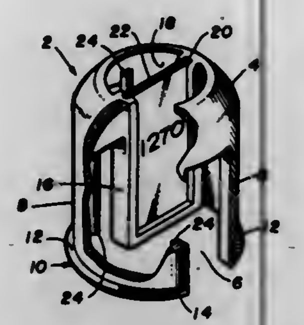
BOBBIN HANDLE

Arthur L. Gottily, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 6, 1970, Ser. No. 9,359

Int. Cl. B65h *75/10*

U.S. Cl. 242—118.3 **2 Claims**



A multiple purpose handle adapted to be flexingly attached to and detached from a portable item such as a tubular textile bobbin. The handle is provided with features for manually gripping the same, for retaining indicia tags and for stacking bobbins in shipping cartons.

3,650,494

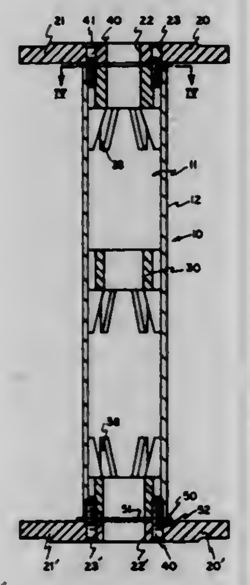
TEXTILE CARRIER

George M. Hutchinson, 403 Chandler St., Hartwell, Ga.

Filed June 2, 1970, Ser. No. 42,684

Int. Cl. B65h *75/14*

U.S. Cl. 242—118.61 **15 Claims**



A textile carrier having a barrel with two head ends secured thereto. An insert into each end of the barrel provides a bushing and a bearing surface for the spindle while also providing an attachment through which the head ends or flanges are secured to the carrier barrel. The insert comprises a body having a central opening through which the spindle passes and a plurality of projections therearound which receive fastening members. The insert may also be provided with axially extending tapered protrusions around the periphery thereof. Fastening members passing through the head end pass partially into the projections of the insert and are self tapping so as to threadedly secure themselves to the insert and the side wall of the barrel.

3,650,495

TAPE CARTRIDGE

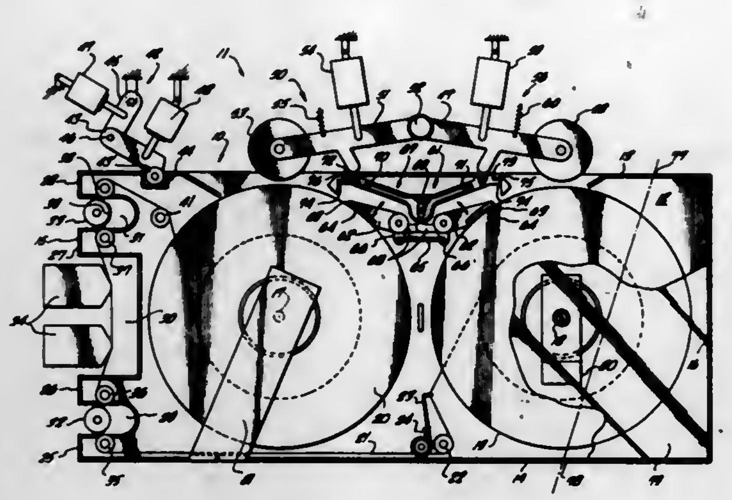
George Wesley Boyer, Covina, Calif., assignor to Leach Corporation, South Pasadena, Calif.

Filed Dec. 20, 1968, Ser. No. 785,551

Int. Cl. G03b *1/04;* **G11b** *15/22, 23/04*

U.S. Cl. 242—192 **8 Claims**

A tape cartridge for a tape recording system is described having a rectangular housing for rotatably supporting a pair of standard reels. The cartridge includes a cover which can be removed to permit access to the interior of the housing to repair the magnetic tape or remove the reels. The cartridge is adapted to expose the tape to capstan and magnetic head assemblies while permitting drive means to be inserted within the housing to engage the take-up and supply reels.



3,650,496

FOLDING FINS FOR MISSILES

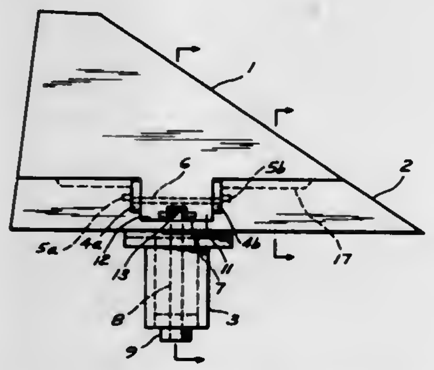
Nils-Ake Birger Svensson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed May 6, 1970, Ser. No. 35,057

Claims priority, application Sweden, May 14, 1969, 6892/69

Int. Cl. F42b *13/32*

U.S. Cl. 244—3.29 **6 Claims**



A steering fin or rudder for a guided missile is divided into two parts, viz, a root part and a foldable part which is foldable in relation to the root part towards the body of the missile. The foldable part is connected to the root part by means of a link system, a first axis joining the link system and the root part, and a second axis joining the link system and the foldable part. An operating rod is connected to the foldable part by a third axis and is subjected to a spring force which strives to pull the rod towards the center of the missile, thereby striving to move the foldable part from folded position to its normal position in which it forms an extension of the root part. The three axes are parallel to each other and so positioned in relation to each other that the foldable part, when moved from folded position to its normal position, during the last part of its motion approaches the root part under an approximately translational motion.

3,650,497

JET PROPELLED CHANNELED AIRCRAFT

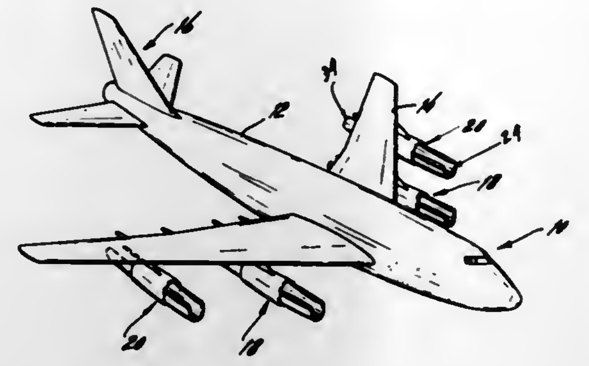
Willard R. Custer, Hagerstown, Md., assignor to Custer Channel Wing Corporation, Hagerstown, Md.

Filed Nov. 26, 1969, Ser. No. 880,011

Int. Cl. B64c *9/06*

U.S. Cl. 244—12 CW **4 Claims**

Jet propelled aircraft having lift enhancing channels connected to the jet engines or nacelles for the same either directly or contiguously, for close proximity with fluid flow associated with the engines, and with structural refinement. The channels can have airfoil shaped sections to increase lift and efficiency. The channels can be incorporated forward and/or aft of the engines, and aft channels can be adjustably controlled.



3,650,498

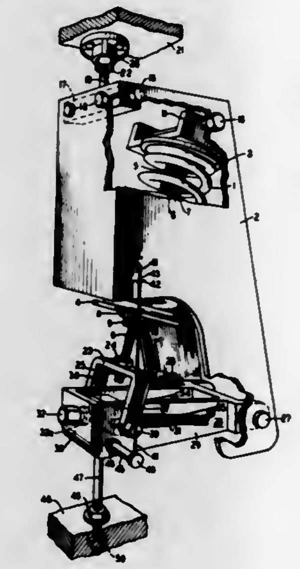
ADJUSTABLE SPRING SUSPENSION MOUNT HAVING CONSTANT STATIC DEFLECTION

James N. Deak, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 2, 1969, Ser. No. 821,281

Int. Cl. F16f *15/00*

U.S. Cl. 248—18 **3 Claims**



A spring suspension mount for protecting a load from shock accelerations by reducing the effects of input shocks to acceptable levels. Means are provided for adjusting the mount so that, when loads of different weights within a preselected range are suspended therefrom, the mount will have a constant overall static deflection. Thus, for any load within the preselected range, the mount will have a constant vertical natural frequency.

3,650,499

CLAMP FOR PIPE SUPPORT WITH SLANTING PIVOTAL ASSEMBLY

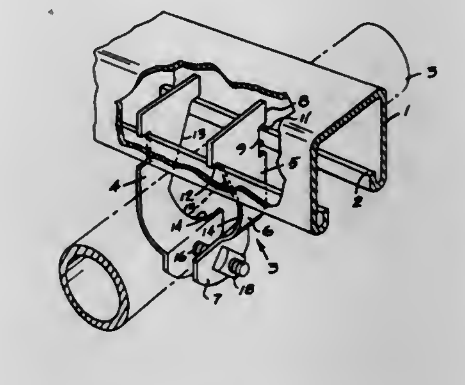
John D. Biggane, Mill Valley, Calif., assignor to Superior Strut & Hanger Company

Filed Jan. 11, 1971, Ser. No. 105,454

Int. Cl. F16l *3/24*

U.S. Cl. 248—62 **3 Claims**

A pair of complementary clamping plates, each plate being curved or dished to form a nesting seat for the pipe and has a pivot and clamping flange on one end of the curved portion, and has a straight flat portion extending tangentially from the other end of the curved portion; one edge of each of the flat portions is perpendicular and has a notch to form a shoulder to hang over one of the inturned flanges in a supporting channel, the other edge of said tangential portion having a shoulder to engage the other inturned flange in the supporting channel and has the edge from its shoulder to the seat converging or slanting toward the opposite edge; the adjacent edge of the nesting seat is cut away in continuation of the slanting edge to form an arcuate edge; the notched perpendicular edge of one of the plates being opposite the slanting edge of the other plate whereby the pivoting of the plates about a loose securing bolt in the clamping flanges and tilting transversely at a slanting angle permits insertion of the plates through the space between the inturned flanges of the supporting channel so that by straightening the plates into nesting attitude the respective shoulders are turned over the respective inturned flanges for suspending a pipe in the seats of the opposite plates.



3,650,500

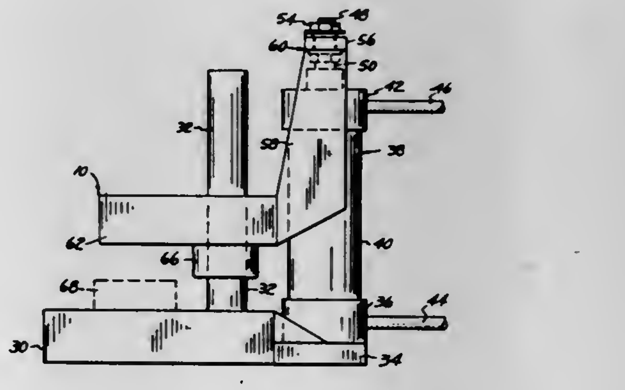
EXTENSIBLE SUPPORT FOR WORK TRANSFER DEVICE

John R. Winne, Detroit, Mich., assignor to Erie Engineering Company, Troy, Mich.

Filed Apr. 24, 1970, Ser. No. 31,524

Int. Cl. F16m *13/00*

U.S. Cl. 248—125 **2 Claims**



An extensible support is provided for the Lifting and Swinging Work Transfer Device of Kirsch et al. U.S. Pat. No. 3,406,837 of Oct. 22, 1968. This extensible support consists of a base adapted to be mounted near the machine to be served by the work transfer device. An external or auxiliary vertical fluid pressure cylinder mounted on this base contains a vertically-reciprocating reciprocating piston, the piston rod of which carries a cross-head connected to arms which in turn carry a horizontal platform on which the work transfer device is mounted. The auxiliary vertical fluid pressure cylinder, when supplied with pressure fluid, such as compressed air, raises the platform and with it the work transfer device, thereby supplementing and extending the range of lift possessed by the work transfer device itself.

3,650,501

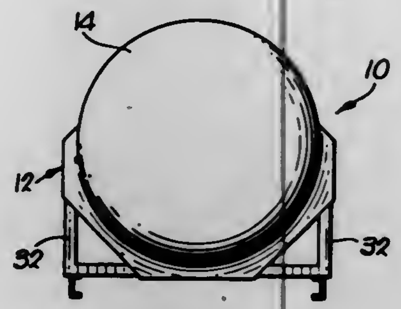
APPARATUS FOR CRADLING TANKS

Ernest L. Streb, Raymondville, Tex., assignor to Frontier Industries, Inc., Raymondville, Tex.

Filed June 15, 1970, Ser. No. 46,187

Int. Cl. B65d *25/24*

U.S. Cl. 248—146 **8 Claims**



A method and apparatus for cradling a tank wherein the latter is constantly held in cushioned, spaced relationship with U-shaped framework of the cradle. The tank is cradled by filling the space between the tank and the framework with an initially fluid, resinous substance which bonds with the framework and the tank as the substance cures to a solid, resilient state. Upon curing, the tank and cradle are integrally bonded into a single composite unit wherein the resinous substance cushions the tank away from the framework to distribute the load evenly over the surface of the tank. A protective, fiber glass sheath enclosing the cradle is bonded to the tank.

3,650,502

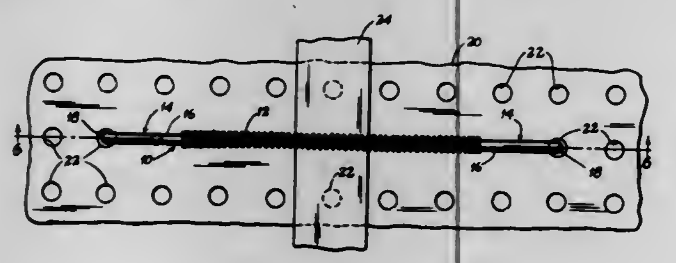
PEGBOARD ITEM

Bruno A. Langhi, St. Louis, Mo., assignor to Ever-Ready Appliance Mfg. Co., St. Louis, Mo.

Filed June 27, 1969, Ser. No. 837,224

Int. Cl. E06b *7/28*

U.S. Cl. 248—225 **5 Claims**



The present device is an apertured panel item comprising a central coiled spring and a hook element removably connected into each end, the spring being under tension and against the mounting board when operatively disposed thereon. Objects are held against the board by the spring.

3,650,503

TILT-AND-ROTATE BRACKET ASSEMBLY

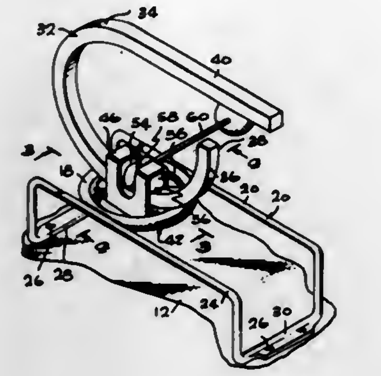
Kendall R. Seidel, 4521 Cambury Drive, La Palma, Calif.

Filed May 28, 1970, Ser. No. 41,449

Int. Cl. F16m *13/00*

U.S. Cl. 248—285 **7 Claims**

Mounting assembly for the mounting of devices which must be directed or oriented and then securely locked into position. Examples of such structures are flood-lighting fixtures and closed circuit TV monitor cameras in places of business. An annular base ring is arranged for securement by any convenient means. An annular arcuate swivel having a right cylindrical outer circumference rests upon the base ring to provide movability about the axis of the ring and about the axis of the swivel. The device being mounted is carried on the swivel. Clamping means engages below the base ring and over the swivel to clamp the two together to secure alignment when positioning is obtained.



3,650,504

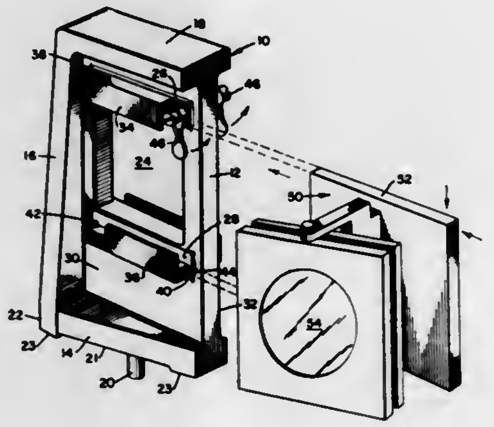
OPTICAL MOUNT

James W. Dormody, Bristol, Conn., assignor to Carson Laboratories, Inc., Bristol, Conn.

Filed Apr. 3, 1970, Ser. No. 25,327

Int. Cl. G02b *7/18*

U.S. Cl. 248—466 **11 Claims**



An optical mount comprising a heavy, rigid support member having finished guide surfaces for rigidly mounting one or more optical devices on the support member. The devices are readily installed and removable by an eccentric lock and are isolated from environmental vibration when installed.

3,650,505

THERMAL VALVE

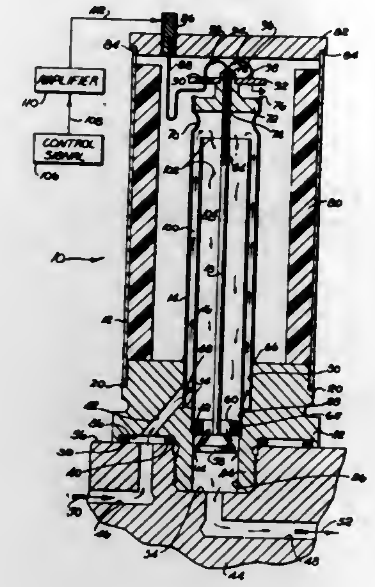
Charles F. Drexel, Rolling Hills Estates, Calif., assignor to Tylan Corporation

Filed Mar. 2, 1970, Ser. No. 15,399

Int. Cl. F16k *31/04;* **F03g** *7/06*

U.S. Cl. 251—11 **10 Claims**

A thermal valve in which heat is utilized to expand an actuator relative to a reference member. The actuator and reference member are interconnected at one end and one or the other carries a valve head on its opposite end whereby a differential in expansion moves the valve head from its seat. Ports are provided to conduct fluid between and in contact with the reference member and actuator and a baffle is disposed between the reference member and actuator to direct the fluid along the reference member for heat transfer therewith and to effect radiant heat shielding between the reference member and the actuator.



3,650,506

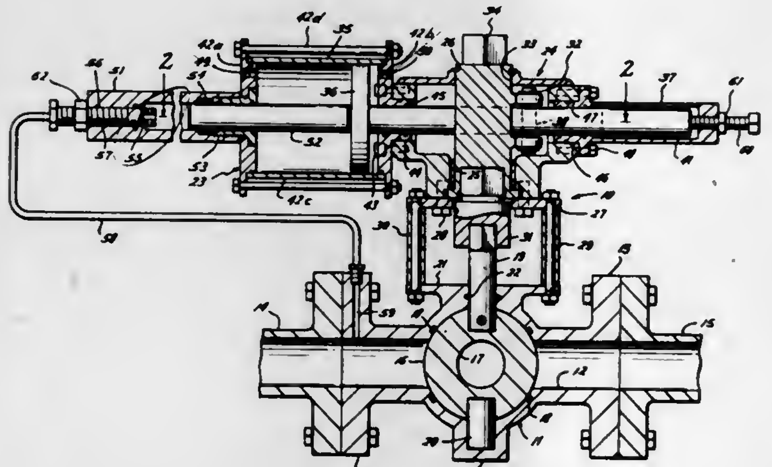
ROTARY VALVE WITH LINE PRESSURE CONNECTED ACTUATOR

Billy R. Bruton, Longview, Tex., assignor to U.S. Industries, Inc., New York, N.Y.

Filed June 26, 1970, Ser. No. 50,236

Int. Cl. F16k *31/163*

U.S. Cl. 251—26 **12 Claims**



A rotary valve having a reciprocable, fluid-actuated operator which rotates the closure member to "fail" position by means of line pressure when there is a failure of power fluid normally used to operate the valve.

3,650,507

COUPLING SLEEVE FOR COUPLING ENGAGEMENT WITH A NIPPLE

Carl Erik Josef Nyberg, Sylvens vag 6, Skovde, Sweden

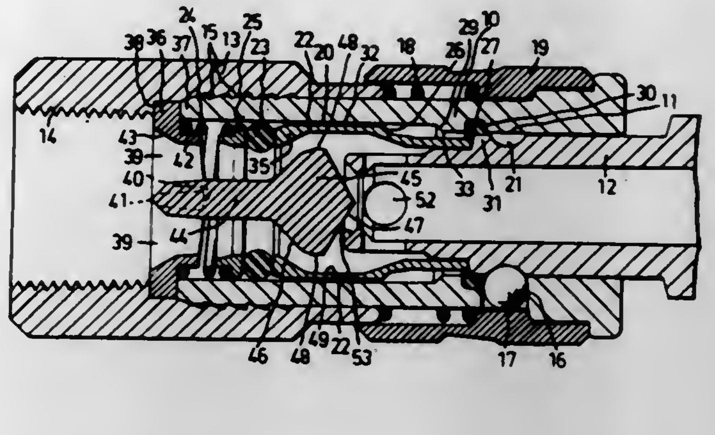
Filed Mar. 11, 1970, Ser. No. 18,474

Claims priority, application Sweden, Mar. 14, 1969, 3568/69

Int. Cl. F16l *37/28*

U.S. Cl. 251—149.6 **5 Claims**

A coupling sleeve for coupling engagement with a nipple to form a quick-coupling between two gas or liquid carrying conduits, the coupling sleeve and its internal separate details being so adapted that all details may be inserted from one and the same end of the sleeve.



3,650,508

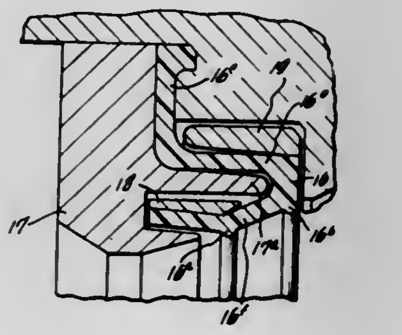
BI-DIRECTIONAL VALVE FOR CRYOGENIC FLUIDS

Ronald W. Kosmala, La Mirada, and Ritchie W. Whitaker, Claremont, both of Calif., assignors to Royal Industries, Inc., Pasadena, Calif.

Filed Feb. 6, 1969, Ser. No. 797,166

Int. Cl. F16k *5/14*

U.S. Cl. 251—174 **12 Claims**



This invention is directed to a valve adapted for bi-directional thermally responsive sealing means having a pair of spaced bead-like projections for engaging a valve disc in leak-proof fashion. The bidirectional seal is provided with means for mechanically loading the sealing means for maintaining a substantially constant pressure on the sealing means to provide an essentially constant sealing load with temperature changes.

3,650,509

FREE ROTOR VIBRATOR

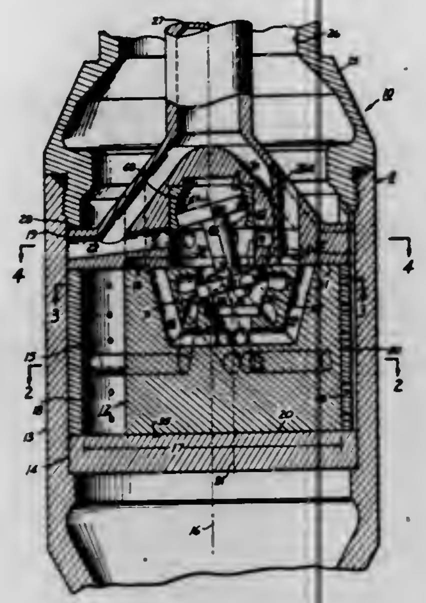
Leroy E. Swerdfeger, Upland, Calif., assignor to Malan Vibrator Co. Inc., South El Monte, Calif.

Filed Sept. 29, 1970, Ser. No. 76,448

Int. Cl. B01f *11/00*

U.S. Cl. 259—1 **6 Claims**

A free rotor vibrator of the class including a case with an internal cylinder race within which a rotor of less diameter orbits in bearing contact therewith so as to exert a radial centrifugal force which is useful in fields such as the placement of concrete. The invention includes valving means for sequentially connecting force means such as plungers to sources of fluid under alternately elevated and reduced pressure so as to cause the rotor to orbit in the case. The valving means comprises a rigid rod with a universally pivoted joint at each end, one of which joints carries valving means which sequentially overlaps passages to the force means and connects them alternately to the regions of elevated and reduced pressure.



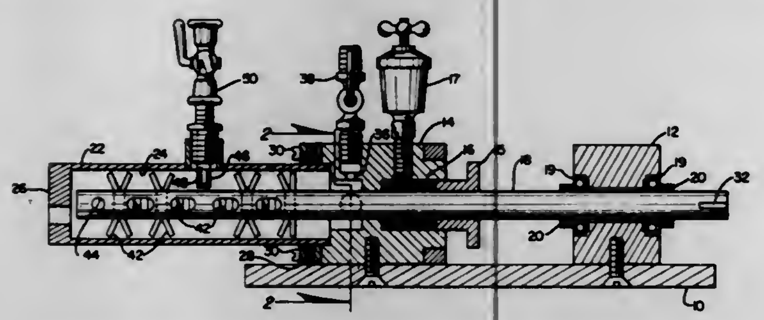
3,650,510
MIXING AND AERATING APPARATUS FOR PLASTICS

Ferman L. Ansel, Arvada, Colo., assignor to Denver Brick and Pipe Company, Denver, Colo.

Filed Apr. 3, 1970, Ser. No. 25,334

Int. Cl. B01f *7/02, 7/08*

U.S. Cl. 259—9 **7 Claims**



Mixing apparatus for liquid plastics, such as polyesters, polyurethane elastomers and polyurethane foams, and liquid additives to same, for effecting certain reactions, characterized by a plurality of mixing rotors which may be optionally employed with basic drive mechanism and liquid supply conduits, common to all rotors, to thereby provide apparatus of variable utility, for the various plastics, by minimizing the number of operative parts required. For certain foaming plastics, air is aspirated into the rotor mixing chamber to provide the required air for initiating foaming by subsequent chemical reaction. For other plastics which require a high shearing action during mixing, alternative forms of rotors are employed which move the plastic in a tortuous path for effecting such action. All rotors are driven at the same speed by a direct drive motor which rotates at 1,700–1,800 r.p.m. (four pole motor) as distinguished from former required speeds of the order of 6,000 r.p.m.

3,650,511
MIXING AND KNEADING DEVICE

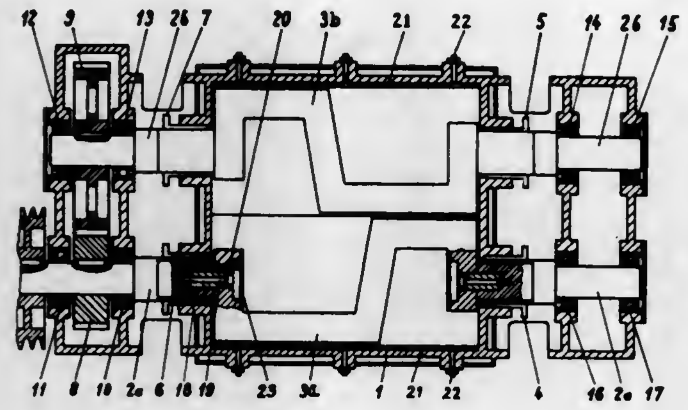
Werner Henschel, Muttenz, Switzerland, assignor to Buss A.G., Basel, Switzerland

Filed June 3, 1969, Ser. No. 830,050

Int. Cl. B01f *7/00*

U.S. Cl. 259—104 **3 Claims**

A mixing and kneading device for both dry and moist products, featuring a housing with one or more agitator arms which are mounted rotatably in said housing by means of shafts provided on each side of the arms, said housing being closed off with "pressure resistant" seals at the points of exit of said agitator shafts. The agitator arms and shafts are designed as separate parts which are divided along planes perpendicular to the axes of rotation, and are detachably interconnected by conventional clamping elements, including respective pins coaxial to said shafts.



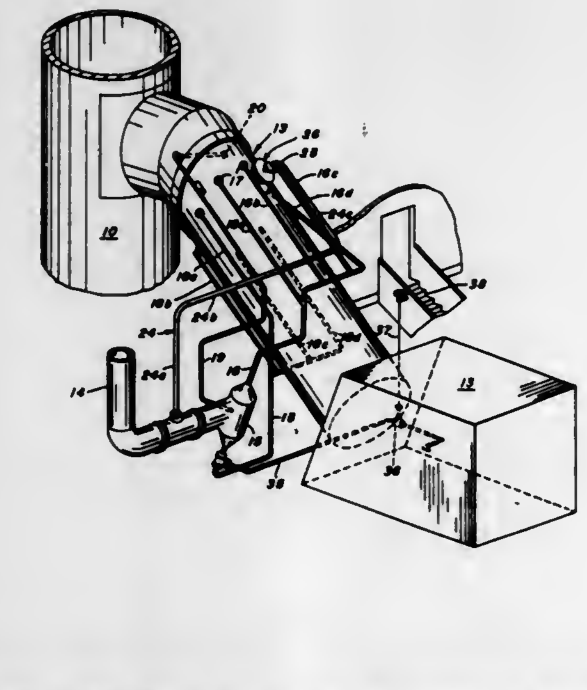
3,650,512
QUENCHING METHOD AND APPARATUS FOR EXHAUST GASES

Lawrence N. Gee, Hobart; Kenneth M. Marrs, and Edwin S. Rutkin, both of Gary, all of Ind., assignors to United States Steel Corporation

Filed Dec. 4, 1969, Ser. No. 881,970

Int. Cl. B01f *3/04*

U.S. Cl. 261—7 **7 Claims**



Exhaust gases from an oxygen steelmaking furnace are quenched with water which is recirculated and contains a large quantity of solids. In conventional quenching systems such solids can clog the water pipes. The invention is an arrangement of the pipes which assures gravity drainage during interruptions and prevents solids from accumulating in the pipes and clogging them.

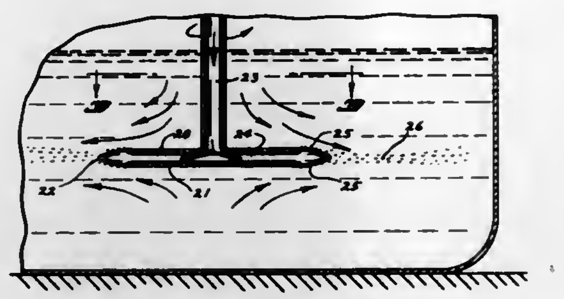
3,650,513
AERATION DEVICE

Frank D. Werner, 5405 Mt. Normandale Curve, Minneapolis, Minn.

Filed Apr. 4, 1969, Ser. No. 813,466

Int. Cl. B01f *7/26*

U.S. Cl. 261—87 **14 Claims**



An aeration device comprising a rotating disc having porous surfaces through which a fluid can be passed to be dispersed into a liquid in which the disc is rotating.

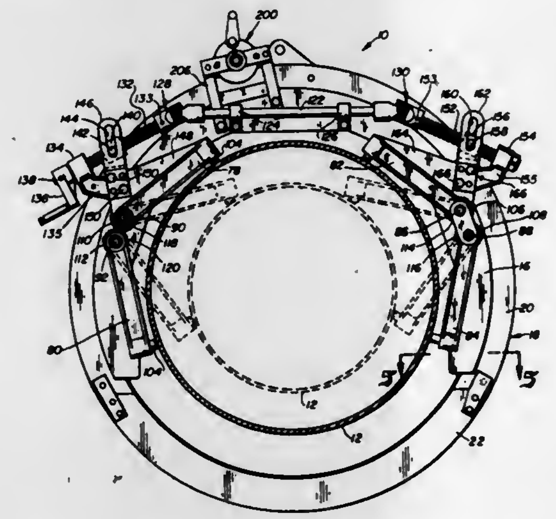
3,650,514
SELF CENTERING PIPE WORKING MACHINE

Gerald A. Stunkard, P.O. Box 594, Jenks, Okla.

Filed Nov. 7, 1969, Ser. No. 874,758

Int. Cl. B23k *7/04*

U.S. Cl. 266—23 **17 Claims**



A self centering pipe-working machine has a circular frame portion positionable around a pipe section, an openable ring assembly in movable contact with the periphery of the frame portion, two pairs of clamping members attached to the frame portion on a first side thereof, and two pairs of clamping members attached to the frame portion on a second side thereof. Each of the first mentioned two pairs of clamping members are operably interconnected through universal joint means, and each pair of clamping members on the second side of the frame portion are operably connected to a corresponding pair of clamping members on the first side of the frame portion. Threaded means connects each pair of the first mentioned two pairs of clamping members to the universal joint means to provide the combined clamping and self centering adjustments. The other two pairs of clamping members on the other side of the frame correspond in unison to the first two pairs. Adjustable tool support means is removably attached to the openable ring member for rotative movement around a pipe section to be worked. In one embodiment, driving means is attached to the frame with the driving means having a driven wheel in contact with the rotatable ring assembly in order to rotate the tool support means around the pipe section. In another embodiment of the invention, the driving means includes a driven sprocket member in contact with a chain-like member secured to the periphery of the openable ring assembly in order to drive the ring assembly.

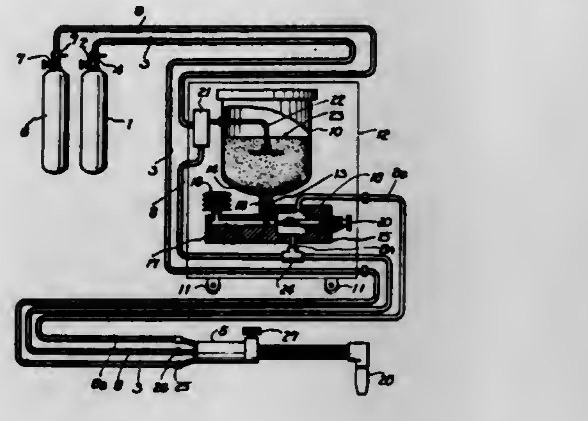
3,650,515
METAL POWDER SPRAY CUTTING APPARATUS

Suichi Okui, 543 Tatsumiyagara-cho, Ikuno-ku, Osaka, Japan

Filed May 21, 1970, Ser. No. 39,316

Int. Cl. B23k *5/00*

U.S. Cl. 266—23 S **1 Claim**



A metal powder spray cutting apparatus comprising a metal powder reservoir, beneath which is a chamber having a metal dropping port crossed by a gas reciprocating route, at the base of which is an expansion accumulator, while said gas reciprocating route has its one end opened in the expansion accumulator and the feeding route for a cutting jet oxygen passes through the expansion accumulator to be connected with a cutting burner, so that metal powders mixed with oxygen may be sprayed out of a spray port in the center of the nozzle at the tip of said cutting burner.

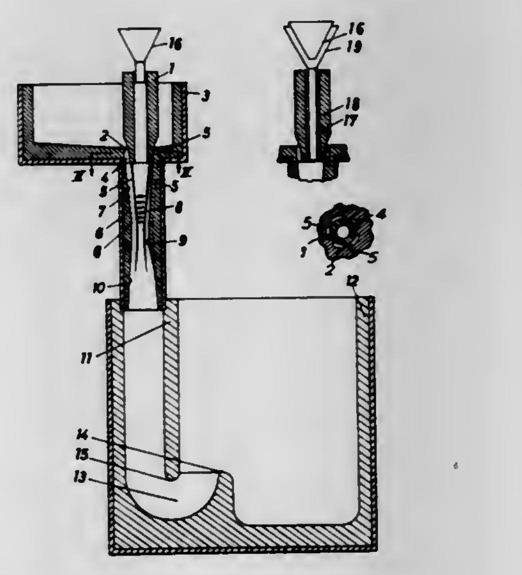
3,650,516
DEVICE FOR INTRODUCING ADDITIVES INTO MOLTEN METAL

Detmar Franz Otto Mantell, and Werner Harald Valentin Mainz, both of Gelsenkirchen, Germany, assignors to Rheinstahl Huettenwerke AG, Essen, Germany

Filed Mar. 25, 1970, Ser. No. 22,650

Int. Cl. C21c *7/00*

U.S. Cl. 266—34 T **18 Claims**

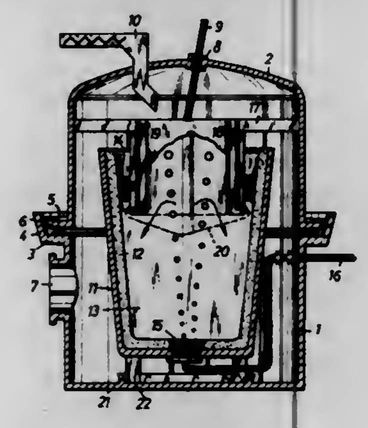


A device for introducing additives, such as solid substances of low boiling point, into a molten metal includes an intermediate ladle for receiving the molten metal and discharging it from an outlet opening in its base into an outlet pipe extending downwardly from the opening. A feed pipe for introducing additives extends downwardly through the ladle with its lower end located in the outlet opening from the ladle. The lower end of the feed pipe is spaced radially inwardly from the inner peripheral of the ladle outlet opening and provides an annular space which is divided by ribs, extending between the ladle and the lower end of the feed pipe, into a number of angularly spaced open sections or flow passages. The ribs extend downwardly for at least a portion of the length of the outlet pipe and the outlet pipe is arranged to provide, in serial arrangements proceeding from the outlet opening in the ladle, a converging section, a cylindrical section, and a diverging nozzle-like section.

3,650,517
DEVICE FOR REMOVING GAS FROM MOLTEN METALS CONTAINED IN A LADLE

Theodor Messing, Muhlheim (Ruhr) Speldorf, Germany, assignor to Standard-Messo Duisburg Gesellschaft fur Chemietechnik mit beschrankter Haftung & Co., Duisburg, Germany

Filed Aug. 19, 1970, Ser. No. 65,032
Claims priority, application Germany, Dec. 27, 1969, P 19 65 136.6
Int. Cl. C21c *7/10*
U.S. Cl. 266—34 V 12 Claims

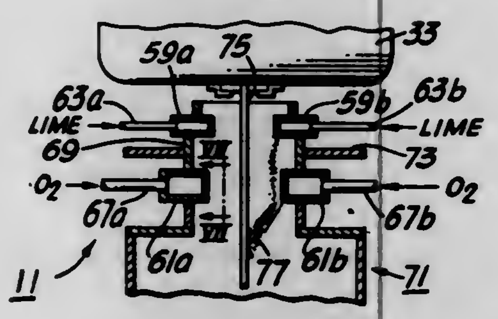


The invention relates to a device for removing gas from steel or other molten metal contained in a ladle. The ladle is housed in a multi-part vacuum container, and a reaction pipe connected to the vacuum container extends into the ladle and is immersed in molten metal when the latter is introduced into the ladle. The inner volume of the reaction pipe is greater than the increase in volume of the molten metal which occurs during degassing and metallurgical treatment of the molten metal.

3,650,518
SPRAY STEELMAKING APPARATUS AND METHOD

William H. Moffatt, Lausanne, Switzerland, assignor to Koppers Company, Inc.

Original application Feb. 2, 1968, Ser. No. 702,570, now Patent No. 3,598,571. Divided and this application Sept. 18, 1970, Ser. No. 73,655
Int. Cl. C21c *5/56*
U.S. Cl. 266—34 T 4 Claims

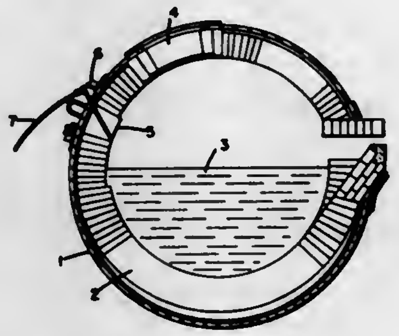


Improved apparatus for carrying out the method of spray steelmaking includes a tundish for holding molten metal that has one or more elongate slots covered by a slidable gate to control the rate and quantity of molten metal flowing from the tundish in the form of one or more thin films of molten metal. Headers on each side of the molten film discharge oxygen and refining materials that react with the molten metal to produce steel.

3,650,519
APPARATUS FOR GASEOUS REDUCTION OF OXYGEN-CONTAINING COPPER

John Vogt; Paul Schmidt, both of Noranda, and Leonard Mills, Murdochville, all of Quebec, Canada, assignors to Noranda Mines Limited, Toronto, Ontario, Canada

Original application Jan. 9, 1968, Ser. No. 696,526. Divided and this application Dec. 31, 1969, Ser. No. 1,917
Int. Cl. C21c *5/48*
U.S. Cl. 266—36 H 9 Claims

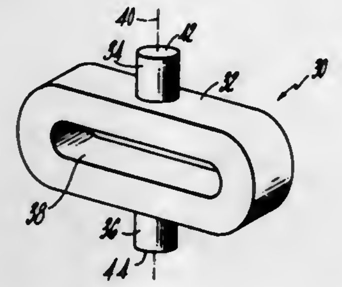


A novel tuyere design in which a metal pipe is secured to the furnace wall and into which a second pipe is inserted to extend for several inches into the molten bath. The apparatus for introducing a gas into a furnace includes an outer pipe secured in a furnace wall and extending from the inner face of the wall to at least the outer face, an inner pipe adapted to be slidably inserted into the outer pipe and being of substantially greater length than the outer pipe, and means for introducing a gas into the inner pipe.

3,650,520
ENERGY ABSORBING DEVICE

John T. Vernon, and Albert M. Ankrom, both of Charlotte, N.C., assignors to Rogers Corporation, Rogers, Conn.

Filed June 29, 1970, Ser. No. 50,742
Int. Cl. F16f *1/44*
U.S. Cl. 267—152 8 Claims



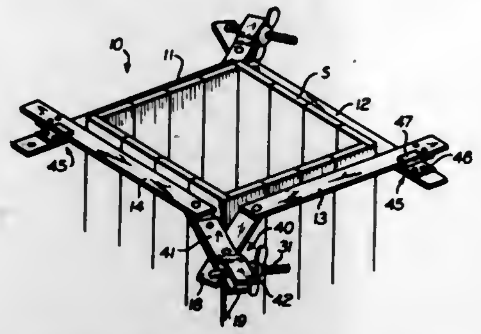
An energy absorbing device formed from an integral molded unit of an elastomeric material such as polyurethane. The unit is composed of an annular body portion having an elliptical configuration with relatively thick wall sections and a pair of impact elements projecting from the outer surface of the body portion at stations which lie generally along the minor axis of the elliptical configuration. The resilience of the body portion, and to a more limited extent the impacting elements, allows the device to absorb energy when objects strike the projecting ends of the impact elements.

3,650,521
CONCRETE FORM CLAMP

Joseph Meli, New Rochelle, N.Y., assignor to CMI Corporation, Oklahoma City, Okla.

Filed July 31, 1969, Ser. No. 846,357
Int. Cl. E04g *17/00*
U.S. Cl. 269—41 11 Claims

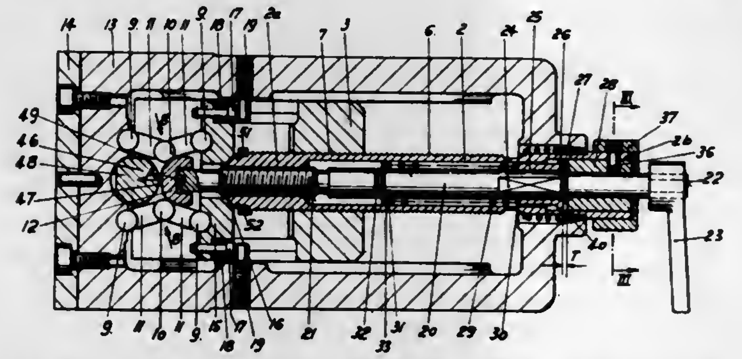
A concrete form clamp for use in maintaining the sheathing employed in concrete forms at right angles with respect to each other so as to implement the assembly of the form for use in pouring concrete columns, footings, or the like structures rectangular in cross section. The clamp is formed with two pairs of clamp bars, the clamp bars of each pair being pivotally joined by means of a pair of pivotally connected pivot links, with a tie member extending between said links to permit them to be biased toward a position of axial alinement. The free ends of the clamp bars overlap and engage each other at right angles, with the tightening of the tie member between the pivot links serving to draw the clamp bars against the concrete form to be held in place.



3,650,522
MECHANICAL CLAMPING DEVICE, IN PARTICULAR MACHINE VICE

Charles Wermuth, Wangi, and Heinz Wagner, Aadorf, both of Switzerland, assignors to Gressel AG, Kempten am Allgau Spatzenweg, Germany

Filed Dec. 1, 1969, Ser. No. 881,205
Claims priority, application Germany, Dec. 3, 1968, P 18 12 325.6
Int. Cl. B25b *1/14*
U.S. Cl. 269—228 8 Claims



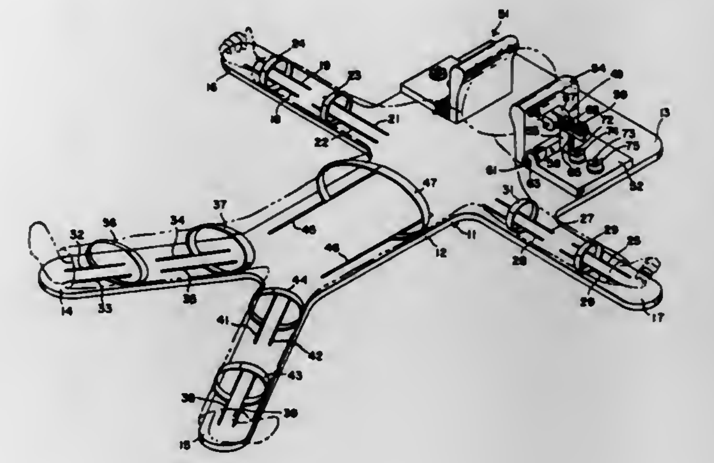
A clamp member for a vice or the like. A hollow spindle is threaded into a stationary block and carries a slide member thereon and a drive rod therein. A limited-torque clutch connects a drive rod to said hollow spindle and solid connecting means connects said manual drive means to said drive rod. Upon rotation of the handle, force is transmitted through the limited-torque clutch to rotate the hollow spindle with respect to the stationary block for advancement of same and simultaneous advancement of the slide until the work-engaging plate initially contacts the workpiece. Thereafter, the clutch slips and force is then applied through the drive rod to force multiplication means and applied to the work-engaging plate for imposing clamping force thereon. The drive rod is only torsionally stressed for most of its length and hence is not subjected to bending forces. It is compressively stressed only for a short distance at the end adjacent the force multiplication means and can at this point be readily and adequately guided.

3,650,523
INFANT RESTRAINING BOARD

Charles P. Darby, Jr., 90 Broad St., P. O. Box 242, Charleston, S.C.

Filed Jan. 15, 1970, Ser. No. 3,086
Int. Cl. A61f *5/56*
U.S. Cl. 269—328 4 Claims

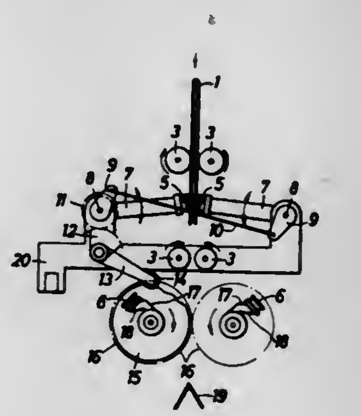
A restraining assembly for children comprises a rigid support board having a head portion at one end adapted to underlie the head of the patient, diverging leg portions at the other end to underlie the legs of the patient, a body portion intermediate the head and foot portions and arm portions projecting from opposite sides adjacent the juncture of the head and body portions. Releasable patient holding bands pass slidably through a plurality of slots in each of the arm, leg and body portions, and laterally adjustable head holding pads are provided on the head portion.



3,650,524
APPARATUS FOR AND METHOD OF OPENING INTERPOSITIONED FOLDED SHEETS

Rudolf Hepp, Schmidt-Ott-Strasse 7a, Berlin, 41, Germany

Filed Dec. 5, 1969, Ser. No. 882,599
Claims priority, application Germany, Dec. 23, 1968, P 18 17 648.2
Int. Cl. B65h *39/02*
U.S. Cl. 270—54 4 Claims



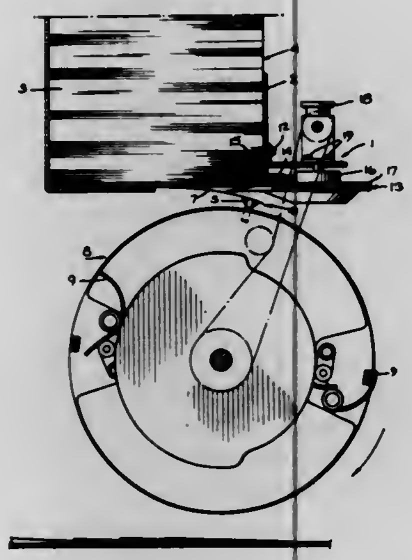
Apparatus for and method of centrally opening two folded interpositioned sheets which are deposited with their edges parallel to their rear fold facing forwards by a roller conveyor receiving the sheets through a spreading device onto a conveyor serving as transport means for the open sheets, comprising the steps of: spreading the outer sheet portions apart from the inner sheet portions, and maintaining the outer spread sheet portions while concurrently spreading the inner sheet portions.

3,650,525
APPARATUS AND METHOD FOR SEPARATING SIGNATURES IN A GATHERER

Carlton V. Hageman, and Victoriano F. Rana, both of Easton, Pa., assignors to Harris-Intertype Corp., Cleveland, Ohio

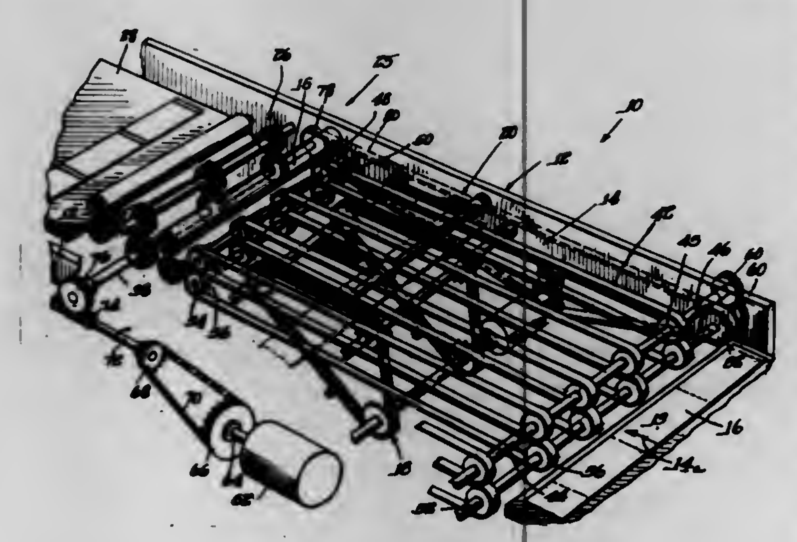
Filed June 10, 1970, Ser. No. 45,010
Int. Cl. B65h *3/08, 3/50*
U.S. Cl. 271—29 11 Claims

A signature gathering machine having an improved rotary lifter separator for separating and deflecting the lowermost signature of a stack of signatures in a stack hopper for extraction therefrom while continually supporting the forward edges of the signatures in the stack thereby reducing pressure and friction on the lowermost signature being extracted and reducing the possibility of the next lowermost signature following the signature being extracted. The rotary lifter separator comprises a disk-like rotary separator having a leading edge which rotates into the stack between a detached lowermost signature and the stack and separates and positions the forward edge of the lowermost signature whereupon it is gripped by a rotary drum mechanism and pulled in an extracting direction from the stack. The periphery of the upper surface of the disk-like rotary separator continually supports the forward edges of the signatures in the stack as the separator rotates. Additionally, a stack support means supports the forward edges of a portion of signatures in the stack thereby further reducing the pressure and friction on the lowermost signature. A controlling means cyclically releases the support to the portion of signatures permitting them to settle towards the bottom of the hopper.



3,650,526
APPARATUS FOR FEEDING PAPER BOOKLETS AND THE LIKE

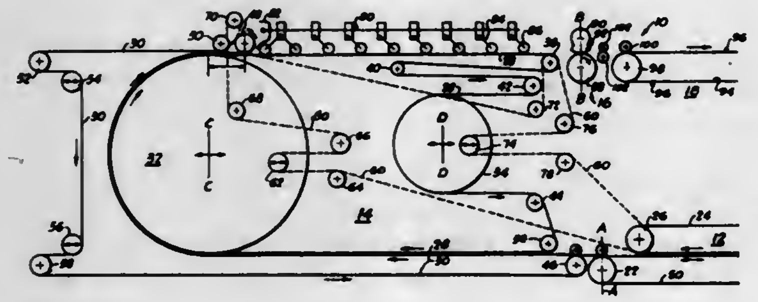
Herman J. Schultz, 1240 West Morse Ave., Chicago, Ill.
Filed Jan. 20, 1970, Ser. No. 884,643
Int. Cl. B65h *9/04, 9/10*
U.S. Cl. 271—48 **8 Claims**



Apparatus for transporting strips of material comprises longitudinal side frame members, a transporting assembly connected between the side frame members for forwardly transporting paper strips between the frame members and longitudinally therewith, and assemblies for aligning the strips transverse to and laterally with respect to the side frame members.

3,650,527
APPARATUS FOR FEEDING A BAND OF OVERLAPPED BLANKS TO A SEPARATOR

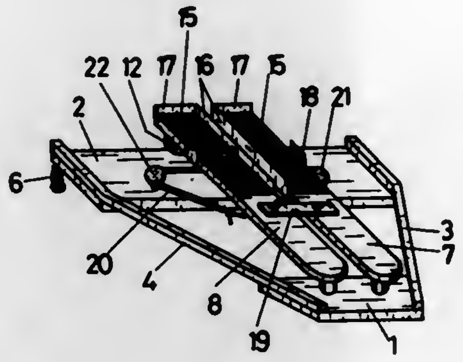
Herbert W. Helm, Hollidaysburg, Pa., assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.
Filed Mar. 16, 1970, Ser. No. 19,848
Int. Cl. B65h *29/12*
U.S. Cl. 271—76 **8 Claims**



In an envelope making machine a band of overlapped blanks is conveyed from an adhesive drier to a blank separator by a refeeder. The refeeder has pairs of inner and outer endless belts that are driven at the same speed with the outer belts overlying portions of the inner belts. The belts engage the band of overlapped blanks therebetween and convey the band from the drier to the separator. is positioned beneath an idler roll carriage that has an end release roll adjacent the separator. The separator includes pull-out rollers with a radially extending pull-out segment on one roller that engages the front or leading edge of the blank and accelerates the front blank to separate it from the band of overlapped blanks and feed it in timed relation to the subsequent elements of the envelope forming apparatus. When the length of the blank changes or when the dimension of the conveyors in the drier and refeeder increase with increased operating temperatures of the machine, an adjustment is required in the phasing or timing of the blanks delivered to the separator so that the pull-out segment continues to engage the front leading edge of the blank. The disclosed refeeder adjusts the timing of the blanks by changing the effective length of the refeeder conveyor and thus the distance that the band of overlapped blanks travels from the drier to the separator. The length of the refeeder conveyor is changed by moving two reference frames or drums relative to each other. Movement of one reference drum changes the effective length of the path followed by the blanks and movement of the other reference drum changes the effective length of the inner belts. The outer belts have spring loaded take-up idlers that proportionately adjust the effective length of the outer belts to conform to that of the inner belts. An endless chain drive mechanism for the inner and outer belts is connected to the pair of reference drums so that the effective length of the chain is adjusted with the reference drums. The pitch diameter of the belt drive pulleys and belt drive sprockets is substantially the same so that the chain velocity remains constant and the phase relation of the chain drive changes with the endless belts.

3,650,528
SKI-TRAINING DEVICE

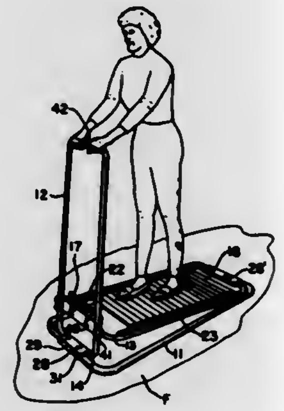
Hans Natterer, 6020 Innsbruck, Austria
Filed Dec. 4, 1969, Ser. No. 882,047
Claims priority, application Austria, Dec. 5, 1968, A 11840/68
Int. Cl. A63b *69/18*
U.S. Cl. 272—57 B **10 Claims**



A ski-training device is formed with a base, a pair of ski-like boards pivotally mounted by their front ends on a vertical axis in the front zone of the base and at least one flexible, resilient traction element acting upon the middle zone of the boards over at least two guide rollers rotatably mounted in vertical axes in the rear zone of the base. In use of the device to obtain a realistic feel of movement and forces experienced in technique of skiing, the ski-like boards rotate parallel to one another out of a basic position and are biased for return thereto by spring action.

3,650,529
TREADMILL EXERCISING DEVICE

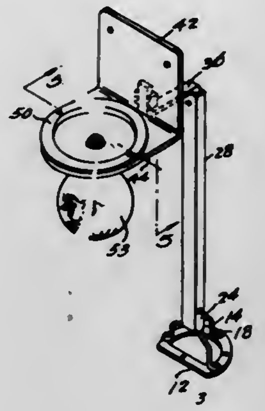
Vincent A. Salm, 3103 Arcadia Terr., Rockford, Ill., and Daniel B. Carter, Rockford, Ill., assignors to said Salm, by said Carter
Filed Mar. 2, 1970, Ser. No. 15,605
Int. Cl. A63b *23/06*
U.S. Cl. 272—69 **8 Claims**



This exercising device is of the treadmill type and comprises three rectangular tubular frames, namely, an open base frame that rests flat on the floor in its operative position, an open handle frame pivotally connected at one end to one end of the base frame and extending upwardly relative to the latter in its operative position, and a roller carrying frame pivotally connected at one end to one end of the base frame inside the same and detachably connectable at its free end in its operative position in either of two height settings relative to the handle frame, rollers on the roller carrying frame extending below the bottom surface thereof and adapted in the horizontal position of said roller carrying frame to provide rolling support to said exercising device in its folded condition, in which the handle frame can be raised and used in pushing or pulling the folded device about on the floor.

3,650,530
HEIGHT ADJUSTABLE BASKETBALL HOOP AND PUNCHING RACK

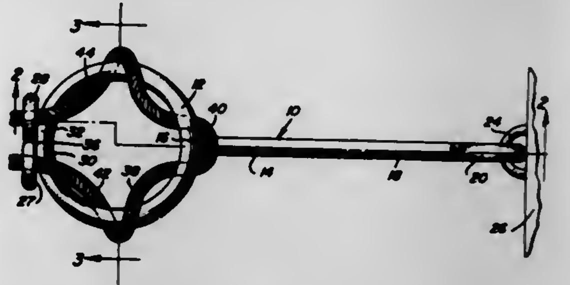
Emmett J. Gantz, 1007 South 14th St., Burlington, Iowa
Filed Apr. 11, 1969, Ser. No. 815,324
Int. Cl. A63b *63/04, 69/22*
U.S. Cl. 272—78 **3 Claims**



A device comprising a telescoping standard adjustable as to height. A combination basketball hoop and backboard is secured to the top of said standard. The hoop presents in plan an annular surface. A punching bag rebound board fits within said loop and has an annular flange overlying said hoop and secured thereto. A hood is provided to receive a basketball. Said hood carries a loop to secure the hood and ball to said board.

3,650,531
FRICTION RESISTANCE EXERCISER

David I. Pridham, 8410 Diane Ct., Gilroy, Calif.
Filed Mar. 13, 1970, Ser. No. 19,430
Int. Cl. A63b *21/00*
U.S. Cl. 272—79 A **5 Claims**

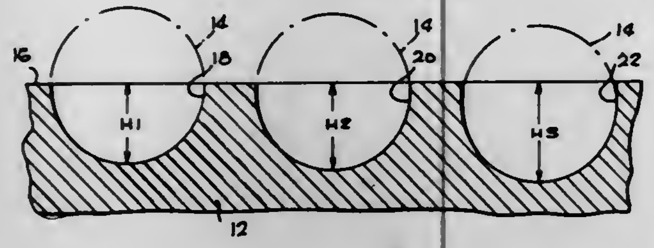


An exercise device for anchoring to a suitable support and including a ring provided with an outwardly projecting binding post portion at one point along its circumference and a pair of at least slightly circumferentially spaced guides disposed generally diametrically opposite the post portion. A length of flexible rope is provided with its mid-portion passed about the post portion and the opposite end portions thereof each spiraled at least once about the connecting portions of the ring extending in opposite directions from the post portion to the guides and then through the guides. The rope may be longitudinally shifted relative to the guides, the connecting ring portions and the post portion by pulling on either free end of the rope and a greater pull on the rope is resisted by greater frictional resistance to the rope being longitudinally shifted relative to the post portion, connecting portions and guides.

3,650,532
SKILL GAME

William J. Dederich, and Howard S. Scar, both of Los Angeles, Calif., assignors to Synanon Foundation, Inc., Santa Monica, Calif.
Filed June 13, 1969, Ser. No. 832,942
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **2 Claims**

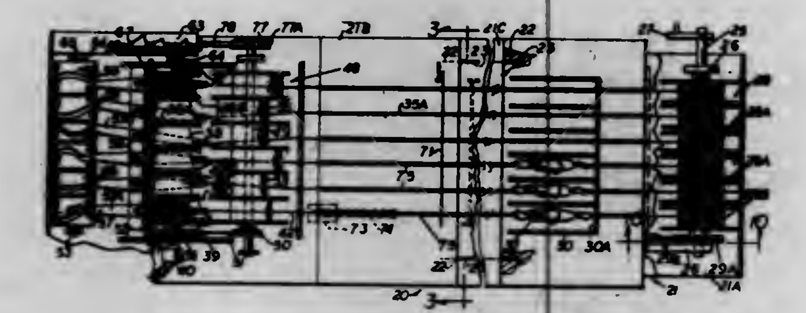
Skill game comprising a base and a ball. Base has a recess which accepts the ball, the diameter of the recess being larger than the ball to prevent binding and close to the same diameter to permit manual grasp on the ball only to the extent the ball extends from the recess. The recess has a depth greater than the ball radius and less than the ball diameter



and is of such depth to permit a sufficient amount of the ball to extend above the base to permit manual removal with difficulty of the ball from the recess. Plurality of recesses of different depths may be located in a single base or separate similar bases.

3,650,533
RACE GAME WITH RANDOMLY DRIVEN REEL DRIVE MEANS

Aladar Heppes, 34 Great Hill Road, Ridgefield, Conn.
Filed Aug. 17, 1970, Ser. No. 64,464
Int. Cl. A63f *9/14*
U.S. Cl. 273—86 G **19 Claims**

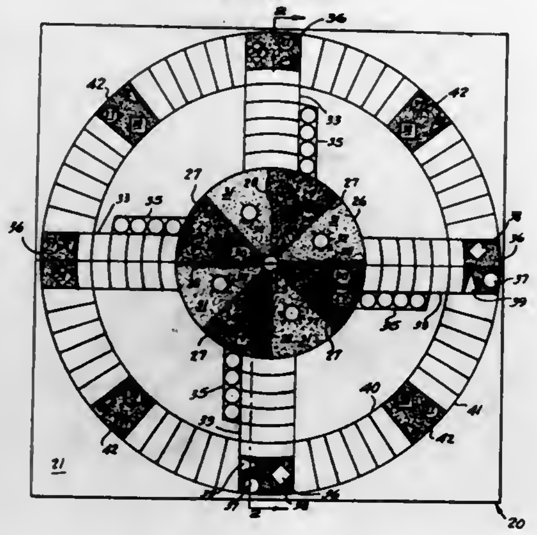


A racing game or amusement device in which racing figures are moved at varying rates of speed so that the arrival of a racing figure at a finish line is rendered completely unpredictable, and wherein the figures can be readily reset at a starting line in position to run another race with completely different results. The device comprises a simulated race track with a plurality of racing figures mounted for movement along the track. Each figure is independently moved in a manner to advance along the track by means of cords arranged to be simultaneously wound and unwound about complementary winding and rewinding reels located at the opposite ends of the track. The arrangement is such that the winding rate of each cord about its winding reel differs from that of the other cords; the several winding rates being completely unpredictable, so that the movement of the respective racing figures varies and the winning figure can not be determined in advance. The track includes a starting section, a finishing section, and one or more intermediate sections which can be interconnected between the starting and finishing sections.

3,650,534
BOARD GAME APPARATUS

Frank W. Collett, Box 943, Fort Pierce, Fla.
Filed Apr. 10, 1970, Ser. No. 27,344
Int. Cl. A63f *3/02*
U.S. Cl. 273—134 AE **6 Claims**

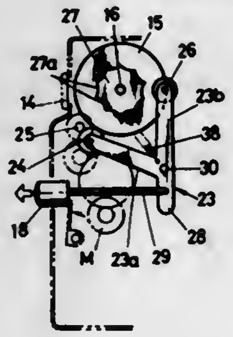
A game apparatus for simulating rocket travel including blastoff and splashdown and including a board having an orbit path around which the playing pieces may travel a variable number of times a determined by chance. A playing piece having three different attitudes, with a base for each attitude having a special shape, is provided carrying magnetically attached markers and is moved about the game board which has separate sockets each shaped to accept one of the



special shape bases of the game piece in one of its several attitudes. Dice are used to provide the element of chance in the game.

3,650,535
MOTOR DRIVEN ROTATABLE DRUM CHANCE DEVICE

Haruo Ohki, No. 2-10, 2-chome Shiratori, Katsushika-ku, Tokyo, Japan
Filed July 8, 1970, Ser. No. 53,245
Claims priority, application Japan, Oct. 13, 1969, 44/96716
Int. Cl. A63f *5/04*
U.S. Cl. 273—143 R **2 Claims**



An amusement device is disclosed which essentially comprises a plurality of display drums each provided on its peripheral surface at circumferentially spaced positions with combinations of symbols, a pushbutton arrangement for stopping rotation of the drums successively so as to pair or match the symbols on one drum with those on another and a handle lever for releasing the depressed pushbuttons.

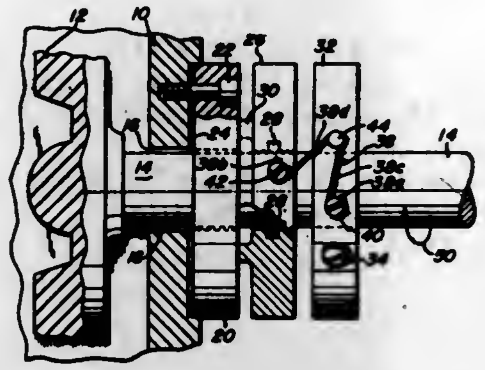
ERRATA

For Classes 274—4 and 274—10 see:
Patent Nos. 3,650,413 and 3,650,539

3,650,536
ROTARY SHAFT SEAL STRUCTURE

Robert M. Shields, 4609 Carlyle Cir., Kettering, Ohio
Filed Apr. 9, 1970, Ser. No. 26,868
Int. Cl. F16j *15/34*
U.S. Cl. 277—93 **13 Claims**

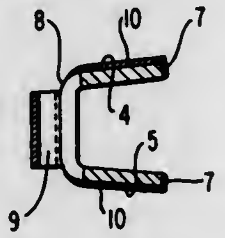
Rotary shaft seal structure for sealing between a rotary shaft and a housing from which the shaft extends, the housing containing fluid. A stationary sealing member is carried by the housing and encompasses the shaft. A rotary sealing member is carried by the shaft and engages the stationary member. A drive member is secured to the shaft for rotation therewith. A control member joins the rotary sealing member



to the drive member and applies a resultant force to the rotary sealing member which force is not parallel to the axis of rotation of the shaft. Thus, any movement of the rotary member with respect to the stationary member is both rotational and axial.

3,650,537
OIL RING OF ONE PIECE TYPE

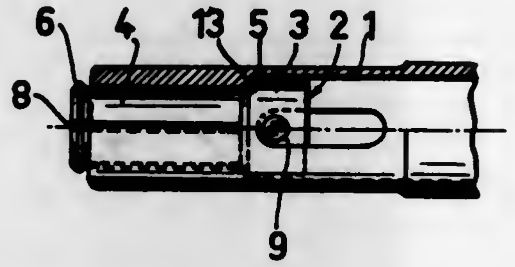
Eisuke Sugahara, Tokyo, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan
Filed Oct. 28, 1970, Ser. No. 84,696
Int. Cl. F16j *9/20*
U.S. Cl. 277—160 **4 Claims**



An oil ring of the one piece type has a chrome plated outer edge periphery, its upper and lower sides are inclined radially outwardly, and an expander is attached to the back thereof having resiliency in the radial direction.

3,650,538
ARRANGEMENT AT FEED COLLET

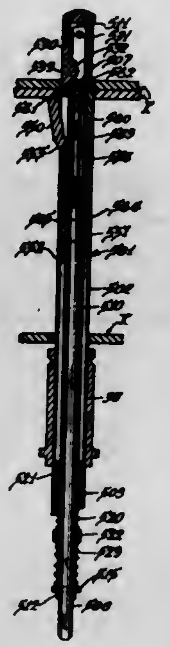
Karl Henning Svensson, 69 Stamgatan, Alvsjo, Sweden
Filed Oct. 29, 1969, Ser. No. 872,101
Claims priority, application Sweden, Oct. 31, 1968, 14761/68
Int. Cl. B23b *31/12*
U.S. Cl. 279—51 **6 Claims**



In a feed collet for use in automatic machines the arrangement of a sleeve to prevent scratches in the material to be worked and rendering it possible to use one and the same feed collet for several material dimensions.

3,650,539
RECORD CHANGER

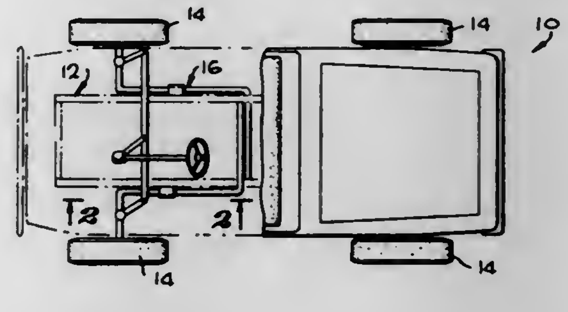
Philip Vazzano, Des Plaines, Ill., assignor to Warwick Electronics Inc.
Filed Jan. 15, 1970, Ser. No. 3,037
Int. Cl. G11b *17/04*
U.S. Cl. 274—10 S **4 Claims**



A record changer having mechanism associated with the center spindle thereof for detecting the absence of records in a record stack on the spindle for operating the record changer in a last record shut-off cycle, with the stack detecting mechanism not being sensitive to the weight of a record or records in the record stack. The spindle carries a sensing member movable outwardly of the spindle body for detecting record presence and controls the extent of elevation of an actuating pin, dependent upon the presence or absence of a record, with the particular elevation being used as a signal to control the subsequent operation of the record changer. The spindle is manually operable from the upper end thereof to discharge records of the stack to the turntable when the record changer is not in use.

3,650,540
VEHICLE SUSPENSION SYSTEM

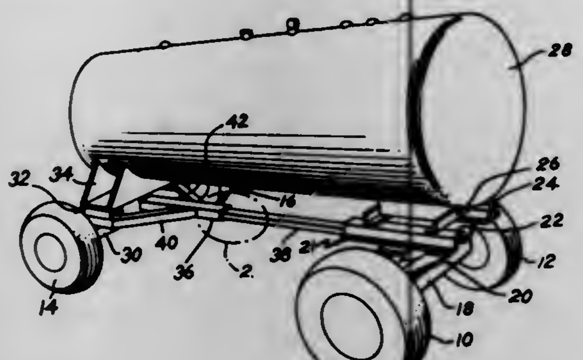
Donald J. Verley, 444 Sunnycrest Drive, Los Angeles, Calif.
Filed Feb. 6, 1970, Ser. No. 9,193
Int. Cl. B60g *11/18*
U.S. Cl. 280—124 B **9 Claims**



A wheel suspension system for vehicles, particularly relatively light-weight low-speed vehicles such as golf carts, industrial utility vehicles, and the like. The suspension system includes a suspension arm for each wheel extending longitudinally of and pivotally mounted at one end on the vehicle frame for vertical swinging movement of the wheel and arm about a transverse axis of the frame, and a spring for yieldably resisting upward and downward rotation of the arm relative to the frame. A primary feature of the invention resides in a restraining device which acts between the frame and each wheel suspension arm to yieldably resist, cushion, and damp deflection of the arm laterally of the frame during cornering and under other driving conditions that impose a lateral deflection load on the arm. In the disclosed inventive embodiment, each wheel suspension arm is furnished by a one-piece metal rod whose ends are bent laterally to form a wheel support and a torsion spring bar on the arm.

3,650,541
FLEXIBLE REACH

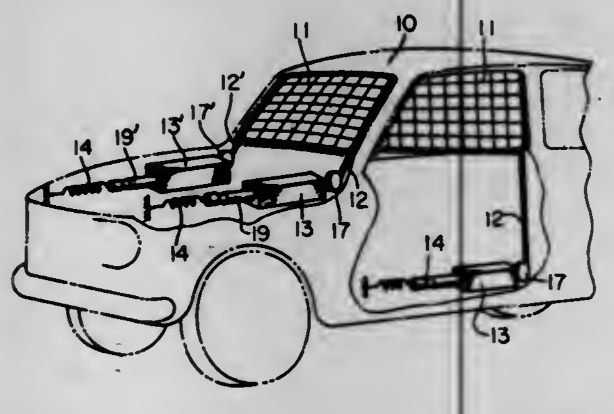
Elmo R. Meiners, Anchor, Ill., and John O. Bradford, Gibson City, Ill., assignors to said Meiners, by said Bradford
Filed Mar. 5, 1970, Ser. No. 16,813
Int. Cl. B62d *9/00*
U.S. Cl. 280—140 **3 Claims**



An improved flexible reach for attaching the front and rear wheels of a farm wagon or the like includes an outer channel member connected with the rear pair of wheels and an inner channel member connected with the front pair of wheels. The channel members are longitudinally slidable one within the other and have a rectangular cross section. A pin fastens the channel members together to provide a desired wheel base for the farm wagon.

3,650,542
MOTOR VEHICLE SAFETY DEVICE

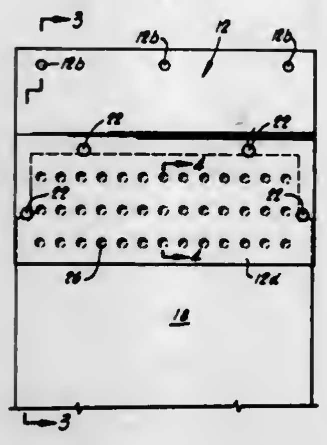
Akira Shimano, Yokohama; Shin Maki, Tokyo; Katsuzi Ohyama, Yokohama, and Hiromichi Ochiyama, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan
Filed July 18, 1969, Ser. No. 843,067
Claims priority, application Japan, July 22, 1968, 43/62051; Apr. 22, 1969, 44/30738
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 B **13 Claims**



A motor vehicle safety device to avoid whip-lash injuries of the vehicle occupants. The device has a stored netting which is automatically positioned in front of the occupants by trigger mechanism responsive to deceleration of a given magnitude of the motor vehicle. The netting is constructed to hold the occupant's head firmly without injury to the neck of the occupant and preclude the head from reverse or backward movement.

3,650,543
MUD FLAP STRUCTURE

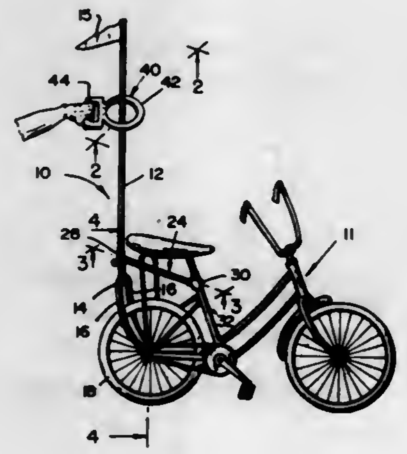
James P. Evans, Oklahoma City, Okla., assignor to Polly E. Trindle and Mary Kathryn, both of Oklahoma City, Okla., part interest to each
Filed May 13, 1970, Ser. No. 36,941
Int. Cl. B62d *25/16*
U.S. Cl. 280—154.5 **9 Claims**



A mud flap structure which includes a first bent plate having a downwardly depending skirt, a second bent plate pivotally connected to the first plate and having a downwardly depending skirt which is spaced from the downwardly depending skirt of the first plate and defines a flap receiving channel therewith. The downwardly depending skirt portions of the first and second plates carry cooperating holes and dimples which function to frictionally retain a flexible mud flap between the plates when the upper portion of the mud flap is passed into the channel between the plates are drawn toward each other by means of a plurality of bolts extended through the plates but not through the mud flap.

3,650,544
BICYCLE STABILIZER

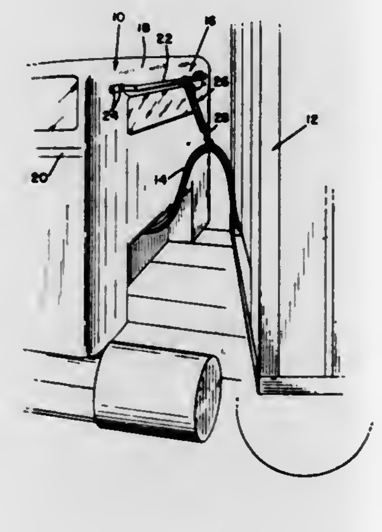
Arnold Cassell, 47 Princeton Ave., Hewlett, N.Y.
Filed June 30, 1970, Ser. No. 51,064
Int. Cl. B62h *7/00*
U.S. Cl. 280—293 **7 Claims**



The disclosure relates to a stabilizer attachment for a bicycle, and includes a clevis or furcated member positionable over a bicycle wheel and affixed to the wheel axle. A stabilizer mast projects upwardly from the clevis member and a ring-like loop member is adapted to be used in conjunction with the stabilizer mast. The loop member is preferably handheld in a circumscribing position with relation to the mast so that the periphery of the loop member is spaced from the mast and a person holding the loop member and moving alongside the bicycle can use the periphery of the loop member to engage the stabilizer mast when it is desired to prevent the bicycle, while in motion, from tipping over and to thereby restore the cyclist's balance. In an alternate embodiment the stabilizer mast is provided at one end with a rotatably mounted loop member. A suspended cable is passed through the loop member so that the periphery of the loop member will engage the cable when the bicycle tends to tip over and will thus stabilize the bicycle as it moves along a path parallel to the cable.

3,650,545
HOSE SUPPORT AND GUIDE

William E. Freed, Box 97, Jonesville, N.C.
Filed Mar. 9, 1970, Ser. No. 17,610
Int. Cl. B60d *1/08*
U.S. Cl. 280—421 **4 Claims**



A slide bar is positioned upon a first vehicle component for supporting and guiding flexible lines extending between interconnected vehicle components. A flexible, resilient member interconnects the slide bar and a member which grips the flexible lines for permitting displacement of the gripping member and the resilient member laterally of the first vehicle.

3,650,546
TRAILER HITCH

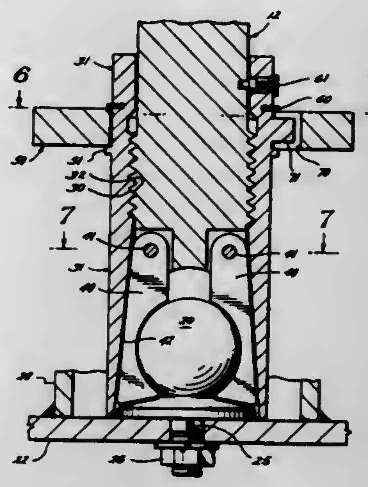
Alvin D. Koenig, Route 1, Box 1645, Smithfield, Tex.
Filed July 22, 1970, Ser. No. 57,040
Int. Cl. B62d *53/00;* **B60d** *1/06*
U.S. Cl. 280—423 **6 Claims**

A trailer hitch connecting a trailer vehicle to a tractor vehicle comprising a pick up truck, the trailer vehicle having a draw bar extending over the tail gate of the truck and turned downwardly at its front end for attachment to the truck.

The invention includes an upstanding ball hitching element mounted on the frame of the truck, below the floor, and companion hitching means on the draw bar, as hereinafter described, extending through a hole in the floor for engagement with the ball.

The downwardly turned front end portion of the draw bar is round in transverse section and has a pair of diametrically opposed dogs pivotally connected to its lower end and depending therefrom for overlying engagement with opposite sides of the ball, to secure the ball between them.

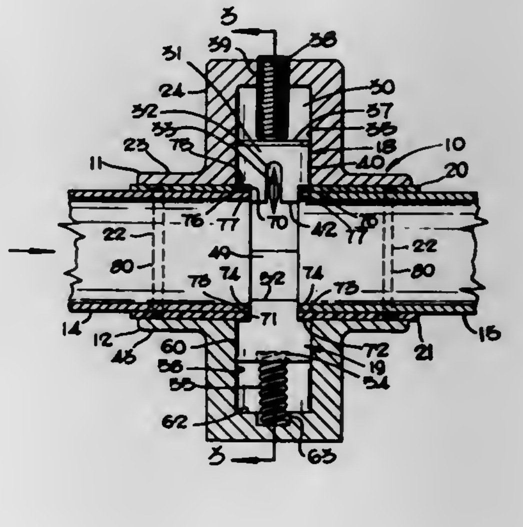
A cylindrical member surrounds the lower end of the draw bar, to which it is connected by threads, and extends downwardly therefrom, around the dogs. The cylindrical member has its interior surface tapered downwardly and radially outwardly adjacent its lower end for overlying engagement with the opposing outer surfaces of the dogs, to squeeze them radially inwardly in clamping engagement with the ball, in the lowermost position of the cylindrical member relative to the draw bar.



The invention further includes handle means on the cylindrical member for turning it on its threads to thereby adjust it longitudinally relative to the draw bar. The handle means consists of a hand wheel loosely encircling the cylindrical member and adjustable circumferentially relative thereto. The hand wheel and the cylindrical member have mutually opposing means for abutting engagement with each other to limit circumferential adjustment of the hand wheel relative to the cylindrical member within fixed predetermined limits.

3,650,547
PIPE FITTING

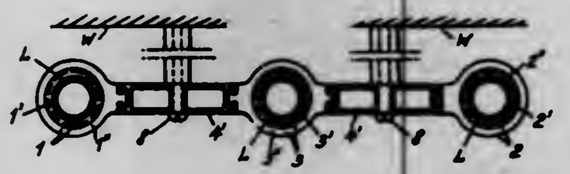
Edward F. Tickett, El Paso, Tex., assignor to Alex B. Reynolds, St. Louis, Mo.
Continuation-in-part of application Ser. No. 864,739, Oct. 8, 1969, now abandoned , Continuation-in-part of application Ser. No. 54,398, July 13, 1970. This application Mar. 5, 1971, Ser. No. 121,439
Int. Cl. F16l *21/02, 21/06*
U.S. Cl. 285—3 **7 Claims**



This pipe fitting is formed from a pair of coupling halves which are fastened together about a continuous pipe. One of the coupling halves includes a built-in cutter assembly capable of severing the pipe into sections which are subsequently coupled together by the coupling halves. The other coupling half includes a built-in spacer assembly providing an insulated spacer block which is inserted between the ends of the separated pipe sections. The pipe sections are electrically insulated from each other by the spacer block and by insulated pipe liners carried by the coupling halves to facilitate cathodic protection. Continuous seals between the coupling halves preclude the escape of fluid from the separated pipe sections.

3,650,548
PIPE-SPACING DEVICE FOR USE IN MAKING WALL-BATTERIES OF COLD-WATER AND HOT-WATER PIPING CONNECTIONS

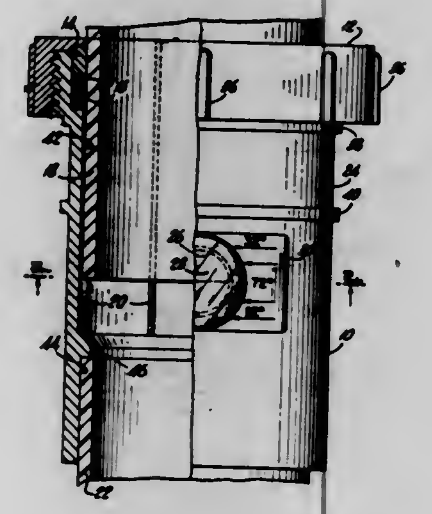
Walter Hussauf, 8497 Fischenthal, Kt. Zurich, Switzerland
Filed Dec. 12, 1969, Ser. No. 884,415
Claims priority, application Switzerland, Aug. 22, 1969, 12669/69
Int. Cl. F16l *39/00*
U.S. Cl. 285—3 **7 Claims**



A pipe-spacing device, comprises a sleeve of nonmetallic (synthetic-resin) material in which a metallic sleeve is embedded to receive the ends of a pair of pipes. The outer synthetic-material sleeve is formed with a T-profile axially extending formation receivable in a channel extending along a side of a generally rectangular spacer element provided with at least two such channels and with means enabling the device to be affixed to a support. The channels have overhanging ledges.

3,650,549
DRAIN, WASTE AND VENT EXPANSION JOINT

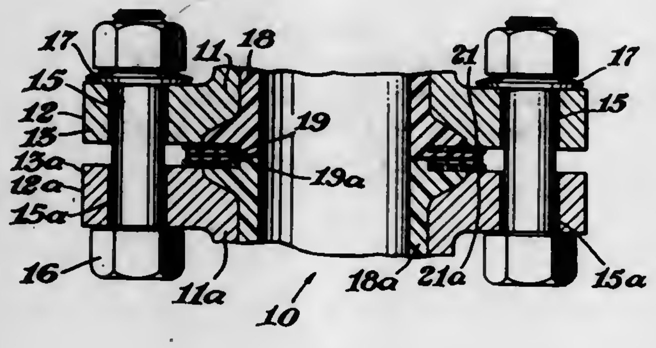
Kenneth V. Pepper, Davison, Mich., assignor to Esso Research and Engineering Company
Filed June 18, 1970, Ser. No. 47,340
Int. Cl. F16l *47/02*
U.S. Cl. 285—27 **1 Claim**



A drain, waste and vent pipe expansion joint or connector for use with plastic pipe is provided with (1) a thermal guide for proper positioning of a mating pipe at installation temperature to allow for linear expansion or contraction of the pipe, (2) a transparent window for visual inspection of the completed assembly, and (3) a positive means for sealing the connection so as to prevent leakage of gas or liquid wastes.

3,650,550
LINED CONDUIT

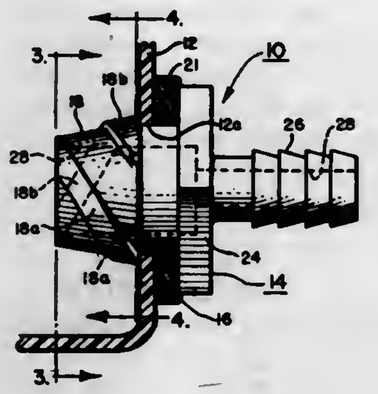
Walter H. West, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Aug. 13, 1970, Ser. No. 63,548
Int. Cl. F16l *13/00*
U.S. Cl. 285—55 **7 Claims**



In lined conduit having flanged connections, improved joints are obtained when a multiple recessed rigid support is employed underneath the molded raised face of the flange of the plastic liner. Substantially improved joints are obtained under conditions wherein the plastic lining is subject to cold flow.

3,650,551
SELF-SEALING TANK CONNECTOR

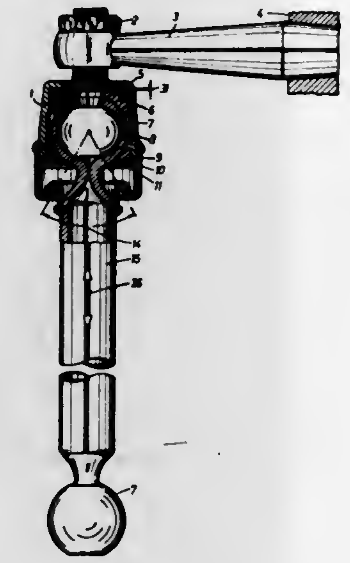
Edward G. Akers, Raytown, Mo., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Feb. 8, 1971, Ser. No. 113,530
Int. Cl. F16l *3/04*
U.S. Cl. 285—158 **8 Claims**



A fitting having a tapered threaded section, formed by flat-topped threads gradually increasing in height, permits the fitting to be screwed into and permanently retained in an aperture in a wall of a semi-rigid tank. As the threaded section is screwed into the aperture the tank wall distorts increasingly and is then led into an annular relief section, following the threaded section, to captivate the fitting against axial movement. The connector also includes a resilient gasket lying in and encompassing the relief section on the outside of the tank. The gasket is held between, and is compressed by, the tank wall and a flange section of the fitting to provide a fluid-tight seal.

3,650,552
BALL JOINT, ESPECIALLY FOR THE STEERING LINKAGE OF MOTOR VEHICLES

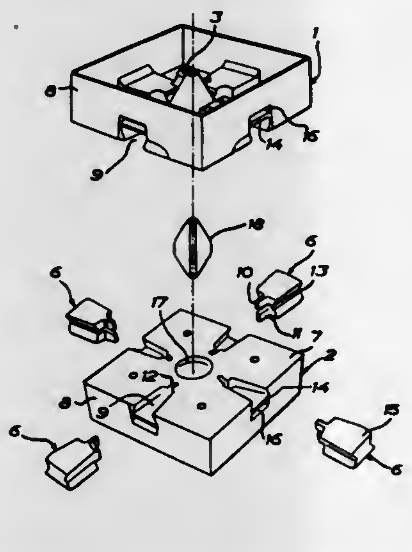
Leopold F. Schmid, Pischekstrasse 49, 7000 Stuttgard-O, Germany
Filed Mar. 31, 1970, Ser. No. 24,111
Claims priority, application Germany, Apr. 1, 1969, P 19 16 579.8
Int. Cl. F16c *11/06*
U.S. Cl. 287—90 RJ **3 Claims**



A ball joint, especially for the steering linkage of motor vehicles, in which the ball head is journaled in ball socket means provided with annularly arranged spring elements of different spring characteristics which spring elements are adapted under increasing load successively to abut a portion of the ball joint housing so that successively the spring elements of different spring characteristic become effective.

3,650,553
PILE CONNECTING DEVICES

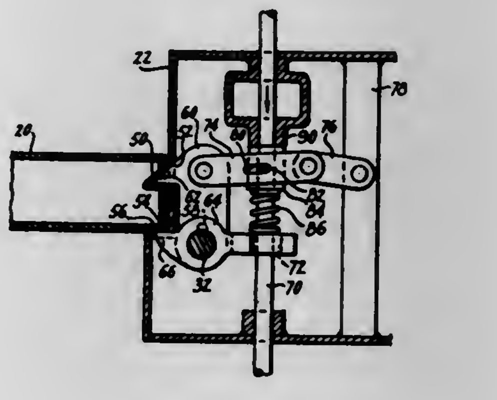
Elof Algot Wennstrom, Orebro, Sweden, assignor to AB Jarnforadling, Halleforsnas, Sweden
Filed Mar. 30, 1970, Ser. No. 23,840
Claims priority, application Sweden, Mar. 28, 1969, 4366/69
Int. Cl. F16b *7/00*
U.S. Cl. 287—130 **7 Claims**



A pile connecting device comprises two plate-shaped members which are adapted for connection with the ends of two pile sections to be joined together and which in the connecting position snugly engage one another by means of planar surfaces. These planar surfaces are provided with registering grooves which extend inwardly from the edges of the plate members and are of dove-tailed cross section, the grooves accommodating locking wedges of double dove-tail configuration in cross section. At their inner ends the wedges have projections which shall cooperate with curved recesses at the inner ends of the grooves. As a result, the wedges when driven into the grooves will be reliably anchored to the plate-shaped members.

3,650,554
TAMPER PROOF LOCKING MECHANISM

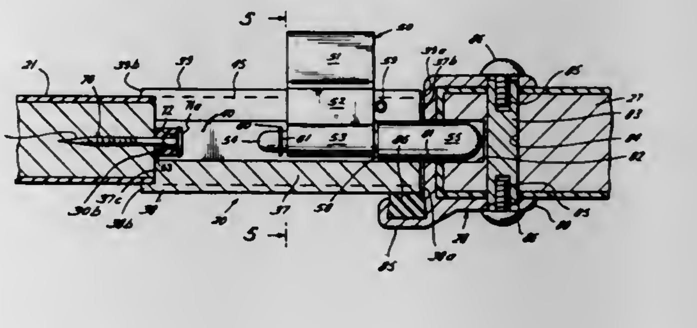
Emery C. Tharp, 430 Powell St., Indianapolis, Ind.
Filed Dec. 9, 1970, Ser. No. 96,548
Int. Cl. E05c *19/10*
U.S. Cl. 292—127 **4 Claims**



A push-pull shaft having an end of each of two links mounted thereon and separated from each other by a spring, the other end of one of the links being pivotally attached to a door latch, the other end of the door latch being keyed to a rotatable shaft, and the other end of the other link forming a latch return dog that kicks open the door when the push-pull shaft is moved to remove the door latch from the recess of the door and press the spring against the link or latch return dog which is rotatably mounted on the rotatable shaft.

3,650,555
DOOR LATCH WITH A CONCEALED SELF-SECURING ARRANGEMENT

Ralph B. Mott, Sr.; Ralph B. Mott, Jr., and Richard C. Cantella, all of Houston, Tex., assignors to Reserv-A-Roll Co.
Filed Nov. 3, 1970, Ser. No. 86,511
Int. Cl. E05c *1/04;* **E05b** *9/08*
U.S. Cl. 292—145 **7 Claims**



A door latch with a self-securing arrangement securing the latch to a hinged door to inhibit removal or destruction of the latch and to deter vandalism.

3,650,556

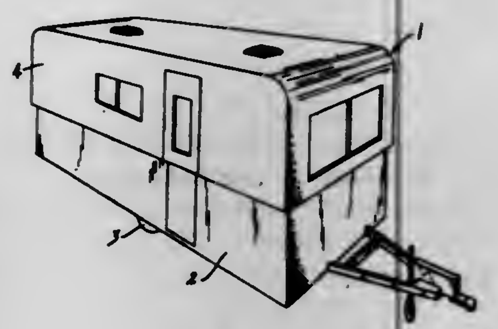
FOLDING SCREEN FOR TELESCOPIC TRAILER

John W. Ratcliff, Marengo, Ill., assignor to Ratcliff Industries, Inc., Marengo, Ill.

Filed Aug. 28, 1970, Ser. No. 67,748

Int. Cl. B60p *3/32*

U.S. Cl. 296—23 C **7 Claims**



This invention relates to a collapsible trailer partition for use in a telescopic travel trailer in which an upper trailer section is disposed to telescope vertically with respect to a lower trailer section from a retracted lower position to an extended upper position. The upper trailer section is lowered to the retracted position for transporting and raised to the extended position for camping. A collapsible partition formed of multiple hinged panels is attached to the upper trailer section. A magnetic latch connects the lower portion of the collapsible partition to the lower trailer section to releasably secure the partition to the lower trailer section when the trailer is in extended upper position. The magnetic latch disengages to allow the partition to collapse in an accordion manner when the upper trailer section is lowered to the retracted position.

3,650,557

MOTOR VEHICLES

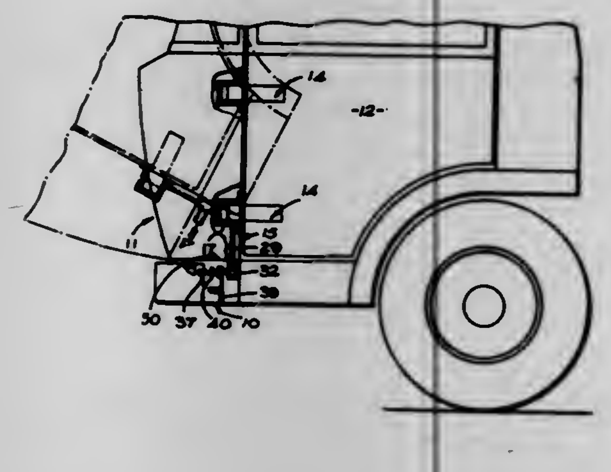
John T. Dudley, Brewood, England, assignor to GKN Sankey Limited, Bilston, Stafford, England

Filed Mar. 9, 1970, Ser. No. 17,853

Claims priority, application Great Britain, Mar. 11, 1969, 12,775/69

Int. Cl. B62d *33/06*

U.S. Cl. 296—28 C **6 Claims**



To prevent the doors of a tilting cab type vehicle swinging open inadvertently when the cab is in its tilted position, each door is provided with arrester means which are operative when the cab is tilted but disabled when the cab is in its normal position. The arrester means comprise a ratchet and pawl device, the pawl device being spring urged into engagement with the ratchet through the intermediary of a pivoted arm, the ratchet and pawl device and the arm being mounted on the cab adjacent to the respective door. An adjustable stop is mounted on the chassis of the vehicle and arranged to engage the arm when the cab is in its normal position so as to disengage the pawl from the ratchet. The ratchet may be afforded by a part secured to the door hinge, a part of the door hinge itself, or a check strap.

3,650,558

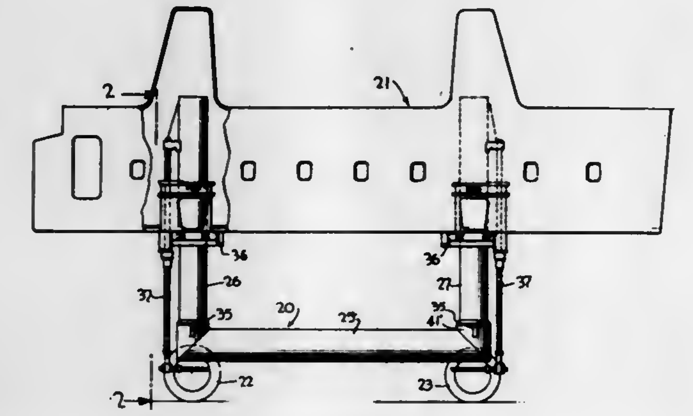
VEHICLE CHASSIS FRAME CONSTRUCTION

Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to Boothe Airside Systems, Inc.

Filed Dec. 31, 1969, Ser. No. 889,412

Int. Cl. B62d *31/02*

U.S. Cl. 296—28 A **10 Claims**



This application discloses a vehicle chassis frame construction which provides a strong rigid connection between a longitudinal frame member or beam and a vertical frame member or column which will resist the variously applied loads between the chassis traveling over uneven surfaces and a body or pod which is subject to heavy loading and which is located at various elevations relative to the chassis frame, specifically, the connection involving the angular tubular joint between a horizontal tubular member and a vertical tubular member.

3,650,559

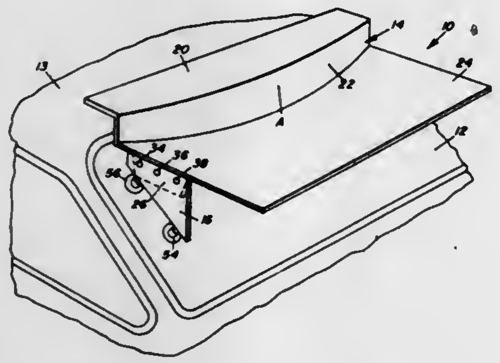
WEATHER DEFLECTOR FOR AUTOMOBILE WINDSHIELD

George A. Powers, Jacksonville, Fla., assignor to Rainshield, Inc., Jacksonville, Fla.

Filed Apr. 3, 1970, Ser. No. 25,370

Int. Cl. B60j *1/20*

U.S. Cl. 296—95 R **3 Claims**



A removable weather deflector for the windshield of an automobile, including a top member and two side members, is disclosed. The top member has an upper horizontal portion, an intermediate downwardly extending curved portion and a lower horizontal portion which acts as a visor to keep rain and snow off the windshield. The two side members are adjustably secured to the top member and can be secured directly to the windshield of the automobile to support the top member.

3,650,560

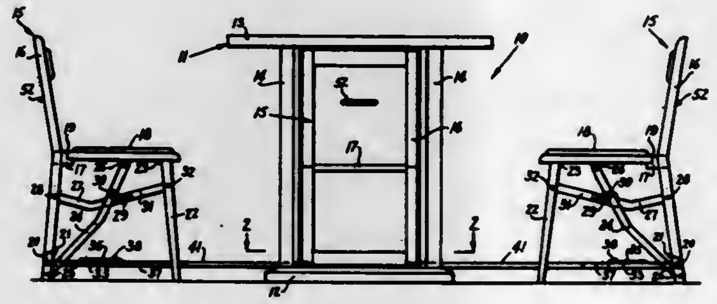
FOLDING CHAIR AND TABLE SET

Henning H. Wohlk, 1812 W. Pacific, Spokane, Wash.

Filed Feb. 5, 1970, Ser. No. 8,849

Int. Cl. A47c *15/00*

U.S. Cl. 297—140 **5 Claims**



A folding chair and table set in which the chairs individually fold for storage under the table. Each chair is individually attached to the table and can be moved about a central pivot for the comfort of the user. The folding of the chairs reduces the distance from the front legs to the back legs of the chair and in addition reduces the overall height of the chair to permit it to be stored under the table top without raising the top.

3,650,561

HEADREST

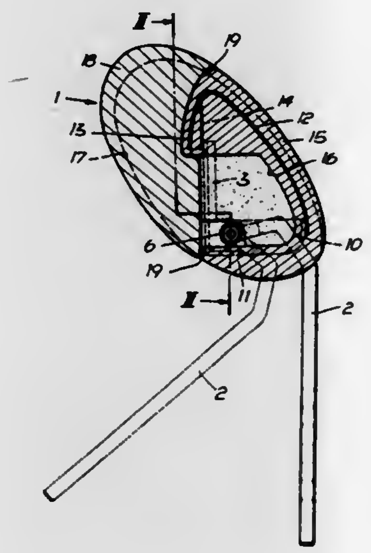
Eberhard O. Faust, Bernhausen, and Klaus Keith, Darmsheim, both of Germany, assignors to Recaro A.G., Glarus, Switzerland

Filed Aug. 22, 1969, Ser. No. 852,199

Claims priority, application Germany, Aug. 28, 1968, P 17 80 300.8

Int. Cl. A47c *1/10, 7/12;* **A61g** *15/00*

U.S. Cl. 297—391 **11 Claims**



A headrest for a seat of a motor vehicle which is especially designed for protecting the seat occupant and a person sitting behind him from injuries especially in accidents. It comprises two complementary parts of foam plastic which are connected to each other and one of which is soft and resilient and forms the part on which the seat occupant may rest his head or neck, while the second part is of a harder and tough composition with a smooth outer surface and has embedded therein a curved reinforcing plate of a solid but deformable material which is secured to an angle bracket which is pivotably connected at the inside of the second part to supporting rods which may be secured to the backrest of the seat.

3,650,562

FOLDING FOOTSTOOL

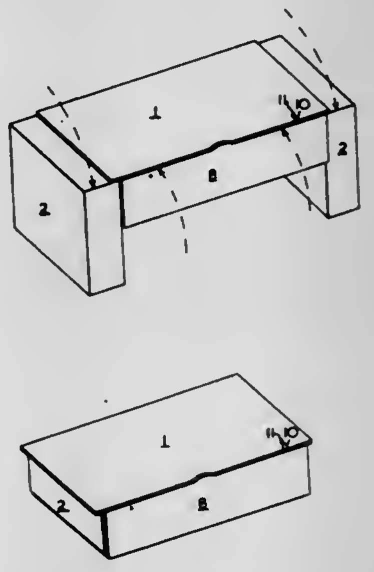
Louise Adler, 359 Clarke Ave., Montreal, Quebec, Canada

Filed July 7, 1970, Ser. No. 52,813

Claims priority, application Canada, Nov. 19, 1969, 067,860

Int. Cl. A47c *9/12, 4/02;* **A47b** *47/00*

U.S. Cl. 297—439 **4 Claims**



The invention relates to a folding footstool which, when in its operative position, has a main box-like structure forming a foot supporting portion with a pair of pedestals supporting the main structure. In its inoperative position, the hingeable panels forming the main structure, are adapted to embrace the pedestals so that a neat and compact box is provided for carrying purposes.

3,650,563

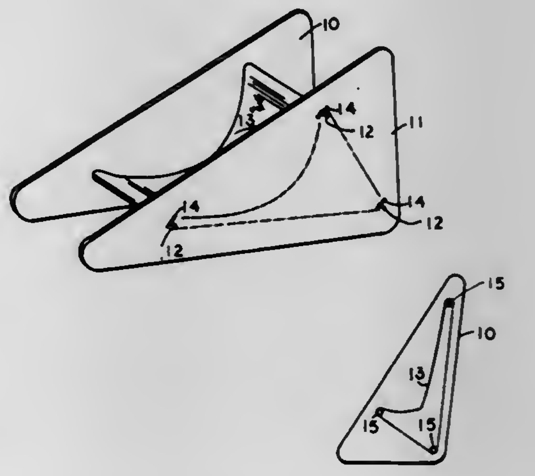
TAKE APART MULTIPLE POSITION CHAIR

Margaret S. Hansson, and Leonard S. Matejcic, both of Boulder, Colo., assignors to Gerico, Inc., Boulder, Colo.

Filed Mar. 2, 1970, Ser. No. 15,492

Int. Cl. A47c *4/12, 9/12*

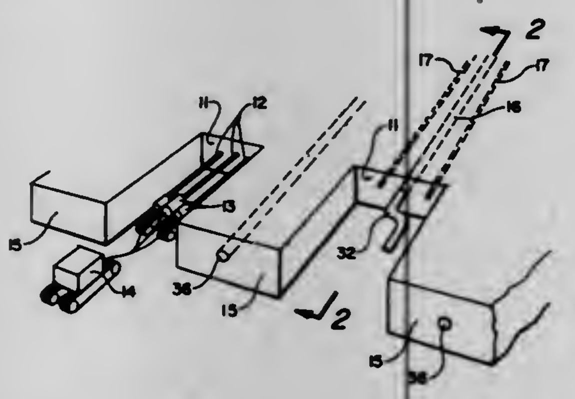
U.S. Cl. 297—441 **7 Claims**



A multiple position chair comprises a pair of rigid side walls of triangular or other configuration providing a plurality of stable resting positions and three or more dowels holding the walls in spaced relationship. A flexible band or belt of canvas or other suitably strong material is arranged about the dowels and provides a seat in two or more of the stable positions of the chair. One of the positions may have curved floor engaging edges to provide a rocking chair. The entire assembly may be taken apart readily by removal of locking pins in the ends of the dowels.

3,650,564
MINING METHOD FOR METHANE DRAINAGE AND ROCK CONDITIONING

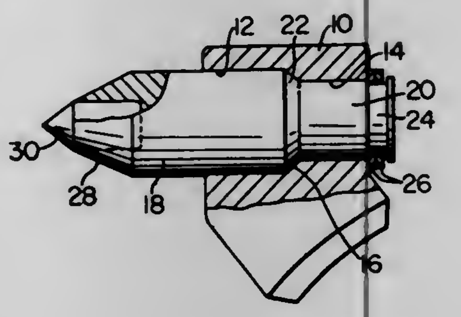
Thomas N. Williamson, San Mateo, Calif., assignor to Jacobs Associates, San Francisco, Calif., a part interest
Filed June 15, 1970, Ser. No. 46,270
Int. Cl. C06c *5/00;* **E21c** *27/20*
U.S. Cl. 299—11 **9 Claims**



Deep (long) parallel holes are drilled into a mine or tunnel face and explosive charges selectively exploded in some, but preferably not all, of such holes to fragment surrounding rock and join the holes. Methane migrates through the fractured formation to the hole which has not been exploded, or to a separately drilled drainage hole, and the unexploded or separate hole is first used to draw off explosive gases, where this is a problem. Then water is pumped through such hole or holes to saturate the formation to reduce dust suspension and also to cause additional gas migration. The fractured formation facilitates mechanical boring machines and reduces tool wear. The explosives are preferably provided at spaced intervals along a carrier tube with stiffeners to enable the tube to be pushed into the deep hole and with built-in electrical connections and stemming. The carrier for the explosives is preferably plastic and thus does not damage boring tools.

3,650,565
PICK TYPE MINING BIT AND SUPPORT BLOCK THEREFOR

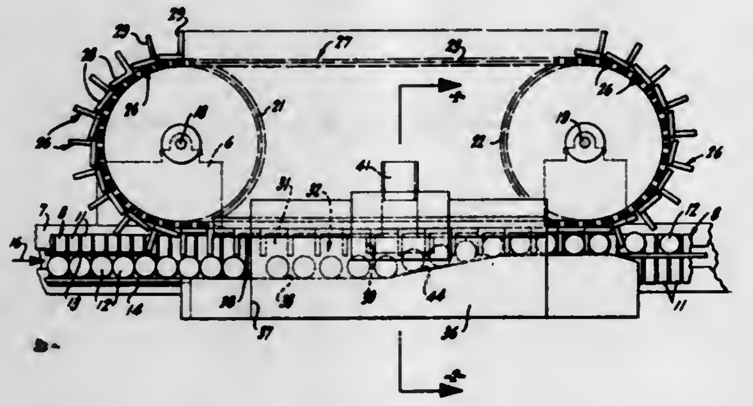
Thomas J. Kniff, Bedford, Pa., assignor to Kennametal Inc., Latrobe, Pa.
Filed May 4, 1970, Ser. No. 34,249
Int. Cl. E21c *35/18*
U.S. Cl. 299—86 **7 Claims**



The specification discloses a heavy duty pick type mining bit and a support block therefor in which the block has a bore completely therethrough with a shoulder intermediate the ends of the bore and the pick type tool or bit is shaped to conform to the bore in the block and to take a seat on the shoulder therein and is retained in the block by retaining rings on the small end of the pick outside the block.

3,650,566
MACHINE FOR ARRANGING CANS IN POSITION

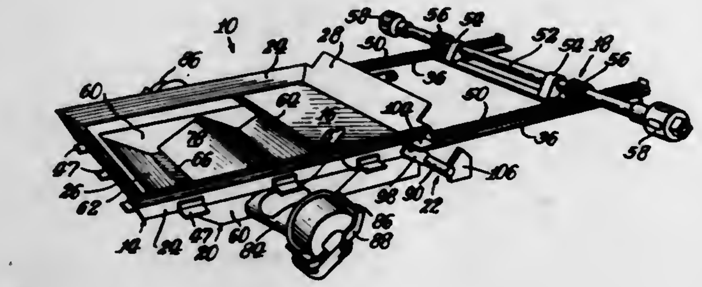
Richard G. Lee, Carmel Valley; Allen K. Schleicher, Carmel; Max L. Panzer, and John E. Brock, both of Pebble Beach, all of Calif., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Oct. 24, 1969, Ser. No. 869,026
Int. Cl. B60t *13/18*
U.S. Cl. 302—11 **11 Claims**



A machine for arranging cans or comparable objects in position has a first conveyor frictionally supporting round cans from the bottom. The first conveyor forms the bottom wall of a tunnel a side wall of which is a second, faster conveyor having partition walls extending partly across the tunnel and defining can receiving pockets. The tunnel is partly evacuated and air flows in through the tunnel portal. A can on the first conveyor, advancing at random, arrives at the portal and when opposite an advancing partition substantially blocks air ingress. Differential air pressure on the can accelerates the can toward the next advanced pocket. Movement of the accelerated can reduces air pressure and affects the air flow so as to tend to hold the can in registry with the pocket. As the can advances, it is also moved laterally into the pocket by transverse air flow or by a converging tunnel wall or both. The pocketed can emerges from the tunnel to the atmosphere in an appropriate position.

3,650,567
HOPPER OUTLET ASSEMBLY

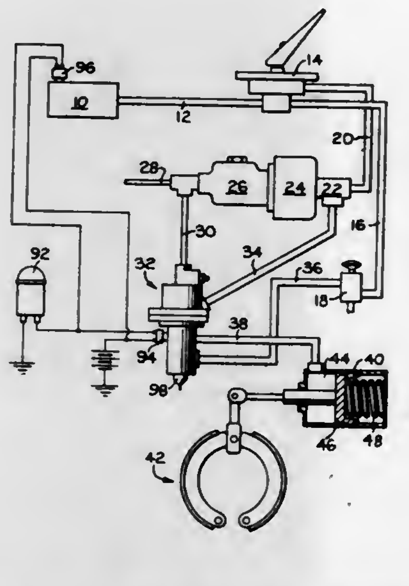
Worrel M. Danielson, Clawson, Mich., assignor to Miner Enterprises, Inc., Chicago, Ill.
Filed Nov. 14, 1969, Ser. No. 876,676
Int. Cl. B65g *53/40*
U.S. Cl. 302—52 **1 Claim**



A hopper outlet assembly with a frame defining a discharge opening, a slidable gate, a slidable plenum chamber, and control latch means carried by the plenum chamber. The control latch means is selectively engageable either with the frame for holding the plenum chamber across the discharge opening or with the gate whereby conjoint movement of the gate and plenum chamber may be effected.

3,650,568
AIR-OVER HYDRAULIC BRAKE SYSTEM

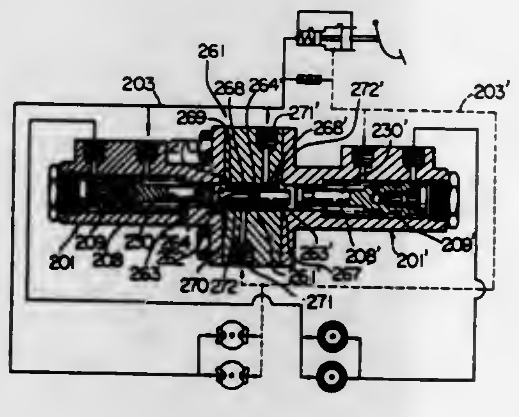
Eugene M. Poplawski, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 29, 1970, Ser. No. 32,812
Int. Cl. B60t *13/22*
U.S. Cl. 303—2 **6 Claims**



A vehicle having pressure actuated service brakes and a pressure releasable emergency brake system is provided with interrelated controls such that the emergency brake is automatically actuated by the service brake controls when a failure occurs in the service brake system.

3,650,569
BRAKE REGULATOR FOR AUTOMOTIVE VEHICLE

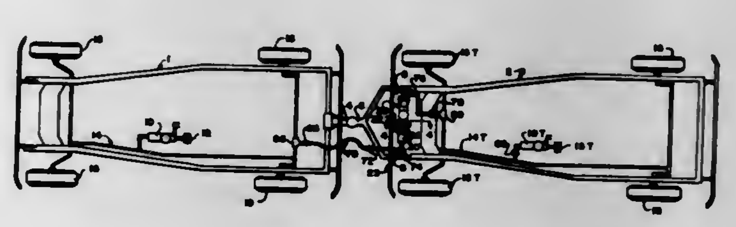
Tsuneo Kawabe; Hirotaka Miyake; Shinji Kawai, and Masasi Ban, all of Kariya City, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi Pref., Japan
Filed July 1, 1969, Ser. No. 838,123
Claims priority, application Japan, July 5, 1968, 43/46484; Aug. 20, 1968, 43/59457
Int. Cl. B60t *8/26, 11/34, 17/18*
U.S. Cl. 303—6 **5 Claims**



A pressure control valve for motor-vehicle fluid brake system having a control means responsive to an accidentally decreased fluid pressure to change a restoring force of the valve device which is normally responsive to a predetermined fluid pressure force whereby accidentally decreased braking force caused by breakage of another brake system can be supplemented by an application of an additional force to the brake pedal.

3,650,570
HYDRAULICALLY ACTUATED BRAKING SYSTEM FOR UNITARY CONTROL OF DRIVEN AND TOWED VEHICLES

Walter Melvin Meeks, Henrietta, Tex., assignor to Wayland D. Keith and Leverne E. Mangel, Wichita Falls, Tex.
Filed Jan. 12, 1970, Ser. No. 2,044
Int. Cl. B60t *7/00*
U.S. Cl. 303—7 **8 Claims**

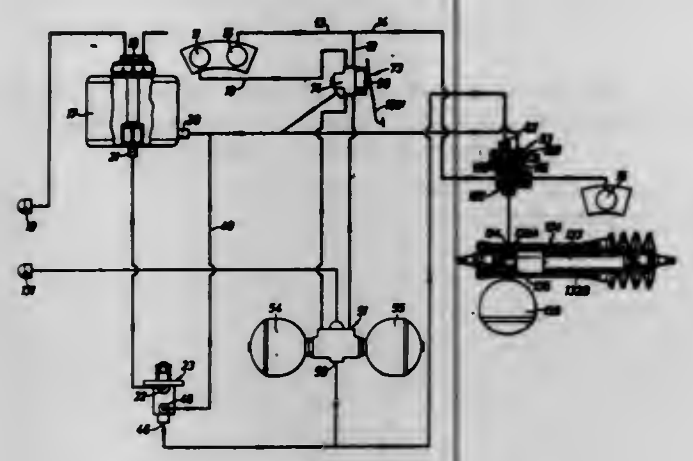


A hydraulically actuated braking system to enable the interconnecting of a driven and a towed vehicle, whereby the hydraulic fluid conduit of the driven vehicle is connected in fluid communication to a cylinder-plunger assembly by a flexible conduit, which cylinder-plunger assembly may be connected in end to end relation with an auxiliary master cylinder mounted on the towed vehicle. The auxiliary master cylinder is connected in fluid communication with the hydraulic fluid conduit system which leads to the brakes of the towed vehicle, and, by closing a valve intermediate the conduit system and the normal master cylinder of the towed vehicle, and opening a valve in a conduit intermediate the auxiliary master cylinder and the hydraulic fluid conduit system of the towed vehicle, mechanical force may be applied by the plunger of the hydraulic fluid cylinder-plunger assembly to the auxiliary master cylinder. The cylinder-plunger assembly is connected in fluid communication with the hydraulic fluid brake system of the driven vehicle, and the driven vehicle and the towed vehicle may be accurately controlled simultaneously by the application of the brake pedal of the driven vehicle. Provision is made to close a valve in a conduit intermediate the auxiliary cylinder and the conduit system of the towed vehicle, and opening a valve in the conduit leading from the original master cylinder to the conduit system of the towed vehicle, to enable the towed vehicle to be used in the same manner as if the auxiliary hydraulic cylinder arrangement was not installed thereon. It is to be pointed out that the separation of the hydraulic cylinder-plunger assembly from the auxiliary master cylinder may be accomplished without loss of hydraulic fluid.

3,650,571
FLUID PRESSURE BRAKING SYSTEMS

Leslie C. Chouings, Leamington Spa, England, assignor to Automotive Products Company Limited, Leamington Spa, England
Filed Sept. 22, 1969, Ser. No. 859,716
Claims priority, application Great Britain, Sept. 23, 1968, 45,124/68
Int. Cl. B60t *13/14*
U.S. Cl. 303—10 **13 Claims**

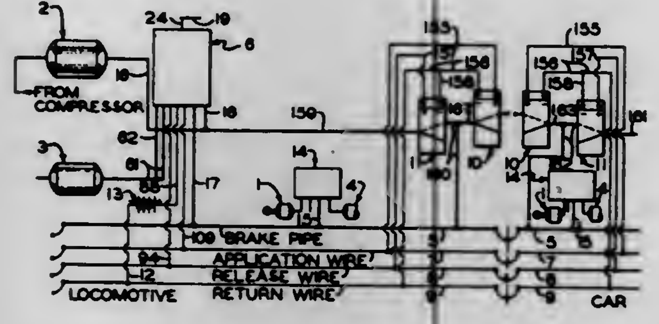
In a liquid pressure braking system having two separate conduit systems through which liquid under pressure is fed to separate motor cylinders for applying brakes to a wheel of a motor vehicle by operation of a driver operable control valve, and wherein a liquid accumulator is provided in each system, the two accumulators being supplied with liquid under pressure through a corresponding nonreturn valve by a continuously operable pump, a pressure control valve is provided in the conduit system leading to a motor cylinder operating brakes on a rear wheel of the vehicle, the pressure control valve being operated in response to changes in the vertical position of the vehicle's body relative to the wheels to control the pressure of liquid supplied to that motor cylinder in relation to the loading of the vehicle.



3,650,572
PNEUMATIC-ELECTRIC SELF-LAPPING CONTROL APPARATUS

Glenn T. McClure, McKeesport, and Robert B. Salton, Pittsburgh, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Jan. 5, 1970, Ser. No. 765
Int. Cl. B60t *13/66*
U.S. Cl. 303—15 **30 Claims**

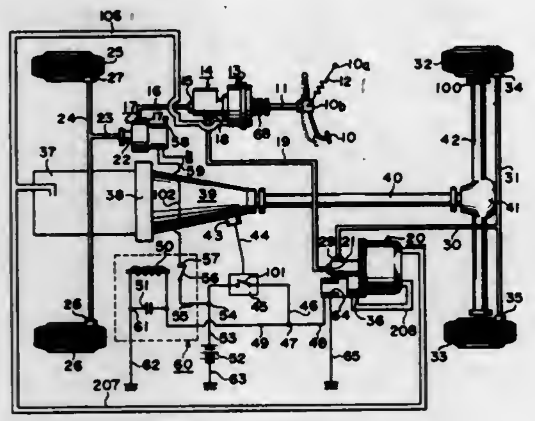


This invention relates to an electro-pneumatic self-lapping unit of a brake valve for use on a railway locomotive to effect control of the pressure in a train line pipe by effecting appropriate energization and deenergization of release and application magnet valve devices provided on the locomotive and each car in a train for supplying fluid under pressure locally to the train line pipe and releasing fluid under pressure therefrom. The energization and deenergization of these magnet valve devices is controlled via train wires by mechanically actuated switches selectively operated substantially simultaneously with the self-lapping unit on the locomotive to supply fluid under pressure to or release fluid under pressure from the train line pipe in response to the engineer effecting manual rotation of a handle mounted on the same shaft as a cam the rotation of which controls operation of the self-lapping unit.

3,650,573
ANTISKID BRAKE ASSEMBLY

Masmai Inada; Tatsuo Hayashi, and Katuki Takayama, all of Kariya-shi, Japan, assignors to Aisin Seiki Company Limited

Filed Mar. 24, 1969, Ser. No. 809,853
Claims priority, application Japan, Mar. 22, 1968, 43/18673
Int. Cl. B60t *8/04*, *8/22*, *8/26*
U.S. Cl. 303—21 F **8 Claims**

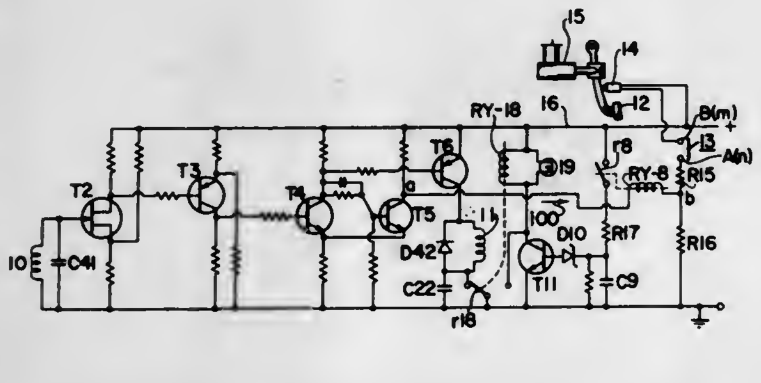


This invention concerns an anti-skid type automotive vehicle wheel brake cylinder comprising a foot brake pedal, a pneumatic brake booster, a hydraulic master cylinder, a skid sensor, a hydraulic wheel cylinder for each of vehicle wheels and a pressure regulator for the control of hydraulic wheel cylinder pressure in response to an output from said skid sensor. The brake arrangement according to the present invention means are provided for making a selected pair, preferably the rear pair, of the vehicle wheels more liable to invite a skid of the selected wheel pair than the remaining wheels, preferably front wheel pair. The brake boosters is controlled in response to an output skid signal from said skid sensor in the skid suppressing sense, and a cut-off valve is provided for the wheel brake cylinders for the remaining vehicle wheels, said cut-off valve being operated for cutting off the hydraulic pressure delivered from said master cylinder to the latter wheel brake cylinders in response to the skid output signal from said skid sensor.

3,650,574
AUTOMOTIVE ANTISKID DEVICE WITH SAFETY APPARATUS

Toshiaki Okamoto; Masami Inada, and Koziro Mori, all of Toyota-shi, Japan, assignors to Aisin Seiki Company Limited, Toyota-shi, Aichi-ken, Japan

Filed Dec. 31, 1969, Ser. No. 889,575
Int. Cl. B60t *8/00*
U.S. Cl. 303—21 AF **19 Claims**

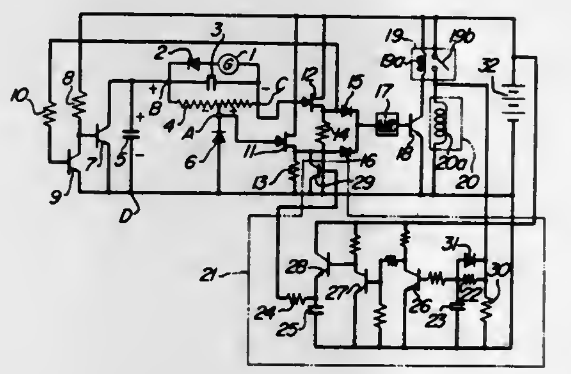


An apparatus for performing antiskid brake pressure control operation characterized by the provision of an alarm apparatus adapted for ignition upon reception of a brake pressure-reducing instruction signal extending beyond a predetermined period.

3,650,575
ANTISKID DEVICE

Atutoshi Okamoto, Toyohashi, Japan, assignor to Nippondenso Kabushiki Kaisha, Showa-cho, Kariya-shi, Aichi-ken, Japan

Filed Apr. 13, 1970, Ser. No. 27,831
Claims priority, application Japan, Apr. 14, 1969, 44/28817
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 CF **9 Claims**

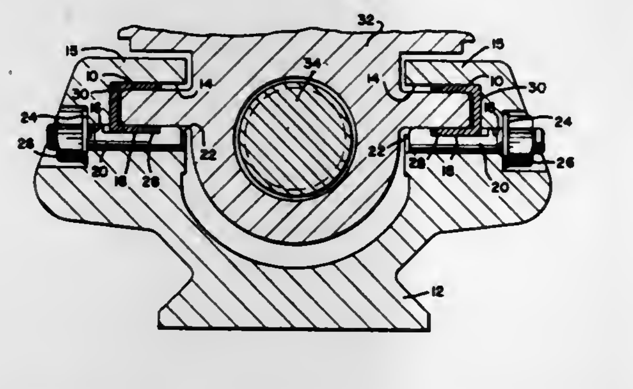


An anti-skid device for automobiles comprising apparatus for converting the wheel speed into a DC voltage, apparatus for producing from the output of said converter a first wheel speed voltage and a second wheel speed voltage higher than said first wheel speed voltage, a capacitor adapted to be charged by said first wheel speed voltage, a discharging circuit for discharging the charge in said capacitor with a time constant corresponding to a preset reference wheel speed, a braking force release unit, switch apparatus for controlling the operation of said braking force release unit, an actuating apparatus consisting of a voltage comparator circuit and an amplifier circuit for actuating said switch apparatus, and a pulse generating circuit for producing pulses to control the actuating apparatus.

3,650,576
LINER FOR ALUMINUM DRILL GUIDE FEED

Robert W. Hughes, Easton, Pa., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Nov. 20, 1970, Ser. No. 91,412
Int. Cl. F16c *29/00*
U.S. Cl. 308—3 A **2 Claims**

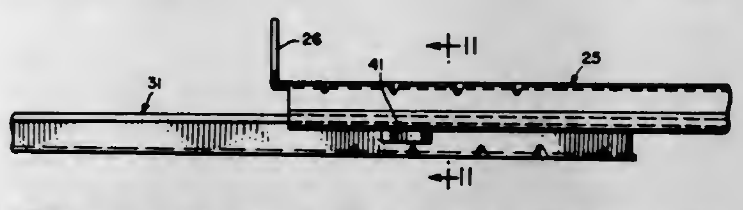


A replaceable wear resistant liner for the wearing surface of an aluminum guide feed used on rock drills.

3,650,577
DRAWER SLIDE ASSEMBLY

Kenneth H. Gutner, 3285 Dato, Highland Park, Ill.

Filed May 28, 1970, Ser. No. 41,190
Int. Cl. F16c *29/00*
U.S. Cl. 308—3.6 **4 Claims**

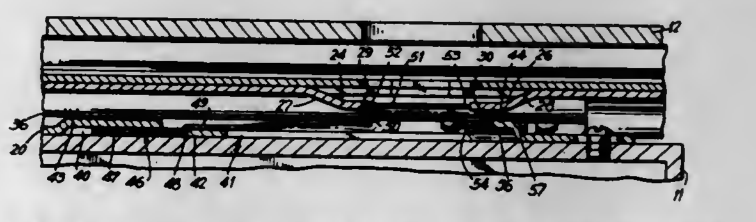


A slide and guide assembly for a drawer made up of two elongated nestable metal members, the metal members being channel shaped and equipped with interfering detents to prevent inadvertent disengagement of the two members, but wherein the members are so constructed and arranged that the interference may be overcome for intentional removal of the drawer from its associated supporting structure.

3,650,578
QUICK DISCONNECT SLIDE STRUCTURE

Joseph T. Del Vecchio, Manuet; John Howell, New City, and Herbert A. Bunin, Tappan, all of N.Y., assignors to Instrument Systems Corporation, West Nyack, N.Y.

Filed Sept. 10, 1969, Ser. No. 856,738
Int. Cl. F16c *21/00*
U.S. Cl. 308—3.8 **11 Claims**

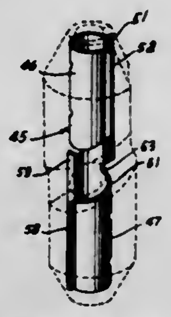


A slide structure comprises a pair of slide members intercoupled by a slide-bearing assembly for longitudinal relative movement between contracted-retracted positions and advanced-extended, and separated positions. A resilient arm is carried by one of the slide members and releasably engages a shoulder on the other slide member when the members are in an intermediate position. The arm is movable to a retained retracted disengaged position, when the slide members are in their intermediate positions, by being longitudinally forwardly slideable along its slide member, or is releasably locked in such position by a slideable lock member and is released from its retracted position upon a predetermined movement of the slide member. The bearing assembly upon extension of the slide member is locked against rearward movement and is released upon a predetermined contraction of the slide members.

3,650,579
SUCKER ROD GUIDE

Donald E. Sable, 4413 Windsor Pr., Dallas, Tex.

Filed July 14, 1970, Ser. No. 54,746
Int. Cl. F16c *29/00*
U.S. Cl. 308—4 A **4 Claims**



A sucker rod guide having a resilient body and a spring clip embedded in the body for exerting a clamping force on the sucker rod on which the guide is mounted.

3,650,580

HYDROSTATIC BEARING

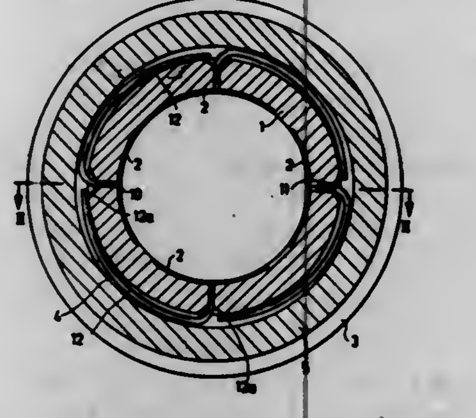
Heinz Beisemann, Monchengladbach, Germany, assignor to P. Konings Machinefabriek, Ijzer-en Metaalgieterij N.V.

Filed June 10, 1970, Ser. No. 45,033

Claims priority, application Germany, June 14, 1969, P 19 30 376.5; Oct. 22, 1969, P 19 53 160.3

Int. Cl. F16c *17/16*

U.S. Cl. 308—9 **11 Claims**



In a hydrostatic bearing comprising a bearing unit having a friction face, bearing pockets in the friction face, means for feeding pressurized liquid into the pockets and a capillary associated with each pocket to act as a hydraulic resistance: the improvement of a common feed passage for a plurality of the bearing pockets, an individual feed duct leading into each of the bearing pockets and the capillary associated with each bearing pocket is in the form of a capillary tube have two ends, one end being sealingly secured in the feed duct leading to that bearing pocket and the other end extending into the common feed passage.

3,650,581

BEARING SYSTEMS

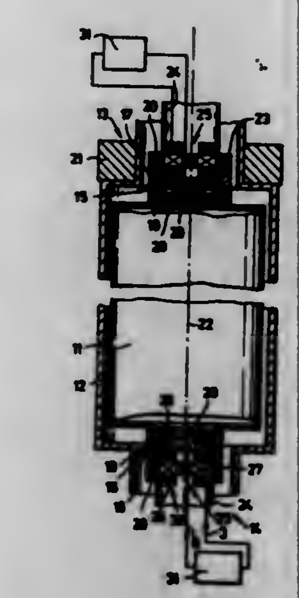
Karl Boden, Oberteuringen, and Dietrich Scheffer, Friedrichshafen, both of Germany, assignors to Karl Boden, Wilhelm Groth & Dietrich Scheffer

Filed Apr. 9, 1970, Ser. No. 27,006

Claims priority, application Germany, June 30, 1969, P 19 33 031.5

Int. Cl. F16c *39/06*

U.S. Cl. 308—10 **36 Claims**



A mechanical contact-free bearing system for a rotor, e.g., in a vacuum pump operating on the Holweck principle, rotatable at high speed comprises a magnetic system which includes at least one carrier magnet for suspending the rotor with its axis vertical. The bearing system includes at least one stabilizing device for counteracting and damping gyratory movements, e.g., procession and nutation, of the rotor. The stabilizing device includes sensors for producing signals responsively to deviation of the axis of the rotor from a predetermined position. An electronic control device amplifies the sensor signals and advances them in phase to produce output signals. Electromagnetic means utilize such output signals to apply electromagnetic forces to the rotor to apply correcting lateral forces to the rotor and further forces to anticipate the gyratory effect of such correcting forces and to damp oscillations of the rotor.

3,650,582

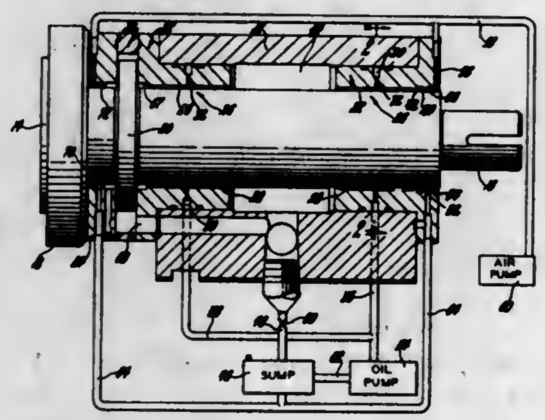
HYDRO-STATIC BEARING AIR SEAL

Richard H. Casey, Bay City, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 15, 1970, Ser. No. 28,849

Int. Cl. F16c *33/72, 17/16*

U.S. Cl. 308—36.3 **3 Claims**



A machine tool spindle having a rotor supported on an externally pressurized liquid film oil bearing is provided with air seals. The air seals comprise annular grooves adjacent the outboards on the spindle which are fed air under pressure. An intermediate groove is provided to limit the aeration of oil to a small portion of oil which overflows from the oil bearing exhaust groove thereby improving pump efficiency and bearing stiffness.

3,650,583

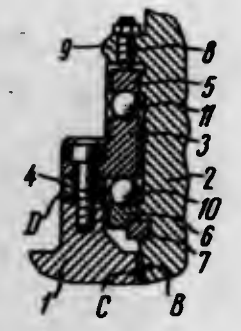
ANTIFRICTION THRUST BEARING OF A ROTARY TABLE

Artur Markovich Itin, ulitsa Gertsena 9/2, kv. 35; Jury Mikhailovich Zhed, Leninsky prospekt, 85 kv. 13, and Vladimir Lvovich Nazarov, 5 Verkhne-Mikhailovsky proezd, 32, kv. 29, all of Moscow, U.S.S.R.

Filed Nov. 24, 1970, Ser. No. 92,384

Int. Cl. F16c *19/10*

U.S. Cl. 308—230 **1 Claim**



An antifriction thrust bearing for a rotary table is constituted by a double-row bearing having an intermediate race rigidly connected through dimensioned inserts with a portion of the rotary table which is uppermost when in the working position, while the outer or upper and lower races are mounted on the lathe pillar relative to which the table rotates, with the upper race being capable of an axial displacement in a direction towards the lower race.

The invention can be most effectively used in vertical multi-spindle lathes.

3,650,584

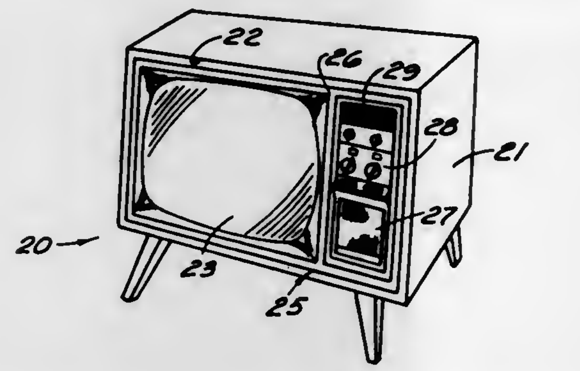
TELEVISION CABINET FACE ASSEMBLY

Frederick J. Goetz, Jr., Arlington Heights, and Emanuel F. Piazza, Addison, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 23, 1970, Ser. No. 92,036

Int. Cl. A47b *81/06*

U.S. Cl. 312—7 TV **12 Claims**



A removable bezel member having integrally formed connector means thereon mounts on the front viewing face of a cabinet for a television receiver with a simple plug-in type connection. A front-mountable escutcheon member has a removable grille member and a removable pivotable door which mount within openings therein with simple snap-in type connections, said bezel, escutcheon and grille members and said door comprising an attachable face assembly for the cabinet to complete and complement the aesthetic appearance of the front face of said television cabinet.

3,650,585

APPARATUS FOR OFFERING GOODS FOR SALE AND FOR DISPENSING SUCH GOODS

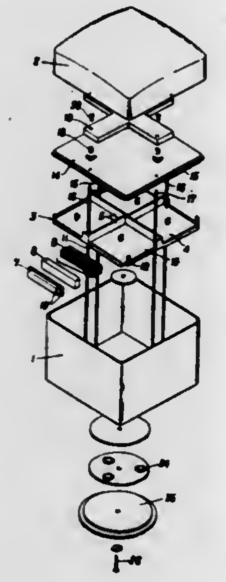
Hermann Hirsch, Klagenfurt, Austria, assignor to Firma Hans Hirsch & Sohne, Klagenfurt, Austria

Filed Dec. 29, 1969, Ser. No. 888,471

Claims priority, application Austria, Oct. 6, 1969, 9407/69

Int. Cl. A47f *1/00*

U.S. Cl. 312—71 **7 Claims**



A plurality of superimposed trays for containing goods are held together by clamp screw means. A base part is connected to the lowermost of said trays and a top part covers the uppermost of said trays. Spring-loaded plungers are adapted to engage said goods in respective trays and urge them in a predetermined direction. Each of said trays defines at least one opening which is arranged to permit of a withdrawal of said goods from said tray in a direction that is transverse to said predetermined direction.

3,650,586

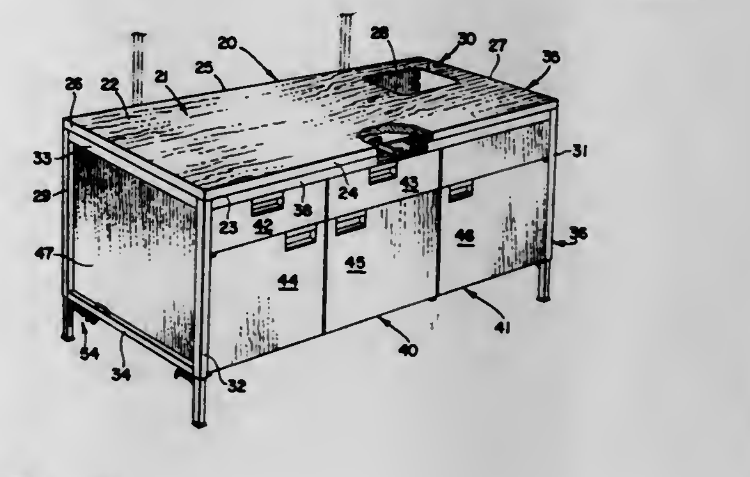
LABORATORY BENCH OR TABLE

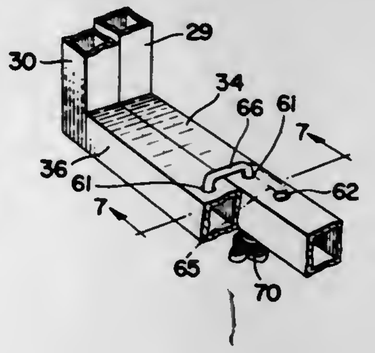
Paul Leslie Nightingale, 51 Hurlingham Crescent, Don Mills, Ontario, and Garnet H. Quigley, 82 Bideford Road, Downsview, Ontario, both of Canada

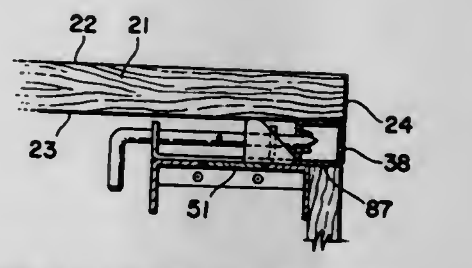
Filed Apr. 2, 1970, Ser. No. 25,145

Int. Cl. A47b *47/00, 47/04*

U.S. Cl. 312—195 **11 Claims**







A modular laboratory bench apparatus adapted to support one or more storage units under the bench, and comprising: a pair of rigid end frame units; a top bench member having front and rear edges and side edges; front and rear channel bars attached to said top member at said front and rear edges; and connecting means for independently interconnecting each end of said channel bars to its respective adjacent end frame unit at the upper portion thereof.

3,650,587

RACK FOR COUNTERS

Arne Sven Hansen, Farsta, and Walter Emil Pegert, Skarholmen, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

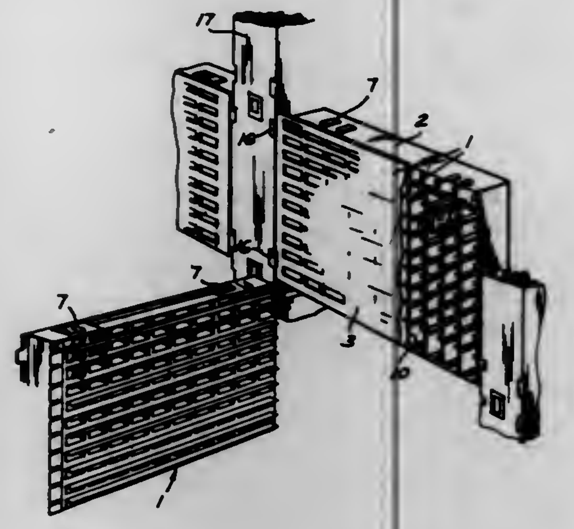
Filed Apr. 6, 1970, Ser. No. 25,853

Claims priority, application Sweden, Apr. 25, 1969, 5886/69

Int. Cl. A47b *53/00, 77/00;* **A47f** *3/00*

U.S. Cl. 312—198 **5 Claims**

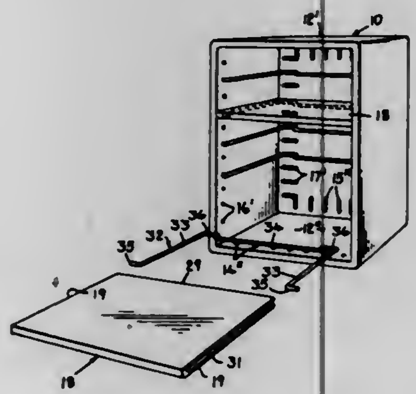
Rack for holding a plurality of counters in rows and columns. The rack comprises a number of casings, each with a rectangular bottom part divided into compartments the construction of which is made in such a way that it facilitates an easy pushing-in of a counter into a compartment. A single lid provided with window-openings for reading of the counters protects all the counters in one casing. The casings are provided with hinges so that they can be swung out for connection or inspection.



3,650,588

CONTAINER ADAPTED TO INCORPORATE ADJUSTABLE SHELVING OR THE LIKE

Russell Earl Helland, Toronto, Ontario, Canada, assignor to Cameron-McIndoo Limited, Don Mills, Ontario, Canada
Filed July 1, 1970, Ser. No. 51,498
Int. Cl. A47b *57/06*
U.S. Cl. 312—306 12 Claims

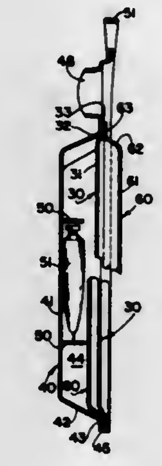


A container having a base wall and a plurality of upstanding side walls, each side wall being substantially parallel to an opposed side wall of the plurality thereof. The inner face of each side wall is provided with a row of spaced holes, and a row of spaced slots is provided in the inner face of the base wall adjacent to each of the side walls, each hole being in alignment in a direction substantially at right angles to the plane of the side wall in which it is provided with one of the holes in the opposed side wall, and each slot being in alignment in a direction substantially at right angles to the plane of the side wall adjacent to which it is provided with one of the slots of the row of slots adjacent to the opposed side wall. Thus, there is a first series of holes and slots comprising the holes provided in an opposed pair of the side walls and the slots provided in the base wall adjacent to these side walls, and one or more further series of holes and slots, each of which comprises the holes provided in a further pair of opposed side walls together with the slots formed in the base wall adjacent to theses latter side walls, thereby permitting the container to be used with a shelf or divider structure adjustably mounted with portions thereof, or portions of an intermediate support on which the shelf or divider structure is in turn mounted, supportedly engaged with aligned holes and aligned slots of the first series thereof, or alternatively with a shelf or divider structure adjustably mounted with portions thereof, or portions of an intermediate support on which this shelf or divider structure is in turn mounted, supportedly engaged with the aligned holes and aligned slots of the other, or one of the other series thereof. In this manner, a shelf or divider structure can be adjustably mounted within the container in a first direction relative to the container, and a further shelf or divider structure can alternatively be adjustably mounted within the container in a different direction relative to the container, thereby considerably increasing the versatility and hence the usefulness of the container.

3,650,589

ARTIST PALETTE AND CARRYING CASE

Harrison K. Linger, 7412 Springvale Drive, Louisville, Ky.
Filed Oct. 15, 1969, Ser. No. 866,471
Int. Cl. A47b *27/00, 63/04*
U.S. Cl. 312—231 7 Claims



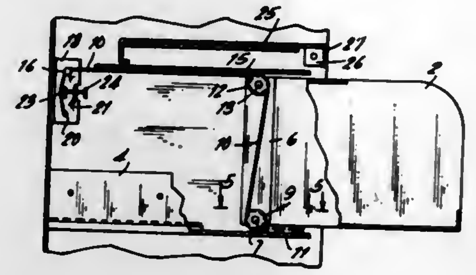
There is disclosed a combination artist's palette and carrying case therefor. The palette includes a generally planar body portion and a peripheral edge portion with at least one side of the body portion being adapted to receive materials thereon for use by the associated artist. A case for the palette is provided, the case having a bottom wall and a side wall and is dimensioned such that the palette fits within the peripheral side wall of the case whereby the case is adapted to receive the palette for use, storage and transportation. Resilient sealing gasket means movable relative to the case also is provided. The gasket means is positionable between the case and the palette and biasing means are provided on the case to cause the palette to compress the gasket and provide a substantially airtight chamber between the palette and the case. In a second embodiment the gasket is rigidly affixed to the edge portion of the palette. in a third embodiment there is provided a disposable liner having a configuration complementary to the configuration of the palette with the peripheral edge of the liner operating as the gasket means. Also, there is provided an artist's tool conditioning structure that may be stored within the case and can be detachably secured to the side of the case for use by the artist.

3,650,590

FILING CABINETS

Martin B. Frederick, New York, and David Sobel, Oceanside, both of N.Y., assignors to Supreme Equipment & Systems Corp.
Original application Mar. 31, 1966, Ser. No. 539,103, now Patent No. 3,378,321. Divided and this application Oct. 30, 1967, Ser. No. 705,870
Int. Cl. A47c *88/00;* **A47b** *81/00;* **A47c** *95/00*
U.S. Cl. 312—319 5 Claims

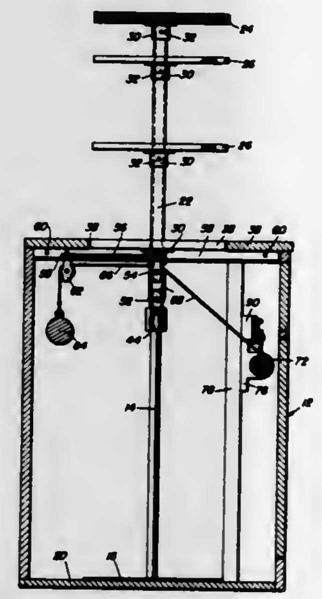
A filing cabinet having a slidably mounted tray and a cable having one end attached to the cabinet. A pair of vertically spaced pulleys are provided on the rear of the tray. The cable passes first over the pulleys and then through a bracket on the cabinet and the other end of the cable is anchored to the bracket.



3,650,591

ELEVATOR SHELF UNIT

Ernest B. Longmire, Sr., 2505 South Rowell St., Mobile, Ala.
Filed Apr. 8, 1970, Ser. No. 26,716
Int. Cl. A47b *57/06*
U.S. Cl. 312—312 2 Claims



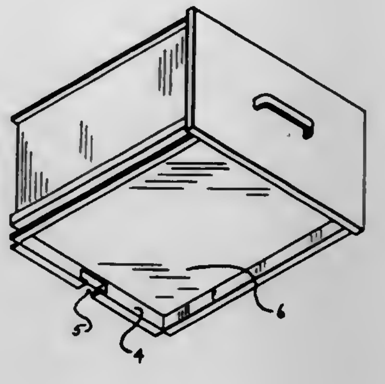
This elevator shelf unit is used in combination with a cabinet. It consists of a plurality of vertically spaced apart shelves rotatably mounted on a sleeve telescopically liftable on an upstanding rod on a base on the floor of the cabinet, the shelves being extendable through an opening in the top of the cabinet. A winch, rotatable by a crank handle through a side of the cabinet, operates a cable and pulley system for lifting the shelves, and a latch near the crank handle serves to hold the shelves in a desired elevated position. A counterweight system is optionally provided for use with heavy shelf loads. It may be used as concealable liquor shelves, or other household needs, for example, with a bathroom cabinet for toilet articles, with a kitchen cabinet for spices and other cooking essentials, etc.

3,650,592

DRAWER WITH GUIDE SYSTEM

Cole C. Williams, 2408 Allanjay Pl., Glendale, Calif.
Filed Dec. 23, 1968, Ser. No. 786,032
Int. Cl. A47b *88/00*
U.S. Cl. 312—330 8 Claims

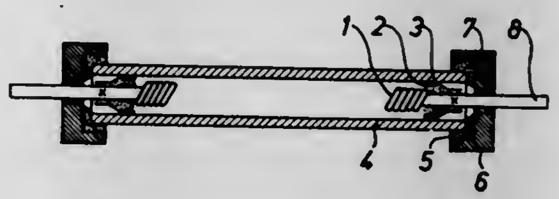
A drawer with a thermoplastic rear wall connected to sides of the drawer, which rear wall has integral friction resistant guide means adapted to slidingly engage a wooden rail of a cabinet to align the drawer as it slides in and out of the cabinet. The thermoplastic rear wall is part of a thermoplastic panel, which panel has indicia to show where the panel is to be properly folded to form a drawer of a specified width and length with a thermoplastic rear wall and two sides joined by integral flexible hinge portions of the thermoplastic panel.



3,650,593

PROCESS OF FILLING DISCHARGE TUBES CONSTRUCTED WITHOUT EXHAUST TUBE

Bela Kerekes, Budapest, Hungary, assignor to Egyesult Izzolampa es Villamossagi Reszvenytarsasag, Budapest, Upjert, Hungary
Filed Oct. 21, 1969, Ser. No. 868,116
Claims priority, application Hungary, Nov. 22, 1968, EE 1596
Int. Cl. H01j *9/18, 9/38*
U.S. Cl. 316—4 5 Claims



The process relates to filling exhaust tubeless cylindrical lamp bulbs having no exhaust tubes — so called ceramic lamps or discharge tubes — with discharge substances as well as to the sealing of same. A cup containing a mixture which upon heating liberates metal vapor is fixed to an electrode, the latter one is introduced into and united with a ceramic cup. After this, this whole assembly is introduced into and sealed by means of a glass-like binder to the ceramic bulb which is preferably made of aluminum oxide. The reaction mixture contained in the cup is heated thereafter.

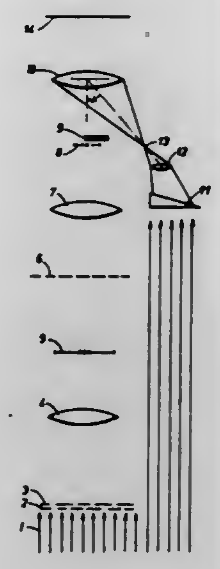
3,650,594

METHOD AND APPARATUS FOR INCREASING THE INFORMATION TRANSMITTING CAPABILITIES OF IMAGE FORMING SYSTEMS

Heinrich Nassenstein, Leverkusen-Steinbuchel, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Feb. 26, 1970, Ser. No. 14,477
Claims priority, application Germany, Mar. 8, 1969, P 19 11 801.5
Int. Cl. G02b *27/22, 5/18*
U.S. Cl. 350—3.5 27 Claims

A process for increasing the transmitting information possibilities in connection with image-mapping systems, in which the information is transmitted from the object space to the image space by waves. The process is characterized in that

The spacial frequencies of the structure to be examined are transformed into the range of smaller spacial frequency by the diffraction of evanesent waves it becomes possible for hitherto inaccessible spacial frequencies to be transformed into the conventional range.



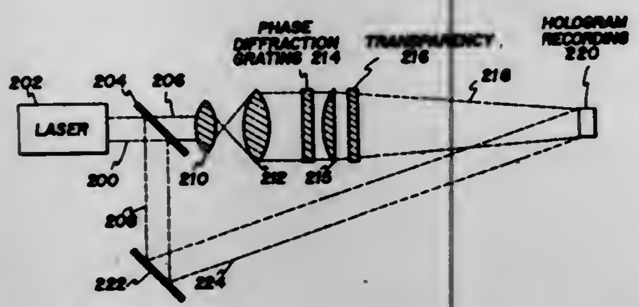
3,650,595
REDUNDANT, SPECKLE-FREE HOLOGRAM RECORDING APPARATUS

Hendrik J. Gerritsen, Providence, R.I., and William J. Hannan, Pennington, N.J., assignors to Radio Corporation of America

Continuation of application Ser. No. 662,822, Aug. 23, 1967, now abandoned. This application Apr. 24, 1970, Ser. No. 29,748

Int. Cl. G02b *27/00*

U.S. Cl. 350—3.5 **10 Claims**



There is disclosed the use of a phase diffraction, rather than a plate of diffusing glass, for introducing redundancy into the information beam which is employed together with a reference beam in recording a hologram. The use of a phase diffraction grating eliminates the presence of unwanted speckle noise in the reproduced image of the hologram, which speckle noise is present to a large degree when a small sized hologram is recorded with a diffused light information beam.

3,650,596
OBJECTIVE INCORPORATING AN IMAGE STABILIZER

Jean Thevenaz, Grandson, Switzerland, assignor to Paillard S.A., Saint-Croix (Vaud), Switzerland

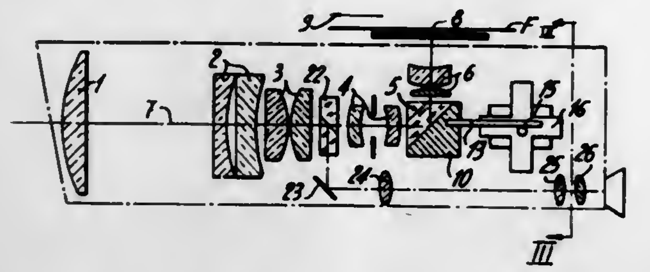
Filed May 13, 1970, Ser. No. 36,866

Claims priority, application Switzerland, June 6, 1969, 8634/69

Int. Cl. G02b *23/00*

U.S. Cl. 350—16 **7 Claims**

An objective chiefly for kinematographic cameras adapted to compensate for untimely shifting of the objective when the camera is held by hand during operation. This compensation is provided by resorting solely to the precession of one or more gyroscopes adapted to rock around an axis with reference to a cage pivotally carried by the objective mount around an axis perpendicular to the axis of the gyroscope, said cage being urged by a spring into a predetermined position and connected with a pivotal optic element incorporated with the objective in a manner such that any angular movement of the cage produced by the precession of the gyroscope causes the pivoting optic element to be shifted with reference to the objective mount to an extent such as will compensate any sudden modification in the angular setting of the optical axis of the objective.



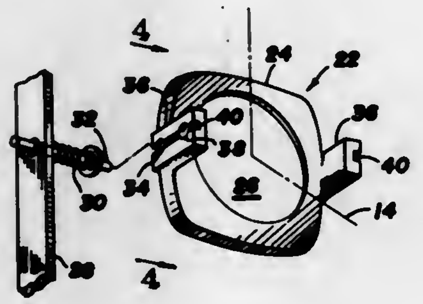
3,650,597
DARKFIELD CONVERTIBLE SUBSTAGE MIRROR

Paul E. Nothnagle, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed June 24, 1970, Ser. No. 49,454

Int. Cl. G02b *21/06*

U.S. Cl. 350—87 **1 Claim**



A substage mirror for illuminating a microscope is equipped with alternate mounting cavities for laterally displacing the mirror off the optical axis and tilting the mirror so as to direct a light beam through the subject but away from the objective, thereby providing darkfield illumination.

3,650,598
LIGHT-CONDUCTING GLASS STRUCTURE HAVING A PERIPHERAL LIGHT-ABSORBENT LAYER

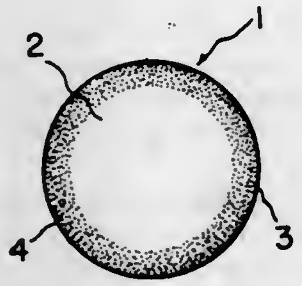
Ichiro Kitano, Kobe-shi; Ken Koizumi, Itami-shi; Yoshiro Ikeda, Nishinomiya-shi, and Hiroyoshi Matsumura, Osaka-shi, all of Japan, assignors to Nippon Selfoc Kabushiki Kaisha (a/k/a Nippon Selfoc Co., Ltd.), Tokyo-to, Japan

Filed Sept. 29, 1969, Ser. No. 861,897

Claims priority, application Japan, Oct. 1, 1968, 43/71721

Int. Cl. G02b *5/14*

U.S. Cl. 350—96 R **1 Claim**



A transparent glass body having a light-focusing effect and a refractive index decreasing progressively from its centerline outward and containing readily reducible metal oxides in at least the outer peripheral part thereof is caused to contact a gas having a reducing effect thereby to reduce the metal oxides and form a light-absorbent layer of metal colloid in the outer peripheral part.

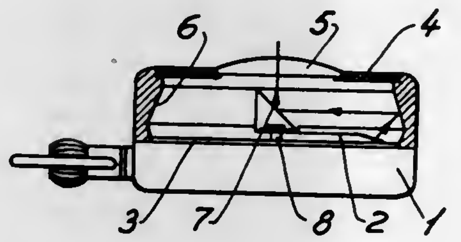
3,650,599
MEASURING INSTRUMENT AND READING DEVICE ASSEMBLY

Carl Pedersen, Morsovej 8 B, DK-2720 Vanlose, Denmark

Filed Jan. 28, 1971, Ser. No. 110,709

Int. Cl. G02b *17/06*

U.S. Cl. 350—113 **1 Claim**



A clock is provided with a curved mirror encircling the scale of the clock, a further mirror is secured to the end of the shaft carrying the pointer of the clock and both mirrors are inclined with respect to the dial of the clock, a magnifying glass is positioned above the mirror secured to the shaft for magnifying the image of the end of the pointer and the section of the scale adjacent the pointer in the actual position thereof, reflected by the mirrors through the magnifying glass.

3,650,600
OPTICAL PULSE DOUBLER UTILIZING SELF-INDUCED TRANSPARENCY

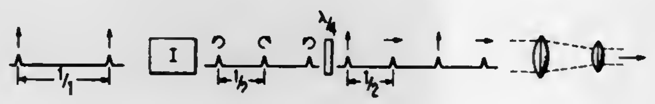
Eric L. Courtens, Adliswil, Switzerland, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 13, 1970, Ser. No. 63,349

Claims priority, application Switzerland, Aug. 25, 1969, 12845/69

Int. Cl. G02f *1/22*

U.S. Cl. 350—151 **14 Claims**



Two circularly polarized components, displaced in both time and space, of a polarized light pulse are obtained in an optically resonant medium when the medium operates under the conditions of self-induced transparency. By operating the resonant medium near, but not at, exact resonance and therefor at a position slightly displaced from the absorption resonance line of the medium, application of an axial magnetic field causes an impinging polarized light pulse to be separated into two circularly polarized components.

3,650,601
MAGNETO-OPTIC DEVICE HAVING ALTERNATE LAYER FILM STRUCTURE

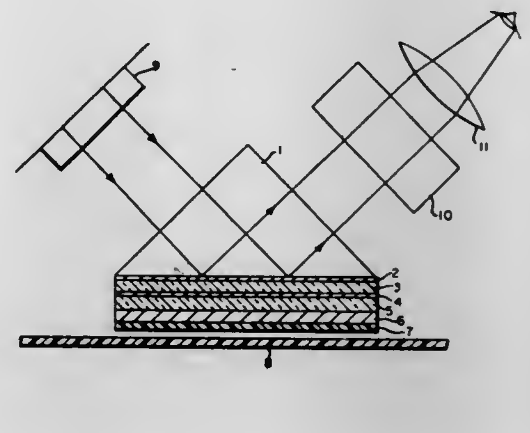
John David Bierlein, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 19, 1970, Ser. No. 91,050

Int. Cl. G02f *1/18*

U.S. Cl. 350—151 **4 Claims**

Kerr magneto-optic transducers having enhanced conversivity can be fabricated using a plurality of thin magnetic mirror layers spaced by dielectric layers having a thickness of approximately $\mu/4$ where λ is the wavelength of the light employed for readout.



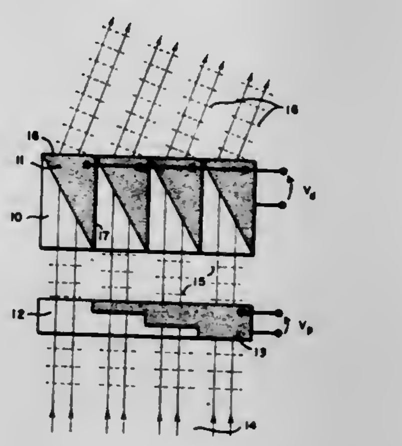
3,650,602
PARALLEL ARRAY LIGHT BEAM DEFLECTOR WITH VARIABLE PHASE PLATE

Tzuo-Chang Lee, Bloomington, and James D. Zook, Burnsville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 19, 1970, Ser. No. 64,980

Int. Cl. G02f *1/34, 1/28*

U.S. Cl. 350—160 R **12 Claims**



The number of resolvable spots produced by a light beam deflection system can be increased by the use of a parallel array of light beam deflectors and a variable phase plate which adjusts the phase of the light entering each of the individual deflectors so that light emerging from the deflectors is co-planar.

3,650,603
LIQUID CRYSTAL LIGHT VALVE CONTAINING A MIXTURE OF NEMATIC AND CHOLESTERIC MATERIALS IN WHICH THE LIGHT SCATTERING EFFECT IS REDUCED WHEN AN ELECTRIC FIELD IS APPLIED

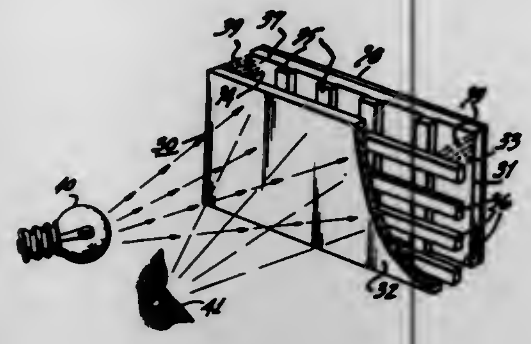
George H. Heilmeier, Philadelphia, Pa., and Joel E. Goldmacher, Cranbury, N.J., assignors to RCA Corporation

Filed Dec. 5, 1967, Ser. No. 688,123

Int. Cl. G02f *1/16*

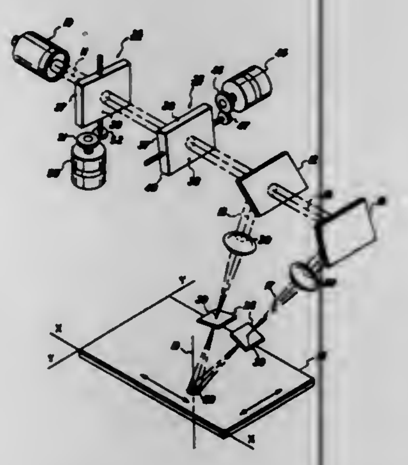
U.S. Cl. 350—160 **12 Claims**

A liquid crystal light valve comprises a mixture of at least one nematic liquid crystal compound of the type that aligns in an electric field, with cholesterol, a cholestrol derivative of a cholesteric liquid crystal and means for applying an electric field to said mixture.



3,650,604
INTERFEROMETRIC SCANNING APPARATUS AND METHOD

William S. Little, Jr,, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 15, 1970, Ser. No. 80,878
Int. Cl. G02b *27/00, 17/00*
U.S. Cl. 350—163 **10 Claims**

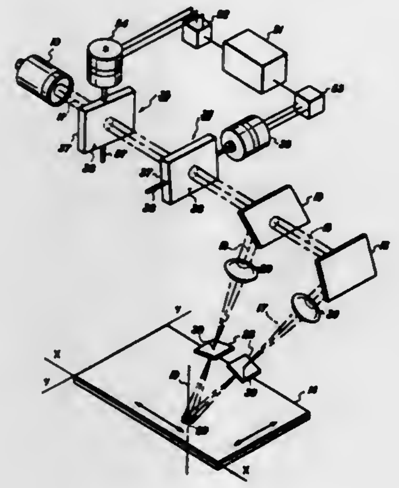


Method and apparatus are herein disclosed for exposing a recording plane to a stable interferometric line pattern where the recording plane extends beyond the boundary of the exposure pattern. A beam of highly coherent collimated light is split into at least two beams of light and the beams recombined in the recording plane to create an interference pattern of light and dark fringes. At least one flat glass plate is obliquely repositionable in the unsplit light beam and serves to shift the position of the light beam whereby the beam of light leaving the plate is substantially parallel to the light beam entering the plate. This, in effect, causes the illuminated region in the recording plane to be shifted to a new location in the plane without altering the phase relationship of the individual interference fringes. Thus, each bright fringe remains in a stationary position and only changes in intensity as the exposure pattern is moved in the recording plane.

3,650,605
INTERFEROMETRIC APPARATUS WITH CONTROLLED SCANNING MEANS

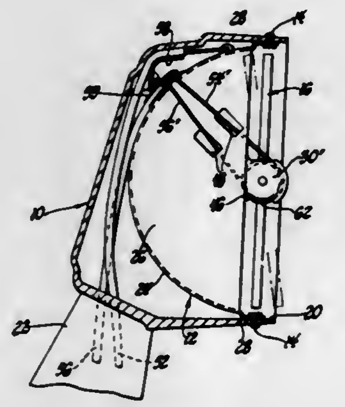
William S. Little, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 15, 1970, Ser. No. 80,879
Int. Cl. G02b *27/00, 17/00*
U.S. Cl. 350—163 **11 Claims**

Apparatus is herein disclosed for exposing a recording plane to an interferometric exposure pattern composed of a set of light interference fringes. A beam of highly coherent collimated light is split into at least two beams and the split beams recombined in a recording plane to create an interference pattern of light and dark fringes. At least one flat glass plate is repositionable in the unsplit light beam and serves to shift the position of the light beam whereby the beam of light leaving the plate is substantially parallel to the light beam entering the plate. This, in turn, causes the illuminated portion of the recording plane to be shifted to a new location without altering the phase relationship between the various beams at any point in the recording plane. Each bright fringe therefore remains in a stationary position and only changes in intensity as the exposure pattern is scanned in the recording plane. The movement of the plate is programmed so that the illumination is scanned in the recording plane to produce a uniform exposure of the interference fringe pattern.



3,650,606
DAY-NIGHT REAR VIEW MIRROR AND REMOTE CONTROLS

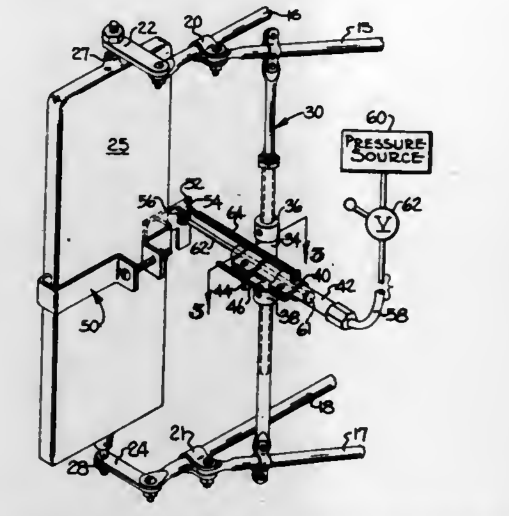
Andrew J. Van Noord, Grand Rapids, Mich., assignor to Kent Engineering, Grand Rapids, Mich.
Filed Dec. 4, 1969, Ser. No. 882,204
Int. Cl. B60r *1/06;* **G02b** *7/18*
U.S. Cl. 350—282 **17 Claims**



A remote control day-night rear view mirror including a reversible day-night mirror rotatably mounted on a supporting member that is pivoted in a housing shell and which includes control means for turning the mirror over, and for adjusting its viewing disposition about relatively transverse pivotal axes.

3,650,607
REAR VIEWING DEVICE

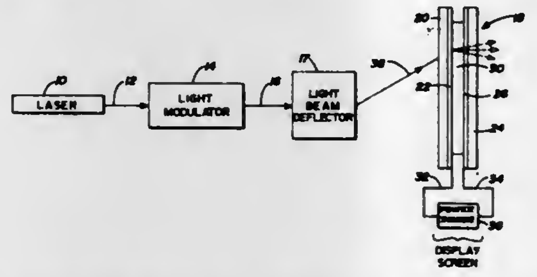
Albert B. Rogers, 1417 Shannonhouse Drive, Charlotte, N.C., and Arthur N. Rogers, P.O. Box 168, Camilla, Ga.
Filed Aug. 6, 1970, Ser. No. 61,641
Int. Cl. G02b *5/08*
U.S. Cl. 350—289 **7 Claims**



A rear viewing device which is remotely adjustable to permit viewing of a wide area by the operator of a vehicle, and which has provision for automatically returning to its normal viewing position. The device includes a mirror which is mounted for rotation about a vertical axis, and an air control system for rotating the mirror away from its normal position. The control system includes an air cylinder, an adjustable inlet valve for admitting air to the cylinder at a controlled rate, and an air relief passage in the cylinder for exhausting the air therefrom at a controlled rate. A biasing spring is provided to return the mirror to its normal position when the inlet valve is closed and the air has exhausted from the cylinder.

3,650,608
METHOD AND APPARATUS FOR DISPLAYING COHERENT LIGHT IMAGES

Charles E. Baker, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 23, 1969, Ser. No. 887,511
Int. Cl. G03b *21/60*
U.S. Cl. 350—320 **8 Claims**

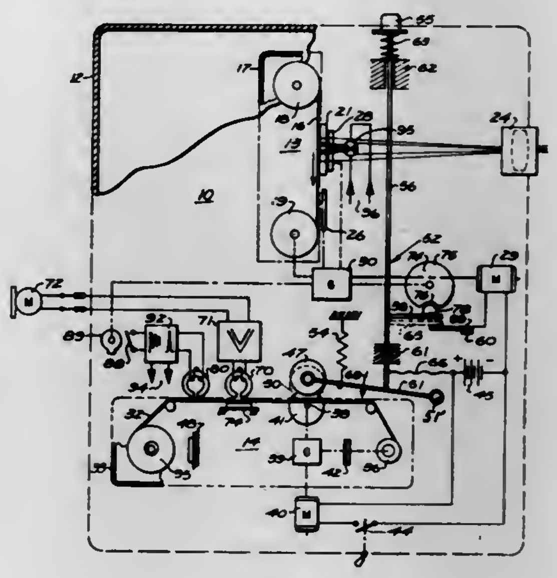


A method and apparatus for destroying the scintillation or speckling effect observed when a bema of coherent light is impinged or directed upon a stationary screen includes a relatively thin layer of an organic nematic mesomorphic compound which is impressed with a voltage above the particular threshold electric field which causes the compound to scatter light.

3,650,609
SOUND MOTION PICTURE CAMERA

Joseph H. Lancor, Jr., Arcadia, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Nov. 3, 1969, Ser. No. 873,330
Int. Cl. G03b *31/04*
U.S. Cl. 352—17 **15 Claims**

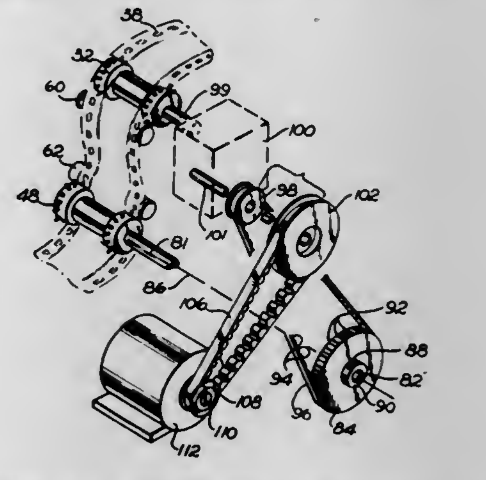
A motion picture camera comprises a sound recorder and a control mechanism. The control mechanism becomes operative when a termination of a picture taking and sound recording operation is initiated during the taking of an image frame. In that case the control mechanism defers termination of the picture taking and sound recording operation pending completion of the taking of the particular image frame. The operation of this control mechanism improves the attainable image-sound synchronism.



From another aspect of the disclosure, a mechanism mounted in the camera housing jointly actuates and jointly releases the motion picture taking means and the sound recording means in response to an actuation and to a release, respectively, of a member movably mounted in the camera housing to be manually actuable from the outside thereof.

3,650,610
MOTION PICTURE PROJECTOR SOUNDTRACK MOVEMENT

Charles Ajar, 4265 Clybourn, N. Hollywood, Calif.
Filed Apr. 13, 1970, Ser. No. 27,606
Int. Cl. G03b *31/04*
U.S. Cl. 352—31 **7 Claims**

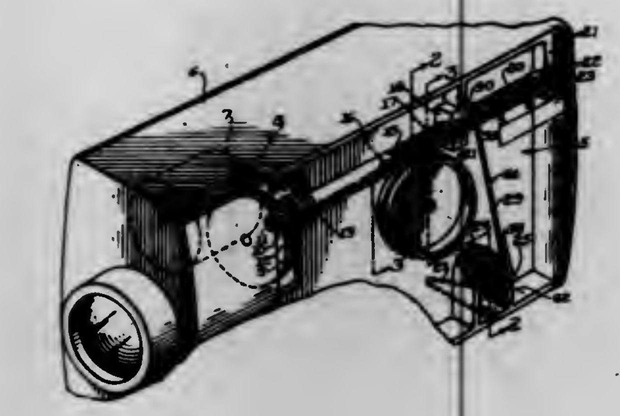


A movement for continuously conducting a soundtrack between continuously rotatable sprocket wheels on opposite sides of a sound transducer, in which the sprockets are mechanically connected to pulleys grooved for and driven by timing belts.

3,650,611
FILM FOOTAGE INDICATOR

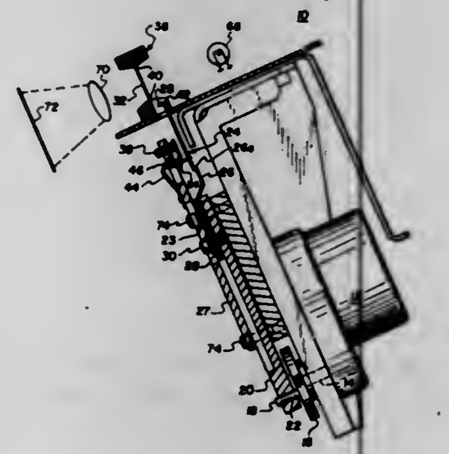
Richard K. Carlson, Chicago, and Henry J. Koeber, Deerfield, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed Sept. 2, 1969, Ser. No. 854,479
Int. Cl. G03b *1/60*
U.S. Cl. 352—172 **9 Claims**

A film footage indicator for movie cameras including a power source operable to drive a driving worm gear when the film is being advanced, a driven worm gear having a single row of teeth helically offset on the periphery thereof which are engageable with and driven by the driving worm gear, a pinion gear rigidly mounted on a shaft which is coaxial with but rotatable relative to the driving worm gear and in mesh with and rotated by the driven worm gear teeth, an indicator worm gear rotatable by the pinion gear, a spring indicator flexibly operable to engage the indicator worm gear by inserting a film cartridge into the camera and flexibly operable to be advanced by the rotating indicator worm gear and a marked window in the camera housing located in alignment with the advancement of the spring indicator for indicating the amount of exposed film. Upon removal of the cartridge from the camera, the spring element indicator will automatically disengage from the indicator worm gear and return to the initial (start) position.



3,650,612
STRIP MARKING ASSEMBLY

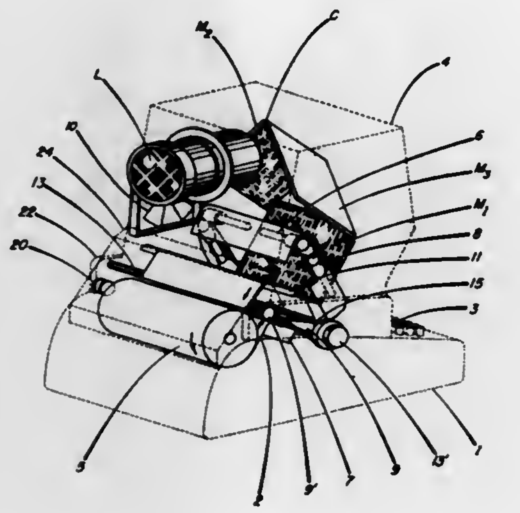
Matthew F. Malkiewicz, New Foundland, N.J., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 1, 1969, Ser. No. 862,712
Int. Cl. G03b *21/26*
U.S. Cl. 353—44 **5 Claims**



Apparatus is disclosed for placing marks or indicia on strips of inscribable material such as photographic film. The apparatus includes a motor for providing rotational torque, a stylus with an offset portion for marking the strip, an assembly for converting the rotational torque of the motor into a rectilinear motion and for coupling the rectilinear motion to the stylus, and a bracket having a surface brought into engagement with the offset portion of the stylus to thereby bring the stylus into contact with the strip.

3,650,613
TELETYPEWRITER OPAQUE OPTICAL PROJECTOR AND THE LIKE

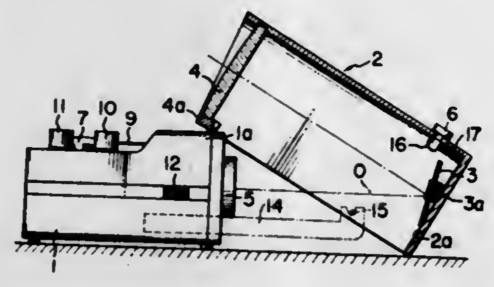
Francis Frazier, Cambridge, Mass., and Ralph P. Graeber, Woodland Hills, Calif., assignors to Bolt Beranek and Newman, Inc., Cambridge, Mass.
Filed Feb. 25, 1969, Ser. No. 802,116
Int. Cl. G03b *21/00*
U.S. Cl. 353—46 **9 Claims**



This disclosure deals with an opaque optical projector that is adapted for attachment to real-time data-recording objects, for simultaneous projection of the data thereof without interference with the operation of the recording.

3,650,614
PROJECTOR

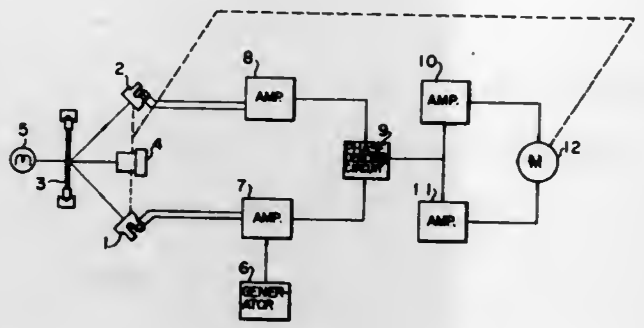
Tsunezo Shimoda; Koji Hikawa; Syuichi Yahata, and Mitsugu Obata, all of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Dec. 8, 1969, Ser. No. 882,958
Claims priority, application Japan, Dec. 12, 1968, 43/108781
Int. Cl. G03b *21/30*
U.S. Cl. 353—72 **4 Claims**



A projector having a main body with a lens therein and a cover body that encloses the main body in closed position. The cover body includes a tilted mirror on one inside end wall and a screen at the other end wall. The cover body can be moved to an open position where the end wall with the tilted mirror is in line with the lens and spaced therefrom while the other end wall is tilted upwardly to rest on the edge of the main body where the lens is mounted. A supporting means in said main body is slidable therefrom to engage an intermediate part of the cover body in the tilted open position.

3,650,615
SONIC FOCUSING SYSTEM FOR PROJECTORS

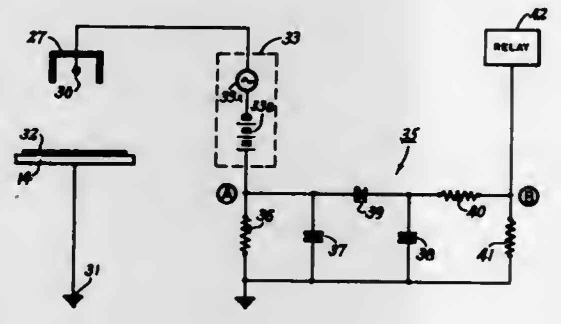
Chibiro Aoki, Aichi District, and Takashi Hirata, Nagoya, both of Japan, assignors to Elmo Company Limited, Mizuho-ku, Nagoya, Japan
Filed June 22, 1970, Ser. No. 48,337
Int. Cl. G03b *3/00, 21/14;* **G01s** *9/66*
U.S. Cl. 353—101 **1 Claim**



A sonic focusing system utilizes a beam of ultrasonic energy to detect an offset or displacement of a picture carrier to be projected from its initial focused position and is based upon the principle that upon the occurrence of such displacement, a phase difference is created between the ultrasonic waves after and before the occurrence of the displacement and therefore if this phase difference can be converted to a detecting signal for causing a focus control motor to be rotated in a direction causing the displacement of the picture carrier to be compensated, it becomes possible to bring the projection lens in focus automatically.

3,650,616
MISPUFF DETECTOR

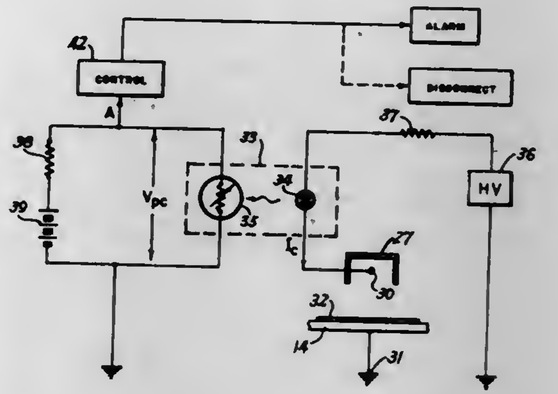
Fredrick W. Hudson, West Henrietta, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Feb. 1, 1971, Ser. No. 111,404
Int. Cl. G03g *15/00;* **B65h** *7/06*
U.S. Cl. 355—3 **7 Claims**



In an electrostatographic copying machine in which a developed image on the surface of a reproducing member is transferred to a transfer sheet in contact with said image, a device is provided for detecting the undesired continued presence of the transfer sheet on the reproducing surface after the image has been transferred, said device including a power source for providing a current flow between an electrode and the reproducing surface at a point beyond the image transfer area and a detecting circuit coupled to the electrode and power source for indicating a change in the current flow caused by the presence of the transfer sheet between the electrode and the surface, thereby indicating continued contact of the transfer sheet with the reproducing surface. The detecting circuit can be used to discontinue the operation of the machine.

3,650,617
SWITCHING DETECTOR

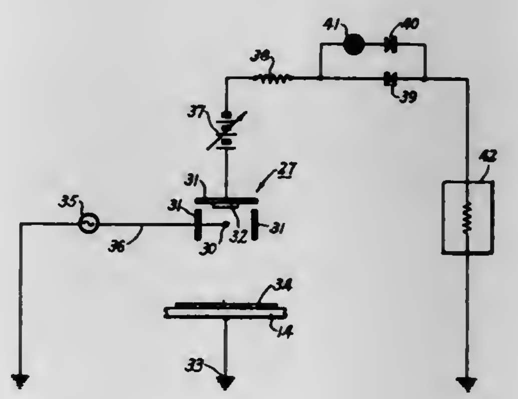
Carlton J. Baxter, Penfield, and S. William Volkers, Williamson, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Feb. 1, 1971, Ser. No. 111,405
Int. Cl. G03g *15/00;* **B65h** *7/06*
U.S. Cl. 355—3 **4 Claims**



In an electrostatographic copying machine in which a developed image on the surface of a reproducing member is transferred to a transfer sheet in contact with said image, a device is provided for detecting the undesired continued presence of the transfer sheet on the reproducing surface after the image has been transferred, said device including a power source for providing a current flow between an electrode and the reproducing surface at a point beyond the image transfer area and a switching circuit coupled to the electrode and power source for indicating a change in the current flow caused by the presence of the transfer sheet between the electrode and the surface, thereby indicating continued contact of the transfer sheet with the reproducing surface. The switching detector includes a light sealed photodetector light source unit which electrically isolates the current flow portion from the detector portion. The switching circuit can be used to discontinue the operation of the machine.

3,650,618
SWITCHING DETECTOR

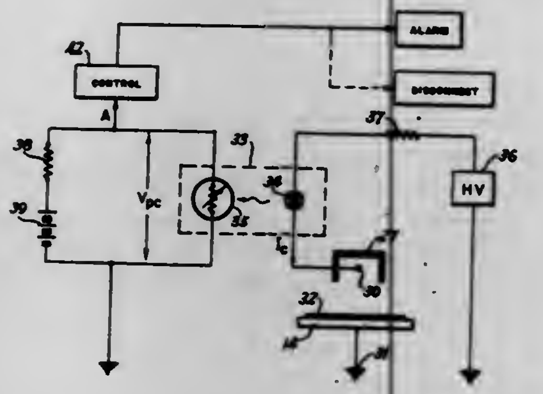
Stewart W. Volkers, Williamson, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Feb. 1, 1971, Ser. No. 111,406
Int. Cl. G03g *15/00;* **B65h** *7/06*
U.S. Cl. 355—3 **5 Claims**



In an electrostatographic copying machine in which a developed image on the surface of a reproducing member is transferred to a transfer sheet in contact with said image, a device is provided for detecting the undesired continued presence of the transfer sheet on the reproducing surface after the image has been transferred, said device including a power source for providing a current flow between an electrode and the reproducing surface at a point beyond the image transfer area and a switching circuit coupled to the electrode and power source for indicating a change in the current flow caused by the presence of the transfer sheet between the electrode and the surface, thereby indicating continued contact of the transfer sheet with the reproducing surface. The electrode is part of a corona discharge unit constructed so as to employ an AC potential source for activation. The switching circuit can be used to discontinue the operation of the machine.

3,650,619
SWITCHING DETECTOR

Delmer G. Parker, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Feb. 1, 1971, Ser. No. 111,407
Int. Cl. G03g *15/00;* **B65h** *7/06*
U.S. Cl. 355—3 **6 Claims**



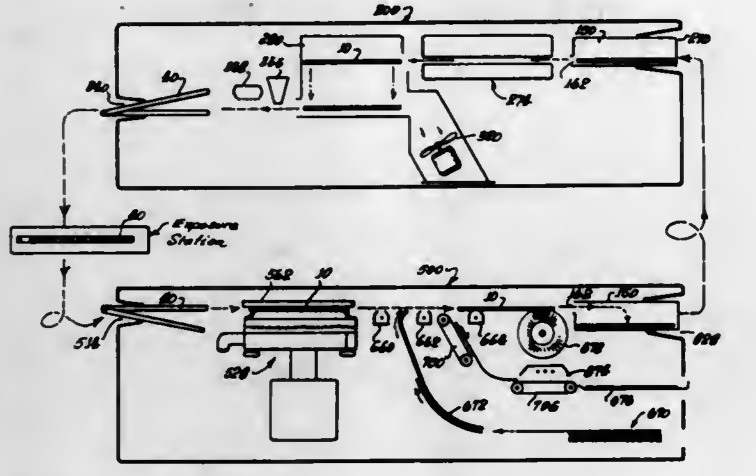
In an electrostatographic copying machine in which a developed image on the surface of a reproducing member is transferred to a transfer sheet in contact with said image, a device is provided for detecting the undesired continued presence of the transfer sheet on the reproducing surface after the image has been transferred, said device including a power source for providing a current flow between an electrode and the reproducing surface at a point beyond the image transfer area and a switching circuit coupled to the electrode and power source for indicating a change in the current flow caused by the presence of the transfer sheet between the electrode and the surface, thereby indicating continued contact of the transfer sheet with the reproducing surface. A charge dissipating device is provided immediately after the transfer point to discharge any residual surface charge patterns and prevent erroneous readings. The switching circuit can be used to discontinue the operation of the machine.

3,650,620
AUTOMATED XEROGRAPHIC PROCESSING SYSTEM

Hazen L. Hoyt, III, Glendora, Calif., assignor to Xerox Corporation, Rochester, N.Y.
Filed Nov. 7, 1969, Ser. No. 874,834
Int. Cl. G03g *15/22*
U.S. Cl. 355—3 **49 Claims**

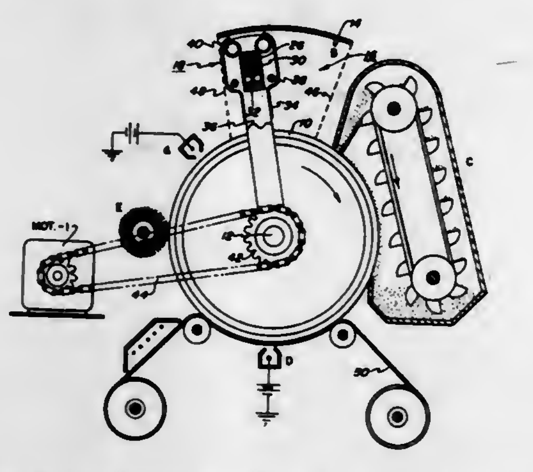
An automated flat-plate xerographic processing system especially adapted for use in the field of medical diagnostics. In this system, exposure of the uniformly charged xerographic plate takes place outside of the xerographic processing apparatus such that the test object may be selectively positioned with respect to the radiation source and the xerographic plate. To permit such exposure, the processing system includes a light-tight cassette into which the uniformly charged xerographic plate is inserted and held until automatically withdrawn, after exposure, by the development apparatus.

The charging apparatus includes means for receiving and opening the light-tight cassette, means for inserting the charged xerographic plate therein without disturbing the uniform electrostatic charge thereon and means for closing the cassette. The development apparatus includes means for receiving and opening the cassette without further exposure of the xerographic plate to actinic electromagnetic radiation, the xerographic plate being held in the proper alignment for removal from the cassette, and means for withdrawing the xerographic plate from the cassette and for advancing the xerographic plate to the development means without disturbing the latent electrostatic image thereon.



3,650,621
OPTICAL IMAGING SYSTEM

William G. Lewis, Rochester; Robert W. Moorhusen, Penfield, and Richard H. Nagel, Fairfield, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Mar. 28, 1969, Ser. No. 811,561
Int. Cl. G03b *27/50*
U.S. Cl. 355—8 **1 Claim**

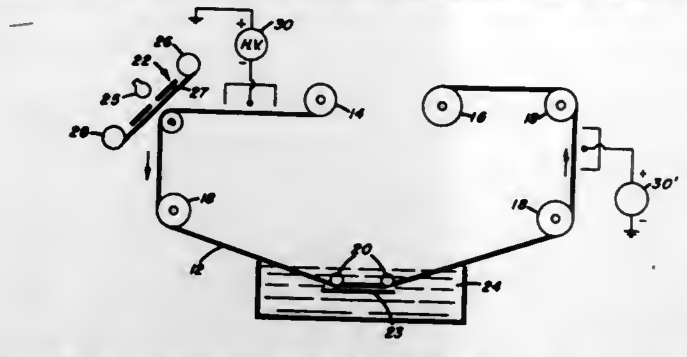


An optical imaging system including a document supporting surface, a short conjugate imaging device and a cylindrically shaped light responsive member. The document to be reproduced is fixedly supported adjacent the light responsive member with the imaging device therebetween. The imaging device is moved in the direction opposite the direction of rotation of the light responsive member in an arcuate path concentric with the light responsive member and document supporting surface to thereby create a usable pattern on the surface of the light responsive member in conformity with the document being reproduced.

3,650,622
APPARATUS FOR CONTROL OF BIAS POTENTIAL IN AN ELECTROPHOTOGRAPHIC COPIER

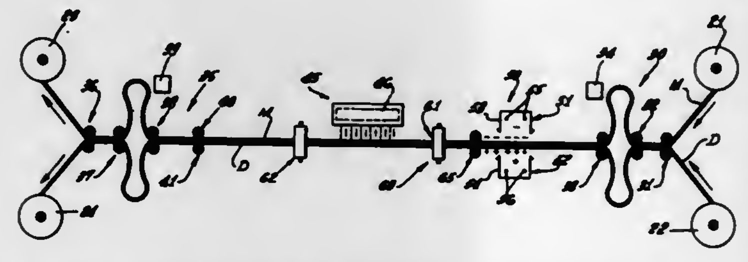
Theodore H. Morse, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 9, 1970, Ser. No. 17,394
Int. Cl. G03g *13/10*
U.S. Cl. 355—10 **2 Claims**

An apparatus and method are disclosed for adjusting the potential difference between the conducting layer and ground at any preselected position on a photoconductive element that is continuous from exposure through development stations.



3,650,623
CONTACT PRINTING METHOD AND APPARATUS WITH ELECTROSTATIC MEANS FOR FILM REGISTRATION

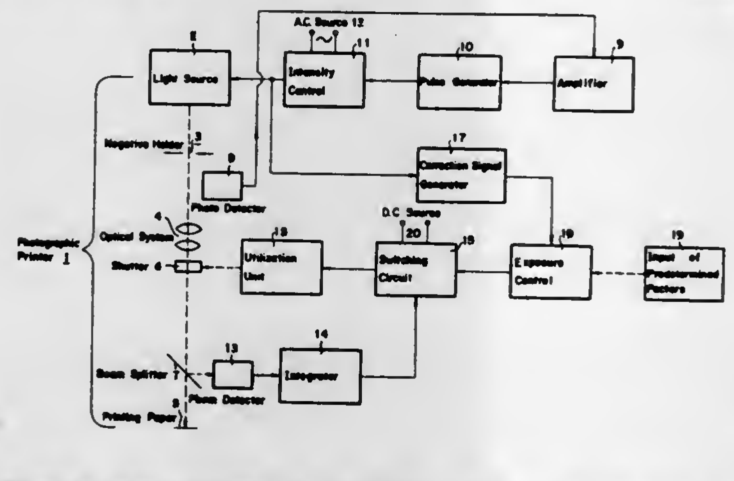
Robert Beispel, Westlake Village, Calif., assignor to Extek Microsystems, Inc., Van Nuys, Calif.
Filed Dec. 18, 1969, Ser. No. 886,171
Int. Cl. G03g *15/00*
U.S. Cl. 355—12 **23 Claims**



A method and apparatus for contact printing of continuous strips of film in which the image on the transparent master film is exposed with the light-sensitive negative film while the film strips are in an exposure zone. The film strips are maintained in precise registry through electrostatic devices which produce opposite charges on the two strips, causing them to attract and strongly adhere to one another, thereby preventing relative transverse, lateral and longitudinal movement during exposure. An alternative form of the invention providing for using a master having a substantially smaller width than the duplicate, and printing a plurality of master strips on the duplicate in side-by-side relation.

3,650,624
PHOTOGRAPHIC PRINTER WITH AUTOMATIC EXPOSURE CONTROL

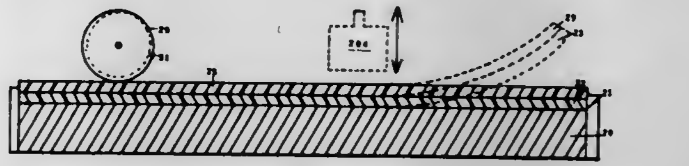
Yoshihiro Yamada, No. 2845, Aza Kuroishi, Oaza Hirabari, Tenpaku-cho, Showa-ku, Nagoya-shi, Aichi-ken, Japan
Filed Mar. 13, 1970, Ser. No. 19,407
Int. Cl. G03b *27/76*
U.S. Cl. 355—69 **1 Claim**



Photographic printer is provided with an apparatus for controlling the quantity of printing light to be applied to a printing paper in dependence upon the variable densities of negative film to be printed. Said intensity control apparatus is composed to two photoelectrical devices, namely one for controlling the effective current supplied to a printer lamp and other for controlling other factors influencing the quantity of the printing light. A correction signal is derived from the former device and applied to the latter device, to thereby attain a fine and high speed control of the photographic printing process with proper exposure appropriate for the negative and printing paper as used.

3,650,625
MULTIPLE AUTOMATIC TRANSFER OF MOLECULARLY ORIENTED MOTION PATTERNS

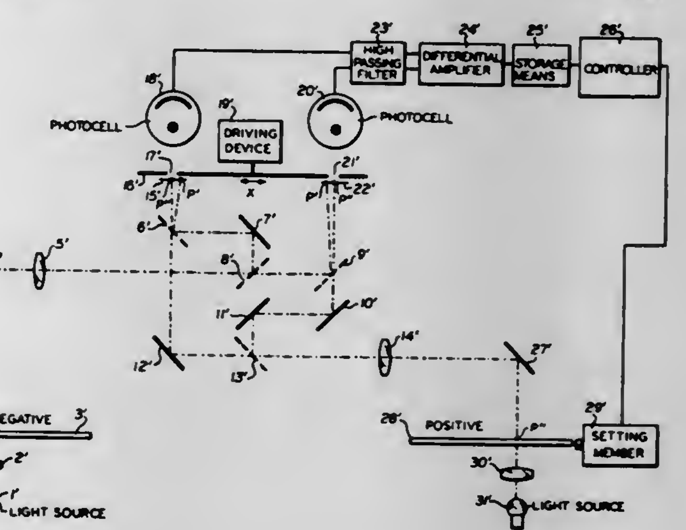
Paul A. Hoyte, Jr., Blue Ash, Ohio, assignor to Technical Animations, Inc., Port Washington, N.Y.
Filed Oct. 31, 1966, Ser. No. 590,789
Int. Cl. G03b *27/02*
U.S. Cl. 355—78 **1 Claim**



1. A method for orienting the surface molecules of a matrix into a motion pattern in the latent state comprising the steps of coating the surface of the matrix with photo resist material, preparing a mask for each vector of orientation desired, each of said masks having at least one portion adapted to permit exposure of all but the selected portions, then placing a first mask over the coating of photo resist exposing the photo resist to light, then washing away the unexposed portions and orienting all unexposed portions in a single vector, then stripping the photo resist from the matrix, then recoating the matrix with photo resist and placing another mask comprising other selected areas, then exposing the photo resist to light and washing away the unexposed portions and orienting the uncovered portions of the matrix in a vector different from the previous vector, and then repeating the foregoing steps for as many vectors as may be desired.

3,650,626
METHOD OF AND APPARATUS FOR THE AUTOMATIC SCANNING OF PARTS OF STEREOGRAMS BY OPTICAL COMPARISON OF THE IMAGES

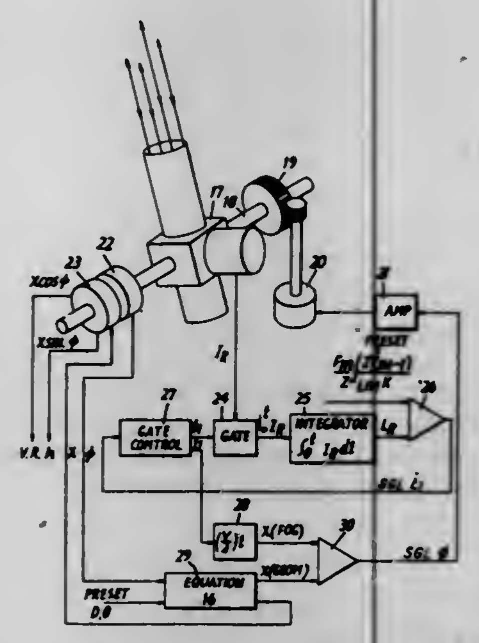
Otto Hofmann, Kirchstockach, Germany, assignor to Dr. Johannes Heidenhain, Traunreut nr. Traunstein, Germany
Filed Sept. 30, 1968, Ser. No. 763,538
Int. Cl. G01c *11/18*
U.S. Cl. 356—2 **12 Claims**



A method of and apparatus for automatic scanning and spatial measuring of stereo image pairs, which comprises the steps of feeding together from a stereo image pair identical zones of the positive image of an exposure location and of the negative image of the other exposure location optically into a plane, and displacing the images relatively to each other or jointly by light-electric scanning and a control circuit such, that within the scanning range the light-dark contours disappear and are reduced to a minimum, respectively, the contours are present as a result of parallaxes between the negative and the positive, so that within the scanning range identical scanning spots of the negative and of the positive and a unitary gray tone are created.

3,650,627
MEASUREMENT OF VISUAL RANGE IN FOG

Paul Adelbert Noxon, Tenafly, N.J., assignor to Thorn-Bendix Limited, New Barnet, Hertfordshire, England
Filed Sept. 10, 1969, Ser. No. 856,565
Claims priority, application Great Britain, Sept. 13, 1968, 43,781/68
Int. Cl. G01c *3/08;* **G01n** *21/22*
U.S. Cl. 356—4 **13 Claims**

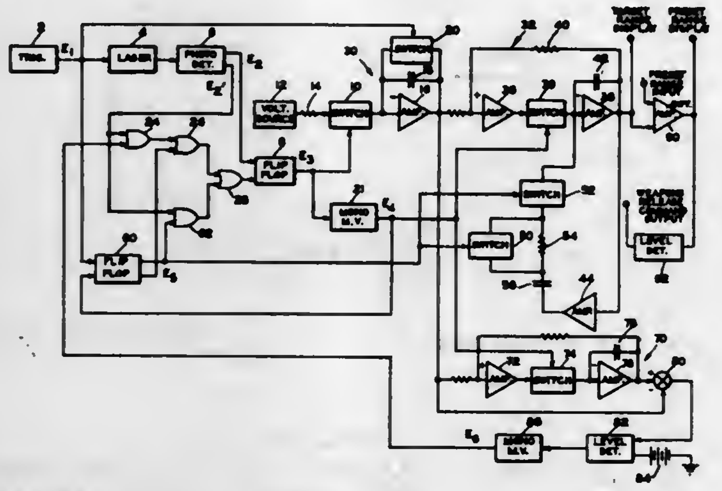


Apparatus for measuring visual range in fog comprises a transmitter which transmits a pulsed parallel beam of radiation, a receiver which measures the radiation reflected by the fog, and means for integrating the received brightness with respect to time. A measure of the visibility is derived from the integrated brightness.

3,650,628
RANGE SYSTEM

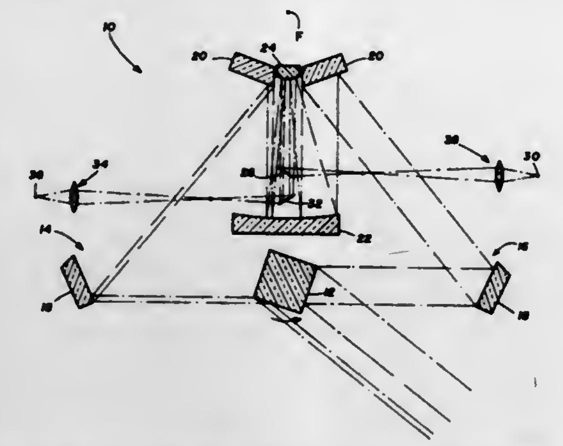
David A. Tawfik, Rego Park, N.Y.; Roger J. Talish, Wayne, and John F. Yurasek, Oakland, both of N.J., assignors to The Bendix Corporation
Continuation of application Ser. No. 763,866, Sept. 30, 1968, now abandoned. This application Mar. 9, 1970, Ser. No. 17,036
Int. Cl. G01c *3/08*
U.S. Cl. 356—4 **9 Claims**

A system for converting the interval between signals fired at a target and corresponding rebound signals therefrom to a full scale target range indicating and to an expanded scale indication showing target range to a preset range point. Means are included for eliminating the effect of missing or false rebound signals, increasing noise immunization and for initiating a weapons release command.



3,650,629
SPLIT IMAGE, DUAL SPECTRUM OPTICAL SCANNING SYSTEM

John G. Erickson, Forth Worth, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed June 3, 1970, Ser. No. 43,053
Int. Cl. G01j *3/00;* **G02b** *17/00*
U.S. Cl. 356—74 **6 Claims**



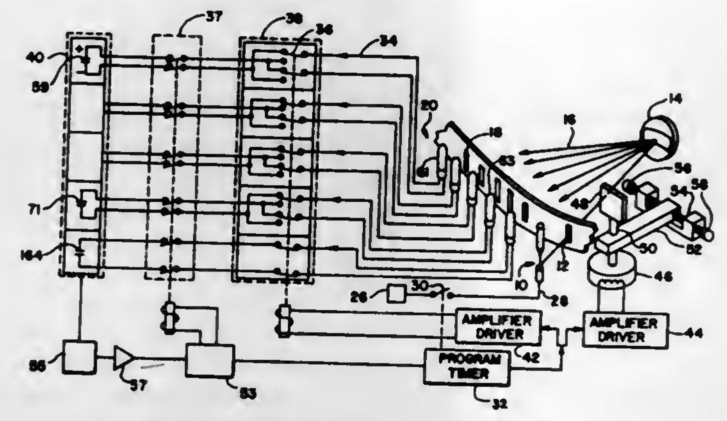
A split image, dual spectrum optical scanning system includes a rotating multi-sided mirror for receiving radiant energy and for dividing the energy into split images. The split images are reflected through equal and opposite relay mirror systems to a Cassegrain type optical system, which converges the split images into a narrow envelope. An angularly extending dichroic mirror reflects the ultraviolet/visible portions of the split images out of the envelope to an ultraviolet/visible detector. The dichroic mirror also passes the infrared portions of the split images to an angularly extending mirror that reflects the infrared portions to an infrared detector.

3,650,630
FORCED ZERO SUBSYSTEM, PARTICULARLY FOR ELECTRO-OPTIC BACKGROUND CANCELLATION SYSTEMS

Kaspar Habosian, Watertown, Mass., assignor to Baird-Atomic, Inc., Cambridge, Mass.
Continuation-in-part of application Ser. No. 602,010, Dec. 15, 1966, now abandoned , and a continuation-in-part of 859,249, Sept. 17, 1969, now Patent No. 3,588,252. This application June 12, 1970, Ser. No. 45,620
Int. Cl. G01j *3/30*
U.S. Cl. 356—82 **10 Claims**

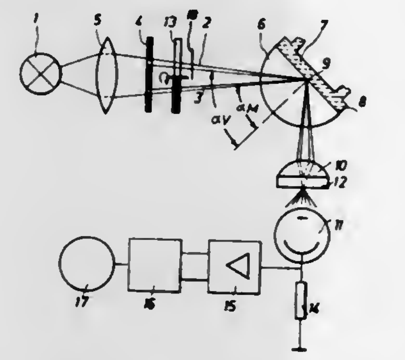
Line spectra and background energy superimposed thereon is alternately positioned "on" and "off" a slit. During the "off" period only background energy is positioned on

the slit. Measuring and reference capacitors associated with photomultipliers, integrate the signal in such a manner that long time constant background energy is canceled. Short time constant background energy is canceled by detecting the polarity of the residual charge on the reference capacitor and by integrating, on each measuring capacitor, a signal representing the opposite polarity of the detected charge. In consequence, the residual charge on each of the measuring capacitors is driven to zero.



3,650,631
ARRANGEMENT AND PROCESS FOR MEASURING THE REFRACTIVE INDEX OF LIQUIDS

Joachim Grassel, Krefeld-Bockum, and Otto Petersen, Krefeld, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 30, 1970, Ser. No. 33,452
Claims priority, application Germany, May 13, 1969, P 19 24 311.9
Int. Cl. G01r *21/46*
U.S. Cl. 356—128 **12 Claims**

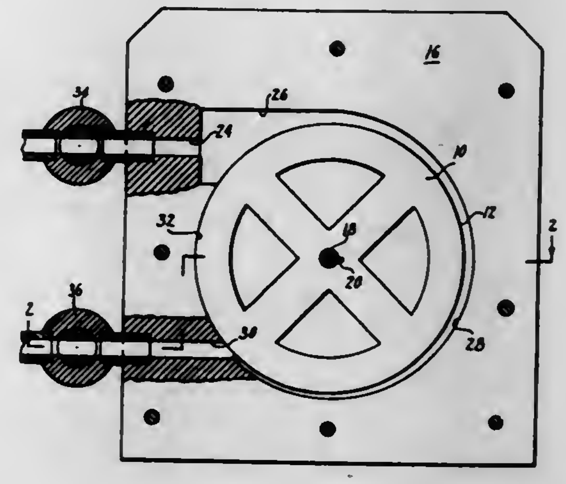


A two-beam arrangement for measuring the refractive index of liquids using the fact that the intensity of a measuring light beam reflected at an interface between a solid reference body and a sample liquid is governed by the refractive index of the sample liquid when the angle of incidence of the light beam striking the interface is smaller than the critical angle of total reflection, in which arrangement the measuring beam and comparison beam are reflected at the same point along an interface between a measuring liquid sample and a reference body, the angle of incidence of the measuring beam being smaller and the angle of incidence of the comparison beam being greater than the critical angle of total reflection.

3,650,632
FRICTION DRIVE ROTARY ENGINE

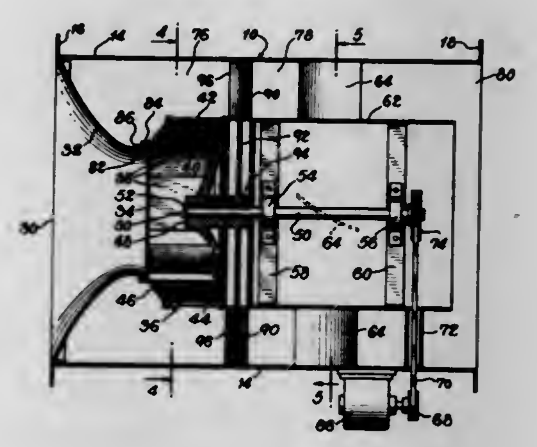
John L. Shanahan, 380 West Main St., Waterbury, Conn.
Filed May 5, 1970, Ser. No. 34,696
Int. Cl. F01d *1/36*
U.S. Cl. 415—90 **4 Claims**

A casing having a circular bore therein, a rotor rotatably mounted within the bore, inlet and exit vents leading to and from the bore, and valves connected to the vents outside the casing for regulating the passage of air or steam travelling from one vent to the other between the rotor and the inner diameter of the bore.



3,650,633
IN-LINE CENTRIFUGAL FAN

Remi A. Benoit, 27 Pinewood Drive, Neptune, N.J.
Filed Nov. 30, 1970, Ser. No. 93,600
Int. Cl. F04d *25/16, 25/02, 29/40*
U.S. Cl. 415—143 **8 Claims**

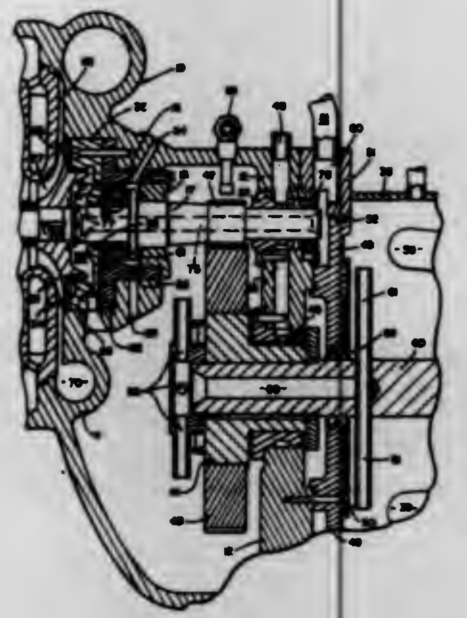


In an in-line centrifugal fan having an annular centrifugal impeller mounted for rotation within a tubular housing, a plurality of independent axial-type impeller blades mounted for rotation with the centrifugal impeller and juxtaposed with the path of air discharged radially from the centrifugal impeller so as to draw such air into the axial-type blades and direct the air in an axial direction toward the outlet of the fan.

3,650,634
CENTRIFUGAL REFRIGERATION COMPRESSOR

William T. Osborne, East Syracuse, and James W. Endress, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Nov. 6, 1970, Ser. No. 87,521
Int. Cl. F04d *29/00, 25/02;* **F16c** *1/24*
U.S. Cl. 415—175 **3 Claims**

In a centrifugal compressor a sealed annular space is established between the backside of the impeller and the housing wall. Pump means is provided to maintain a minimum pressure in the annular space at a level above the pressure in the bearing structure mounted in the housing wall. The arrangement prevents the passage of oil from the bearing structure to the area behind the impeller when the discharge pressure falls to an abnormally low level.



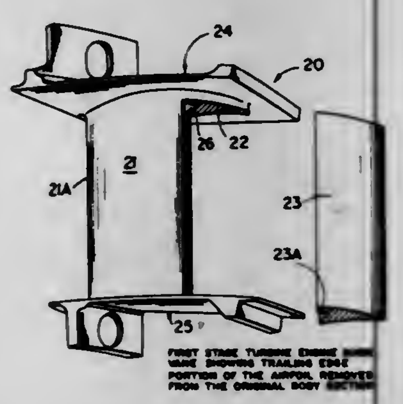
3,650,635
TURBINE VANES

Richard Lloyd Wachtell, Tuxedo Park, and Edward C. Palmenberg, Nanuet, both of N.Y., assignors to Chromalloy American Corporation

Filed Mar. 9, 1970, Ser. No. 17,752

Int. Cl. F01d *5/14*

U.S. Cl. 415—115 **14 Claims**



An improved airfoil is provided for turbine engines having locating buttresses at opposite ends thereof, said airfoil having a leading edge and a trailing edge. The body of the airfoil section has a polycrystalline structure of equiaxed grains, at least one of the airfoil edges being comprised of a welded insert having grains running longitudinally of said edge.

3,650,636
ROTARY GAS COMPRESSOR

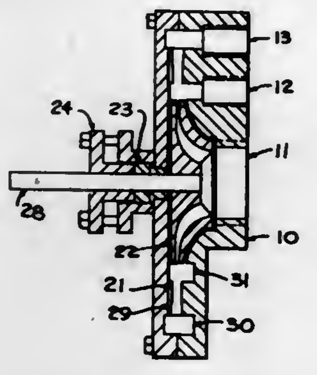
Michael Eskeli, 2932 Sandage Ave., Fort Worth, Tex.

Filed May 6, 1970, Ser. No. 35,112

Int. Cl. F04b *23/04*

U.S. Cl. 417—78 **2 Claims**

Method and apparatus for a compressor for compressing air, gases and vapors isothermally using a liquid stream to compress the gas; the liquid issuing from an impeller intermittently, with the gas being entrained between these liquid pulses and compressed by the liquid; the liquid having high kinetic energy when leaving the impeller and in slowing the kinetic energy is converted to pressure for both the liquid and entrained gas. Also, this compressor may be used advantageously to compress vapors, wherein the liquid is the same fluid as the gas, in which case condensation of the gas to the liquid occurs, and work of compression is reduced.



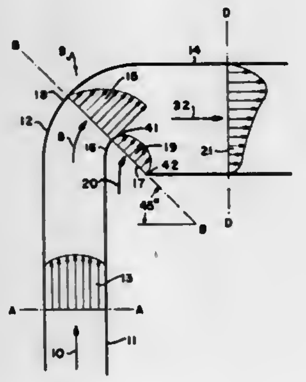
3,650,637
ASYMMETRICAL JET EJECTOR

David W. Amick, 6437 Melia St., Springfield, Va.

Filed Apr. 27, 1970, Ser. No. 31,897

Int. Cl. F04f *5/00*

U.S. Cl. 417—151 **5 Claims**



An asymmetrical jet ejector having a bend along the conduit axis in the direction of the primary fluid flow and an inlet at the inner radius of the bend for the secondary fluid. The differential pressure at the inlet between the pressure of the secondary fluid and the primary fluid at the inner radius of the bend produces a flow of the secondary fluid into the conduit. The energy in the primary flow thereby induces and entrains the flow of the secondary fluid.

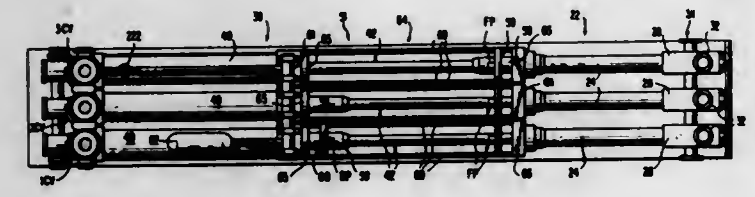
3,650,638
HYDRAULICALLY POWERED PUMP HAVING A PRECOMPRESSION FUNCTION

Clinton W. Cole, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Dec. 19, 1969, Ser. No. 886,687

Int. Cl. F04b *35/00, 15/02, 17/00*

U.S. Cl. 417—346 **21 Claims**



An hydraulically powered multiplex pump having at least three pumping units, each operable in a cycle including suction, precompression and discharge phases, with the cycles being out of phase with one another, whereby simultaneous performance of these functions results in a substantially constant pressure and flow of both the pumped fluid and the power fluid. Separate power and cycle control circuits, which may employ different fluids, are provided. Control valve assemblies, each including two sleeve valves communicating with a common chamber, are operated by the control circuit fluid to condition power circuit flow for the various phases of the pumping cycle. The power end of the pumping units includes power cylinders which may be fluid interconnected at their rod ends so that operations in each power cylinder affect functions in the other chambers, and provision is made for automatic correction of errors in stroke length.

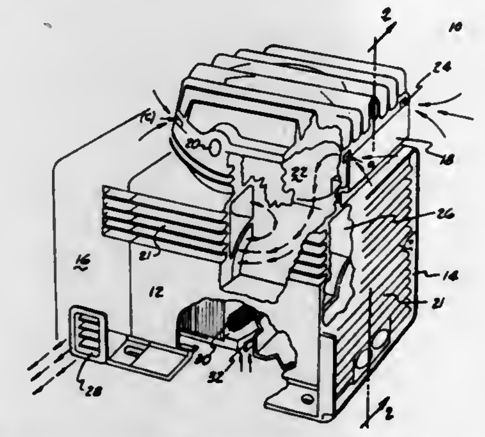
3,650,639
AIR PUMPS

Robert Raymond Greene, Chicago; Hans Oscar Jacob, Morton Grove, and Meredith Wayne Meece, Niles, all of Ill., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 21, 1970, Ser. No. 4,615

Int. Cl. F04b *17/00, 35/00, 39/02, 21/00, 45/00*

U.S. Cl. 417—368 **4 Claims**



Air pumps are provided having channels therein to allow cool air to circulate throughout the interior of the pump to promote efficient and effective cooling of the pump. Additionally, a dampening or muffling arrangement is provided which substantially reduces the air borne operational noise of the pumps.

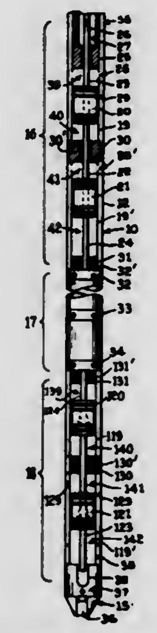
3,650,640
DOWNHOLE PUMP ASSEMBLY HAVING ENGINES SPACED APART BY A PRODUCTION PUMP

George K. Roeder, Box 4335, Odessa, Tex.

Filed May 11, 1970, Ser. No. 36,351

Int. Cl. F04b *17/00, 35/00*

U.S. Cl. 417—396 **10 Claims**



A fluid actuated pump assembly having a valve assembly, an engine means, and a production pump. The engine means is comprised of an upper and lower engine assembly with the pump being interposed therebetween. A flow passageway formed from the valve assembly through an axial passageway in the upper engine assembly, through an axial passageway in the production pump, and to the lower engine assembly provides a power fluid source and exhaust to the lower engine. Another flow passageway is located externally of the piston of the upper engine and provides a second flow passageway which is connected to the upper engine assembly so as to enable power fluid and spent power fluid to flow to and from the upper engine. This expedient causes the pump piston to be actuated by a compressive force which is applied to each of the connecting rods attached thereto.

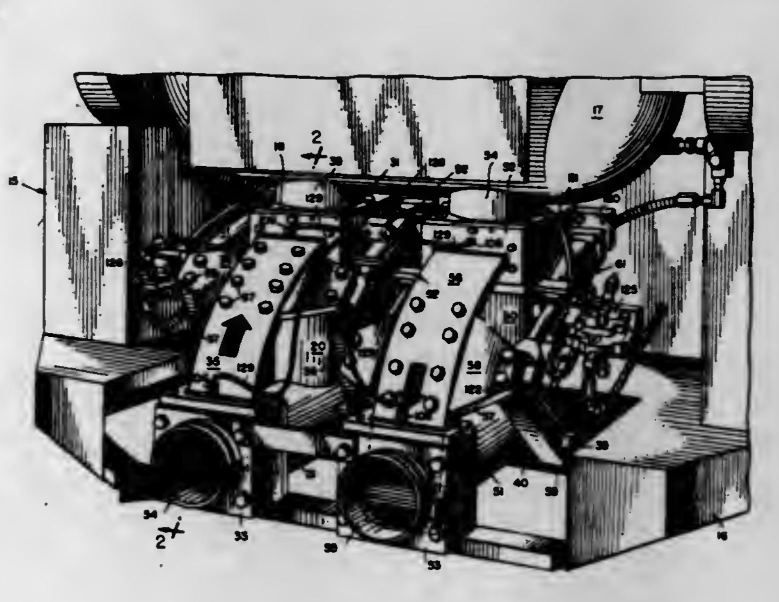
3,650,641
CONCRETE PUMPING MACHINE

Gerald H. Reinert, Cold Spring, Ky., assignor to Desa Industries, Inc., Cockeysville, Md.

Continuation-in-part of application Ser. No. 875,439, Nov. 10, 1969. This application Aug. 25, 1970, Ser. No. 66,744

Int. Cl. F04b *7/00;* **E03b ; G01f** *11/28*

U.S. Cl. 417—518 **15 Claims**



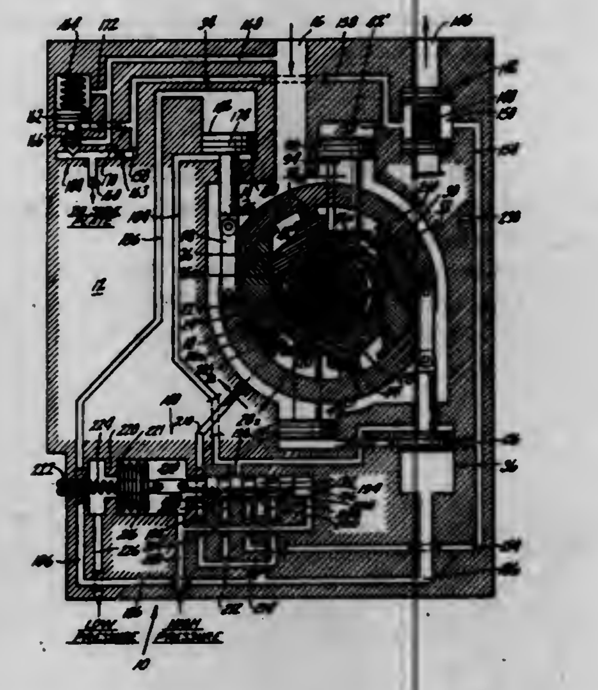
A concrete pumping machine having an elongated concrete pumping cylinder and a concrete supply hopper is provided with an inlet conduit for supplying concrete from the hopper to the cylinder and an outlet conduit for discharging the concrete from the cylinder. The inlet and outlet conduits are disposed substantially perpendicularly, and an arcuate valve blade is pivotally mounted for swinging movement into and out of the flow paths through the inlet and outlet conduits for selectively opening the inlet conduit while closing the outlet conduit and for closing the inlet conduit while opening the outlet conduit. A blade seal housing is mounted on each of the conduits for slidably receiving the swinging valve blade, and each seal housing is provided with an elongated generally rectangular opening through which the blade moves. A sealing gasket and an oil-absorbent felt pad are mounted within each housing adjacent the opening, and a hardened steel liner is positioned in the housing to protect the housing from the moving blade. The blade is mounted for arcuate movement on a pivotally mounted yoke, which is powered by a pair of double-acting hydraulic piston and cylinder assemblies, and the piston of the concrete pumping cylinder is also powered by a double-acting hydraulic piston. Suitable control means are provided for coordinating the movement of the blade-operating pistons with the movement of the pumping piston so that the pumping piston is retracted when the blade closes the outlet conduit and is extended when the blade closes the inlet conduit. The blade-operating cylinders are pivotally interconnected between the swinging yoke and the pump frame, and a hydraulic pilot valve is mounted for movement with the blade-operating cylinder to maintain a substantially constant relationship between the pilot valve and the cylinder.

3,650,642

PUMPING SYSTEM INCLUDING VARIABLE DISPLACEMENT VANE PUMP

John E. Cygnor, Middletown, and Jack G. Sundberg, Meriden, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed Apr. 14, 1970, Ser. No. 28,446
Int. Cl. F01c *21/16*; **F03c** *3/00*; **F04c** *15/04*
U.S. Cl. 418—26 **6 Claims**



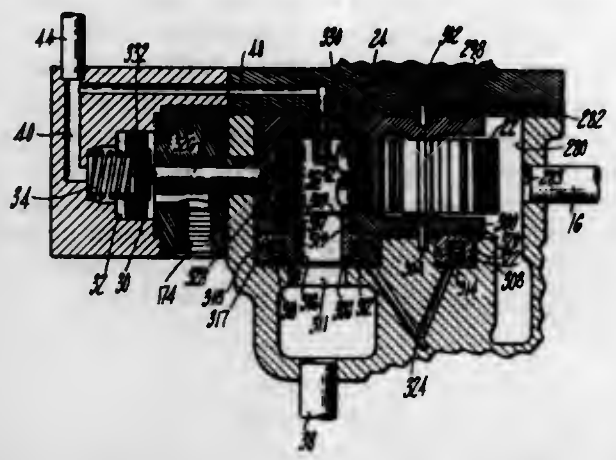
A variable displacement vane pump has a plurality of vanes slidably fitted in slots formed substantially radially in a rotor. The identical track elements are movably arranged around the rotor to provide a track for the vanes. The positions of the track elements determines the displacement of the pump. Each track element includes a radial inlet passage and a radial outlet passage. The inlet passage of one of the track elements is diametrically opposed from the inlet passage of the other of the track elements and the outlet passage of one of the track elements is diametrically opposed from the outlet passage of the other of the track elements in order to pressure balance the rotor. The track elements are slideably mounted within a frame around which is rotatably disposed a cam actuation ring. Cam members are provided on the cam ring to contact respective can surfaces on the track elements and control the position of the track elements with respect to the rotor. The cam ring is rotated about the frame by means of pistons.

3,650,643

FLUID PUMP AND DELIVERY SYSTEM

Charles W. Grennan, Newington, and Richard J. Hearn, Hartford, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Continuation-in-part of application Ser. No. 767,293, Oct. 14, 1968, now Patent No. 3,547,557. This application Apr. 30, 1970, Ser. No. 33,360
Int. Cl. F01c *19/10*; **F03c** *3/00*; **F04c** *27/00*
U.S. Cl. 418—126 **7 Claims**



A fuel pump and delivery system for gas turbine engines is disclosed having a plurality of interrelated pumping circuits to meet the engine fuel requirements over the entire range of engine operation. The system has three distinct but interrelated circuits for (1) start up and low-speed operating requirements, (2) normal operating requirements above engine idle speed, and (3) high altitude cruise requirements. A positive displacement gear pump functions in the low speed and start up circuit to provide the necessary dry lift and high pressure, and after the start-up requirements have been met this part of the displacement gear pump is unloaded to terminate its pumping action, but the gear train is employed to drive selectively operative centrifugal pumps of different capacities suitable to meet the engine fuel requirements for either normal operations or for high altitude cruise.

ERRATUM

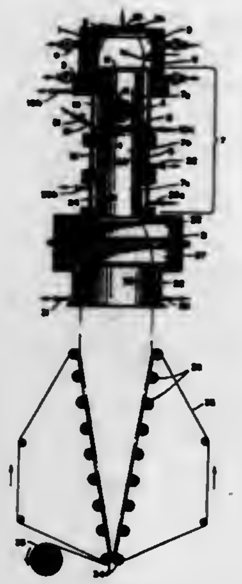
For Class 425—408 see:
Patent No. 3,650,030

3,650,644

APPARATUS FOR BIAXIALLY STRETCHING THERMOPLASTIC TUBULAR FILM

Alfred Ebert; Ernst Pirot, both of Wuppertal-Barmen; Fritz Holler, Wuppertal-Langerfeld, and Georg Steinhilber, Wuppertal-Elberfeld, all of Germany, assignors to J. P. Bemberg Aktiengesellschaft, Wuppertal, Germany

Original application Feb. 2, 1968, Ser. No. 702,733, now Patent No. 3,544,667. Divided and this application Apr. 23, 1970, Ser. No. 43,302
Claims priority, application Germany, Feb. 10, 1967, B 91113; Aug. 9, 1967, B 93882; Jan. 8, 1968, B 96135; B 96137; B 96138
Int. Cl. B29d *7/16*
U.S. Cl. 425—66 **18 Claims**



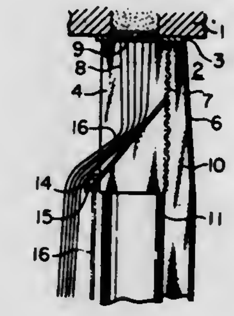
Process and apparatus wherein an extruded seamless thermoplastic tubular film is biaxially stretched by a longitudinal drawing accompanied by an inflation or blowing for transverse stretch. After first inflating the initially extruded film tube under a counterpressure of an externally applied cooling gas in a pressure chamber, the tubular film is necked down from the pressure chamber to pass through an elongated pipe having at least a first cooling section of reduced surface contact with the tubular film, after which the tubular film is reheated for further inflation and/or longitudinal stretching and may then be subsequently tempered to achieve uniform and/or stable dimensions. The resulting inflated and biaxially stretched tube is collapsed or flattened and collected on a take-up roll in the usual manner.

3,650,645

SPINNING CHIMNEY

Seibi Yamada, and Reizo Asada, both of Matsuyama-shi, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Oct. 17, 1969, Ser. No. 867,130
Claims priority, application Japan, Oct. 25, 1968, 43/93141
Int. Cl. D01d *7/00*
U.S. Cl. 425—71 **2 Claims**



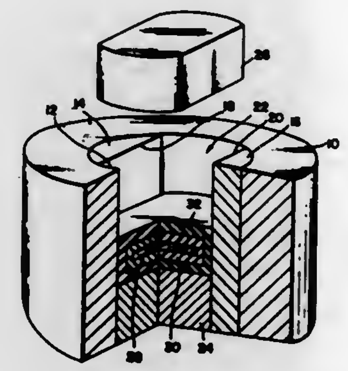
In a spinning chimney comprising side plates and a back plate such a manner that a front part of the chimney is opened, in which extruded filaments are quenched and solidified by a stream of fluid blown in a direction from the back plate to the front part of the chimney through a screen; a plate at one end is swingably spanned with both front ends of said side plates, and said plate at the other end reclined slantly against the screen in order to remove waste filaments therefrom during the start-up of the spinning operation.

3,650,646

APPARATUS FOR FORMING POWDER COMPACTS OF UNIFORM INTERCONNECTED POROSITY

Milton E. Kirkpatrick, Palos Verdes Peninsula, and Ralph A. Mendelson, Westminster, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Original application Feb. 23, 1968, Ser. No. 707,813, now Patent No. 34,946,425, which is a continuation-in-part of application Ser. No. 509,970, Nov. 26, 1965, now abandoned. Divided and this application Aug. 8, 1969, Ser. No. 848,641
Int. Cl. A61c *13/00*
U.S. Cl. 425—78 **12 Claims**



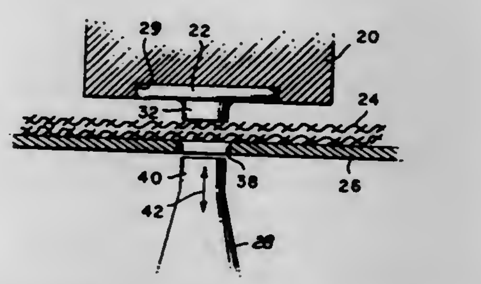
Powder compacting apparatus includes an enclosure made of two parts of elastomeric material. One internal part contains the powder and is made of relatively soft, flowable, elastomeric material. The other part is external to the first part and is made of relatively hard, elastomeric material. The enclosure fits in a die cavity, with the hard elastomeric part placed to form a seal between the soft elastomeric part and the interface or open junction between walls of the die cavity. Pressing force applied to the die is transmitted to all sides of the enclosure to exert pressure isostatically on the powder, with the hard elastomeric part pressed against the wall interface of the die cavity to prevent extrusion of the soft elastomeric part from the die cavity.

3,650,647

APPARATUS FOR SECURING BUTTONS TO FABRIC

Herbert V. Jacobs, Lower Merion, Pa., and Donald Kirk, Jr., St. Petersburg, Fla., assignors to Jacobs Machine Corporation, West Conshohoken, Pa., by said Herbert V. Jacobs

Filed May 21, 1969, Ser. No. 826,587
Int. Cl. B29c *3/00*
U.S. Cl. 425—109 **4 Claims**



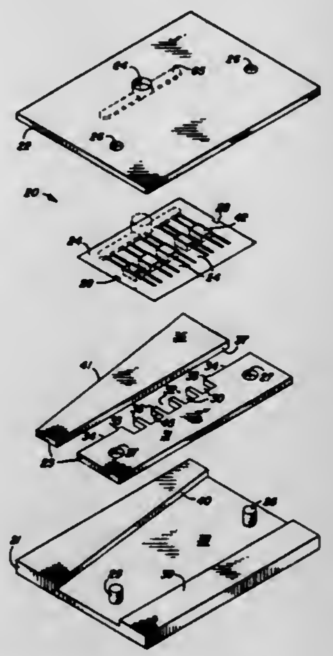
A method and apparatus for securing buttons to fabric. The method comprises providing a button with a thermoplastic portion and securing the button to fabric by applying ultrasonic energy to the thermoplastic portion which enables securement between the button and the fabric by the flowing of the thermoplastic portion into the fabric.

3,650,648

SYSTEM FOR MOLDING ELECTRONIC COMPONENTS

Richard A. Lambrecht, Greenville, S.C., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 25, 1970, Ser. No. 13,956
Int. Cl. B29c *6/04*
U.S. Cl. 425—129 **19 Claims**



System for injection molding components including process and an apparatus consisting of at least two mold parts having molding cavities formed therein when the parts are brought together, a sheet-like frame member disposed between the mold parts and having a pattern of cutouts therein defining central openings in registry with mold cavities and pairs of slots in the sheet extending from the openings to form elongated prong-like strips which extend into the cavities and support the electronic components therein, and a passage in one of the mold parts overlying the slots in the sheet whereby fluid molding material can be flowed through said slots and into the cavities to encapsulate the components therein.

3,650,649

APPARATUS FOR PRODUCING A MULTI-LAYER BLOWN TUBULAR THERMOPLASTIC FILM

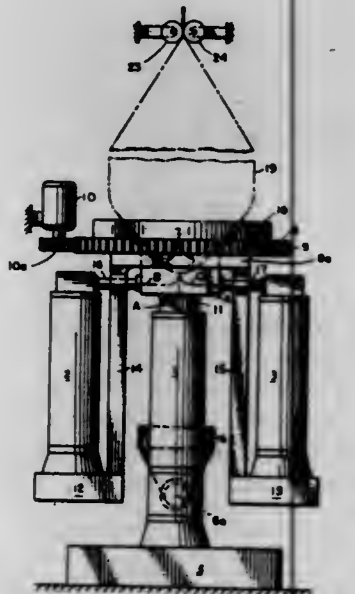
Heinz Schippers, Remscheid-11, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Aug. 3, 1970, Ser. No. 60,390

Claims priority, application Germany, Aug. 2, 1969, P 19 39 528.9

Int. Cl. B29d *23/04*

U.S. Cl. 425—131 **10 Claims**



Apparatus for the continuous extrusion of a multi-layer blown tubular thermoplastic film wherein the extrusion die is rotatably mounted about a vertical extrusion axis in feed connection with an extruder in which the screw axis coincides with the vertical extrusion axis and also in feed connection with one or more additional extruders mounted for rotation together with the die, preferably with a common drive means and support for the die and the interconnected additional extruders.

3,650,650

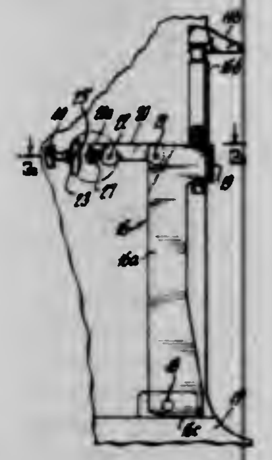
SAFETY MECHANISM FOR A PLASTICS INJECTION-MOLDING MACHINE

Francis W. Cook, Jr., Newington, Conn., assignor to The New Britain Machine Company, Britain, Conn.

Filed May 15, 1969, Ser. No. 825,010

Int. Cl. B29f *1/00*; **B29c** *3/00*

U.S. Cl. 425—153 **6 Claims**



A plastics injection-molding machine carries the parts of a two-part mold, supported respectively on upper and lower platens, one of which is movable toward and away from the other for clamped mating and for separation of the mold halves. Safety dogging mechanism in the form of a drop-bar is mounted to be moved selectively into and out of the path of the one movable platen, when the platens are apart, for preventing the one platen from moving toward the other. A rotatable shaft is connected to position the bar into and out of said path. A handle on the shaft is positioned to overbalance the shaft when the bar is positioned in said path, thereby providing gravity-retention of the safety or blocking position.

3,650,651

APPARATUS FOR PELLETIZING POWDEROUS MATERIALS BY VIBRATIONAL FORCES

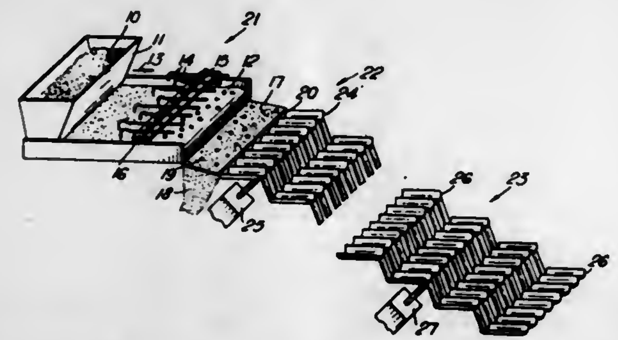
Godfrey A. Turner, 277 Glenridge Drive, Waterloo, Ontario, Canada

Filed Sept. 22, 1969, Ser. No. 859,715

Claims priority, application Canada, Apr. 2, 1969, 47,608

Int. Cl. B29b *1/03*

U.S. Cl. 425—197 **11 Claims**



An apparatus for pelletizing powderous materials, such as iron ore and alumina, the apparatus including rows of vibrating trough-like members, each row being spaced below the preceding row so that primary pellets fed into the apparatus pass from the top row to the bottom row of trough-like members and are formed into hard pellets.

3,650,652

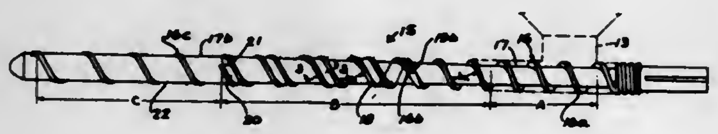
APPARATUS FOR EXTRUDING PLASTIC MATERIAL

Robert F. Dray, New Castle, Pa., and Donald L. Lawrence, Toledo, Ohio, assignors to Feed Screws, Inc., New Castle, Pa., by said Robert F. Dray and Owens-Illinois, Inc., Toledo, Ohio, by said Donald L. Lawrence

Filed May 5, 1970, Ser. No. 34,726

Int. Cl. B29f *3/02*

U.S. Cl. 425—206 **19 Claims**



Extruding plastic material utilizing an extruder comprising a cylindrical bore having an inlet at one end and an outlet at the other end in which a single shaft screw is rotatably mounted. The periphery of the screw is formed with a first land that defines a main helical channel that extends throughout the length of the screw. At a point downstream from the inlet, the lead of the first land is increased and a second land begins defining with the first land an auxiliary helical channel. The periphery of the second land is spaced from the surface of the bore a greater distance than the periphery of the first land and the second land terminates at a point spaced rearwardly from the end of the first land and in spaced relation thereto.

3,650,653

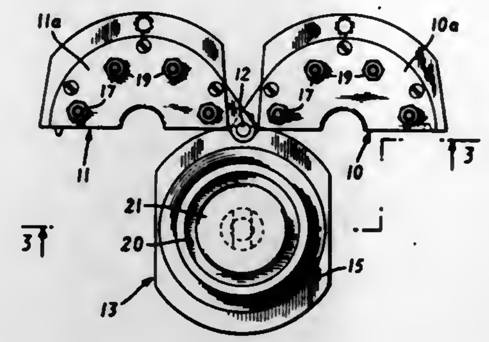
MOLD ASSEMBLY FOR MOLDING CHIMED CONTAINERS

Gerald Erickson, P.O. Box 6175, Surfside, Fla.

Filed Oct. 13, 1969, Ser. No. 865,656

Int. Cl. B29c *17/07*; **B29d** *23/03*

U.S. Cl. 425—218 **3 Claims**



A mold assembly for molding a container having chimes at opposite ends which mold assembly is composed of a plurality of relatively movable mold sections for molding the body of the container, a chime-molding section for molding at least part of one of said chimes and means for moving the chime-molding section from a molding position interlocking with the molded container to a disengaged position to facilitate removal of the chimed container from the mold.

3,650,654

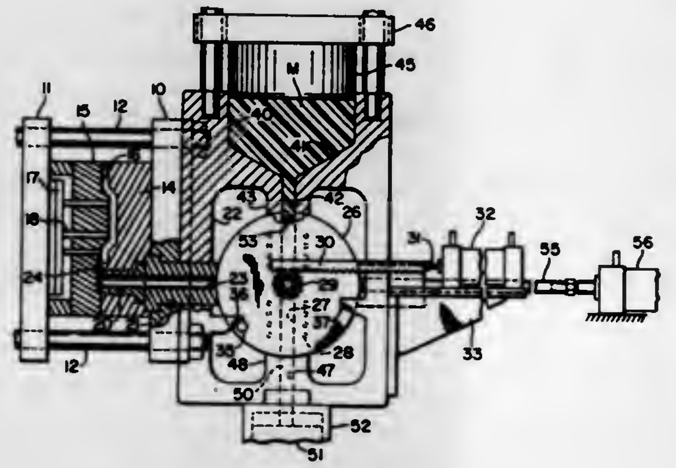
INJECTION MOLDING MACHINE

William H. Schwartz, University Heights, Ohio, assignor to Lester Engineering Company, Cleveland, Ohio

Filed Jan. 24, 1969, Ser. No. 793,838

Int. Cl. B29f *1/02*

U.S. Cl. 425—243 **7 Claims**



An injection molding machine including a shot cylinder which is indexed between an inject and shot preparation position, the cylinder in the latter position having forced therein under high pressure the plastic material forming the shot.

3,650,655

APPARATUS FOR FORMING AND STACKING CONTAINER LIDS

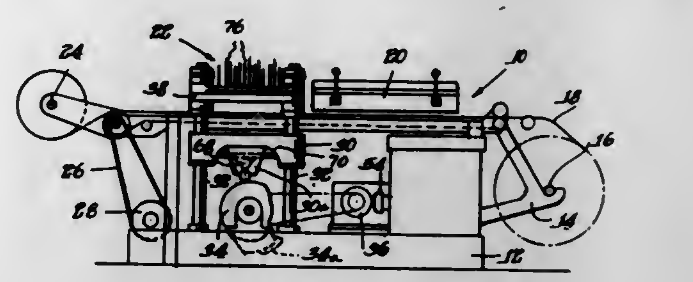
Ioannis A. Santouris, 141 West Jackson Blvd., Chicago, Ill.

Filed Dec. 10, 1969, Ser. No. 883,940

Int. Cl. B29c *17/00*

U.S. Cl. 425—289 **13 Claims**

The present invention relates generally to improvements in apparatus for forming relatively shallow container lids and the like and more particularly to apparatus for (i.e., production of such lids from heated plastic sheet material. The present application discloses apparatus for feeding a web of heated plastic sheet material to a forming station. The forming station comprises a mold cavity positioned above the heated sheet material, and a plunger means beneath the sheet material. Relative movement between the mold cavity and plunger means causes a shallow container lid or the like to be formed and sheared from the sheet stock. Means superimposing the plunger means is provided for successively receiving completely formed lids and positioning them in stacked relation.



3,650,656

APPARATUS FOR MAKING HOLLOW PLASTIC ARTICLES

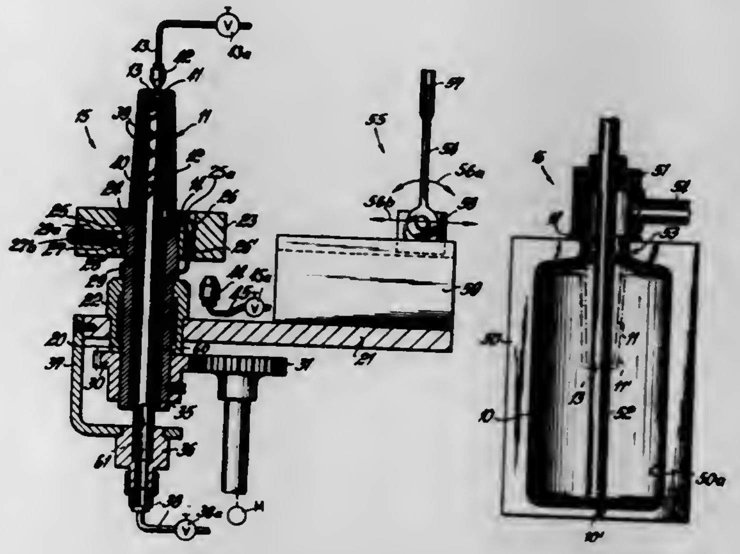
Gunther Schmid, Stuttgart-Mohringen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed June 13, 1969, Ser. No. 832,951

Claims priority, application Germany, July 27, 1968, P 17 79 306.5

Int. Cl. B29d *23/03*

U.S. Cl. 425—387 **9 Claims**



Selected portions of tubular thermoplastic parisons are heated from inside prior to introduction into the cavity of a blow molding unit. Steam which heats the parisons from inside is discharged by orifices provided in a hollow mandrel which is connected to a source of steam and extends with clearance through a hollow rotary shaft cooperating with a clamping device for parisons. The mandrel can be mounted for reciprocatory and/or rotary movement with reference to the shaft.

3,650,657

YOKE TYPE ISOSTATIC PRESS

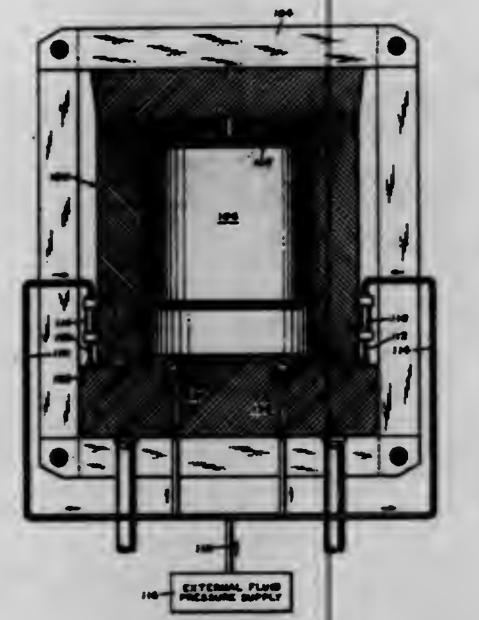
Donald E. Witkin, Warren, Pa., assignor to National Forge Company, Irvine, Pa.

Filed Aug. 5, 1970, Ser. No. 61,349

Int. Cl. B29c *3/00*; **B30b** *5/02*

U.S. Cl. 425—389 **5 Claims**

An isostatic press comprising an upstanding, hollow cylindrical vessel body which has both upper and lower ends sealed with plug type closures held in place by a yoke structure. The pressurization within the closed vessel is applied to a hydraulic structure to continuously lift the vessel body into contact with the upper closure when a predetermined pressurization is exceeded. In one embodiment the hydraulic structure includes a lower closure seal having a diameter which exceeds the diameter of the upper closure seal. In another embodiment the hydraulic structure includes hydraulic cylinders, which are connected by fluid passages to the interior of the pressure vessel, and which exert an upward force on the vessel body by means of extendable piston rods.



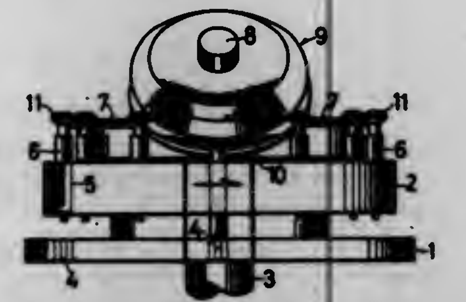
3,650,658
APPARATUS FOR LIFTING, LOWERING AND COMPRESSING THE PUNCHES OF A ROTARY POWDER COMPRESSION MOLDING MACHINE

Yasuo Shimada, 104, Minamikamiai-cho, Nishinokyo, Nakakyo-ku, and Giichiro Kowada, 3, Inoke-cho, Hanazono, Ukyo-ku, Kyoto, both of Japan

Filed Apr. 28, 1970, Ser. No. 32,643

Int. Cl. B29c *3/02*

U.S. Cl. 425—418 **3 Claims**



Apparatus for lifting, lowering and compressing one of the punches in a rotary powder compression molding machine at an angle which is inclined wherein a rotating cam having an annular groove and rotating to the horizontal is mounted above a punch holding block of a rotary powder compression molding machine. The head of the punch is fitted in the annular groove of the rotating cam, thereby lifting and lowering the punch at least in the part of the punch holding block before and behind the position of compression, and compressing the punch at the position of compression.

3,650,659
SPINNING DIE

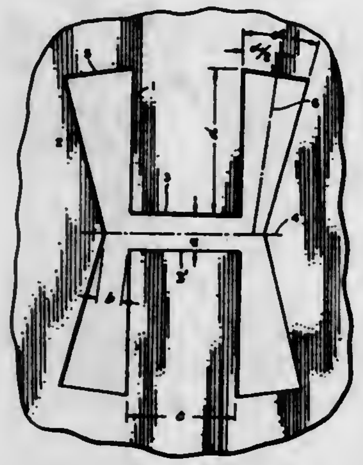
Hans Stapp, Momlingen, Germany, assignor to Akzona Incorporated, Asheville, N.C.

Filed Mar. 31, 1970, Ser. No. 24,094

Claims priority, application Germany, Apr. 5, 1969, G 69 13 818

Int. Cl. D01d *3/00;* **B28b** *21/54*

U.S. Cl. 425—461 **9 Claims**



Spinning nozzle and the production of profiled filaments, threads, bristles or the like in the melt-spinning of a synthetic thermoplastic high molecular weight fiber-forming linear polymer by means of an H-shaped spinning orifice or opening wherein the crossbar flanks are parallel to the inner flanks of the legbars are perpendicular to the axis of symmetry, the outer flanks of the legbars of the H-shaped orifice being at an angle of at least 5° up to 45° to the corresponding inner flanks.

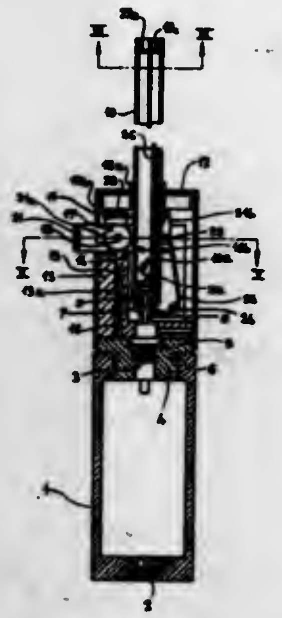
3,650,660
FLAME CONVEYING TUBES OR WAVE TUBES FOR IGNITION DEVICES FOR GAS BURNERS

Alain Huguet, Lyon, France, assignor to Application Des Gaz, Paris, Seine, France

Filed Mar. 16, 1970, Ser. No. 19,677

Int. Cl. F23q *2/16*

U.S. Cl. 431—254 **5 Claims**



The invention relates to an ignition device for gas burners comprising a flame conveying tube or wave tube conveys a combustible gas to the outlet of the tube and a capillary bore auxiliary tube passing up the wave tube to convey gas to the end of the wave tube for ignition to maintain the ignition of the flame from the wave tube.

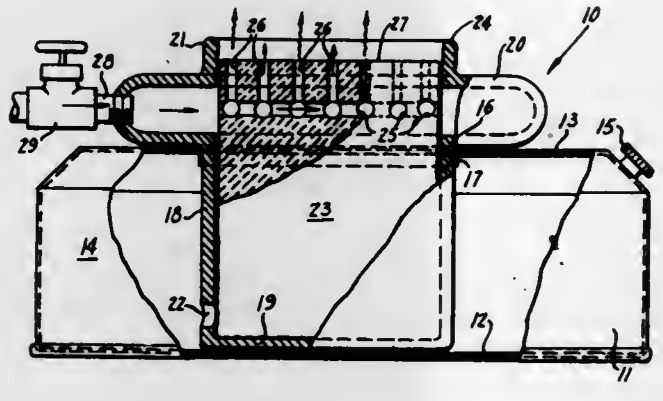
3,650,661
LIQUID FUEL BURNER

Enrique L. Lagulnia, No. 6 Bulletin St., West Triangle, Diliman, Quezon City, Philippines

Filed Nov. 13, 1969, Ser. No. 876,245

Int. Cl. F23d *13/16*

U.S. Cl. 431—328 **1 Claim**



A burner for liquid fuel in which a porous ceramic block is wetted with fuel and the fuel travels to an upper surface thereof by capillary action. Air is pumped through openings in the porous ceramic block to also reach the upper surface with the fuel burning from the upper ceramic surface. In a modified form the fuel burns from a side face of the ceramic block.

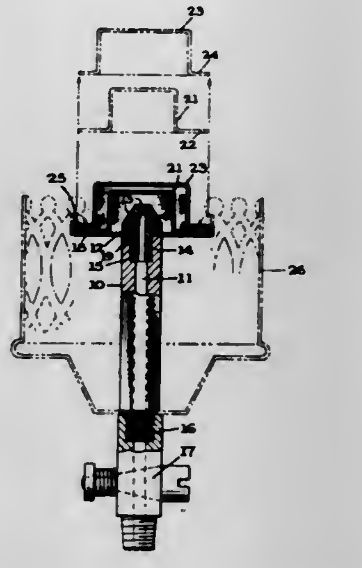
3,650,662
OPEN FLAME BURNER

Francis W. Werring, Baltimore, Md., assignor to The Welsbach Corporation, Philadelphia, Pa.

Filed Nov. 5, 1970, Ser. No. 87,113

Int. Cl. F23d *13/14*

U.S. Cl. 431—329 **5 Claims**



An open flame gas burner has a body portion bringing the gas to a perforated tip. The top screws onto the body and clamps a bottom screen between it and the body extending in a plane at right angles thereto. The bottom screen is circular and two interfitted spaced inner and outer cup-shaped screen members over the tip are supported by the lower screen whose periphery is turned over to engage extending peripheral edges of the cup-shaped screens.

CHEMICAL

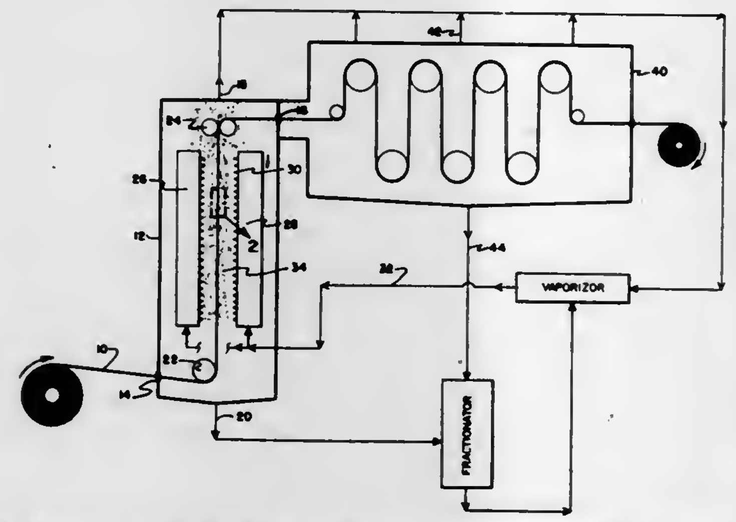
3,650,663
METHOD FOR TREATING SYNTHETIC LINEAR POLYESTERS FIBERS AND FILM IN THE VAPOR PHASE TO IMPROVE THE DYEABILITY AND TO HEAT SET SAID POLYESTERS

Frederick E. Barwick, III, Charlotte; Vernon C. Smith, Huntersville, both of N.C.; Robert W. McCullough, Riverside, Conn., and James B. Hobgood, Roxboro, N.C., assignors to Collins & Alkman Corporation, New York, N.Y.

Filed Sept. 15, 1969, Ser. No. 857,844

Int. Cl. D06p *3/00*

U.S. Cl. 8—4 **9 Claims**



A method is provided for improving the dyeability and for heat setting synthetic linear polyesters, wherein the polyester in fibrous or film form is contacted with a vapor of a monocyclic or bicyclic halogenated aromatic hydrocarbon for 10^{-4} to 20 seconds. The halogenated aromatic hydrocarbon is removed from the polyester after treatment. The polyester fibers and films treated in accordance with the method of this invention exhibits superior dyeing properties being readily dyed to deep shades in the absence of a carrier. The polyester fibers and films treated in accordance with the present invention likewise exhibit improved dimensional stability.

3,650,664
TEXTILE PRINTING METHOD

John E. De Graff, Waldwick; Theodore Antoniou, Oak Ridge, and Peter Baganakis, North Haledon, all of N.J., assignors to Inmont Corporation, New York, N.Y.

Filed Apr. 4, 1968, Ser. No. 718,946

Int. Cl. D06p *5/04;* **C09b** *27/00;* **Do6 ; C08f** *45/26*

U.S. Cl. 8—18 **1 Claim**

Textile print pastes containing an aqueous phase emulsified into a continuous phase containing pigment dispersed in a solution of resins, including a vinyl acetate-ethylene copolymer containing 20.0 to 50.0 percent vinyl acetate.

3,650,665
DYEING AND PRINTING ACRYLIC MATERIAL USING DISPERSE DYESTUFFS

Visvanathan Ramanathan, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland

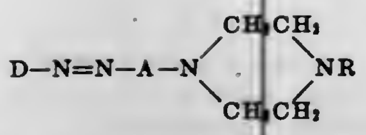
Filed Sept. 23, 1969, Ser. No. 860,405

Claims priority, application Switzerland, Oct. 4, 1968, 14836/68

Int. Cl. C09b *29/36;* **D06p** *1/18*

U.S. Cl. 8—41 **7 Claims**

A process for dyeing or printing acrylic textile material, wherein a dyestuff of the formula



is used which is free from groups conferring solubility in water, and in which R is a hydrogen atom or a lower alkyl residue containing one to four carbon atoms that may be substituted by hydroxy or cyano, D is a residue of a diazo component and A is substituted or unsubstituted 1,4-phenylene residue.

3,650,666
TANNING AND FAT LIQUORING METHOD

Teisuke Shimizu, Tokyo-to; Atsuo Sasaki, Omiya-shi, and Shigeo Nagaki, Urawa-shi, all of Japan, assignors to Cashew Kabushiki Kaisha, Tokyo-to, Japan

Filed May 20, 1968, Ser. No. 730,660

Claims priority, application Japan, June 13, 1967, 42/37285

Int. Cl. C14c *9/02, 9/04*

U.S. Cl. 8—94.22 **9 Claims**

A phenolic compound having a long-chain alkyl radical or a long-chain alkenyl radical is used as a tanning and fat-liquoring agent in addition to ordinary tanning agents in tanning of hides and skins.

This invention relates generally to the art of processing animal hides and skins and more particularly to a new and improved method and fat liquoring agents for tanning hides and skins.

3,650,667
LAUNDRY PROCESS FOR PRODUCING FABRICS THAT ARE SUBSTANTIALLY FREE FROM BACTERIA AND BACTERIAL SPORES

Louis F. Luechauer, Salt Lake City, Utah, assignor to Steiner American Corporation, Salt Lake City, Utah

Continuation-in-part of application Ser. No. 802,670, Feb. 26, 1969, now abandoned. This application Dec. 12, 1969, Ser. No. 884,694

Int. Cl. D06l *3/02*

U.S. Cl. 8—111 **28 Claims**

Method (A) for laundering fabrics comprising washing said fabrics in hot water at a medium water level in the presence of soap and a sequestering agent; flushing the fabric load; washing the fabric at a low water level for about 10 to about 15 minutes at a temperature of about 175° to about 195° F. in the presence of a strong alkali and soap or a detergent; flushing the fabric load; bleaching the fabric load in hot water at a medium water level with an oxygen-containing bleach which is hydrogen peroxide or a material that forms hydrogen peroxide or nascent oxygen in the presence of water at a concentration of about 0.1 to about 0.2 percent by weight of the dry fabric weight, the bleaching being carried out at a temperature of at least about 175° F. for about 6 to about 10 minutes; rinsing the fabric load; souring the fabric load in the presence of a souring agent and a water soluble germicide at a concentration level sufficient to inhibit the growth of mildew in the laundered fabric, and extracting the water from the soured fabric load.

Method (B) for laundering fabrics comprising washing said fabrics in hot water at a medium water level in the presence of soap and a sequestering agent; flushing the fabric load; treating the fabric load at a low water level at a water temperature of about 140° to about 160° F. in the presence of an oxygen-containing bleach which is hydrogen peroxide or a material which forms hydrogen peroxide or nascent oxygen in the presence of water for a time sufficient to obtain substantially uniform penetration of the oxygen-containing bleach into the fabric with the concentration of oxygen-containing bleach ranging from about 0.1 to about 0.2 percent by weight of the dry fabric; increasing the temperature of the fabric load to at least about 175° F. in the presence of a strong alkali and soap or a detergent for about 10 to about 15 minutes; rinsing the fabric load; souring the fabric load in the presence of a water-soluble germicide at a concentration level sufficient to inhibit the growth of mildew in the laundered fabric, and extracting the water from the soured fabric load.

The use in either of the above described methods (A) and (B) of a hypochlorite bleach step subsequent to the treatment with the oxygen-containing bleach and prior to the souring treatment to remove stains from the fabric.

3,650,668
THERMALLY STABILIZED ACRYLIC FIBERS PRODUCED BY SULFATION AND HEATING IN AN OXYGEN-CONTAINING ATMOSPHERE

John Perry Riggs, Berkeley Heights, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Mar. 9, 1970, Ser. No. 17,876

Int. Cl. D06m *3/22*

U.S. Cl. 8—115.5 **21 Claims**

A process is provided wherein the thermal stabilization of an acrylic fibrous material is accelerated by heating in an oxygen-containing atmosphere following treatment with a water-soluble persulfate compound which has been found capable of promoting the oxidative cross-linking of adjoining polymer molecules. The treatment with the water-soluble persulfate compound results in the sulfation of the acrylic polymer and renders the same amenable to oxidative cross-linking on a more expeditious basis. The resulting stabilized fibrous materials are non-burning when subjected to an ordinary match flame, and may be utilized as fire resistant textile fibers, or optionally converted to a carbonized fibrous material by heating in an inert atmosphere at a more highly elevated temperature.

3,650,669
TREATMENT OF MONOMERIC AND POLYMERIC SYSTEMS WITH HIGH INTENSITY PREDOMINANTLY CONTINUUM LIGHT RADIATION

Claiborn Lee Osborn, and David John Trecker, both of So. Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 794,752, Jan. 28, 1969, now abandoned, and a continuation-in-part of 838,460, July 2, 1969, now abandoned. This application Sept. 2, 1970, Ser. No. 69,041

Int. Cl. B01j *1/00;* **C08d** *1/00;* **C08f** *1/00*

U.S. Cl. 8—115.5 **33 Claims**

High intensity predominantly continuum light radiation having an intensity of at least about 350 watts per square centimeter steradian is used to polymerize monomers and to crosslink polymers. A convenient source of this high intensity predominantly continuum light radiation is a swirl-flow plasma arc radiation source. The polymers can be crosslinked in the form of films, fibers, molded or extruded shaped articles, coatings, laminated articles, and the like. The process produces finished articles having known commercial utility.

3,650,670
N-(OXYMETHYL) DERIVATIVES OF PHOSPHONOPOLYAMINO-S-TRIAZINES USED AS FLAME RETARDANTS FOR CELLULOSIC MATERIALS

Guiliana Tesoro, Dobbs Ferry, N.Y.; Stephen B. Sello, Cedar Grove; Donald R. Moore, Rutherford, and Rudolf F. Wurster, Weehawken, all of N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

Original application Mar. 27, 1968, Ser. No. 716,323, now Patent No. 3,551,422, dated Dec. 29, 1970. Divided and this application Apr. 15, 1970, Ser. No. 33,147

Int. Cl. D06m *13/28, 13/32, 13/44*

U.S. Cl. 8—116.3 **6 Claims**

There are disclosed N-(oxymethyl) derivatives of phosphonopolyamino-s-triazines, such as 2,4-bis-(hydroxymethyl)-6-(0,0′-diethylphosphonomethyl)-s-triazine and the corresponding 2,4-bis(methoxymethyl) derivative. These compounds are produced by reaction of the corresponding amine, e.g., 2,4-diamino-6-(0,0′-diethylphosphonomethyl)-s-triazine, with formaldehyde, either alone or in combination with an alkanol, such as methanol, in aqueous medium. The products are useful either alone or in combination with organo-nitrogen compounds as flame-retardant agents for cellulose. A durable treatment is obtained by insolubilization with acidic catalysts or hydrogen peroxide.

3,650,671
PROCESS FOR FINISHING CELLULOSIC TEXTILE MATERIALS WITH N-METHYLOL COMPOUNDS

Gerhard Bergmann, Niederau, Germany, assignor to Hoesch-Chemie GmbH, Duren, Germany

Filed Mar. 14, 1969, Ser. No. 807,402

Claims priority, application Germany, Mar. 16, 1968, P 17 19 546.9

Int. Cl. D06m *13/34*

U.S. Cl. 8—116.3 **17 Claims**

Finishing treatment of textile materials such as cotton is effected by impregnating such material with a cross-linking, resin-forming, nitrogen-containing methylol compound such as dimethylol urea, dimethylol dihydroxy-ethylene urea, methylol acrylamide in the presence of an acid catalyst, like trichloro acetic acid either alone or preferably in mixture with its salts or a mixture of a thermally unstable acid with a salt of trichloro acetic acid.

3,650,672
FABRIC TREATMENT PROCESSES

Francis H. Swayn, 5 Elton Avenue, Blundellsands, Liverpool 23, England

Filed Nov. 27, 1968, Ser. No. 779,573

Claims priority, application Great Britain, Oct. 3, 1968, 46,886/68; Dec. 1, 1967, 54,843/67

Int. Cl. B08b *3/00*

U.S. Cl. 8—137 **2 Claims**

Fabric is treated with a detergent solution and then dried to form a pliable protective coating of detergent on the fabric. The treated fabric is subsequently washed after use simply by rinsing in water, when the detergent coating, which may incorporate chemical agitators, is activated to wash the fabric. A fresh detergent coating can then be applied to the clean fabric.

3,650,673
DRY WASH FABRIC CLEANING METHOD AND APPARATUS

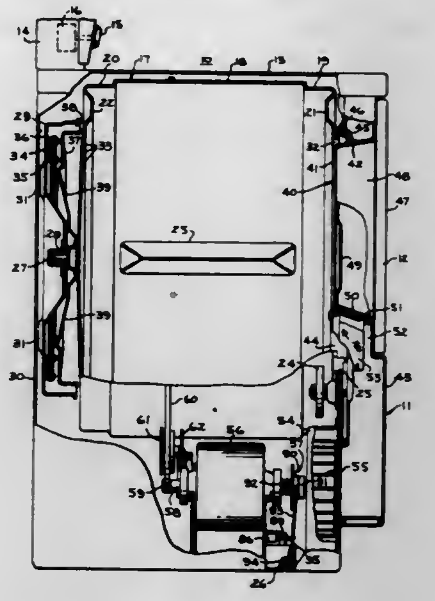
William J. Ehner, Louisville, Ky., assignor to General Electric Company

Filed Nov. 24, 1969, Ser. No. 879,315

Int. Cl. D06l *1/02*

U.S. Cl. 8—137 **6 Claims**

A method for cleaning soil from fabrics, whereby the fabrics to be cleaned are tumbled together with a quantity of water, detergent and transfer agent. The transfer agent comprises a material having a large surface area per unit mass, and the water comprises a quantity sufficient only to dampen the fabrics. The tumbling causes the water, the detergent and the transfer agent to contact the fabrics, and causes soil from the fabrics to be distributed over the combined exposed surface areas of the fabrics and the transfer agent. Subsequently, the soiled transfer agent is separated from the fabrics, whereby the fabrics are cleaned of the soil distributed onto the transfer agent. An improved domestic automatic clothes dryer is provided for performing therein the aforementioned method.



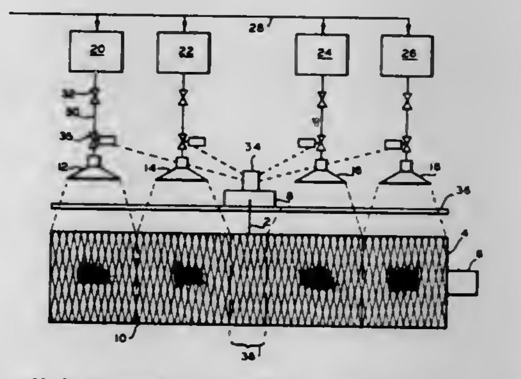
3,650,674
METHOD AND APPARATUS FOR DYEING A CONTINUOUS LENGTH OF YARN

Richard C. Newton, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Aug. 17, 1970, Ser. No. 64,441

Int. Cl. B05c *5/00*

U.S. Cl. 8—149 **8 Claims**



A takeup roll is rotated to wind a continuous length of yarn thereupon. During winding of the yarn, dye spray nozzles positioned adjacent to the yarn on the takeup roll discharges dye onto the yarn for dyeing said yarn.

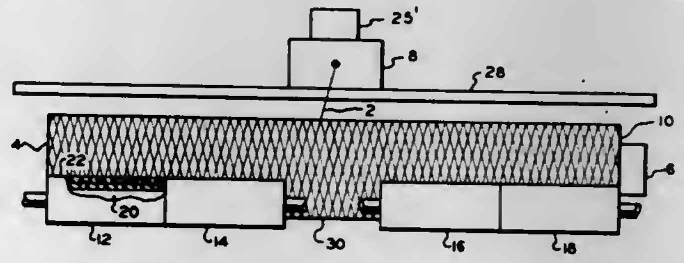
3,650,675
METHOD AND APPARATUS FOR DYEING A CONTINUOUS LENGTH OF YARN

Richard D. Meyer, and Richard C. Newton, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Aug. 17, 1970, Ser. No. 64,399

Int. Cl. B05c *1/10*

U.S. Cl. 8—149 **7 Claims**



A takeup roll is rotated to wind a continuous length of yarn thereupon. During winding of the yarn, a dye roller positioned adjacent the yarn on the takeup roll contacts the yarn and discharges dye onto the yarn for dyeing said yarn.

3,650,676

METHOD FOR TREATING TEXTILE MATERIAL WITH A CIRCULATING LIQUID

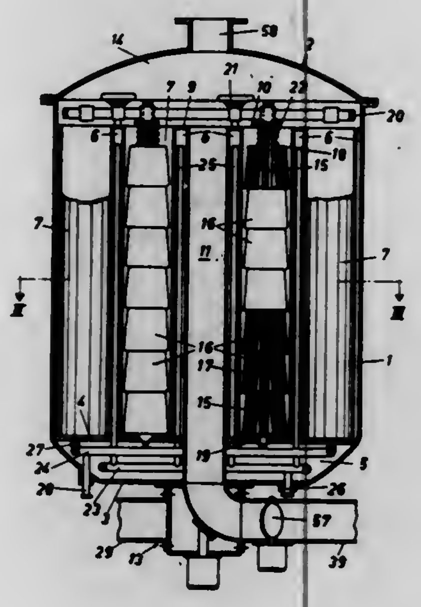
Niels Rudolf Bergholtz, Uinna, Sweden, assignor to AB Ludvig Svensson, Kinna, Sweden

Filed Jan. 5, 1970, Ser. No. 612

Claims priority, application Sweden, Jan. 14, 1969, 392/69

Int. Cl. B05c *8/02*

U.S. Cl. 8—155.1 5 Claims



The steps of placing material to be treated in a container, forming the material as separate bodies by placing the material in separate chambers and providing a relatively small clearance between the bodies and the chambers; forming the chambers as part of a heat-exchanger and providing a circulating treatment fluid (heating or cooling) in controlled quantities and maintaining the temperature within the chambers at a desired level; circulating the fluid in a closed circulation system and recirculating the treatment fluid repeatedly through the bodies of material and/or reversing the direction of flow of treatment fluid through the chamber.

3,650,677

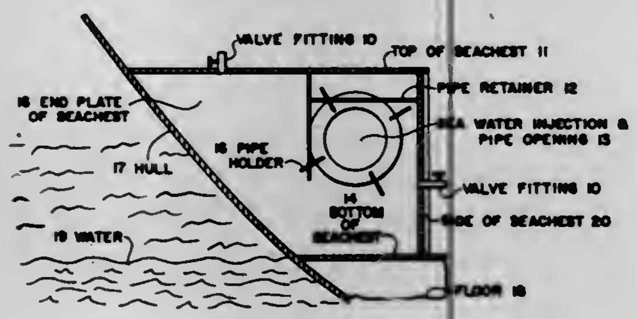
SEA CHEST PROTECTION PROCESS

David J. Mauter, Edgewater, N.J., and Jack A. Antinori, Bayside, Long Island, N.Y., assignors to Drew Chemical Corporation, New York, N.Y.

Filed Sept. 25, 1969, Ser. No. 861,045

Int. Cl. C23f *11/10*

U.S. Cl. 21—2.5 5 Claims



Method of protecting sea chests of vessels during layup by filling the chest with a substantially biodegradable vegetable oil based composition which has a melting point of between 25° and 50° C.

3,650,678

APPARATUS FOR THE STERILIZATION OF A MACHINE

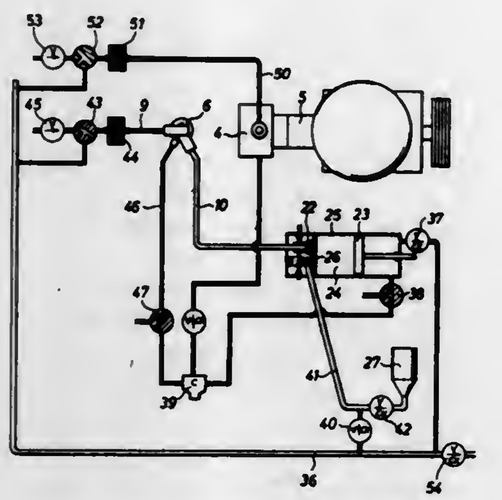
Gerhard Hansen, Hofener Strasse 47, D 7013 Oeffingen (Wuertt), Germany

Filed Dec. 9, 1968, Ser. No. 782,294

Claims priority, application Germany, Dec. 20, 1967, P 16 42 069.2

Int. Cl. A61l *3/00*

U.S. Cl. 21—91 7 Claims



Apparatus for the sterilization of a machine for the production, filling and closing of containers wherein a source delivering a sterilizing agent is connected to various elements of the machine.

3,650,679

REFINING LOW-GRADE BERYLLIUM ORES BY TREATMENT WITH ANHYDROUS SULFUR TRIOXIDE

Fathi Habashi; Raymond Dugdale, and Francis L. Holderreed, all of New York, N.Y., assignors to The Anaconda Company, New York, N.Y.

Filed Jan. 12, 1970, Ser. No. 2,422

Int. Cl. C22b *59/00;* **C01f** *3/00*

U.S. Cl. 23—15 R 8 Claims

Low-grade substantially dry beryllium-containing ores are reacted directly with anhydrous sulfur trioxide, at temperatures ranging from 50° to 350° C., to form beryllium sulfate. The reaction product is then leached with water to dissolve the beryllium sulfate. The resulting solution is separated from the insoluble residue and the beryllium is subsequently recovered from the leach solution.

3,650,680

PROCESSES FOR OBTAINING VANADIUM SUBOXIDES

Robert O. Teeg, Grosse Pointe Farms, and Robert W. Hallman, St. Clair Shores, both of Mich., assignors to Teeg Research, Inc., Detroit, Mich.

Original application Apr. 7, 1964, Ser. No. 358,065, now Patent No. 3,455,724. Divided and this application Apr. 12, 1965, Ser. No. 447,546. The portion of the term of this patent subsequent to July 15, 1986, has been disclaimed.

Int. Cl. C22b *59/00;* **C01g** *31/00*

U.S. Cl. 23—21 4 Claims

Methods for obtaining vanadium suboxide of the general formula VO_x, wherein x is comprised between 1.5 and 2.02, consisting in heating vanadium pentoxide, contained in an inert boat, in a reduced atmosphere in the presence of a stoichiometric amount of vanadium pentoxide or, alternately, in continuously evacuating the atmosphere of the vessel in which the boat is placed, and recovering the vanadium suboxide in a bulk or crystalline form remaining in the boat.

3,650,681

METHOD OF TREATING A TITANIUM OR ZIRCONIUM SALT OF A PHOSPHORUS OXYACID

Yujiro Sugahara, Tokyo; Hiroyuki Naito; Kiyoshi Takai, and Kouichi Usui, all of Tsuruoka-shi, Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 5, 1969, Ser. No. 847,633

Claims priority, application Japan, Aug. 8, 1968, 43/55974; Nov. 27, 1968, 43/86350

Int. Cl. C22b *59/00*

U.S. Cl. 23—21 4 Claims

A method of treating a titanium or zirconium salt of a phosphorus oxyacid, which comprises heating a mixture of carbon and a titanium or zirconium salt of a phosphorus oxyacid at a temperature exceeding 900° C. in a non-oxidizing atmosphere or heating a titanium or zirconium salt of a phosphorus oxyacid at a temperature exceeding 900° C. in absence of carbon in a carbon monoxide atmosphere, thereby separating the phosphorus oxyacid component as phosphorus vapor and recovering the titanium or zirconium component as solid residue.

3,650,682

PROCESS FOR THE PRODUCTION OF ALKALI METAL PERBORATES

Heinrich Till, Tyrol, Austria, assignor to Sandoz Limited, Basel, Switzerland

Continuation-in-part of application Ser. No. 594,988, Nov. 17, 1966, now abandoned, Continuation-in-part of application Ser. No 753,763, Aug. 19, 1968, now abandoned, Continuation-in-part of application Ser. No. 837,983, May 15, 1969, now abandoned, Continuation in-part of application Ser. No. 551,537, May 20, 1966, now abandoned. This application July 15, 1969, Ser. No. 841,978. Claims priority, application Austria, May 20 1965, A 4586/65; July 14, 1966, A 10310/66; Nov. 7, 1966, A 10268/66; July 16, 1968, A 6848/68; Switzerland, July 23, 1968, 11050/68

Int. Cl. C01b *15/12*

U.S. Cl. 23—60 33 Claims

This invention is directed to a process for preparing alkali metal perborates and may take the form of various embodiments in which hydrogen peroxide is formed in organic solution and reacted with borate. In one embodiment a single reaction step is used wherein an organic compound containing at least two hydrogen atoms capable of being oxidized to hydrogen peroxide is reacted with oxygen in an organic solvent and in the presence of solid alkali metal borate and water wherein the organic solvent is a solvent for the water and the organic compound but not for the alkali metal borate and perborate. In another embodiment the hydrogen peroxide is formed in an organic solvent as described above and subsequently reacted with alkali metal borate in the presence of water in an amount of from more than 1 mole to 5 moles at a temperature of 10°–60° C. In another embodiment the one or two step processes are conducted using less than one mole of alkali metal borate per gram atom active oxygen present or theoretically obtainable from the said organic compound. The process may be conducted wherein the water content is regulated according to the inequalities defined in the claims and utilizing sodium metaborate or disodium tetraborate or mixtures thereof.

3,650,683

PROCESS FOR THE MANUFACTURE OF CONDENSED ALUMINUM PHOSPHATES

Albert Hloch, Frankfurt/Main; Nikolaj Medic, Kelkheim/Taunus, and Rudolf Kohlhaas, Frankfurt/Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed May 9, 1969, Ser. No. 823,496

Claims priority, application Germany, May 13, 1968, P 17 67 460.1

Int. Cl. C01b *25/36, 25/38*

U.S. Cl. 23—105 4 Claims

The preparation of condensed aluminum phosphates containing phosphorus pentoxide and aluminum trioxide in a molar ratio within the range of from 1.1 : 1 to 3 : 1 is carried out by reacting water-soluble alkali metal polyphosphates with water-soluble aluminum salts and water and subjecting them to a heat treatment.

3,650,684

MANUFACTURE OF POTASSIUM METAPHOSPHATE

James W. Watson, Richmond, Va., assignor to Swift & Company, Chicago, Ill.

Filed Dec. 10, 1968, Ser. No. 782,726

Int. Cl. C01b *25/30, 25/38*

U.S. Cl. 23—107 4 Claims

A process is disclosed for the manufacture of potassium metaphosphate by reacting potassium chloride with superphosphoric acid on a free flowing bed of inert solids under essentially anhydrous conditions.

3,650,685

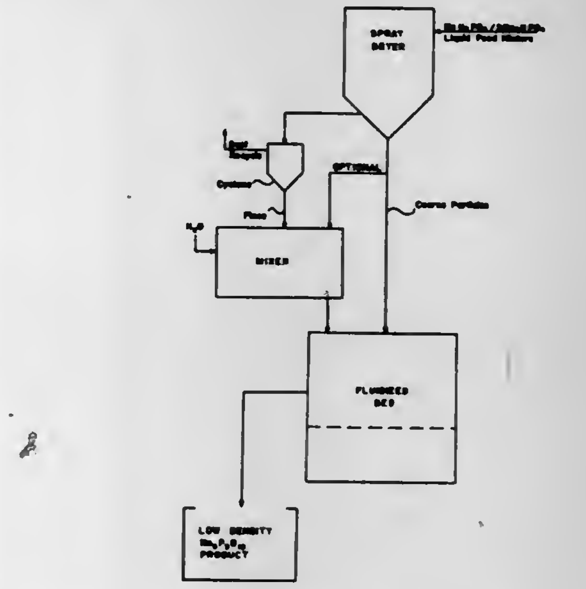
LOW BULK DENSITY SODIUM POLYPHOSPHATES

James N. Dyer; Leo B. Post, both of New City, and Herbert J. Rosen, Yonkers, all of N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Filed Sept. 12, 1969, Ser. No. 857,393

Int. Cl. C01b *25/30, 25/38*

U.S. Cl. 23—107 4 Claims



Sodium polyphosphates and particularly sodium tripolyphosphates which generally find use as detergent builders are prepared in low bulk density, high relatively nonfrangible granular yields by spray drying an aqueous solution of monosodium/disodium orthophosphate salts having an $NaO:P_2O_5$ ratio of from 1 to 2, hydrating the spray dried product or the fines to a LOI of between about 18% and about 25% and intermolecularly dehydrating the hydrated product in a fluidized converter at a temperature of between about 200° C. and 500° C. to provide the desired product.

3,650,686

PROCESS FOR RECOVERY OF PHOSPHOROUS VALUES FROM DILUTE PLANT EFFLUENTS

Robert B. Hudson, St. Louis, Mo.; Robert E. Mesmer, Oak Ridge, Tenn., and Roger A. Rose, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 18, 1969, Ser. No. 851,047

Int. Cl. C01b *25/32;* **C02c** *5/02*

U.S. Cl. 23—109 7 Claims

The process of recovering phosphorus values from plant effluents by precipitating the phosphorus values with lime to obtain a sludge which is difficult to handle is improved by treating the sludge with phosphoric acid so as to convert phosphorus values in the sludge from basic calcium phosphate to crystalline calcium phosphates which are readily filterable and useful as an animal feed supplement.

3,650,687

PROCESS FOR PREPARING BINDERLESS MOLECULAR SIEVE AGGREGATES

Carl Vance McDaniel, Laurel; Philip Kenerick Maher, Baltimore, and Joseph Michael Pilato, Silver Spring, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Original application Sept. 19, 1968, Ser. No. 760,970, now Patent No. 3,472,940, Continuation-in-part of application Ser. No. 515,227, Dec. 20, 1965, now abandoned. Divided and this application May 14, 1969, Ser. No. 841,660

Int. Cl. C01b *33/28*

U.S. Cl. 23—112 **7 Claims**

Methods of preparing attrition resisting binderless molecular sieve zeolite aggregates having a particle size of about 50 to 200 microns are disclosed. The processes are characterized by a high temperature spray drying step. The product is particularly useful in fluidized adsorption and fluidized catalyst systems.

3,650,688

INDUSTRIAL PROCESS FOR SEPARATION OF NICKEL

Laszlo Fekete; Imre Pataricza; Dezso Bodi; Jozsef Gyuricza; Mihaly Miskei, and Ferenc Orszag, all of Budapest, Hungary, assignors to Metalimpex Acel Es Femkulkereskedelmi Vallalat and Femipari Kutato Intezet, Budapest, Hungary

Filed Oct. 17, 1969, Ser. No. 867,400

Claims priority, application Hungary, Oct. 23, 1968, ME-990

Int. Cl. C01g *53/10, 53/08;* **C01b** *7/08*

U.S. Cl. 23—117 **3 Claims**

Nickel can be separated from metals forming chlorocomplex anions, such as cobalt, by dissolving a nickel concentrate in hydrochloric acid, boiling down the nickel chloride solution to a nickel content of not more than 240 grams per liter, increasing the concentration of hydrochloric acid to 7 to 9 moles/liter by adding concentrated sulfuric acid to the solution in an amount equivalent to the nickel present, thereby forming a nickel sulfate salt, adsorbing the metallic contaminations on an anion exchange resin, and isolating hydrated nickel sulfate and hydrochloric acid from the effluent from the resin.

3,650,689

ANHYDROUS CALCIUM SULPHATE

Gerald Waterworth Cafferata, Woodborough, England, assignor to BPB Industries Limited, London, England

Filed May 26, 1969, Ser. No. 827,986

Claims priority, application Great Britain, May 28, 1968, 25,496/68

Int. Cl. C01f *11/46*

U.S. Cl. 23—122 **3 Claims**

Production of anhydrous calcium sulphate by autoclaving gypsum in saturated steam at a temperature of at least 205° C.

3,650,690

BORIC ACID PRODUCTION

Jerome C. Shiloff, Pleasantville, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Oct. 18, 1968, Ser. No. 768,887

Int. Cl. C01b *35/00;* **C01d** *5/02*

U.S. Cl. 23—149 **10 Claims**

Boric acid is produced by treating an alkali metal borate ore with concentrated sulfuric acid in an amount sufficient to provide an alkali metal to sulfur mole ratio of 1.5 to 2.5, contacting the so treated ore with superheated steam at temperatures of 100° to 500° C. to produce a gaseous boric acid-containing effluent, removing the effluent and recovering the boric acid therefrom.

3,650,691

METHOD OF PURIFYING A PHOSPHORIC ACID HYDROLYZING SOLUTION

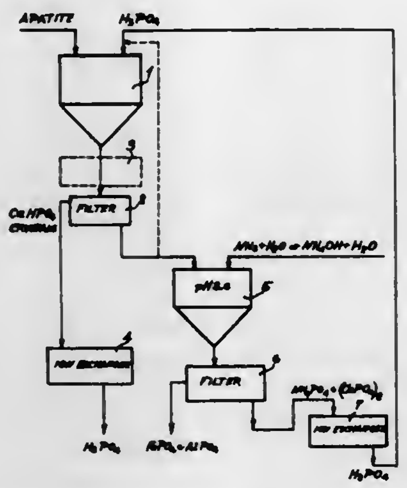
Wilhelm Reulecke, Bensberg; Toni Litzenburger, Bergisch-Gladbach, and Otto Winter, Bergisch-Gladbach-Sand, all of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Mulheim, Germany

Filed Oct. 5, 1970, Ser. No. 77,923

Claims priority, application Germany, Feb. 10, 1967, K 61389

Int. Cl. C01b *25/18*

U.S. Cl. 23—165 **5 Claims**



A phosphoric acid solution for hydrolysis of rock phosphate is purified by neutralizing it with a base pH 3.3 to 5.5, thereby causing impurities such as iron and aluminum phosphates to precipitate. After removal of impurities, the solution is brought together with a cationic ion-exchange resin, in hydrogen form, to regenerate highly pure phosphoric acid.

3,650,692

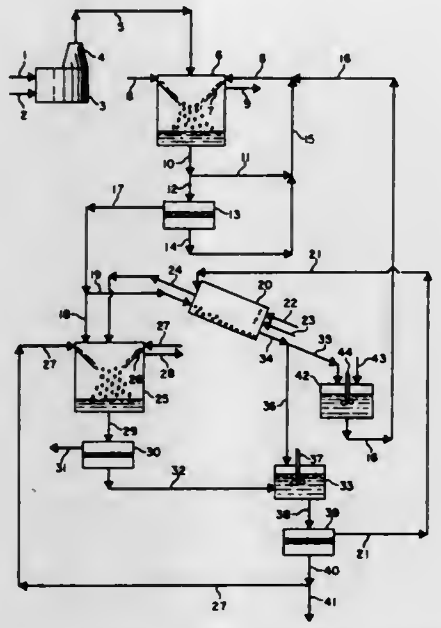
REMOVAL OF SULFUR DIOXIDE FROM WASTE GASES

John F. Villiers-Fisher, Kendall Park, N.J., assignor to Chemical Construction Corporation, New York, N.Y.

Filed Dec. 9, 1969, Ser. No. 883,485

Int. Cl. C01b *17/60, 17/56*

U.S. Cl. 23—178 **14 Claims**



Waste gases containing sulfur dioxide and entrained solids such as fly ash are scrubbed with an aqueous magnesium oxide-sulfite slurry, which dissolves sulfur dioxide to form further magnesium sulfite and also scrubs entrained solids from the gas stream into the aqueous slurry. Magnesium oxide is regenerated by calcining a portion of the slurry or the solids component of a slurry portion, which generates a dust-laden off-gas rich in sulfur dioxide. Buildup of entrained solids such as fly ash in the system is effectively prevented by scrubbing the dust-laden off-gas with an aqueous solution, to which a portion of the solids component of the slurry or regenerated magnesium oxide may be added. The scrubbing step solubilizes magnesium compounds as magnesium bisulfite, due to high sulfur dioxide concentration, and the resulting aqueous magnesium bisulfite solution is filtered to remove residual solids such as fly ash. Magnesium oxide is added to the residual liquid phase to precipitate solid magnesium sulfite, which is filtered from the final residual liquid phase. A portion of this final liquid phase may be discarded to prevent buildup of alkali sulfates or the like, and the balance of the final liquid phase is recycled to the off-gas scrubbing step. The precipitated solid magnesium sulfite is recycled to the calcining step.

3,650,693

PREPARATION OF FIBROUS TITANIUM DIOXIDE

Hans J. Borchardt, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 24, 1970, Ser. No. 75,234

Int. Cl. C01g *23/04*

U.S. Cl. 23—202 R **2 Claims**

A process is described for producing rutile fibers of unusual dimensional uniformity. Titanium trichloride is reacted at 960°–990° C. with humidified oxygen followed by dry oxygen in the presence of molten sodium and potassium chloride mixtures containing preformed titanium dioxide of pigmentary size.

3,650,694

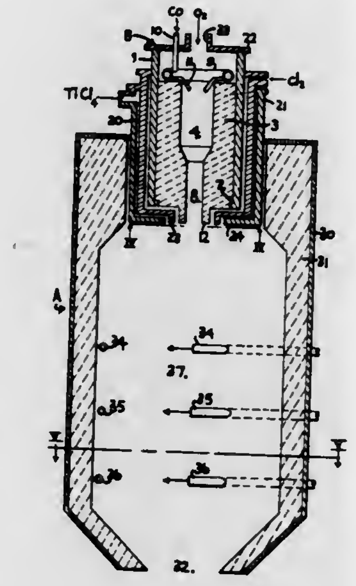
PROCESS FOR PREPARING PIGMENTARY METAL OXIDE

Edward M. Allen, Doylestown, Ohio, assignor to P.P.G. Industries, Inc., Pittsburgh, Pa.

Continuation of application Ser. No. 361,008, Apr. 20, 1964, now abandoned , Continuation-in-part of application Ser. No. 234,962, Nov. 2, 1962, now abandoned , which is a continuation-in-part of application Ser. No. 13,860, Mar. 9, 1960, now Patent No. 3,069,282. This application June 25, 1969, Ser. No. 842,430

Int. Cl. C01g *23/04, 1/02;* **C01b** *33/18*

U.S. Cl. 23—202 V **12 Claims**



The preparation of pigmentary metal oxide, e.g., titanium dioxide, by vapor phase oxidation of metal halide, e.g., titanium tetrahalide, is described. The difficulties associated with providing a high temperature reaction zone and/or preheating reactants are discussed and a method is proposed for providing heat to the reaction zone to maintain said reaction.

3,650,695

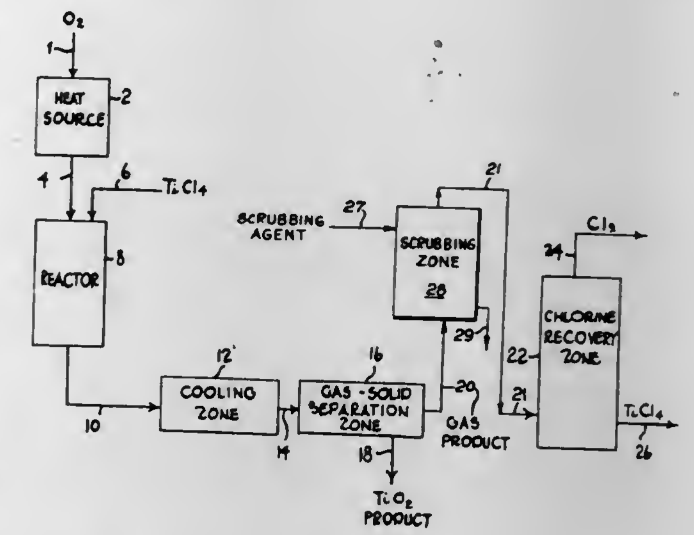
METHOD FOR TREATING TITANIUM DIOXIDE REACTOR DISCHARGE CONTAINING PRODUCTS OF NITROGEN FIXATION

John R. Bogdan, and Alonzo Farmer, both of New Martinsville, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 28, 1969, Ser. No. 853,653

Int. Cl. C01g *23/04;* **C01b** *21/20*

U.S. Cl. 23—202 V **6 Claims**



Pigmentary titanium dioxide is produced by vapor phase oxidation of titanium tetrachloride with oxygen at elevated temperatures in a reactor. Gaseous and solid products produced by the reaction are separated and chlorine recovered from the gaseous portion in a chlorine recovery zone. Obstruction of the chlorine recovery zone by products resulting from nitrogen fixation is prevented by scrubbing reactor discharge gas with liquid chlorine, liquid titanium tetrachloride or liquid chlorinated solvents. Removal of the obstruction is accomplished by heating the chlorine recovery zone.

3,650,696

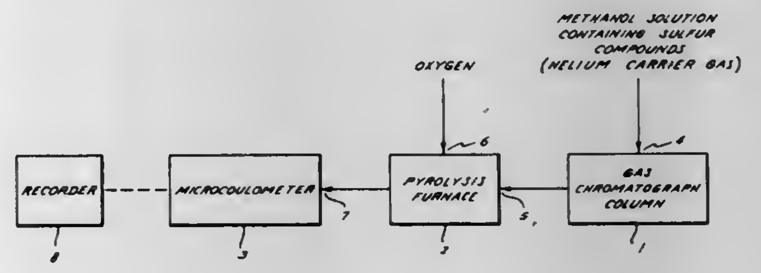
SAMPLING AND ANALYSIS OF SULFUR COMPOUNDS

Ewin A. Eads, Beaumont, Tex., assignor to Lamar State College of Technology, Beaumont, Tex.

Filed Sept. 8, 1970, Ser. No. 70,478

Int. Cl. G01n *31/08, 31/16*

U.S. Cl. 23—230 PC **10 Claims**

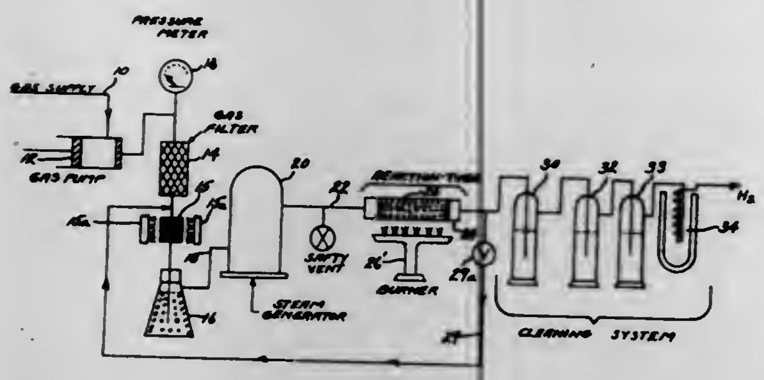


A method for accurately sampling ambient air containing sulfur compounds in the low parts per billion range and for separating, identifying and quantitatively monitoring each sulfur compound. The gaseous sample is collected in substantially sulfur-free methanol. The methanol solution is then passed through a gas chromatograph column packed with octylphenoxypolyethylene on oxyethanol polytetrafluoroethylene to separate the sulfur compounds. From the gas chromatograph the separated sulfur compounds go through a pyrolysis furnace where they are oxidized to sulfur dioxide, and thence into a microcoulometer for titration. By using the same procedure, sulfur compound impurities in solid materials can be identified and quantitatively measured.

3,650,697
METHOD OF HYDROGEN PRODUCTION

Franz Goebel, Columbus, Ohio, assignor to Rand Development Corporation, Cleveland, Ohio

Filed Nov. 25, 1969, Ser. No. 879,791
Int. Cl. C01b *1/18*; B01j *11/22*
U.S. Cl. 23—212 R **9 Claims**

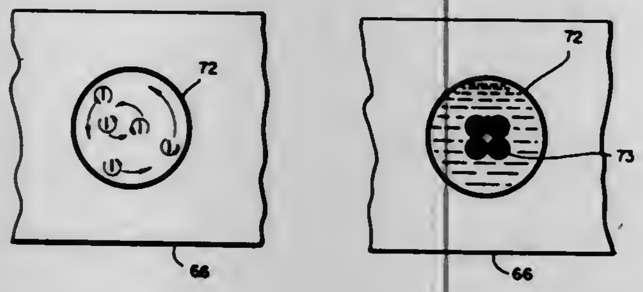


A process for the production of hydrogen from a hydrocarbon, and more particularly methane, by the reaction of the hydrocarbon with steam in the presence of a catalyst. The catalyst consists essentially of a mixture of activated Raney nickel, iron, activated Raney cobalt, zirconium and aluminum. The catalyst may be used in a 50—50 mixture of quartz sand or alumina and catalyst. The process is carried out at a relatively low temperature of between approximately 300° to 550° C.

3,650,698
APPARATUS FOR THE AUTOMATIC DETERMINATION OF THE COAGULATION, AGGREGATION AND OR FLOCCULATION, OR THE LIKE, RATES OF FLUIDS, AND NOVEL REACTION INTENSIFYING AGENT FOR USE THEREWITH

Stanford L. Adler, Monsey, N.Y., assignor to Technicon Corporation, Tarrytown, N.Y.

Filed Dec. 4, 1969, Ser. No. 881,971
Int. Cl. B03c *1/02*; G01n *11/00*, *33/16*
U.S. Cl. 23—253 R **11 Claims**

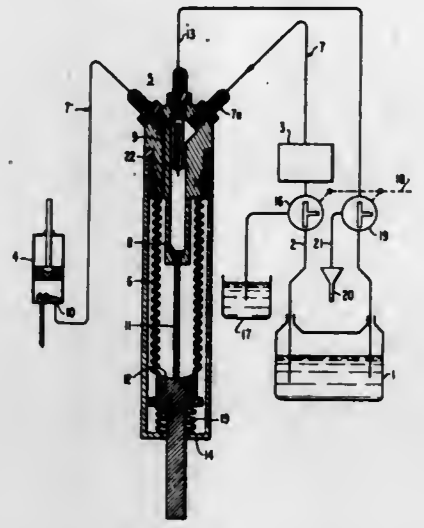


Apparatus for the determination of the coagulation rate or the like of fluids, wherein dispensing means are operable to successively dispense blood plasma samples, in turn and at a precisely metered rate, onto spaced-apart measured quantities or spots of a dried suspension of a reaction intensifying agent carried on an advancing film strip. The intensifying agent may comprise magnetic iron oxide particles. Subsequent to incubation of the sample-intensifying agent mixture, additional dispensing means are operable to dispense a precisely metered quantity of prothrombin reagent into the film strip. The resulting sample-reagent-intensifying agent mixture is subjected to rotating magnetic fields, with the result that the moving magnetic particles promote mixing and, also, are operative to collect one or more of the fibrin strands, whereby the mixture, which is substantially turbid, undergoes a sharp change in its optical transmission properties, which change is detected by light sensitive means for the measurement of the prothrombin time of the blood plasma sample of interest.

3,650,699
ANALYTICAL APPARATUS HAVING PRESSURE REGULATOR AND FLUSHING MEANS

Palle-Finn Beer, Lidingo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed Feb. 5, 1970, Ser. No. 8,966
Claims priority, application Sweden, Feb. 5, 1969, 1492/1969
Int. Cl. B01l *3/02*
U.S. Cl. 23—259 **6 Claims**

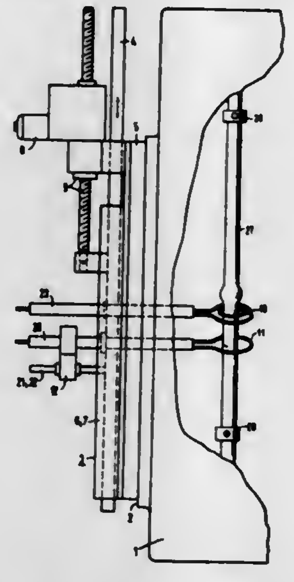


An apparatus for regulating the liquid pressure in a measuring pipette which comprises a measuring pipette, a pump, a pressure equalizer, a first means for conveying liquid for said pump to said pressure equalizer, a second means for conveying liquid from said pressure equalizer to said measuring pipette, said pressure equalizer comprising a variable volume chamber having an outlet communicating with said second means and an inlet communicating with said first means, valve means disposed in said variable volume chamber, said valve means communicating with said inlet and adapted to close when the variable volume chamber reaches a predetermined volume.

3,650,700
DEVICE FOR CRUCIBLE-FREE ZONE MELTING HAVING SEALING MEANS FOR A SLIDING MEMBER

Reimer Emeis; Joachim Haus, both of Ebermannstadt, and Wolfgang Keller, Pretzfeld, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 14, 1969, Ser. No. 790,985
Claims priority, application Germany, Jan. 16, 1968, P 17 19 512.9
Int. Cl. B01j *17/10*; E06b *7/16*
U.S. Cl. 23—273 SP **7 Claims**

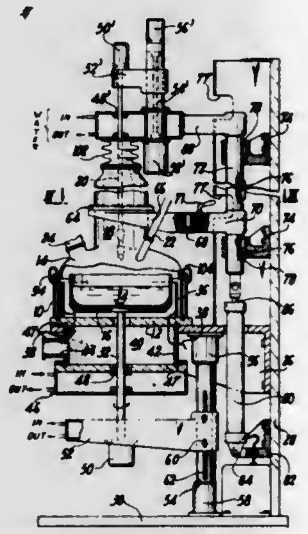


Device for crucible-free zone melting a crystalline rod substantially vertically supported at the ends thereof in a zone melting chamber includes heating means extending into the chamber through a substantially vertical slot formed in a side wall of the chamber. Slide means located adjacent the side wall carries the heating means and is slidable therewith relative to the rod axis. Elastically deformable sealing means are mounted between the sliding surface of the slide means and the side wall and completely surround the slot so as to seal it gas-tightly. The slide means, at least at the sliding surface thereof, are formed of a material of good slidability, the sealing means are formed of a material effecting a dry seal with the sliding surfaces, the paired materials having a frictional coefficient of at most 0.2.

3,650,701
APPARATUS FOR GROWING CRYSTALLINE BODIES

Francis Forrat, Seyssinet, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed July 22, 1970, Ser. No. 57,139
Int. Cl. B01j *17/18*
U.S. Cl. 23—273 SP **8 Claims**

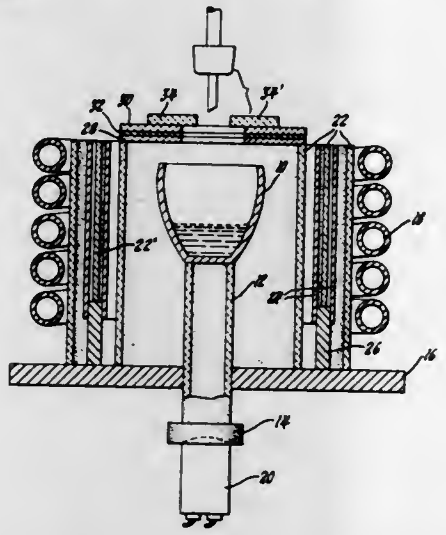


The apparatus comprises a gastight furnace locating a crucible which may be rotated by a motor located under the furnace. A rod vertically movable in a tubular extension of the furnace cover is adapted to pull a crystal from a melt in the crucible. The cover has a side arm which is pivotally connected to a lateral extension of a vertical shaft adapted to swing about its axis into a position where the crystal clears the furnace only after the shaft has been raised to a predetermined position. Additional pivotal movement of the side arm then provides access to the furnace body if necessary.

3,650,702
CRYSTAL GROWTH OF TETRAGONAL GERMANIUM DIOXIDE FROM A FLUX

Don E. Swets, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 15, 1970, Ser. No. 28,771
Int. Cl. B01j *17/18*; C01g *17/02*
U.S. Cl. 23—300 **6 Claims**

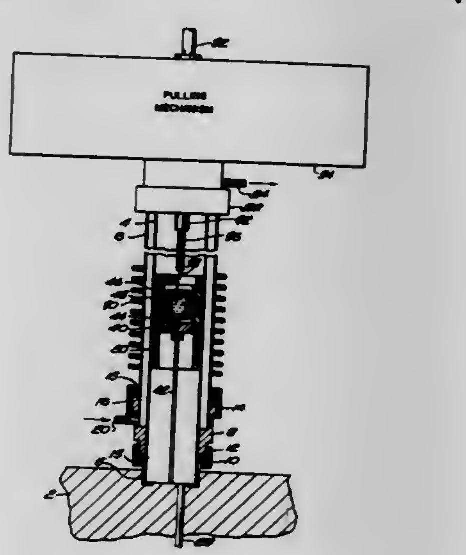


Highly pure single crystals of tetragonal germanium dioxide are grown from a melt containing germanium dioxide in which germanium atoms are octahedrally coordinated to oxygen. In addition to germanium dioxide, the melt includes an oxide of a monovalent metal from Group I of the Periodic Table of the Elements. In preferred embodiments alkali metal oxides are employed, particularly sodium oxide and lithium oxide.

3,650,703
METHOD AND APPARATUS FOR GROWING INORGANIC FILAMENTS, RIBBON FROM THE MELT

Harold E. Labelle, Jr., Quincy, and Abraham I. Mlavsky, Lexington, both of Mass., assignors to Tyco Laboratories, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 621,731, Feb. 14, 1967, abandoned.
Filed Sept. 8, 1967, Ser No. 666,304. The portion of the term of the patent subsequent to Mar. 14, 1988, has been disclaimed.
Int. Cl. B01j *17/18*
U.S. Cl. 23—301 **4 Claims**

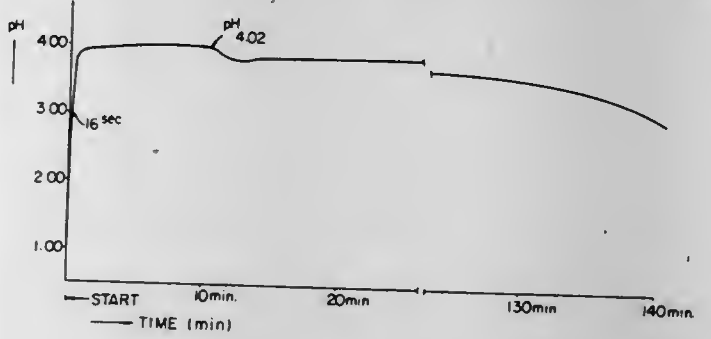


Method of growing elongate essentially monocrystalline bodies of indefinite lengths and selected cross-sectional shapes from melts of selected high melting materials that melt congruently. Examples are filaments, ribbons and tubes of α -alumina.

3,650,704
NOVEL SYNTHETIC HYDROTALCITE AND ANTACID COMPRISING SAID SYNTHETIC HYDROTALCITE

Teruhiko Kumura, 305, Yashima-Nishimachi; Norio Imataki, 25-8, 2-chome Tukuokamachi, both of Takamatsu-shi; Katuyuki Hasui, 1692, Konzaki, Sangawacho; Takeo Inoue, 297, Otoi, Zoda, Nagao-cho, and Kimiaki Yasutomi, 761, Zoda, Nagao-cho, all of Ohkawa-gun, Kagawa-ken, Japan

Continuation-in-part of application Ser. No. 654,977, July 21, 1967, now Patent No. 3,539,306. This application Jan. 6, 1970, Ser. No. 925
Int. Cl. G01f *5/00*; C01f *7/00*; A61k *27/00*
U.S. Cl. 23—315 **2 Claims**



A synthetic hydrotalcite having the composition expressed by the formula:

$$Al_2O_3 \cdot 6MgO \cdot CO_2 \cdot 12H_2O$$

and having substantially the following diffraction X-ray diffraction analysis:

dÅ 7.75, 3.89, 2.59, 2.30, 1.96, 1.53 and 1.50

said synthetic hydrotalcite containing heavy metal impurities in amounts of up to 30 p.p.m., being insoluble or substantially insoluble when treated with 1/10 N NaOH at 37° C. for 1 hour, having an acid consuming capacity of at least 240 ml./g, and being characterized by such properties that the time required for the artificial gastric juice to come to have a pH of higher than 3.0 is up to 30 seconds and time during which the pH of the artificial gastric juice is maintained above 3.0 is more than 120 minutes.

3,650,705

POTASSIUM PYROPHOSPHATE PEROXYHYDRATES AND METHOD OF PREPARING THE SAME

Helmut W. Majewski, Yonkers, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Aug. 21, 1968, Ser. No. 754,459

Int. Cl. C01b *15/00, 25/16*

U.S. Cl. 23—315 **1 Claim**

Potassium pyrophosphate peroxyhydrates containing at least 30 weight percent bound hydrogen peroxide are prepared by forming a saturated solution of potassium pyrophosphate in concentrated hydrogen peroxide and crystallizing out the product from the saturated solution. Also prepared is the new compound potassium pyrophosphate heptaperoxyhydrate.

3,650,706

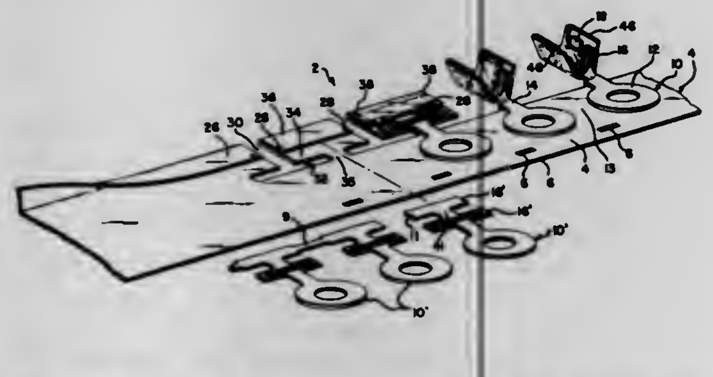
TERMINAL TAPE AND METHOD FOR MAKING THE SAME

Stuart L. Parsons, Clearwater, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 23, 1970, Ser. No. 21,802

Int. Cl. H01r *9/14*

U.S. Cl. 29—193.5 **11 Claims**



Electrical terminal tape comprises a continuous carrier tape having pockets at spaced-apart intervals along one of its sides. Open barrel terminals, having contact portions, wire barrel portions, and insulation barrel portions, are carried by the tape. Insulation barrel portions are received in pockets and wire barrel portions and contact portions are supported on adjacent sections of tape. Upon crimping, the tape portions covering the wire and insulation barrel portions of the terminals are utilized to insulate the crimped connections.

3,650,707

METHOD AND MEANS FOR JOINING PARTS

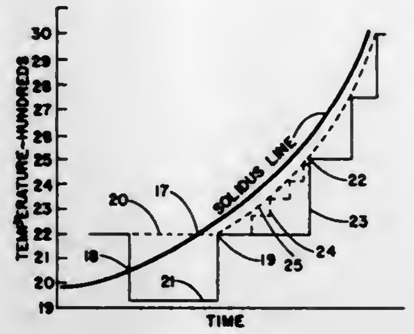
Dan P. Duff, Grand Prairie, Tex., and Joseph A. Van Velzor, Columbus, Ohio, assignors to LTV Aerospace Corp., Dallas, Tex., by said Duff

Original application Apr. 25, 1966, Ser. No. 551,824, now Patent No. 3,496,630. Divided and this application Apr. 22, 1969, Ser. No. 842,040

Int. Cl. B23p *3/10*

U.S. Cl. 29—194 **2 Claims**

A means for joining contiguous parts and comprising an alloy having a melting temperature lower than the parts to be joined and having dispersed therethrough solid, metallic particles which have a melting temperature higher than the alloy and which are diffusible into the alloy when the alloy is at or near its melting temperature. Once the metallic particles have diffused into the alloy, the remelting temperature of the alloy is thereby raised.



3,650,708

METAL PLATING OF SUBSTRATES

William P. Gallagher, Monroeville, Pa., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of application Ser. No. 855,037, Sept. 3, 1969, now abandoned. This application Mar. 30, 1970, Ser. No. 23,967

Int. Cl. B23p *3/00*

U.S. Cl. 29—195 **40 Claims**

Substrates, particularly plastics, are plated with metals by pretreatment of the substrate with phosphorus sesquisulfide in an organic solvent to deposit phosphorus sesquisulfide at the surface, followed by containing the treated surface with a metal salt or complex thereof, to form a metal-phosphorus-sulfur compound. The resulting treated surface is either conductive or is capable of catalyzing the reduction of a metal salt to produce a conductive surface. Such conductive surfaces are readily electroplated by conventional techniques.

3,650,709

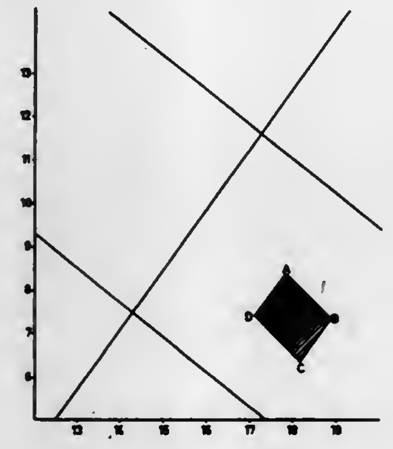
FERRITIC, AUSTENITIC, MARTENSITIC STAINLESS STEEL

Lars Johan Gustaf Morsing, Avesta, Sweden, assignor to Avesta Jernverks Aktiebolag, Avesta, Sweden

Continuation-in-part of application Ser. No. 856,872, July 3, 1969, which is a continuation of application Ser. No. 558,998, June 20, 1966, now abandoned. This application Oct. 13, 1969, Ser. No. 871,396

Int. Cl. B32b *15/00;* **C22c** *39/20*

U.S. Cl. 29—196.1 **3 Claims**



Rollable and weldable stainless steel with a high degree of tension and toughness within a wide range of temperatures both in a hardened and a tough-hardened condition comprising 5–15 percent by weight of ferrite, 10–40 percent by weight of austenite and the remainder tempered martensite.

3,650,710

ELEMENT WITH A LAMINATED METAL STRUCTURE

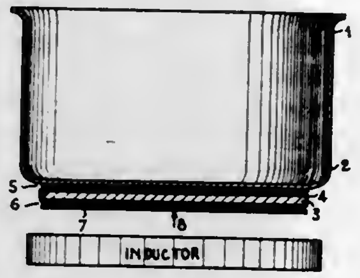
Jacques J. D. Doucerain, Massy, France, assignor to Societe de Traitements Electrolytiques et Electrothermiques (S.T.E.L.)

Filed Sept. 24, 1969, Ser. No. 860,727

Claims priority, application France, Sept. 25, 1968, 167577; Nov. 5, 1968, 172607

Int. Cl. B32b *15/18, 15/20*

U.S. Cl. 29—196.2 **11 Claims**



The problem of manufacturing heat-resistance elements with a laminated structure, comprising a plate of a metal having a comparatively low melting point, aluminum for example, is solved through coating this plate with a film of another metal having both a higher melting point and a high mechanical resistance allowing the holding in position of the aluminum plate when the latter is in the molten state. The aluminum plate can thus be brazed to another plate by means of a high temperature, and therefore reliable brazing, using a soldering metal or alloy whose melting point is higher than that of the aluminum.

3,650,711

FUEL COMPOSITION

Alvin J. Unick, Baton Rouge, La., and Richard G. Abowd, Jr., Farmington, Mich., assignors to Ethyl Corporation, New York, N.Y.

Filed Mar. 14, 1969, Ser. No. 807,418

Int. Cl. C10l *9/00, 11/00*

U.S. Cl. 44—1 R **23 Claims**

Disclosed herein are compositions of matter having valuable combustion properties. The compositions are particularly desirable in combinations having enhanced ignition and continued combustion properties in forms based on natural source and manmade (reconstituted) firewood and briquettes for heating, cooking and the like. The compositions involved contain mixtures of straight chain and branched chain olefins and paraffins of selected molecular weight with preference for the co-presence of higher alcohols, the latter being particularly effective components for purposes of enhancing the fabrication and burning characteristics of some of the compositions.

3,650,712

COMBINATION OF POLYVINYL ALCOHOL AND GELLING AGENT AS A BINDER IN MATCH FORMULATIONS

Ronald Raymond Martin, Melrose Park, Ill., and John Russell Danner, Jr., Cedar Grove, N.J., assignors to CPC International Inc.

Filed Mar. 21, 1969, Ser. No. 809,366

Int. Cl. C06f *3/00*

U.S. Cl. 44—42 **13 Claims**

A binder for use in a match formulation is revealed which comprises a mixture of a gelling agent and a polyvinyl alcohol wherein the gelling agent-polyvinyl alcohol binder serves as a replacement for the animal glue binder conventionally used in the formulation of matches.

3,650,713

STEAM REFORMING OF HYDROCARBONS

Godfrey Charles Chinchen, and Thomas Cecil Hicks, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 12, 1970, Ser. No. 36,690

Claims priority, application Great Britain, May 20, 1969, 25,627/69

Int. Cl. C01b *2/14;* **B01j** *11/06*

U.S. Cl. 48—214 **8 Claims**

A continuous process of steam reforming hydrocarbons with decreased carbon-lay-down is carried out over a substantially alkali-free catalyst comprising nickel or cobalt metal and the dioxide of zirconium on a pre-formed refractory support.

3,650,714

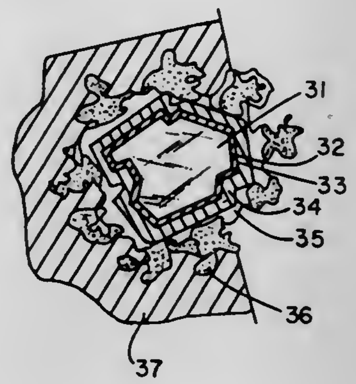
METHOD OF COATING DIAMOND PARTICLES WITH METAL

Peter Farkas, Milford, N.H., assignor to Permattach Diamond Tool Corporation, Milford, N.H.

Filed Mar. 4, 1969, Ser. No. 804,144

Int. Cl. B24b *1/00*

U.S. Cl. 51—295 **7 Claims**



Titanium (or zirconium) coated single diamonds have high cohesion bonding between coating and diamond and have external surfaces adhesion-receptive to subsequently applied less oxidizable metal, resin, and ceramic coatings which permit the double coated particles to be mounted at elevated temperatures in or on extraneous supports with or without application of pressure, without loosening the cohesion bonding and without resort to nonoxidizing atmospheres; or permitting them to be directly mounted in nonoxidizing atmospheres, in either case providing long life support for single or multiple diamond arrays as in cutting and abrading implements.

3,650,715

ABRASIVE COMPOSITIONS

Dieter Klaus Brushek, and Frank Clyde Starr, Jr., both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 4, 1969, Ser. No. 813,754

Int. Cl. C08g *51/12;* **C09c** *1/68*

U.S. Cl. 51—298 **11 Claims**

Abrasive compositions and articles such as grinding wheels and hones formed therefrom which abrasive compositions contain from 6 to 35 volume percent of diamonds from 5 to 65 volume per cent of a dendritic form of a metal such as copper, or silver or alloys thereof, from 10 to 75 volume percent of a coalesced aromatic polyimide and up to 80 volume percent (but retaining the 10 volume percent minimum of polyimide) of the polyimide phase of a filler or a metal coating on the diamonds.

3,650,716
METHOD OF AND APPARATUS FOR THE PRODUCTION OF FIBERS FROM THERMOPLASTIC MATERIALS, PARTICULARLY GLASS FIBERS

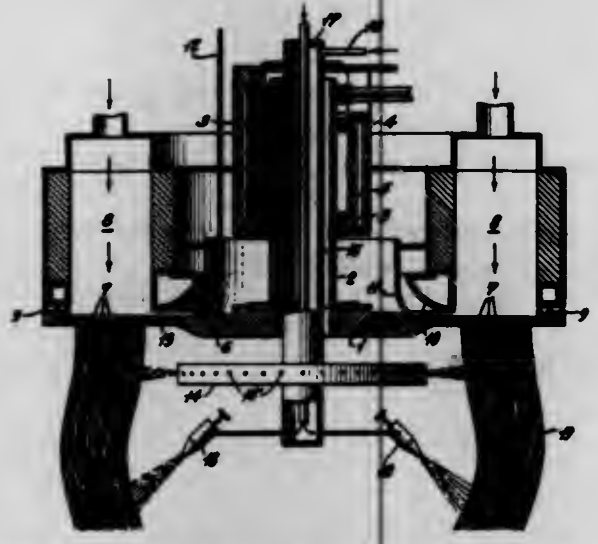
Daniel Brossard, Sarcelles, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France

Filed Sept. 2, 1969, Ser. No. 854,369

Claims priority, application France, Sept. 6, 1968, 165317

Int. Cl. C03b *37/04*

U.S. Cl. 65—6 **26 Claims**



The production of fibers from viscous thermoplastic material by collecting a reserve supply of the material at the central portion of a centrifuge plate, in the form of a disc or the bottom of an enclosure, which plate rotates on a vertical axis, where from the material is thrown in sheet form toward the periphery of the plate. A plurality of openings are provided in the outer portion of the plate through which the material of the sheet is forced, either by centrifugal force alone or with the aid of a gaseous blast acting on the top of the sheet, which serves to subdivide the material into a plurality of primary filaments to be drawn out into fine fibers. Additional attenuating blasts for drawing out the fibers, and blowers for directing the fibers may be used for effecting their withdrawal.

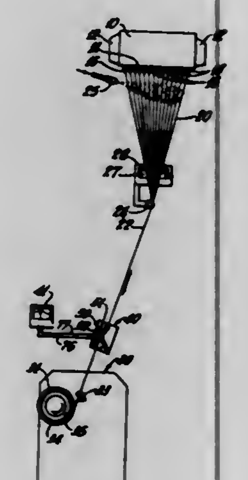
3,650,717
APPARATUS FOR MEASURING TENSION IN GLASS FIBER MAKING

Sheldon A. Canfield, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation

Original application Apr. 8, 1968, Ser. No. 719,632, now Patent No. 3,526,130, dated Sept. 1, 1970. Divided and this application Aug. 14, 1969, Ser. No. 850,023

Int. Cl. G01l *5/10;* **C03b** *37/02*

U.S. Cl. 65—11 W **4 Claims**



This invention pertains to an apparatus for producing glass fibers which includes a bushing having openings, a winder, and an elongated member positioned to engage a strand located between the bushing and winder. This member is extended and flexible and bends upon engagement with a moving strand setting up a stress in the member which raises the resistance of the member. The resistance is measured by a bridge and a signal is sent to the winder which may stop the winder or regulate the speed of the winder in response to the strain of the member.

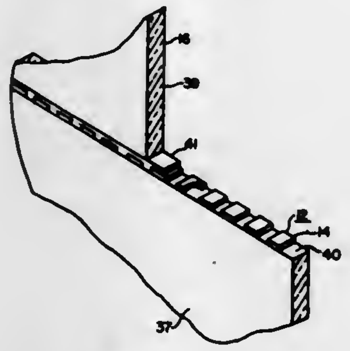
3,650,718
FUSION METHOD FOR SPACED CONDUCTIVE ELEMENT WINDOW

Jon W. Ogland, Glen Burnie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 14, 1969, Ser. No. 876,767

Int. Cl. C03c *19/00, 19/00, 15/00*

U.S. Cl. 65—23 **6 Claims**



A display device in which a cathode ray tube envelope is utilized with a plurality of conductive elements extending from the interior surface of the faceplate of the cathode ray to the exterior surface of the cathode ray tube. A high resolution faceplate is provided by fabricating the faceplate in a manner such that the conductive elements are formed on a surface transverse to the inner and outer surfaces of the faceplate and this transverse surface is then formed into the faceplate to provide a vacuum type window.

3,650,719
CHEMICAL AND THERMAL TEMPERING OF VITREOUS MATERIALS

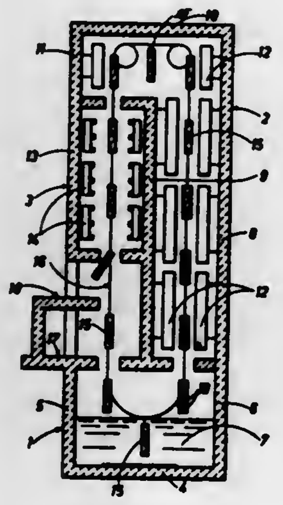
Robert Van Laethem, Les Morlaires, Belgium, assignor to Glaverbel S. A., Watermael, Boitsfort, Belgium

Filed Apr. 26, 1968, Ser. No. 724,336

Claims priority, application Luxembourg, Apr. 27, 1967, 53,546; Great Britain, Feb. 8, 1968, 6,390/68

Int. Cl. C03c *17/00*

U.S. Cl. 65—30 **11 Claims**



A process for treating vitreous materials to temper them which includes first chemically and then thermally tempering such materials.

3,650,720
DECORATING GLASS-CERAMIC ARTICLES

Peter Grego, Corning; Theodore R. Kozlowski, Horseheads, and Peter M. Schuyler, Otego, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 14, 1969, Ser. No. 877,053

Int. Cl. C03c *15/00, 17/00*

U.S. Cl. 65—30 **1 Claim**

This invention relates to the decorating of Li_2O and/or Na_2O-containing glass-ceramic articles through the stain coloring thereof utilizing copper and/or silver ions, these articles being subsequently chemically strengthened through an ion exchange reaction of the large-ion-for-small-ion type carried out in a bath of molten salt. More specifically, the present invention is concerned with the prevention of unsightly defects which can occur in the stain coloring during the chemical strengthening process. This is accomplished by passing sulfur dioxide gas through the bath of molten salt.

3,650,721
METHOD OF FORMING MICRO-POROUS GLASS FIBERS

Joseph J. Hammel, Pittsburgh, Pa., and John D. Mackenzie, Schenectady, N.Y., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 736,670, June 13, 1968, now abandoned. This application May 6, 1969, Ser. No. 822,325

Int. Cl. C03c *25/06*

U.S. Cl. 65—31 **6 Claims**

This invention relates to a process for forming small particles of microporous glass having inter-connected pores suitable to filter tobacco smoke. It particularly relates to a method of melting a phase-separable borosilicate glass composition, especially alkali borosilicates, forming the glass into a workable form, especially fibers, at elevated temperatures, phase separating the glass by heat treatment at elevated temperatures below the miscibility temperature of the glass for a sufficient period to form a silica-rich phase and a substantially continuous borate-rich phase, cooling the phase-separated glass, sizing the phase-separated glass, and leaching the glass to remove a sufficient quantity of the borate-rich phase to form microporous articles having inter-connected pores.

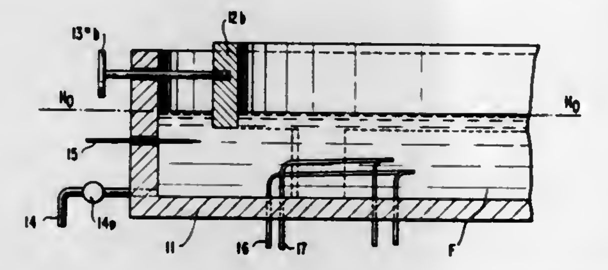
3,650,722
METHOD AND APPARATUS FOR FORMING BLANKS IN OPTICAL-QUALITY HOMOGENEOUS GLASS

Roger R. Genisson, Fontainebleau, and Jean Pierre A. Thibieroz, Montigny sur Loing, both of France, assignors to Societe des Verreries Industrielles Reunies du Loing, Levallois Perret, France

Filed June 26, 1970, Ser. No. 50,209

Int. Cl. C03b *29/00*

U.S. Cl. 65—65 A **5 Claims**



A method for casting blanks of optical-quality glass disks in which the glass is cast on a bath of metallic material. The height of the metal material is varied during casting to ensure a constant distance between the casting tube and the top of the forming disk. Also during casting controllable heating and cooling means immersed within the bath of metallic material maintain a proper casting temperature at the top of the bath.

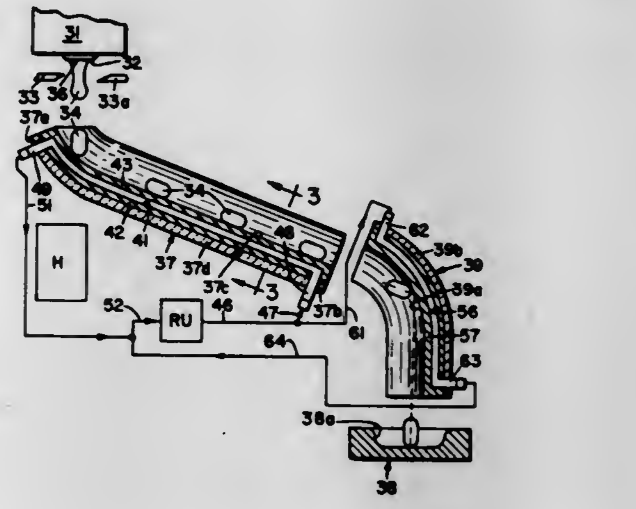
3,650,723
GLASS GOB DELIVERY

Robert F. Wiley, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 12, 1969, Ser. No. 806,605

Int. Cl. C03b *39/00*

U.S. Cl. 65—169 **1 Claim**



Method of and apparatus for delivering gobs of molten glass to glass forming apparatus at substantially identical rates of speed, such apparatus and method comprising a sloping trough having a gob contacting surface arranged to be cooled below freezing temperature of water, and supplying a coolant or cooling medium to said trough to form frost on said surface.

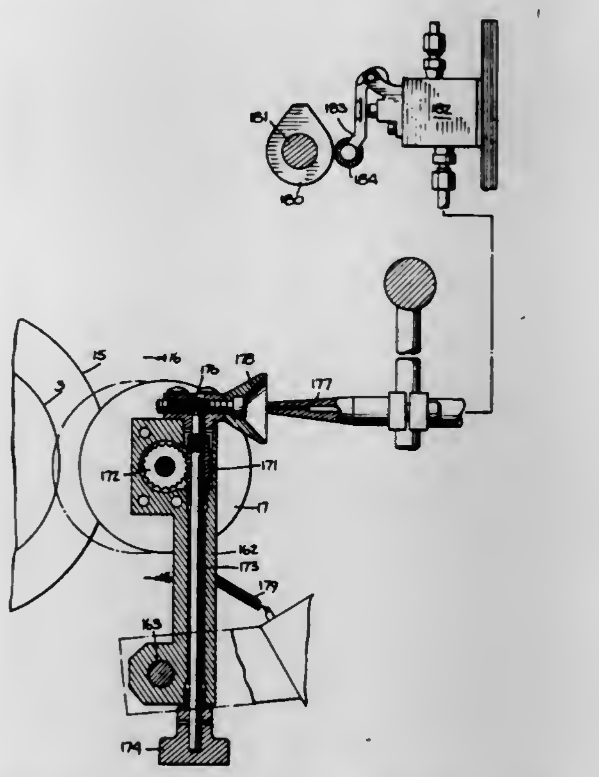
3,650,724
CRACK-OFF APPARATUS FOR GLASS ARTICLES

John S. Lush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Dec. 8, 1969, Ser. No. 882,969

Int. Cl. C03b *9/46, 23/00, 21/00*

U.S. Cl. 65—174 **8 Claims**

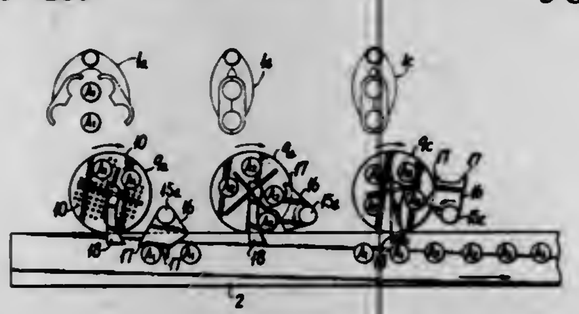


Apparatus for manufacturing glass tumblers or other glass articles which is positioned in a manufacturing line to receive the glass articles after they have been shaped by a forming machine and to complete the articles by cracking-off unwanted portions. The machine includes an aligning and feeding means, a main crack-off turret, and annealing and cooling means. The articles are fed in upright position to the crack-off turret and the unneeded portion or moil is cracked-off or removed from the lower portion of the article by a combined heating and impacting operation. After the moil is removed on the turret, the newly formed edges of the glass vessel are smoothed or polished and the article is then tempered and cooled.

3,650,725
GLASSWARE COOLING AND TRANSFER APPARATUS

Akihiro Okumura, and Isao Izumi, both of Hyogo, Japan, assignors to Yamamura Glass Kabushiki Kaisha, Hyogo, Japan

Filed Apr. 9, 1970, Ser. No. 27,057
Claims priority, application Japan, Aug. 13, 1969, 44/64346; 44/64347
Int. Cl. C03b *35/00*
U.S. Cl. 65—260 **3 Claims**

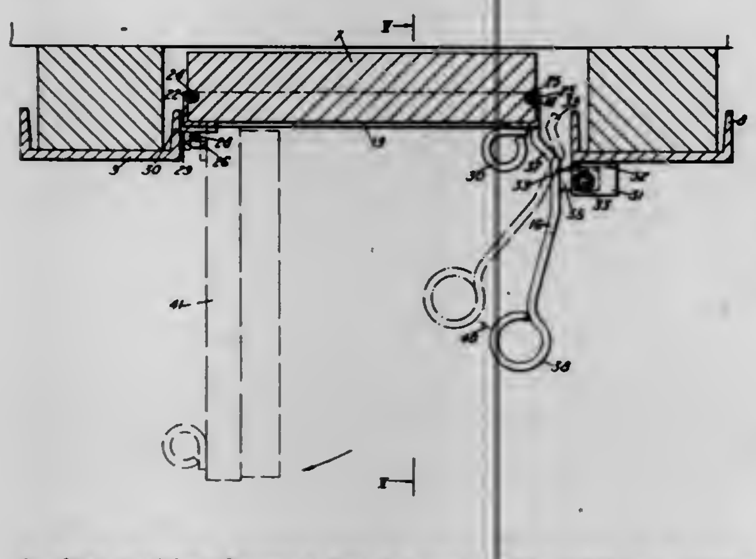


Articles of glassware manufactured by an automatic apparatus are taken out from finishing molds of the apparatus and held temporarily by take-out assemblies until they are cooled to such temperature that they no longer undergo deformation. The articles, then placed onto turntables in rotation and further cooled thereon, are transferred, in equidistant arrangement, onto a belt conveyor which is driven at a velocity higher than the rotational speed of the turntable by means of delivery arms adapted to be rotated at a progressively increasing velocity.

3,650,726
GLASS MELTING FURNACES HAVING HINGED FLOOR INSULATION

William Christie Hynd, Liverpool, England, assignor to Pilkington Brothers Limited, Liverpool, England

Filed Feb. 4, 1969, Ser. No. 796,423
Claims priority, application Great Britain, Feb. 16, 1968, 7,790/68
Int. Cl. C03b *5/22*
U.S. Cl. 65—347 **4 Claims**

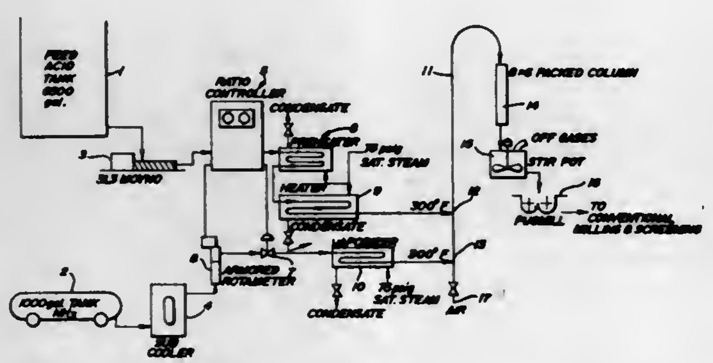


A glass melting furnace has an array of blocks of thermal insulation material beneath its floor extending beneath the whole of the floor of the furnace, and has a hinged mounting for each block for moving each block from an inoperative position to an insulating position where it is locked facing the undersurface of the furnace floor, thereby providing selective insulation of the furnace floor.

3,650,727
AMMONIUM POLYPHOSPHATE IMPROVEMENT

John L. Kolbe, Clarksville, and Casimer C. Legal, Jr., Elkridge, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jan. 26, 1970, Ser. No. 5,571
Int. Cl. C05b *7/00*
U.S. Cl. 71—34 **7 Claims**



Hydrolysis of ammonium polyphosphate can be significantly delayed and reduced when the hot freshly made ammonium polyphosphate reaction mixture, still under pressure, is passed through a column containing an inert packing.

3,650,728
COMBATING PIGWEED IN SUGAR BEET FIELDS

William C. Doyle, Jr., Leawood, and James L. Ahle, Shawnee, both of Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 18, 1969, Ser. No. 886,402
Int. Cl. A01n *9/22*
U.S. Cl. 71—88 **3 Claims**

Pigweed is combated in sugar beet fields by applying postemergently to the locus of the pigweed a herbicidally effective amount of a composition comprising one part by weight of methyl 3-(N'-m-tolylcarbamoyl)carbanilate and from one-fourth to two parts by weight of 2-(m-chlorophenyl)-4H-3,1-benzoxazin-4-one.

3,650,729
INTERNALLY NITRIDED STEEL POWDER AND METHOD OF MAKING

Lynn E. Kindlimann, Natrona Heights, Pa., and George S. Ansell, Latham, N.Y., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Mar. 7, 1969, Ser. No. 805,361
Int. Cl. B22f *3/12, 9/00*
U.S. Cl. 75—0.5 BC **34 Claims**

The application describes a steel powder containing as a dispersoid therein particles of metal nitride having a free energy of formation of greater than about −21,000 cal./mole, said nitride particles being present at an interparticle spacing of less than about 2 microns. Also described is a hot pressed article produced from the powder, a method of producing the powder by internal nitridation, and a method for producing the hot pressed article.

3,650,730
PURIFICATION OF ALUMINIUM

Leslie Jack Derham, deceased, late of Avonmouth Works, Avonmouth, England, and Michael Gordon Derham, administrator, Henleaze, Bristol, England, assignors to Alloys and Chemicals Corporation, Cleveland, Ohio

Filed Mar. 21, 1969, Ser. No. 810,086
Claims priority, application Great Britain, Mar. 21, 1968, 13,643/68
Int. Cl. C22b *21/06, 9/10, 9/12*
U.S. Cl. 75—68 **15 Claims**

A process for removing impurities from aluminum or aluminum alloys comprising treating the molten metal with a chloridizing agent while the metal is covered with a layer of molten flux, so as to suppress the emission of fumes from the molten metal. An improved aspect of such process wherein the flux contains at least part of the chloridizing agent.

3,650,731
FERRITIC STAINLESS STEEL

George Aggen, Sarver, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Jan. 31, 1969, Ser. No. 795,740
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 T **2 Claims**

A hot rolled ferritic stainless steel having up to 0.07% carbon, 10–12.5% chromium, traces to 0.75% silicon, traces to 3% manganese, traces to 2% copper, 0.5 to 1.5% nickel, 0.1 to 0.5% titanium and which may contain as small alloying additions aluminum, vanadium, zirconium, columbium or combinations thereof. The elements of the steel are also balanced with respect to each other so that it is capable of being softened to R_B80 hardness or lower in less than about 24 hours of subcritical box annealing and develops at least 50% austenite during hot rolling so as to exhibit a charpy V-notch impact strength of at least 20 ft.-lb. at 0° F.

3,650,732
PROCESSING OF FERROPHOSPHORUS

Milton J. Scott, and Jurgen A. Stenzel, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 17, 1969, Ser. No. 867,398
Int. Cl. C22c *33/00;* **C01b** *25/08*
U.S. Cl. 75—129 **5 Claims**

Ferrophosphorus is heated in admixture and excess aluminum to convert the phosphorus therein to aluminum phosphide. The aluminum phosphide is hydrolyzed and an alloy comprising the nonphosphorus constituents of the ferrophosphorus and unreacted aluminum is separated from the hydrolysis products. The alloy of non-phosphorus constituents and aluminum is useful in the metallurgical industry and the phosphine obtained during the hydrolysis reaction has well-known utility as a chemical intermediate, for example, in preparing gasoline additives such as tributyl phosphine.

3,650,733
NONMAGNETIC COPPER-BASED ALLOY

Alexei Vasilievich Bobylev, ulitsa Arkhitektora vlasova 41; Kapitolina Arsenievna Goryacheva, ulitsa 3a, korpus 1, kv. 73, and Alla Vasilievna Chernikova, Otkrytoe shosse, 21 korpus 2, kv. 113, all of Moscow, U.S.S.R.

Filed Aug. 17, 1970, Ser. No. 64,565
Int. Cl. C22c *9/06, 9/00*
U.S. Cl. 75—153 **1 Claim**

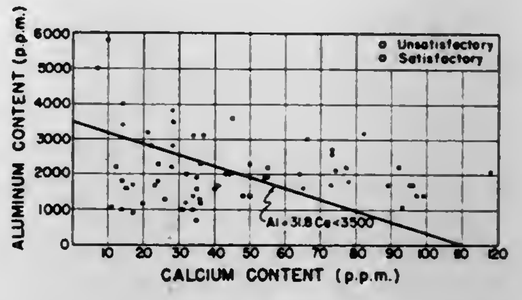
The present invention relates to nonmagnetic copper-based alloys applicable in the apparatus for magnetic tape recording and playback. The alloy contains 4.5 to 4.9% nickel, 4.5 to 4.9% aluminum, 2.5 to 3% manganese, 0.7 to 1% chromium and copper.

3,650,734
WROUGHT WELDING ALLOYS

Thomas A. Kantor, Pittsburgh, and Ronald K. Bowen, Bethel Park, both of Pa., assignors to Cyclops Corporation, Universal-Cyclops Specialty Steel Division, Pittsburgh, Pa.

Filed June 16, 1969, Ser. No. 833,464
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 **4 Claims**

A welding alloy and a method of making same containing a controlled amount of aluminum and calcium, for example, as represented by the formula $Al + 31.8\ Ca < 3{,}500$ where the compositions are given in parts per million for the elimination of fusion zone undercutting during the welding of said alloy.



3,650,735
TIN BASE ALLOY CONTAINING ALUMINUM, ZINC AND COPPER

Luigi Monaco, 270 Amityville Street, Islip Terrace, N.Y.

Filed Apr. 4, 1969, Ser. No. 813,716
Int. Cl. C22c *13/00*
U.S. Cl. 75—175 R **2 Claims**

An alloy for a jewelry metal consisting of at least 50 percent tin, and aluminum, zinc and copper, has high brightness and improved tarnish resistance.

3,650,736
METHOD OF MOLDING ELECTRODES

Robert F. Broom, Villa Park, Ill., assignor to Amforge, Inc., Chicago, Ill.

Filed Sept. 9, 1968, Ser. No. 758,624
Int. Cl. B22f *3/12*
U.S. Cl. 75—200 **18 Claims**

An improved method of molding electrodes for use in electrical discharge machining comprising mixing various powdered materials together along with a binder, molding the same under a low pressure, and thereafter sintering the molded compound at a temperature approximately equal to the melting point of that one of the powders having the lowest melting point.

3,650,737
IMAGING METHOD USING PHOTOCONDUCTIVE ELEMENT HAVING A PROTECTIVE COATING

Leon I. Maissel; Bernt Narken, and Brian Sunners, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 25, 1968, Ser. No. 715,657
Int. Cl. G03g *13/22, 5/02*
U.S. Cl. 96—1 PC **2 Claims**

A transparent, protective coating overlies a photoconductive layer and is integral therewith. The coating, which has a resistivity at least equal to the dark resistivity of the photoconductive material, has a thickness in the range of 50A–4000A. The coating is deposited on the photoconductive layer by sputtering through utilization of a high frequency alternating voltage whereby the properties of the coating may be controlled. When applying the high frequency alternating voltage, the power is kept low to produce a relatively high compressive stress of the coating. Controlling the power results in controlling the compressive stress of the coating. The temperature of the photoconductive layer may be maintained at a sufficiently low temperature so that the photoconductive layer retains its photoconductive properties.

3,650,738

PROCESS FOR DEVELOPING AN ELECTROPHOTOGRAPHIC PRINTING MATERIAL

Itsuo Ikeda, and Nobuyuki Katagiri, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed June 10, 1969, Ser. No. 831,933
Claims priority, application Japan, June 15, 1968, 43/41228
Int. Cl. G03g *13/00*

U.S. Cl. 96—1 LY **3 Claims**

A process is described for developing an electrophotographic printing material, said process being capable of improving the printed image of the electrophotographic printing material by treating the photoconductive layer of the printing material with a surface-treating solution prepared by dissolving a two- or multi- component copolymer in paraffinic hydrocarbon, said copolymer containing at least one monomer selected from each of the following first and second group of monomers, the first group of monomers having an oleophilic group and the second group of monomers having a basic nitrogen atom.

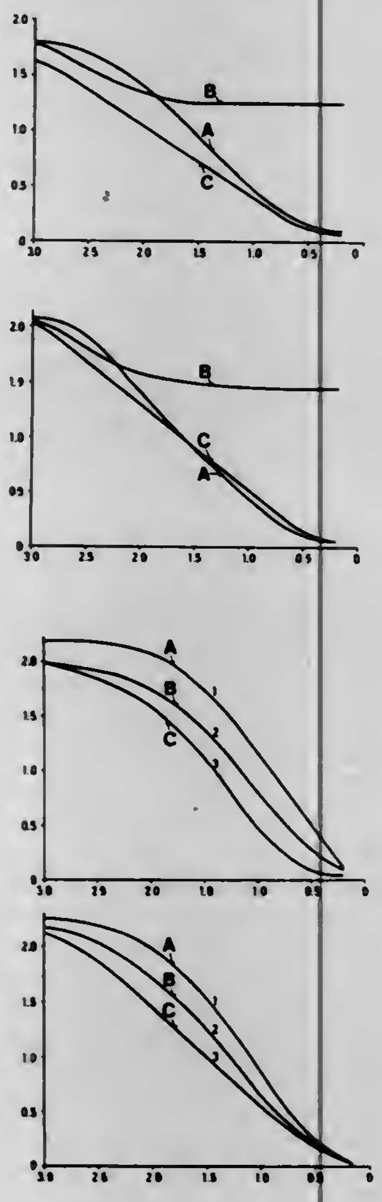
3,650,739

SILVER DYE BLEACH PHOTOGRAPHIC ELEMENTS AND PROCESSES FOR THEIR USE

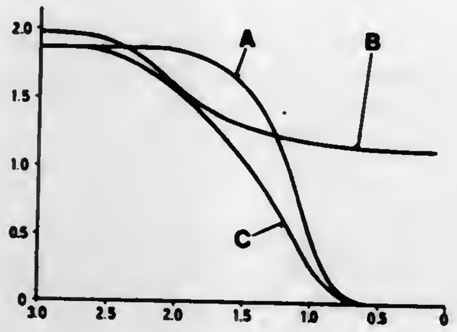
Max Marthaler, Marly-le-Petit, and Alfred Oetiker, Fribourg, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed July 20, 1970, Ser. No. 56,597
Claims priority, application Switzerland, July 25, 1969, 11441/69
Int. Cl. G03c *5/52, 7/00*

U.S. Cl. 96—20 **13 Claims**



A process for the manufacture of a photographic color image by the silver dyestuff bleaching process is provided. The photographic material used in this process comprises on a support at least one silver halide emulsion layer containing a diffusion-resistant bleachable image dyestuff and immediately on top of said layer on the side facing the light source, a silver halide emulsion layer free of image dyestuff. After imagewise exposure this material is processed in the presence of a dyestuff bleaching catalyst to give a color image. The color image is produced exclusively through image dyestuffs present in the photographic material prior to the exposure.



By the present process color images are obtained wherein the gradation, sensitivity and spectral distribution of the sensitivity have been favorably influenced.

3,650,740

TRANSFER OF SHEET-LIKE MATERIAL

August Jean Van Paesschen, Antwerpen, and Lucien Jan Baptist Van Gossum, Kontich, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed May 31, 1968, Ser. No. 733,313
Claims priority, application Great Britain, June 1, 1967, 25,418/67
Int. Cl. G03c *11/12;* **B44c** *31/00*

U.S. Cl. 96—28 **4 Claims**

Visible image-shaped regions of colloid material in a thin layer are transferred from a temporary support to a permanent support by means of a chemically hardenable adhesive applied as a liquid coating between the colloid material to be transferred and the permanent support and allowed to harden so that the temporary support can be peeled away. The visible image-shaped regions of the colloid material can form part of an overall layer or the non-image portions of such layer can be removed in advance. A preferred colloid layer is constituted of solid hydrophobic thermoplastic polymer particles dispersed in a hydrophilic binder in a weight ratio greater than 1:1 and a preferred hardenable adhesive is an epoxy resin in liquid state having a viscosity of 8,000 to 20,000 cp. which is applied to at least the pattern on the temporary support carrying the colloid layer thereon and permeates the colloid layer so that upon hardening of such resin, improved resistance to wear, humidity and heat is imparted to the colloid.

3,650,741

SILVER COMPLEX DIFFUSION TRANSFER PROCESS

Camille A. Vandeputte, Mortsel, and Paul Desire Van Pee, Edegem, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed Mar. 25, 1968, Ser. No. 715,551
Int. Cl. G03c *5/54*

U.S. Cl. 96—29 R **16 Claims**

An improved silver complex diffusion transfer copy image is obtained when for purposes of better sensitivity and/or continuous-tone reproduction, a silver bromide or silver bromo-iodide emulsion is utilized as the light-sensitive emulsion from which diffusion transfer takes place, by forming the diffusion transfer image in the presence of a quaternary

phosphonium salt wherein three of the quaternary substituents are aryl groups and the fourth is an alkyl group. Known diffusion transfer additives, especially the tetrazoline-5 thiones and certain water soluble amines are preferably used together with the phosphonium salt.

3,650,742

OLEOPHILIZING GELATINOUS IMAGES

Doyle O. Etter, and Anthony J. Parrinello, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 1, 1968, Ser. No. 741,758
Int. Cl. G03f *7/02*

U.S. Cl. 96—33 **3 Claims**

Gelatinous images, especially lithographic materials having gelatinous images on metallic supports, for example, aluminum, are heated, for example, at 500° F. for 5 minutes, to render the gelatinous images durably oleophilic.

3,650,743

METHODS FOR MAKING LITHOGRAPHIC OFFSET PLATES BY MEANS OF ELECTROMAGNETIC RADIATION SENSITIVE ELEMENTS

Robert W. Hallman, Utica, and Gary W. Kurtz, Southfield, both of Mich., assignors to Teeg Research, Inc., Detroit, Mich. Continuation-in-part of Ser. No. 673,410 Oct. 6, 1967, abandoned.

Filed Aug. 14, 1969, Ser. No. 850,184
Int. Cl. G03f *7/02*

U.S. Cl. 96—33 **3 Claims**

Methods for making lithographic offset plates and the like by means of electromagnetic radiation sensitive elements comprising essentially a metallic layer or a layer of silicon, a layer of an inorganic material capable when exposed to electromagnetic actinic radiation to form an interreaction product with the metallic layer, and a support member. The methods consist of exposing the radiation sensitive elements to an actinic image projected thereon for causing selective and discrete interreaction between silicon or the metal or metals of the first layer and the inorganic material, such reacted portions having hydrophilic or oleophilic qualities different from the unreacted portions of the elements.

3,650,744

ETCHING METHOD USING PHOTOPOLYMERIZABLE VAPORS AS THE PHOTORESIST

Charles O. Kunz, Ballston Lake, and Parley C. Long, Bridgewater, both of N.Y., assignors to General Electric Company

Filed Mar. 2, 1970, Ser. No. 15,678
Int. Cl. G03c *5/00*

U.S. Cl. 96—35.1 **8 Claims**

An etching method is provided utilizing an organic solvent soluble photosensitive photopolymerized organic film on the surface of an etchable substrate as a negative photoresist. The organic film is applied by effecting the ultraviolet surface photopolymerization of a photopolymerizable organic material in vaporous form, such as hexachlorobutadiene at substrate temperatures below about 100° C. The method allows for the production of composites having continuous and imperforate films having thicknesses as low as 500 Angstroms, which can be employed as negative photoresists and also provide dielectric layers.

3,650,745

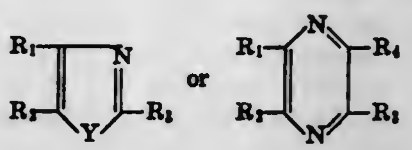
PRINTING PLATE CARRYING A PHOTOACTIVE LAYER

Ernst-August Hackmann, Wiesbaden-Dotzheim, and Erwin Lind, Auringen uber Wiesbaden, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Aug. 28, 1968, Ser. No. 755,807
Claims priority, application Germany, Aug. 31, 1967, P 15 97 784.1
Int. Cl. G03c *1/70*

U.S. Cl. 96—35.1 **21 Claims**

This invention relates to a photoactive layer, particularly adapted for use in the preparation of printing plates, which comprises a compound corresponding to one of the following general Formulae



wherein:

R_1 and R_2 which may be identical or not, are aryl or heteroyl groups which may be substituted, or form members of an aromatic or pyridine ring.

R_3 is $-CH \quad CH_2$ or $-RCH \quad CH_2$, with R being arylene, naphthylene, or heteroylene,

R_4 is either identical with R_3, or is an aryl or heteroyl group which may be subsituted, and is NH, S, Se, or O.

3,650,746

DUAL IMAGE FORMATION ON SEPARATE SUPPORTS OF PHOTOCURABLE COMPOSITION

Robert J. Bailey, College Park, Md., assignor to W. R. Grace & Co

Filed June 16, 1969, Ser. No. 833,723
Int. Cl. G03c *5/00*

U.S. Cl. 96—35.1 **14 Claims**

This invention is directed to forming two silverless continuous tone photographic images from a sandwich comprising two UV transparent outer support layers and a pigment or dye filled photosensitive composition as the inner layer by exposing said composition to actinic radiation e.g., UV light through image-bearing transparencies adjacent each outer support layer to selectively insolublize the UV exposed areas of said composition, peeling said outer support layer apart and removing soluble portions of the composition in the unexposed areas thereby forming a silverless, continuous tone, photographic image on each outer support layer.

3,650,747

ELECTROLESS DEPOSITION OF NICKEL, COBALT, COPPER OR IRON METAL AND A BISMUTH, ANTIMONY, LEAD, TIN, TITANIUM, TUNGSTEN OR CHROMIUM SALT ON A GOLD, PLATINUM OR PALLADIUM LATENT IMAGE

Ennio Calligaris; Roy Callaby, and Mario Rossello, all of Savona, Italy, assignors to Minnesota Mining and Manufacturing Company

Filed Jan. 31, 1969, Ser. No. 795,708
Int. Cl. G03c *5/24*

U.S. Cl. 96—48 **5 Claims**

Salts of bismuth, antimony, lead, tin, gold, silver, titanium, tungsten and chromium are employed to impart continuous tone characteristics to image reproductions produced by the electroless deposition of a non-noble metal onto a recording medium.

3,650,748

PHOTOGRAPHIC REPRODUCTION USING NOVEL PHYSICAL DEVELOPERS

Joseph S. Yudelson, and Barbara F. Dernbach, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 22, 1968, Ser. No. 778,323
Int. Cl. G03c *5/24, 1/64*

U.S. Cl. 96—48 PD **30 Claims**

Processes for producing images by photoexposure, and stable physical developers employing borane reducing agents for use in such processes are described.

3,650,749

PHOTOGRAPHIC DEVELOPMENT

Jozef Frans Willems, Wilrijk, and Antoon Leon Vandenberghe, Hove, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed May 23, 1969, Ser. No. 827,145
Claims priority, application England, June 10, 1968, 27,524/68
Int. Cl. G03c *5/30*

U.S. Cl. 96—66 **12 Claims**

Photographic silver halide elements are described which comprise incorporated in a silver halide emulsion layer or another water-permeable colloid layer a hydroquinone silver halide developing agent precursor of which at least one of the hydroxyl groups of said hydroquinone has been esterified to form a hydrolyzable aliphatic acyloxy radical comprising a quaternary ammonium group. Upon treatment of the exposed elements with an alkaline solution the developing agent precursor hydrolyzes readily to yield the active developing agent so that no delay in development occurs. The resulting developed images are free from spots, do not show fog and possess the desired sensitivity and gradation with normal or even shorter length of development time.

3,650,750

HEAT-DEVELOPABLE DIAZO-TYPE LIGHT-SENSITIVE MATERIAL

Susumu Iwata, Tokyo, and Etuo Oida, Yokohama-shi, both of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Dec. 23, 1969, Ser. No. 887,758
Claims priority, application Japan, Dec. 28, 1968, 44/781
Int. Cl. G03c *1/60, 1/58*

U.S. Cl. 96—75 **4 Claims**

A heat-developable diazotype light-sensitive material is provided which gives a high density of dye-image. This light-sensitive material may be produced by applying to a substrate a solution containing a diazonium compound and a derivative of polyhydroxybenzoic acid dissolved in an aqueous solution which contains a salt of an alkali metal (Na), an alkaline earth metal (Ca and Mg) or a weak acid having an electric dissociation exponent more than 2.0.

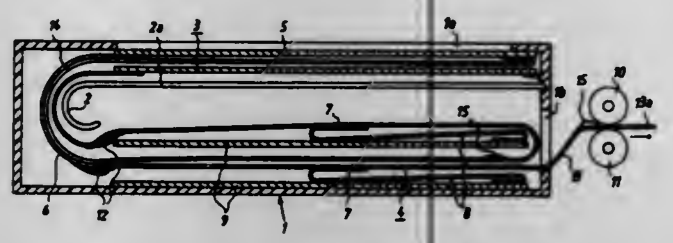
3,650,751

PHOTOGRAPHIC FILM PACK

Hans-Peter Huber, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 19, 1968, Ser. No. 785,277
Claims priority, application Germany, Sept. 26, 1968, P 15 97 098.6
Int. Cl. G03c *1/48*

U.S. Cl. 96—76 C **25 Claims**



Successive film units which are stored in the container of a photographic film pack for use in a camera which develops the film are connected to each other by flexible coupling strips each of which automatically passes between the pressure applying rolls of the camera in response to withdrawal of the preceding film unit. The leading ends of coupling strips are weakened so that they can be readily separated from preceding film units. Such separation is further facilitated by transversely extending or inclined beads provided on the coupling strips and engaging with the pressure applying rolls during separation of respective coupling strips from the preceding film units.

3,650,752

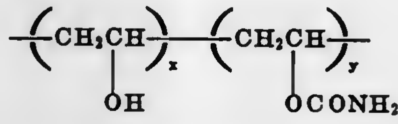
WHITENED PHOTOGRAPHIC PRINTING PAPER

Hiroyuki Amano; Nobuo Tsuji; Takushi Miyazako; Kazuo Shirasu, and Yosinori Tutiya, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ashigara-Kamigun, Kanagawa, Japan

Filed May 12, 1970, Ser. No. 36,525
Claims priority, application Japan, May 12, 1969, 44/36404
Int. Cl. G03c *1/92*

U.S. Cl. 96—82 **14 Claims**

A photographic printing paper comprising a support having thereon a light-sensitive silver halide emulsion layer containing a water-soluble fluorescent brightening agent and a partially urethanated polyvinyl alcohol having the following recurring structure:



$$-\!\left(\mathrm{CH_2}\underset{\mathrm{OH}}{\mathrm{CH}}\right)_x\!-\!\left(\mathrm{CH_2}\underset{\mathrm{OCONH_2}}{\mathrm{CH}}\right)_y\!-$$

wherein $x+y$ is a number from 100 to 5,000 and $y/(x+y)$ is a number from 0.05 to 0.25.

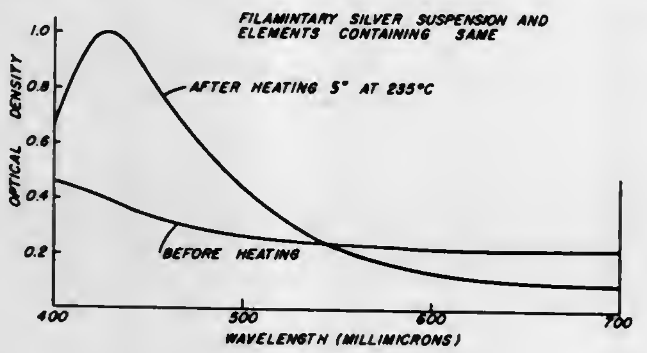
3,650,753

FILAMENTARY SILVER SUSPENSIONS AND ELEMENTS CONTAINING SAME

Robert Elwin Bacon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 29, 1969, Ser. No. 861,584
Int. Cl. G03c *1/84*

U.S. Cl. 96—84 **9 Claims**



This invention relates to photographic elements having at least one layer which contains a filamentary silver suspension and to processes of heating elements containing said suspensions to change the adsorption characteristics thereof. Elements containing uniform coverage layers of filamentary suspensions can be heated to temperatures of at least 150° C. to reduce the light adsorption over at least one third of the visible light spectrum. Antihalation layers for heat-processable elements can be provided by utilization of the filamentary silver suspension in said elements.

3,650,754

PHOTORESIST COMPOSITIONS CONTAINING LIMED ROSIN AND PHOTOACTINATOR

Viron V. Jones, Caldwell, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed July 31, 1969, Ser. No. 846,616
Int. Cl. G03c *1/00, 1/68*

U.S. Cl. 96—88 **9 Claims**

A layer of limed rosin sensitized with a photoactive dye or a photosensitive organic polyhalogen compound is normally hydrophobic, but is rendered soluble in weakly alkaline aqueous solution upon exposure to light. When over-coated upon a hydrophilic base sheet these limed rosin materials provide aqueous-developable, positive-working lithographic printing plates, or when coated upon film layers soluble in aqueous solutions they provide for aqueous-developable reproduction sheets by means of etching processes.

3,650,755

POSITIVE-MODE PHOTOGRAPHIC PROCESS AND COMPOSITION

Yoshikazu Yamada, Sierra Madre, and Thomas H. Garland, El Monte, both of Calif., assignors to Bell & Howell Company

Continuation-in-part of application Ser. No. 523,705, Jan. 28, 1966, now Patent No. 3,503,745, dated Mar. 31, 1970, which is a continuation-in-part of application Ser. No. 481,759, Aug. 23, 1965, now Patent No. 3,476,562, dated Nov. 4, 1969, which is a continuation-in-part of application Ser. No. 352,625, Mar. 17, 1964, now abandoned , which is a continuation-in-part of application Ser. No. 278,050, May 6, 1963, now abandoned. This application July 29, 1968, Ser. No. 748,420
Int. Cl. G03c *1/52*

U.S. Cl. 96—90 R **15 Claims**

A positive-mode photographic process, and composition therefor, wherein an organic photo-sensitive polymer-former and dye progenitor are dispersed in a non-solubilizing hydrophilic vehicle. Exposure forms a latent image by polymerization in light struck areas. A visible, positive image is obtained by developing the dye progenitor in non-polymerized areas. Multi-layers can be provided with substractive color-dye progenitors to yield a full color direct positive print.

3,650,756

SENSITIZATION OF LAYERS MADE OF POLYMERS WHICH CAN BE CROSS-LINKED BY THE ACTION OF LIGHT

Hans Ohlschlager, Cologne-Stammheim; Oskar Riester, and Eckart Seelig, both of Leverkusen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 14, 1969, Ser. No. 841,553
Claims priority, application Germany, July 15, 1968, P 17 72 867.5
Int. Cl. G03c *1/52*

U.S. Cl. 96—91 **1 Claim**

Recording materials comprising at least one layer of a polymer which can be cross-linked by the action of light. The recording material can be very effectively spectroscopically sensitized, particularly in the visible region of the spectrum. The sensitizers include condensation products of a methyl mercapto quaternary salt or of an acetanilidovinyl quaternary salt of a heterocyclic base with a cyanothioacetamide compound in solvent with a base.

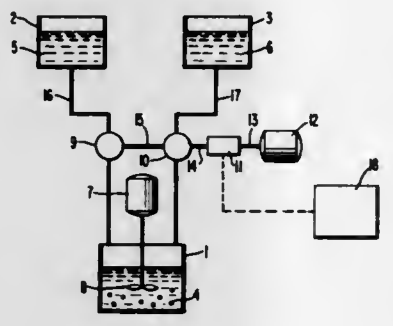
3,650,757

PREPARATION OF INORGANIC SALT CRYSTALS

Kazuo Irie, and Keiichi Suzuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

Filed Oct. 23, 1968, Ser. No. 769,983
Claims priority, application Japan, Oct. 23, 1967, 42/68170; Jan. 30, 1968, 43/5556
Int. Cl. G03c *1/02*

U.S. Cl. 96—94 R **11 Claims**



An improved method for preparing crystals of a weak-soluble inorganic salt, using a double decomposition of two or more inorganic salts by simultaneously adding aqueous solutions of the inorganic salts to a dispersing medium under conditions of agitation, which comprises increasing the rate of addition of the aqueous solutions of the inorganic salts which are reacted at a rate which is proportional to, or less than, the growth rate of the surface areas of the growing crystals. Particular applicability is found wherein the salt is a silver halide and the dispersing medium is an aqueous gelatin solution.

3,650,758

DIRECT-POSITIVE PRINT-OUT SILVER HALIDE EMULSION FOGGED TO VISIBLE DENSITY

Paul Brewster Gilman, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 20, 1970, Ser. No. 56,703
Int. Cl. G03c *1/36*

U.S. Cl. 96—101 **17 Claims**

Print-out, direct-positive images are obtained by exposure of a silver bromide emulsion which has been uniformly fogged to a visible density and contains an electron-accepting compound.

3,650,759

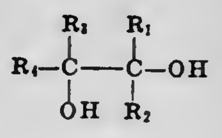
SILVER HALIDE EMULSION CONTAINING 1.2-GLYCOL AS SENSITIZER AND ANTIFOGGANT

Minoru Sonoda; Nobuo Yammamoto, and Akikazu Mikawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

Filed July 9, 1969, Ser. No. 840,477
Claims priority, application Japan, July 9, 1968, 43/48021
Int. Cl. G03c *1/28, 1/34*

U.S. Cl. 96—107 **11 Claims**

A photographic silver halide light-sensitive emulsion is enhanced in sensitivity without an attendant increase in fog by addition to the silver halide emulsion of a 1,2-glycol of the general formula



$$\mathrm{R_4}-\underset{\mathrm{OH}}{\overset{\mathrm{R_3}}{\mathrm{C}}}-\underset{\mathrm{R_2}}{\overset{\mathrm{R_1}}{\mathrm{C}}}-\mathrm{OH}$$

wherein R_1, R_2 and R_3 represent a hydrogen atom or an alkyl group, and R_4 represents a hydrogen atom, an alkyl group, an aryl group, an alkoxyalkyl group, an aryloxyalkyl group, or an allyloxyalkyl group.

3,650,760

ALKOXY MERCAPTOPHENOLS AS PHOTOGRAPHIC ADDENDA FOR PHOTOGRAPHIC ELEMENTS

John W. Gates, Jr., and Dorothy J. Beavers, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 17, 1969, Ser. No. 858,857
Int. Cl. G03c *1/34*

U.S. Cl. 96—109 **15 Claims**

Alkoxy mercaptophenols are used in photographic silver halide elements and emulsions in order to stabilize said elements and emulsions against fog.

3,650,761

PHOTOSENSITIVE RESIST

Rosemonde W. Killy, Seattle, Wash., assignor to Powers Chemco, Inc., Glen Cove, N.Y.

Filed Dec. 15, 1969, Ser. No. 885,374
Int. Cl. G03c *1/68, 5/00*

U.S. Cl. 96—115 R **8 Claims**

A new photosensitive resist for the production of photoengravings, photolithographic plates and printed circuits, having excellent photographic speed and acid resistance comprises a solution in a volatile organic solvent of an ester of a polyvinyl alcohol and a furoic acid, said polyvinyl alcohol having a molecular weight of about 86,000 and having at least 70% of the -OH groups possible in the molecule esterified, preferably almost 100%. The furoic ester may be sensitized by a cyclic compound containing one or more keto groups.

3,650,762
SUPERSENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION

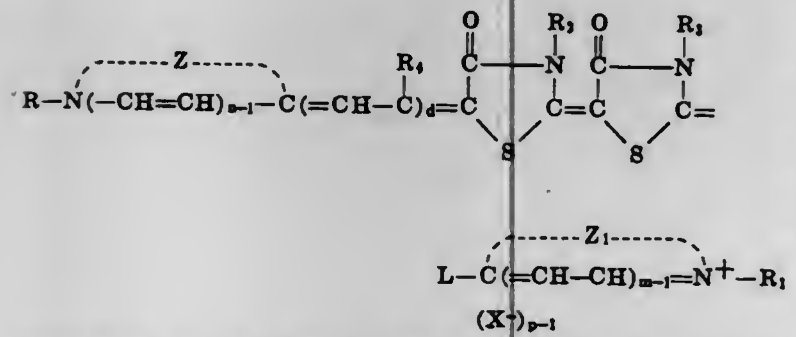
Keisuke Shiba; Masanao Hinata; Nobuo Tsuji; Takushi Miyazako, and Akira Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

Filed July 14, 1970, Ser. No. 54,852
Claims priority, application Japan, July 14, 1969, 44/55970
Int. Cl. G03c *1/28, 1/22*

U.S. Cl. 96—122 **6 Claims**

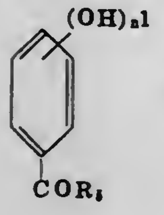
A photographic silver halide emulsion containing

(1) at least one sensitizing dye having the general formula [I]

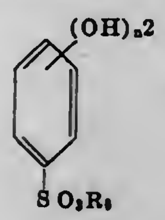


wherein R, R_1, R_2 and R_3 each is selected from the group consisting of an alkyl, a substituted alkyl, an allyl and an aralkyl group; wherein L is selected from the group consisting of a monomethine group and an aliphatic chain which may combine with the nitrogen atom in the heterocyclic nucleus containing Z_1 to complete a heterocyclic ring; wherein R_4 is selected from the group consisting of a hydrogen atom, an alkyl group, and an aryl group; wherein *m*, *n* and *p* each is 1 or 2, and *d* is 0, 1 or 2; wherein X^- is an anion; wherein Z and Z_1 each represents the non-metallic atoms necessary to complete a heterocyclic nucleus, and

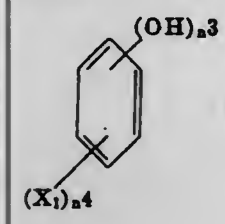
(2) at least one condensate of formaldehyde with a polyhydroxybenzene selected from the group of compounds having the general formula [II*a*], [II*b*], [II*c*]and [II*d*]



[IIa],

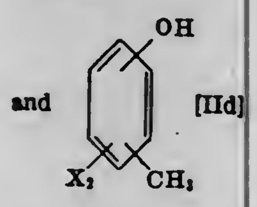


[IIb],



[IIc],

and



[IId]

wherein R_5 and R_6 each is selected from the group consisting of $-OH$, $-OM$, $-OR_7$, $-NH_2$, $-NHR_7$, $-N(R_7)_2$, $-NHNH_2$ and $-NHNHR_7$, in which R_7 is selected from the group consisting of an alkyl group containing from one to eight carbon atoms, an aryl group and an aralkyl group; wherein M is selected from the group consisting of an alkali metal atom and an alkaline earth metal atom; wherein X_1 is selected from the group consisting of a hydroxyl group and a halogen atom; wherein X_2 is a halogen atom; and wherein n^1, n^2, n^3 and n^4 each are 1, 2 or 3, wherein n^3 and n^4 are not both 3 is disclosed.

3,650,763
HIGH PRESSURE PROCESS FOR MAKING PUFFED FOOD PRODUCT AND PRODUCT

Ali R. Touba, Crystal, Minn., assignor to General Mills, Inc.

Filed Mar. 26, 1969, Ser. No. 810,777
Int. Cl. A23l *1/18, 1/20*

U.S. Cl. 99—82 **7 Claims**

The process for producing a puffed food product from raw material such as legumes and cereal grains by subject the raw food product to high pressures and temperatures to cement and puff individual grains together to form a wafer-like product having low crumb characteristics and crunchy texture.

3,650,764
ENZYMATIC BAKING COMPOSITIONS AND METHODS FOR USING SAME

Noel Charles Duquette, Flanders, N.J., assignor to H. C. Brill Company, Inc., Fairfield, N.J.

Continuation-in-part of application Ser. No. 732,064, May 27, 1968, now abandoned. This application Mar. 30, 1970, Ser. No. 23,989
Int. Cl. A21d *8/04, 2/04*

U.S. Cl. 99—90 R **14 Claims**

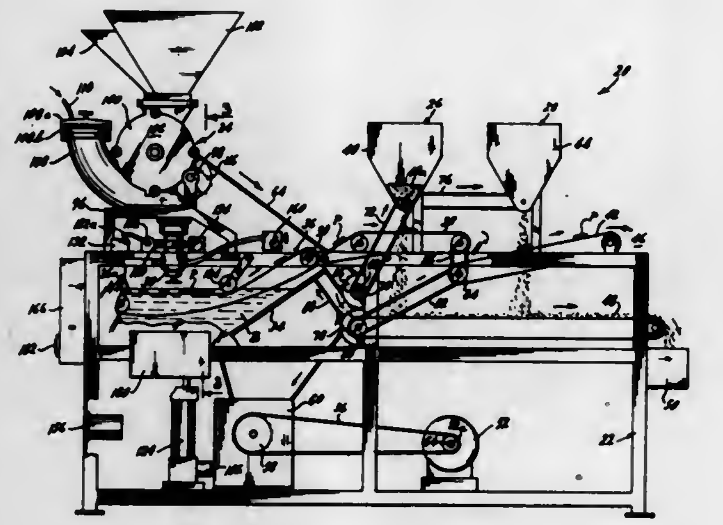
Novel dough-treating compositions containing a proteolytic enzyme such as papain, bromelain or ficin in combination with dough aging agents such as alkali metal and alkaline earth metal iodates, bromates or peroxides and sufficient edible, non-toxic acid so that the pH of a 10 percent aqueous solution is from about 3.7 to 6.5, and the use of such compositions to reduce the fermentation time of yeast-leavened dough.

3,650,765
METHOD AND APPARATUS FOR PREPARING FOOD PRODUCTS

Yechiel Smadar, New York; Howard Roth, Bronx; John P. McCarthy, College Point, and John H. Moyer, Garden City, all of N.Y., assignors to DCA Food Industries, Inc., New York, N.Y.

Filed July 7, 1969, Ser. No. 839,173
Int. Cl. A23l *1/00*

U.S. Cl. 99—100 **15 Claims**



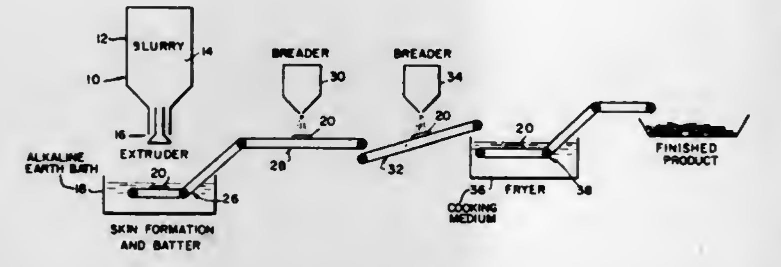
A method and apparatus for preparing food products wherein an extrudable slurry of the food product and a gel forming material which is settable upon exposure to a setting solution and is capable of forming a skin, is extruded into an elemental shape, such as a torroid, while washing the surfaces of the elemental shape with the setting solution to form a skin onto the shape. Extrusion is continued to expand the elemental shape into a final extruded food product, with the skin serving to envelope and contain the initial slurry during further extrusion and until such time as the product is completed, as by further processing which may include coating and finally stabilizing the slurry as by cooking, baking, frying, freezing or the like.

3,650,766
EXTRUDED FOOD PRODUCTS AND METHOD OF PRODUCING SAME

Yechiel Smadar, New York, N.Y., assignor to DCA Food Industries, Inc., New York, N.Y.

Filed July 7, 1969, Ser. No. 839,191
Int. Cl. A23l *1/00*

U.S. Cl. 99—100 **15 Claims**



Food products may be manufactured in any shape or size by a process including the steps of forming an extrudable slurry of a food material, extruding the slurry and forming a gel-like skin around the extruded product. The skin is formed by subjecting gellable materials such as alginates to the action of gellation agents such as alkaline earth ions, at the surface of the extrusion product. The products may be subjected to further processing including coating, cooking, baking, frying, freezing or the like. In one embodiment the process may be employed to form uniform French fried onion rings.

3,650,767
PREPARATION OF SAUSAGE MEAT EMULSION

Harry C. Stump, Palatine, and Paul L. Ford, Flossmoor, both of Ill., assignors to Armour and Company, Chicago, Ill.

Continuation-in-part of application Ser. No. 807,421, Mar. 14, 1969. This application July 30, 1969, Ser. No. 846,225
Int. Cl. A22c *11/00*

U.S. Cl. 99—109 **4 Claims**

A method for manufacturing sausage meat emulsions in which the broth produced in the high temperature wet rendering of pork fat is combined with frozen raw meat materials to form a sausage meat emulsion.

3,650,768
MAKING AMERICAN CHEESE FROM HEAT TREATED MILK

Miron J. Roberts, Glenview, Ill., assignor to Kraftco Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 668,681, Sept. 18, 1967, now abandoned. This application Feb. 27, 1970, Ser. No. 15,263
Int. Cl. A23c *19/02*

U.S. Cl. 99—116 **13 Claims**

A method for making American cheese and similar types of cheese from heat treated milk so as to provide increased cheese flavor. In accordance with the method, a combination of a particular type of a proteolytic micrococcus and a particular type of lipase are added at specified levels to heat treated milk which is to be made into American cheese. A particular lactobacillus micro-organism may also be used in connection with the combination of the indicated proteolytic micrococcus and specified lipase to provide improved body, flavor and/or texture to the cheese.

3,650,769
VACUUM PUFFED FOODS

Edward L. Fritzberg, Minneapolis, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed Apr. 29, 1969, Ser. No. 820,309
Int. Cl. A23g *3/00*

U.S. Cl. 99—134 **7 Claims**

To prevent destructive crystallization of vacuum puffed food products, a powdered edible filler is suspended in a matrix which consists of an aqueous solution of a saccharide. The filler can comprise any of a variety of powdered food substances such as flour, dried milk, cocoa, coffee or powdered vegetable solids which remain largely undissolved in the matrix. The dispersion is made up to a stiff taffy consistency, formed into sheets subdivided into pieces of a desired size, heated sufficiently to become soft and exposed to vacuum until expanded to at least two times their original size.

3,650,770
PULPY TEXTURED, STARCH CONTAINING FOOD SYSTEMS

Nicholas G. Marotta, Greenbrook; Harvey Bell, North Plainfield, and Paolo C. Trubiano, Somerville, all of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 540,845, Apr. 7, 1966, now abandoned. This application June 25, 1969, Ser. No. 836,636
Int. Cl. A23l *1/14*

U.S. Cl. 99—139 **6 Claims**

Preparation of starch containing food products exhibiting a grainy, pulpy texture, as well as the food products thus prepared, by admixing the non-starch ingredients of said food product with a cold water swelling, amylose containing starch product which has been pulverized to within a particle size range of no more than about 25 percent retained in a No. 12 mesh U.S. Standard Sieve and no more than about 60 percent by weight passing through a No. 100 mesh U.S. Standard Sieve and thereafter heating the resulting mixture at a temperature of at least about 160° F. so as to effect the swelling of the intact, starch particles therein.

3,650,771
FLAVORING SUBSTANCES AND THEIR PREPARATION

Charles Wiener, Middletown, N.Y., assignor to Polak's Frutal Works, Inc., Middletown, N.Y.

Filed Aug. 1, 1968, Ser. No. 749,271
Claims priority, application Great Britain, Aug. 15, 1967, 37,445/67
Int. Cl. A23l *1/26*

U.S. Cl. 99—140 R **8 Claims**

Process for the preparation of flavors of onion and bacon which comprises reacting certain sulfide or hydrosulfide sulfur compounds with certain aldehydes and the products produced thereby.

3,650,772
PUMPKIN PICKLE

Stephanie N. Lapinig, 8976 215th Street, Queens Village, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,423
Int. Cl. A23b *7/00*

U.S. Cl. 99—156 **1 Claim**

A process for converting pumpkin meat into a desirable flavored sweet-sour pickle, particularly with the use of specific spices. The process includes the chilling of the pumpkin in a brine with ice at 40° to 45° F. for approximately 5 hours or more to achieve crispness, subsequently draining and rinsing, partially cooking, and subsequently combining the partially cooked pumpkin with sugar, distilled white vinegar, water, cinnamon, cloves, allspice, mustard seed, nutmeg and ginger root.

3,650,773

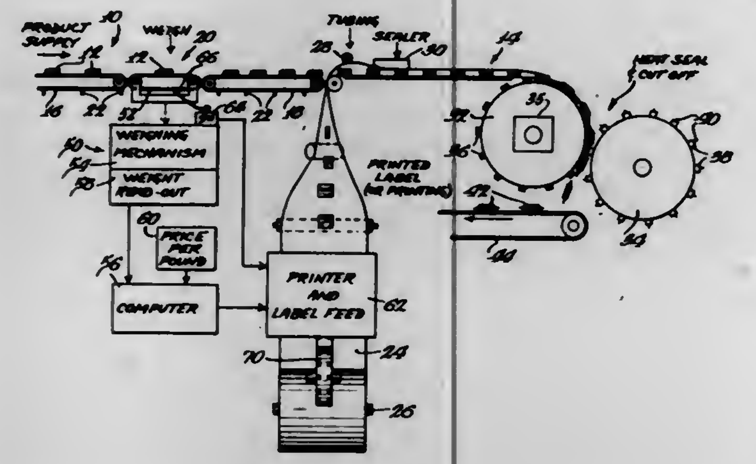
WEIGHING AND LABELING SYSTEM

Robert G. Bush, and Gilbert H. Hannon, both of Green Bay, Wis., assignors to L. D. Schreiber Cheese Co., Inc.

Filed Feb. 9, 1970, Ser. No. 9,578

Int. Cl. B65b *11/12*

U.S. Cl. 99—171 R **9 Claims**



A method and apparatus for automatically weighing and labeling random weight articles as they are being packaged. The articles are moved along a path to a wrapping station by conveying means and a weighing station is located along the path. The weighing station has a weighing mechanism which produces an output that is fed to a computer or other type of device for determining the total price of the article based upon a price per unit of weight. The total price, as well as the price per unit of weight, and the total weight are supplied to a printing mechanism that is disposed adjacent the path of movement of the advancing packages and automatically prints this information on labels that are applied to a continuous supply of film. The printing could also include product identification information, if desired. Furthermore, the printing could be done directly on the film. The feeding of the film and the articles is synchronized so that the portion of the continuous film having the printed information thereon moves into package forming relationship with the article corresponding to the information, whereupon, the article is then completely enclosed by the film to produce a finished package.

3,650,774

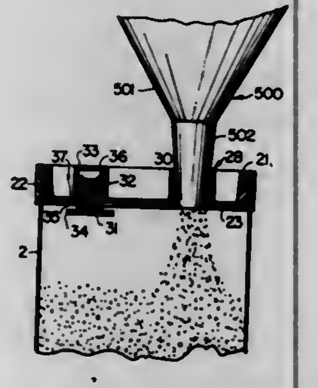
FLAT END CASING SYSTEM AND METHOD OF USE

Donald Beth, 325 W. Parkwood Ave., Dayton, Ohio; George P. Saliaris, 352 Schrock Rd., Worthington, Ohio, and Ralph A. Welch, 2470 Lane Road, Columbus, Ohio

Filed July 17, 1969, Ser. No. 842,606

Int. Cl. B65b *25/06*

U.S. Cl. 99—174 **23 Claims**



A flat ended casing system having planar plastic end plates mounted on the ends of a hollow food product casing. The end plates are attached to the hollow casing around their periphery. One end plate has a filling valve through which a moldable food product is inserted into the casing and the casing is filled. Upon completion of the filling operation the valve is closed and the filled casing is ready for further processing.

3,650,775

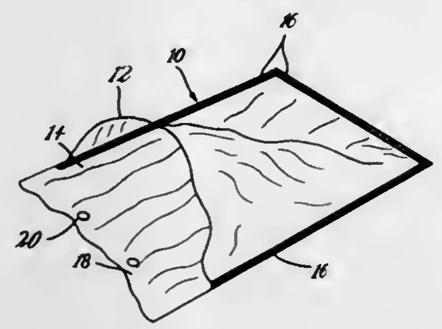
PLASTIC BAG FOR PACKAGING FRESH RED MEAT AND METHOD FOR MAKING THE SAME

Selwyn Simon, Glencoe, and Donatas Tijunelis, Chicago, both of Ill., assignors to Union Carbide Corporation

Filed July 24, 1968, Ser. No. 747,353

Int. Cl. B65b *25/06*

U.S. Cl. 99—174 **26 Claims**



A film bag for packaging fresh red meats is formed of two dissimilar films one of which has good oxygen transmitting properties but a tendency to "block" to itself, the other of which is non-blocking. Either or both of the films may be shrinkable. The films may be supplied in kit form for the making of bags by the meat packer.

3,650,776

DEHYDRATED POTATO PRODUCT AND PROCESS FOR PRODUCING SAME

Alan W. Tschirgi, P.O. Box 411, Idaho Falls, Idaho

Filed Apr. 16, 1969, Ser. No. 816,807

Int. Cl. A23b *7/03;* **A23l** *1/12;* **A23b** *7/16*

U.S. Cl. 99—207 **9 Claims**

A process for producing an improved dehydrated potato product especially useful for the preparation of "hash-browns." The process includes the steps of preparing, from dehydrated potatoes and water, a liquid system having phases containing starch, pectins, proteins, and fiber; coating cut pieces of fresh or boiled potato with the liquid system; and dehydrating the coated pieces. The resulting product is conveniently rehydrated by merely adding water, and is then fried as a cohesive mass to yield hash-brown potatoes of desirable texture and golden brown color. A milk product, such as sweet dried whey, can be mixed with the liquid system to improve the browning characteristics upon frying. Flavoring agents and various additives can also be included if desired.

3,650,777

ELECTROLESS COPPER PLATING

Frederick W. Schneble, Jr., Oyster Bay; Rudolph J. Zeblisky, Hauppauge; John F. McCormack, Roslyn Heights, and John Duff Williamson, Miller Place, all of N.Y., assignors to Photocircuits Division of Kollmorgen Corporation, Hartford, Conn.

Continuation-in-part of application Ser. No. 9,062, Feb. 5, 1970, now abandoned , which is a continuation-in-part of application Ser. No. 772,061, Oct. 18, 1968, now abandoned , Continuation of application Ser. No. 451,335, Apr. 27, 1965, now abandoned. This application Feb. 11, 1971, Ser. No. 114,695

Int. Cl. C23c *3/02*

U.S. Cl. 106—1 **13 Claims**

An improved aqueous autocatalytic copper deposition solution is provided which comprises maintaining in a solution, containing complexing and reducing agents for the copper ion and a pH adjuster, a small effective amount of a compound providing a metal value selected from the group consisting of molybdenum, niobium, tungsten, rhenium, rare earths of the actinide series, rare earths of the lanthanide series, and mixtures of the foregoing. Additionally, an improved method of depositing electroless copper is provided which comprises employing the solution hereinabove defined.

3,650,778

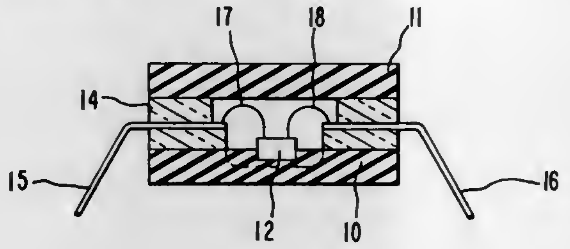
LOW-EXPANSION, LOW-MELTING ZINC PHOSPHOVANADATE GLASS COMPOSITIONS

Maurice E. Dumesnil, Palo Alto; Robert R. Hewitt, San Jose, and Joseph L. Bozarth, Mountain View, all of Calif., assignors to Fairchild Camera and Instrument Corporation, Syosset, Long Island, N.Y.

Filed Oct. 29, 1969, Ser. No. 870,620

Int. Cl. C03c *3/00*

U.S. Cl. 106—47 R **1 Claim**



Low-melting, low-expansion, lead-free glass compositions are provided for sealing ceramics parts and encapsulating ceramic substrates. In addition to having a thermal expansion matching that of alumina, the glass compositions provide for the formation of a glass-to-alumina seal in the 380° to 450° C. temperature range.

3,650,779

FLUORIDE GLASSES CONTAINING XENON

Eugene F. Riebling; Paul E. Blaszyk, both of Horseheads, and Dennis W. Smith, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,754

Int. Cl. C03c *3/00;* **C09k** *1/0;* **C04b** *35/00*

U.S. Cl. 106—47 R **4 Claims**

This invention relates to the production of low melting fluoride glasses containing oxidized xenon and, more particularly, to the production of fluoroberyllate glasses containing Xe(VI).

3,650,780

FIBER OPTIC CORE GLASS

John H. Connelly, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 1, 1969, Ser. No. 820,780

Int. Cl. C03c *3/00, 13/00*

U.S. Cl. 106—47 Q **3 Claims**

The present invention relates to glass compositions which are eminently suitable for use as core glasses in fiber optic elements. More specifically, the instant invention is concerned with essentially thoria-free glasses in the La_2O_3—$B_2O_3A'Ta_2O_5$—Nb_2O_5 composition field exhibiting an index of refraction (n_D) higher than about 1.80 and a coefficient of thermal expansion (0°–300° C.) of between about 60–70×10 $^{-7}$/°C.

3,650,781

SILICA-CADMIA GLASS BATCHES FOR PRODUCING LOW-TO-MEDIUM EXPANSION GLASSES

Nils Tryggve E. A. Baak, Ridgefield, Conn., assignor to Owens-Illinois, Inc.

Continuation-in-part of application Ser. No. 465,741, June 21, 1965. This application Aug. 28, 1969, Ser. No. 853,960

Int. Cl. C03c *3/04*

U.S. Cl. 106—52 **24 Claims**

Glass batch compositions for producing glasses having linear coefficients of thermal expansion in the range of from about 10×10^{-7} to about 20×10^{-7} in./in./° C. and which batch compositions are composed of finely divided batch materials consisting essentially of from 70–90 mole percent SiO_2, up 1 to 15 mole percent CdO, and the balance of such Composition, if any, being finely divided batch materials composed essentially of one or more oxides selected from the group consisting of Al_2O_3, TiO_2, B_2O_3, CuO, MnO, ZnO, ZrO_2, Sb_2O_3, AlF_3 and P_2O_5.

3,650,782

BOROSILICATE GLASS FOR PRODUCING ARTICLES BY CENTRIFUGAL CASTING

Wilhelm Baum, Mainz-Mombach, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Sept. 16, 1969, Ser. No. 858,267

Claims priority, application Germany, Sept. 17, 1968, P 17 96 183.0

Int. Cl. C03c *3/04*

U.S. Cl. 106—54 **2 Claims**

Glass for producing articles by centrifugal casting composed essentially of 60% SiO_2, 18% B_2O_3, 7% MgO, 6% Li_2O, 4% Al_2O_3, 3% BaO, 1% CaO and 1% K_2O, within tolerances of about ±2 percent, all of the percentages being by weight; and article formed by helium-tight, stress-free fusion of the glass with an Fe—Ni—Co alloy.

3,650,783

TRIVALENT METAL PHOSPHATE COATED COLLOIDAL SILICA MOLDING POWDERS

Paul C. Yates, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 13, 1969, Ser. No. 824,266

Int. Cl. C04b *35/14*

U.S. Cl. 106—69 **16 Claims**

Compositions having small particle sizes and containing (1) silica and (2) a trivalent metal phosphate and wherein the trivalent metal phosphate is distributed uniformly and homogeneously with respect to the silica, are useful as high temperature refractory binders, coatings, and adhesives and can be pressed to molded articles.

3,650,784

AGGREGATE CONTAINING A TREATMENT AGENT FOR IMPROVING CONCRETE PROPERTIES

Robert J. Albert, Salem, N.H., and John H. Hoge, Cincinnati, Ohio, assignors to said Albert, by said Hoge

Filed Aug. 11, 1970, Ser. No. 63,022

Int. Cl. C04b *31/40*

U.S. Cl. 106—90 **31 Claims**

The internal capillary and pore spaces of porous lightweight aggregate are filled with a solution or suspension of a treating agent capable of improving at least one physical property of concrete. When this treated aggregate is used in the conventional manner in mixing and placing concrete, a treating agent remains absorbed within the aggregate and does not emerge to react or deposit in the concrete matrix until the moist curing, normally given to concrete, is terminated and the cast begins to dry. The treating agent is thus uniformly released throughout the interior of the cast at any time that is selected as optimum in the cement crystallization cycle for the particular property improvement sought in contrast to the relatively shallow penetration achieved by externally wetting the cast with such agents as in present art. A variety of organic and inorganic agents, many not heretofore usable by the conventional methods, can be incorporated in concrete to improve physical properties such as compressive, tensile and flexural strength, impermeability, freeze/thaw resistance and the like. Agents that would be rendered ineffective if introduced during mixing or in the early stages of hydration can now be utilized by this novel process.

3,650,785
PORTLAND CEMENT COMPOSITIONS REINFORCED WITH NON-ROUND FILAMENTS

Claire G. Ball, Turtle Creek; Arthur C. Grimm, Bellevue Borough, and Thomas Melville, Unity Township, Westmoreland County, all of Pa., assignors to United States Steel Corporation

Continuation-in-part of application Ser. No. 663,315, Aug. 25, 1967, now abandoned. This application Apr. 16, 1970, Ser. No. 29,211

Int. Cl. C04f *31/04*

U.S. Cl. 106—90 **9 Claims**

A reinforced composite of a castable matrix having discontinuous reinforcing filaments randomly distributed within the matrix which reinforce the matrix and which are bonded to the matrix chemically and/or mechanically. The filaments have a non-round cross sectional configuration with width and thickness dimensions and with a width-to-thickness ratio of not greater than about five. For maximum reinforcing strength, the filaments should have an ultimate tensile strength at least equal to the average tensile stress developed in the filament at bond failure. The characteristics of the filaments are such as to permit dry admixing with the castable matrix material. A method of making the reinforced composite and apparatus for and a method of coating the filaments are disclosed.

3,650,786
OIL WELL CEMENT AND METHOD OF MAKING THE SAME

Sam Maravilla, Lansing, Ill., assignor to United States Steel Corporation

Filed June 18, 1969, Ser. No. 834,538

Int. Cl. C04b *7/02*

U.S. Cl. 106—98 **11 Claims**

A cement composition for deep oil wells comprising sintered dicalcium silicate, uncombined calcium oxide, and silica. A method of making the cement in which a mixture of limestone and sand is sintered. For best efficiency the sintering is at a temperature between 2,500° and 2,560° F., and the raw mixture is proportioned to yield a sinter whose primary constituent has a molecular ratio of approximately 2 CaO to 1 SiO_2. If the uncombined CaO in the sinter is below 2 percent, additional CaO is added. Silica is also added to the sinter.

3,650,787
AMPHOTERIC, HIGH AMYLOSE STARCHES AND PREPARATION AND USES THEREOF

Lee H. Elizer, Keokuk, Iowa, assignor to The Hubinger Company, Keokuk, Iowa

Continuation of application Ser. No. 691,179, Dec. 18, 1967 now abandoned. This application Oct. 9, 1969, Ser. No. 866,125

Int. Cl. C08b *25/02*

U.S. Cl. 106—213 **28 Claims**

Amphoteric, high amylose starch containing both basic and acidic groups, preferably tertiary amino and sulfonic acid or sulfonate groups, in the starch molecule, which amphoteric starches are especially useful for sizing threads or yarns of mixed fibers, such as cotton fibers and polyester fibers, viz, polyethylene terephthalate fibers.

3,650,788
REACTIVE COAL TAR SYSTEM CONTAINING PHENOL REACTIVE COMPOUND

Woodrow E. Kamp, Pittsburgh, and Lawrence F. Flaherty, Verona, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Original application Feb. 23, 1967, Ser. No. 610,895, now Patent No. 3,514,316. Divided and this application Aug. 1, 1969, Ser. No. 862,117

Int. Cl. C09d *5/08*

U.S. Cl. 106—287 **3 Claims**

A reactive primer containing phenol-blocked isocyanate molecules and a compound capable of reacting with a phenol is applied to a metal substrate at ambient temperature. Subsequent application of a coal tar enamel at a temperature above 300° F. causes the isocyanate groups to unblock releasing the phenol which then reacts with the phenol reactive compound. The unblocked isocyanate bonds the enamel to the substrate.

3,650,789
COMPOSITION COMPRISING METAL SALTS AND OCHRA

John W. Garrison, Dearborn, Mich., and Charles L. Schlef, University City, Mo., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 29, 1969, Ser. No. 829,144

Int. Cl. G08h *17/24*

U.S. Cl. 106—287 **2 Claims**

This invention relates to a glass coating composition containing silver nitrate, cuprous chloride, potassium chloride barium carbonate and ochre.

3,650,790
NACREOUS MICA PIGMENT COMPOSITIONS

Edward F. Klenke, Liberty Corner, N.J., and George L. Lewis, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 13, 1970, Ser. No. 11,353

Int. Cl. C08h *17/04;* **C09c** *1/28*

U.S. Cl. 106—291 **6 Claims**

Nacreous pigments exhibiting intense interference colors, reduced milkiness and substantial luster are prepared by depositing a thin layer of titanium dioxide on mica flakes, treating the resulting titanium dioxide-coated mica pigment with a soluble silicate in an aqueous slurry at a pH from 7 to 11.5, and calcining the resulting silicate-treated pigment; and the resulting pigment.

3,650,791
PAVING OR BINDER COMPOSITIONS CONTAINING ASPHALT REACTED WITH DIISOCYANATE

Eugene M. Fauber, Hammond, Ind., assignor to Sinclair Research, Inc., New York, N.Y.

Filed Apr. 13, 1967, Ser. No. 630,512

Int. Cl. C08h *13/00, 17/22;* **C08j** *1/46*

U.S. Cl. 106—279 **6 Claims**

Compositions suitable for use as paving or as a binder for paving materials and possessing improved ductility, viscosity and resistance to oxidation are obtained by reacting a minor amount of a diisocyanate with asphalt. The preferred diisocyanate is toluene diisocyanate. This composition may be blended with urethane in situ or the urethane-forming components, e.g., polyhydroxy-terminated polydiene and hydrocarbon diisocyanate may be added separately. Blending the asphalt-diisocyanate composition with urethane-forming materials has been found to improve viscosity and homogeneity and decrease the amount of carbon tetrachloride insolubles.

3,650,792
METHOD FOR PRODUCING PIGMENTS OF IMPROVED DISPERSIBILITY

Albert Dietz, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 849,894, Aug. 13, 1969, now Patent No. 3,549,396, which is a continuation-in-part of application Ser. No. 506,608, Nov. 5, 1965, now abandoned. This application Aug. 7, 1970, Ser. No. 62,161

Int. Cl. C09c *1/00, 1/36, 3/00*

U.S. Cl. 106—300 **9 Claims**

Pigmentary metal oxides, e.g., titanium dioxide, are treated with an organic amine, e.g., triethanolamine, and an organic nitrogen compound containing an ionizable hydrogen atom attached to the nitrogen atom, the nitrogen atom being flanked by at least one carbonyl group, e.g., ortho-benzosulfimide.

3,650,793
TITANIUM DIOXIDE OF IMPROVED CHALK RESISTANCE

Neil C. Goodspeed, Wadsworth, Ohio; Albert Dietz, New Martinsville, W. Va., and Russel R. May, Jr., Wadsworth, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 28, 1969, Ser. No. 803,447

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 **17 Claims**

Pigmentary titanium dioxide having a metal oxide coating, e.g., zinc oxide, is heat treated and then given a separate hydrous metal oxide coating, e.g., an alumina and silica coating. The resulting pigment has good chalk resistance and good retention of optical properties such as gloss, color and tint efficiency.

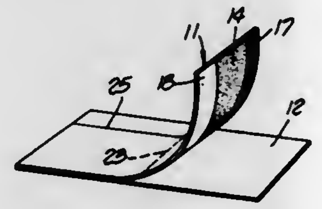
3,650,794
CORRECTION ACCESSORY FOR HECTOGRAPHIC STENCILS

Richard L. Steinbach, 525 Windsor Place, Laguna Beach, Calif.

Filed June 19, 1970, Ser. No. 47,843

Int. Cl. B32b *35/00;* **B41m** *5/00*

U.S. Cl. 117—2 TC **12 Claims**



An accessory for use in correcting errors made in typing hectographic masters comprising a continuous tape having side-by-side bands of hectographic and adhesive materials along the midsection and one lateral edge thereof, leaving the other edge of the tape uncoated and usable as a finger tab. A severed length of the tape can be affixed temporarily to the back of the master sheet with the hectographic band positioned properly for use in correcting an erased error and the finger tab being thereafter usable to remove the length of tape.

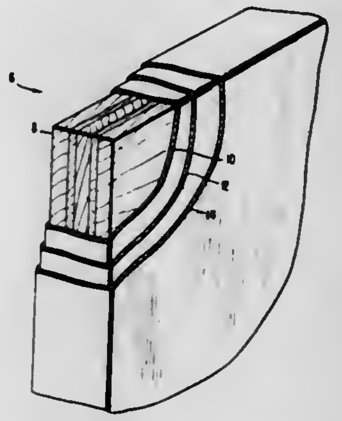
3,650,795
CONCRETE FORM SURFACING

John H. Willingham, 1280 Estate Drive, Memphis, Tenn.

Filed Jan. 27, 1969, Ser. No. 794,227

Int. Cl. B29c *1/04*

U.S. Cl. 117—5.1 **7 Claims**



There is disclosed herein a method for preparation and construction of concrete pouring forms in which the surfaces and edges of the form members are treated with several coats of a resinous material exhibiting particularly advantageous mechanical and chemical properties. A preferred material is a moisture cured urethane prepolymer solution.

3,650,796
PHOTOLITHOGRAPHIC MASKS

Thomas Meirion Jackson, Stortford; Eric Langley Bush, Waltham Cross; Thomas John Rowe, Stortford, and David John Moule, Saffron Walden, Essex, all of England, assignors to Standard Telephones and Cables Limited, London, England

Filed May 27, 1969, Ser. No. 828,367

Claims priority, application Great Britain, June 6, 1968, 26,940/68

Int. Cl. B44c *1/22;* **B44d** *1/50*

U.S. Cl. 117—8 **2 Claims**

A method of making a photolithographic mask comprising the steps of depositing upon a transparent substrate a thin film of a polymeric material which is capable of being pyrolized to form thin film on the substrate, heating the film in order that the film is pyrolized, and removing selected areas of the pyrolized film in an oxidizing atmosphere by means of a laser beam to form the desired mask pattern.

3,650,797
DEVELOPING ELECTROSTATIC LATENT IMAGES WITH A MIXTURE OF POSITIVE AND NEGATIVE TONERS

Martha Tomanek, nee Kunitzer Wiesbaden-Biebrich, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Continuation of application Ser. No. 598,152, Dec. 1, 1966, now abandoned , which is a continuation-in-part of application Ser. No. 123,099, July 11, 1961, now abandoned. This application May 18, 1970, Ser. No. 37,472

Int. Cl. G03g *13/08, 13/22*

U.S. Cl. 117—17.5 **13 Claims**

This invention relates to a developer and process for developing an electrostatic latent image, which process comprises applying to the image, in the absence of a carrier, a mixture consisting of effective amounts of at least one fusible, organic toner capable of acquiring a positive charge, and at least one infusible, inorganic toner of approximately the same effective particle size capable of acquiring a negative charge. The developed image is fused by heating and then treated with an alkaline liquid which removes the inorganic toner particles and renders hydrophilic the image free areas.

3,650,798

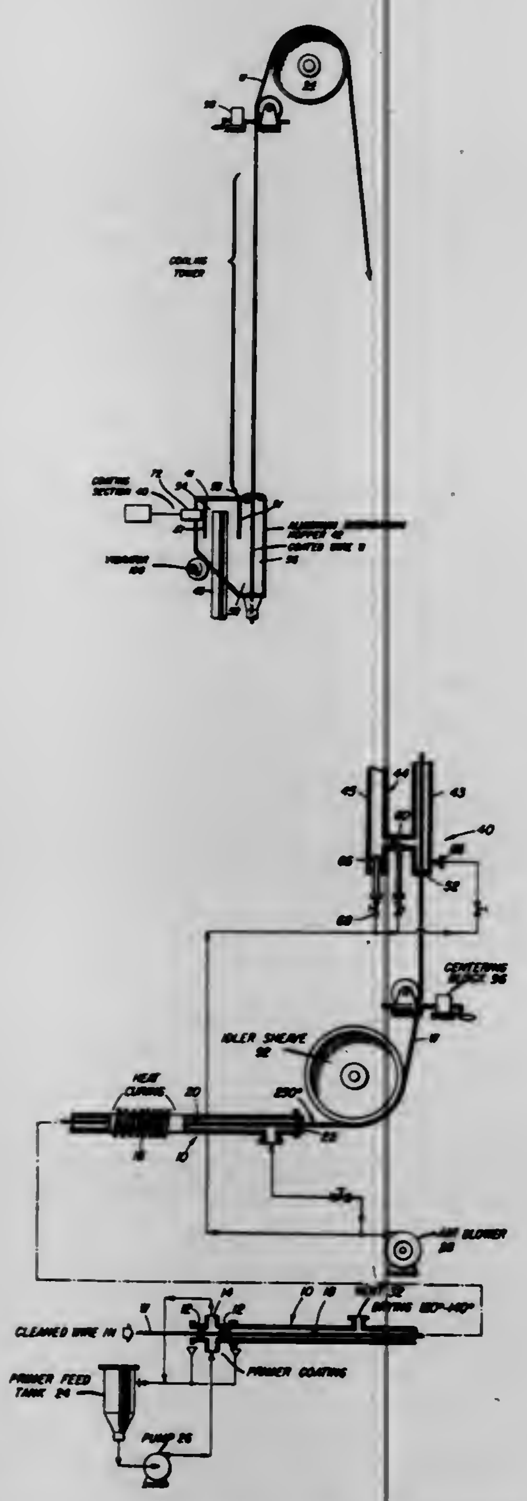
METHOD FOR CONTINUOUS COATING OF METALLIC PRODUCTS WITH FUSIBLE PULVERULENT MATERIALS

John B. Case, Baltimore, Md., and William B. Johnson, Marion, Mass., assignors to Anchor Post Products, Inc., Baltimore, Md.

Continuation of application Ser. No. 598,842, Dec. 2, 1966, now abandoned. This application Nov. 17, 1969, Ser. No. 877,494

Int. Cl. B44d *1/094*

U.S. Cl. 117—21 **9 Claims**



A method is described for the coating of running strands or webs with a thermoplastic protective layer. The successive steps comprise the application of a primer and the hot air current drying and curing of same supplemented by inductive heating. The temperature is next raised in two successive stages by inductive type heaters, the later stage while the strand or web is vertically traversing the length of a continuously replenished dense cylindrical bed of powdered vinyl polymer or the like. The replenishment as well as cooling of the powder is accomplished through a recirculatory arrangement powered by air nozzles. Alternate coating materials are proposed including polyolefins containing compounds of metal.

3,650,799

SUBSTRATES PROTECTED WITH PREPARED POLYMERIC ULTRAVIOLET LIGHT STABILIZERS FROM PHENOL-FORMALDEHYDE CONDENSATES

Raymond H. Young, Jr., East Longmeadow; Albert H. Markhart, Wilbraham, and Joseph G. Martins, Ludlow, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 606,595, Jan. 3, 1967, abandoned.

Filed Aug. 11, 1969, Ser. No. 849,210

Int. Cl. B44d *5/06*

U.S. Cl. 117—33.3 **6 Claims**

This invention relates to polymeric ultraviolet light stabilizers which are the esterification products of (A) phenol-formaldehyde condensates, which have at least 12.5 mol percent of the positions ortho to the esterifiable hydroxyl group unsubstituted, and (B) a compound capable of esterification with the phenol formaldehyde condensate which contains at least one ring of six carbon atoms characterized by having benzenoid unsaturation. Upon exposure to ultraviolet light, the exposed portion of the ester rearranges to form a polymeric compound which is a barrier to ultraviolet light.

3,650,800

TEXTILE PRODUCTS AND PRODUCTION THEREOF

Martin Reiner, Plochingen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 24, 1969, Ser. No. 809,932

Claims priority, application Germany, Apr. 25, 1968, P 17 60 260.7

Int. Cl. B44d *1/44*

U.S. Cl. 117--37 **2 Claims**

Coated textiles are produced by a process in which 4-rail knitted fabric which is napped on one face is coated on the napped face with a polyurethane and subsequently grained mechanically.

3,650,801

SOIL RELEASE FOR 100% SYNTHETIC FIBERS

Everett H. Hinton, Jr., and Larry E. Avery, both of Greensboro, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed July 25, 1968, Ser. No. 747,473

Int. Cl. D06m *15/36*

U.S. Cl. 117—47 A **13 Claims**

Soil release properties of a 100 percent synthetic textile are improved by impregnating the same with a mixture of polyacrylic acid and an essentially linear water-insoluble swellable synthetic polymer which absorbs at least 550 percent of water. Soil release properties of a 100 percent synthetic textile can also be improved by subjecting the textile to an alkaline scour followed by treatment with the water insoluble swellable polymer.

3,650,802

PROCESS FOR COATING A SUBSTRATE WITH A POLYENE/POLYTHIOL COMPOSITION

Clifton Leroy Kehr, Silver Springs, and James Leverette Guthrie, Ashton, both of Md., assignors to W. R. Grace & Co.

Continuation-in-part of application Ser. No. 793,534, Jan. 23, 1969. This application Mar. 7, 1969, Ser. No. 805,354

Int. Cl. B44d *1/092, 1/36*

U.S. Cl. 117—47 R **41 Claims**

This invention relates to curing of coatings, sealants and laminates under ambient conditions without affecting the pot life of a curable liquid composition comprising a polyene containing at least two reactive unsaturated carbon to carbon bonds per molecule and a polythiol containing at least two thiol groups per molecule, the total combined functionality of (a) the reactive unsaturated carbon to carbon bonds per

molecule in the polyene and (b) the thiol groups per molecule in the polythiol being greater than four which comprises having present at least a minor amount of an iron-containing material either as a portion of the substrate, as a primer coat for the substrate or as a top coat for the curable composition. In the case where oxygen is excluded from the reaction, a minor amount of an oxime ester is added to the system to assure curing to a solidified product.

3,650,803

METAL PLATING OF SUBSTRATES

Kingso Chingtsung Lin, Niagara Falls, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of application Ser. No. 750,477, Aug. 6, 1968, now abandoned. This application July 3, 1969, Ser. No. 839,080

Int. Cl. B44d *1/092;* **C23c** *3/02*

U.S. Cl. 117—47 A **50 Claims**

Substrates are plated with metals by subjecting the substrate to low oxidation state phosphorus compounds, usually in a solvent, followed by subjecting the treated substrate to a metal salt or complex thereof. The low oxidation state phosphorus compounds, wherein the phosphorus has an oxidation state of less than 5, i.e., an oxidation number of −3 to +3, can be prepared by reacting elemental phosphorus, preferably elemental white phosphorus (which include various impure or commercial grades sometimes referred to as yellow phosphorus), with a nucleophilic reagent or organometallic compound. The resulting treated substrate is electroless metal plated and/or electroplated to provide an adherently bound metal layer on the substrate. In one embodiment, the substrate is subjected to a low oxidation state phosphorus compound and thereafter electroless metal plated.

3,650,804

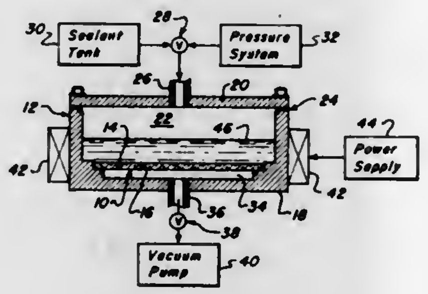
PROCESS FOR DECREASING PERMEABILITY OF A POROUS BODY AND THE PRODUCT THEREOF

Anthony Parisi, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 19, 1969, Ser. No. 800,667

Int. Cl. B44d *1/34*

U.S. Cl. 117—49 **8 Claims**



A process for decreasing the permeability of a porous body and the resulting product wherein a preferably highly fluid synthetic resin sealant is impressed under pressure into pores on one surface of a normally porous body until resin has bled through the body to a desired depth or to an opposite surface completely filling the pores of the body and then curing the synthetic resin sealant in said pores. Such a body may be made impervious to gas pressures exceeding the tensile limit of the body.

3,650,805

METHOD OF MANUFACTURING COATED PAPER

Saburo Imoto, 1652 Sakazu; Kyoichiro Ikari, 550 Yasue; Hirosaburo Mori, and Tatsuaki Hattori, both of 1621 Sakazu, all of Kurashiki-shi, Japan

Filed June 28, 1968, Ser. No. 741,206

Claims priority, application Japan, June 30, 1967, 42/42708

Int. Cl. B44d *1/44;* **B32b** *7/10*

U.S. Cl. 117—62.2 **5 Claims**

A method of manufacturing coated VIII of which comprises treating paper which is coated with a coating color composition composed essentially of a pigment, a PVA or a derivative thereof, and a latex, with a treating solution composed essentially of three components including from about 1 to 9 parts of a salt of a metal of Group II, III, IV or VIIIof the Periodic Table which combines with the PVA or derivative thereof, to form a chelate compound, from about 1 to 9 parts of boric acid [a nonmetallic compound] which combines with the PVA or derivative thereof to have a joint tackifying or gelling action, and from about 0.001 to 1 part of a surface active agent. The coated paper obtained by the method of the invention has superior water resistance and offset printability qualities and in addition possesses extremely improved luster on the finished surface.

3,650,806

PROCESS FOR TREATING WOOL

George M. Wagner, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of application Ser. No. 622,465, Mar. 13, 1967, now abandoned. This application Feb. 16, 1970, Ser. No. 11,900

Int. Cl. B44d *1/44;* **D06m** *15/52*

U.S. Cl. 117—62.2 **15 Claims**

A process for treating wool and other proteinaceous material to render it shrinkproof which comprises treating the proteinaceous material with a polymerizable treating solution which contains the reaction product of a diol and a polyisocyanate or a urethane-polyisocyanate, and, thereafter, curing the thus-treated material with water. The reaction product produced contains at least three free NCO groups per molecule. Preferably, the polyisocyanate or urethane-polyisocyanate used contains three isocyanate groups. These isocyanates may be of the polymethylene polyphenyl type, as well as of the type formed by reacting a polyhydroxy compound containing from three to six OH groups with a diisocyanate and, additionally, may also contain from about 0.05 to 3 percent by weight of tertiary nitrogen. The solutions used to treat the proteinaceous material typically contain from about 0.5 to 50 percent by weight of the above compositions. The proteinaceous materials treated with these compositions are found to have an improved hand over those materials which are treated with similar solutions but which contain polyisocyanates or urethane polyisocyanates which have not been reacted with a diol.

3,650,807

SUBSTRATE HAVING METAL PHOSPHORUS OR METAL PHOSPHORUS SULFUR COMPOUND ON SURFACE AND CURED SICCATINE COATING COMPOSITION THEREON

Gilbert Witschard, Grand Island, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of application Ser. No. 722,543, Apr. 19, 1968, now abandoned. This application Sept. 30, 1970, Ser. No. 76,999

Int. Cl. B32b *27/06;* **B44d** *1/14*

U.S. Cl. 117—69 **15 Claims**

A siccative coating composition such as paint, lacquer, varnish, enamel and the like, is applied to an article having a metal phosphorus and/or metal phosphorus sulfur compound adherently formed at the surface of a substrate, wherein said metal is selected from groups IB, IIB, IVB, VB, VIB, VIIB and VIII of the Periodic Table.

3,650,808
POLYCARBONATE SURFACES HAVING TENACIOUSLY ADHERED ORGANOPOLYSILOXANE COATINGS THEREON AND PROCESS FOR MAKING

Donald W. Gagnon, 6802 Gaines Mill Drive, Sylvania, Ohio
Filed Apr. 8, 1970, Ser. No. 26,803
Int. Cl. B44d *1/092;* **B32b** *27/08*
U.S. Cl. 117—72 **14 Claims**

Process, and the article produced thereby, for providing a tenaciously adhered, hard, acetone-resistant and mar-resistant coating on articles having a polycarbonate surface. The process includes priming the polycarbonate surface with preferably gamma-aminopropyltriethoxysilane, then coating the primed surface with a solution of a solvent-soluble, further-curable organopolysiloxane in an organic solvent and thereafter evaporating the solvent and finally curing the organopolysiloxane. The solvent-soluble, further-curable organopolysiloxane is produced by heating methyltrialkoxysilane or a mixture of methyltrialkoxysilane and phenyltrialkoxysilane and water in the presence of a hydrolysis catalyst at a sufficient temperature and for a suitable time to form a partial condensation product, concentrating this product by heating to remove some alkanol by-product and water and thereafter precuring the product by heating below the gel point thereof.

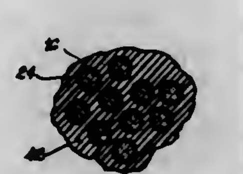
3,650,809
POLYETHYLENE COATED METAL SUBSTRATE AND PROCESS OF PREPARING SAME

Kenneth D. Gilliam, Cedar Lake, Ind., and Alfred W. Kehe, Berkeley, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Sept. 15, 1969, Ser. No. 858,164
Int. Cl. B44d *1/14;* **B32b** *15/08*
U.S. Cl. 117—75 **9 Claims**

A method for bonding polyethylene to an enamel coated metal surface wherein there is employed as a bond promoting interlayer between the polyethylene and enamel coated metal surface a resinous mixture of a carboxyl containing polyethylene resin and a vinyl butyral polymer. The polyethylene coated metal surface is suitable for the manufacture of metal containers.

3,650,810
GLASS FIBERS IMPREGNATED WITH POLYMERS CONTAINING AN UNSATURATED SILANE

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation
Filed Nov. 20, 1969, Ser. No. 878,500
Int. Cl. C03c *17/30, 17/32*
U.S. Cl. 117—76 **10 Claims**



The improvement in the bonding relationship between glass fibers and elastomeric materials in the manufacture of glass fibers, glass reinforced elastomeric products wherein the individual glass fibers are sized, or a bundle of fibers are impregnated with a composition containing a polymeric material formed by the reaction of an organic silane having ethylenic unsaturation with either a copolymer of styrene and butadiene or poly-alpha-olefins.

3,650,811
ACRYLIC-SILOXANE RESIN PAINT IV

John D. Nordstrom, Detroit, and Carolyn B. Zelek, Ypsilanti, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 24, 1969, Ser. No. 888,055
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 **17 Claims**

A novel acrylic-siloxane paint binder resin that is cross-linkable with vinyl monomers by exposure to an electron beam is produced in a three step reaction wherein (1) a siloxane having two or more hydroxy or alkoxy functional groups per molecule is reacted with a C_5–C_{12} monohydroxy acrylate, i.e., the monohydroxy ester of a C_2–C_8 diol and acrylic or methacrylic acid, (2) the siloxane-acrylate product of the first reaction step is reacted with a mixture of vinyl monomers having as a constituent monomer an acrylate selected from glycidyl acrylate and glycidyl methacrylate, and (3) the resultant siloxane-acrylate-vinyl monomer copolymer is reacted with acrylic or methacrylic acid.

3,650,812
ACRYLIC-SILOXANE RESIN PAINT AND PAINTED ARTICLE

John D. Nordstrom, Detroit, and Carolyn B. Zelek, Ypsilanti, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 24, 1969, Ser. No. 888,056
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 **17 Claims**

A novel acrylic-siloxane paint binder resin that is cross-linkable with vinyl monomers by exposure to an electron beam is produced in a three step reaction wherein (1) a siloxane having two or more hydroxy or alkoxy functional groups per molecule is reacted with a C_5 - C_{12} monohydroxy acrylate, i.e., the monohydroxy ester of a C_2 - C_8 diol and acrylic or methacrylic acid, (2) the siloxane-acrylate product of the first reaction step is reacted with a mixture of vinyl monomers at least one constituent monomer of which is selected from glycidyl acrylate and glycidyl methacrylate, and (3) the resultant siloxane-acrylate-vinyl monomer copolymer is reacted with a C_5 - C_{12} monohydroxy acrylate, i.e., the monohydroxy ester of a C_2 - C_8 diol and acrylic or methacrylic acid.

3,650,813
ACRYLIC-SILOXANE RESIN PAINT II

John D. Nordstrom, Detroit, and Carolyn B. Zelek, Ypsilanti, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 24, 1969, Ser. No. 888,058
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 **18 Claims**

A novel acrylic-siloxane paint binder resin that is cross-linkable with vinyl monomers by exposure to an electron beam is produced in a two step reaction wherein (1) a siloxane having two or more hydroxy or alkoxy functional groups per molecule is reacted with a hydroxy functional copolymer of acrylic monomers, and (2) the siloxane-comprising reaction product of the first reaction step is reacted with a C_5 - C_{12} monohydroxy acrylate, e.g., the monoester of a C_2 - C_8 diol and acrylic or methacrylic acid.

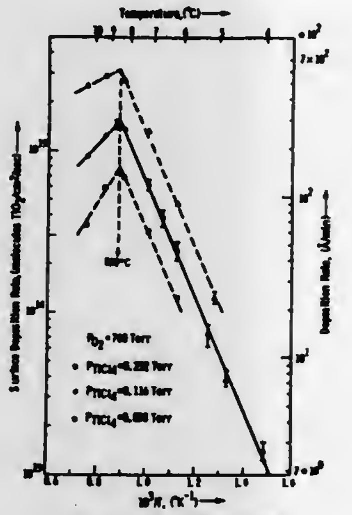
3,650,814
PROCESS FOR PREPARING MOLDABLE THERMOPLASTIC POLYMER PARTICLES

John A. Elder, Jr., Plainfield, N.J., assignor to Union Carbide Corporation, New York, N.Y.
Filed Oct. 9, 1969, Ser. No. 865,188
Int. Cl. B44d *5/00*
U.S. Cl. 117—100 C **6 Claims**

Thermoplastic polymers can be treated directly with an organo-functional silane coupling agent and a resinous copolymer of ethylene and acrylic and/or methacrylic acid so as to enhance their bonding to inorganic oxide substrates thereby providing moldable products with superior physical properties heretofore unattainable.

3,650,815
CHEMICAL VAPOR DEPOSITION OF DIELECTRIC THIN FILMS OF RUTILE

Rathindra N. Ghoshtagore, Monroeville, and Robert F. Yut, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 6, 1969, Ser. No. 863,973
Int. Cl. C23c *11/00, 13/00*
U.S. Cl. 117—106 **17 Claims**



Temperature dependence of rutile deposition rate at one atmosphere of oxygen partial pressure and different titanium tetrachloride partial pressures.

Thin films of titanium dioxide in the rutile form are deposited by chemical vapor deposition technique on a heated surface of a substrate by reacting titanium tetrachloride with oxygen, in the range of temperatures from 700° to 900° C.

3,650,816
ADDITIVES FOR CLOTHES DRYERS

Jerome Rudy, Livingston, N.J., and Anthony A. Rapisarda, Elmhurst, N.Y., assignors to Lever Brothers Company, New York, N.Y.
Filed July 17, 1969, Ser. No. 842,719
Int. Cl. B05c *3/08;* **C11d** *3/48;* **D06m** *13/00*
U.S. Cl. 117—109 **9 Claims**

A novel method for applying adjuvants to fabric employing a tumbler-type dryer is disclosed. To achieve uniform distribution of the adjuvant on the fabric, the adjuvant, in accordance with the present invention, is sprayed on to the dryer drum. Spreading agents, distributing agents or carrier may be included in the composition sprayed on to the dryer drum if desired. Novel compositions of matter suitable for use in the practice of this invention are also disclosed.

3,650,817
METHOD OF MANUFACTURING LOW THERMAL-EXPANSION PORCELAIN

Inoue Motoyuki, Nagoya-shi, Japan, assignor to Nippon Toki Kabushiki Kaisha, Nagoya-shi, Aichi-ken, Japan
Continuation-in-part of application Ser. No. 499,022, Oct. 20, 1965, now Patent No. 3,499,787, dated Mar. 10, 1970. This application Aug. 8, 1969, Ser. No. 848,693
Int. Cl. C03c *17/00*
U.S. Cl. 117—118 **6 Claims**

A heat resistant porcelain body having a smooth, dense and hard glaze layer on the surface thereof is prepared by coating a porcelain body comprised of at least one of petalite and spodumene in admixture with plastic clay and containing specified amounts of Al_2O_3, SiO_2 and LiO_2 in addition to at least one of 0.5–6 percent by weight of ZnO and 7–26 percent by weight of free SiO_2 with a glaze preparation containing primarily SiO_2 and thereafter firing the coated porcelain body at 1250°–1350° C.

3,650,818
GLASS FIBERS COATED WITH VINYL POLYMERS CONTAINING AN AMINE

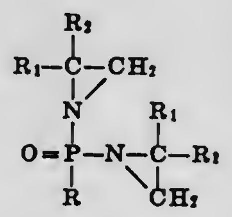
Alfred Marzocchi, Cumberland, R.I., and Richard C. Horton, Millwood, N.Y., assignors to Owens-Corning Fiberglas Corporation
Continuation-in-part of application Ser. No. 96,106, Mar. 16, 1961, now Patent No. 3,234,042. This application July 8, 1965, Ser. No. 470,618
Int. Cl. C03c *25/00;* **C08g** *41/04*
U.S. Cl. 117—126 GB **4 Claims**

Glass fibers are coated with a formulation containing vinyl polymer. 2-10% by weight of an amine compound is added to the vinyl polymer. A typical formulation contains 100 pts. PVC, 6 pts. undecyl benzyl phthalate, 21 pts. tri-o-phosphate, 21 pts. epoxidized tall oil ester, 4 pts. paste aluminum pigment, 2 pts. Sb_2O_3, a heat stabilizer, a barium-cadmium coupler, an ulta violet stabilizer, and a hydrocarbon thinner. The amines may be vinyl pyrrolidone monomer, propylamine, polyvinyl pyrrolidone acrylamide, aminopolyethylene, polyvinyl pyridine, polyacrylonitrile, hexamethylenediamine, and diphenyl guanidine.

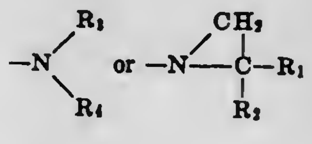
3,650,819
DURABLE FIRE-RETARDANT FINISH FOR CELLULOSIC TEXTILE MATERIALS

Robert George Weyker, North Plainfield, and George Louis Mina, Highbridge, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.
Filed Oct. 8, 1968, Ser. No. 765,961
Int. Cl. C09k *3/28;* **D06m** *13/26*
U.S. Cl. 117—136 **6 Claims**

A method for providing a hard water wash durable cyanamide-phosphoric acid, flame-retardant finish for cellulosic textile materials which comprises aftertreating the textile material bearing the cyanamide-phosphoric acid finish with an aziridinyl phosphine oxide of the formula:



wherein R is alkyl, aryl, cyclo alkyl,



R_1 and R_2 are hydrogen or lower alkyl; and R_3 and R_4 are alkyl, or, taken together with the nitrogen, represent a heterocyclic ring, followed by a curing step.

3,650,820

PRODUCTION OF FLAME RETARDANT CELLULOSIC MATERIALS

Joseph DiPietro, Alma; John Heaton Todd, St. Louis, and Robert John Mulph, Alma, all of Mich., assignors to Michigan Chemical Corporation, St. Louis, Mich.

Filed Feb. 17, 1969, Ser. No. 800,831

Int. Cl. C09k *3/28;* **D06m** *13/26;* **C09d** *5/18*

U.S. Cl. 117—136 **11 Claims**

Various cellulosic materials such as cotton, burlap, jute, fiberboard and paper may be rendered flame retardant without impairing desirable physical properties by treating them with an aqueous solution of a water soluble salt of a polyhaloalkyl acid ester of phosphoric acid in which the halogen is bromine or chlorine and in which the alkyl radical contains two through six carbon atoms. An acid may be used if it is water soluble.

3,650,821

RAPID CURING MELAMINE-FORMALDEHYDE IMPREGNATED PAPER SHEET FOR PRODUCING SURFACE OF IMPROVED STAIN RESISTANCE AND LUSTER RETENTION

Kenneth D. Meiser, Dallas, Tex., assignor to Plastics Manufacturing Company, Dallas, Tex.

Continuation-in-part of application Ser. No. 745,130, July 16, 1968, now abandoned , and a continuation-in-part of 473,815, July 21, 1965, now abandoned. This application Aug. 10, 1970, Ser. No. 62,648

Int. Cl. D21h *1/40*

U.S. Cl. 117—155 L **2 Claims**

An aqueous solution of a slightly hydrophobic, unmodified reaction product of formaldehyde and melamine in a molar ratio from 1:1 to 1.9:1 and, as a curing catalyst, a water-soluble acidic salt of aluminum or zinc, which solution remains ungelled for at least 12 hours at ordinary temperatures, is used to impregnate a cellulosic paper sheet. The dried sheet forms a surface lamination cures in 1 to 2 minutes at 315° F. to a surface having superior stain-resistance and luster retention.

3,650,822

METHOD OF PRODUCING EPITACTIC SEMICONDUCTOR LAYERS ON FOREIGN SUBSTRATES

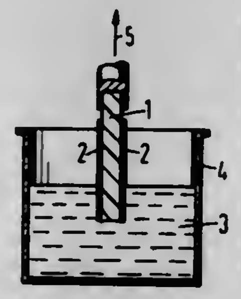
Josef Grabmaier, Unterhaching, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Sept. 25, 1969, Ser. No. 860,942

Claims priority, application Germany, Sept. 30, 1968, P 17 94 273.3

Int. Cl. B44d *1/18;* **H01l** *7/40*

U.S. Cl. 117—201 **9 Claims**



A method of producing thin, monocrystalline layers of semiconductor material, upon a monocrystalline, preferably wafer-shaped, substrate body of another chemical composition, but having the same or a similar lattice structure, by an epitactic growth process. The substrate body is immersed into a melt comprising the appropriate semiconductor material. A temperature balance between the substrate body and the melt, is established. Thereafter the semiconductor material epitactically grown on the surface of the substrate body, by slowly pulling the substrate body out from the melt.

3,650,823

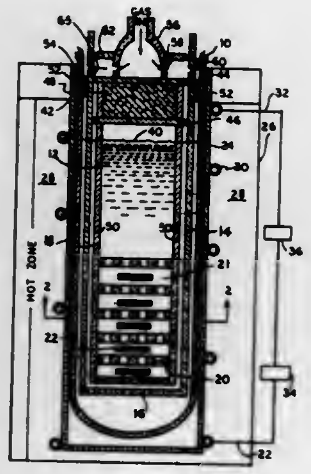
METHOD FOR PROCESSING SEMICONDUCTORS

Carver A. Mead, Pasadena, and James O. McCaldin, South Pasadena, both of Calif., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 24, 1969, Ser. No. 860,736

Int. Cl. C23c *13/04, 17/00;* **H01l** *7/46*

U.S. Cl. 117—201 **15 Claims**



A system for diffusion treatment of semiconductor compounds including an open crucible containing a molten bath of treating material and a liquid permeable carrier member for inserting and removing semiconductor slabs from the bath. The bath is isolated from reacting with the atmosphere by slowly flowing an inert gas across the top of the bath. High melting point treating materials such as zinc can be more readily removed from semiconductors such as zinc sulfide by quickly removing the carrier from the zinc bath and inserting the carrier into a bath of a material having a much lower melting point such as indium or gallium. The lower melting material displaces the higher melting material and the lower melting material is then mechanically removed from the slabs while being heated on a hotplate to a temperature above the melting point of the lower melting material.

3,650,824

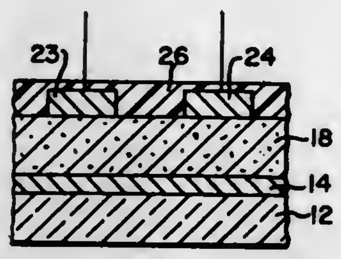
ELECTROLUMINESCENT DISPLAY PANEL

Zoltan P. J. Szepesi, and Michael A. Novice, both of Elmira, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 15, 1969, Ser. No. 857,751

Int. Cl. H01j *1/70;* **B44d** *1/18*

U.S. Cl. 117—212 **6 Claims**



An electroluminescent display device comprised of an electroluminescent layer having a large area front electrode and a plurality of back electrodes in which coatings operatively associated with the back electrodes eliminate dark gaps between the light emitting electrodes.

3,650,825

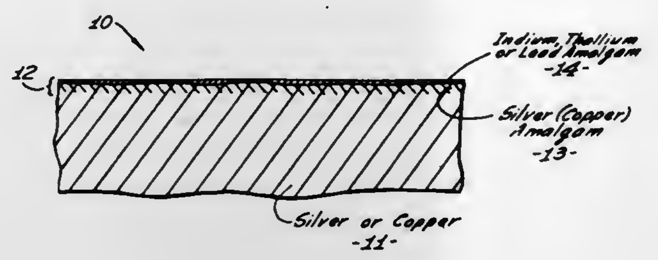
METHOD FOR MANUFACTURE OF AN ELECTRICAL CONTACT

Franz Lihl, Vienna, Austria, assignor to Schaltbau GmbH, Munich, Germany

Filed June 19, 1969, Ser. No. 834,839

Int. Cl. B44d *1/14, 1/18*

U.S. Cl. 117—217 **18 Claims**


10
12
Indium, Thallium or Lead Amalgam -14-
Silver (Copper) Amalgam -13-
Silver or Copper -11-

Contact elements are made by amalgamating copper or silver contact pieces through thermal treatment with mercury. Subsequently a different amalgam, e.g., lead, thallium, or preferably, indium amalgam is deposited thereon, rubbed in and thinned.

3,650,826

METHOD FOR PRODUCING METAL CONTACTS FOR MOUNTING SEMICONDUCTOR COMPONENTS IN HOUSINGS

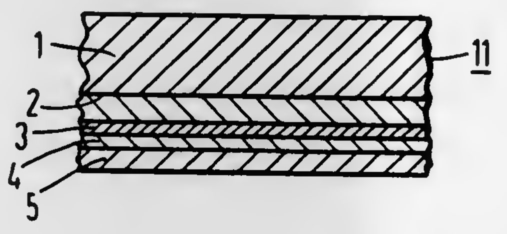
Wolfgang Ganser, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Munich, Germany

Filed Sept. 26, 1969, Ser. No. 861,355

Claims priority, application Germany, Sept. 30, 1968, P 17 89 062.9

Int. Cl. C23b *5/50;* **C23c** *1/08*

U.S. Cl. 117—217 **8 Claims**



A method for producing metal contact layers for mounting semiconductor components in a housing, particularly those made by the planar technique. The semiconductor component surface to be contacted with the housing is first provided with a layer consisting of aluminum and nickel. Thereafter, a metal layer consisting of titanium is deposited on top of the alloy layer and subsequently thickened by a coating of silver.

3,650,827

FEP CABLES

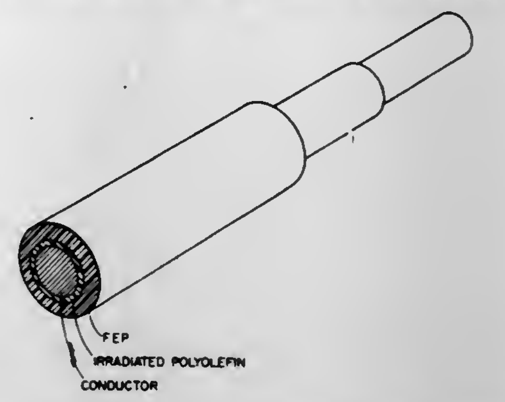
Chester A. Brown, Andover, and Louis F. Rossetti, Arlington, both of Mass., assignors to Electronized Chemicals Corp., Burlington, Mass.

Filed Nov. 17, 1969, Ser. No. 877,269

Int. Cl. B44d *1/42*

U.S. Cl. 117—218 **7 Claims**

Electric cables of the type known as composite electrical insulated cables are insulated with a first inner layer of insulation material such as polyolefin and second outer layer of an irradiated cross-linked co-polymer of tetrafluoroethylene



and hexafluoropropylene known in the trade as FEP to form a superior high temperature cable.

3,650,828

MAGNETIC COATING FORMULATION FOR RECORDING TAPE

Louis M. Higashi, Monte Sereno, and Herbert R. McEvers, San Jose, both of Calif., assignors to Karex, Inc.

Filed Sept. 4, 1969, Ser. No. 855,405

Int. Cl. H01f *10/02*

U.S. Cl. 117—235 **4 Claims**

A polymeric binder for magnetic coating exhibiting excellent wear and aging characteristics comprised of a mixture of a high molecular weight vinyl chloride-vinyl acetate or a polyvinyl acetal having a glass transition temperature (Tg) in excess of 70° C. and a thermoplastic polyurethane-polyurea, hydroxyl-functional elastomer which is a reaction product of a mixture of a polyesterdiol, a hydrocarbon diol, a diphenyl sulfone diamine and an organic diisocyanate.

3,650,829

METHOD OF PRODUCING GRANULAR DEXTROSE

Raoul Guillaume Philippe Walon, Brussells, Belgium, assignor to CPC International Inc. and Les Industries du Mais

Filed Aug. 6, 1969, Ser. No. 848,100

Int. Cl. C13k *1/06, 1/10*

U.S. Cl. 127—60 **9 Claims**

A process for producing a granular dextrose product having a high content of beta dextrose by seeding a starch hydrolyzate solution containing at least about 90% by weight dry substance, and having a dextrose equivalent of at least 90, to obtain a crystallized mass, breaking the mass up into particles, and recovering a granular dextrose product. Also, the use of the product for lozenges and bakery products.

3,650,830

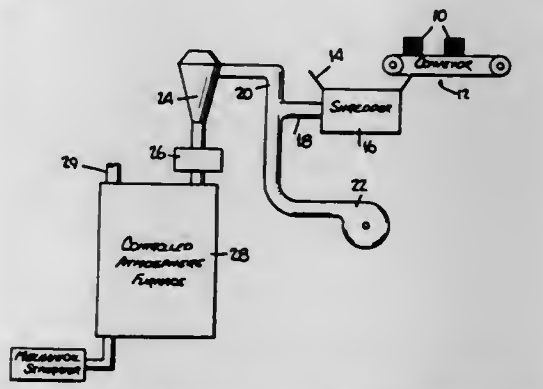
RECOVERY SYSTEM

Edmund A. Mathis, Staten Island, N.Y., assignor to Nichols Engineering & Research, New York, N.Y.

Original application July 6, 1966, Ser. No. 563,240, now abandoned. Divided and this application June 30, 1969, Ser. No. 851,121

Int. Cl. C22b *21/00;* **B08b** *7/00*

U.S. Cl. 134—19 **3 Claims**



Aluminum is recovered from scrap by volatilization of organics from the scrap in a non-oxidizing furnace having multiple hearths, and thereafter separating the aluminum from the ash by mechanical means.

3,650,831
METHOD OF CLEANING SURFACES

Eric Jungermann, Chicago; Aaron B. Herrick, La Grange, and Armando Carlo, Chicago, all of Ill., assignors to Armour-Dial, Inc., Chicago, Ill.

Filed Mar. 10, 1969, Ser. No. 805,797
Int. Cl. B08b *3/08*

U.S. Cl. 134—27 **5 Claims**

A method of removing deposits of soil from surfaces, which comprises applying to said surfaces a caustic alkali including an acid-base color indicator, and applying an aqueous solution which is sufficiently acidic to substantially neutralize the caustic and visibly change the color of the caustic. The method has particular efficacy for the cleaning of the interior surfaces of ovens and similar surfaces.

3,650,832
ACTIVE MATERIAL ELECTRODE AND CELL COMPRISING IMPROVED BATTERY GRADE DIVALENT SILVER OXIDE

Aladar Tvarusko, Princeton, N.J., assignor to ESB Incorporated

Continuation-in-part of application Ser. No. 637,643, May 11, 1967, now abandoned , which is a continuation-in-part of application Ser. No. 507,585, Nov. 12, 1965, now abandoned , and a continuation-in-part of 515,497, Dec. 21, 1965, now abandoned. This application Aug. 20, 1969, Ser. No. 851,741
Int. Cl. H01m *35/02*

U.S. Cl. 136—6 **11 Claims**

Battery grade divalent silver oxide (AgO) active material containing an additive selected from mercury, selenium, tellurium and combinations of mercury with lead or tin to provide improved electrical conductivity and/or improved stability in aqueous alkaline electrolyte, without substantially adversely affecting either property. The additive is present in the divalent silver oxide active material in amounts ranging from about 0.1 to about 5 percent by weight of silver, in both ionic and metallic form, in the active material. Instead of being incorporated into the divalent silver oxide active material, the selenium, tellurium, mercury-lead and mercury-tin additives are also effective when incorporated into the alkaline electrolyte of a battery employing divalent silver oxide positive electrodes. The preferred method for incorporating the additives into the divalent silver oxide active material is by chemical coprecipitation during its preparation, though they can also be physically admixed therewith. The divalent silver oxide active material contains at least 50 percent by weight of divalent silver oxide (AgO) with the balance of the active material comprising monovalent silver oxide (Ag_2O) and metallic silver.

3,650,833
MULTICELL STORAGE BATTERY

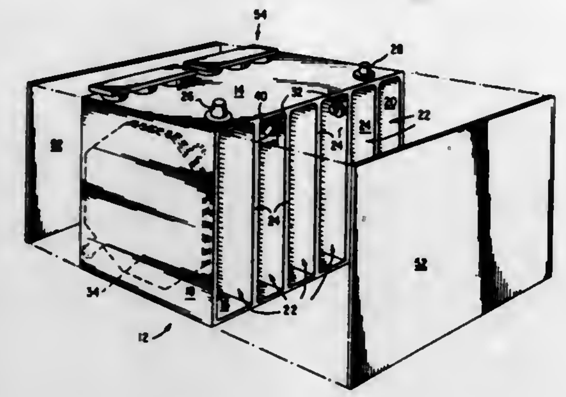
Erik G. Sundberg, Osbacken, Sweden, assignor to Aktiebolaget Tudor, Stockholm, Sweden

Filed June 16, 1969, Ser. No. 833,390
Claims priority, application Sweden, May 21, 1968, 6842/68
Int. Cl. H01m *35/04, 35/32*

U.S. Cl. 136—6 **13 Claims**

A multicell storage battery characterized by the improved path of current flow provided by the positioning of the conductive terminals of the electrodes and the input and output connections between the cells in alternating fashion adjacent the tops and bottoms of the cells. These connections may additionally be positioned in alternating fashion adjacent the front and rear of the cells so that current flows diagonally in the electrodes thereby to tend to reduce resistance in and between the electrodes. Moreover, electrodes may be contoured so that the peripheries of the plates thereof are contained within acute angles having apexes located generally diagonally of one another substantially at the intersection of adjacent plate sides, whereby more effective utilization of the active material in the electrodes is obtained.

A method of making a multicell storage battery wherein an open-sided casing with cell connecting terminals positioned in alternating fashion adjacent the tops and bottoms of the cells is provided, and then electrode plate sets are inserted laterally into open-sided cells and connected to the cell connectors. Afterwards, the side walls are secured in position. Thus, assembly problems associated with the internal positioning of the cell connecting terminals are obviated.



3,650,834
ALUMINUM BROMIDE FUSED SALT BATTERY

Edward S. Buzzelli, Solon, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Jan. 28, 1970, Ser. No. 6,410
Int. Cl. H01m *35/02*

U.S. Cl. 136—22 **8 Claims**

The secondary electrical energy storage battery of this invention comprises a carbon cathode, an aluminum metal anode, and a fused salt electrolyte containing an aluminum halide in admixture with one or more of the halides of the alkali metals. The electrical energy storage device described has the advantage of being operable in a lower temperature range than presently known fused salt batteries.

3,650,835
PREPARATION OF BATTERY PLATES WITH IRON OXIDES HAVING A FUSED COATING

John F. Jackovitz, Monroeville, and Alois Langer, Wilkinsburg, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application Oct. 2, 1968, Ser. No. 764,458. Divided and this application Dec. 16, 1969, Ser. No. 885,404
Int. Cl. H01m *43/04*

U.S. Cl. 136—25 **6 Claims**

A method of producing active electrode material consists of fusing an elemental sulfur, selenium, or tellurium additive coating onto iron oxide and/or hydrated iron oxide, within a temperature range dependent on the melting point of the additive.

3,650,836
ELECTROCHEMICAL CELL WITH AT LEAST ONE GAS DIFFUSION ELECTRODE

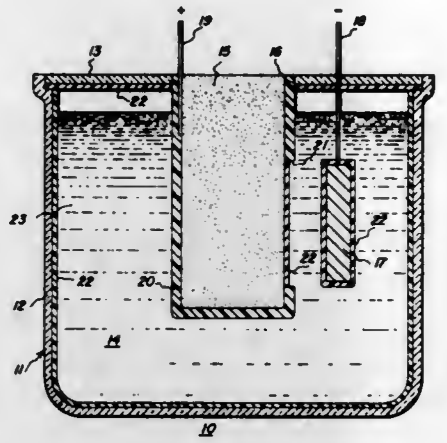
Willard T. Grubb, Schenectady, N.Y., and Robert A. Macur, Milwaukee, Wis., assignors to General Electric Company

Filed Apr. 6, 1970, Ser. No. 25,703
Int. Cl. H01m *27/00*

U.S. Cl. 136—86 R **5 Claims**

An electrochemical cell has at least one positive wetproofed gas diffusion electrode with its major portion within the casing covered with a fuel and oxidant impervious mask, and with its remaining portion within the casing covered with at least one water soluble polymeric thickening agent swellable in the aqueous alkaline electrolyte of a fuel-electrolyte

solution and an alkali metal silicate dissolved in the solution. This cell eliminates or reduces substantially the conventional problems of carbonate crust formation, electrolyte leakage, drowning of the gas diffusion electrode, and loss of fuel.

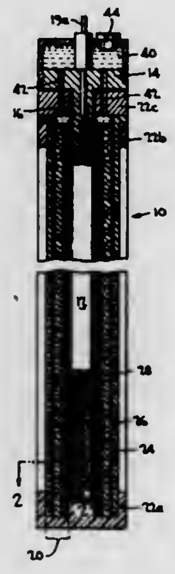


3,650,837
SECONDARY METAL/AIR CELL

Nigel J. Palmer, Port Washington, N.Y., assignor to Leesona Corporation, Warwick, R.I.

Filed Apr. 6, 1970, Ser. No. 25,883
Int. Cl. H01m *29/02*

U.S. Cl. 136—86 A **13 Claims**



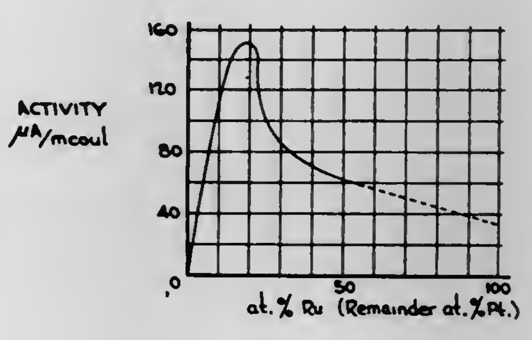
An electrically rechargeable metal/air or metal/oxygen depolarized electrochemical cell and a method of generating electricity therefrom are described. The electrochemical cell comprises an anode capable of being regenerated and a composite cathode having an oxygen-permeable, hydrophobic member layered with catalyst and a bi-porous unit. The coarse pore layer of the bi-porous unit is in contact with the catalyst. A bubble barrier which can be integral with either the anode or composite cathode is in contact with the fine pore layer of the bi-porous unit. During discharge of the cell, the bi-porous unit is flooded with electrolyte and merely acts as a current collector. When charging, oxygen evolution occurs at the fine pore layer and, due to the bubble barrier, the evolved oxygen is forced into the coarse pore layer displacing the electrolyte, thereby protecting the catalyst layer from damage due to oxygen evolution and the high charging potential.

3,650,838
ELECTROCHEMICAL CELL WITH PLATINUM-RUTHENIUM ELECTRODE AND METHOD OF USING WITH AMMONIA

Jose D. Giner, Glastonbury, and James R. Moser, Bolton, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 30, 1965, Ser. No. 491,759
Int. Cl. H01m *27/10, 27/30*

U.S. Cl. 136—86 **3 Claims**



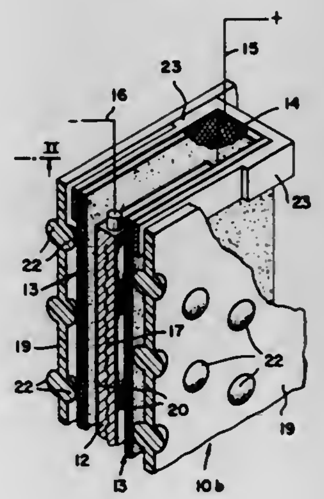
An improved method of, and an apparatus for, generating electrical energy is described comprising feeding ammonia to an anode comprising a major amount of platinum and a second metal of the platinum group in minor but effective amounts. Preferred percentages range from about 75 to 98 parts platinum and from about 25 to about 2 parts of the promoter metal on an atomic weight basis.

3,650,839
FUEL CELL BATTERY

Maurice Lang, Massapequa, N.Y., and Renato Di Pasquale, Paramas, N.J., assignors to Yardney International Corp., New York, N.Y.

Filed July 1, 1968, Ser. No. 741,634
Int. Cl. H01m *29/04*

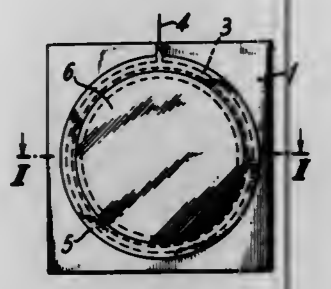
U.S. Cl. 136—86 **1 Claim**



Several fuel cells, each comprising a metal electrode in a gas-permeable envelope electrode with a catalytically effective inner surface, are juxtaposed to form a battery and are separated by solid spacers which are carried on an interposed partition or project directly from confronting outer surfaces of adjoining envelope electrodes to form channels for the admission of air or oxygen to the respective cells.

3,650,840
FUEL CELL WITH ELECTRODE HOLDER

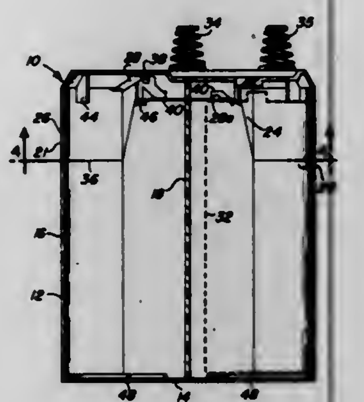
Hermann Dietz, Stuttgart-Giebel, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Aug. 12, 1969, Ser. No. 849,457
Claims priority, application Germany, Oct. 12, 1968, P 18 02 803.0
Int. Cl. H01m *27/04, 13/10*
U.S. Cl. 136—86 D **4 Claims**



A method of connecting an electrode member to an electrode holder of a fuel cell. An electrically conductive adhesive substance is applied to one or both of the electrode member and the electrode holder, and thereupon the two are placed into contact with one another so as to adhere via the adhesive substance, whereby the electrode is electrically conductively but in fluid-tight relationship connected to the electrode holder.

3,650,841
MULTIPLE CELL GALVANIC BATTERY

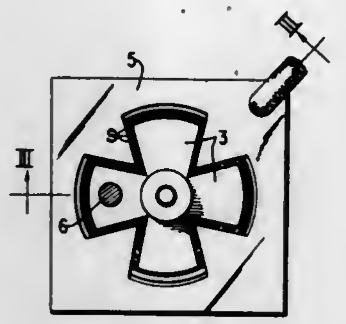
Robert Edwin Brindley, New York, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed Jan. 20, 1970, Ser. No. 3,720
Int. Cl. H01m *1/02*
U.S. Cl. 136—132 **9 Claims**



A multiple cell galvanic battery and particularly a container assembly therefor comprising a container with individual compartments for the cells and a cover which fits over the container and seals off the individual compartments. The cells are connected electrically in either series, parallel, or series-parallel relationship by the use of intercell connectors and intercell connecting clips. Battery terminals are sealed to, and extend through, the cover to provide external electrical contact with the battery. The bond between the cover and container supplies sufficient mechanical pressure to maintain good electrical contact between the intercell connectors, cell electrodes and external battery terminals.

3,650,842
ELECTROLYTIC, SECONDARY AND PRIMARY CELLS

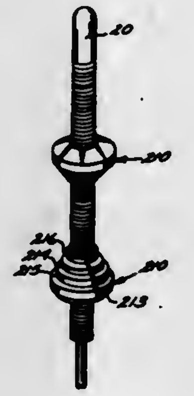
Marcel Bougaran, Paris, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France
Original application Jan. 16, 1967, Ser. No. 609,631, now Patent No. 3,505,121, dated Apr. 7, 1970. Divided and this application July 18, 1969, Ser. No. 870,725
Claims priority, application France, Apr. 1, 1966, 56030
Int. Cl. H01m *35/32*
U.S. Cl. 136—134 **3 Claims**



Electric cell constructions are provided with negative and positive electrodes having edges protruding respectively from opposite ends of an electrode assembly which latter includes a separator or separators between the positive and negative electrodes. Independent plate-like positive and negative electrode current collectors are located at respective opposite ends of the assembly. The respective plate-like members have shapes, e.g., of ray-like configuration and dimensions such as to cover or overlie only portions of such respective protruding edges and leave selected other portions of the respective edges of the electrodes completely uncovered. The plate-like members are welded directly and uniformly respectively to the entirety of those portions of the respective edges that they actually cover and contact. The electrodes comprise metallic carriers bearing active materials except in their edges which are bare of the active materials, and these bare edges of the carriers are those uniformly welded in entirety to the covering portions of the plate-like members.

3,650,843
THERMOCOUPLE

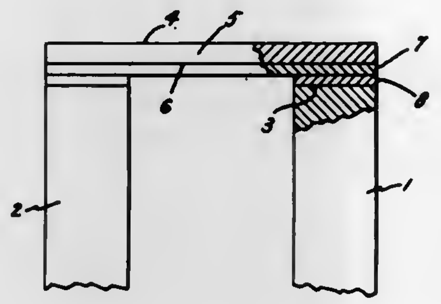
Fred V. Kenyon, Anaheim, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Continuation-in-part of application Ser. No. 651,570, July 6, 1967, now Patent No. 3,522,107. This application Feb. 15, 1968, Ser. No. 705,767
Int. Cl. H01v *1/02*
U.S. Cl. 136—217 **8 Claims**



A thermocouple which may be attached to any type of support bracket, has a mounting portion and a pair of adaptors thereon in spaced relation to each other with each adaptor having a resilient element cooperating with the mounting portion to enable initial slip-on positioning of the two adaptors which may be finally moved into clamping positions relative to the support bracket.

3,650,844
DIFFUSION BARRIERS FOR SEMICONDUCTIVE THERMOELECTRIC GENERATOR ELEMENTS

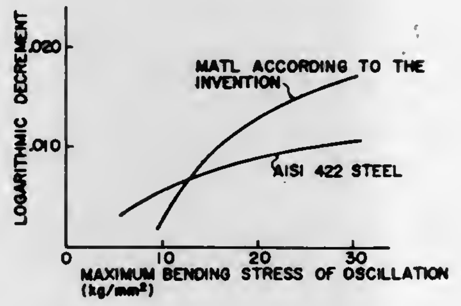
Louis F. Kendall, Jr., Scotia, N.Y., and James H. Bredt, Garrett Park, Md., assignors to General Electric Company
Continuation-in-part of Ser. No. 575,244, Aug. 26, 1966
Filed Sept. 19, 1968, Ser. No. 760,989
Int. Cl. H01v *1/04*
U.S. Cl. 136—237 **6 Claims**



In the manufacture of thermoelectric generators of the lead telluride type, it is desirable that the joints between the thermoelements and the electrodes or bridging members have low electrical resistance and resist fracture during thermal cycling. When materials having a linear coefficient of thermal expansion which is near that of the lead telluride, such as AISI Type 300 stainless steels are used, mechanical failure due to thermal mismatch is eliminated, but unwanted diffusion from the ferrous body into the lead telluride. It has been found that a thin diffusion barrier of iron, molybdenum or tungsten will prevent this degradation.

3,650,845
METHOD OF MANUFACTURE OF STEEL TURBINE BLADES

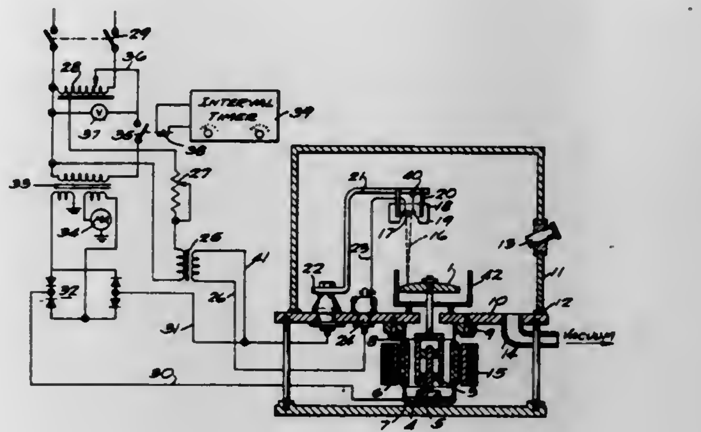
Teishiro Oda, and Makoto Nakamura, both of Nagasaki-shi, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 27, 1969, Ser. No. 810,975
Claims priority, application Japan, Mar. 28, 1968, 43/20255
Int. Cl. B22d *25/02;* **C21d** *7/14*
U.S. Cl. 148—2 **8 Claims**



High toughness steel suitable for the manufacture of turbine blades is composed of defined quantities of Cr, Ni, Co, Mo, and iron, wherein the molybdenum may be replaced by tungsten. The steel composition also contains minor amounts of carbon, silicon and manganese. The composition of this steel is selected so that the quantity of δ Ferrite and the Ms point have predetermined values. The steel is subjected to heat treatment, cooling and aging.

3,650,846
PROCESS FOR RECONSTITUTING THE GRAIN STRUCTURE OF METAL SURFACES

William P. Holland, West Redding, Conn., and Robert E. Hueschen, Hales Corners, Wis., assignors to General Electric Company
Filed Nov. 4, 1968, Ser. No. 773,135
Int. Cl. C22f *3/00*
U.S. Cl. 148—4 **9 Claims**



Surface brittle fracture of metals is inhibited by impinging on the surface of the metal an intense pulsed beam of charged particles, neutral particles or radiation while the metal is maintained at a temperature at least above its nil ductility temperature. Energy from the pulsed beam creates high thermal gradients and concomitant high stresses which in turn effect high plastic strain in the surface region and produce a unique fine subgrain structure on and immediately underneath the surface. The treatment enhances the resistance of the metal surface to brittle fracture and results in decreased cracking, delaminating and grain lifting.

3,650,847
METHOD OF AUTOMATICALLY CONTROLLING MOTOR SPEED OF GAS-CUTTER

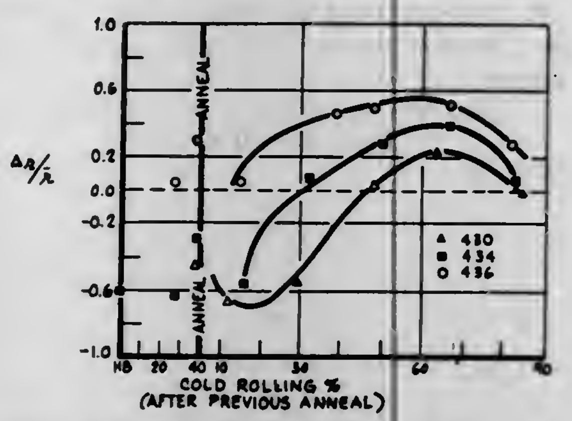
Yoshiaki Arata, Amagasaki, and Katsunori Inoue, Ashiyashi, both of Japan, assignors to Iwatani & Co., Ltd., Osaka, Japan
Filed Feb. 24, 1969, Ser. No. 801,287
Claims priority, application Japan, Apr. 30, 1968, 43/28899
Int. Cl. B23k *7/00*
U.S. Cl. 148—9 **6 Claims**

A method of automatically controlling the speed at which a gas flame cutter travels over the work to assure a uniform and complete cut. The flames generate a voltage between the gas nozzle and work which pulsates, the pulsation becoming greater as cutting efficiency decreases due to an excessively fast rate of travel of the nozzle. The pulsations are transformed into a signal to be fed into an electric control system to regulate the nozzle speed.

3,650,848
PRODUCTION OF FERRITIC STAINLESS STEEL WITH IMPROVED DRAWING PROPERTIES

Stephen G. Schneider, Garfield Heights; Frank A. Hultgren, North Royalton, and William F. Barclay, Berea, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio
Filed June 18, 1969, Ser. No. 834,404
Int. Cl. C21d *7/02*
U.S. Cl. 148—12 **15 Claims**

Ferritic stainless steel of the 430 series is produced to have improved drawing properties by procedure in which in a two-stage cold reduction of the hot-rolled band, with an intermediate anneal, the second stage effects reduction of at least about 80 percent, following at least about 30 percent reduction in the first stage. The finally annealed sheet is substantially non-earing and when the first stage reduction is at least



in the vicinity of 40 percent, the sheet is also characterized by deep drawing property.

3,650,849

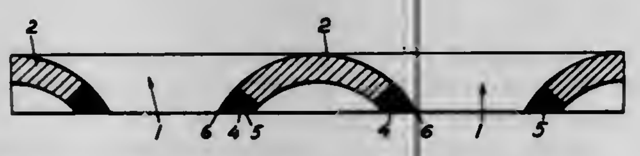
PERFORATED SHEAR-PLATE FOR DRY SHAVERS

Leopold Nidetzky, Klagenfurt, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 19, 1969, Ser. No. 800,576

Int. Cl. C21d *9/00;* **B26b** *19/04*

U.S. Cl. 148—12.4 **3 Claims**



This invention provides a perforated shear-plate for dry shavers, made of a soft, hardenable steel foil and comprising bridges which form a network between the holes and which have edges forming the rims of the holes, the edges being flanged and ground and the material in the region of the edges having a sub-microscopic, extremely hard martensitic structure containing residual austenite. A process for manufacturing such shear-plates comprises stamping holes into a ribbon of soft, hardenable steel foil containing more than 0.5 percent carbon, flanging and then grinding the edges of the holes with simultaneous pulse heating of the material in the region of the flanged edges up to an austenite forming temperature, and abruptly cooling the ground flanged edges.

3,650,850

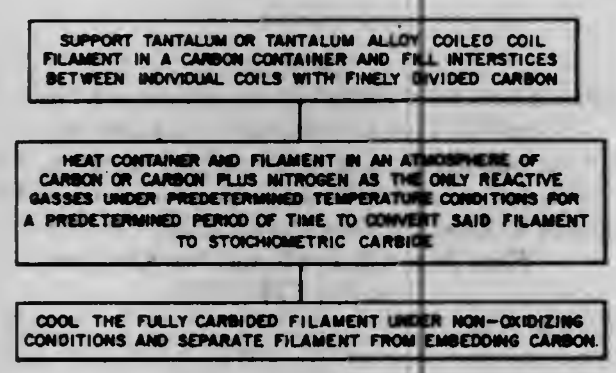
METHOD OF MAKING AN UNDISTORTED COILED-COIL TANTALUM CARBIDE FILAMENT

Richard Corth, 10 Plymouth Road, Nutley, N.J., and Jacob F. Michael, W33 Sycamore St., Paramus, N.J.

Filed Apr. 7, 1970, Ser. No. 26,233

Int. Cl. C23c *9/00, 11/10;* **C22c** *29/00*

U.S. Cl. 148—13.1 **8 Claims**


SUPPORT TANTALUM OR TANTALUM ALLOY COILED COIL FILAMENT IN A CARBON CONTAINER AND FILL INTERSTICES BETWEEN INDIVIDUAL COILS WITH FINELY DIVIDED CARBON
HEAT CONTAINER AND FILAMENT IN AN ATMOSPHERE OF CARBON OR CARBON PLUS NITROGEN AS THE ONLY REACTIVE GASSES UNDER PREDETERMINED TEMPERATURE CONDITIONS FOR A PREDETERMINED PERIOD OF TIME TO CONVERT SAID FILAMENT TO STOICHIOMETRIC CARBIDE
COOL THE FULLY CARBIDED FILAMENT UNDER NON-OXIDIZING CONDITIONS AND SEPARATE FILAMENT FROM EMBEDDING CARBON.

To carbide coiled-coil tantalum or tantalum alloy filament without causing it to distort, the coiled-coil metal filament is supported in a firing container consisting essentially of carbon as the only container component which will react with tantalum. The interstices between individual coils of the coiled-coil filament are filled with finely divided carbon, preferably graphite. The container and filament are then heated in an atmosphere of carbon or carbon plus nitrogen as the only reactive gases under predetermined temperature conditions and for a predetermined period of time sufficient to convert the filament to stoichiometric carbide.

3,650,851

GALLIUM CONTAINING COLD-ROLLED TRANSFORMER LAMINATIONS AND SHEETS WITH A CUBIC STRUCTURE

Mihaly Stefan; Fulop Balazs; Zoltan Hegedus, and Laszlo Tapolcai, all of Budapest, Hungary, assignors to Csepeli Femmu

Filed July 7, 1969, Ser. No. 839,683

Claims priority, application Hungary, July 17, 1968, SE-1433

Int. Cl. H01f *1/16;* **C22c** *39/46, 39/00*

U.S. Cl. 148—31.55 **4 Claims**

Cold-rolled transformer laminations with a cubic structure, containing a maximum of 4 percent by weight of silicon alloyed with 0.0001–0.20 percent by weight of gallium, 0–0.5 percent by weight of nickel and 0–0.5 percent by weight of copper.

3,650,852

SILICONE RESIN COMPOSITIONS

Francis Cecil Davis, and John Chapman Pirie, both of Adrian, Mich., assignors to Stauffer-Wacker Silicone Corporation, Adrian, Mich.

Continuation-in-part of application Ser. No. 714,792, Mar. 21, 1968, now abandoned. This application July 20, 1970, Ser. No. 56,684

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 R **9 Claims**

A silicone resin composition is prepared by adding a zirconium or lead salt of an organic acid to an alkoxylated organosilane and thereafter partially hydrolyzing the reaction product. The composition is amenable to being deposited on a porous substrate in various ways, but is preferably applied in dilute solution in an organic solvent.

3,650,853

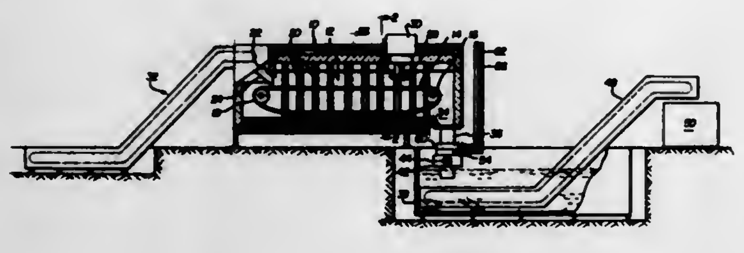
HEAT TREATING METHOD

William R. Keough, Bloomfield Hills, Mich., assignor to Multifastener Company, Detroit, Mich.

Filed Oct. 27, 1969, Ser. No. 869,524

Int. Cl. C21d *1/00*

U.S. Cl. 148—143 **4 Claims**



Heat treating apparatus which includes a heat treating furnace, a chute at the back of the furnace, and a quench bath at the bottom of the chute. The chute has at least one opening in it located at a level above the quench bath, through which a purging gas is injected, and at a slightly higher level the chute has at least one opening in it through which purging gas, furnace atmosphere gas, quench bath fumes and other contaminants are exhausted.

Also included is a method of heat treating objects utilizing the apparatus.

3,650,854

METHOD OF FABRICATING A TRANSISTOR HAVING IMPROVED EMITTER-BASE JUNCTION BREAKDOWN VOLTAGE CHARACTERISTICS

Herbert M. Demsky, Wappingers Falls; Alan Platt, La Grangeville, both of N.Y.; Arthur J. Rideout, Wettswil, Switzerland, and Robert S. Samson, Fishkill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,467

Int. Cl. H01l *7/44*

U.S. Cl. 148—187 **7 Claims**

A process for producing in a transistor a slumped base profile wherein the base diffusion window is reoxidized, a layer of P_2O_5 is deposited over the oxide, an insulating layer deposited over the P_2O_5, an emitter window opened, and emitter diffusion made.

3,650,855

SOLID ROCKET FUEL COMPOSITION CONTAINING METAL HYDRIDE WITH BUTYL RUBBER AND METHOD OF MAKING SAME

Gerald L. MacKenzie, Redlands, Calif., assignor to Donald G. De Long, Redlands, Calif., a part interest

Filed Dec. 19, 1962, Ser. No. 245,676

Int. Cl. C06d *5/00*

U.S. Cl. 149—19 **3 Claims**

1. A solid fuel composition suitable for use with a liquid oxidizer in a hybrid rocket motor, which comprises a solidly compacted and heat-cured grain having good dimensional stability and strength adequate to resist the stresses of rocket motor combustion, said grain consisting of about 90 percent by weight of lithium hydride and about 10 percent by weight of butyl rubber.

3,650,856

RED PHOSPHORUS CASTABLE SMOKE PRODUCING COMPOSITION

Glen D. Artz, Canoga Park, Calif., assignor to North American Rockwell Corporation

Filed Oct. 6, 1969, Ser. No. 864,159

Int. Cl. C06d *3/00*

U.S. Cl. 149—19 **11 Claims**

A castable pyrotechnic white smoke composition which comprises red phosphorous, an alkali metal nitrate, magnesium and a suitable castable polymeric binder.

3,650,857

GELLED AMINE ROCKET FUELS

George William Burdette, and Dean Henry Couch, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 18, 1965, Ser. No. 496,886

Int. Cl. C06b *15/00*

U.S. Cl. 149—36 **4 Claims**

A gelled amine rocket fuel comprising hydrazine or derivatives thereof, cellulose acetate and hydroxyethylcellulose, for use in modern missile systems.

3,650,858

SURFACE TREATMENT PROCESS FOR SOLID ROCKET PROPELLANT COMPOSITION

Donald Saylak, Lancaster, and Arthur E. Karabela, Edwards, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Feb. 24, 1970, Ser. No. 15,321

Int. Cl. C06b *19/00*

U.S. Cl. 149—109 **1 Claim**

A process for extending the storage and environmental capabilities of cured polymers by depositing an age retardant agent on the surface of the polymer. An age retardant agent such as a plasticizer or antioxidant is dissolved in a low boiling point swelling agent which is compatible with the plasticizer and acts as a solvent therefor. The plasticizer-solvent mixture is then applied to the surface of the polymeric structure, such as a solid propellant rocket motor, in a conventional manner. For example, the solvent mixture can be applied by painting or dipping the structure. The solvent acts as a carrying agent for the plasticizer allowing it to penetrate the surface of the structure to a desired depth.

3,650,859

REGENERATION OF CHROMIC ACID ETCHING SOLUTIONS

Eugene D. D'Ottavio, Thomaston, Conn., assignor to MacDermid Incorporated, Waterbury, Conn.

Filed Sept. 12, 1969, Ser. No. 861,542

Int. Cl. C23f *1/04;* **C23g** *1/36*

U.S. Cl. 156—2 **6 Claims**

A spent chromic acid etching solution, which has been used, for example, to etch plastic substrates, is regenerated by adding, with mixing, an alkali metal permanganate, such as potassium permanganate, and separating the resulting sludge which forms. During the regeneration process trivalent chromium in the etchant is oxidized to hexavalent chromium. The regenerated etching solution, thus recovered, is utilized as an etchant per se or it may be reconstituted with added sulfuric acid and/or chromic acid as required.

3,650,860

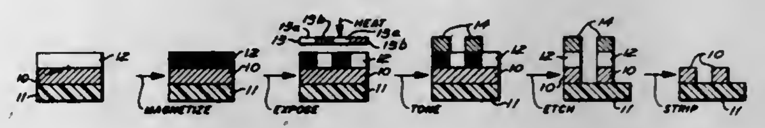
METHOD OF MAKING PRINTED CIRCUITS

John H. Rolker, Jr., Monrovia, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Aug. 22, 1968, Ser. No. 754,668

Int. Cl. H05k *1/00, 3/06;* **B41n** *3/02*

U.S. Cl. 156—3 **11 Claims**



Printed circuits are made by a method which applies a dissoluble magnetizable layer to the electrically conductive coating of a circuit board blank. A magnetic image of the desired circuit is provided in the applied magnetizable layer and etchant-resistive magnetic toner is attracted by the magnetic image to form an etch resist pattern. The electrically conductive coating is then etched with the aid of an etchant and the latter etch resist pattern.

3,650,861

SURFACE TREATMENT OF TITANIUM

Clifford Hyde Angell, Sutton Coldfield, England, assignor to Imperial Metal Industries (Kynoch) Limited, Birmingham, England

Continuation of application Ser. No. 558,243, June 17, 1966, now abandoned. This application Apr. 27, 1970, Ser. No. 29,769

Claims priority, application Great Britain, July 1, 1965, 27,931/65

Int. Cl. C23f *1/00*

U.S. Cl. 156—18 **9 Claims**

A matt etched surface is provided of titanium metal or titanium alloy, suitable for the deposition of an adhesive coating thereon by treating the surface of the metal or alloy with an aqueous solution of oxalic acid at a temperature greater than ambient temperature. Preferably the concentration of the oxalic acid solution should be greater than five percent.

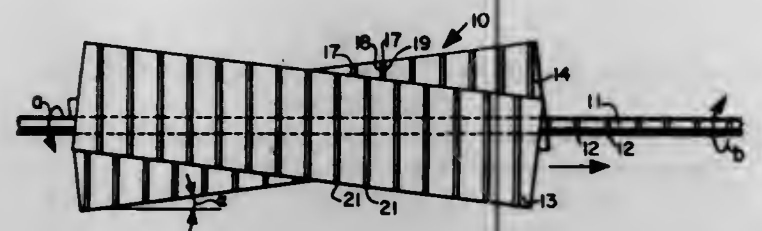
3,650,862
MARKING APPARATUS AND METHOD

Harvey Burr, Bronxville, N.Y., assignor to Anaconda Wire and Cable Company

Filed Jan. 27, 1969, Ser. No. 794,011

Int. Cl. H01b *19/04*

U.S. Cl. 156—51 **29 Claims**



Stripes are applied to insulated wire by passing it between two endless belts at least one of which carries ink or transverse marking areas. The belts are canted at opposite angles so that the wire is caused to roll across the printing surface.

3,650,863
METHOD OF MAKING LAMINATED FOAM-FILLED STRUCTURAL UNITS

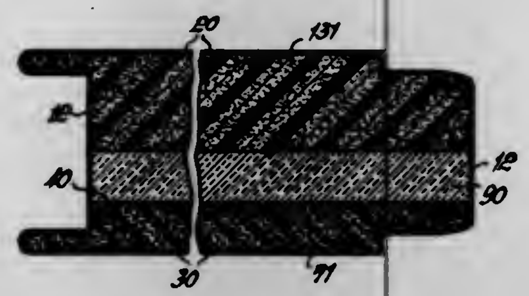
Reinhard Klinkosch, Dortmund, Germany, assignor to Hoesch Aktiengesellschaft, Dortmund, Germany

Filed July 9, 1969, Ser. No. 840,397

Claims priority, application Germany, July 17, 1968, P 17 79 192.3

Int. Cl. B32b *5/18*

U.S. Cl. 156—79 **10 Claims**



Structural units, and method and apparatus for making the same. Two webs are advanced in spaced parallel predetermined paths. A foam material is deposited on the upper surface of the lower web and foamed to form a foam layer. An intermediate web is applied onto the foam layer. An intermediate layer of sound- or fire-retarding material is applied onto the intermediate web, and the space between the intermediate layer and the upper web has foam material introduced thereinto and converted into a foam layer, whereby to obtain an elongated structural laminar unit consisting of the various layers and webs which adhere to one another.

3,650,864
METHOD FOR MAKING FILAMENT REINFORCED A-STAGE PROFILES

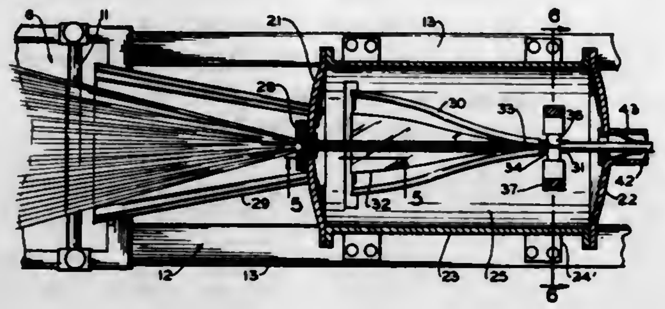
William B. Goldsworthy, Palos Verdes Estates, Calif., assignor to Goldsworthy Engineering, Inc., Torrance, Calif.

Continuation-in-part of application Ser. No. 674,820, Oct. 12, 1967, now Patent No. 3,576,705. This application July 23, 1969, Ser. No. 844,022

Int. Cl. B32b *31/04*

U.S. Cl. 156—85 **20 Claims**

Fiberglass filament unwound from a series of spools is impregnated with a resin matrix and passed through a pair of rollers or sizing bushing for removing the excess resin and air therefrom. The resin impregnated fiberglass is then envelopely enclosed within a sheet of unidirectionally oriented plastic film, the latter being sealed along its upper longitudinal margin by means of an ultrasonic weld or heat weld. The film enclosed composite may then be heated to shrink the film. The temperature should be sufficiently low to have no curing effect on the resin leaving it in the uncured or so-called "A-stage." For some systems, it is desirable to advance the resin to a semicured or so-called "B-stage." The film enclosed composite may then be wound upon suitable reels and stored for further use.



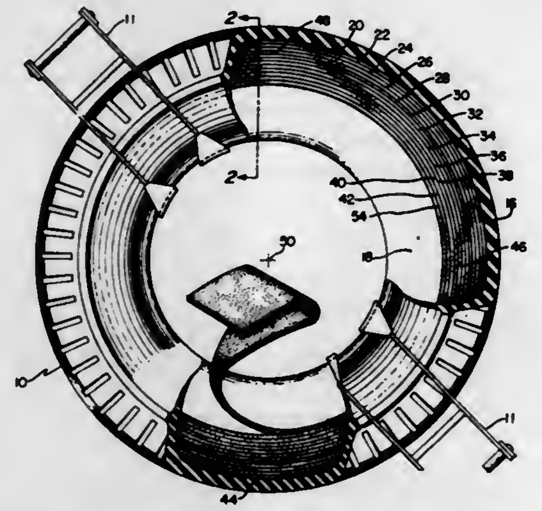
3,650,865
METHOD OF INFLATING TIRES WITH FOAMABLE MATERIAL

Joseph S. Hawkes, Silver Lake, and David L. Turk, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 15, 1969, Ser. No. 884,849

Int. Cl. B29h *13/00*

U.S. Cl. 156—119 **28 Claims**



A method for producing a tire inflated with foamable material such as synthetic rubber. A number of preformed strips of unfoamed material are annularly layered within a tire, the first layer being against the inside crown of the tire. Any joints between successive layers are arcuately staggered. The layers of unfoamed material are compacted or compressed against each other and the tire, forming a laminated, foamable, annular insert within the tire cavity. A predetermined amount of unfoamed material is uniformly placed within the tire to give a desired tire pressure, when the material is foamed.

3,650,866
INCREASING STRIP TENSILE STRENGTH OF MELT BLOWN NONWOVEN POLYPROPYLENE MATS OF HIGH TEAR RESISTANCE

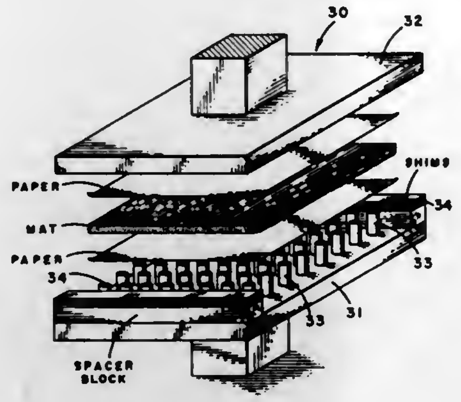
James S. Prentice, Baytown, Tex., assignor to Esso Research and Engineering Company

Filed Oct. 9, 1969, Ser. No. 865,108

Int. Cl. B32b *31/00*

U.S. Cl. 156—181 **4 Claims**

The strip tensile strength of a highly tear resistant nonwoven mat of melt blown polypropylene fibers having a diameter between about 10–40 microns is increased, while maintaining a high mat tear resistance, by fuse-bonding, as by calendering or point-bonding, at least a portion of the fibers of the mat at temperatures not greater than about 225° F., preferably, between about 170°–210° F., under pressure sufficient to prevent shrinkage of the fibers of the mat.



3,650,867
METHOD OF PRODUCING LAMINATED TEXTILE FABRICS WITH IMPROVED DIMENSIONAL STABILITY

Jackson Bauer, Croydon, Pa., assignor to Collins and Alkman Corporation, New York, N.Y.

Filed June 25, 1969, Ser. No. 836,479

Int. Cl. B31f *1/12*

U.S. Cl. 156—183 **8 Claims**

A method is provided for producing laminated textile fabrics with improved dimensional stability. In the present method, a laminate comprised of at least one ply of a textile fabric and at least one ply of a foam which plies are laminated together with an uncured to partially cured adhesive is compacted and then cured. The laminated textile fabrics of this invention are especially useful in the manufacture of wearing apparel, but also find uses in home furnishings and in industrial applications.

3,650,868
METHODS AND APPARATUS FOR MANUFACTURING PIPE-SHAPED ARTICLES FROM FOAMED THERMOPLASTIC RESIN

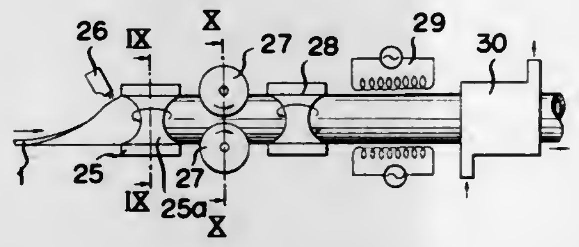
George Murota, Tokyo, Japan, assignor to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1969, Ser. No. 808,806

Claims priority, application Japan, Mar. 27, 1968, 43/19412

Int. Cl. B29d *23/10*

U.S. Cl. 156—203 **18 Claims**



Methods and apparatus for manufacturing pipe-shaped articles from foamed thermoplastic resin which comprise turning the foamed thermoplastic resin sheet such as foamed polyethylene, foamed polypropylene, or foamed polyvinyl chloride, heating the abutting or contacting surfaces of the sheet and joining the sheet.

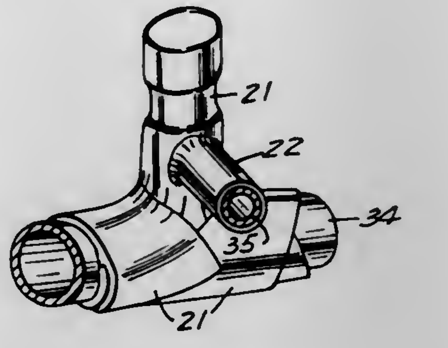
3,650,869
PROTECTIVE PAD AND METHOD OF USING

Stanley M. Lindell, Richfield, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 7, 1969, Ser. No. 839,323

Int. Cl. B32b *3/04, 3/10*

U.S. Cl. 156—212 **5 Claims**



Service connections to gas mains are protected against external corrosive influences by covering with a protective mastic sheet material which is slit in a pattern permitting complete void-free coverage by simple and rapid hand application.

3,650,870
PROCESS FOR THE CONTINUOUS MANUFACTURE OF CAPILLARY BLOCKS

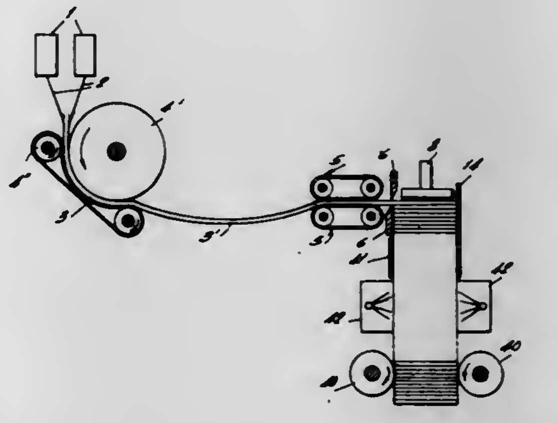
Hans-Joachim Dietzsch, Villars sur Ollon Vaud/Rhine Schaffhausen, and Ottot Dietzsch, Stein am Rhein SH, both of Switzerland, assignors to INVENTA AG fur Forschung und Patentverwertung, Zurich, Switzerland

Filed Sept. 3, 1969, Ser. No. 854,984

Claims priority, application Switzerland, Sept. 5, 1968, 13371

Int. Cl. B32b *31/30*

U.S. Cl. 156—264 **11 Claims**



A process for the continuous production of block materials containing capillaries in side-by-side relationship comprising producing a plurality of capillary tubes having longitudinal axes adhering the tubes together to form a capillary web, drawing off said web, cutting said web transversely of said axes at predetermined intervals, to form relatively shallow web pieces having flat faces, placing said pieces with the faces in contact with one another affixing said pieces to one another to form a continuous block.

3,650,871
METHOD OF PRODUCING INSULATING PANELS

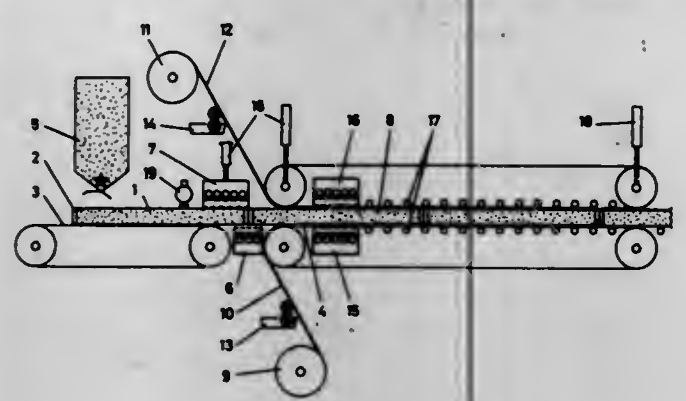
Karl Waldemar Bentfors, Utsiktsvagen 14, Motala, Sweden

Filed June 9, 1969, Ser. No. 831,508

Int. Cl. B32b *31/00, 5/20*

U.S. Cl. 156—269 **1 Claim**

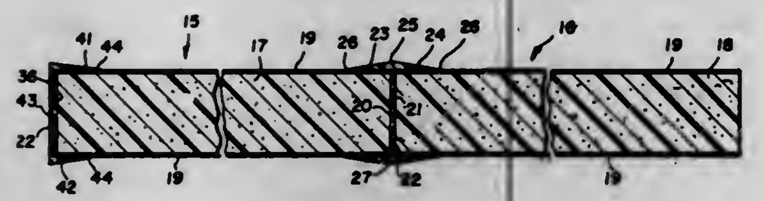
A method for producing insulated panels of a honeycomb structure surrounded by a frame, in which the panels are continuously fed below a discharging device which fills the honeycomb with polystyrene, granular or ground waste material having insulating properties. Before or after filling, the honeycomb structure may be closed by a subjacent cover board or sheet, and an upper cover board or sheet is applied after filling, the upper and lower cover boards or sheets being adhesively bonded to the honeycomb.



3,650,872
METHOD OF MAKING ATHLETIC MATS

Eugene McKiernan, Dublin, Ireland, assignor to Voplex Corporation, Rochester, N.Y.

Filed Oct. 2, 1969, Ser. No. 863,241
Int. Cl. B29c *19/00*
U.S. Cl. 156—304 **14 Claims**



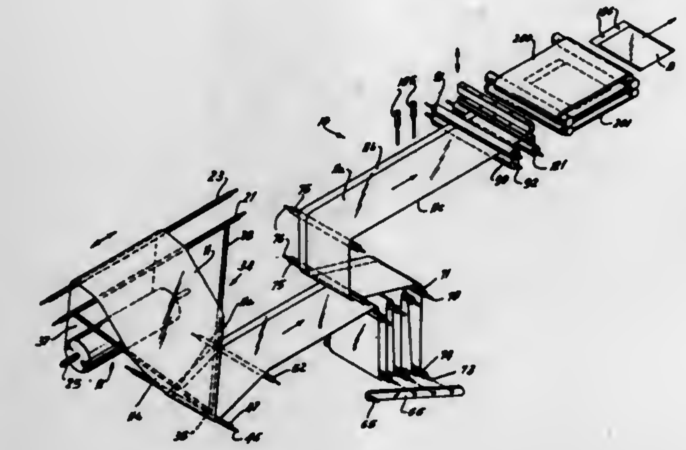
An athletic mat is made up of uniform plastic foam slabs that are coated with plastic on each face and covered with adhesive along their edges. A mat of the desired shape and color is then assembled by abutting adhesive coated edges of selected slabs to bond together the foam; and the plastic coatings on each face of the bonded slabs are heated, and a heated plastic tape is pressed against the heated coatings to form a fused union between the tape and the coatings on each face of the slabs. The top and bottom coatings along the peripheral edges of the mat are heated, and a heated edge tape is formed into a channel shape and pressed over the peripheral edges and against the heated plastic coatings to form a fused union between the edge tape and the plastic coatings.

3,650,873
BAG MAKING MACHINE HAVING HEAT SEALER WHOSE DWELL TIME IS ADJUSTABLE

William E. Smith, Upper Saddle River, N.J.; Edward P. Primosch, Franklin Square, N.Y., and John D. Keenan, Jr., Caldwell, N.J., assignors to Amsco Packaging Machinery, Inc.

Filed Oct. 7, 1968, Ser. No. 765,316
Int. Cl. B32b *31/20*
U.S. Cl. 156—465 **10 Claims**

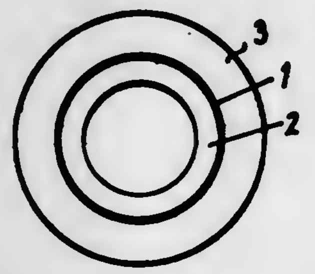
The web from a roll of thermoplastic sheet material folded longitudinally, and the folded web passes around dancer rods, then between feed rollers and over a platen roller. A heated sealing and severing bar is alternately moved against the folded web to press it against the platen roller to heat seal and sever the folded web transversely, and away from the folded web, in timed relation with the speed of feed of web by the feed rollers to form bags of uniform width, each open at one end. The feed of the web is stopped each time the sealing bar presses against the folded web. The dwell time and pressure of the sealer can be adjusted. The width of the bags can be adjusted. The formed bags are delivered for stacking. When tension on the web slackens, the roll of the web material is correspondingly braked. Each time a predetermined number of bags are made, the feed rollers stop feeding and the sealing bar is held away from the web on the platen to permit each delivered stack of bags to be removed, before resuming the bag making operation.



3,650,874
ADHERING RUBBERS AND POLYOLEFINES BY OTHER THAN PEROXIDE CURING AGENTS

Claude Job, Paris; Yvan Landler, Sceaux; Pierre Henri Lebel, Reuil-Malmaison, and Lucile Meillat, Paris, all of France, assignors to Pneumatiques, Caoutchouc Manufacture et Plastiques Keber-Colombes, Colombes (Hauts de Seine), France

Continuation-in-part of application Ser. No. 523,558, Jan. 28, 1966, now abandoned. This application Mar. 6, 1969, Ser. No. 804,915
Claims priority, application France, Mar. 15, 1968, 144124; 144126; 144127; 144128: Nov. 6, 1968, 172836
Int. Cl. B32b *15/02, 25/08;* **C09j** *3/14*
U.S. Cl. 161—217 **30 Claims**

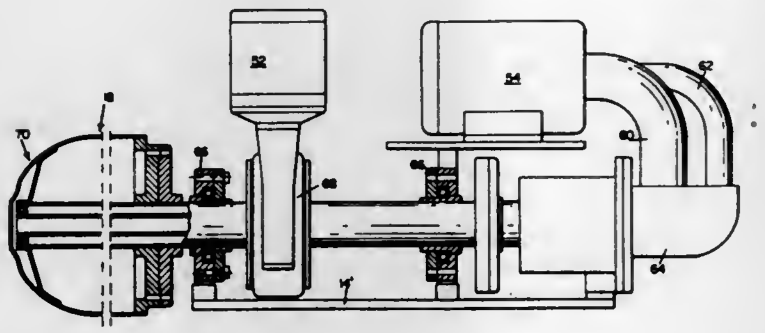


A rubber is bonded to a polyolefine by placing on the rubber a layer of polyolefine of melt index less than 0.15 and applying heat and pressure. If the rubber is an unvulcanized mix containing a vulcanizing agent, the temperature, pressure and duration should be sufficient to cause vulcanization of the rubber. If the rubber is partly or fully vulcanized the pressure used is at least 10 kg./cm.^{2} and the polyolefine is heated to at least its melting point. The low melt index polyolefine may be in the form of a powder, powder suspension, film or sheet, which can thus be used to adhere a higher melt index polyolefine to the rubber. Various integral rubber/polyolefine articles are produced by this method.

3,650,875
AUTOMATIC MANUFACTURE OF CLOTHING

George H. Kendall, Sr., New London, Conn., assignor to Kendall-Russell, Inc., Marblehead, Mass.

Filed Sept. 3, 1969, Ser. No. 854,969
Int. Cl. B32b *1/00*
U.S. Cl. 156—559 **11 Claims**

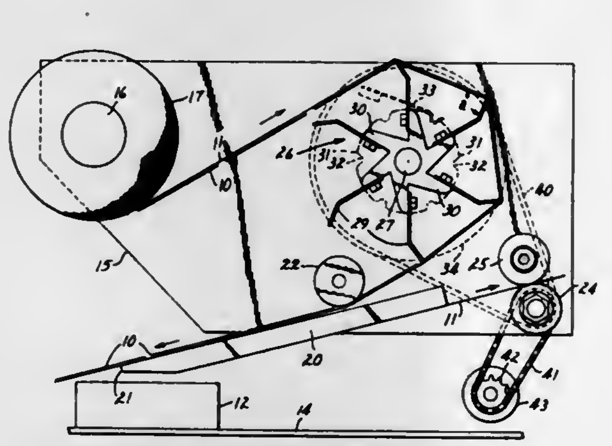


A continuous conveyor, a series of pallets mounted thereon, a tooling station on each pallet, a work nest mounted in association with each tooling station, means automatically applying garment parts having dry adhesives thereon in a predetermined relation to the work nests so that the various garment parts are correctly aligned and overlap each other to a certain degree, and automatic means providing for activating the adhesive, securing said garments in the relationship in which they were deposited on the various work nests.

3,650,876
ARTICLE POSITIONING AND CONTROL MECHANISM

Wilfred E. Stageberg, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 18, 1969, Ser. No. 817,528
Int. Cl. B32b
U.S. Cl. 156—584 **13 Claims**

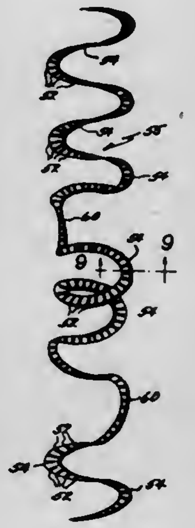


An apparatus for registering articles releaseably adhered to a liner with a predetermined station for printing, punching, dispensing, etc. The apparatus includes a movable article guide- and registering-member comprising spaced transversely extending blades engageable with the strip of articles and positioned a predetermined distance from said station such that upon movement of the articles toward said predetermined station and movement of said registering member a predetermined extent the desired position of the articles relative to the station may be readily maintained.

3,650,877
CUSHIONING DUNNAGE PRODUCT

George R. Johnson, Chagrin Falls, Ohio, assignor to The Arpax Company, Chagrin Falls, Ohio

Original application May 22, 1967, Ser. No. 640,145. Divided and this application Oct. 6, 1969, Ser. No. 863,856
Int. Cl. B32b *3/28*
U.S. Cl. 161—47 **4 Claims**

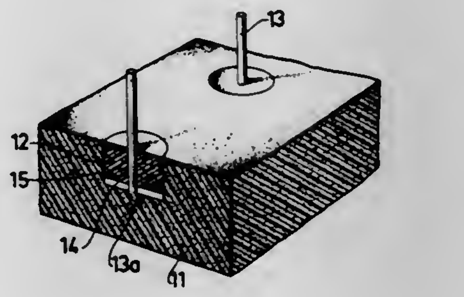


A resilient cushioning dunnage product of helical coil like configuration produced from a web of low cost sheet like material, such as paper, by crumpling the web down into a relatively narrow strip and then forming the strip by pressure into generally helical coiled form. Also a tubular like dunnage product formed by taking a web of flexible sheet like material, such as paper, forming the web into generally tubular-like shape by moving lengthwise edges of the web inwardly toward one another and then loosely crumpling the tubular-like product and stitching it along the lengthwise extent thereof to maintain the formed configuration.

3,650,878
METHOD FOR ANCHORING FASTENERS IN CELLULAR PLASTIC MATERIALS AND JOINTS OBTAINED THEREBY

Erik Harry Mattsson, Tidaholm, and Hans Ulrich Wurth, Ekedalen, both of Sweden, assignors to Bofors-Tidaholmsverken Aktiebolag, Tidaholm, Sweden

Filed Oct. 8, 1968, Ser. No. 765,903
Claims priority, application Sweden, Oct. 12, 1967, 13972/67
Int. Cl. B32b *33/00*
U.S. Cl. 161—48 **1 Claim**



A strong direct joint between a fastener element and a block of cellular plastic material is obtained by providing a wide contact surface between the element and the block and then providing a layer of hardenable plastic material in the space between the element and the block.

3,650,879
MANUFACTURE OF UNIQUE POLYETHYLENE TEREPHTHALATE FIBER

Johannes Pieter Munting, Emmen, Netherlands, assignor to Akzona Incorporated, Enka, N.C.

Filed Aug. 25, 1969, Ser. No. 852,915

Claims priority, application Netherlands, Aug. 31, 1968, 6812442

Int. Cl. B32b *11/02*

U.S. Cl. 161—89 **8 Claims**

A fiber especially suitable for reinforcing bitumen-containing materials which comprises a fiber of polyethylene terephthalate having a tenacity of at least about 7.5 grams per denier, an elongation at break of at least about 9 percent, an elongation of not more than about 5 percent under a load of 5 grams per denier and a shrinkage of less than 4 percent when kept under a tension of 0.05 grams per denier for 4 minutes at about 160° C. Also a process for producing this fiber and a bitumen-containing structure reinforced therewith are disclosed.

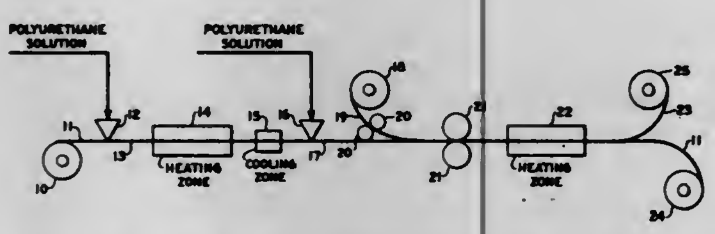
3,650,880
POROUS POLYURETHANES AND METHOD OF MANUFACTURE

Albert C. Tieniber, Moorestown, N.J., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of application Ser. No. 691,220, Dec. 18, 1967, now abandoned. This application Nov. 20, 1968, Ser. No. 777,428

Int. Cl. B32b *3/00, 27/12*

U.S. Cl. 161—89 **15 Claims**



A porous, breathable, polymer-coated fabric is produced by applying a layer of film-forming flexible polyurethane solution to a carrier member; heating said layer sufficiently to form a solidified film on said carrier member; cooling said film and carrier member; applying a second layer of film-forming polymer solution on the first film on the member; applying to said second layer a fabric material; and heating the resulting structure to form an unitary article comprised of the fabric and both polymer layers. The carrier member can be stripped from the first polymer layer. Plastic films can also be produced.

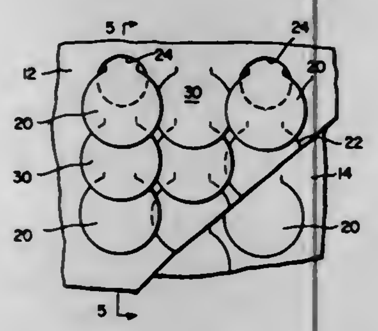
3,650,881
DECORATIVE PANEL ASSEMBLY

Anthony J. Giannone, Sr., Route 2, P.O. Box 240, Saugerties, N.Y.

Filed June 5, 1970, Ser. No. 43,906

Int. Cl. B32b *3/10*

U.S. Cl. 161—111 **3 Claims**



A flexible decorative panel assembly having front and rear members joined together in co-planar relationship. Both members have flaps located over apertures formed in their surfaces. The flaps of the rearward member protrude through the apertures in the front member. The apertures in each member are offset from the apertures in the other member, and the flaps hide the apertures from sight to give a decorative shingle effect to the front surface of the assembly.

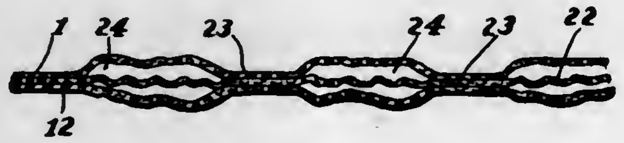
3,650,882
MULTI-PLY PAPER TOWEL

Gordon D. Thomas, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed July 11, 1969, Ser. No. 841,004

Int. Cl. B32b *3/28, 7/14*

U.S. Cl. 161—122 **4 Claims**



A multi-ply absorbent creped cellulose wadding paper tissue material in which an elastically extensible inner web of creped tissue paper has on its major faces at least one embossed paper tissue material of greater dryer basis weight and lesser extensibility. The outer webs are bonded to the inner web (or webs) in spaced regions to provide unbonded zones between bonds. The adhesive is sufficiently water resistant to permit retention of the webs when wetted so that the inner creped web may expand and fill the unbonded zones providing good bulk in the wet product. Methods of effecting the web combinations are described.

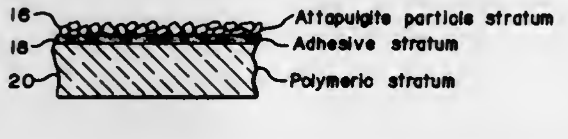
3,650,883
VAPOR CONTROL SHEET MATERIAL

Robert Sweeney, 10 Wilton Drive, Wilmington, Mass.

Filed July 17, 1969, Ser. No. 842,659

Int. Cl. B32b *5/16;* **B05b** *7/00*

U.S. Cl. 161—162 **3 Claims**



A sheet material comprises an absorbent stratum, for trapping undesired vapor, and a liquid impermeable polymeric stratum, for preventing transmission of liquid formed by condensation of the vapor. The sheet material serves as an exterior wrapping before disposal.

3,650,884
POLYAMIDE MONOFILAMENT HAVING A MICROPOROUS SURFACE LAYER

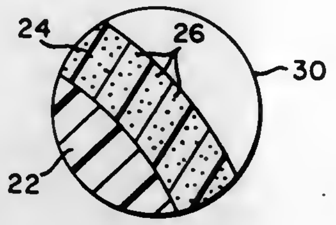
John Edward Hansen, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 834,213, June 9, 1969, now abandoned , which is a continuation-in-part of application Ser. No. 616,956, Feb. 17, 1967, now abandoned , and a continuation-in-part of 850,665, Aug. 15, 1969, which is a continuation-in-part of application Ser. No. 673,287, Oct. 6, 1967, now abandoned. This application July 20, 1970, Ser. No. 56,383

Int. Cl. D02j *3/00*

U.S. Cl. 161—175 **6 Claims**

Highly drawn polyamide monofilaments having a diameter of at least 15 mils which have been subjected to steam at specified conditions possess properties that render them particularly suitable in tires. The steam-modified surface layer of the monofilament is microporous, resulting in a dye-penetration of 3–15 microns which depth constitutes less than 6 percent of the transverse radius of the monofilament. The monofilament has an X-ray orientation half-width that is no greater than about 12.5 degrees-chi.



3,650,885
RADIATION-CURABLE COMPOSITIONS

Gerald I. Nass, West New York, and Gerhard E. Sprenger, Carlstadt, both of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Apr. 4, 1969, Ser. No. 813,756

Int. Cl. B32b *5/02;* **C08d** *1/00;* **C08f** *1/16*

U.S. Cl. 161—189 **19 Claims**

Radiation-curable compositions consisting of (a) an ethylenically unsaturated ester of 1,4,5,6,7,7-hexahalo-2,3-bis(hydroxymethyl)-bicyclo(2,2,1)-5-heptene, tetrahalobenzene-dimethanol, or 2,2'[isopropylidene bis(2,6-dihalophenoxy] dipropylene oxide diol and (b) acyloin, an acyloin derivative, or a halogenated aromatic, alicyclic, or aliphatic hydrocarbon are useful as printing inks, coatings, adhesives, printing plates, and the like.

3,650,886
FORMATION OF COLLOIDAL SUSPENSIONS OF CHRYSOTILE ASBESTOS BY TREATMENT WITH HYDROGEN SMECTITES

Andrew Torok, Parsippany, N.J., assignor to Yara Engineering Corporation, Elizabeth, N.J.

Filed Feb. 26, 1970, Ser. No. 14,655

Int. Cl. C03b *37/00*

U.S. Cl. 162—3 **14 Claims**

A method for preparing a colloidal suspension wherein an aqueous slurry of water, chrysotile asbestos, and hydrogen smectite is subjected to a shearing action until the slurry is a colloidal suspension of hydrogen smectite and asbestos, the ultimate particle size of at least 90% of the chrysotile asbestos having a length of no greater than 3 microns and a diameter no greater than 0.05 microns. The ph of the slurry is no greater than 5. The ratio by weight of the hydrogen smectite to the chrysotile asbestos ranges from about 1–30 to about 30–1. The ratio by weight of the water to the combined weights of the chrysotile asbestos and the hydrogen smectite ranges from about 100–1 to about 100–10. The hydrogen smectite is selected from hydrogen montmorillonite, hydrogen hectorite, or mixtures thereof.

3,650,887
WOOD PULP BLEACHING PROCESS UTILIZING PEROXIDE-SILICATE BLEACHING SOLUTION

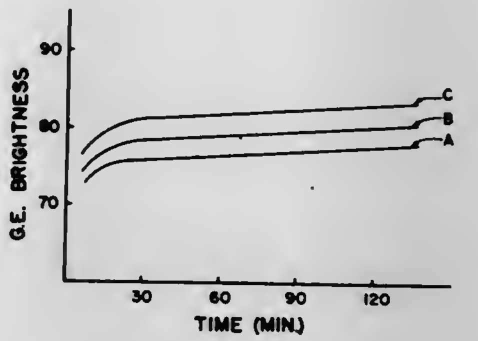
Donald H. Grangaard, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of application Ser. No. 546,066, Apr. 28, 1966, now abandoned. This application Apr. 21, 1969, Ser. No. 826,756. The portion of the term of this patent subsequent to Apr. 21, 1987, has been disclaimed.

Int. Cl. D21c *9/16*

U.S. Cl. 162—25 **5 Claims**

A process of bleaching defibered hardwood pulp with a peroxide-silicate composition to attain in a single bleaching step a brightness (General Electric) of 80+. The procedure requires, a plurality of controlled conditions including bleaching time, temperature, pulp consistency, pH, sodium silicate and alkalinity concentrations, and particularly a peroxide solution concentration in actual contact with the pulp of between about 0.4 and 1.2 percent based on the weight of the aqueous bleach solution itself including any water in the pulp. The bleaching takes place at a consistency such that initially at least 3 percent by weight of peroxide based on the air dry pulp weight is present. Brightnesses well in excess of 80 are attained in a single bleaching step, and pre-treatment of pulp with barium chloride is effective in the attainment of such brightnesses at relatively low temperatures with reasonable peroxide consumptions.



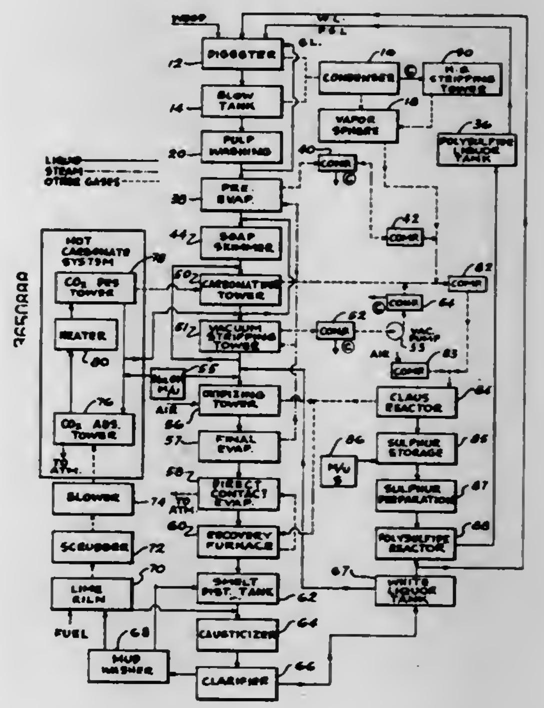
3,650,888
POLLUTION CONTROLLED POLYSULFIDE RECOVERY PROCESS

Carl Bertil Fogman, Westfield, N.J.; Hugh Wharton Nelson, West Hartford, Conn., and Utah Tsao, Jersey City, N.J., assignors to Combustion Engineering, Inc., Windsor, Conn., by said Nelson and Lummus Company, Bloomfield, N.J., by said Fogman and Tsao

Filed June 11, 1970, Ser. No. 45,455

Int. Cl. D21c *11/04*

U.S. Cl. 162—30 **22 Claims**



A chemical recovery process for a polysulfide paper pulping system is described. After the polysulfide digestion, the pulp washing is carried out in an essentially oxygen-free environment to minimize the oxidation of NaSH. The spent liquor is pre-evaporated and mixed with a recycle stream of liquor containing Na_2CO_3 and $NaHCO_3$. The mixture is next carbonated with a gas stream rich in CO_2 which has been generated from lime kiln flue gas. The carbonated spent liquor is then vacuum stripped to release H_2S which is converted to sulfur. The sulfur is mixed and reacted with Na_2S in at least part of the white liquor to form sodium polysulfide. The polysulfide liquor and any remaining white liquor are returned to the digester.

The pH of the desulfurized liquor from the vacuum stripping operation is increased to about 12.5 by the addition of make-up NaOH and recycled and oxidized white liquor. The resulting mixture is then evaporated to about 50 percent dry solids concentration. Finally, direct contact evaporation and combustion of the spent liquor occur as in conventional kraft chemical recovery systems. Means for recovering all sulfur compounds in vent gases and condensates from all mill process unite such as the digesters, evaporators, lime kiln, etc., are included to reduce air and water pollution.

3,650,889

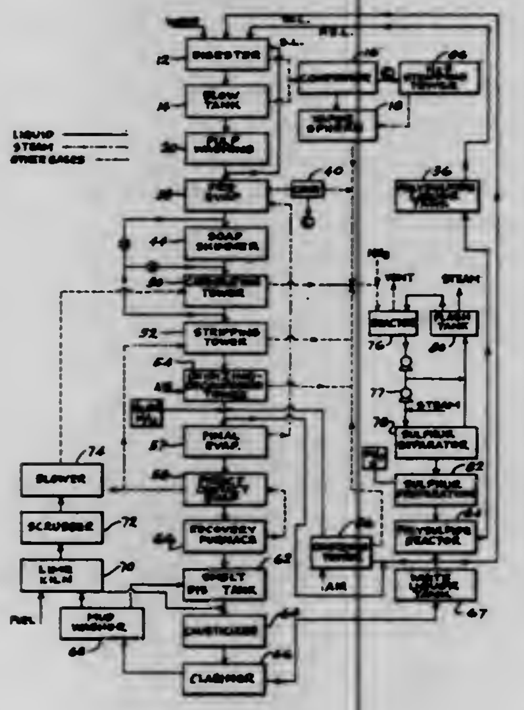
POLLUTION CONTROLLED POLYSULFIDE RECOVERY PROCESS

Carl Bertil Fogman, Westfield, N.J.; Hugh Wharton Nelson, West Hartford, Conn., and Utah Tsao, Jersey City, N.J., assignors to Combustion Engineering, Inc., Windsor, Conn., by said Hugh Wharton Nelson and The Lummus Company, Bloomfield, N.J., by said Carl Bertil Fogman and Utah Tsao

Filed Aug. 3, 1970, Ser. No. 60,568

Int. Cl. D21c *11/04*

U.S. Cl. 162—30 **15 Claims**



A chemical recovery process for a polysulfide paper pulping system is described. After the polysulfide digestion, the pulp washing is carried 3. in an essentially oxygen-free environment to minimize the oxidation of NaSH. about spent liquor is then pre-evaporated, makeup with a recycle stream of liquor containing Na_2CO_3 and $NaHCO_3$ and subjected to a soap skimming operation. The mixture is next carbonated to convert Na_2CO_3 to $NaHCO_3$ and stripped to release H_2S. The stripping and carbonation are accomplished by passing flue gas through the stripping tower and the carbonating tower. The H_2S is converted to sulfur by the use of a liquid catalyst and the formed sulfur is then mixed and reacted with Na_2S in at least part of the white liquor to form sodium polysulfide. The polysulfide liquor and any remaining white liquor are returned to the digester.

The desulfurized liquor from the stripping operation is subjected to an oxidizing-decomposing operation to oxidize residual sulfides and decompose residual $NaHCO_3$. The pH of the so treated liquor is then increased to about 12.5 by the additon of makeup NaOH and recycled and separately oxidized white liquor. The resulting mixture is then evaporated to about 50 percent dry solids concentration. Finally, direct contact evaporation and combustion of the spent liquor occur as in convention kraft chemical recovery systems. Means for recovering all sulfur compounds in vent gases and condensates from all mill process units are included to reduce air and water pollution.

3,650,890

CONTINUOUSLY DETECTING THE DEGREE OF DELIGNIFICATION OF PULP

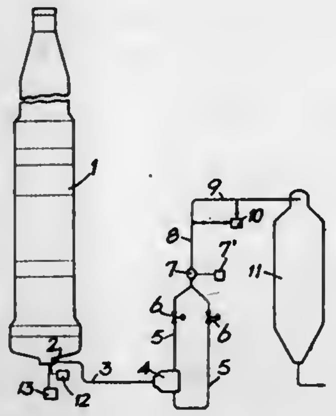
Shigeo Kamio, Kushiro-City, Japan, assignor to Honshu Paper Manufacturing Company Limited, Tokyo, Japan

Filed Apr. 3, 1969, Ser. No. 813,260

Claims priority, application Japan, June 19, 1968, 43/41884

Int. Cl. D21c *7/12*

U.S. Cl. 162—49 **5 Claims**



A process for continuously detecting the degree of delignification of pulp in a continuous digester wherein pressure drop in a length of pipe located downstream of the digester, between a blow tank and an accumulator, is measured and used to compute the degree of delignification of the pulp. Pulp flow through the pipe and consistency of the pulp leaving the digester can also be used in obtaining a more accurate determination of the degree of delignification.

3,650,891

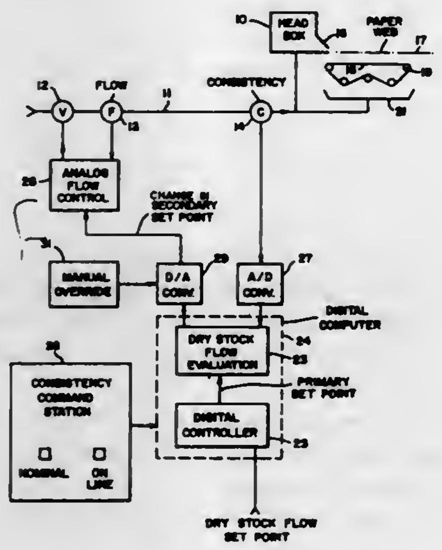
SYSTEM FOR MAINTAINING CONSTANT THE DRY MATERIAL FLOW TO A SHEET MATERIAL MANUFACTURING MACHINE

Erik B. Dahlin, Saratoga, Calif., assignor to Measurex Corporation, Santa Clara, Calif.

Filed Apr. 7, 1969, Ser. No. 814,100

Int. Cl. D21f *1/06*

U.S. Cl. 162—259 **5 Claims**



The stockline valve of a paper making machine is regulated by comparing by means of a digital computer successive readings of the consistency of the paper pulp carried by a water carrier. Any resultant difference between such readings is converted to analog information and coupled to the set point of an analog flow control unit which is responsive to the actual flow rate to control the stock valve. The digital computer will perform changes of the flow controller set point in such a manner that the product of consistency and flow set point is constant. This provides control of the pulp flow in the line.

3,650,892

STOCK TANK SEALING MEANS FOR PAPERMAKING

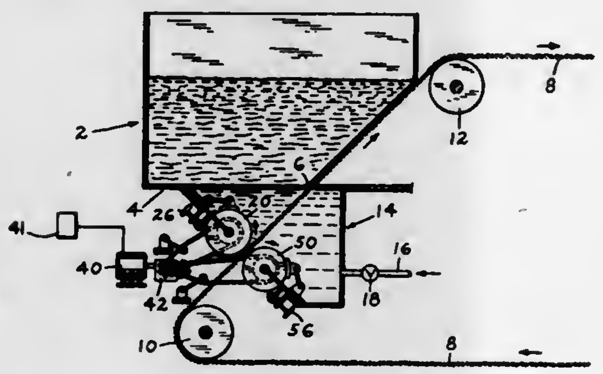
Heinz Genz, Willich; Heinz Liborius, Duesseldorf; Dieter Pfleiderer, Lahnstein; Karl Schmidt, Duesseldorf; Dieter Berger, and Horst Seeliger, both of Lahnstein, all of Germany, assignors to Feldmuehle Aktiengesellschaft, Dusseldorf, Germany

Filed July 11, 1969, Ser. No. 840,939

Claims priority, application Germany, July 15, 1968, P 17 61 854.1

Int. Cl. D21f *1/00, 1/32*

U.S. Cl. 162—275 **7 Claims**



The screen inlet to the stock tank is sealed to prevent loss of stock water by a water chamber. The seal water pressure is adjustable. The chamber is sealed with reference to the screen by two rollers each of which is in close proximity to but not in contact with an opposite side of the screen and is driven in either direction at variable speed. The gap between rollers and screen is adjustable to accommodate different screen gages, different concentrations of fiber suspension, different stock levels and other operating conditions.

3,650,893

PORT PLUG FOR A PLASMA-CONFINING CAVITY

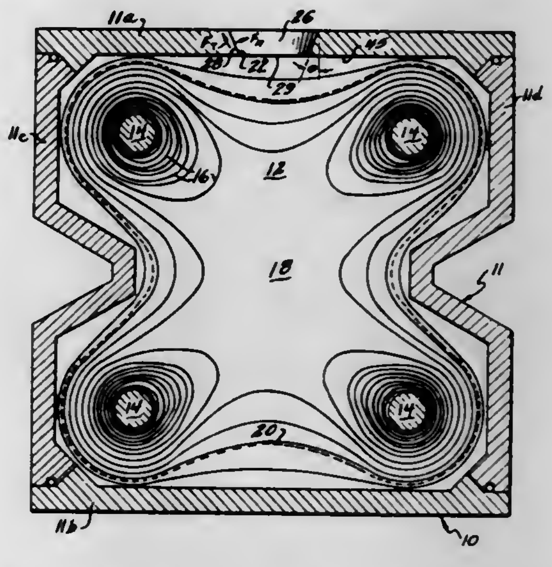
Neil C. Lien, Evansville, Wis., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 2, 1969, Ser. No. 881,356

Int. Cl. G21b *1/00*

U.S. Cl. 176—1 **7 Claims**

A body defining a cavity confining a plasma in a partial vacuum includes an inwardly tapering conical aperture permitting access to the cavity and a truncated-conical plug sized to engage the aperture in removable-deformable fit engagement a distance along the length of the aperture from the cavity-defining interior walls of the body greater than the resistive skin depth of the body. The plug is further sized to seal the cavity flush with the interior walls of the body and the sides of the plug and the conical aperture are generated at an angle θ relative the vertical such that θ has a value less than $\tan \theta = 1/\mu$ and greater than $\tan \theta = \mu$, wherein μ is the coefficient of static friction between the plug and the body.



3,650,894

METHOD OF MEASURING THE NUCLEAR PHYSICAL BEHAVIOR OF BODIES

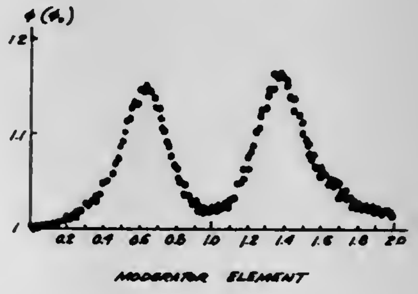
Wilfried Rausch, Dollweg; Claus Benedikt Von Der Decken, Verlautenheide/Aachen, and Klaus-Peter Bachus, Aachen, all of Germany, assignors to Brown, Boveri/Krupp Reaktorbau GmbH

Continuation-in-part of application Ser. No. 554,803, June 2, 1966, now abandoned. This application Oct. 22, 1968, Ser. No. 769,573

Claims priority, application Germany, June 10, 1965, B 82346

Int. Cl. G21c *17/06*

U.S. Cl. 176—12 **9 Claims**



A method of measuring the neutron-physical behavior of elements to be examined, particularly in sampling elements from the core of a nuclear reactor, comprising introducing the elements in a continuous or substantially continuous flow into a critical facility, conducting the elements in continuous or substantially continuous motion through the critical facility with the time interval spent by the individual elements in the critical facility being less than 10 seconds, and measuring the change in the system parameters of the facility.

3,650,895

GUIDE TUBE FOR A CONTROL ROD IN A NUCLEAR REACTOR

Bengt Martin Sodergard, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

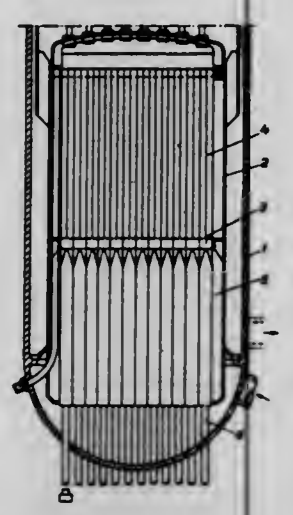
Filed Apr. 22, 1968, Ser. No. 723,061

Claims priority, application Sweden, Apr. 25, 1967, 5787/67

Int. Cl. G21c *1/08*

U.S. Cl. 176—44 **2 Claims**

In a BLWR exchangeable guide tubes for cruciform control rods are indirectly supported by the bottom of the reactor vessel and carry at their upper ends square support blocks, each being provided with four holes for four fuel assemblies, said holes being symmetrically distributed around a central cruciform slot for the control rod. The support blocks are arranged in an edge to edge relationship, thus forming an even bottom for the core volume. Each guide tube has at its upper end four depressions, thereby obtaining a cruciform cross section and permitting flow of coolant from outside the tubes to the fuel assemblies.

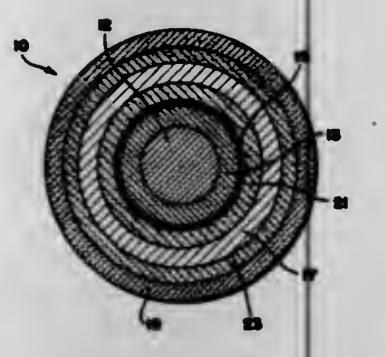


3,650,896
NUCLEAR FUEL PARTICLES

Walter V. Goeddel, Poway, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 9, 1969, Ser. No. 865,017
Int. Cl. G21c ***3/06***

U.S. Cl. 176—68 **8 Claims**



Nuclear fuel particles having fissile or fertile central cores surrounded by a buffer layer of low density pyrolytic carbon. A shell of dense silicon carbide, zirconium carbide or niobium carbide surrounds the buffer layer, and a layer of isotropic pyrolytic carbon may be disposed therebetween. To maintain the dense carbide shell in compression during the fuel particle lifetime, an outer isotropic carbon shell is provided which shrinks down onto the carbide shell as a result of high temperature, fast neutron irradiation. To prevent stresses of too great a magnitude from being created early in the fuel particle lifetimes, an intermediate layer of compressible pyrolytic carbon is disposed immediately exterior of the carbide shell. Nuclear reactors utilizing such particles can be operated at temperatures about 800° C. to a fast neutron dosage over 4×10^{21} neutrons/cm.^{2} while maintaining good fission product retentivity within the coated fuel particles.

3,650,897
PROCESS FOR PRODUCING 5-FLUOROURACIL RIBOSIDE AND 6-MERCAPTOPURINE RIBOSIDE

Kiyoshi Nakayama, Sagamihara-shi; Takashi Nara, Tokyo; Masanaru Misawa, Kawasaki-shi, and Toshio Komuro, Machida-shi, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation of application Ser. No. 565,089, July 14, 1966, now abandoned. This application July 15, 1968, Ser. No. 744,690
Claims priority, application Japan, July 19, 1965, 40/43227
Int. Cl. C12d ***13/06***

U.S. Cl. 195—28 N **9 Claims**

A process for producing 5-fluorouracil or 6-mercaptopurine riboside by fermentation which comprises culturing a micro-organism belonging to *Bacillus subtilis* or *Streptomyces fradiae* in an aqueous nutrient medium under aerobic conditions. In the case of 5-fluorouracil riboside, 5-fluorouracil is added to the medium and in the case of 6-mercaptopurine riboside, 6-mercaptopurine is added to the medium. The products have been reported as being useful as antagonistic agents of nucleic acid metabolism and as anti-cancer agents.

3,650,898
PROCESS FOR PRODUCING NICOTINIC ACID MONONUCLEOTIDE

Kiyoshi Nakayama, Sagamihara-shi, and Haruo Tanaka, Machida-shi, both of Japan, assignors to Kyowa Hakko Kogyo, Ltd., Tokyo, Japan

Filed Mar. 25, 1969, Ser. No. 810,349
Claims priority, application Japan, Mar. 29, 1968, 43/20057
Int. Cl. C12d ***13/06***

U.S. Cl. 195—28 N **14 Claims**

Nicotinic acid mononucleotide is produced in significant amounts by fermentation by a process which comprises culturing a suitable microorganism belonging to the genus Brevibacterium, Corynebacterium, Arthrobacter or Micrococcus under aerobic conditions in an aqueous nutrient medium containing nicotinic acid or nicotinamide. Yields of greater than 2 mg./ml. are obtained in some cases.

3,650,899
PROCESS FOR PRODUCING L-PROLINE

Yuichi Noguchi; Toru Nakanishi, and Yasuyuki Taketugu, all of Hofu-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation of application Ser. No. 696,493, Jan. 9, 1968, now abandoned. This application June 14, 1968, Ser. No. 736,957
Claims priority, application Japan, Jan. 13, 1967, 42/2180
Int. Cl. C12d ***1/02***

U.S. Cl. 195—29 **13 Claims**

A process for producing L-proline by fermentation which comprises culturing a micro-organism capable of producing L-proline under aerobic conditions in an aqueous nutrient medium containing biotin, in an amount at least sufficient for the growth of the bacterial cells, and at least 0.5 mole per liter each of ammonium ion and chloride ion. A convenient supply of the said ions is ammonium chloride. Preferred micro-organism are Micrococcus glutamicus ATCC 21157, 21158 and 21159.

3,650,900
INSOLUBLE POLYMER-ENZYME PRODUCTS

Yehuda Levin, Tel-Aviv; Shmaryahu Blumberg, Rishon le Zion; Ephraim Katchalski, and Leon Goldstein, both of Rehovot, all of Israel, assignors to Yeda Research and Development Co. Ltd., Rehovoth, Israel

Filed Sept. 27, 1968, Ser. No. 763,254
Int. Cl. C12k ***1/00;*** **C07g** ***7/02***

U.S. Cl. 195—63 **8 Claims**

insoluble polymer enzyme products having covalently bonded therein a member selected from the group consisting of dialkyamino-alkylamines, alkylmonamines and aminoloweralkanols.

3,650,901
POLYMERIC ENZYME PRODUCTS

Ephraim Katchalski; Leon Goldstein, both of Rehovot; Yehuda Levin, Tel-Aviv, and Shmaryahu Blumberg, Rishon le Zion, all of Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

Filed Sept. 27, 1968, Ser. No. 763,128
Int. Cl. C12k ***1/00;*** **C07g** ***7/02***

U.S. Cl. 195—63 **40 Claims**

Method of preparing active polymer-enzyme products by reaction or coupling of the polymer with an enzyme derivative in which a reactive group is inactivated and subsequently restoring the activity of the inactivated group, and at least partially inactivated intermediate polymer-enzyme products. Process is conducted with greater facility, and permits higher yields of desired polymer-enzyme product and attainment of higher percentage of activity in polymer-enzyme product. Intermediate polymer-enzyme products thus-produced.

3,650,902
PROCESS FOR THE STABILIZATION AND PURIFICATION OF L-ASPARAGINASE

Otto Wagner; Klaus Bauer, both of Wuppertal-Elberfeld; Wilfried Kaufmann, Wuppertal-Vohwinkel; Erich Rauenbusch; Alfred Arens, and Eckart Irion, all of Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 28, 1969, Ser. No. 828,601
Claims priority, application Germany, May 29, 1968, P 17 67 617.4; July 16, 1968, P 17 92 043.3; Nov. 7, 1968, P 18 07 447.0; Nov. 9, 1968, P 18 08 042.7
Int. Cl. C07g ***7/02***

U.S. Cl. 195—66 A **4 Claims**

L-asparaginase is obtained in a highly purified, pyrogen free and stabilized form from a crude aqueous solution thereof, by adding to said solution an amino acid, such as glycine, adjusting the pH of the solution to from 7.0 to 9.2, preferably in the presence of a lower aliphatic alcohol, such as methanol, then heating the solution for a period of from 1 to 5 days at a temperature up to 65° C., preferably between 40° C. to 61° C., thereby denaturizing the inactive accompanying proteins without affecting the L-asparaginase. The precipitated, denatured proteins are then removed, as by centrifuge, the enzyme enriched solution then adjusted to a pH between 4.5 and 5.5 and fractionally precipitated with a 50 percent polyethylene glycol solution, the precipitate then washed with acetone and dried.

3,650,903
METHOD OF PRODUCTION OF FIBRINOLYTIC MATERIAL

Nathan H. Sloane, Germantown, Tenn., assignor to Rand Laboratories, Inc.

Filed July 15, 1969, Ser. No. 841,974
Int. Cl. C07g ***7/026***

U.S. Cl. 195—66 B **3 Claims**

A fibrinolytic material comprising urokinase in highly concentrated form is produced by admixing with human urine an equine adsorbant prepared from an insoluble precipitate which forms in pregnant mare's urine. This insoluble residue extracts and adsorbs urokinase from human urine thereby permitting its recovery, in concentrated form, in a single step. The urokinase is then eluted from the adsorbant, collected, and purified for use in humans or animals to dissolve blood clots and/or prevent their formation, and for use as a blood thinning agent.

3,650,904
PRODUCTION OF CHLORAMPHENICOL, BOTTROMYCIN AND FRADICIN

Toju Hata, 94 Nakameguro, 4-chome; Akihiro Matsumae, 10 Isurumaki, 5-chome; Kimihiko Abe, 50 Kameido-machi, 7-chome; Yoshimoto Sano, 18–17 Nishiogi, Kita, all of Tokyo; Mariko Ohtani, 4055 Mutsuura-cho, Yokohama, and Satoshi Ohmura, 207 Tamagava, Seta-machi, Tokyo, all of Japan

Filed Aug. 18, 1969, Ser. No. 851,100
Int. Cl. C12d ***9/00***

U.S. Cl. 195—80 **1 Claim**

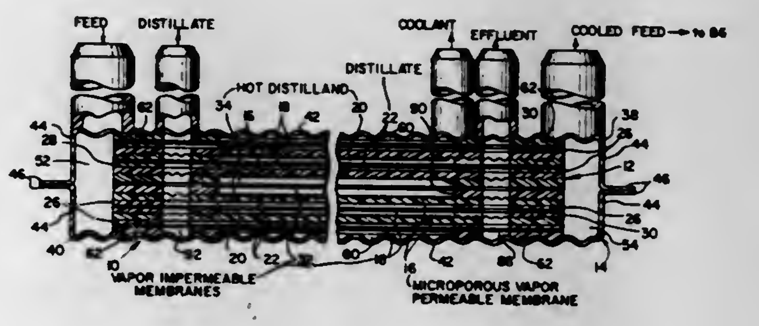
The production of chloramphenicol, bottromycin and fradicin by fermentation utilizing a chloramphenicol-producing microorganism belonging to a new *Kitasatoa* group of the new species of the *Actinoplanaceae*. A live culture of the organism is on deposit with the American Type Culture Collection under the number ATCC 21405.

3,650,905
STACKED MICROPOROUS VAPOR PERMEABLE MEMBRANE DISTILLATION SYSTEM

Franklin A. Rodgers, Brookline, Mass., assignor to Pactide Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 102,811, Dec. 30, 1970, now abandoned , which is a continuation-in-part of application Ser. No. 838,872, July 3, 1969, now abandoned , and a continuation-in-part of 838,769, July 3, 1969, now abandoned. This application Feb. 11, 1971, Ser. No. 114,584
Int. Cl. B01d ***3/00, 3/02***

U.S. Cl. 203—10 **15 Claims**



A distillation system incorporating a multiple stage still comprising microporous membranes in which heated and deaerated feed liquid is utilized, in part, as distilland, and in part, as a heating liquid for transferring heat to the distilland within the still to generate a thermal gradient and effect heat transfer required to produce distillate from the distilland. The feed liquid employed for heating is returned to a deaerator heater where it is combined with additional feed liquid to replace the distillate and effluent distilland liquid. Heat is transferred from the effluent and distillate to the additional feed liquid prior to introduction thereof into the deaerator heater.

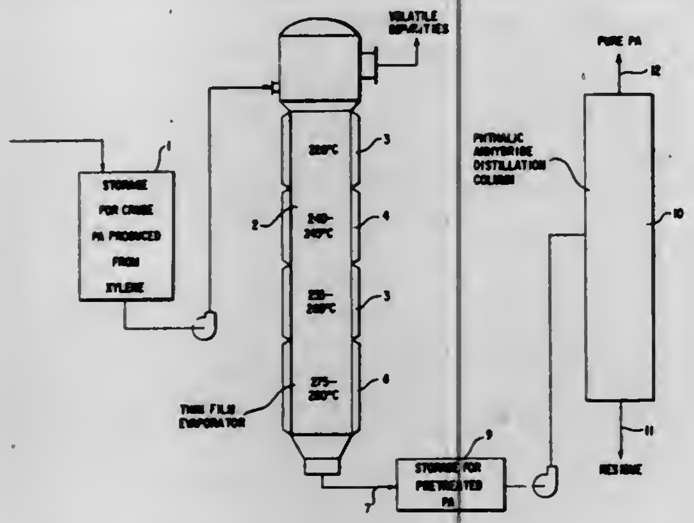
3,650,906
THIN FILM HEATING FOR THE PRELIMINARY PURIFICATION OF CRUDE PHTHALIC ANHYDRIDE

Hubert Gehrken, Weiden; Gerd Helms, Junkersdorf; Gerhard Keunecke, Geyen, and Herbert Krimphove, Cologne, Mungersdorf, all of Germany, assignors to Chemiebau Dr. A. Zieren GmbH & Co. KG, Cologne-Mungersdorf, Germany

Filed Apr. 14, 1969, Ser. No. 816,112
Claims priority, application Germany, Apr. 13, 1968, P 17 68 211.0
Int. Cl. B01d ***1/22, 3/00***

U.S. Cl. 203—89 **17 Claims**

In the preliminary purification (prior to distillation) of crude phthalic anhydride produced from xylene, the pretreatment is improved by heating a thin film of molten phthalic anhydride to 200–280° C. during the course of not more than


VOLATILE IMPURITIES
PURE PA
12
STORAGE FOR CRUDE PA PRODUCED FROM XYLENE
1
280°C
3
2
4
275–280°C
THIN FILM EVAPORATOR
PHTHALIC ANHYDRIDE DISTILLATION COLUMN
10
11
RESIDUE
9
STORAGE FOR PRETREATED PA
7

60 seconds, said film having a thickness of not more than 2 mm.

3,650,907

METHOD OF SEPARATING 2,6-NAPHTHALIC ACID FROM 6-FORMYL-2-NAPHTHOIC ACID

Edward J. McNelis, New Rochelle, N.Y., and Wesley R. Cherry, Prospect Park, Pa., assignors to Sun Oil Company, Philadelphia, Pa.

Filed Apr. 23, 1969, Ser. No. 818,815

Int. Cl. B01d *3/38;* **C07c** *67/06, 69/76*

U.S. Cl. 203—96 **4 Claims**

Mixtures of 6-formyl-2-naphthoic acid and 2,6-naphthalic acid formed from the oxidation of 2,6-dimethylnaphthalene are readily separable by the steam distillation of their esters. This method has a further advantage in that it removes trace amounts of color bodies from the aldehyde ester.

3,650,908

METHOD OF MANUFACTURING INTEGRATED MAGNETIC MEMORY ELEMENT

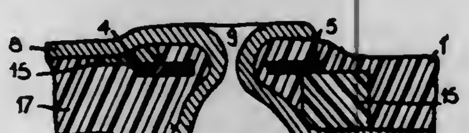
Michel Carbonel, Paris, France, assignor to Thomson-CSF

Filed Nov. 26, 1969, Ser. No. 880,022

Claims priority, application France, Dec. 10, 1968, 177379

Int. Cl. C23b *5/48, 7/00*

U.S. Cl. 204—15 **1 Claim**



In a method of manufacturing integrated magnetic memory elements the steps of: deposition by electrolysis on one face of a substrate made of a metal easily removed by etching agents through a mask, of the magnetic circuit; forming apertures through the substrate, inside the circuit, by etching through a second mask placed over the other face of the substrate; deposition by electrolysis of a further layer of metal on the assembly and in the apertures; depositing the conductor by electrolysis on the two faces of the assembly and in the apertures.

3,650,909

METHOD OF FORMING A POLYMER COATING

Harvey A. Hodes, Eatontown, N.J.; James F. Sobieski, St. Paul, Minn., and Michael C. Zerner, Uppsala, Sweden, assignors to The United States of America as represented by the Secretary of the Army

Filed May 27, 1970, Ser. No. 41,113

Int. Cl. B44c *1/04;* **B44d** *1/36*

U.S. Cl. 204—18 PC **3 Claims**

Polymer is formed on metal surfaces such as iron, chromium, cobalt or nickel by first making the metal surface the cathode of a light responsive electrolytic cell. A potential is then applied across the electrodes of the electrolytic cell causing image-wise passage of current therethrough. Polymer may then be deposited in an image-wise fashion by immersing the metal surface in an acid-peroxide-monomer solution.

3,650,910

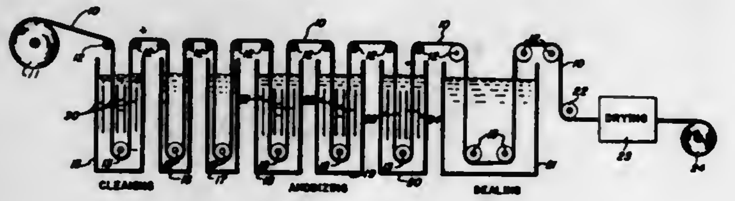
METHOD FOR ANODIZING ALUMINIZED STEEL STRIP

Griff W. Froman, Lansing, Ill., assignor to Inland Steel Company, Chicago, Ill.

Filed Nov. 19, 1970, Ser. No. 90,892

Int. Cl. C23b *9/02*

U.S. Cl. 204—28 **9 Claims**



Aluminized steel strip is anodized during movement through a succession of anodizing tanks, each housing at least one anodizing stage. The strip is subjected to successively higher current densities in successive anodizing stages. The current density in the first anodizing stage is controlled to prevent pitting, and the increase in current density from one anodizing stage to the next is relatively large.

3,650,911

METALLIZING SUBSTRATES

Kingso Chingtsung Lin, Niagara Falls, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Aug. 6, 1968, Ser. No. 750,476

Int. Cl. C23b *5/60;* **B44d** *1/092*

U.S. Cl. 204—30 **16 Claims**

Substrates particularly thermoplastic resins and polymers, are plated with metals by pre-treatment of the substrate with a metallic coating by contacting said substrate with a basic solution of a metal salt to which is being introduced continuously or portionwise a phosphorus compound wherein the phosphorus has an oxidation number of less than 5. The resulting treated surface is conductive. Such conductive surfaces are readily electroplated by conventional techniques.

3,650,912

METHOD OF MANUFACTURE OF ELECTROLYTIC CELLS

Edward J. Plehal, Woodland Hills, Calif., assignor to The Bissett-Berman Corporation, Santa Monica, Calif.

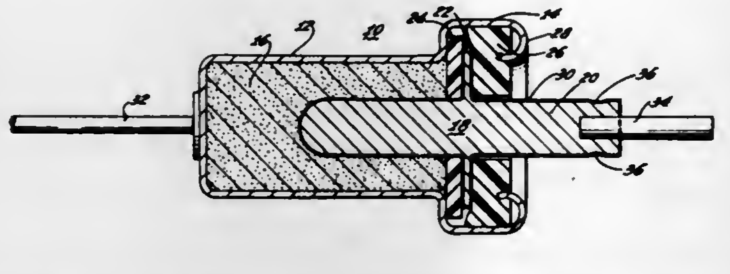
Continuation of application Ser. No. 610,140, Jan. 18, 1967, now abandoned. This application Nov. 10, 1969, Ser. No. 871,583

Int. Cl. C23b *3/06*

U.S. Cl. 204—29 **9 Claims**

The invention relates to a method of forming a flanged inner electrode member for use in an electrolytic cell. The

method includes the steps of providing a particular length of soft metallic wire and of cold forming the soft metallic wire to flow some of the wire outwardly to form a flanged electrode member and smoothing the surface of the electrode



member. The method further includes the steps of polishing the surface of the electrode member to remove any irregularities from the surface of the electrode member and of plating the electrode with a layer of gold. The plating may be accomplished either by barrel plating or rack plating.

3,650,913

AN ELECTROLESS PLATING PROCESS EMPLOYING A SPECIALLY PREPARED PALLADIUM-TIN ACTIVATOR SOLUTION

Eugene D. D'Ottavio, Thomaston, Conn., assignor to MacDermid Incorporated, Waterbury, Conn.

No Drawing. Original application June 28, 1967, Ser. No. 654,307. Divided and this application Sept. 8, 1969, Ser. No. 870,770

Int. Cl. C23b *5/60;* **B44d** *1/092*

U.S. Cl. 204—30 **2 Claims**

A method of electroless metal plating of plastic substrates is disclosed involving the use of a one-step acid tin-palladium catalyst activating solution prepared in a particular manner, resulting in improved plating operations and plated substrates.

3,650,914

METAL PLATING PLASTICS

Kingso C. Lin, Newark, Ohio, assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Mar. 3, 1970, Ser. No. 15,917

Int. Cl. C23b *17/00, 5/62;* **B44d** *1/092*

U.S. Cl. 204—38 B **17 Claims**

Plastics are metallized by preconditioning the surface thereof by etching and the like, subjecting the preconditioned plastics to an aqueous solution of the organic insoluble product of a process comprising reacting elemental phosphorus an alkali metal or alkaline earth metal alkoxide and oxidizing the resulting product, and thereafter electroless plating the thus-treated plastics.

3,650,915

COPPER ELECTRODEPOSITION ELECTROLYTES AND METHOD

George R. Quimby and Kenneth R. Gray, Shelton, Wash., assignors to International Telephone & Telegraph Corp., New York, N.Y.

No Drawing. Filed Jan. 23, 1969, Ser. No. 793,582

Int. Cl. C23b *5/20, 5/46*

U.S. Cl. 204—52 R **15 Claims**

Improved electrodeposition of copper is achieved by adding a combination of a cation active organic nitrogen compound and a lignosulfonate material to a copper electrodeposition electrolyte.

3,650,916

METHOD FOR THE PRODUCTION OF SULFUR HEXAFLUORIDE

Shunji Nagase, Hajime Baba, Kazuo Kodaira, and Takashi Abe, Nagoya, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

No Drawing. Filed July 17, 1970, Ser. No. 56,001

Claims priority, application Japan, July 18, 1969, 44/57,188

Int. Cl. B01k *3/00*

U.S. Cl. 204—59 **2 Claims**

Carbon monoxide is blown into molten sulfur to produce carbonyl sulfide. The carbonyl sulfide so produced is blown into anhydrous hydrogen fluoride where it is electrolytically fluorinated to produce sulfur hexafluoride.

3,650,917

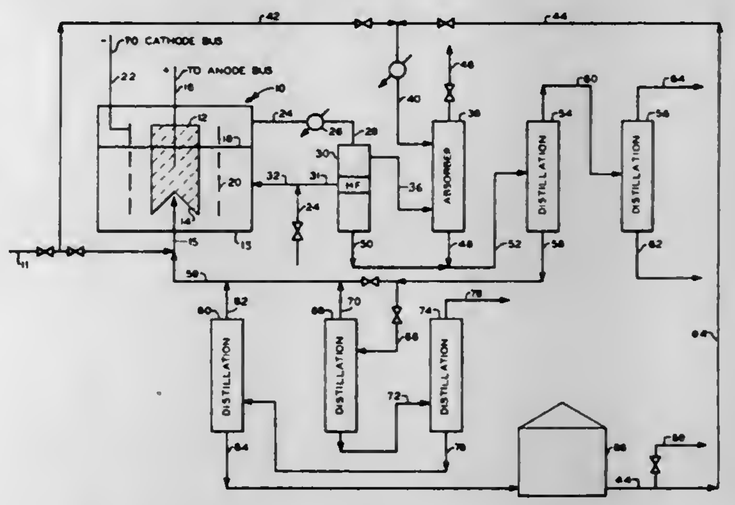
RECOVERY OF PRODUCTS FROM ELECTROCHEMICAL FLUORINATION

Forrest N. Ruehlen, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Aug. 25, 1969, Ser. No. 852,601

Int. Cl. B01k *3/00*

U.S. Cl. 204—59 **13 Claims**



Fluorinated products are recovered from an effluent stream from an electrolytic cell in an electrochemical fluorination process by employing a combination of steps comprising cooling said effluent stream to a temperature sufficient to condense hydrogen fluoride and higher boiling cell products contained in said effluent stream, contacting the noncondensed portion of said cooled effluent stream with an absorbent selected from the group consisting of (a) the fluorinatable feedstock to the electrolytic cell, (b) a high boiling by-product fraction produced as a by-product in the fluorination reaction, and (c) mixtures of said (a) and said (b), and recovering fluorinated products from the resulting rich absorbent and the condensed portion of said cooled effluent stream.

3,650,918

ELECTROCHEMICAL OXIDATION OF OLEFINIC COMPOUNDS

Morris A. Johnson, Paul H. Washecheck, Kang Yang, and Charles M. Starks, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Aug. 27, 1969, Ser. No. 853,513

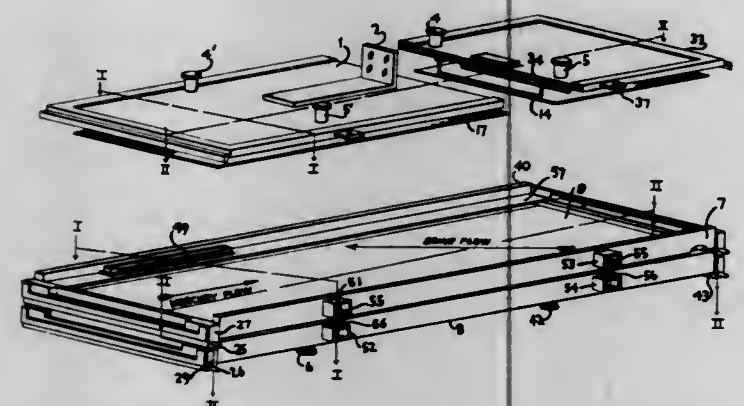
Int. Cl. B01k *1/00;* **C07b** *3/00*

U.S. Cl. 204—80 **10 Claims**

Olefinic compounds are electrolytically oxidized to carbonyl compounds in the presence of an oxidation catalyst consisting of a Group VII metal or compound thereof. The catalyst, which is reduced during the oxidation of the olefinic compounds, is regenerated by a catalyst regeneration agent present in the anolyte. The reduced catalyst regeneration agent is then regenerated electrolytically, thereby preventing any net change in the catalyst or the catalyst regeneration agent.

3,650,919
METHOD AND APPARATUS HAVING MULTIPLE-TIERED MERCURY CATHODE ELECTROLYSIS CELLS

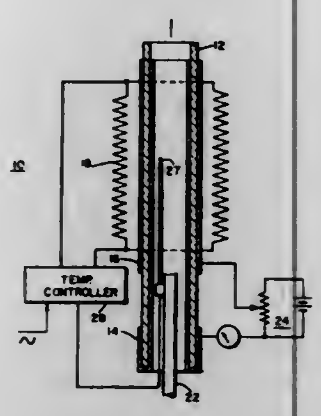
Carl W. Raetzsch, John F. Van Hoozer, and Hugh Cunningham, Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 410,579, Nov. 12, 1964. This application July 8, 1969, Ser. No. 842,816
Int. Cl. C01d *1/08;* **C22d** *1/04*
U.S. Cl. 204—99 **18 Claims**



Method and apparatus for alkali metal chloride electrolysis in multiple-tiered electrolysis cells of the mercury cathode type. The cells are arranged to enable brine electrolyte to flow across the mercury cathode flow in the individual, as well as in the plurality of cells.

3,650,920
METHOD FOR CONVERTING OXYGEN CONTAINING COMPOUNDS INTO ELEMENTAL CONSTITUENTS

William M. Hickam, Pittsburgh, and Robert E. Witowski, West Mifflin, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 14, 1969, Ser. No. 876,790
Int. Cl. B01k *3/12, 1/00*
U.S. Cl. 204—130 **4 Claims**



A method for converting oxygen containing nitrogen compounds and oxygen containing sulfur compounds into elemental constituents including nitrogen, sulfur and oxygen in which an oxygen ion conductive solid electrolyte electrochemical cell electrolytically dissociates and separates the oxygen from the other elemental constituents.

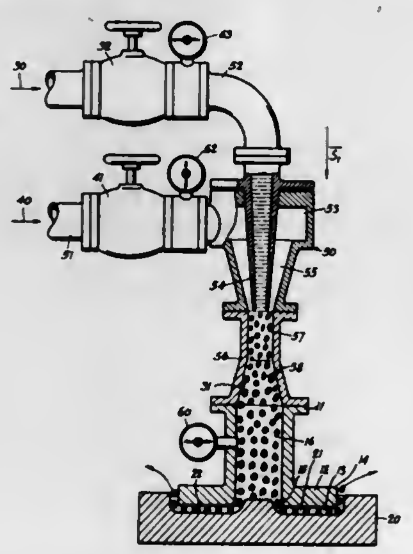
3,650,921
TECHNIQUE FOR THE PREPARATION OF IRON OXIDE FILMS BY CATHODIC SPUTTERING

Frank Groom Peters, Nutley, and William Robert Sinclair and Miles Vincent Sullivan, Summit, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 15, 1970, Ser. No. 46,405
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **5 Claims**

A technique for the preparation of iron oxide films destined for use as photomasks for thin film and semiconductor processing involves sputtering iron oxide in a carbon dioxide ambient upon an electrically isolated substrate member.

3,650,922
ELECTROCHEMICAL MACHINING OF METALS

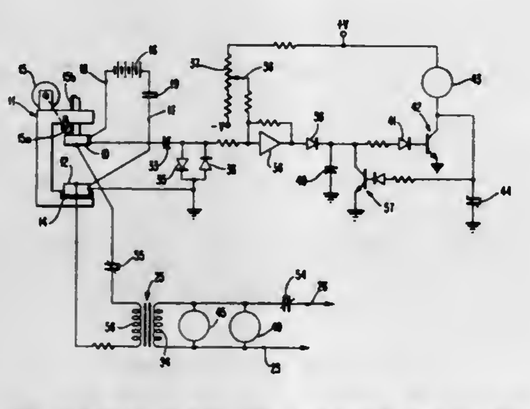
Jan Augustin, Podolie, Ctibor Trebichavsky, Nove Mesto nad Vahom, and Jan Zubak, Ostrov, Czechoslovakia, assignors to Vyskumny ustav mechanizacie a automatizacie, Nove Mesto nad Vahom, Czechoslovakia
Filed Aug. 29, 1969, Ser. No. 854,074
Int. Cl. B23p *1/00*
U.S. Cl. 204—143 M **6 Claims**



An electrochemical machining process wherein a current is passed between an electrode and a workpiece and wherein at least two electrolytic fluids are alternated in the space between the electrode and workpiece.

3,650,923
METHOD AND DEVICE FOR DETECTING CONTACT BETWEEN TOOL AND WORKPIECE OF AN ECM APPARATUS

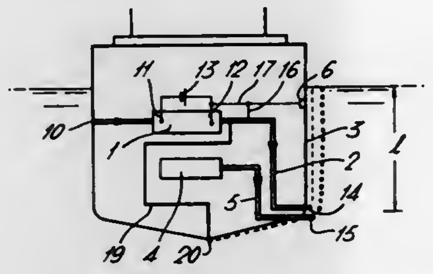
Philip E. Berghausen, Gareth A. Dehner, and John M. Morgan, Jr., Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Sept. 19, 1968, Ser. No. 760,783
Int. Cl. B23p *1/00*
U.S. Cl. 204—143 M **13 Claims**



A low AC voltage is applied between a tool and a workpiece of an ECM apparatus. The voltage drop between the tool and the workpiece decreases when contact occurs between the tool and the workpiece. This change in the voltage drop is sensed to indicate that there is contact. If there is contact, the DC power supply cannot be activated. The device also may be utilized to form a selected size gap between the tool and the workpiece by moving the tool and the workpiece apart the selected distance after contact has been indicated.

3,650,924
METHOD FOR PREVENTING FOULING OF SHIPS, PARTICULARLY SHIPS HAVING SUBSTANTIALLY VERTICAL SIDE SURFACES

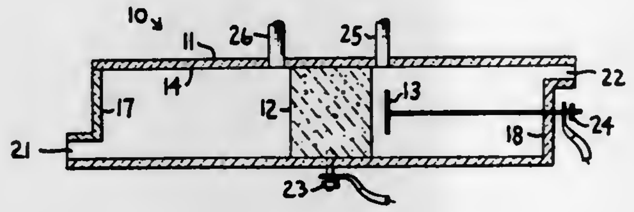
Oystein E. Rasmussen, 119 Hosleveien, 1340 Bekkestua, Norway
Filed Apr. 17, 1970, Ser. No. 29,502
Claims priority, application Norway, May 13, 1969, 1,954/69
Int. Cl. B63b *59/00*
U.S. Cl. 204—147 **5 Claims**



The invention relates to a method and means for the prevention of fouling of ships having substantially vertical side surfaces. Sea water is subjected to electrolysis and the decomposition products are conveyed to and discharged along the side of the ship. Compressed air is simultaneously conducted to the side of the ship and discharged beyond the decomposition products in an amount to form a dense air blanket which holds the decomposition products adjacent the side of the ship.

3,650,925
RECOVERY OF METALS FROM SOLUTION

Gordon A. Carlson, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of applications Ser. No. 806,204, Mar. 11, 1969, and Ser. No. 739,741, June 25, 1968, now Patent No. 3,459,646, which is a continuation-in-part of applications Ser. No. 506,101, Nov. 2, 1965, and Ser. No. 561,999, June 30, 1966. This application June 2, 1969, Ser. No. 829,529
Int. Cl. B01k *3/04;* **C01d** *1/40*
U.S. Cl. 204—153 **13 Claims**



Disclosed is a method for removing metal ions from a solution containing trace amounts of the metal. The solution is passed through an electrolytic cell having a porous cathode. Metal ions from the solution are electrolytically deposited in the porous cathode as the solution passes through the porous cathode. The metal or metals are then separated from the porous cathode.

3,650,926
RADIOLYTIC TREATMENT OF ORGANIC INDUSTRIAL WASTES IN A PRESSURIZED OXYGEN ATMOSPHERE

Forrest N. Case, Oak Ridge, and David E. Smiley, Knoxville, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Oct. 7, 1969, Ser. No. 864,520
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 **2 Claims**

The present invention relates to a method of increasing the light transparency and reducing the biological oxygen demand of organic-containing waste solutions which comprises the step of exposing such solutions to penetrating ionizing radiation under pressure of an oxygen-containing atmosphere of at least 1000 p.s.i. until the desired degree of optical and ultraviolet transmittancy as well as biological oxygen demand have been reached.

3,650,927
PHOTOPOLYMERIZATION UTILIZING DYE-SENSITIZED SULFONES

Steven Levinos, Chatham, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.
No Drawing. Filed Dec. 2, 1969, Ser. No. 881,636
Int. Cl. C08d *1/00;* **C08f** *1/16*
U.S. Cl. 204—159.24 **6 Claims**

Rapid polymerization of vinyl monomers is accomplished by combining the monomer with a sulfone and a photoreducible dye and exposing the combination to light. The procedure is particularly useful in bulk polymerization where the monomer, sulfone, and dye are combined in a common solvent.

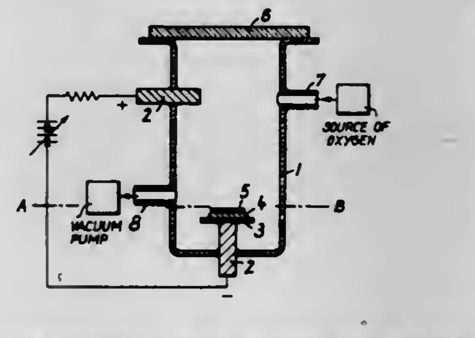
3,650,928
PROCESS FOR PREPARING FLUORINATED OXYGEN-CONTAINING COPOLYMERS

Dario Sianesi, Adolfo Pasetti, and Costante Corti, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
No Drawing. Continuation-in-part of applications Ser. No. 446,292, Apr. 7, 1965, and Ser. No. 650,257, June 30, 1967. This application Apr. 2, 1969, Ser. No. 812,844
Claims priority, application Italy, Apr. 9, 1964, 7,678/64
Int. Cl. C07c *51/58;* **B01j** *1/00;* **C08d** *1/00*
U.S. Cl. 204—159.22 **5 Claims**

Perfluorinated linear polyethers are prepared by liquid phase photochemical reaction of a mixture of perfluoropropylene and tetrafluoroethylene with oxygen in the presence of ultraviolet radiation.

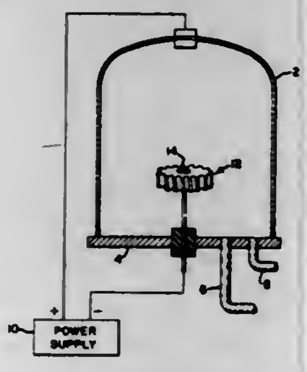
3,650,929
OXIDIZING METHOD AND APPARATUS

Kurt Lertes, Offenbach am Main, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany
Filed Aug. 14, 1964, Ser. No. 389,535
Claims priority, application Germany, Aug. 16, 1963, L 35,231, L 45,616
Int. Cl. B01k *1/00;* **H01k** *3/12*
U.S. Cl. 204—164 **1 Claim**



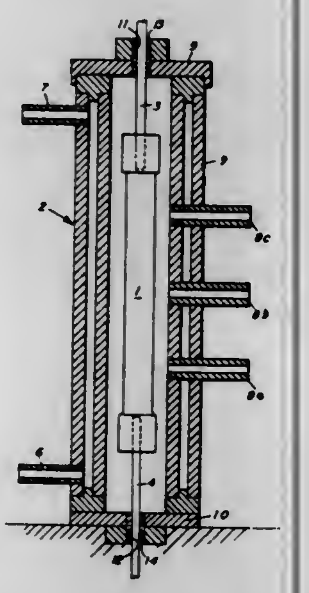
A method and apparatus for oxidizing the surface of a silicon semiconductor body having at least one diffused pn-junction. The method comprises the step of treating or bombarding the surface of a semiconductor body with oxygen ions in the region to be oxidized. The oxygen ions are produced in a continuous gas discharge created by apparatus which comprises a closed discharge chamber, two silicon electrodes extending into the chamber and connected to a source which creates a potential difference between them, and oxygen inlet and outlet means attached to the chamber which cause a stream of oxygen to flow through the chamber under a controlled low pressure. The silicon semiconductor body is arranged within the chamber in such a way that the oxygen ions, produced in the discharge, impinge on the surface to be oxidized.

3,650,930
GLOW DISCHARGE MASKING PROCESS
Claude K. Jones, Marblehead, and Stuart W. Martin, Salem, Mass., assignors to General Electric Company
Filed Oct. 27, 1969, Ser. No. 869,815
Int. Cl. C23c *11/14;* B01k *1/00*
U.S. Cl. 204—177 **6 Claims**



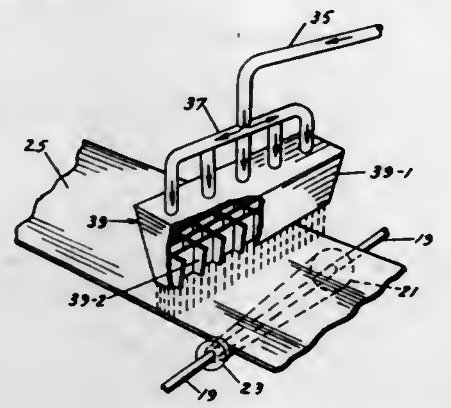
Glow discharge masking process using comminuted material to selectively limit the treatment of a cathode workpiece cavity limiting, to that extent, ionitriding on the cavity walls.

3,650,931
PURIFICATION OF REACTIVE METALS
Thomas A. Henrie, Reno, Nev., assignor to the United States of America as represented by the Secretary of the Interior
Filed June 5, 1969, Ser. No. 830,714
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 R **7 Claims**



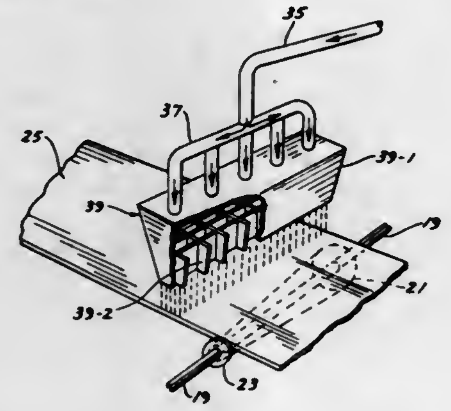
Reactive metals, such as rare-earth metals, are purified by electrotransport in a pulsed direct current electric field.

3,650,932
ELECTRO-FLOW COATING METHOD
Allen H. Turner, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Continuation-in-part of application Ser. No. 643,127, June 2, 1967. This application Nov. 3, 1969, Ser. No. 873,555
Int. Cl. B01k *5/02;* C23b *13/00*
U.S. Cl. 204—181 **1 Claim**



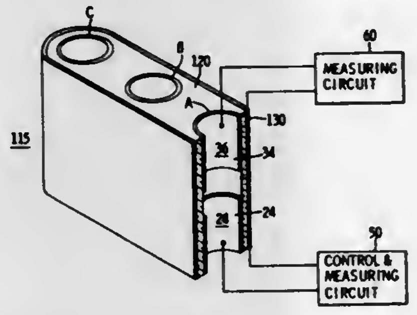
In a method for electrodepositing an organic, film-forming coating material wherein a stream of an aqueous dispersion of the coating material is passed from a first electrode to an electrically conductive workpiece which serves a second electrode of a coating circuit, a difference of electrical potential is provided between the first electrode and the second electrode and unidirectional electric current is passed between the first electrode and second electrode through said stream, the improvement wherein a plurality of streams of the aqueous dispersion are separately passed in contact with the first electrode and converged into a single stream before contacting the workpiece.

3,650,933
METHOD OF ELECTRO-FLOW COATING
Allen H. Turner, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Continuation-in-part of application Ser. No. 643,127, June 2, 1967. This application Nov. 3, 1969, Ser. No. 873,554
Int. Cl. B01k *5/02;* C23b *13/00*
U.S. Cl. 204—181 **2 Claims**



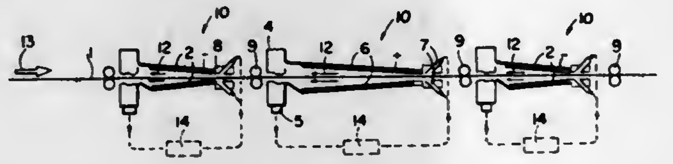
The method of coating an electrically conductive workpiece with an organic, film-forming coating material which comprises passing a stream of an aqueous dispersion of the material in contact with a first electrode of an electrical circuit, providing a difference of electrical potential between said fist electrode and the workpiece which serves as a second electrode in the same circuit, moving the workpiece through said stream, and passing an electric current between the first electrode and said second electrode through the stream, and wherein the resistivity of said stream is in the range of about 500 to about 1000 ohm-cm. and a high current density is provided at the surface of the workpiece being coated by maintaining said difference of electrical potential in the range of about 400 to about 1000, maintaining said first electrode within a distance of less than 10 inches from said second electrode, and causing said stream to pass in contact with said first electrode as a plurality of separate streams which converge before contacting the workpiece.

3,650,934
OXYGEN CONTROL AND MEASURING APPARATUS
William M. Hickam, Pittsburgh, and Robert E. Witkowski, West Mifflin, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 14, 1969, Ser. No. 876,791
Int. Cl. G01n *27/26, 27/30*
U.S. Cl. 204—195 **3 Claims**



The invention comprises a combination of a solid electrolyte electrochemical cell as an oxygen ion pumping means and a second solid electrolyte electrochemical cell as an oxygen measuring means, the combination regulating and measuring the oxygen concentration of a fluid respectively.

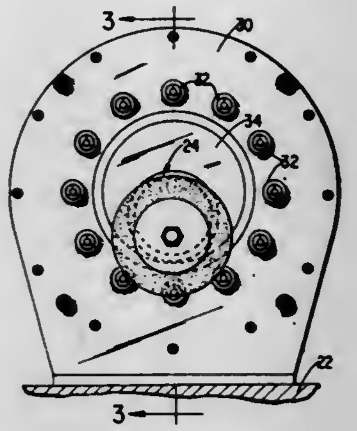
3,650,935
APPARATUS FOR ELECTROLYTIC SURFACE TREATMENT
Bengt Ivar Andersson, Torshalla, Sweden, assignor to AB C. J. Wennbergs Mekaniska Verkstad, Karlstad, Sweden
Filed May 5, 1969, Ser. No. 821,691
Claims priority, application Sweden, May 6, 1968, 6,047/68
Int. Cl. C23b *1/04, 5/58;* B01k *3/00*
U.S. Cl. 204—206 **5 Claims**



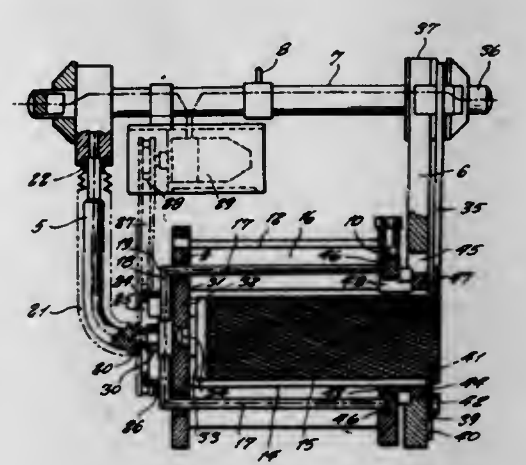
A method and an apparatus for carrying out the method of electrochemical surface treatment of metallic objects, the method being with bipolar current conduction in separate electrolysis cells combined with the method employing an electrode gap decreasing in the direction of movement of the object for the purpose of achieving maximum electrochemical efficiency, maximum economy, and operation reliability.

3,650,936
CUTTING MACHINE
Robert G. Towle, 2 Mary Ann Lane, Nanuet, N.Y. 10954
Filed Oct. 22, 1969, Ser. No. 868,448
Int. Cl. C23b *5/68;* B23p *1/00*
U.S. Cl. 204—212 **12 Claims**

A machne for cutting a series of pieces arranged from work in a circle with a wheel having a cutting edge subject to wear and reduction of diameter. The wheel is rotated about its center and the center is orbited in a circle eccentric to the center of the circle in which the work is arranged. As the wheel wears and its diameter is reduced, the eccentricity of the wheel center and work center is increased.



3,650,937
PLATING BARREL ASSEMBLY
Hans L. Henig, Nuremberg, Germany, assignor to Schering AG, Berlin and Bergkamen, Germany
Filed Feb. 4, 1969, Ser. No. 796,444
Claims priority, application Germany, Aug. 20, 1968, P 17 96 045.1
Int. Cl. C23b *5/78*
U.S. Cl. 204—213 **12 Claims**

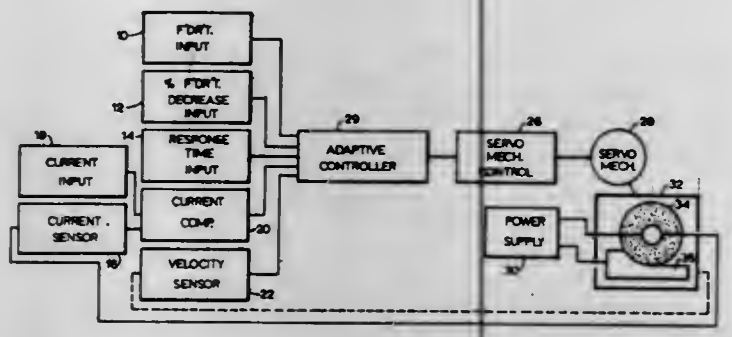


A plating barrel is suspended from hangers one of which has an opening coaxial with a corresponding opening in one end wall of the barrel. A tubular perforated partition is coaxially arranged in the barrel and conformingly received in the openings of the end wall and of the hanger for providing support to the barrel at one axial end. The other axial barrel end is supported by means of four contact rods which axially pass through the other end wall into the annular compartment between the barrel shell and the partition. The rods are connected by a coaxial spider outside the barrel cavity, and the spider is journaled in the other hanger which is metallic. The barrel is turned by a chain trained over a sprocket on the spider. The capacity of the annular plating compartment can be changed by replacing the partition by another one of different diameter. A perforated, tubular, insoluble anode of smaller diameter than the partition is coaxially arranged in the same.

3,650,938

ADAPTIVE CONTROL FOR AN ELG MACHINE

Peter F. Olton and Harry D. Kauffman, Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Aug. 24, 1970, Ser. No. 66,331
Int. Cl. C23b *5/78*
U.S. Cl. 204—218 **9 Claims**

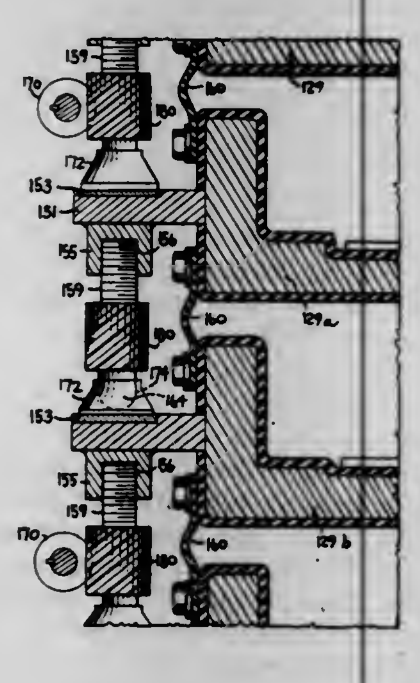


An apparatus for use in an ELG process for automatically changing the relative velocity between a tool and workpiece as a function of current flow therebetween and thereby maintaining an approximately constant ratio of metal removed electrolytically to metal removed by grinding. Input circuits are provided for predetermining a maximum relative velocity between the tool and workpiece, an ideal current magnitude, and a response time for changing the relative velocity. Machining currents at or below the ideal magnitude initiate the maximum relative velocity. However, when the machining current exceeds the ideal magnitude, the apparatus operates to introduce a change in the magnitude of the relative velocity. The time rate of said change is controlled by the predetermined response time.

3,650,939

ALKALI CHLORINE CELL

Carl W. Raetzsch, John F. Van Hoozer, and Hugh Cunningham, Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 410,579, Nov. 12, 1964. This application Apr. 4, 1969, Ser. No. 813,588
Int. Cl. C22d *1/04;* **B01k** *3/00*
U.S. Cl. 204—219 **4 Claims**

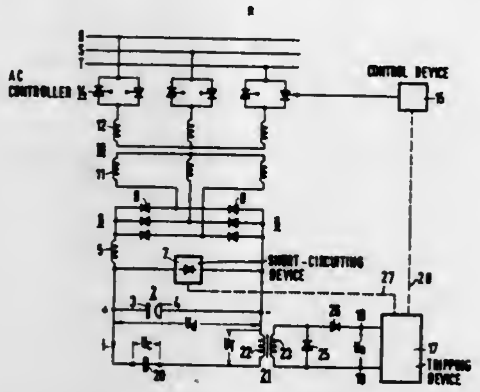


An electrolytic cell comprising a stack of bipolar units is provided. These units each comprise a mercury cathode tray and anodes disposed below the tray so that the anodes oppose the mercury cathode of a lower unit and the mercury cathode opposes the anodes of an upper unit. Means are provided to adjust the relative level of the units. This means comprises a support on one of the units and an adjustable screw on the next adjacent element which rests upon or bears against the support of the first unit. The support-screw assembly is provided with insulation to electrically isolate the units.

3,650,940

DEVICE FOR LIMITING THE POWER SUPPLY UPON SHORT-CIRCUIT BETWEEN WORKPIECE AND TOOL IN ELECTROLYTIC METAL FORMING MACHINE

Nils Bardahl, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Feb. 19, 1969, Ser. No. 800,409
Claims priority, application Germany, Feb. 24, 1968, P 16 38 130.9
Int. Cl. B23p *1/04;* **B01k** *3/00*
U.S. Cl. 204—224 **1 Claim**

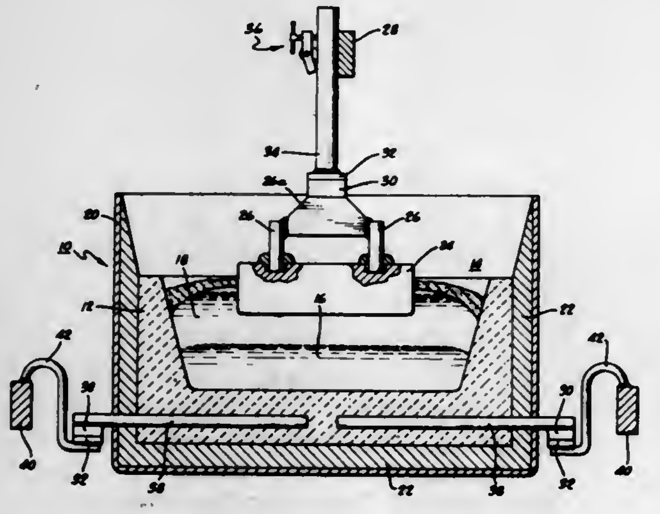


The supply of power to an electrolytic metal forming machine is limited in response to an abrupt voltage change between its electrodes. A control circuit connected to the device controls it to limit the power. The control circuit has a voltage-responsive input member connected in series with a capacitor between the electrodes of the machine and in shunt with the gap between the electrodes.

3,650,941

ELECTROLYTIC REDUCTION CELL

Walter D. Finnegan, Spokane, Wash., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Original application Sept. 23, 1968, Ser. No. 761,421, now Patent No. 3,579,432, dated May 18, 1971. Divided and this application July 24, 1970, Ser. No. 64,865
Int. Cl. C22d *3/02;* **B01k** *3/04*
U.S. Cl. 204—243 R **2 Claims**



A composite electrical conductor adapted to contact an electrode in current transmitting engagement. A ferrous metal plate is affixed to the free end of a ferrous metal rod adapted to be embedded in the electrode. A soft aluminous plate is roll bonded along one face to the ferrous plate affixed to the rod. An aluminum conductor rod is welded to the aluminous plate roll bonded to the ferrous plate and is adapted to be connected to a source of electric current.

3,650,942

PROCESS FOR THE DEOILING OF OIL-CONTAINING WAX

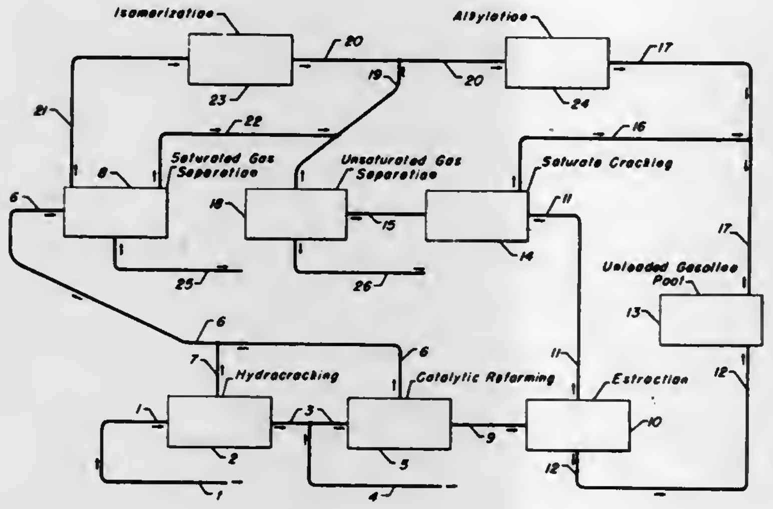
Alfred Hoppe, Frankfurt am Main, Germany, assignor to Edeleanu Gesellschaft mbH, Frankfurt am Main, Germany
No Drawing. Filed Oct. 7, 1969, Ser. No. 864,545
Claims priority, application Germany, Oct. 9, 1968, P 18 02 051.4
Int. Cl. C10g *43/08*
U.S. Cl. 208—31 **8 Claims**

A process for de-oiling a wax containing both oil and solvent obtained from the dewaxing of a hydrocarbon oil by adding additional solvent, heating and refiltering at least a portion of the additional solvent being supplied in the form of vapor from the solvent recovery system.

3,650,943

HIGH OCTANE UNLEADED GASOLINE PRODUCTION

Richard P. Schuller, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed July 10, 1970, Ser. No. 53,719
Int. Cl. C10g *13/00, 21/00;* **C07g** *3/54*
U.S. Cl. 208—60 **10 Claims**



A high octane, unleaded gasoline pool is produced via an integrated refinery operation. The individual processes integrated in combination with each other are hydrocracking, low severity catalytic reforming, saturate cracking and alkylation. Catalytic reforming is effected at low severity conditions to maximize the reaction of naphthene dehydrogenation to produce aromatics which simultaneously inhibiting the dehydrocyclization and cracking of paraffinic hydrocarbons.

3,650,944

REFORMING PROCESS STARTUP

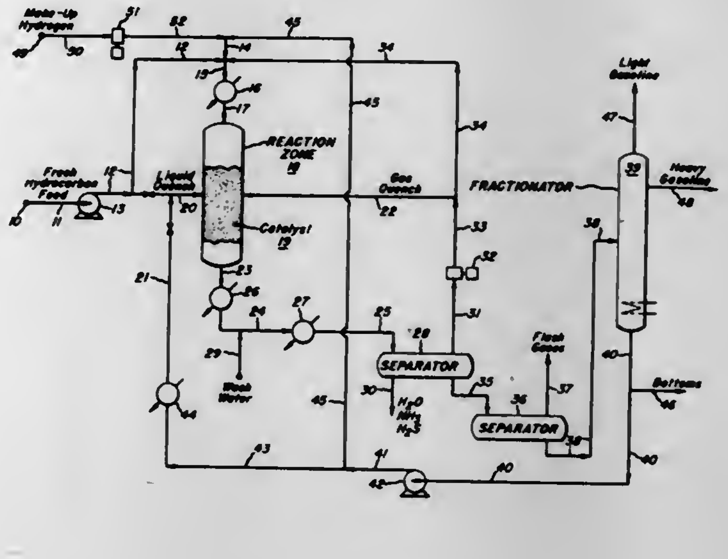
Charles S. McCoy, Orinda, and Willard M. Haunschild, Walnut Creek, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed July 7, 1969, Ser. No. 839,717
Int. Cl. C10g *35/08, 39/00*
U.S. Cl. 208—65 **7 Claims**

A reforming process involving a plurality of reactors in series containing a platinum group component catalyst is started up by contacting the feed with the catalyst in the presence of an inert gas at a temperature wherein the dehydrogenation reaction predominates, gradually increasing the temperature while adding a small amount of sulfur to the terminal reactor to control the temperature increase across the terminal reactor to below 5° F.

3,650,945

URANIUM-CONTAINING AND ALUMINOSILICATE-CONTAINING HYDROCARBON CONVERSION CATALYST AND PROCESS

Ralph J. Bertolacini, Chesterton, and Louis C. Gutberlet, Crown Point, Ind., assignors to Standard Oil Company, Chicago, Ill.
Continuation-in-part of application Ser. No. 749,838, Aug. 2, 1968. This application Jan. 28, 1969, Ser. No. 794,731
Int. Cl. C10g *13/04*
U.S. Cl. 208—111 **19 Claims**



The catalyst comprises a hydrogenation component and a cocatalytic acidic cracking support. The hydrogenation component comprises a member selected from the group consisting of (1) uranium and a Group VI–B metal of the Periodic Table of Elements; (2) a Group VI–B metal and a Group VIII metal of the Periodic Table of Elements; (3) uranium, a Group VI–B metal, and a Group VIII metal; (4) their oxides; (5) their sulfides; and (6) mixtures of the metals, their oxides, and their sulfides. The acidic cracking support comprises a large-pore crystalline aluminosilicate material and a silica-alumina cracking catalyst, the large-pore crystalline aluminosilicate material being a member selected from the group consisting of uranium-exchanged X-type aluminosilicate material, uranium-exchanged Y-type aluminosilicate material, uranium-exchanged L-type aluminosilicate material, and ultrastable, large-pore crystalline aluminosilicate material. The catalyst is characterized by the presence of at least some uranium in its composite.

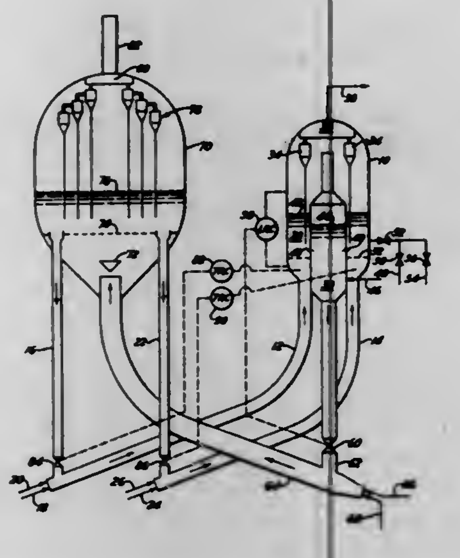
The process comprises contacting petroleum hydrocarbons with the catalyst of the invention under hydrocarbon conversion conditions.

3,650,946

FLUID CATALYTIC CRACKING IN A DENSE CATALYST BED

Marion P. Mourning, Media, Pa., assignor to Gulf Oil Corporation, Pittsburgh, Pa.
Filed Sept. 10, 1969, Ser. No. 862,623
Int. Cl. B01j *9/00;* **C10g** *11/02, 11/18*
U.S. Cl. 208—120 **7 Claims**

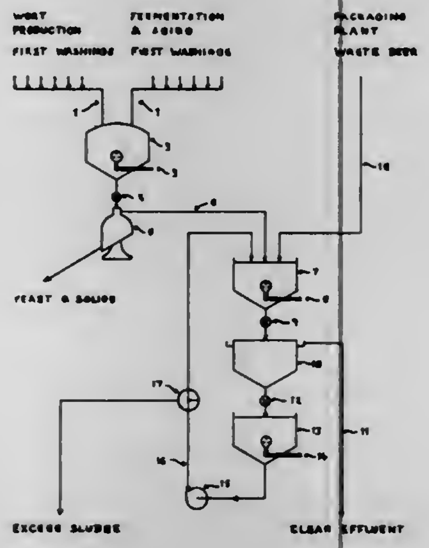
A hydrocarbon feed is cracked in the presence of a fluid zeolite catalyst or a catalyst of comparable activity and/or selectivity which produces a transient maximum gasoline yield at a residence time of 5 seconds or less and in the presence of a diluent vapor or vapors which lower the partial pressure of the hydrocarbon feed and increase gasoline selectivity. Residence time is established by regulating the depth of a dense catalyst bed relative to the position of charging the hydrocarbon feed so that residence time control does not require adjustment of the charge rate of hydrocarbon or diluent vapor as generally occurs in the case of a riser reactor having a nondense catalyst system. In this manner, the residence time is changed at a constant ratio of diluent vapor or vapors to hydrocarbon feed and the depth of the bed is controlled so that a greater yield of gasoline is recovered from the process than could be recovered in the absence of the diluent vapor.



3,650,947

BIOLOGICAL PROCESS FOR PURIFICATION OF BREWERY EFFLUENT

Erik Krabbe, 12—56 117th St.,
College Point, N.Y. 11356
Filed Sept. 28, 1970, Ser. No. 75,958
Int. Cl. C02c *5/10*
U.S. Cl. 210—15 **8 Claims**

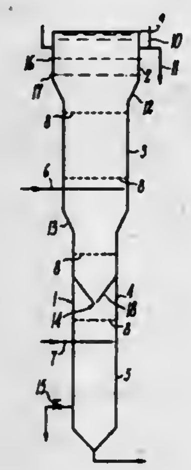


A two-stage biological process for purification of brewery effluent is provided wherein fermentation of sugars by means of aeration with yeast precedes treatment with activated sludge, thereby enhancing fluocculation and separation of biota from the purified effluent. The yeast may be recovered.

3,650,948

METHOD AND APPARATUS FOR THE CONTINUOUS REGENERATION OF ION EXCHANGE RESINS

Jean Clamart Burriat and Philippe du Fort, Louveciennes, France, assignors to Degremont, Societe Generale d'Epuration et d'Assainissement, Rueil, France
Filed Nov. 3, 1969, Ser. No. 873,369
Claims priority, application France, Nov. 20, 1968, 174,498
Int. Cl. B01d *15/06;* **B01j** *1/06*
U.S. Cl. 210—33 **6 Claims**



This invention provides a method of regenerating ion exchange resins in a fluid bed, which consists in loosening, actually regenerating and thereafter rinsing the regenerated ion exchange resins as a continuous process in a same and single enclosure, in superposed successive zones thereof, by possibly varying the upward speed of the liquids circulating in each one of said zones in counter-current relationship to the resin flow, as a function of the specific one of the aforesaid operations which is being performed in each one of the aforesaid zones.

The invention also comprises an apparatus for carrying out this method, which comprises a column in which the saturated resins circulate by gravity from top to bottom with the regenerating, washing and rinsing liquids circulating in counter-current relationship to the resins.

3,650,949

CYANIDE REMOVAL

Donald Gene Hager, Pittsburgh, and Joseph Leo Rizzo, Pitcairn, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.
No Drawing. Filed Dec. 24, 1969, Ser. No. 888,026
Int. Cl. B01d *15/00, 23/14*
U.S. Cl. 210—36 **5 Claims**

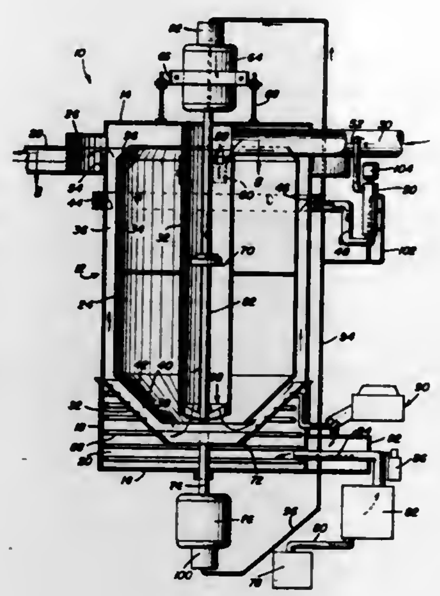
Method of removing cyanide from water are disclosed in which copper salts and oxygen are added to the water upstream of a bed of activated carbon. The copper and cyanide form a complex of uncertain composition. The copper complexed cyanide thus formed is adsorbed on the activated carbon, which catalyzes the oxidation of the cyanide to carbon dioxide and nitrogen.

3,650,950

MATERIAL SHEARING MIXER AND AERATOR

Robert W. White, 409 S. Union Ave., P.O. Box 74,
Salem, Ohio 44460
Filed Aug. 20, 1969, Ser. No. 851,702
Int. Cl. B01d *43/00*
U.S. Cl. 210—60 **24 Claims**

Fluent materials including sewage and industrial discharges such as exhaust gases, smoke and slurries are treated to remove noxious odors, to decompose and oxidize undesirable compounds and to condition the waste material for easier handling or subsequent treatment. The fluent material is subjected to shearing stresses simultaneously with the injection of an oxidizing agent such as ozone to enhance biochemical and chemical treatment of the material as well as to physically treat the material.



3,650,951

OIL WELL DRILLING AND TREATING FLUIDS

Byron E. Marsh, Western Springs, and Roy J. Betty and Frederick S. Marsh, Chicago, Ill., assignors to Armour Industrial Chemical Company
No Drawing. Filed June 30, 1967, Ser. No. 650,208
Int. Cl. C10m *1/32, 1/34*
U.S. Cl. 252—8.5 6 Claims

Thickened hydrocarbon fluids obtained by the in situ reaction of a long chain amine and isocyanate to form urea, and method of use for drilling fluids, fracturing fluids, packer fluids, and the like in petroleum production operations.

3,650,952

COMBUSTION ENGINE OIL WITH ADDITIVE TO PREVENT SLUDGE FORMATION AND DETERIORATION

Robert A. Gerlicher, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.
No Drawing. Filed Aug. 5, 1970, Ser. No. 61,427
Int. Cl. C10m *1/32, 1/34*
U.S. Cl. 252—33.6 **5 Claims**

A method for preventing sludge formation and deterioration of a lubricating oil composition for internal combustion engines comprising formulating the lubricating oil composition to contain one part by weight of an N-nitroso aryl hydroxyl amine compound or metal salt thereof per 100–10,000 parts by weight of the oil and a concentrate for use in adding to crank case oils.

3,650,953

LUBRICATING OIL COMPOSITION CONTAINING A PHOSPHONAMIDE

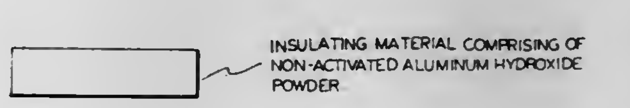
Thomas J. Clough, Webster Grove, Mo., assignor to Atlantic Richfield Company
No Drawing. Filed Apr. 11, 1967, Ser. No. 629,929
Int. Cl. C10m *1/20, 1/36, 1/44*
U.S. Cl. 252—49.9 **8 Claims**

A phosphorus halide (e.g. PCl_3) is present during the Friedel-Crafts polymerization in a monochloroalkane solvent (e.g. ethylchloride) of an alpha-monoalkene, resulting in the in situ formation of a phosphorylated polymer. Further reaction of the polymer with a polyamine converts phosphoryl groups to phosphonamide groups, yielding a product which is useful as a lube oil detergent.

3,650,954

INSULATING PAPER OF GOOD THERMAL CONDUCTIVITY

Toshitaka Yasuda, Suita, Osaka Prefecture, Shiro Katayama, Kita-Katsuragi-gun, and Yutaka Suzuki, Shizuoka, Japan, assignors to Tatsuta Electric Wire & Cable Co., Ltd., Osaka, and Tomoegawa Paper Manufacturing Co., Ltd., Tokyo, Japan, fractional part interest to each
Continuation-in-part of application Ser. No. 371,903, June 2, 1964. This application June 12, 1968, Ser. No. 736,347
Claims priority, application Japan, June 3, 1963, 38/29,101
Int. Cl. H01b *3/10, 3/20, 3/52*
U.S. Cl. 252—63.2 **3 Claims**


INSULATING MATERIAL COMPRISING OF NON-ACTIVATED ALUMINUM HYDROXIDE POWDER

The thermal conductivity of electrical insulation is improved by incorporating therein non-activated aluminum hydroxide powder having a purity of at least 99 percent and a maximum Na_2O and Fe_2O_3 content of 0.7 and 0.05 percent, respectively, and/or by coating or impregnating same with an admixture of resin, thermally conductive material and surface active substance.

3,650,955

GASEOUS MIXTURE FOR USE IN ELECTRICAL APPARATUS

Jean P. Manion, Milwaukee, John A. Philosophos, Brookfield, and Marquis B. Robinson, Milwaukee, Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Continuation of application Ser. No. 600,564, Dec. 9, 1966. This application May 27, 1970, Ser. No. 41,705
Int. Cl. H01b *3/24*
U.S. Cl. 252—66 1 Claim

A gaseous mixture for arc extinguishing and insulating in circuit breakers comprising a first gas such as perfluorocyclobutane (cC_4F_8) having high dielectric strength but a relatively slow dielectric recovery rate and a second gas such as dichlorodifluoromethane (CCl_2F_2) which has a rapid initial dielectric recovery and only a moderately high ultimate dielectric strength in comparison to the first gas.

3,650,956

HEAVY-DUTY AEROSOL CLEANER

David L. Strand, Maplewood, and Roger L. Abler, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed May 28, 1969, Ser. No. 828,701
Int. Cl. C11d *17/00*
U.S. Cl. 252—90 **5 Claims**

A heavy-duty foaming aerosol abrasive cleaner composition particularly adapted for cleaning hard surface floors without detrimental effect on floors or floor finishes. The cleaner comprises a thixotropic suspension of bentonite, abrasive particles, reducing agent for corrosion prevention, an effective amount of at least one higher fatty acid alkanolamide to provide a visible foam, and sufficient water to provide the desired viscosity.

3,650,957

ETCHANT FOR CUPREOUS METALS

Charles R. Shipley, Jr., and Michael Gulla, Newton, Mass., assignors to Shipley Company, Inc., Newton, Mass.

No Drawing. Filed July 24, 1970, Ser. No. 58,200
Int. Cl. C09k *3/00;* **C23f** *1/00*
U.S. Cl. 252—79.1 **23 Claims**

This invention is for a solution for etching cupreous metals comprising a source of cupric ions, at least one complexing agent for cupric ions which agent is capable of forming a solution soluble copper (II) complex at solution pH, a source of bromide or chloride ions and a solution soluble molybdenum, tungsten or vanadium compound. Cupric etching solutions have been found to attack tin and tin-lead solder plate such as that used in the fabrication of printed circuit boards. The addition of a molybdenum, tungsten, or vanadium compound to the etching solution retards or eliminates such attack.

3,650,958

ETCHANT FOR CUPREOUS METALS

Charles R. Shipley, Jr., Newton, Mass., assignor to Shipley Company, Inc., Newton, Mass.

No Drawing. Filed July 24, 1970, Ser. No. 58,170
Int. Cl. C09k *3/00;* **C23f** *1/00*
U.S. Cl. 252—79.1 **20 Claims**

This invention is for a solution for etching cupreous metals comprising a source of cupric ions, at least one non-fuming complexing agent for cupric ions which is capable of forming a solution of soluble copper (II) complex at solution pH, and preferably a source of bromide or chloride ions. The invention is an improvement over prior art ammoniacal etchants inasmuch as it is capable of use over a wide range of pH and does not yield excessive ammonia fumes which would require expensive exhaust equipment and frequent replenishment of the etchant solution. In a preferred embodiment of this invention an etchant is provided which has a pH varying between 6 and 8 and more preferably, a pH of about 7 to 7.5.

3,650,959

ETCHANT FOR CUPREOUS METALS

Charles R. Shipley, Jr., Newton, and Oleh B. Dutkewych, Medfield, Mass., assignors to Shipley Company, Inc., Newton, Mass.

No Drawing. Filed July 24, 1970, Ser. No. 58,160
Int. Cl. C09k *3/00;* **C23f** *1/00*
U.S. Cl. 252—79.1 **22 Claims**

This invention is for a solution capable of continuous etching of cupreous metals without a requirement for substantial regeneration or replenishment, which etching solution comprises a source of cupric ions, at least one non-fuming complexing agent for cupric ions which is capable of forming a solution soluble copper (II) complex at solution pH, preferably a source of bromide or chloride ions and a source of nitrate ions. In a preferred embodiment, the etching solution also contains a solution soluble molybdenum, tungsten or vanadium compound. The invention is an improvement over prior art ammoniacal etchants inasmuch as it is capable of use over a wide range of pH, does not yield excessive ammonia fumes which would require expensive exhaust equipment and with frequent removal of copper precipitate as it forms, is capable of continuous use without frequent regeneration or substantial replenishment.

3,650,960

ETCHING SOLUTIONS

Cyrus M. Strauss, Philadelphia, Pa., and John M. Bauer, San Jose, Calif., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed May 6, 1969, Ser. No. 822,288
Int. Cl. C09k *3/00;* **C23f** *1/02*
U.S. Cl. 252—79.3 **4 Claims**

Etching solutions adapted for etching thin layers of silicon dioxide as required in the manufacture of integrated circuits and other semi-conductor devices, comprising aqueous mixtures of hydrogen fluoride and ammonium fluoride, said mixtures being free from crystallization at temperatures down to at least about +5° F.

3,650,961

PROCESS FOR PREPARING PARTICULATE PRODUCTS HAVING PREFERENTIALLY INTERNALLY CONCENTRATED CORE COMPONENTS

Robert B. Hudson, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed July 18, 1969, Ser. No. 842,890
Int. Cl. B44d *1/095;* **C11d** *7/42, 7/56*
U.S. Cl. 252—99 **6 Claims**

Granular particles comprising a partially hydrated inorganic salt and a core component, the core component being preferentially internally concentrated in the particles, are prepared by spraying an aqueous medium containing the core component onto a fluidized bed of hydrateable inorganic salt. Such particles wherein the core component is, for example, a chlorocyanurate are useful ingredients of detergent compositions wherein they exhibit excellent chemical and physical stability.

3,650,962

WASHING, BLEACHING AND CLEANSING AGENTS CONTAINING POLY-(N-ACETIC ACID)-ETHYLENEIMINES

Achim Werdehausen, Monheim, Arnold Heins, Hilden, and Manfred Dohr, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Dec. 1, 1969, Ser. No. 881,264
Claims priority, application Germany, Dec. 21, 1968, P 18 16 348.9
Int. Cl. C11d *7/54*
U.S. Cl. 252—102 **3 Claims**

A washing, bleaching and cleansing agent having a content of from 50% to 99.9%, by weight, of customary components of washing, bleaching and cleansing agents and from 0.1% to 50%, by weight, of a polyethyleneimine selected from the group consisting of (1) branched poly-(N-acetic acid)-polyethyleneimines having an average molecular weight of from 2,000 to 200,000 wherein from about 50% to 100% of the primary and secondary amine groups in the polyethyleneimine molecule are carboxymethylated and (2) their alkali metal, ammonium and organic ammonium salts.

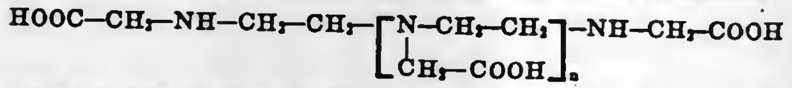
3,650,963

WASHING, BLEACHING AND CLEANSING AGENTS CONTAINING POLY-(N-ACETIC ACID)-ETHYLENEIMINES

Achim Werdehausen, Monheim, and Manfred Dohr, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

No Drawing. Filed Dec. 1, 1969, Ser. No. 881,301
Claims priority, application Germany, Dec. 21, 1968, P 18 16 280.6
Int. Cl. C11d *7/54*
U.S. Cl. 252—102 **4 Claims**

A washing, bleaching and cleansing agent having a content of from 50% to 99.9%, by weight, of customary components of washing, bleaching and cleansing agents and from 0.1% to 50%, by weight, of a polyethyleneimine selected from the group consisting of (1) linear poly-(N-acetic acid)-polyethyleneimines of the formula



$$HOOC-CH_2-NH-CH_2-CH_2-\left[\begin{array}{l}N-CH_2-CH_2\\ |\\ CH_2-COOH\end{array}\right]_n-NH-CH_2-COOH$$

wherein *n* is an integer from 3 to 50 and (2) their alkali metal, ammonium and organic ammonium salts.

3,650,964

LOW FOAM ANIONIC ACID SANITIZER COMPOSITIONS

Ronald M. Sedliar, Trenton, Donald F. Garvin, Berkley, and Otto T. Aepli, Southgate, Mich., assignors to BASF Wyandotte Corporation

No Drawing. Filed May 13, 1968, Ser. No. 728,766
Int. Cl. C11d *3/48, 7/08*
U.S. Cl. 252—106 **14 Claims**

Low foam sanitizer compositions are prepared from anionic surfactants or blends thereof in an acid media. The anionic surfactants used in the present invention are those having low foaming characteristics. These anionics are members of the class of sulfonated oleic acids, derivatives of sulfonated oleic acids, alkali metal salts of sulfosuccinic acid esters, and alkali metal salts of alkyl sulfates.

3,650,965

LOW FOAM DETERGENT COMPOSITIONS

Abraham Cantor, Elkins Park, Pa., and Murray W. Winicov, Flushing, N.Y., assignors to West Laboratories, Inc., Long Island, N.Y.

No Drawing. Filed July 25, 1968, Ser. No. 747,427
Int. Cl. C11d *3/48, 7/08*
U.S. Cl. 252—106 **12 Claims**

Low foam detergent composition consisting essentially of:

(a) a nonionic surface active component having a cloud point above 45° C.,

(b) an amount of the order of 5 to 100% by weight of component "a," of a nionionic surface active component having a cloud point below 35° C.,

(c) an amount of the order of 1 to 50% by weight of component "a," of a component selected from the group consisting of aliphatic monocarboxylic acids and aliphatic alcohols wherein the aliphatic radical contains 8 to 18 carbon atoms, and

(d) when said composition contains aliphatic monocarboxylic acid as component "c," an amount of the order of 1 to 20 times the weight of component "a" of a mineral acid, preferably phosphoric acid.

When a combined detergent-sanitizer action is desired said composition should also contain an iodine source providing an amount of available iodine of the order of 5 to 50% of the combined weight of components "a" and "b."

3,650,966

IODINE DETERGENT COMPOSITION

Richard Leo Bakka, Rosemount, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

No Drawing. Filed Aug. 20, 1969, Ser. No. 851,725
Int. Cl. C11d *3/48*
U.S. Cl. 252—106 **1 Claim**

Germicidal-detergent compositions having low foaming properties containing iodine and, as a carrier therefor, triethanolamine octyl sulfate.

3,650,967

ENZYMATIC GRANULES

Wade A. Johnson, Highland Park, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Sept. 15, 1969, Ser. No. 858,106
Int. Cl. C11d *3/12, 1/86;* **C12k** *1/08*
U.S. Cl. 252—135 **20 Claims**

The malodor of granules formed from enzyme and a powdered hydratable mineral salt in the presence of water is minimized and substantially removed by incorporating into the granules an inorganic colloidal mineral material. Examples of such materials include colloidal silica, colloidal magnesium silicate and colloidal alumino-silicates.

3,650,968

FISHERMAN'S SOAP

Paul Hoffman, 1001 SW. 16th Ave, Gainesville, Fla. 32601, and John D. Hodge, Jr., 1505 Carr St., Palatka, Fla. 32077

No Drawing. Filed Apr. 30, 1968, Ser. No. 725,499
Int. Cl. C11d *7/08;* **C23g** *1/02*
U.S. Cl. 252—142 **14 Claims**

A cleaning composition for removing odors originating with fish, fish residue, fish slime and the like comprising a source of citric acid and a compatible detergent. The source of citric acid is preferably citrus fruits and the like, and the compatible detergent is preferably of the non-ionic type.

3,650,969

COMPOSITIONS FOR REMOVAL OF FINISH COATINGS

Gotlibs Baltakmens, Wilmington, Del., and John P. Tourish, Wallingford, Pa., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 29, 1968, Ser. No. 748,207
Int. Cl. C11d *7/50*
U.S. Cl. 252—143 **11 Claims**

Improved compositions for the removal of finish coatings, such as paint coatings, from substrates comprise a dichloroalkane containing 1 to 2 carbon atoms, such as methylene chloride, an aliphatic monohydric alcohol containing 1 to 3 carbon atoms, such as methanol, hydrogen fluoride, water and preferably iodine.

3,650,970

CALCIUM SULPHATE SCALE INHIBITING COMPOSITION OF SALT OF ESTER POLYMER OF STYRENE-MALEIC ANHYDRIDE COPOLYMER

Richard J. Pratt, Flossmoor, and David W. Young, Homewood, Ill., assignors to Atlantic Richfield Company

No Drawing. Filed Jan. 8, 1969, Ser. No. 789,923
Int. Cl. C02b *5/06*
U.S. Cl. 252—181 **5 Claims**

A method is disclosed for inhibiting calcium sulphate scale formations in systems containing water which contains calcium sulphate. The method comprises providing small amounts of a gypsum scale inhibitor which is an alkali metal or ammonium salt of an ester polymer formed by esterifying styrene-maleic anhydride copolymers with capped polyethylene glycols. The amount of the inhibitor provided can vary with the amount of calcium sulphate in the water but even very small amounts of the inhibitor reduce scale formations. The ester polymer salt can be formed in situ.

3,650,971

COMPOSITION FOR PLASTICIZING RUBBER

Richard S. Tobey, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 26, 1970, Ser. No. 50,356
Int. Cl. C09k *3/00*
U.S. Cl. 252—182 **8 Claims**

A composition useful for plasticizing or peptizing rubber; it is in the form of easy-to-use pourable solid particles, and it is substantially free of unpleasant mercaptan odor. The composition is comprised of particles of hydrated silica or calcium silicate of certain particle size and surface area to which is attached a specified amount of xylyl mercaptan; and preferably the composition also contains uniformly dispersed iron phthalocyanine and clay, plus a suitable liquid such as kerosene.

3,650,972

LIQUID ACYL SULFONYL PEROXIDE-SOLVENT COMPOSITIONS

Jose Sanchez, Grand Island, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Nov. 7, 1969, Ser. No. 874,990

Int. Cl. C07c *73/00;* **D06l** *3/02*

U.S. Cl. 252—186 11 Claims

Storage stable compositions, liquid below −10° C., are formed by liquid acyl sulfonyl peroxides and liquid polar or polarizable solvents. Example: A composition of 70 weight percent of acetyl sec-heptyl sulfonyl peroxide and 30 weight percent of dimethyl phthalate, is liquid at −80° C., shock stable, and has essentially no loss in assay after 4 weeks storage at 0° C.

3,650,973

METHOD FOR SCINTILLATION COUNTING

Erwin Maeder, Aesch, Basel-Land, Rudolf Anliker, Binningen, Karl Schmid, Reinach, Basel-Land, and Adolf Emil Siegrist, Basel, Switzerland, assignors to Ciba Limited, Basel, Switzerland

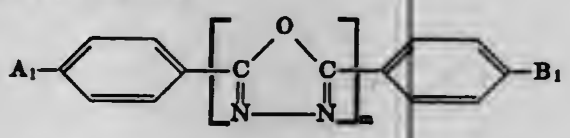
No Drawing. Continuation of application Ser. No. 577,168, Sept. 6, 1966. This application July 31, 1969, Ser. No. 850,312

Claims priority, application Switzerland, Sept. 15, 1965, 12,815/65

Int. Cl. C09k *1/02*

U.S. Cl. 252—301.2 6 Claims

A method is provided for counting atomic disintegrations of radioactive material which is accompanied by emission of β-rays, wherein the material is dispersed in a scintillation liquid which contains an oxdiazole compound of the formula



wherein A_1 is a branched chain alkyl, B_1 is hydrogen, phenyl, lower alkyl, or lower alkoxy, and *m* is 1 or 2. The counts per minute emitted by the material dispersed in the scintillation liquid are measured with a suitable instrument such as a liquid scintillation spectrometer.

3,650,974

ALKALINE EARTH HALOSILICATE PHOSPHORS

Harold Francis Ward, London, England, assignor to Thorn Electrical Industries Limited, London, England

No Drawing. Filed May 13, 1969, Ser. No. 824,260

Int. Cl. C09k *1/54*

U.S. Cl. 252—301.4 F 3 Claims

A phosphor for use in fluorescent lamps comprising an alakilne earth yttrium or lanthanum halosilicate activated by activating metal ions in the trivalent state and/or activating metal ions in the divalent state, e.g., by trivalent tin, antimony, terbium, cerium or europium ions.

3,650,975

RARE EARTH OXIDE PHOSPHORS CONTAINING ALKALI METAL SILICATES AND GERMANATES

Ramon L. Yale, Ulster, Pa., assignor to Sylvania Electric Products Inc.

No Drawing. Filed Oct. 31, 1969, Ser. No. 873,067

Int. Cl. C09k *1/10, 1/54*

U.S. Cl. 252—301.4 F 9 Claims

A new phosphor composition having increased brightness is disclosed that consists essentially of a rare earth oxide host material having a europium activator and specific amounts of an ion selected from the group consisting of silicate, germanate and mixtures thereof and specific amounts of alkali metal ions selected from the group consisting of lithium, sodium, and mixtures thereof. A process for producing the new phosphors and for controlling the particle size thereof, comprises incorporating an alkali metal compound selected from the group consisting of lithium silicate, lithium germanate and mixtures thereof with the appropriate rare earth oxalate and subjecting the mixture to a two step heating process.

3,650,976

MIXED ALKALINE EARTH SULFATE PHOSPHOR COMPOSITIONS

George W. Luckey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 21, 1969, Ser. No. 868,224

Int. Cl. C09k *1/22*

U.S. Cl. 252—301.4 S 14 Claims

Novel phosphors comprising lanthanide-activated plural mixed alkaline earth sulfates such as europium-activated strontium barium sulfate, are prepared by the coprecipitation of the lanthanide ion and said plural alkaline earth ions in dilute solution. The phosphors show high efficiency of fluorescence when excited by X-rays and are particularly useful in intensifying screens in combination with radiographic image recording elements.

3,650,977

METHOD OF PREPARING SILICA SOL AND PRODUCT THEREOF

John S. Stephen Bobb, Springfield, Pa., assignor to Philadelphia Quartz Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 548,841, May 10, 1966. This application Mar. 27, 1969, Ser. No. 811,219

Int. Cl. B01j *13/00;* **C01b** *33/14, 33/18*

U.S. Cl. 252—313 S 16 Claims

A method of forming a silica sol, including adding silicon metal to an aqueous solution containing an inorganic alkali metal compound and having a pH in excess of about 11, such as sodium hydroxide, potassium hydroxide, lithium hydroxide, sodium silicate, sodium metasilicate, etc., while maintaining the temperature between about 50 and 100° C. and thereafter maintaining these materials in contact at the above temperatures for a period sufficient to produce a predetermined silica-to-alkali metal oxide ratio or a predetermined pH is attained. If the temperature reaches 100° during either of the treating steps, the product produced loses some of its hydrophilic character to the point of becoming a hydrophobic, low viscosity silica sol, whereas at lower temperatures, hydrophilic, high viscosity silica sols are produced. In addition, by maintaining the temperature in the critical range of 90 to 95° C., substantial increases in the efficiency of conversion of silicon to silica are obtained. The silica sol products of the invention are characterized by a viscosity below about 200 cp. for hydrophobic sols and a viscosity substantially above 300 cp. for hydrophilic sols at silica contents of about 50% and both are characterized by formation of a coacervate or precipitate which does not harden or redissolve when conventional gelling agents are added thereto.

3,650,978

VINYL-MALEIC ACID THIOESTER OR THIOETHERESTER POLYMERS OR SALTS THEREOF AS EMULSIFYING AGENTS

Robert R. Chambers, Homewood, Henry V. Isaacson, Oak Forest, and David W. Young, Homewood, Ill., assignors to Atlantic Richfield Company

No Drawing. Original application Jan. 4, 1967, Ser. No. 607,150, now Patent No. 3,472,772, dated Oct. 14, 1969. Divided and this application Apr. 25, 1969, Ser. No. 840,884

Int. Cl. B01f *17/36*

U.S. Cl. 252—356 12 Claims

A vinyl monomer (e.g., styrene)-maleic anhydride polymer is esterified with a thioalcohol or a hydroxythioether. The product is rendered water-soluble by formation of amine, ammonium or alkali metal salt thereof, and the water-soluble salt is used as an emulsifying aid in oil-water emulsions, e.g., mineral oil-based cutting fluids.

3,650,979

METHYL-POLYSILOXANE-CONTAINING DEFOAMING AGENTS AND PREPARATION THEREOF

Hans-Horst Steinbach, Schildgen, Werner Theuer, Opladen-Luetzenkirchen, and Karl Schnurrbusch, Leverkusen-Steinbuechel, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 16, 1968, Ser. No. 729,546

Claims priority, application Germany, May 26, 1967, F 52,507

Int. Cl. B01d *17/00*

U.S. Cl. 252—358 3 Claims

A stable defoaming agent which is very effective in aqueous systems is prepared according to the invention by emulsifying, in 100 to 10,000 parts by weight of water, 100 parts by weight of an α,ω-bis-(trimethylsiloxy)-polydimethyl-siloxane having a viscosity between 500 and 5000 centistokes at 20° C., 1 to 15 parts by weight of finely divided silica and 20 to 40 parts by weight of an emulsifier consisting of a polyglycol ether or a fatty acid ester thereof or of an alkyl- or aryl-sulphate or -sulphonate, and admixing the emulsion so obtained with 100 to 500 parts by weight of a fatty acid ester of hydroxyethane-sulphonic acid or an alkali metal salt thereof.

3,650,980

RETARDING WATER EVAPORATION WITH SURFACE FILMS OF OXO ALCOHOLS CONTAINING ORTHOSILICIC ACID ESTER

Herbert Göthel, Oberhausen-Holten, Hans Feichtinger, Dinslaken, and Hans Tummes, Oberhausen-Strakrade-Nord, Germany, assignors to Ruhrchemie Aktiengesellschaft

Filed Oct. 22, 1969, Ser. No. 868,535

Claims priority, application Germany, Nov. 20, 1968, P 18 10 018.0

Int. Cl. B01j *1/18*

U.S. Cl. 252—384 5 Claims

A film forming composition for application to water surfaces to retard evaporation loses comprises a higher alkyl alcohol and up to three weight percent of an orthosilicic acid ester of an oxyalkylated alcohol.

3,650,981

PROCESS FOR STABILIZATION OF COMPOSITION COMPRISING CHLOROFLUOROALKANE AND AQUEOUS SOLUTION OF LOWER ALCOHOL

Ryuichiro Inouye, Manaka Nishikawa, and Akimi Akano, Shimizu-shi, Japan, assignors to Mitsui Fluorochemicals Company, Ltd., Chiyoda-ku, Tokyo, Japan

No Drawing. Filed Aug. 27, 1969, Ser. No. 853,540

Claims priority, application Japan, Sept. 2, 1968, 43/62,658

Int. Cl. C09k *3/00*

U.S. Cl. 252—389 6 Claims

Process for stabilizing an aerosol composition comprising a chlorofluoroalkane and an aqueous solution of a lower alcohol, which comprises adding to said composition (a) at least 0.1% by weight, based on said chlorofluoroalkane, of nitromethane and (b) at least 0.05% by weight, based on said chlorofluoroalkane, of a compound selected from the group consisting of alkali metal phosphates of polyoxyethylene alkyl ethers, phosphoric acid amine salts of polyoxyethylene alkyl ethers, alkali metal phosphates of polyoxyethylene alkylphenol ethers, phosphoric acid amine salts of polyoxyethylene alkylphenol ethers, and alkali metal alkylsulfates.

3,650,982

PROCESS FOR INHIBITING CORROSION OF TIN-PLATED STEEL AEROSOL CANS

Lloyd T. Flanner, Florham Park, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Feb. 4, 1969, Ser. No. 796,577

Int. Cl. C09k *3/00*

U.S. Cl. 252—394 6 Claims

Propellant compositions, inhibited against corrosion of tin-plated steel aerosol cans containing water-based concentrates, consisting essentially of at least one liquefied saturated hydrocarbon having 3 or 4 carbon atoms and about 0.01 to 2% by weight based on the hydrocarbon of nitromethane or 2-nitropropane.

3,650,983

ALKALINE WASH REACTIVATION OF PALLADIUM CATALYSTS USED IN VINYL ACETATE SYNTHESIS

Franklyn D. Miller, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 615,067, Feb. 10, 1967. This application Dec. 23, 1969, Ser. No. 887,736

Int. Cl. B01j *11/14, 11/10*

U.S. Cl. 252—412 7 Claims

A method for the reactivation of a palladium catalyst having a reduced activity by washing the catalyst with an alkaline solution such as sodium hydroxide, potassium hydroxide, sodium acetate, potassium acetate, and mixtures thereof. The catalyst is preferably a palladium metal or a catalyst comprising a combination of palladium and gold which has been preactivated with an alkaline material and which has been employed in the preparation of vinyl acetate from ethylene.

3,650,984

NITROALKANE OR NITROALKANOL COMPLEX WITH ALKYL-TIN OXIDE OR ALKYL-TIN CHLORIDE

Lawrence R. Jones, Terre Haute, Ind., assignor to Commercial Solvents Corporation

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,805

Int. Cl. C07f *7/22;* **C08f** *45/60, 45/62*

U.S. Cl. 260—429.7 8 Claims

Polyvinyl halide resin compositions including co-polymers thereof, stabilized against degradation by heat by incorporating therein from 1–10% by weight of a complex obtained by reacting a nitroalkane or nitroalkanol with bis(di-n-butyltin)oxide, bis(tri-n-butyltin)oxide or tri-n-butyltin chloride.

3,650,985

ETHYNYLATION CATALYST, CATALYST PREPARATION, AND PROCESS

Jack R. Kirchner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Oct. 23, 1967, Ser. No. 677,020, now Patent No. 3,560,576, dated Feb. 2, 1971. Divided and this application Mar. 4, 1970, Ser. No. 16,579

Int. Cl. C07c *33/04*

U.S. Cl. 252—431 23 Claims

Particulate catalysts, consisting essentially of cuprous acetylide complexes containing at least 1.75 carbon atoms per copper atom, and having a total surface area of at least 5.0 square meters per gram, are prepared at 50–120° C. by the simultaneous action of formaldehyde and acetylene at a partial pressure of less than 2.0 atmospheres on cupric compounds slurried in substantially neutral aqueous media and used to catalyze ethynylation in a continuous stirred reaction at 60–120° C. and acetylene partial pressures below 2.0 atmospheres.

3,650,986

CARRIER CATALYST FOR THE MANUFACTURE OF UNSATURATED ESTERS OF CARBOXYLIC ACIDS

Kurt Sennewald and Wilhelm Vogt, Knapsack, near Cologne, Heinz Erpenbach, Surth, near Cologne, Hermann Glaser, Knapsack, near Cologne, and Helmut Dyrschka, Kottingen, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Dec. 5, 1968, Ser. No. 781,627

Claims priority, application Germany, Dec. 23, 1967,
P 16 67 140.2

Int. Cl. C07c *67/04*
U.S. Cl. 252—431 C **4 Claims**

Carrier catalyst—and process for making and activating it—for the production of unsaturated esters of carboxylic acids from an olefinic compound, a carboxylic acid and molecular oxygen in the gas phase, the carrier catalyst containing palladium acetate, alkali metal acetate and one or more uranium compounds as its active constituents.

3,650,987

CATALYST BASED ON ALUMINUM FLUORIDE FOR THE GASEOUS PHASE FLUORINATION OF HYDROCARBONS

Martino Vecchio, Giovanni Groppelli, and Vittorio Fattore, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed July 18, 1969, Ser. No. 843,232

Claims priority, application Italy, July 25, 1968,
19,448/68

Int. Cl. B01j *11/78*
U.S. Cl. 252—442 **2 Claims**

A catalyst is disclosed for the preparation of fluorinated hydrocarbons via fluorination of chlorofluorination reactions in gaseous phase, the catalyst consisting essentially of aluminum fluoride containing minor quantities of iron, chromium, and preferably also nickel compounds, present in quantities corresponding to the following percentages by weight of the metal (based on the total): from 0.1% to 5% of Fe, from 0.05% to 8.5% of Cr, and up to 5% of nickel. These metals are present, at least partially, in the form of halides, and in particular fluorides, or in the form of oxides or oxy-halides. The catalyst is prepared by adding iron or chromium compounds, and preferably also nickel compounds, in a subdivided form, to aluminum fluoride or alumina, and then subjecting the composition thus obtained to an activation treatment by heating at a temperature between 300° C. and 550° C. for from 0.5–4 hours in a current of nitrogen or air, and then subjecting said composition to a fluorination treatment by heating at 200°–500° C. in an HF current, suitably diluted with inert gases for the thermal control of the reaction, in order to convert, at least partially, the alumina and possibly also the other metal compounds into their respective fluorides. The catalyst thus obtained is employed for the fluorination in gaseous phase at elevated temperatures of halogenated ethanes containing at least one chlorine atom, in order to obtain high yields in fluorinated ethanes having a high degree of symmetry, by means of HF, or for the chlorofluorination in gaseous phase at elevated temperatures of ethylene or partially halogenated ethylenes by means of a mixture of $HF+Cl_2$, in order to obtain fluorinated or chlorofluorinated ethanes with a high degree of symmetry.

3,650,988

HYDROCARBON CONVERSION CATALYSTS

John S. Magee, Jr., Baltimore, and Warren S. Briggs, Silver Spring, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Sept. 15, 1969, Ser. No. 858,134

Int. Cl. B01j *11/36, 11/40*
U.S. Cl. 252—451 **15 Claims**

A relatively low surface area highly stable and attrition resistant zeolite promoted hydrocarbon conversion catalyst wherein the semi-synthetic portion comprises a synthetic amorphous silica-alumina composite of which up to 50% of the synthetic alumina is derived from an alkali metal aluminate, and optionally clay. The catalyst finds utility in the conversion of hydrocarbons to more desirable derivatives thereof.

3,650,989

PREPARATION OF SILICA-ALUMINA CATALYST

Saul G. Hindin, Mendham, Joseph C. Dettling, Jackson, and William R. Larsen, Fords, N.J., assignors to Engelhard Minerals & Chemicals Corporation
No Drawing. Filed Dec. 9, 1969, Ser. No. 883,576

Int. Cl. B01j *11/36, 11/40*
U.S. Cl. 252—451 **7 Claims**

A highly acidic silica-alumina catalyst, containing a relatively large amount of alkali metal, e.g. up to about 1%, is prepared by a process comprising acidifying an alkali metal silicate to a pH of less than about 5.0 to form a silica hydrogel, washing the hydrogel with water, slurrying the hydrogel in a solution of an aluminum salt, adding to the slurry an ammoniacal base in excess of the amount required for neutralization of the aluminum salt, and separating, drying and calcining the resultant silica-alumina composite.

3,650,990

CATALYST AND METHOD FOR PREPARING SAME

Vincent J. Frilette, Yardley, Pa., and Russell W. Maatman, Sioux Center, Iowa, assignors to Mobil Oil Corporation

No Drawing. Continuation-in-part of application Ser. No. 711,215, Mar. 7, 1968, which is a continuation-in-part of application Ser. No. 319,639, Oct. 29, 1963, now Patent No. 3,373,109, which in turn is a continuation-in-part of application Ser. No. 774,124, Nov. 17, 1958. This application Oct. 9, 1969, Ser. No. 865,173

The portion of the term of the patent subsequent to Mar. 12, 1985, has been disclaimed

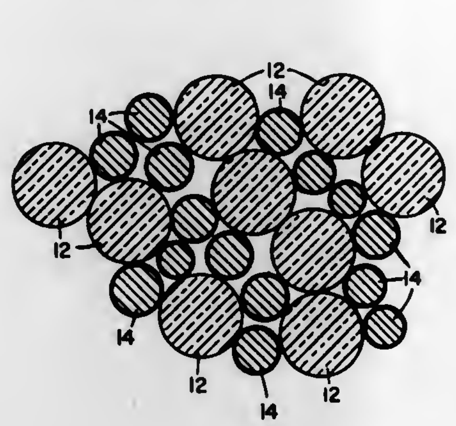
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z **24 Claims**

Crystalline aluminosilicate zeolite having uniform pores of from greater than 6 angstroms to 15 angstroms in diameter and containing specified metal and/or metal ions therein, prepared by "growing" crystals of such aluminosilicate from an aqueous medium containing said metal in anionic form.

3,650,991

COMPOSITE SUPERCONDUCTIVE BODY COMPRISING A MATRIX OF POROUS GLASS AND A SUPERCONDUCTIVE MATERIAL

James H. P. Watson, 164 E. 4th St.,
Corning, N.Y. 14830
Filed Apr. 13, 1970, Ser. No. 27,564
Int. Cl. H01b *1/02*
U.S. Cl. 252—500 **12 Claims**



Disclosed is a composite superconductive body comprising a porous glass matrix having a granular system of superconductive material disposed within the pores thereof. Adjacent grains of superconductive material are spatially separated but are electrically connected by electron tunneling. The critical field of these granular superconductors can be modified by processing either the porous glass matrix or the molten superconductor prior to impregnation of the superconductive material into the matrix.

ERRATUM

For Class 260—46 see:
Patent No. 3,650,852

3,650,992

METHOD FOR IMPREGNATING POLYMER BEADS WITH A BLOWING AGENT

Edward J. Schwoegler, Munster, Ind., assignor to Cupples Container Co., Austin, Tex.
No Drawing. Filed Sept. 15, 1970, Ser. No. 72,554
Int. Cl. C08j *1/26*
U.S. Cl. 260—2.5 B **6 Claims**

Particulate polymeric material, especially polystyrene, is impregnated with a blowing agent by suspending the particulate polymeric material in a suspension system comprising ethylene glycol and water, introducing a blowing agent, e.g., pentane, and maintaining under conditions of elevated temperature and pressure.

3,650,993

CRUSH-BEFORE-FINAL CURING PROCESS FOR MAKING DENSIFIED POLYURETHANE FOAM UTILIZING A VOLATILE ORGANIC FOAMING AGENT

Natale C. Zocco, East Haven, and Stanley I. Cohen, Orange, Conn., assignors to Olin Corporation, New Haven, Conn.
No Drawing. Continuation-in-part of application Ser. No. 780,247, Nov. 29, 1968. This application Apr. 6, 1970, Ser. No. 26,058
Int. Cl. B29d *27/04;* **C08g** *22/04, 53/10*
U.S. Cl. 260—2.5 BD **19 Claims**

An improved process for preparing flexible, densified polyurethane foam is disclosed which comprises allowing a polyurethane foam forming reaction mixture containing an organic foaming agent to rise, thereby forming a partially cured cellular material, and applying a compressive force to the partially cured cellular material to permanently reduce its volume. The organic foaming agent inhibits the formation of outer layers of undensified polyurethane foam integral with the densified polyurethane foam. The resulting flexible, densified polyurethane foam is particularly useful for such applications as cushioning and rug padding.

3,650,994

POLYURETHANE COMPOSITIONS PREPARED FROM DIPHENYL ETHER-PHENOL RESINS AND POLYISOCYANATES

Llewellyn Delphin Booth, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation-in-part of application Ser. No. 781,258, Dec. 4, 1968. This application July 27, 1970, Ser. No. 58,747
Int. Cl. C08g *22/44, 22/18*
U.S. Cl. 260—2.5 AM **2 Claims**

The invention concerns polyurethane compositions derived from chloromethylated diphenyl ether-phenol resins and polyisocyanates. It relates more particularly to polyurethane foams of synthetic chloromethylated diphenyl ether-phenol resins and polyisocyanates. The foams are fire retardant and have improved physical properties.

3,650,995

SHAPED ARTICLES OF LATEX FOAM

Robert E. Erickson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Oct. 7, 1968, Ser. No. 765,628
Int. Cl. C08f *47/08;* **B29d** *27/00*
U.S. Cl. 260—2.5 L **9 Claims**

Shaped foam articles of the reactive latexes are readily prepared by casting the latex in the form of a wet froth comprising a polymer having certain reactive substituent groups such as carboxy and a water-dispersible coreactive material such as a melamine-formaldehyde condensate onto a porous mold and curing and drying the wet froth with an air circulating drying means.

3,650,996

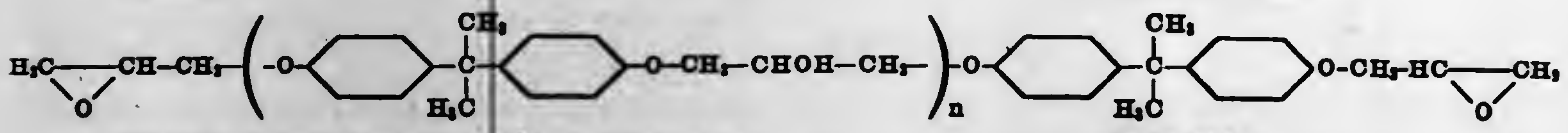
WATER-DILUTABLE COATING COMPOSITIONS CONTAINING PHENOL RESOLS ETHERIFIED

Rolf Guldenpfennig, Dossenheim, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg-Wondsbek, Germany
No Drawing. Continuation of abandoned application Ser. No. 661,558, Aug. 18, 1967. This application Dec. 4, 1970, Ser. No. 95,384
Claims priority, application Germany, Sept. 9, 1966,
R 44,090
Int. Cl. C08g *45/08*
U.S. Cl. 260—20 **8 Claims**

A water-dilutable heat-curable coating composition comprising:

(I) 50 to 99 percent by weight of hydrophilic plasticizing epoxy resin partial esters selected from the group consisting of:
  (1) the partial esters of compounds containing epoxy groups or hydroxyl groups produced by hydrolytic dissociation of said epoxy groups with at least one monocarboxylic acid and a polybasic carboxylic acid;
  (2) the partial esters of compounds containing epoxy groups or hydroxyl groups produced by hydrolytic dissociation of said epoxy groups with a polybasic carboxylic acid; and
  (3) a mixture of (1) and (2);
  wherein said polybasic carboxylic acid comprises adducts selected from the group consisting of maleic acid with fatty acids and maleic anhydride with fatty acids, said fatty acids are selected from the group consisting of drying oil

acids, semi-drying oil acids, and mixtures of said oils with rosin acids, said fatty acids containing unsaturated monocarboxylic acids, the molar proportion of unsaturated monocarboxylic acid to maleic acid or maleic anhydride is between about 0.9:1 and 1.1:1 and said compounds containing epoxy groups or hydroxyl groups are epoxy resins having the general formula



wherein n represents molecular weights of between about 380 and 3500;

(II) strong nitrogenous bases to form soaps with the free carboxyl groups;

(III) water; and

(IV) 1 to 50 percent by weight of hydrophilic and water-soluble low molecular weight hardenable aldehyde condensation products such as etherified phenol resols alone or in combination with phenol resols and/or aminoplast-forming resins.

3,650,997

COATING COMPOSITIONS CONTAINING EPOXY RESINS AND CARBOXYL TERMINATED POLYESTERS

Joseph Weisfeld, Fair Lawn, Alfred M. Tringali, Parsippany, Joseph F. Ackerman, Cedar Grove, and Joseph J. Bernardo, Lodi, N.J., assignors to Immont Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 710,656, Mar. 5, 1968. This application Aug. 13, 1970, Ser. No. 63,352

Int. Cl. C08g *39/10, 45/14;* **C09d** *3/66*

U.S. Cl. 260—21 **11 Claims**

Improved coating compositions comprising a blend of an epoxy resin and a polyester having a terminal carboxyl functionality between about two and four. The preferred polyester is the esterification product of (1) a hydroxyl terminated polyester and (2) a carboxylic acid-containing monoanhydride composition made up of a mixture of trimellitic anhydride and dodecenylsuccinic anhydride. Cratering of coatings has been very substantially reduced by use of terminally located dodecenylsuccinic anhydride-produced side chains on the polyester. Cratering is still further reduced and solubility parameters are improved by employing a glycidyl ester of a tertiary carboxylic acid, such as Cardura E, in the preparation of the hydroxyl terminated polyester.

3,650,998

HYDROXY-FUNCTIONAL HYDROPHYLIC RESINS BASED ON COPOLYMERS OF MONOVINYL AROMATIC COMPOUND AND HYDROXY-FUNCTIONAL MONOMER

Kazys Sekmakas and Edward A. Ganger, Jr., Chicago, and Lester A. Henning, Arlington Heights, Ill., assignors to Desoto, Inc., Des Plaines, Ill.

No Drawing. Continuation-in-part of applications Ser. No. 615,048, Feb. 10, 1967, and Ser. No. 634,480, Apr. 28, 1967. This application Oct. 17, 1968, Ser. No. 768,549

The portion of the term of the patent subsequent to Nov. 30, 1988, has been disclaimed

Int. Cl. C08f *19/02, 27/12;* **C23b** *13/00*

U.S. Cl. 260—21 **18 Claims**

Hydroxy-functional hydrophylic resins dispersible in water with the aid of a base are based on copolymers such as styrene-allyl alcohol copolymers. These copolymers are partially esterified with drying oil fatty acid and then reacted with a monoanhydride to generate carboxy functionality. A portion of the carboxy functionality is consumed by reaction with an epoxide such as butylene oxide. The resins are dispersible in water with the aid of a base at low acid number.

3,650,999

POLY(ESTER-AMIDE) BLOCK COPOLYMER HOT MELT ADHESIVES

Joseph G. Martins, Ludlow, and Kenneth F. Ashley, Westfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 15, 1970, Ser. No. 46,490

Int. Cl. C08g *41/04;* **C09j** *3/14*

U.S. Cl. 260—22 D **20 Claims**

An adhesive composition is prepared by reacting a crystalline polyester, a C_{18} to C_{54} polycarboxylic acid and a primary diamine to form a poly(ester-amide) adhesive composition. This composition which is especially suited for use as a hot melt adhesive, provides adhesive bonds which are resistant to flow at 150° C.

3,651,000

STABLE EMULSIONS

Gene N. Woodruff, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Nov. 9, 1967, Ser. No. 681,890

Int. Cl. C08c *11/68*

U.S. Cl. 260—28.5 **4 Claims**

Stable emulsions are prepared from blends of asphalt with rubber and/or polyolefins utilizing dual function emulsifying agents containing both amino and carbonyl groups, which emulsion blends are useful as coatings for fabrics, etc., sheeting, and other structures requiring high resistance to weathering.

3,651,001

PIGMENTED PAINTS

Heinrich Meckbach, Leverkusen, Dietrich Glabisch, Opladen, and Herbert Bartl, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 12, 1968, Ser. No. 712,393

Claims priority, application Germany, Apr. 5, 1967, F 52,024

Int. Cl. C09d *3/00*

U.S. Cl. 260—29.6 **2 Claims**

A pigmented paint having a continuous aqueous phase including a binder of a copolymer of ethylene, a half ester of a α,β-unsaturated dicarboxylic acid or a salt thereof, vinyl chloride and vinyl ester in specified proportions.

3,651,002

ACRYLAMIDE TYPE SOIL STABILIZER CONTAINING EITHER SODIUM OR AMMONIUM ACRYLATE

Einosuke Higashimura and Eiichi Nakamura, Tokyo, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

No Drawing. Filed Apr. 22, 1968, Ser. No. 723,302

Claims priority, application Japan, May 4, 1967, 42/28,367; Jan. 31, 1968, 43/5,392; Feb. 8, 1968, 43/7,416

Int. Cl. C08f *15/18, 15/22, 45/44, 45/46;* **E02d** *3/12*

U.S. Cl. 260—29.6 TA **10 Claims**

A novel acrylamide type soil stabilizer comprising (1) an acrylamide, (2) a water-soluble cross linking agent, (3) a member selected from the group consisting of sodium acrylate and ammonium acrylate in an amount of less than 10% based on the acrylamide, and (4) at least one member selected from the group consisting of sodium methacrylate, ammonium methacrylate, magnesium methacrylate and 2-hydroxyethyl methacrylate. This soil stabilizer provides a homogeneous aqueous solution which is stable even at a high concentration and has excellent soil stabilizing effect. The soil stabilizer is applied in the form of aqueous solution having a concentration of 2–20% together with a redox catalyst to soil to stabilize the same.

3,651,003

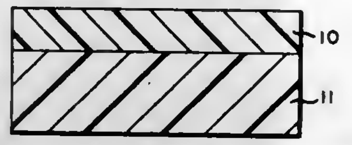
HEXA(ALKOXYMETHYL)MELAMINE-MODIFIED HYDROXYLATED FLUOROPOLYMER COATING COMPOSITIONS AND PROCESSES

Max F. Bechtold, Kennett Square, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 18, 1968, Ser. No. 785,648

Int. Cl. C08g *37/32*

U.S. Cl. 260—31.2 XA **28 Claims**



Described are combinations of certain hydroxylated fluoropolymers and hexa(alkoxymethyl)melamines, both in the form of crosslinkable liquid mixtures and in the form of scratch-resistant, strongly adherent cross-linked coatings, methods of applying the coatings from the liquid mixtures, and solid objects, especially plastic objects, carrying the coatings.

3,651,004

SOLUTIONS OF POLYGLUTAMIC ACID DERIVATIVES

Yasuo Fujimoto and Yoichi Koiwa, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed May 6, 1970, Ser. No. 35,176

Claims priority, application Japan, May 7, 1969, 44/34,513

Int. Cl. C08g *51/36*

U.S. Cl. 260—31.2 N **7 Claims**

Treating solid polymers of polyglutamic acid derivatives with formic acid effectively dissolves out the higher molecular weight portions thereof, resulting in solutions which are stable and which do not become discolored with time. Shaped articles such as films made from the formic acid solutions of, for example, poly-γ-alkyl glutamates or copolymers thereof possess superior mechanical properties such as tensile strength and elongation.

3,651,005

COATING COMPOSITIONS OF AZIRIDINYL ALKYL ACRYLATE OR METHACRYLATE ACRYLIC GRAFT COPOLYMERS

Aloysius N. Walus, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 22, 1970, Ser. No. 100,829

Int. Cl. C08f *45/34, 45/36*

U.S. Cl. 260—31.2 **10 Claims**

The lacquer coating composition consists essentially of a graft copolymer dissolved in an organic solvent wherein the backbone of the graft copolymer is of polymerized soft acrylic constituents of an alkyl acrylate or an alkyl methacrylate in which the alkyl groups have 4–24 carbon atoms, and the copolymer has grafted into the backbone through a coupling unit of an aziridinyl acrylate or an aziridinyl methylacrylate a side chain of relatively hard polymerized monomer units, such as alkyl acrylates or alkyl methacrylates having 1–3 carbon atoms in the alkyl groups, acrylonitrile, methacrylonitrile and the like. The composition forms a high quality coating which is particularly useful as an exterior finish for automobiles and trucks.

3,651,006

BINDERS CONTAINING 1,3,5-TRIOXANE FOR THE PRODUCTION OF PROCESSED WOOD MATERIALS

Bruno Sander and Heinrich Sperber, Ludwigshafen (Rhine), Ernst-Heinrich Pommer, Limburgerhof, Pfalz, and Werner Helmut Clad and Otto Wittmann, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 19, 1968, Ser. No. 699,058

Claims priority, application Germany, Jan. 24, 1967, B 90,865

Int. Cl. C08g *37/08, 37/24, 51/34*

U.S. Cl. 260—33.2 **3 Claims**

Binders for the production of processed wood materials and based on mixtures of wood adhesives, wood preservatives and organic solvents which contain 1,3,5-trioxane; and processed wood materials prepared therewith.

3,651,007

EPOXIDES

Hans-Peter Sigg, Binningen, and Christian Stoll, Basel, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

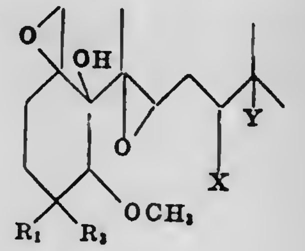
Filed Apr. 8, 1969, Ser. No. 814,388

Claims priority, application Switzerland, Apr. 16, 1968, 5,564/68, 5,566/68, 5,567/68

Int. Cl. C07d *1/18*

U.S. Cl. 260—348 R **3 Claims**

The invention provides new antibiotics derivatives of formula



in which either:

(i)

X and Y together form a second bond between the carbon atoms to which they are attached,
R_1 is a hydrogen atom, and
R_2 is a hydroxyl group,

(ii)

X and Y together with the carbon atoms to which they are attached form an epoxy group, and
R_1 and R_2 together form the oxo group=O, or

(iii)

X and Y together are a second bond between the carbon atoms to which they are attached and
R_1 and R_2 together form the radical

$$=N—NH—CO—NH_2$$

The new antibiotic derivatives are useful in inhibiting the production of antibodies and the formation of cellular immunity reactions.

3,651,008

POLYMERIC COMPOSITIONS AND THEIR METHOD OF MANUFACTURE

Billy G. Moser, Lake View Terrace, and Robert F. Landel, Altadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

No Drawing. Filed Dec. 22, 1967, Ser. No. 692,636

Int. Cl. C08g *51/04;* **C06b** *1/04;* **C08h** *17/02*

U.S. Cl. 260—37 **7 Claims**

Filled polymer compositions made by dissolving the polymer binder in a suitable sublimable solvent, mixing the filler material with the polymer and its solvent, freezing the resulting mixture, and subliming the frozen solvent from the mixture, removing it therefrom. The remaining composition is then suitable for conventional processing, such as compression molding or extruding. A particular feature of the method of manufacture is pouring the mixed solution slowly in a continuous stream into a cryogenic bath wherein frozen particles of the mixture result. The frozen individual particles are then subjected to the sublimation.

3,651,009

MODIFIED ELASTOMERIC ETHYLENE/PROPYLENE COPOLYMERS AND PROCESS FOR PRODUCING SAME

Nazzareno Cameli, Paolo Longi, and Alberto Valvassori, Milan, Italy, assignors to The B. F. Goodrich Company, Akron, Ohio

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,076
Claims priority, application Italy, Apr. 14, 1969, 15,533/69
Int. Cl. C08f *17/00*
U.S. Cl. 260—41 R **12 Claims**

Quaternary, sulfur-vulcanizable copolymers of ethylene, propylene, dicyclopentadiene and alkyltricyclo(6,2,1,$0^{2,7}$) 4,9-undecadiene are disclosed. Although at least half of the relatively expensive alkyltricyclo(6,2,1,$0^{2,7}$)4,9-undecadiene is replaced by relatively inexpensive dicyclopentadiene in the new copolymers, the copolymers, while being less expensive than the known ternary copolymers of ethylene, propylene, alkyltricyclo-undecadiene, have the same desirable properties of those known terpolymers, and have a faster vulcanization rate than ethylene/propylene/dicyclopentadiene copolymers prepared under like conditions.

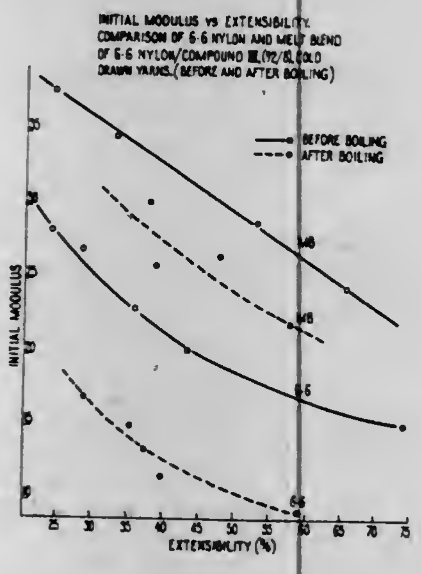
A process for preparing the new quaternary copolymers, using catalysts prepared from hydrocarbon-soluble vanadium compounds and hydrides or organometallic compounds of beryllium, aluminum, or lithium-aluminum complexes is also disclosed.

3,651,010

SYNTHETIC POLYAMIDE COMPOSITIONS

Clifton Douglas Cowell and Karl Anthonie Martin, Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 26, 1968, Ser. No. 740,195
Claims priority, application Great Britain, June 26, 1967, 29,430/67
Int. Cl. C08g *51/58*
U.S. Cl. 260—45.95 **7 Claims**



A polyamide composition which can be melt spun or shaped and, if necessary drawn, which composition comprises a class of phenols which confer increased resistance to deformation to the product.

3,651,011

CYCLIZATION OF 1,2-POLYBUTADIENE IN THE PRESENCE OF PHENOLIC ANTIOXIDANTS

Robert J. Schaffhauser, Brookside, and Chester L. Parris, Morris Plains, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed June 11, 1969, Ser. No. 832,488
Int. Cl. C08f *27/00*
U.S. Cl. 260—45.95 **4 Claims**

1,2-polybutadiene is cyclized within 10 hours to the point of complete elimination of vinyl unsaturation, at concentration in lower alkyl benzene in the range 3%–10% by weight, using a cationic agent, especially boron trifluoride, to promote the cyclization. The temperature employed is at most 105° C. An antioxidant such as a hindered polyphenol is included in the cyclization reaction mixture.

3,651,012

NOVEL BIS-IMIDE COMPOSITIONS AND POLYMERS THEREFROM

Fred F. Holub, Schenectady, and Carl M. Emerick, Mechanicville, N.Y., assignors to General Electric Company

No Drawing. Filed Apr. 25, 1969, Ser. No. 819,430
Int. Cl. C08g *20/20*
U.S. Cl. 260—47 UA **6 Claims**

The invention covers novel imide compositions, and coreaction products of the latter with copolymerizable monomers and various polymers and resins. The compositions herein described have many uses including insulation and protective applications as well as being useful in numerous molding applications.

3,651,013

ACRYLIC FIBER

Toshio Ohfuka, Yasushi Ichikawa, and Yoshiharu Sugaya, Shizuoka-ken, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed June 16, 1969, Ser. No. 833,728
Claims priority, application Japan, June 14, 1968, 43/40,582
Int. Cl. C08f *15/40*
U.S. Cl. 260—49 **6 Claims**

Acrylic fiber having an improved antiflaming performance and comprising a copolymer of more than 55 wt. percent acrylonitrile, 5–25 wt. percent vinylidene chloride, 4–25 wt. percent methacrylonitrile and 3–14 wt. percent acrylamide and/or methacrylamide.

3,651,014

SEGMENTED THERMOPLASTIC COPOLYESTER ELASTOMERS

William K. Witsiepe, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 843,243, July 18, 1969. This application June 22, 1970, Ser. No. 48,503
Int. Cl. C08g *17/08*
U.S. Cl. 260—75 R **11 Claims**

A segmented thermoplastic copolyester elastomer containing recurring polymeric long chain ester units derived from dicarboxylic acids and long chain glycols and short chain ester units derived from dicarboxylic acids and low molecular weight diols. About 50–90% of the total number of short chain ester units must be derived from a single dicarboxylic acid and a single low molecular weight diol. The elastomers have exceptional properties, particularly tear-strength, abrasion resistance and resistance to oil swell.

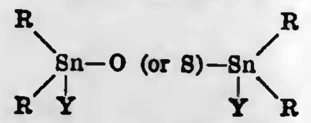
3,651,015

PROCESS FOR PRODUCING POLYACETAL RESIN

Shinichi Ishida, Tokyo, Noboru Ohshima, Saitama-ken, Norimasa Fujita and Kyoichiro Mori, Yokohama, and Kunio Kurita, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 3, 1969, Ser. No. 813,016
Claims priority, application Japan, Mar. 5, 1969, 44/16,210
Int. Cl. C08g *1/02, 1/20, 3/00*
U.S. Cl. 260—64 **16 Claims**

Polyacetal resin having good mechanical properties is prepared commercially advantageously by polymerizing formaldehyde containing up to 6% water or copolymerizing the formaldehyde with a monomer copolymerizable with formaldehyde using a tetravalent organo-tin compound represented by the following formula as a catalyst,



$$R_2(Y)Sn-O\ (\text{or } S)-Sn(Y)R_2$$

wherein R is a hydrocarbon radical, Y is halogen, hydroxy, thiocyano, alkoxy, thioalkoxy or alkoxycarbonyl group, and acylating the thus obtained polymer or copolymer.

3,651,016

METHOD FOR THE PRODUCTION OF FILM- AND FIBER-FORMING POLYESTERS WITH A NOVEL METALLIC CATALYST

Josef Hrach and Theodor Wimmer, Tyrol, Austria, assignors to Alpine Chemische Aktiengesellschaft, Kufstein, Tyrol, Austria

No Drawing. Filed Dec. 21, 1967, Ser. No. 692,275
Claims priority, application Austria, Dec. 30, 1966, 12,053/66; June 2, 1967, 5,144/67
Int. Cl. C08g *17/013*
U.S. Cl. 260—75 R **5 Claims**

Film- and filament-forming color-stable polyesters or copolyesters of dicarboxylic acids, such as terephthalic, iso-phthalic, diphenyldicarboxylic and adipic acids, and a diol, such as ethylene glycol, 1,4-bis(hydroxy methyl) cyclohexane and bis-phenol-A-diglycolether, are reacted under polymerizing conditions in the absence of oxygen and in the pressure of a polymerization catalyst consisting of a mixture of (a) metallic antimony, (b) metallic lead, and (c) metallic zinc. Instead of a dicarboxylic acid, a functional, polyester-forming derivative thereof may be used, preferably the dimethyl ester. The lead component (b) of the catalyst may be replaced in whole or part by tin, and the catalyst preferably is in the form of an alloy.

3,651,017

PROCESS FOR THE PREPARATION OF POLYESTERS

Kenichi Tanabe, Kazuo Itoi, and Hirozo Segawa, Kurashiki, Japan, assignors to Kurashiki Rayon Co., Ltd., Kurashiki, Japan

No Drawing. Filed Oct. 28, 1968, Ser. No. 771,360
Claims priority, application Japan, Dec. 29, 1967, 43/85,175
Int. Cl. C08g *17/015*
U.S. Cl. 260—75 R **10 Claims**

Process for the preparation of a polyester in which at least 80% of the recurring structural units are composed of ethylene terephthalate units, which comprises polycondensing bis(β-hydroxyethyl)terephthalate, or a mixture of bis(β-hydroxyethyl)terephthalate of the quantity sufficient to give at least 80% of ethylene terephthalate units to the product polyester, with the balance quantity of at least one comonomer which is copolycondensable with the terephthalate, in the presence of a polycondensation catalyst, characterized in that the polycondensation catalyst is composed of at least one germanium compound and at least one alkaline substance selected from the group consisting of alkali metals, and hydrides, hydroxides, oxides, alcoholates, and inorganic and organic acid salts of alkali metals.

3,651,018

USE OF A GERMANIUM-CONTAINING POLYCONDENSATION CATALYST IN THE PREPARATION OF POLYETHYLENE TEREPHTHALATE

Gerhard Schade, Witten-Bommern, and Franz Blaschke, Witten (Ruhr), Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,183
Claims priority, application Germany, Nov. 28, 1968, P 18 11 446.0
Int. Cl. C08g *17/015*
U.S. Cl. 260—75 R **6 Claims**

A process for the preparation of polyethylene terephthalate by the polycondensation of oligomeric ethylene terephthalate. A glycolic solution of triethylammonium or tripropylammonium germanate is employed as the catalyst in the process. The catalyst is prepared by adding the respective trialkylamine to an aqueous-glycolic slurry of germanium dioxide.

3,651,019

PRODUCTION OF ADDUCTS OF CARBON TETRACHLORIDE OR CHLOROFORM WITH OLEFINICALLY UNSATURATED SUBSTANCES

Meir Asscher, Rehovoth, Aharon Katchalsky, Tel-Aviv, and David Vofsi, Rehovoth, Israel, assignors to Yeda Research & Development Company Ltd., Rehovoth, Israel

No Drawing. Continuation-in-part of applications Ser. No. 223,543 and Ser. No. 233,549, both Sept. 13, 1962. This application July 27, 1965, Ser. No. 475,274
Claims priority, application Israel, Sept. 28, 1961, 16,079, 16,080
Int. Cl. C07c *121/06, 21/04*
U.S. Cl. 260—77.2 **8 Claims**

A process for the production of 1:1 adducts of carbon tetrachloride or chloroform with olefinically unsaturated compounds in the presence of iron or copper compound catalysts, which are at least partially in reduced valence states.

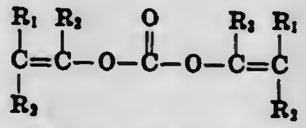
3,651,020

ADDITION HOMOPOLYMERS OF DIVINYL CARBONATES

David Rhum, Westfield, and Lester Weintraub, Livingston, N.J., assignors to Air Reduction Company, Incorporated, New York, N.Y.

No Drawing. Continuation of application Ser. No. 591,091, Nov. 1, 1966. This application Nov. 7, 1969, Ser. No. 871,570
Int. Cl. C08g *17/13*
U.S. Cl. 260—77.5 UA **3 Claims**

There are provided addition homopolymers of a carbonate having the formula



$$R_1R_3C{=}C(R_2)-O-C({=}O)-O-C(R_3){=}CR_1R_2$$

wherein R_1, R_2 and R_3 are hydrogen, phenyl or alkyl containing up to 20 carbon atoms.

3,651,021

ETHYLENICALLY UNSATURATED POLYLACTONE-BASED POLYURETHANE ELASTOMER AND VULCANIZATES THEREFROM

Harrison S. Kincaid, Moorestown, and Fritz Hostettler, Verona, N.J., and Harry Vineyard, South Charleston, W. Va., assignors to Union Carbide Corporation

No Drawing. Filed May 3, 1968, Ser. No. 726,589
Int. Cl. C08g *22/10*
U.S. Cl. 260—77.5 AN **15 Claims**

Polyethylenically unsaturated polyurethane elastomers can be prepared by reacting an ethylenically unsaturated polylactone diol, an organic diisocyanate, and a difunctional glycol chain extender at an isocyanato/hydroxyl ratio of approximately one. These elastomers can be cross-linked by methods employed in the natural and synthetic rubber arts to yield useful and desirable vulcanizates.

3,651,022
PROCESS FOR PREPARING A POLYAMIDE

Donald A. Holmer and Oscar A. Pickett, Jr., Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,247

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **8 Claims**

Linear polyamides from which useful fibers may be conventionally melt-spun can be prepared in a relatively short time and with no substantial polymer gelation by heating a mixture of polyamide-forming reactants consisting essentially of 4,4'-methylene dianiline and from 1.01 to 1.09 moles of azelaic acid, sebacic acid, 1,11-undecanedioic acid, 1,12-dodecanedioic acid or a mixture of two or more of such acids per mole of the 4,4'-methylene dianiline in an inert atmosphere at a temperature between the melting point of the resulting polyamide and about 350° C. and in the absence of an extraneous polyamidation catalyst.

3,651,023
PREPARATION OF POLYAMIDES WITH SPECIAL PROPERTIES

Johannes H. Ottenheym, Sittard, and Pieter C. A. Van Krimpen and Pierre J. Franssen, Stein, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed July 2, 1968, Ser. No. 741,897

Int. Cl. C08g *20/08, 20/12, 41/00*

U.S. Cl. 260—78 L **1 Claim**

There is provided a polyamide composition containing at least one additive of lysine, α-amino-ε-caprolactam, ε-N—R-lysine (wherein R stands for a bivalent hydrocarbon radical), α-N—R-α-amino-ε-caprolactam (wherein R stands for a bivalent hydrocarbon radical), N,N'-bis hexahydro-azepin-2-oxo-3-yl)-R (wherein R stands for a diamine or a diamide) and 1 N, 3 N, 5 N-tri(hexahydro-azepin-2-oxo-3-yl)-triazine-1,3,5 and a process for producing the same. Preferably the additive is contained in the composition in amounts of 0.5 to 5% by weight of the polyamide. The composition is useful for spinning into fibers and yarns and improves color intensity, modulus of elasticity and flat spotting.

3,651,024
ANIONIC SOLUTION POLYMERIZATION OF LAUROYL LACTAM

Michel Biensan, Billere, and Philippe Bruant, Pau, France, assignors to Societe Nationale des Petroles d'Aquitaine Tour Aquitaine, Courbevole, France

No Drawing. Filed Dec. 23, 1969, Ser. No. 887,761

Claims priority, application France, Dec. 31, 1968, 182,522

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 L **10 Claims**

Polyamide powders are obtained by adding to a lactam solution, a fine polyamide powder in an amount of at least 20% of the total weight of the lactam and polyamide and thereafter heating the solution, an anionic catalyst and an activator to a polymerization temperature below the melting point of the lactam.

3,651,025
DIENE POLYMERIZATION PROCESS

Arthur R. Bean, Jr., Buena Park, Mary J. Papavasiliou, Gardena, and John L. Snyder, Long Beach, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Feb. 2, 1970, Ser. No. 8,006

Int. Cl. C08d *5/02;* **C08f** *27/00*

U.S. Cl. 260—78.4 D **4 Claims**

Conjugated diene polymers having improved processability, better dryability, green strength, and resistance to cold flow are prepared by polymerization of a conjugated diene coupling of the product with a multi-functional coupling agent and reinitiation of the polymerization to form a mixture of polymeric species.

3,651,026
COPOLYMERS OF ISOPROPENYL ALKYL ETHERS AND PROCESS FOR THEIR PRODUCTION

Kurt Moser, Fribourg, Beat Hochli, Bern, and Theodor Volker and Paul Wicht, Friboug, Switzerland, assignors to Lonza Ltd., Basel, Switzerland

No Drawing. Filed Jan. 19, 1970, Ser. No. 4,083

Claims priority, application Switzerland, Jan. 17, 1969, 617/69; Dec. 3, 1969, 17,985/69

Int. Cl. C08f *15/00, 15/40*

U.S. Cl. 260—78.5 R **11 Claims**

Isopropenyl alkyl ethers may be copolymerized with other unsaturated monomers such as esters of unsaturated dicarboxylic acids, olefins, vinyl esters or acrylates. Polymerization is effected by known radical catalysts and may be conducted as a reaction, emulsion, suspension, solution or precipitation process.

3,651,027
POLYURETHANE BLOCK ELASTOMERS

Jean Robin, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Feb. 7, 1969, Ser. No. 797,675

Claims priority, application France, Feb. 9, 1968, 139,336

Int. Cl. C08g *22/24*

U.S. Cl. 260—75 NH **6 Claims**

The invention provides new polyurethane block elastomers of good mechanical properties and resistance to yellowing made by condensing bis(4-isocyanato-cyclohexyl)methane with an α,ω-dihydroxy macrodiol and coupling the isocyanate-terminated prepolymer obtained with 3,3-bis(aminomethyl)-oxacyclobutane.

3,651,028
MODIFIED POLYOLEFIN COMPOSITION

Kenichi Maemoto, Ibaraki, and Takeshi Shimamura, Niihama, Japan, assignors to Sumimoto Chemical Co., Ltd., Osaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 680,332, Nov. 3, 1967, which is a division of application Ser. No. 530,400, Feb. 28, 1966, now Patent No. 3,418,395. This application Mar. 29, 1968, Ser. No. 717,406

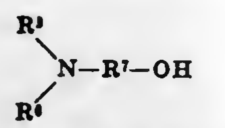
Int. Cl. C08f *27/08*

U.S. Cl. 260—78.5 T **4 Claims**

This invention is directed to a modified copolymer of ethylene and maleic acid ester compound or an acrylic acid ester compound of the formula:

$$CHR^1{=}CR^2COOR^3$$

wherein R^1 is a hydrogen atom or —$COOR^4$, R^2 is a hydrogen atom or methyl radical, each of R^3 and R^4 being an alkyl radical of from 1 to 5 carbon atoms, said copolymer being modified by treatment with (1) an amino-alcohol of the formula:



$$\begin{matrix}R^5 & \\ & N-R^7-OH\\ R^6 & \end{matrix}$$

wherein each of R^5 and R^6 is a hydrogen atom, or a hydrocarbon radical, such as alkyl, cycloalkyl, aralkyl or an aryl radical, the hydrogens of said hydrocarbon radical of which may be substituted with amino or alkyl-substituted amino radicals, R^7 is a divalent aliphatic, alicyclic or aromatic hydrocarbon radical or (2) an alcohol containing a nitrogen-containing heterocyclic radical and having the general formula X—R^8—OH, wherein R^8 is a divalent aliphatic hydrocarbon radical and X is a nitrogen-containing heterocyclic radical. The invention also relates to the method of producing the aforesaid modified copolymers.

3,651,029
LUBRICATING OIL ADDITIVES

Takehiko Fujimoto, Mikio Nishimura, and Shoji Takigawa, Kyoto, Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

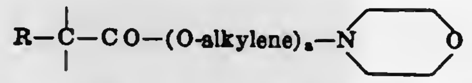
No Drawing. Filed Aug. 22, 1969, Ser. No. 852,485

Claims priority, application Japan, Aug. 26, 1968, 43/61,061

Int. Cl. C08f *19/00*

U.S. Cl. 260—78.5 E **6 Claims**

Copolymers having as an essential unit thereof the radical



where *a* is an integer of 1 or higher and R is hydrogen or methyl, are added to lubricating oils to improve the detergency, dispersancy and viscosity index thereof.

3,651,030
PROCESS FOR MAKING A MEMBRANE

Charles W. Desaulniers, Franklin, Cheryl A. Ford, Dedham, and Richard W. Mayo, Winchester, Mass., assignors to Amicon Corporation, Lexington, Mass.

No Drawing. Filed July 5, 1968, Ser. No. 742,516

Int. Cl. C08g *23/00, 33/00*

U.S. Cl. 260—79.3 **6 Claims**

A process for forming highly wettable and rewettable polysulfone membrane useful in fuel cells as moisture vapor transmissive, yet hydrogen retentive, barriers.

This process comprises the steps of subjecting a microporous membrane to treatment in an acidic bath to enable the pores to imibibe water more readily and more completely. In the preferred and most advantageous aspects of the invention, an anisotropic polysulfone membrane having a microporous barrier layer about 0.1 to 5 microns thick which layer comprises about 1% by volume of pores having an average diameter of from 20 to 100 angstroms is treated with the acid to form a novel, high performance membrane.

3,651,031
PREPARATION OF POLYTHIIRANES

Bernard Boucheron, Bethune, France, assignor to Societe Anonyme: Ethylene-Plastique, Paris, France

No Drawing. Filed Dec. 10, 1968, Ser. No. 782,755

Claims priority, application Great Britain, Dec. 14, 1967, 56,849/67

Int. Cl. C08g *23/00*

U.S. Cl. 260—79 **6 Claims**

Process for the preparation of thermostabilisable polythiiranes in which polymerisation is effected in a polymerisation medium containing or consisting of dimethyl sulfoxide and a catalyst selected from the group consisting of a tetraphenyl phosphonium salt and a tetraalkyl ammonium salt.

3,651,032
VULCANIZABLE ETHYLENE/PROPYLENE COPOLYMERS AND PROCESS FOR PREPARING SAME

Nazzareno Cameli, Paolo Longi, Alberto Valvassori, and Sandro Parodi, Milan, Italy, assignors to The B. F. Goodrich Company, Akron, Ohio

No Drawing. Filed June 10, 1970, Ser. No. 45,256

Claims priority, application Italy, June 11, 1969, 18,049/69

Int. Cl. C08f *17/00*

U.S. Cl. 260—79.5 B **11 Claims**

Vulcanizable copolymers of ethylene, propylene, dicyclopentadiene and hexadiene-1,4 are disclosed, as well as a process for preparing them. The copolymers have the same characteristics of vulcanizability and fast vulcanization rate as do copolymers of ethylene, propylene and hexadiene-1,4, but are less costly.

3,651,033
DYEABLE ACRYLONITRILE COPOLYMERS CONTAINING VINYL PHENYL ALKYL QUATERNARY AMMONIUM COMPOUNDS

Ardy Armen, Amsterdam, Netherlands, and Gary G. Hammer and John H. Hennes, Williamsburg, Va., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 17, 1969, Ser. No. 834,158

Int. Cl. C08f *17/00*

U.S. Cl. 260—80.72 **6 Claims**

Vinyl phenyl alkyl quaternary ammonium compounds, e.g. p-vinyl benzyl methyl morpholinium chloride, are copolymerized in amounts of 0.25 to 7% with at least 85% acrylonitrile and, 1 to 10% of a monomer copolymerizable with acrylonitrile, e.g. methyl acrylate. The resulting polymer, upon spinning, gives fibers having excellent dyeability and heat stability.

3,651,034
CROSS-LINKED ETHYLENE VINYL AZETIDINONE COPOLYMERS

Eduard Kaiser, Kelkheim, Taunus, Helmut Korbanka, Gersthofen, and Hans Dieter Stemmer, Hattersheim (Main), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,932

Claims priority, application Germany, Dec. 13, 1968, P 18 14 447.3

Int. Cl. C08f *15/02, 15/40, 27/00*

U.S. Cl. 260—80.72 **10 Claims**

Cross-linked ethylene copolymers which are prepared trom ethylene coplymers consisting of at least 50% by weight of ethylene and 0.5 to 40% by weight of monomers carrying azetidinone rings, which copolymers are cross-linked by heat treatment.

3,651,035
COPOLYMERS OF ALKYL STYRENES AND N-VINYL HETEROCYCLIC MONOMERS AND INVERSE SUSPENSION POLYMERIZATION USING THE SAME

Bobby Leroy Atkins, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 12, 1970, Ser. No. 19,128

Int. Cl. C08f *19/02*

U.S. Cl. 260—88.1 P **4 Claims**

This invention relates to a new interpolymeric composition of matter and particularly to copolymers of certain alkyl substituted alkenyl aromatic monomers and N-vinyl heterocyclic monomers. The new copolymers find utility as suspending agents for water-in-oil dispersions and as water dispersible coatings.

3,651,036

STABLE ANAEROBIC CURABLE SEALING COMPOSITIONS CONTAINING ZINC CHLORIDE AND TETRAHYDROQUINOLINE

Eisuke Watanabe and Masayashi Ozono, Tokyo, Japan, assignors to Tokyo Three Bond Co., Ltd., Tokyo, Japan
No Drawing. Filed Feb. 16, 1970, Ser. No. 11,920
Int. Cl. C08f *3/64, 3/66*
U.S. Cl. 260—89.5 **10 Claims**

The present invention relates to an anaerobic curable sealing composition comprising 100 parts by weight of acrylic ester monomer containing polymerization initiator capable of imparting anaerobic property, 0.1 to 20 parts by weight of zinc chloride and 0.01 to 20 parts by weight of tetrahydroquinoline added thereto, which composition maintains preservation in the air and cures in extremely short periods of time under the condition of air-exclusion.

3,651,037

PROCESS FOR PREPARING HIGH-SOLIDS CHLOROPRENE POLYMER LATEX

Austin Matthew Snow, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 669,720, Sept. 22, 1967. This application Sept. 30, 1969, Ser. No. 862,451
Int. Cl. C08f *3/16*
U.S. Cl. 260—92.3 **4 Claims**

High-solids chloroprene polymer latexes are prepared by polymerizing chloroprene in an alkaline aqueous emulsion containing critical amounts of the potassium salts or a mixture of the sodium and potassium salts of (1) disproportionated wood rosin acids, (2) a formaldehyde condensate of a naphthalene sulfonic acid, and (3) a polymerized unsaturated fatty acid.

3,651,038

PROCESS FOR PREPARING HIGH-SOLIDS CHLOROPRENE POLYMER LATEX

Austin Matthew Snow, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 669,720, Sept. 22, 1967. This application Sept. 30, 1969, Ser. No. 862,449
Int. Cl. C08f *3/16*
U.S. Cl. 260—92.3 **4 Claims**

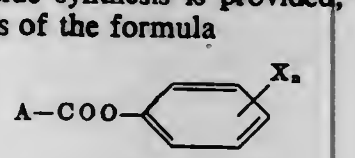
High-solids chloroprene polymer latexes are prepared by polymerizing chloroprene in an alkaline aqueous emulsion containing critical amounts of the potassium salts or a mixture of sodium and potassium salts of (1) wood rosin acid, (2) a formaldehyde condensate of a naphthalenesulfonic acid, and (3) a polymerized unsaturated fatty acid.

3,651,039

β-ALANINE[1] AND γ-AMINOBUTYRIC ACID[1]-A.C.T.H. PEPTIDES

Masahiko Fujino, Takarazuka, Chitoshi Hatanaka, Kyoto, and Osamu Nishimura and Yasushi Sanno, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Filed Dec. 30, 1968, Ser. No. 788,066
Claims priority, application Japan, Dec. 29, 1967, 43/84,700, 43/84,701, 43/84,702; Feb. 8, 1968, 43/7,865; Feb. 9, 1968, 43/8,076, 43/8,077; Apr. 24, 1968, 43/27,565; Nov. 9, 1968, 43/82,160; Nov. 20, 1968, 43/85,113
Int. Cl. C07c *103/52*
U.S. Cl. 260—112.5 **3 Claims**

Novel peptide synthesis is provided, involving the use of compounds of the formula



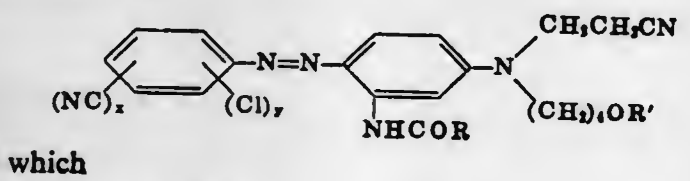
wherein A represents dichloromethyl or trichloromethyl, X represents chloro or nitro, and *n* represents an integer of 1 to 5, inclusive, to form active esters with peptide fragments, said active esters reacting with other peptide fragments to effect condensation of the said peptide fragments. This novel process provides better yield and purity when compared with the use of N,N′-dicyclohexyl carbodiimide as a condensing agent. Novel peptides with ACTH-type activity have been prepared by this novel synthesis and include [β-alanine[1]]α-ACTH(1–23 amide), [γ-aminobutyric acid[1]]-ACTH(1–24) and [β-alanine[1]]-ACTH(1–24).

3,651,040

WATER-INSOLUBLE PHENYL-AZO-PHENYL MONOAZO DYESTUFFS

Winfried Kruckenberg, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Feb. 12, 1969, Ser. No. 798,767
Claims priority, application Germany, Feb. 23, 1968, P 17 19 076.0
Int. Cl. C07c *107/06;* **C09b** *29/08*
U.S. Cl. 260—207.1 **6 Claims**

Water-insoluble orange to red monoazo dyestuffs of the formula



in which

R is CH_3 or C_2H_5;
R′ is H or —COR″;
R″ is CH_3, C_2H_5, OCH_3 or OC_2H_5;
x is 1 or 2; and
y is 0, 1, 2 or 3;

are disclosed for dyeing hydrophobic fiber materials, e.g. polyester. The dyeings are characterized by good fastness to alkaline boiling and good fastness to sublimation.

3,651,041

ACID ION EXCHANGERS DERIVED FROM AGAROSE

Horst D. Schell and Victor F. Ghetie, Bucharest, Rumania, assignors to Institutul de Biochimie, Bucharest, Rumania
No Drawing. Filed Mar. 28, 1969, Ser. No. 811,624
Claims priority, application Rumania, Mar. 30, 1968, 57,502
Int. Cl. C07c *47/18*
U.S. Cl. 260—209 R **5 Claims**

The present invention deals with the synthesis of new strong acid ion exchangers derived from agarose.

The procedure for obtaining the derivatives, according to the invention, consists in the introduction of sulphoethyl groups either into simple agarose molecule or into agarose cross-linked through glyceric bridges by means of epichlorohydrin.

3,651,042

SEPARATION OF THE COMPONENTS OF THE GENTAMICIN COMPLEX

Joseph A. Marquez, Montclair, Gerald H. Wagman, East Brunswick, and David J. Cooper, North Plainfield, N.J., assignors to Schering Corporation, Bloomfield, N.J.
Continuation-in-part of abandoned application Ser. No. 743,740, July 10, 1968. This application Dec. 24, 1968, Ser. No. 786,777
Int. Cl. C07d *7/18*
U.S. Cl. 260—210 AB **6 Claims**

This invention relates to three heretofore unseparated antibiotic substances gentamicin C_1, gentamicin C_2 and

gentamicin C_{1a}; to their novel structures and to methods by which they may be separated, one from the other.

3,651,043

AGAROSE BASED ANION EXCHANGERS

Horst D. Schell and Victor F. Ghetie, Bucharest, Rumania, assignors to Institutul de Biochimie, Bucharest, Rumania
No Drawing. Filed Apr. 1, 1969, Ser. No. 812,423
Claims priority, application Rumania, Mar. 30, 1968, 57,505
Int. Cl. C07c *47/18*
U.S. Cl. 260—209 R **5 Claims**

The present invention deals with the synthesis of new basic ion exchangers of medium strength derived from agarose.

The procedure for obtaining these derivatives, according to the invention, consists in reacting simple or glyceric bridge cross-linked agarose with an equimolecular mixture of epichlorohydrin and triethanolamine.

3,651,044

PROCESS FOR PREPARING 5-HALOCYTOSINE-1-NUCLEOSIDES

James H. Hunter, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Feb. 24, 1966, Ser. No. 529,626
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R **5 Claims**

Cytosine-1-nucleosides can be halogenated using an N-halo cyclic imide, e.g., N-bromosuccinimide. Glacial acetic acid is a preferred reaction medium. The novel compounds 1-β-D-arabinofuranosyl-5-(chloro-, bromo-, and iodo-) cytosine were prepared directly from cytosine arabinoside and found to have the antiviral and antitumor activity of cytosine arabinoside. The new compounds are less toxic in the animal body than cytosine arabinoside.

3,651,045

9-(β-D-ARABINOFURANOSYL)ADENINE ESTERS AND METHODS FOR THEIR PRODUCTION

Theodore H. Haskell, Ann Arbor, Mich., and Stephen Hanessian, Beaconsfield, Quebec, Canada, assignors to Parke, Davis & Company, Detroit, Mich.
No Drawing. Filed Oct. 21, 1968, Ser. No. 769,423
Int. Cl. C07d *51/54*
U.S. Cl. 260—211.5 R **5 Claims**

9-(β-D-arabinofuranosyl)adenine esters, such as 9-(β-D-arabinofuranosyl)adenine, triacetate ester and N′-(9-β-D-arabinofuranosyl - 9H-purin-6-yl) - N,N-dimethylformamidine, triformate ester, and their production by reacting 9-(β-D-arabinofuranosyl)adenine with a reactive derivative of an alkanoic acid or with (chloromethylene) dimethylammonium chloride. The ester compounds are useful as antiviral agents that are more efficiently absorbed upon oral administration to standard experimental animals than is 9-(β-D-arabinofuranosyl)adenine.

3,651,046

QUINAZOLINO-BENZODIAZEPINES AND METHODS FOR THE PREPARATION THEREOF

Michael Edward Derieg, West Orange, Rodney Ian Fryer, North Caldwell, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed Jan. 30, 1969, Ser. No. 795,345
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 **25 Claims**

A new class of pharmaceutically active tetracyclic compounds is described. The subject compounds are derivatives of benzodiazepines. The tetracyclic compounds are useful as sedatives, muscle relaxants and anti-convulsant agents.

3,651,047

IODINATION OF 2,3-DIHYDRO-1,4-BENZODIAZEPINES

George Francis Field, West Caldwell, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed June 1, 1970, Ser. No. 42,524
Int. Cl. C07d *53/06*
U.S. Cl. 260—239 BD **7 Claims**

A process for the iodination of 2,3-dihydro-1,4-benzodiazepines comprising first treating the uniodinated 1,4-benzodiazepines with iodine monochloride, in the presence of an inert solvent and then treating the resulting product with a weak reducing agent is disclosed. The so-obtained iodinated 2,3-dihydro-1,4-benzodiazepines are useful as sedatives, muscle relaxants and anti-convulsants.

3,651,048

PURIFICATION PROCESS

Charles George Lex, Kenosha, Wis., assignor to Abbott Laboratories, Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 809,963, Mar. 24, 1969. This application Feb. 25, 1970, Ser. No. 14,232
Int. Cl. C07c *173/10*
U.S. Cl. 260—239.5 **7 Claims**

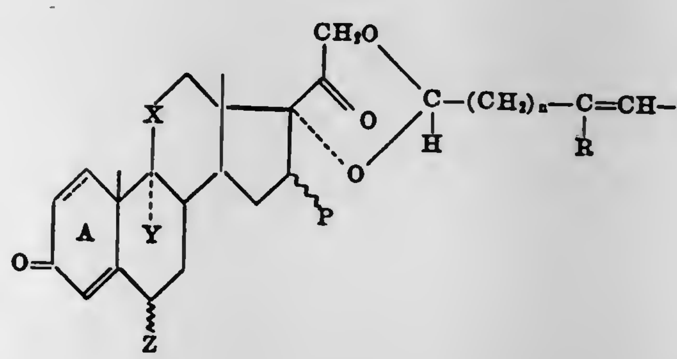
Crystalline, pure piperazine estrone sulfate is obtained by refluxing the crude material in a low-boiling alcohol containing a small amount of a weak base and a small amount of water, filtering the solution while still hot, concentrating the filtrate and cooling it slowly.

3,651,049

17α,21 ALKENYLIDENE DIOXY DERIVATIVES OF PREGNANE AND PROCESS FOR PREPARATION THEREOF

Jacques R. Boissier, Paris, and Roger Ratouis, Saint-Cloud, France, assignors to Societe Anonyme dite: Roussel-UCLAF, Paris, France
No Drawing. Filed Mar. 12, 1970, Ser. No. 19,076
Claims priority, application France, Mar. 21, 1969, 6908232
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 D **10 Claims**

Cyclic acetal derivatives of pregnane of general formula:



(1)

wherein X:CO or CH_2 or CHOH—Y:H or F—Z:H or CH_3—P:H or alkyl or alkylidene—*n*: 0 or 1—R:H or halogen or alkyl—R_1:H or alkyl or carboxyl or alkoxycarbonyl—broken line in the ring A:optional presence of a double bond.

These products are very useful substances in human and animal therapy, especially owing to their remarkable anti-inflammatory action.

The products are prepared by action of a dialkyl acetal on a pregnane derivative having hydroxyl radicals in its 17 and 21 positions, in the presence of an acid catalyst.

3,651,050
ACYLATION OF 6-AMINOPENICILLANIC ACID AND 7-AMINOCEPHALOSPORANIC ACID

Susumu Nakanishi, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Jan. 23, 1969, Ser. No. 793,604

Int. Cl. C07d *99/24, 99/16*

U.S. Cl. 260—239.1 **14 Claims**

The acylation of 6-aminopenicillanic acid and 7-aminocephalosporanic acid using carboxylic acids with hexachlorocyclotriphosphatriazine or hexabromocyclotriphosphatriazine as acylating agents is described.

3,651,051
BENZO[b]BENZOFURANO[2,3-e]OXEPINES

Fernand Binon, Strombeek-Bever, and Marcel Louis Victor Descamps, Crainhem, Belgium, assignors to Laboratoires Labaz, Paris, France

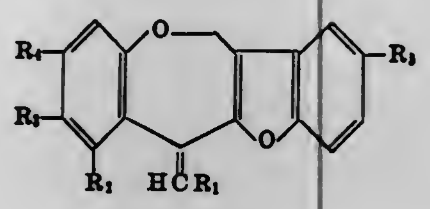
No Drawing. Filed Dec. 18, 1969, Ser. No. 886,388

Claims priority, application Great Britain, Dec. 20, 1968, 60,855/68

Int. Cl. C07d *51/70*

U.S. Cl. 260—240 TC **3 Claims**

Novel serotonin and histamine antagonists of the formula



wherein R_1 is β-dimethylaminoethyl, β-dimethylaminoisopropyl, β-piperidinoethyl, ethyl-β-(4-methylpiperazino), methyl-(1-methyl-2-piperidyl) or 1-methyl-3-piperidyl; R_2 is hydrogen or methyl; R_3 is hydrogen, chlorine, methyl or methoxy; R_4 is hydrogen or methyl and R_5 is hydrogen, chlorine or methoxy.

3,651,052
PIPERIDINE SPIRO COMPOUNDS

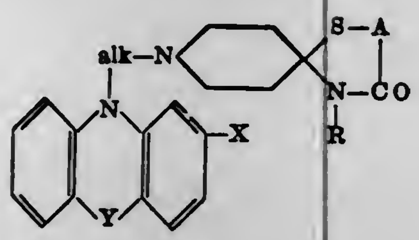
Michio Nakanishi, Oita, Katsuo Arimura and Tatsumi Tsumagari, Fukuoka, and Masami Shiroki, Oita, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Higashi-ku, Osaka, Japan

No Drawing. Application July 3, 1969, Ser. No. 839,046, now Patent No. 3,574,204, which is a continuation-in-part of application Ser. No. 675,074, Oct. 13, 1967. Divided and this application May 18, 1970, Ser. No. 48,739

Int. Cl. C07d *93/06, 29/120*

U.S. Cl. 260—243 R **8 Claims**

The piperidine spiro compounds of the formula:



wherein X is H, Cl, CH_3—, CF_3—, CH_3O—, CH_3— or CH_3CO; Y is —S— or —CH_2CH_2—; alk is alkylene of 2 to 4 carbon atoms (e.g. ethylene, propylene, trimethylene or 2-methyltrimethylene); A is methylene, ethylene or ethylidene; and R is H or lower alkyl of at most 4 carbon atoms (e.g. methyl, ethyl, propyl or butyl) are useful as tranquilizers.

3,651,053
1,3-THIAZINES

Gerhard Sagner, Wuppertal-Vohwinkel, and Otto Behner, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

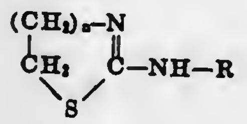
No Drawing. Filed Apr. 2, 1969, Ser. No. 812,904

Claims priority, application Germany, Apr. 27, 1968, P 17 67 335.7

Int. Cl. C07d *93/06*

U.S. Cl. 260—243 R **4 Claims**

Thiazines of the formula:



wherein

R is substituted phenyl and
n stands for 1 or 2.

or a physiologically acceptable salt thereof, have been found to be useful for their analgesic, sedative and muscle relaxant properties in animals and have also exhibited utility as anaesthetics for animals.

3,651,054
3,5-DISUBSTITUTED 1,2,4-OXADIAZOLES

Aldo Joseph Crovetti, Lake Forest, and Anne Mary Von Esch, North Chicago, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Jan. 31, 1967, Ser. No. 612,778

Int. Cl. C07d *85/52, 87/38*

U.S. Cl. 260—247.5 R **12 Claims**

Compounds comprising 3,5-disubstituted-1,2,4-oxadiazoles with one of the substituents being 5-nitro-2-furyl. The compounds are useful as antibacterial, anthelmintic, and anti-trichomonas agents.

3,651,055
ANTHRAQUINONYL-TRIAZINE DYESTUFFS

Dennis Eckersley, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 18, 1970, Ser. No. 38,542

Claims priority, application Great Britain, July 4, 1969, 33,872/69

Int. Cl. C07d *51/42, 55/46*

U.S. Cl. 260—249 **5 Claims**

Anthraquinone dyes of the general formula:

A—T—Np—T—A

where each A represents a 1-amino-2-sulphoanthraquinon-4-ylaminoaryl moiety, Np represents a sulphonated 1,5- or 2,6-naphthylene radical and each T represents a chloro-s-triazine or chloro-5-cyanopyrimidine radical linked to A or to Np by a bridging amino group, are valuable reactive dyes for cellulose textiles giving a range of bright reddish-blue to green shades of excellent fastness to washing and to light. The dyes are notable for the high proportion which reacts with the fibre when applied from alkali- and salt-containing dyebaths in the beck or on the jig or winch.

3,651,056
TRIAZINE DERIVATIVES

Mitsuo Muruyama, Yokohama, Akira Okabe, Fujisawa, Hideo Yamazaki, Hideaki Sakai, Tadao Shimazu, and Shotaro Kajiya, Yokohama, and Katsunobu Noda, Kamakura, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

No Drawing. Filed Dec. 24, 1969, Ser. No. 888,040

Int. Cl. C07d *55/20*

U.S. Cl. 260—249.8 **8 Claims**

This invention is to provide novel 2,4-diamino-6-(OH-substituted alkoxy)-s-triazine compounds and bis(2,4-diamino-s-triazine-6-yl-oxy)-alkylene compounds which are useful as nonfoaming stabilizers for an aqueous solution of formaldehyde.

3,651,057
NITROFURFURALDEHYDE SULFONYLHYDRAZONES

Frederick K. Kirchner, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed May 21, 1969, Ser. No. 826,685

Int. Cl. C07d *5/30*

U.S. Cl. 260—240 A **6 Claims**

A series of 5-nitro-2-furaldehyde benzene-, α-toluene-, halobenzene- and alkylbenzenesulfonylhydrazones, useful for preventing and suppressing coccidiosis in poultry, are prepared by the condensation of 5-nitrofuraldehyde with the appropriate sulfonylhydrazide.

3,651,058
PHTHALOCYANINE DYESTUFFS

Victor David Poole, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

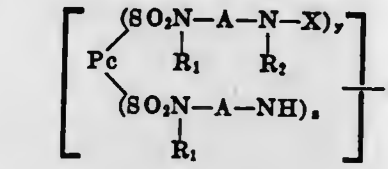
No Drawing. Filed Nov. 7, 1968, Ser. No. 774,199

Claims priority, application Great Britain, Nov. 23, 1967, 53,401/67

Int. Cl. C07d *55/18, 57/00*

U.S. Cl. 260—242 **7 Claims**

The invention provides phthalocyanine dyestuffs of the formula:



wherein

Pc represents a phthalocyanine nucleus,
A represents an alkylene radical which may be substituted
X represents a s-triazine nucleus carrying at least one cellulose-reactive halogen atom or a pyrimidine nucleus carrying at least one cellulose-reactive halogen atom or methane sulphonyl group,
one of R_1 and R_2 represents a sulphatoalkyl group and the other represents a hydrogen atom or sulphatoalkyl group,
x has a value of 0 to 2, and *y* and *z* have values of from 1 to 3, the sum of the substituents attached directly to the phthalocyanine nucleus benig not greater than 4.

These dyestuffs are distinguished by the unusually high percentage which fixes on the cellulose during the dyeing or printing process.

3,651,059
DERIVATIVES OF NORBORNENE-2,3-DICARBOXYIMIDE AND OF NORBORNANE-2,3-DICARBOXYIMIDE AND METHOD FOR PREPARING THEM

Enrico Serino and Demetrio Antoniu, Rome, Mario Magi, Siena, and Fabrizio Ganzina and Fabio Samuell, Rome, Italy, assignors to S.I.R. Laboratori Chimico-Biologici S.p.A., Tor Sapienza, Rome, Italy

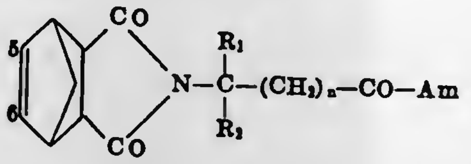
No Drawing. Filed June 26, 1969, Ser. No. 836,994

Claims priority, application Italy, July 2, 1968, 18,510/68

Int. Cl. C07d *27/52*

U.S. Cl. 260—247.2 A **13 Claims**

A new series of Δ^5-norbornene-2,3-dicarboximide derivatives of the general formula:



(1)

and 5,6-dihydroanalogs are disclosed, and processes for their preparation.

3,651,060
1,1′-ETHYLENE-2,2′-BIPYRIDLIUM SALTS

George Henry Lang, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Oct. 2, 1969, Ser. No. 863,370

Claims priority, application Great Britain, Oct. 4, 1968, 47,224/68

Int. Cl. C07d *51/76*

U.S. Cl. 260—250 R **5 Claims**

Herbicidal 1,1′-ethylene-2,2′-bipyridylium salts are obtained from 2,2′-bipyridyls by heating with an acid in ethylene glycol.

3,651,061
2,3-DIHYDRO-2-(1-NAPHTHYL)-4(1H)QUINAZOLINONE AND THE 6-CHLOROANALOG

Ronald J. Ericsson, Kalamazoo, Mich., and Ernst Reif, Heidenheim an der Brenz, Germany, assignors to Ernst Reif, Heidenheim an der Brenz, Germany

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,267

Int. Cl. C07d *51/48*

U.S. Cl. 260—251 QA **2 Claims**

2,3 - dihydro - 2 - (1-naphthyl) - 4(1H)quinazolinone and the 6 - chloroanalog are provided by this invention. These compounds are useful in controlling fertility in warm-blooded male animals.

3,651,062
BICYCLIC AMINES

Willy Fatzer, Flurweg 12, Bottmingen, Switzerland; Daniel Porret, Zeigerweg 37, Binningen, Switzerland; and Juerg Maurer, Baeumlihofstrasse 395, Riehen, Switzerland

No Drawing. Filed May 4, 1970, Ser. No. 34,534

Claims priority, application Switzerland, May 13, 1969, 7,287/69

Int. Cl. C07d *57/12*

U.S. Cl. 260—256.4 F **5 Claims**

Process for the manufacture of new, bicyclic amines, for example 1-(γ-aminopropyl)-9,9-dimethyl-1,3,7-triazabicyclo[4.3.0]non(7)en-2-one or 1-(γ-aminopropyl)-9-methyl-9-ethyl - 1,3,7 - triaza-bicyclo[4.3.0]non(7)en-2-one by intramolecular elimination of 1 mol of water from, for example, 1,3-di-(γ-aminopropyl)-5,5-dimethylhydantoin or 1,3 - di - (γ-aminopropyl)-5-methyl-5-ethylhydantoin. The new bicyclic amines represent valuable curing agents for epoxide resins, and furthermore a B-stage resin (precondensate) having good storage stability at room temperature can be manufactured.

3,651,063
5-CYCLOHEXYLAMINO-6-METHYLURACIL

Masuro Murakami, Yuji Kawashima, and Noriki Ito, Tokyo, and Kuniichiro Yano, Saitama, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

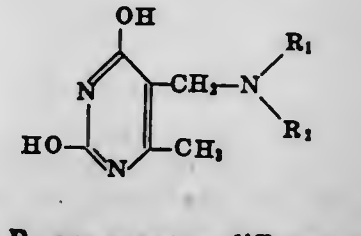
No Drawing. Filed Oct. 16, 1968, Ser. No. 768,154

Claims priority, application Japan, Oct. 18, 1967, 42/66,520; June 10, 1968, 43/39,803

Int. Cl. C07d *51/30*

U.S. Cl. 260—256.4 C **1 Claim**

Novel 5-aminomethyl-2,4-dihydroxy-6-methyl pyrimidine derivatives of the general formula



wherein R_1 and R_2 are same or different and each represents a hydrogen atom, alkyl radical having 1 to 4 carbon atoms, cyclohexyl or aryl radical, and the said R_1 and R_2 may be taken together with the nitrogen atom to form a heterocyclic ring which may contain a further hetero atom in the ring, with the proviso that R_1 and R_2 are not hydrogen atoms at the same time. The derivatives potentiate the efficiency of antibiotics such as chloramphenicol and josamycin. Compositions are provided comprising the said compound and an antibiotic.

3,651,064
PROCESS FOR PREPARING TERTIARY AMINE ALANES

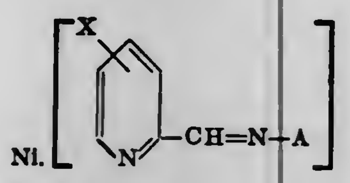
Gunner E. Nelson, Warren E. Becker, and Paul Kobetz, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.
No Drawing. Original application Oct. 23, 1967, Ser. No. 677,088. Divided and this application Jan. 12, 1970, Ser. No. 2,392
Int. Cl. C07d *105/00;* **C07f** *5/06*
U.S. Cl. 260—270 R **17 Claims**

A process for preparing tertiary amine alanes by direct synthesis from hydrogen, an aluminum source, and a tertiary mono amine in the presence of a reaction promoter.

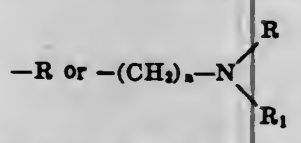
3,651,065
ZERO VALENT NICKEL COMPLEXES AND PREPARATION THEREOF

Yoshiharu Yagi, Ibaraki-shi, Osaka-fu, Akira Kobayashi, Nishinomiya-shi, Hyogo-ken, and Itsuro Hirata, Takatsuki-shi, Osaka-fu, Japan, assignors to Sumitomo Chemical Co., Ltd.
No Drawing. Filed Nov. 19, 1968, Ser. No. 777,151
Claims priority, application Japan, Nov. 21, 1967, 42/75,042; Jan. 19, 1968, 43/3,178
Int. Cl. C07f *15/04*
U.S. Cl. 260—270 **9 Claims**

A nickel complex compound represented by the formula:

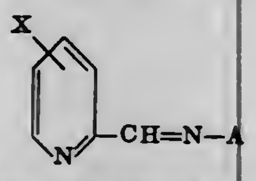


wherein X is a hydrogen atom or a non-dissociating substituent such as methyl or chlorine and A is a group of the formula:



$$-R \text{ or } -(CH_2)_n-N\begin{matrix}R\\R_1\end{matrix}$$

in which R and R′ are each a hydrogen atom, a lower alkyl group, a cyclo(lower) alkyl group, an aryl group or an ar(lower)alkyl group and *n* is an integer of 2 or 3, which is prepared by treating an olefin coordinated complex of zero valent nickel with a Schiff base of the formula:



wherein X and A are each as defined above. The nickel complex is useful as a catalyst in oligomerization of butadiene and cooligomerization of the same in the presence of an α-olefin with a high selectivity.

3,651,066
POLYHALO-4-NITROSOPYRIDINES

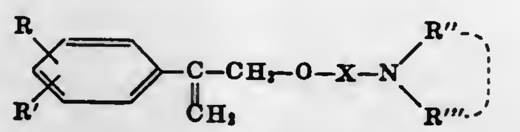
Penelope B. Domenico, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Nov. 4, 1969, Ser. No. 874,064
Int. Cl. C07d *31/26*
U.S. Cl. 260—290 HL **4 Claims**

Disclosed as novel compounds are polyhalo-4-nitrosopyridines which may be substituted in the 6-position by cyano, trifluoromethyl or methylsulfonyl groups. The compounds have utility as pesticides and are variously effective as herbicides and as active constituents of fungicidal and bacteriocidal compositions.

3,651,067
STYRENE ETHERS OF AMINO ALCOHOLS

Bill Elpern, White Plains, and Victor T. Bandurco, Huntington Station, N.Y., assignors to USV Pharmaceutical Corporation
No Drawing. Filed Apr. 15, 1970, Ser. No. 28,985
Int. Cl. C07d *29/18*
U.S. Cl. 260—293.83 **4 Claims**

Compounds of the formula



wherein X is a lower alkylene having from 2–5 carbon atoms, R and R′ are hydrogen, lower alkyl, lower alkoxy or halogen, R″ and R‴ are hydrogen, lower alkyl or phenyl lower alkyl, and R″ and R‴ taken together with N may be piperidino, morpholino, thiomorpholino, pyrrolidino, or methylpiperazino, are potent anticonvulsants, useful in the treatment of grand mal.

3,651,068
DERIVATIVES OF 1,2,3,4-TETRAHYDROBENZOTHIENO[2,3-c]PYRIDINES

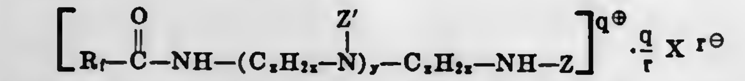
John T. Suh, Mequon, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 705,909, Feb. 16, 1968, now Patent No. 3,520,895, which is a continuation-in-part of application Ser. No. 621,475, Mar. 8, 1967. This application Nov. 13, 1969, Ser. No. 876,600
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 B **7 Claims**

The compounds are derivatives of 1,2,3,4 - tetrahydrobenzothieno[2,3 - C]pyridines and 1,2,3,4 - tetrahydro-5H - benzothieno[2,3 - C]azepines useful as tranquilizing and antihypertensive agents. Compounds disclosed are 2 - β - diethylaminopropyl - 1 - phenyl - 1,2,3,4 - tetrahydrobenzothieno[2,3 - C]pyridine and 1 - (p - chlorophenyl) - 1,2,3,4 - tetrahydrobenzothieno[2,3-C]pyridine.

3,651,069
FLUOROCARBON DERIVATIVES

Richard F. Sweeney, Randolph Township, Morris County, and Alson K. Price, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Aug. 1, 1968, Ser. No. 749,350
Int. Cl. C07d *31/48*
U.S. Cl. 260—294.8 F **14 Claims**

Fluorinated quarternary ammonium salts having the formula



$$\left[R_f-\overset{O}{\overset{\|}{C}}-NH-(C_xH_{2x}-\overset{Z'}{\overset{|}{N}})_y-C_xH_{2x}-NH-Z\right]^{q\oplus}\cdot\frac{q}{r}X^{r\ominus}$$

wherein *x* and *y* are integers from 2 to 6 and 1 to 4, respectively; R_f is a perfluoroalkyl or a fluorinated isoalkoxyalkyl radical; Z is H, a fluorinated acyl radical R_fCO— wherein R_f is as described above, a vinyl sulfone radical or a sulfone-tertiary amine adduct radical; Z′ is H. a fluorinated acyl radical R_fCO— wherein R_f is as described above, a vinyl sulfone radical, a sulfone-tertiary amine adduct radical, or a —C_xH_{2x}—NHZ radical wherein *x* and Z have the above meaning, there being at least one fluorinated acyl radical and one sulfone-tertiary amine adduct radical in the molecule represented by Z and Z′; X is an anion of a salt-forming acid; *q* is an integer corresponding to the number of sulfone-tertiary amine adduct radicals in the molecule; and *r* is an integer corresponding to the valency of X. These salts are water- and/or oil repellency agents for materials such as textiles and paper.

3,651,070
POLYCHLORO HYDROXY DERIVATIVES OF MONOCARBOXY PYRIDINES

Charles E. Granito, Cherry Hill, N.J., assignor to Diamond Shamrock Corporation, Cleveland, Ohio
No Drawing. Filed July 9, 1969, Ser. No. 840,535
Int. Cl. C07d *31/36*
U.S. Cl. 260—295 R **2 Claims**

Novel polychloro hydroxy derivatives of monocarboxy and dicarboxy pyridines, their methods of preparation and utilization as pesticides are disclosed.

3,651,071
PYRIDINE DERIVATIVES AND THE PREPARATION THEREOF

Roy Dennis Bowden, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Mar. 6, 1969, Ser. No. 804,993
Claims priority, application Great Britain, Mar. 18, 1968, 13,008/68
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 D **13 Claims**

A process for the manufacture of bipyridyls which comprises reacting the corresponding substituted pyridine with ammonia in the vapous phase, the substituted pyridine being a 2-(pyridyl)tetrahydropyran or tetrahydrothiopyran, a 4 - (pyridyl)tetrahydropyran or tetrahydrothiopyran, or a substituted pyridine wherein the substituent is a group of the structural formula

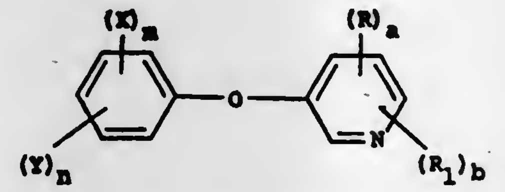
$$—C(R)(R_1)(R_2)$$

wherein R represents a hydrogen atom, a halogen atom, a hydroxy group, an alkyl group or an amino group, and R_1 and R_2 each represents a group of the general formula $-CH_n(XR_3)_{2-n}CH_m(XR_4)_{3-m}$ wherein X represents an atom of sulphur or oxygen, *n* is 0, 1 or 2 and *m* is 1 or 2, and R_3 and R_4 each represents a hydrogen atom or an alkyl, alkene, alkaryl, aralkyl or cyclo-aliphatic group.

3,651,072
3-(HALOPHENOXY) PYRIDINES

Kurt A. Nowotny, Camas, Wash., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of application Ser. No. 443,063, Mar. 26, 1965. This application Aug. 21, 1967, Ser. No. 661,782
Int. Cl. C07d *31/30*
U.S. Cl. 260—297 **4 Claims**

Halogenated phenoxypyridines which can be represented by the formula



where X, Y, R and R_1 are each selected from the group consisting of fluoro, chloro and bromo; *m* and *n* are whole numbers from 0 to 5 and the sum of $m+n$ is from 0 to 5; *a* and *b* are whole numbers from 0 to 2 and the sum of $a+b$ is from 0 to 2; provided that the sum of $a+b+m+n$ is from 1 to 7; and mixtures thereof.

3,651,073
CERTAIN POLYFLUOROISOALKOXY-ALKOXYMETHYL PYRIDINIUM COMPOUNDS

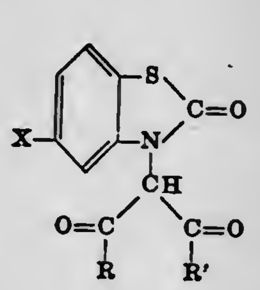
Aziz Urrehman Kahn, Elizabeth, Alson Kay Price, Morristown, and Richard Francis Sweeney, Dover, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Apr. 14, 1969, Ser. No. 816,012
Int. Cl. C07d *31/28*
U.S. Cl. 260—297 R **11 Claims**

Halomethyl ethers of polyfluoroisoalkyloxyalkyl alcohols characterized in that an ether oxygen links a fluorinated carbon atom attached to two fluoroalkyl groups and at least one —CF_2— group. These compounds are useful as oil repellency agents and as intermediates for the preparation of their corresponding quaternary ammonium salts useful as oil and water repellency and surface active agents.

3,651,074
CERTAIN 2-OXO-3-BENZOTHIAZOLINYL-MALONYL COMPOUNDS

John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Dec. 24, 1969, Ser. No. 888,063
Int. Cl. C07d *91/24*
U.S. Cl. 260—304 **6 Claims**

Compounds of the formula

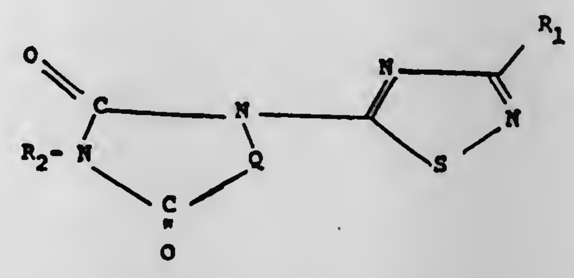


where X is hydrogen or chlorine, and R and R′ are individually lower alkyl or lower alkoxy are disclosed. The new compounds are particularly useful as contact herbicides.

3,651,075
CERTAIN 2,4,5-TRIOXOIMIDAZOLINDIN-1-YL-AND 3,5 - DIOXO-1,2,4-THIADIAZOLIDIN-2-YL-1,2,4-THIADIAZOLES

Alfred H. Miller, Somerset, N.J., assignor to Esso Research and Engineering Company
No Drawing. Filed Apr. 27, 1970, Ser. No. 32,463
Int. Cl. C07d *91/62*
U.S. Cl. 260—306.8 D **13 Claims**

Compositions of matter characterized by the following structural formula:



wherein R_2 can be one selected from the group consisting of hydrogen, C_1–C_8 alkyl, C_3–C_8 cycloalkyl, C_7–C_{10} aralkyl, C_1–C_4 dialkyl amino, C_6–C_{10} aryl optionally substituted by C_1–C_4 alkyl, C_3–C_8 alkene, C_3–H_8 alkyne, chlorine, bromine or nitro; R_1 can be the same or different as R_2, and can also include C_1–C_4 alkylmercapto;

and Q is one selected from the group consisting of C═O and S, have been shown to possess pesticidal activity especially pre- and post-emergent herbicidal activity.

3,651,076
SULFUR COMPOUNDS AND METHODS FOR THEIR PRODUCTION

Roger D. Westland, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed Aug. 7, 1969, Ser. No. 848,343

Int. Cl. C07d *91/34*

U.S. Cl. 260—306.8 R **5 Claims**

3-[(2-mercaptoethyl)amino] - N - 2-thiazolylpropionamide, 3,3'-[dithiobis(ethyleneimino)]bis[N-2-thiazolylpropionamide], and their acid-addition salts, useful as schistosomacides, and their production by (1) reaction of N-2-thiazolyl-1-ethyleneiminopropionamide with hydrogen sulfide to produce the thiol product and (2) reaction of the thiol product with an oxidizing agent to produce the disulfide product.

3,651,077
1,4-OXIDO-3-AZA-A-HOMO-STEROIDS AND PROCESS FOR THEIR MANUFACTURE

Oskar Jeger, Zollikerberg, Zurich, and Hans Ueli Wehrli, Schaffhausen, Switzerland, assignors to Ciba Corporation, New York, N.Y.

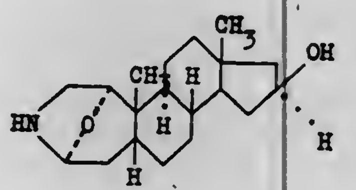
No Drawing. Filed Mar. 25, 1968, Ser. No. 715,496

Claims priority, application Switzerland, Mar. 31, 1967, 4,594/67

Int. Cl. C07d *85/26*

U.S. Cl. 260—307 F **10 Claims**

1,4-oxido-3-aza-A-homosteroids represent a class of steroids among which there are to be found natural products, such as Samandarin, the principal alkaloid of the salamander skin gland extract, having the formula



Such a process comprises converting the aldehyde group in a 3-ether of a 1α-aldehydo-3-hydroxy-2-oxa-5α-steroid or of a 1β-aldehydo-3-hydroxy-2-oxa-5β-steroid into a free aminomethyl group and treating resulting compounds with an acid.

This compound and derivatives related to it, such as the new 1β,4β-oxido-3-aza-A-homosteroids of the androstane series can be prepared by the new process of the present invention. These new compounds have, like Samandarin, a local anaesthetic effect and they also increase the blood pressure.

3,651,078
8-SUBSTITUTED-ACENAPHTH(1,2-d)OXAZOLE COMPOUNDS

Herman Eldridge Faith, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 27, 1970, Ser. No. 15,255

Int. Cl. C07d *85/26*

U.S. Cl. 260—307 D **4 Claims**

8-substituted-acenaphth(1,2-d)oxazole compounds and their pharmaceutically-acceptable salts, such as 8-(dimethylamino)-6b-9a-dihydroacenaphth(1,2 - d)oxazole hydrobromide are prepared by the reaction of 2-amino-1-acenaphthenol with a substituted organic nitrogen compound such as cyanogen bromide, diethyl carbamyl chloride, or propyl isocyanate. The novel compounds are useful as anoretic agents and are also useful as antimicrobials for the control of bacteria and fungi.

3,651,079
1-ARYL-5-HYDROXYALKYL-HYDANTOINS

Joseph A. Skorcz, Milwaukee, and John T. Suh, Mequon, Wis., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 25, 1968, Ser. No. 778,750

Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **7 Claims**

The compounds are 1-aryl-5-hydroxyalkyl-hydantoins which are useful as central nervous system affecting agents and as intermediates in the preparation of pickling agents, moth-proofing agents and wood preservatives. Representative of the compounds disclosed are 5-hydroxymethyl-1-(2-methoxy-4-nitrophenyl) - 5 - methylhydantoin, 5-acetoxymethyl - 1 - (2-methoxy-4-nitrophenyl)-5-methylhydantoin, 5 - acetoxymethyl - 1 - (2-methoxy-4-aminophenyl)-3,5-dimethylhydantoin hydrochloride and 5-hydroxymethyl - 1 - (2-methoxy - 4 - aminophenyl)-5-methylhydantoin hydrochloride.

3,651,080
CERTAIN SUBSTITUTED 2-ALKYLMERCAPTO-IMIDAZOLE DERIVATIVES

Karl J. Doebel, Ossining, N.Y., and Andre R. Gagneux, Basel, Switzerland, assignors to Ciba-Geigy Corporation

No Drawing. Continuation-in-part of application Ser. No. 721,930, Apr. 17, 1968, which is a continuation-in-part of application Ser. No. 500,245, Oct. 21, 1965. This application Nov. 7, 1969, Ser. No. 874,949

The portion of the term of the patent subsequent to Apr. 7, 1987, has been disclaimed

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **6 Claims**

The compounds are of the class of substituted 2-alkylmercaptoimidazole derivatives which have anti-inflammatory utility. An illustrative example is 1-(4-methoxyphenyl)-2-methylmercapto-5-methylimidazole.

3,651,081
PRODUCTION OF 2-ARYL-3-AMINOINDAZOLES

Hans-Juergen Sturm, Ludwigshafen (Rhine), and Herbert Armbrust, Gruenstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed July 29, 1968, Ser. No. 748,210

Claims priority, application Germany, Aug. 2, 1967, P 16 70 255.9

Int. Cl. C07d *49/02*

U.S. Cl. 260—310 C **6 Claims**

A process for the production of 2-substituted indazoles from ortho-azobenzonitriles by reaction with dithionites.

3,651,082
PROCESS FOR THE PRODUCTION OF HALOGEN-CONTAINING COBALT-PHTHALOCYANINE DERIVATIVES

Peter Mertens, Cologne-Marienburg, and Heinrich Vollmann, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 28, 1968, Ser. No. 755,825

Claims priority, application Germany, Aug. 31, 1968, F 53,374

Int. Cl. C09b *47/04*

U.S. Cl. 260—314.5 **11 Claims**

Cobalt phthalocyanine complex compounds having one or more halogen atoms linked directly to the cobalt atom are prepared by reacting a cobalt phthalocyanine dispersed in an organic liquid free of hydroxy and amino groups and inert to the reactant with a halogenating agent.

3,651,083
TETRA- AND HEXAHYDRO-PHENYLPYRROLO BENZODIAZEPINES AND INTERMEDIATES

Jackson B. Hester, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,691

Int. Cl. C07d *53/02, 53/06*

U.S. Cl. 260—326.5 B **13 Claims**

1,2,4,5 - tetrahydropyrrolo[3,2,1 - jk][1,4]benzodiazepines, 1,2,4,5,6,7-hexahydro-7-phenylpyrrolo[3,2,1-jk][1,4]benzodiazepines, 4,5,6,7-tetrahydro-7-phenylpyrrolo[3,2,1-jk][1,4]benzodiazepines, 1,2,4,5,6,7 - hexahydro - 6-phenylpyrrolo[1,2,3-ef][1,5]benzodiazepines and processes for preparing the same. The novel benzodiazepines exhibit tranquilizing and anticonvulsant activity in animals.

3,651,084
SUBSTITUTED PHENYLALKANOIC ACIDS

Rolf Denss, Basel, Switzerland, Niels Clauson-Kaas, Farum, Denmark, and Franz Ostermayer, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Apr. 22, 1969, Ser. No. 818,393

Claims priority, application Switzerland, Apr. 29, 1968, 6,379/68

The portion of the term of the patent subsequent to May 18, 1988, has been disclaimed

Int. Cl. C07d *27/24*

U.S. Cl. 260—326.3 **5 Claims**

The compounds are of the class of [4-(1-pyrryl)-phenyl]-alkanoic acid and the pharmaceutically acceptable salts thereof and have analgesic and anti-inflammatory activity; the compounds are active ingredients of pharmaceutical compositions and are useful for alleviating pain and treating inflammatory diseases in mammals; an illustrative embodiment is 4-[4-(1-pyrryl)-3-chlorophenyl]-butyric acid.

3,651,085
1-(ω-BENZOYLALKYL)-3-SUBSTITUTED PYRROLIDINES

Carl Dalton Lunsford, William John Welstead, Jr., and Grover Cleveland Helsley, Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

No Drawing. Continuation-in-part of application Ser. No. 592,263, Nov. 7, 1966. This application Apr. 14, 1969, Ser. No. 816,119

Int. Cl. C07d *27/04*

U.S. Cl. 260—326.5 J **9 Claims**

Novel 1-(ω-benzoylalkyl)-3 - substituted pyrrolidines possessing central nervous system depressant activity and analgetic activity are disclosed. The compounds are prepared from γ-halobutyrophenones, β-(di-lower alkylamino)propiophenones and 3-substituted pyrrolidines.

3,651,086
5-AMINOMETHYL-4,5,6,7-TETRAHYDRO-4-OXOINDOLES

Irwin J. Pachter, 42 Juneau Blvd., Woodbury, N.Y. 11797, and Karl Schoen, 83—36 Beverly Road, Kew Gardens, N.Y. 11415

No Drawing. Application Sept. 1, 1967, Ser. No. 664,942, which is a continuation of applications Ser. No. 575,303, Aug. 26, 1966, and Ser. No. 599,387, Dec. 6, 1966. Divided and this application July 15, 1968, Ser. No. 768,566

Int. Cl. C07d *27/54*

U.S. Cl. 260—326.15 **4 Claims**

Process for preparing 2-aminoalkyl pyrrol-3-yl ketones and derivatives thereof, and oxoindoles thus produced. The process is carried out by quaterizing 2-dimethylamino- or 2-piperidino-alkyl-pyrrol-3-yl ketones or derivatives thereof, including those having bi- and tricyclic nuclei, and reacting the quaternary salts either with a base and an amine or, alternatively, with an amine only.

3,651,087
DIBENZOTHIAZEPINE ETHER INTERMEDIATES

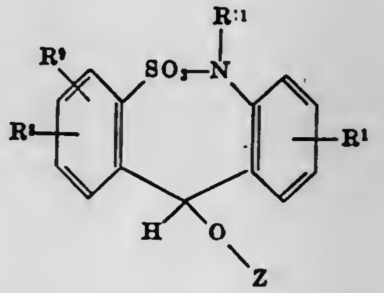
Abraham Weber, Paris, and Jacques Jean Frossard, Champigny, France, assignors to Mead Johnson & Company

No Drawing. Original application Aug. 3, 1967, Ser. No. 657,785, now Patent No. 3,519,633, dated July 7, 1970. Divided and this application Mar. 18, 1970, Ser. No. 18,774

Int. Cl. A61k *27/00;* **C07d** *93/42*

U.S. Cl. 260—327 B **4 Claims**

Novel compounds of Formula I having antihistaminic and other pharmacological activity



Formula I

This invention is concerned with a novel group of chemical substances having antihistaminic and other pharmacologic activities, and intermediates for their preparation.

3,651,088
CERTAIN ANILINOALKYL MERCAPTANS AS FUNGICIDES

Asbjorn Baklien, Kingsbury, Victoria, and Jocelyn Margaret Gregory, Croydon, Victoria, Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia

No Drawing. Filed Sept. 30, 1968, Ser. No. 763,975

Claims priority, application Australia, Oct. 31, 1967, 29,186/67

Int. Cl. A01n *9/20*

U.S. Cl. 424—330 **6 Claims**

Fungicidal compositions containing as the active ingredient certain anilinoalkyl mercaptans. The compositions are useful for controlling bunt, smut, Tilletia spp. and other fungi.

3,651,089
BENZODIOXEPINE DERIVATIVES OF GUANIDINE

Darius Molho, Boulogne-sur-Seine, Eugene Boschetti, Venissieux, and Louis Fontaine, Lyon, France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique

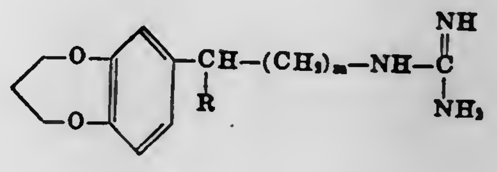
No Drawing. Original appplication Feb. 21, 1967, Ser. No. 617,463, now Patent No. 3,502,695, dated Mar. 24, 1970. Divided and this application Oct. 29, 1969, Ser. No. 870,933

Claims priority, application France, Feb. 28, 1966, 51,313; Nov. 22, 1966, 84,498

Int. Cl. C07d *13/00*

U.S. Cl. 260—340.3 **6 Claims**

The benzodioxepine derivatives of guanidine of the formula



in which *m* is equal to 0 or 1 and R is a member of the group formed by hydrogen and the hydroxy radical, and their acid addition salts, useful as hypotensive agents.

3,651,090
1,3-DIOXOLAN-4-YL-ALKYL GUANIDINES

Waldo R. Hardie, Walnut Creek, and Joseph E. Aaron, Berkeley, Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

No Drawing. Application June 17, 1969, Ser. No. 834,174, now Patent No. 3,547,951, which is a continuation-in-part of application Ser. No. 547,194, May 3, 1966. Divided and this application Dec. 17, 1969, Ser. No. 888,118

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 **12 Claims**

1,3-dioxolan-4-yl-alkyl-guanidines substituted at the two-position of the dioxolane ring with hydrogen, alkyl, substituted alkyl, a carbocyclic ring system, or a spirocyclic ring system in which the two-position carbon atom of the dioxolane ring is a ring carbon atom thereof, are prepared by converting a 1,3-dioxolan-4-yl-alkylamine to a guanidine by reaction with thiopseudourea. The amine is prepared by reacting a halide group with a metallo salt of phthalimide followed by hydrolysis. The guanidines have pharmacological activity which includes anti-hypertensive activity.

3,651,091
DERIVATIVES OF 4-HYDROXY COUMARIN AND THE PREPARATION THEREOF

Eugene Boschetti, Venissieux, Darius Molho, Boulogne-sur-Seine, and Louis Fontaine, Lyon, France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique

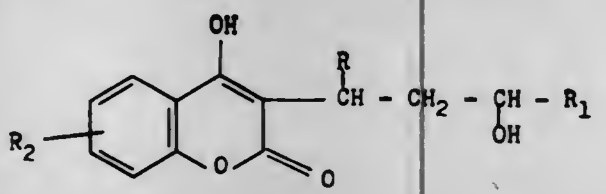
No Drawing. Continuation-in-part of application Ser. No. 689,347, Dec. 11, 1967, now Patent No. 3,574,234. This application Nov. 21, 1969, Ser. No. 878,876

Claims priority, application France, Dec. 13, 1966, 87,213; Nov. 13, 1967, 127,915; Nov. 28, 1968, 175,753

Int. Cl. C07d *7/30*

U.S. Cl. 260—343.2 R **13 Claims**

The 4-hydroxy coumarins are represented by the formula



in which R is a member of the group formed by hydrogen, the phenyl, halophenyl, dihalophenyl, nitrophenyl, methoxypenyl, tolyl, methylene dioxyphenyl and furyl radicals;

R_1 is a member of the group formed by the methyl, phenyl, halophenyl, nitrophenyl, diphenyl, halodiphenyl, nitrodiphenyl and naphthyl radicals; and

R_2 is hydrogen or a halogen.

These new 4-hydroxy coumarins have very powerful oral anticoagulating actions of the antivitamin K type.

3,651,092
ISOMERIZATION PROCESS

Paul R. Stapp, Gerhard P. Nowack, and Marvin M. Johnson, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed May 25, 1970, Ser. No. 40,343

Int. Cl. C07d *5/10, 7/10*

U.S. Cl. 260—345.1 **24 Claims**

Cyclic olefinically unsaturated ethers containing 4 to 5 ring carbon atoms are isomerized by contact with a catalyst containing nickel and arsenic in a hydrogen atmosphere. The isomerization reaction is favorably influenced by the presence of carbon monoxide. The isomerization products are useful solvents and intermediates for the preparation of useful chemicals such as polymers, polyfunctional alcohols and the like.

3,651,093
BIS-TETRAHYDROPYRANYL SULFIDE

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Dec. 13, 1968, Ser. No. 783,737

Int. Cl. C07d *7/46*

U.S. Cl. 260—345.9 **2 Claims**

Novel bis-tetrahydropyranyl sulfides are prepared by reacting a halo-tetrahydropyran with an alkali metal or an alkaline earth metal sulfide. Bis-tetrahydropyranyl sulfones and sulfoxides can be prepared by oxidizing the bis-tetrahydropyranyl sulfide with hydrogen peroxide.

3,651,094
2,3-DIHYDRO-5-ACYLBENZOFURAN-2-CARBOXYLIC ACIDS

Bernard Libis, St. Louis-la-Chaussee, France, and Ernst Habicht, Oberwil, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed May 26, 1969, Ser. No. 827,941

Claims priority, application Switzerland, May 30, 1968, 8,030/68

Int. Cl. C07d *5/36*

U.S. Cl. 260—346.2 **5 Claims**

5-acyl-benzofuran-2-carboxylic, 5-acyl-benzothiophene-2-carboxylic acids and pharmaceutically acceptable salts thereof with bases, which compounds have valuable diuretic and simultaneously saluretic as well as anti-tussive activities, therapeutic compositions containing such compounds as aforesaid or their pharmaceutically acceptable salts with bases as well as methods for producing simultaneously diuretic and saluretic effects and for inhibiting tussive irritation in mammals. Illustrative embodiments exhibiting primarily antitussive and simultaneous diuretic and saluretic effects respectively are 2,3-dihydro-5-butyryl-6-methyl-benzofuran-2-carboxylic acid and 2,3-dihydro-5-butyryl-6,7-dimethylbenzofuran-2-carboxylic acid.

3,651,095
PROCESS FOR THE PURIFICATION OF TRIMELLITIC ANHYDRIDE

Gerhard Jung, Cologne-Weldenpesch, and Gerhard Klotgen, Essen, Germany, assignors to Chemiebau Dr. A. Zieren G.m.b.H. & Co. KG, Cologne-Mungersdorf, Germany

No Drawing. Filed Oct. 11, 1968, Ser. No. 766,970

Claims priority, application Germany, Oct. 24, 1967, P 16 43 816.7

Int. Cl. C07c *63/02, 63/32*

U.S. Cl. 260—346.4 **13 Claims**

A process for the continuous purification of crude trimellitic anhydride obtained by an oxidation process, such as the nitric acid oxidation of 1,2,4-trialkyl benzene and subsequent anhydride formation by distillation at elevated temperatures under a vacuum, wherein molten, crude trimellitic anhydride is distributed in a thin film and subjected to distillation conditions for a period of less than 120 seconds under a pressure of about 3 to 30 torr (millimeters of mercury), and at a temperature of between about 205 and 270° C.

3,651,096
PREPARATION OF DIETHYL TETRAHYDROFURFURYLMALONATE

Nicholas D. Harris, Norwich, N.Y., assignor to The Norwich Pharmacal Company

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,897

Int. Cl. C07d *5/04*

U.S. Cl. 260—347.5 **1 Claim**

Diethyl tetrahydrofurfurylmalonate is conveniently prepared by the hydrogenation of diethyl furfurylidenemalonate in the presence of palladium on carbon.

3,651,097
SYNTHESIS OF 2-METHYL AND 2-ETHYL-3-HYDROXY - 4,5 - DIHYDROFURAN-4-ONE FROM MONOSACCHARIDE 5-ESTERS

Godefridus Antonius Maria van den Ouweland and Hendricus Gerardus Peer, Zevenaar, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Mar. 11, 1969, Ser. No. 806,290

Claims priority, application Luxembourg, Mar. 10, 1968, 55,706; Dec. 23, 1968, 57,648

Int. Cl. C07d *5/10;* **A23l** *1/26*

U.S. Cl. 260—347.8 **9 Claims**

Certain 2-alkyl-3-hydroxy-4,5-dihydrofuran-4-ones useful as flavouring agents, particularly in meaty flavours can be prepared from monosaccharide 5-esters. The phosphate esters are particularly useful as starting materials. The monosaccharide 5-esters are reacted with nucleophillic agents, such as diethylamine, in an aqueous medium at a carefully controlled pH between 2 and 8 preferably in the presence of a buffer system.

3,651,098
POLYGLYCIDYL ESTERS

Alfred Heer, Birsfelden, and Karl Metzger, Aesch, Basel-land, Switzerland, assignors to Ciba Limited, Basel, Switzerland

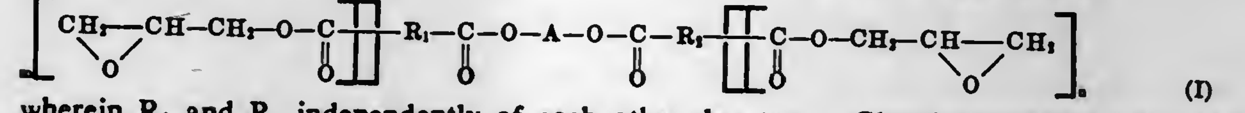
No Drawing. Filed Jan. 21, 1969, Ser. No. 792,749

Claims priority, application Switzerland, Jan. 29, 1968, 1,314/68

Int. Cl. C07d *1/18*

U.S. Cl. 260—348 A **11 Claims**

Polyglycidyl esters of formula



$$\left[\underset{\diagdown O \diagup}{CH_2-CH}-CH_2-O-\underset{\overset{\|}{O}}{C}\right]-R_1-\underset{\overset{\|}{O}}{C}-O-A-O-\underset{\overset{\|}{O}}{C}-R_2-\left[\underset{\overset{\|}{O}}{C}-O-CH_2-\underset{\diagdown O \diagup}{CH-CH_2}\right] \qquad (I)$$

wherein R_1 and R_2 independently of each other denotes a residue, obtained by removal of the carboxyl groups, or an aliphatic or cycloaliphatic polycarboxylic acid having 2 to 4 carboxyl groups, A represents the residue, obtained by removal of the two hydroxyl groups, of a polyalkylene glycol of average molecular weight of at least 200, and wherein *m* and *n* denote integers having a value of at least 1 and at most 3, preferably 1 or 2.

3,651,099
PREPARATION OF MONOBENZAMIDO DERIVATIVES OF DIAMINOANTHRAQUINONE

Hans L. Perlinger, Toms River, and Joseph S. Milazzo, Dumont, N.J., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Apr. 2, 1968, Ser. No. 718,198

Int. Cl. C09b *1/42*

U.S. Cl. 260—377 **14 Claims**

A process for producing monoacylated derivatives of diaminoanthraquinones comprising reacting the diaminoanthraquinone with benzoyl chloride or a mixture of benzoic acid and an inorganic acid chloride in the presence of an N,N-dialkyl carboxylic acid amide.

3,651,100
5β-H-6-KETO-PREGNANE DERIVATIVES

Andor Fürst and André Furlenmeler, Basel, Albert Langemann, Binningen, and Guy Waldvogel, Riehen, Switzerland, and Peter Hocks, Ulrich Kerb, and Rudolf Wiechert, Berlin, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Aug. 9, 1966, Ser. No. 571,187. Divided and this application Feb. 29, 1968, Ser. No. 709,186

Claims priority, application Germany, Oct. 15, 1965, Sch 37,892; Jan. 27, 1966, Sch 38,384; Switzerland, Mar. 24, 1966, 4,336/66

Int. Cl. C07c *173/00*

U.S. Cl. 260—397.4 **6 Claims**

This invention is directed to 2,3-substituted 5β-H-6-keto-pregnane derivatives which are useful as metamorphosis hormones and are additionally useful as intermediates for the production of other insect hormones. Accordingly, the compounds may be employed in the control of insect population.

3,651,101
PROCESS FOR THE MANUFACTURE OF PHENYL ESTERS AND PHENOL FROM BENZENE

Manfred Boldt and Hans-Jürgen Arpe, Fischbach, Taunus, and Lothar Hornig, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 9, 1968, Ser. No. 751,351

Claims priority, application Germany, Sept. 12, 1968, P 16 43 355.9

Int. Cl. C07c *67/04*

U.S. Cl. 260—410.5 **12 Claims**

The invention provides a process for the catalytic preparation of phenyl esters and, if desired, phenol from benzene and saturated aliphatic carboxylic acids in the presence of a catalyst comprising a noble metal of sub-group VIII of the Periodic Table and carboxylates of metals of Group II*b,* III or IV of the Periodic Table.

3,651,102
PREPARATION OF DIESTERS

Myron Coopersmith, New York, N.Y., assignor to Esso Research and Engineering Company

No Drawing. Filed May 1, 1967, Ser. No. 634,838

Int. Cl. A61k *7/14;* **C11c** *3/00*

U.S. Cl. 260—410.6 **6 Claims**

Glycol monoesters prepared by the reaction of hindered acids with alkylene oxides are converted to alkyl diesters and ether alkyl diesters in acid or base catalyzed reactions. The diesters are useful as emollients having good hydrolytic stability, and which do not suppress foam.

3,651,103
SUBSTITUTED 2-(FLUOREN - 2-YLOXY)-ACETIC ACIDS AND LOWER ALKYL ESTERS THEREOF

Gerhard Baschang, Bettingen, Charles J. Morel, Arlesheim, and Oskar Wacker, Binningen, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Sept. 24, 1969, Ser. No. 860,827

Claims priority, application Switzerland, Sept. 25, 1968, 14,335/68

Int. Cl. C07c *69/76;* **C11c** *3/00*

U.S. Cl. 260—413 **3 Claims**

Compounds of the class of substituted 2-(fluoren-2-yloxy)- and 2-(fluoren-2-ylthio)-acetic acids, as well as lower alkyl esters and alkali and alkaline-earth metal salts thereof have hypolipemic activity; they are active ingredients of pharmaceutical compositions and are useful for treating hyperlipemic conditions in warm-blooded animals.

3,651,104
α,β-UNSATURATED QUATERNARY ALKYLATED FATTY ACIDS AND ESTERS USEFUL FOR INSECT CONTROL

John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Continuation-in-part of application Ser. No. 854,778, Sept. 2, 1969. This application Oct. 27, 1969, Ser. No. 869,855

Int. Cl. C07c *69/52;* **A01n** *9/24*

U.S. Cl. 260—410.9 R **13 Claims**

Methods employing and compositions comprising a quaternary alkylated aliphatic hydrocarbon amide or ester and derivatives thereof for the control of insects.

3,651,105

CHROMIUM COMPLEXES OF FLUOROISOALKOXYALKYL CARBOXYLIC ACIDS

Louis G. Anello, Basking Ridge, Edward Michael Boghosian, Fort Lee, Edward S. Jones, Whippany, Pritam S. Minhas, Morris Plains, Alson K. Price, Morristown, and Richard F. Sweeney, Randolph Township, Dover, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Nov. 1, 1968, Ser. No. 772,849

Int. Cl. C08h *17/36*

U.S. Cl. 260—414 **7 Claims**

Chromium complexes of fluorocarbon carboxylic acids characterized by having a polyfluoroisoalkoxyalkyl tail wherein an ether oxygen atom links a fluorinated carbon atom connected to two fluoroalkyl groups and at least one —CF_2CF_2-group. These chromium complexes are useful to impart oil and water resistance to various substrates, including paper, leather, and the like.

3,651,106

PREPARATION OF 2-(6-METHOXY-2-NAPHTHYL) PROPIONIC ACID, -1-PROPANOL, AND PROPANAL AND INTERMEDIATES THEREFOR

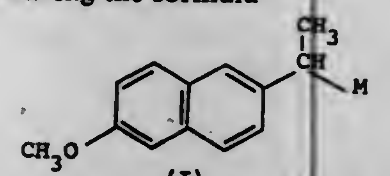
Ian T. Harrison, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Filed Sept. 30, 1969, Ser. No. 862,501

Int. Cl. C07f *3/08, 3/02, 1/02*

U.S. Cl. 260—429 R **4 Claims**

Compounds having the formula



(I)

are carboxylated to yield the corresponding 2-(6-methoxy-2-naphthyl)propionic acid; carbonylated to yield the corresponding 2-(6-methoxy-2-naphthyl)propanal, or carbinolated to yield the corresponding 2-(6-methoxy-2-naphthyl)-1-propanol. In the formula M represents —MgX (X=Cl, Br, I), Li, Na, K, $Zn_{1/2}$, $Cd_{1/2}$, and the like. The products have anti-inflammatory, analgesic and anti-pyretic activities.

3,651,107

ORGANOTIN SALTS OF MONOALKYL ALKENYLSUCCINATES

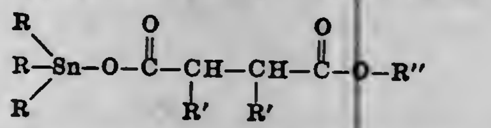
Robert J. Stanback, Gladstone, and Thomas E. Maggio, Somerville, N.J., assignors to Tenneco Chemicals, Inc.

No Drawing. Filed Oct. 14, 1969, Ser. No. 866,366

Int. Cl. C07f *7/22*

U.S. Cl. 260—429.7 **7 Claims**

Organotin compounds that have the structural formula



$$\underset{R}{\overset{R}{R-Sn}}-O-\overset{O}{\overset{\|}{C}}-\underset{R'}{\underset{|}{CH}}-\underset{R'}{\underset{|}{CH}}-\overset{O}{\overset{\|}{C}}-O-R''$$

wherein each R represents phenyl or an alkyl group having from 4 to 12 carbon atoms; one R′ represents an alkenyl group having from 8 to 22 carbon atoms; the other R′ represents hydrogen; and R″ represents an alkyl group having from 1 to 16 carbon atoms are used to protect surface-coating compositions from attack by microorganisms. Among the most effective of these biocidal compounds is (tri-n-butyltin)-n-butyldodecenylsuccinate.

3,651,108

PROCESS FOR THE PREPARATION OF TIN-ALKYLS

Bindo Massimo Giannaccari, Rome, and Riccardo Galli, Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed May 14, 1970, Ser. No. 37,287

Claims priority, application Italy, May 20, 1969, 17,020/69

Int. Cl. C07f *7/22*

U.S. Cl. 260—429.7 **11 Claims**

A process is disclosed for preparing tin-alkyls starting from metallic tin and alkyl halides, characterized in that a mixture of subdivided tin and an auxiliary subdivided alkali or alkaline earth metal is reacted with an alkyl halide in the presence of a catalyst selected from the class consisting of onium salts and Lewis bases or mixtures thereof, at a temperature between 0 and 150° C. The onium salts are tetra-alkylammonium halides and the Lewis bases are ethers, thioethers and amines.

3,651,109

PROCESS FOR PREPARING ORGANOMERCURY COMPOUNDS

Ronald D. Clark, North Randall, and Ronald J. Valus, Cleveland, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

No Drawing. Filed July 31, 1969, Ser. No. 846,598

Int. Cl. C07f *3/10*

U.S. Cl. 260—431 **7 Claims**

Organomercury compounds can be prepared in essentially theoretical yields by reacting an organomercuric halide with magnesium metal in the presence of carbon dioxide.

3,651,110

NICKEL DERIVATIVES OF SALICYLIC ACID ESTERS AND A PROCESS FOR PREPARING THE SAME

Laird Gordon Lindsay Ward, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,618

Int. Cl. C07f *15/04;* **C08f** *45/62*

U.S. Cl. 260—439 R **9 Claims**

Nickel derivatives of salicylic acid esters, e.g., anhydrous nickel-2-carbmethoxyphenoxide, and a process for preparing the same in which a salicylic acid ester such as methylsalicylate, a Group Ia metal alkoxide and a nickel salt are reacted in an essentially non-aqueous environment, and the nickel derivative is precipitated from solution. Anhydrous nickel-2-carbmethoxyphenoxide prepared by this process is effective as a light stabilizing additive in polymers such as polyvinylchloride.

3,651,111

AMIDE-NICKEL SALT COMPLEXES

Howard E. Dunn, Mount Vernon, Ind., assignor to Phillips Petroleum Company

No Drawing. Filed Oct. 7, 1969, Ser. No. 864,564

Int. Cl. C07f *75/04;* **C07c** *3/10*

U.S. Cl. 260—439 R **2 Claims**

Amide-nickel salt complexes having constituents of substituted 2-aminomalonamides and nickel salts are produced, which complexes are useful as a catalyst in the oligomerization of monoolefins. Bis[N,N′-dicyclohexyl-2-(cyclohexylamino)malonamide] reacts with nickel chloride to form bis[N,N′-dicyclohexyl-2-(cyclohexylamino)malonamide]dichloronickel, which is used as an oligomerization catalyst for propylene.

3,651,112

POLYMERIC ORGANO ALUMINUM SUBSTANCES

Hansjoerg Sinn, Harksheide, Helmut Hinck and Hans Friedrich Gruetzmacher, Hamburg, and Friedhelm Bandermann, Schenefeld, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

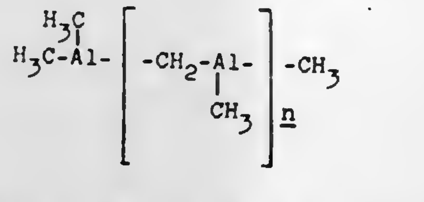
No Drawing. Filed Oct. 8, 1968, Ser. No. 765,995

Claims priority, application Germany, Oct. 12, 1967, P 17 20 313.3

Int. Cl. C08g *33/20;* **C07f** *5/06*

U.S. Cl. 260—448 A **2 Claims**

A new polymeric organo aluminum substance is described; it has essentially the structural formula:



$$\overset{H_3C}{\overset{|}{H_3C-Al}}-\left[-CH_2-\underset{CH_3}{\underset{|}{Al}}-\right]_{\underline{n}}-CH_3$$

wherein *n* denotes an integer of at least 2, the upper limit being practically infinity. The substance and branched derivatives thereof may be prepared by dissolving bicyclopentadienyltitanomonomethyl chloride in trimethyl aluminum and the whole kept thermostatically at −50 to 200° C. while excluding oxygen and water and evolving methane.

3,651,113

COMPLEXES OF ALUMINUM TRICHLORIDE OR BORONTRIFLUORIDE WITH HYDROQUINONE AND PREPARATION THEREOF

Werner Metlesics, Vienna, Austria, and Pius Anton Wehrli, Verona, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 777,199, Nov. 19, 1968, which is a continuation-in-part of application Ser. No. 708,495, Feb. 27, 1968. This application Feb. 5, 1969, Ser. No. 796,911

Int. Cl. C07f *5/06*

U.S. Cl. 260—448 R **10 Claims**

A process for producing chromanols by the reaction of an isoprenol or isoprenol derivatives and a hydroquinone in the presence of borontrifluoride or aluminum trichloride and intermediates in this process.

3,651,114

PRODUCTION OF ORGANO ALUMINUM COMPOUNDS

Hoyt J. Cragg and Kenneth L. Lindsay, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,888

Int. Cl. C07f *5/06*

U.S. Cl. 260—448 A **9 Claims**

Improvements in reactions for producing organo aluminum compounds are described. The improvements involve control of the proportions of reactants fed for reactions involving aluminum, olefin and hydrogen in the presence of an organo aluminum compound. It is disclosed that significantly increased reaction rates are obtained when olefin and hydrogen are fed at a ratio substantially higher than the 2:1 molar ratio taught as suitable or even unimportant by much of the prior art.

3,651,115

ORGANO-SILICON-CONTAINING ALPHA-PHENYL-BETA-HYDROXY-CARBOXYLIC ACIDS

Igal Belsky, Ramat-Gan, and David Gertner and Albert Zilkha, Jerusalem, Israel, assignors to Yissum Research Development Company, Hebrew University, Jerusalem, Israel

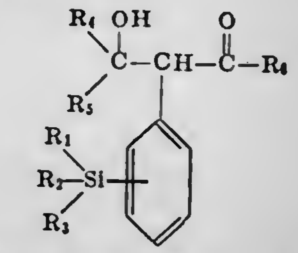
No Drawing. Filed May 18, 1967, Ser. No. 639,301

Claims priority, application Israel, May 22, 1966, 25,820

Int. Cl. C07f *7/10*

U.S. Cl. 260—448.2 N **10 Claims**

Compounds of the formula



wherein R_1, R_2, and R_3 are alkyl or aryl; R_4 and R_5 are hydrogen, alkyl, aryl or aralkyl, or form together with the adjoining carbon atom carrying the hydroxyl group a cyclohexyl, cyclopentyl or cycloheptyl group; and R_6 is hydroxyl, a residue of an alcohol connected through its hydroxyl group to the carbonyl group by an ester linkage and containing a tertiary amino group and having an alkyl or cycloalkyl or heterocyclic or a condensed biheterocyclic skeleton, or is a residue of any of ammonia, hydroxylamine, hydrazine, N-alkyl or aryl substituted hydrazine, a primary of secondary amine, urea, thiourea of guanidine or their substituted derivatives, all of such residues being connected through nitrogen to the C=O group. The compounds display anti-cholinergic activity and are antidotal against organo-phosphate poisoning.

3,651,116

SILYLATED PROSTAGLANDIN F_α ACIDS AND ESTERS

Frank H. Lincoln, Jr., Portage, and John E. Pike, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 873,603, Nov. 3, 1969. This application Aug. 4, 1970, Ser. No. 60,928

Int. Cl. C07f *7/04, 7/18*

U.S. Cl. 260—448.8 R **22 Claims**

Prostaglandin F_α acids and esters are obtained in improved yields with respect to the usual byproduct prostaglandin F_β acids and esters by silylating corresponding prostaglandin E compounds, reducing the silylated prostaglandin E compounds to silylated prostaglandin F compounds, and then removing the silyl groups by hydrolysis.

3,651,117

ESTERIFICATION OF HALOSILANES

Everett W. Bennett, Longmeadow, Mass., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,053

Int. Cl. C07f *7/04, 7/06, 7/18*

U.S. Cl. 260—448.8 R **15 Claims**

A process for esterifying halosilanes which comprises mixing a halosilane and a sufficient amount of an alcohol in a reaction zone wherein at least 80 percent of the halogen groups of the halosilane are esterified by reaction with said alcohol, said reaction zone having a temperature sufficiently high enough to maintain said halosilane, alcohol, and the highest boiling esterified silane reaction product in the vapor state, and removing the products of the reaction from the reaction zone while in the vapor state.

3,651,118

PROCESS FOR THE PREPARATION OF 1,3-CYCLOHEXYLENE DIISOCYANATES

Moses Cenker, Trenton, and Peter T. Kan, Livonia, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed Feb. 5, 1969, Ser. No. 796,934

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 PH **13 Claims**

A process for the preparation of 1,3-cyclohexylene diisocyanates in which 1,3-cyclohexanediamines are contacted with hydrogen chloride to form dihydrochloride salts which are subsequently reacted with phosgene to provide 1,3-cyclohexylene diisocyanates.

3,651,119

SULFUR-LINKED LINEAR ALKYL VICINAL DISULFATES

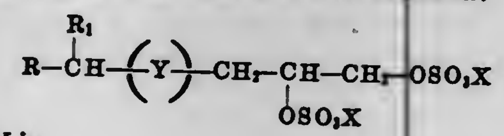
Robert G. Anderson, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Aug. 5, 1970, Ser. No. 62,233

Int. Cl. C07c *141/02*

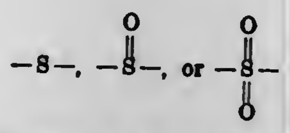
U.S. Cl. 260—458 **4 Claims**

Detergent active materials which are effective in the absence of phosphate builders comprise sulfur-linked linear alkyl vicinal disulfates of the formula:



$$R-\underset{}{\overset{R_1}{\overset{|}{C}}}H-(Y)-CH_2-\underset{OSO_3X}{\underset{|}{C}}H-CH_2-OSO_3X$$

in which Y is



$$-S-,\ -\overset{\overset{O}{\|}}{S}-,\ \text{or}\ -\overset{\overset{O}{\|}}{\underset{\underset{O}{\|}}{S}}-$$

R and R_1 are hydrogen or alkyl radicals having a total of from 9 to 23 carbon atoms, and X is hydrogen or a water-soluble salt-forming cation.

3,651,120

POLYFLUOROISOALKOXYALKYL SULFURIC ACIDS AND SALTS THEREOF

Louis Gene Anello, Basking Ridge, and Richard Francis Sweeney, Dover, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Feb. 27, 1969, Ser. No. 803,120

Int. Cl. C07c *141/02*

U.S. Cl. 260—458 **13 Claims**

Novel sulfuric acid compounds characterized by having a polyfluoroisoalkoxyalkyl tail wherein an ether oxygen links a fluorinated carbon atom attached to two fluorinated alkyl groups and at least one $—CF_2—$ group, and their metal, ammonium and substituted ammonium salts. These acids and salts are useful as surface active agents.

3,651,121

OXYDEHYDROGENATION PROCESS FOR PREPARATION OF DIENES

Roy B. Duke, Littleton, and David P. McGrew, Golden, Colo., assignors to Marathon Oil Company, Findlay, Ohio

No Drawing. Continuation-in-part of applications Ser. No. 722,170, Apr. 18, 1968, and Ser. No. 851,737, Aug. 20, 1969. This application Aug. 10, 1970, Ser. No. 62,722

Int. Cl. C07c *1/00, 5/18*

U.S. Cl. 260—465 K **32 Claims**

Alcohols, e.g. tert-amyl alcohol are dehydrated and oxydehydrogenated in a two-stage, halogenated-promoted process by preferably first passing alcohol-halogen-oxygen mixture over a substantially inert contact-surface, e.g., Alundum, and then passing the mixture over a metallic oxide catalyst, e.g. copper chromite, to produce dienes, e.g. isoprene. Isoprene and other dienes are useful in the manufacture of elastomers used in the manufacture of tires and other elastomeric products.

3,651,122

SULFAMYL BENZOIC ACID COMPOUNDS

Laszlo Beregi, Boulogne, Pierre Hugon, Rueil Malmaison, Jean-Claude Le Douarec, Suresnes, and Michel Laubie, Vaucresson, France, assignors to Science Union et Cie, Societe Francaise de Recherche Medicale, Suresnes, France

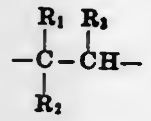
No Drawing. Filed June 12, 1968, Ser. No. 736,286

Claims priority, application Great Britain, June 12, 1967, 27,112/67

Int. Cl. C07c *143/52*

U.S. Cl. 260—470 **5 Claims**

β - (3 - sulfamyl - 4 - chlorobenzoyloxy) ethylamine and *β* - (3 - sulfamyl - 4,6 - dichlorobenzoyloxy) ethylamine substituted on the amine function by —Alk—Ar wherein —Alk is $—CH_2—$ or



$$-\underset{R_2}{\underset{|}{\overset{R_1}{\overset{|}{C}}}}-\overset{R_3}{\overset{|}{C}}H-$$

wherein R_1 and R_2 are hydrogen or methyl and R_3 is hydrogen or alkoxy of up to C_4 inclusive, and —Ar is phenyl, chlorophenyl, bromophenyl or trifluoromethyl phenyl.

These compounds possess anorexigenic and diuretic properties and antihypertensive and lipid metabolism regulating activities.

3,651,123

3-ALKOXY-4-ARYLOXY-CIS-CROTONIC ACID ESTERS

Clarence L. Moyle, Clare, and Diomed M. Chern, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 29, 1968, Ser. No. 725,142

Int. Cl. C07c *69/76*

U.S. Cl. 260—473 A **20 Claims**

Novel 3 - loweralkoxy - 4 - aryloxy-cis-crotonic acid loweralkyl esters, prepared by reacting an aryloxide salt with a 4-halo-3-loweralkoxy-cis-crotonic acid loweralkyl ester. They are useful as plant growth inhibitors.

3,651,124

SUBSTITUTED 2-BROMO-2-NITRO-ALKYL ESTERS OF SALICYLIC ACID

Richard Wessendorf, Essen-Heisingen, and Horst Bellinger, Dusseldorf, Germany, assignors to Henkel & Cie., GmbH, Dusseldorf-Holthausen, Germany

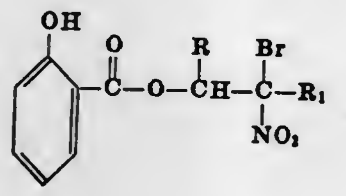
No Drawing. Filed Oct. 22, 1970, Ser. No. 83,235

Claims priority, application Germany, Nov. 6, 1969, P 19 55 854.4

Int. Cl. C07c *69/88*

U.S. Cl. 260—474 **6 Claims**

Novel salicylic acid esters of the formula



I

wherein R is selected from the group consisting of hydrogen, methyl and halogenated methyl, and R_1 is selected from the group consisting of hydrogen and methyl and ethyl which may be substituted with at least one hydroxy group which have antimicrobic activity and lower toxicity than the corresponding free alcohols.

3,651,125

CONTINUOUS METHOD FOR FORMATION OF A LIQUID MONOMER FOR A CONDENSATION POLYMER

Alan E. Lewis and Frederick W. Voight, Jr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 12, 1968, Ser. No. 752,057

Int. Cl. C07c *69/82*

U.S. Cl. 260—475 P **5 Claims**

An improved method in which a liquid comprising a precursor for a condensation polymer monomer, such as the monomer, bis(*β*-hydroxyethyl)terephthalate, is reacted in a succession of zones by the addition in each zone of a heated vapor such as ethylene glycol vapor, which vapor condenses in part as the formation of monomer occurs, thereby providing heat to the liquid and combining with the liquid for reacting with the unreacted portion of the precursor, the remaining uncondensed portion of the precursor, the remaining uncondensed portion of the vapor in each zone sweeping the reaction byproducts from each zone without allowing the byproducts to enter any of the other zones and thus come into contact with the liquid in any such other zones.

3,651,126

PREPARATION OF o-METHYLBENZOIC ACID AND DERIVATIVES THEREOF

Anthony T. Jurewicz, Edison, and Le Roy S. Forney, Metuchen, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Jan. 16, 1969, Ser. No. 791,796

Int. Cl. C07c *69/78, 69/80*

U.S. Cl. 260—475 R **5 Claims**

Phthalide and substituted (4, 5, 6, 7 positions) derivatives are converted to o-methylbenzoic acids by hydrogenolysis in alcohol, using a protic acid catalyst, over palladium metal catalyst. o-Methylterephthalic acid is prepared in this way from 5-carboxyphthalide, and is useful for making non-crystalline polyesters. o-Methylbenzoic acids have a variety of uses, such as the preparation of alkyl and polyester resins and in organic synthesis.

3,651,127

PROCESS FOR THE MANUFACTURE OF PHENYL ESTERS OR MIXTURES OF PHENYL ESTERS AND PHENOL FROM BENZENE

Lothar Hörnig, Frankfurt am Main, Hans-Jürgen Arpe, Kelkheim, Taunus, and Manfred Boldt, Fischbach, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Mar. 8, 1968, Ser. No. 711,475

Claims priority, application Germany, Mar. 17, 1967, F 51,849

Int. Cl. C07c *37/00, 51/32*

U.S. Cl. 260—479 R **10 Claims**

Preparation of phenyl esters and, if desired, phenol by gaseous phase reaction of benzene, a carboxylic acid and molecular oxygen in the presence of a compound of a noble metal of Group VIII of the Mendeleeff Periodic Table as catalyst.

3,651,128

BACTERIOSTATIC CARBAMATES OF BISPHENOLS

Edward J. Nikawitz, Glen Rock, N.J., assignor to Givaudan Corporation, Clifton, N.J.

No Drawing. Filed June 11, 1968, Ser. No. 736,008

Int. Cl. C07c *125/06*

U.S. Cl. 260—479 C **7 Claims**

This disclosure relates to certain carbamates of halogenated bisphenols. These esters have been found to have useful and unexpected properties making them suitable for employment as anti-bacterial agents in a wide variety of compositions, including toilet soaps.

3,651,129

SIDE-CHAIN HALOGENATED ALKYLPHENYL CARBAMATES

Edward D. Weil, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application Aug. 29, 1963, Ser. No. 305,509, now Patent No. 3,420,868, dated Jan. 7, 1969. Divided and this application Nov. 7, 1968, Ser. No. 816,426

Int. Cl. C07c *125/06*

U.S. Cl. 260—479 **2 Claims**

Haloalkylphenylcarbamates, useful as insecticides, herbicides and bacteriostats, are prepared by way of the corresponding haloformates.

3,651,130

PROCESS FOR THE PRODUCTION OF ACETOACETIC ACID ESTERS

Othmar Marti and Willi Zimmerli, Visp, Valais, Switzerland, assignors to Lonza, Ltd., Basel, Switzerland

No Drawing. Filed July 25, 1968, Ser. No. 747,467

Int. Cl. C07c *69/72*

U.S. Cl. 260—483 **6 Claims**

An improved yield of an acetoacetic acid ester is obtained from a reaction between diketene and an alcohol in the presence of an acid catalyst, by converting the *β*-alkoxycrotonic acid ester, which is formed as secondary product in the reaction, into the corresponding acetoacetic acid ester by heating it with water.

3,651,131

PROCESS FOR CONVERTING TRIALKYLALUMINUM COMPOUNDS TO ALUMINUM ALKOXIDES

Russell G. Hay, Gibsonia, and John G. McNulty and William L. Walsh, Glenshaw, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Nov. 17, 1969, Ser. No. 877,423

Int. Cl. C07f *5/06*

U.S. Cl. 260—448 AD **8 Claims**

A process for converting trialkylaluminum compounds to aluminum alkoxides which involves subjecting the trialkylaluminum compound to contact with molecular oxygen at moderate temperatures in the presence of a metallic compound of copper, iron, manganese, chromium, cesium, vanadium, titanium, nickel, magnesium, aluminum or zirconium.

3,651,132

CARNITINE SALTS OF N,N-DIMETHYLBIGUANIDE HYDROHALIDES AND MANUFACTURING THE SAME

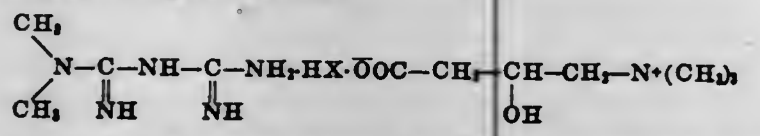
Tadahiro Dohi and Taneyoshi Yu, Naruto-shi, Takayuki Nakagawa, Tokushima-shi, and Kozi Hiraoka, Naruto-shi, Japan, assignors to Otsuka Pharmaceutical Company Limited, Tokyo-to, Japan

No Drawing. Filed May 27, 1969, Ser. No. 828,372

Int. Cl. C07c *101/00*

U.S. Cl. 260—501.13 **2 Claims**

The carnitine salts of N,N-dimethylbiguanide hydrohalides having the formula:



$$(CH_3)_2N-\underset{\underset{NH}{\|}}{C}-NH-\underset{\underset{NH}{\|}}{C}-NH_2\cdot HX\cdot{}^{-}OOC-CH_2-\underset{\underset{OH}{|}}{CH}-CH_2-N^{+}(CH_3)_3$$

wherein X is a halogen atom. The present compounds are useful as anti-diabetic drugs.

3,651,133

o-ALKYLOXY-BENZOYL-HYDRAZONES OF PYRUVIC ACID EMPLOYABLE AS ANTIRHEUMATIC, ANTIPYRETIC AND ANALGESIC PRODUCTS

Mario Ghelardoni, Firenze, and Filippo Russo, Giarre, Catania, Italy, assignors to A. Menarini S.A.S., Firenze, Italy

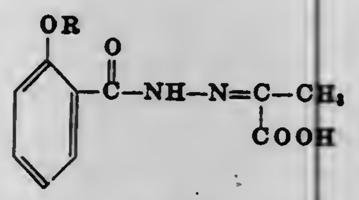
No Drawing. Filed Nov. 22, 1966, Ser. No. 596,092

Claims priority, application Italy, Nov. 23, 1965, 26,344/65

Int. Cl. C07c *109/14*

U.S. Cl. 260—519 **1 Claim**

A compound having therapeutic properties and the process for the preparation thereof. The therapeutic compound has the formula:



wherein R may be hydrogen or a lower alkyl group. The process for preparing the therapeutic compound of this invention comprises condensing the hydrazide of the appropriate o-substituted-benzoic acid with pyruvic acid in a solvent such as ethanol or diethyl ether.

3,651,134

5-ARYLALKOXY-1-HYDROXY-2-NAPHTHOIC ACIDS

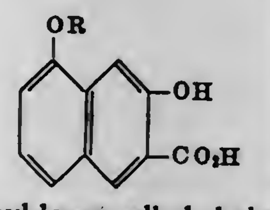
Bill Elpern, White Plains, Harris J. Shapiro, Bronx, and Harold Soloway, New Rochelle, N.Y., assignors to USV Pharmaceutical Corporation

No Drawing. Filed Feb. 10, 1970, Ser. No. 10,293

Int. Cl. C07c *65/14*

U.S. Cl. 260—520 **4 Claims**

Derivatives of 3,5-dihydroxy-2-naphthoic acid of the formula



wherein R is phenyl-lower alkyl, halophenyl-lower alkyl or trifluoromethyl-phenyl-lower alkyl are potent antimicrobial agents.

3,651,135

PREPARATION OF OXALIC ACID

Jacques Boichard, Bernard Pierre Brossar, Jacques Marius Duroux, and Raymond Marc Clement Janin, Lyon, Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France

Continuation of application Ser. No. 539,775, Apr. 4, 1966. This application Dec. 1, 1969, Ser. No. 876,220

Claims priority, application France, Apr. 7, 1965, 12,311

Int. Cl. C07c *55/06*

U.S. Cl. 260—533 R **5 Claims**

Oxalic acid is made by oxidizing propylene with at least 50% nitric acid at 40 to 80° C.

3,651,136

SYNTHESIS OF DL-THREONINE

George Foulds, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed Nov. 6, 1969, Ser. No. 874,716

Int. Cl. C07c *101/30*

U.S. Cl. 260—534 M **6 Claims**

DL-threonine may be prepared in good yield by a novel three-step process comprising the epoxidation of crotonic acid, followed by addition of chlorine and then ammonia to the resulting intermediates.

3,651,137

SELECTIVE CONVERSION OF $N^{\text{alpha}},N^{\text{epsilon}}$-DIACETYLLYSINE ESTERS TO $N^{\text{alpha}},N^{\text{epsilon}}$-DIACETYLLYSINE

Tucker T. Yee, Claymont, Del., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Dec. 23, 1969, Ser. No. 887,789

Int. Cl. C07c *103/50*

U.S. Cl. 260—534 L **7 Claims**

The alkyl esters of $N^{\text{alpha}},N^{\text{epsilon}}$-diacetyllysine are converted to the $N^{\text{alpha}},N^{\text{epsilon}}$-diacetyllysine by first reacting the ester with ammonium hydroxide or an ammoniacal-alcohol solution to produce the $N^{\text{alpha}},N^{\text{epsilon}}$-diacetyllysine amide, a novel compound, and then by reacting the amide with glacial acetic acid saturated with gaseous hydrogen chloride to hydrolyze the amide to the $N^{\text{alpha}},N^{\text{epsilon}}$-diacetyllysine.

The diacetyllysine is a racemic mixture but is conveniently resolved by reaction with an optically active amine to form a mixture of the salts which can be separated by fractional crystallization from which the desired L-lysine is produced.

3,651,138

RESOLUTION OF DL-DIACETYLLYSINE

Tucker T. Yee, Claymont, Del., and Joseph A. Cahill, Philadelphia, and Joseph A. Meyers III, Springfield, Pa., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Dec. 23, 1969, Ser. No. 887,790

Int. Cl. C07c *101/24*

U.S. Cl. 260—534 L **3 Claims**

Conversion of DL-diacetyllysine to diastereoisomeric salts by reaction with an optically active base such as D-(+)-alphamethylbenzylamine, separation of the salt of the desired L isomer from that of the D isomer by fractional crystallization, conversion of the salt of the L isomer to L-diacetyllysine utilizing a cation exchange resin and finally hydrolysis of the L-diacetyllysine to L-lysine hydrochloride.

3,651,139

SPRAY-DRIED AGENT FOR FINISHING TEXTILES

Anton Feinauer, Wilhelm Ruettiger, Rolf Fikentscher, and Walter Pitteroff, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Oct. 13, 1967, Ser. No. 675,013

Claims priority, application Germany, Oct. 13, 1966, P 15 94 916.3

Int. Cl. C07c *127/14;* **D06m** *13/34*

U.S. Cl. 260—553 R **8 Claims**

A spray-dried agent for textile finishing which contains as active components at least one methylol compound of urea and, as a stabiliser to increase stability in storage, a small amount of a five- to seven-membered heterocyclic compound having one of the groupings

$$-NH-CO-NH-,\ -NH-CO-CH_2-$$

or

$$-NH-CO-O-$$

in the ring or a methylol derivative of such a heterocyclic compound.

3,651,140

AMINO AND AMIDO COMPOUNDS DERIVED FROM N - 3 - OXOHYDROCARBON-SUBSTITUTED ACRYLAMIDES

Lester E. Coleman, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Continuation-in-part of application Ser. No. 657,787, Aug. 2, 1967, which is a continuation-in-part of application Ser. No. 586,391, Oct. 13, 1966. This application Dec. 4, 1969, Ser. No. 882,304

Int. Cl. C07c *103/00*

U.S. Cl. 260—561 N **12 Claims**

N-3-oxohydrocarbon-substituted acrylamides, preferably diacetone acrylamide, react with polyamines and polyamides through the carbonyl group or the olefinic bond. The products are excellent curing agents for epoxy resins. They have low toxicity and skin and eye irritation, and resins cured therewith are stable to light and ultraviolet radiation.

3,651,141

2,6-DI(LOWER ALKANOYLAMINO)-3,4-DICHLOROPHENOLS

Eugene E. Galantay, Morristown, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Aug. 8, 1969, Ser. No. 848,697

Int. Cl. C07c *103/38*

U.S. Cl. 260—562 A **4 Claims**

2,6 - di(loweralkanoylamino) - 3,4 - dichlorophenols, e.g., 2,6-diacetamino-3,4-dichlorophenol. The compounds are useful as herbicides, bacteriostats, mold inhibitors and preservatives.

3,651,142

3-AMINO-2-(3,4-DIHALOPHENYL) BICYCLO[2.2.2]OCTAN-2-OL

Jules Freedman, Milwaukee, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Feb. 6, 1969, Ser. No. 797,233

Int. Cl. C07c *91/00*

U.S. Cl. 260—570.5 CA **7 Claims**

The compounds are 3-amino-2-(3,4-disubstituted)bicyclo[2.2.2]octan-2-ols which are useful in the treatment of depression. Representative compounds disclosed in the application are N-methyl-2-(3,4-dichlorophenyl)-3-aminobicyclo[2.2.2]octan - 2-ol hydrochloride, N-isopropyl-2-(3,4-dichlorophenyl)-3-aminobicyclo[2.2.2]octan - 2 - ol, and N,N-dimethyl - 2 - (3,4-dichlorophenyl)-3-aminobicyclo[2.2.2]octan-2-ol hydrochloride.

3,651,143

AMINO AND SUBSTITUTED AMINO CONTAINING BENZOCYCLOHEPTENONES

Eugene E. Galantay, Morristown, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Feb. 4, 1969, Ser. No. 796,567

Int. Cl. C07c *87/64*

U.S. Cl. 260—575 **4 Claims**

The compounds are 6-amino- and substituted amino-5H-benzocyclohepten-5-ones, which may be substituted or unsubstituted at the aromatic moiety, e.g., 6-amino-5H-benzocyclohepten-5-one, and are useful as hypnotic-sedative agents.

3,651,144

PRODUCTION OF ALKANOLAMINES

John B. Tindall, 448 Osborne St.,
Terre Haute, Ind. 47802

No Drawing. Filed June 6, 1969, Ser. No. 831,246

Int. Cl. C07c *85/10, 89/00, 89/04*

U.S. Cl. 260—584 R **1 Claim**

The alkanolamines 2-amino-1-butanol and 2-amino-2-ethyl-1,3-propanediol are produced simultaneously in good yield and quality in a process wherein 1-nitropropane is reacted with formaldehyde in a mole ratio of about 0.7 to about 0.9, reducing the nitroalkanols so obtained and separating the alkanolamines.

3,651,145

NOVEL DIKETO COLORING AGENTS

Joseph Donald Surmatis, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application June 23, 1967, Ser. No. 648,196. Divided and this application Apr. 24, 1969, Ser. No. 819,520

Int. Cl. C07c *49/54*

U.S. Cl. 260—586 R **1 Claim**

Novel C_{40} and C_{50} diketo coloring and pigmenting agents for foodstuffs and the like and a process for their production from hydroxenin including intermediates therein.

3,651,146

PROCESS FOR THE PREPARATION OF TRIARYLBORANES

Don Morris von Schriltz, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 25, 1970, Ser. No. 14,192

Int. Cl. C07f *5/02*

U.S. Cl. 260—606.5 B **4 Claims**

An improved process for the preparation of triarylboranes such as triphenylborane which comprises reacting an aryl Grignard reagent with a trialkylborate, isolating the product by hydrolysis, extracting the resultant material with an organic solvent, washing, drying and concentrating the extractant to recover the crude product, and thereafter treating the crude product with an aliphatic hydrocarbon solvent which dissolves undesired by-products and leaves substantially pure triarylborane.

3,651,147

1,6-DIPHOSPHATRIPTYCENE

Kurt Weinberg, Upper Saddle River, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 621,763, Mar. 9, 1967, now Patent No. 3,557,207. This application Oct. 7, 1970, Ser. No. 78,962

Int. Cl. C07f *9/50*

U.S. Cl. 260—606.5 P **1 Claim**

This invention relates to the production of 1,6-diphosphatriptycene which compound is useful as a plasticizer, flame retardant intermediate, a ligand in homogeneous catalysis and a reaction intermediate in the production of insecticide fuel and oil additives.

3,651,148
2-(6-METHOXY-2-NAPHTHYL)-1-PROPYL BORANES

Peter H. Nelson, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama
No Drawing. Filed Sept. 30, 1969, Ser. No. 862,475
Int. Cl. C07f *5/02;* **C07c** *43/20*
U.S. Cl. 260—606.5 B **2 Claims**

This invention relates to 2-(6-methoxy-2-naphthyl)-1-propyl boranes useful in the preparation of 2-(6-methoxy-2-naphthyl) propionic acid and 2-(6-methoxy-2-naphthyl)-1-propanol.

These products have anti-inflammatory, analgesic and anti-pyretic activities.

3,651,149
β-(6-METHOXY-2-NAPHTHYL)-9-BORABICYCLO-(3,3,1)-NONANE

Ian T. Harrison, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama
No Drawing. Filed Sept. 30, 1969, Ser. No. 862,458
Int. Cl. C07c *5/02;* **C07f** *43/20*
U.S. Cl. 260—606.5 B **1 Claim**

This invention relates to β-(6-methoxy-2-naphthyl)-9-borabicyclo(3,3,1)-nonane which is useful in the preparation of 2-(6-methoxy-2-naphthyl)propionic acid. The said propionic acid has anti-inflammatory, analgesic and anti-pyretic activities.

3,651,150
PREPARATION OF DI-ALKYLAROMATIC DISULFIDES

George H. Garrison, Andrew G. Horodysky, and Howard E. Philips, Beaumont, Tex., assignors to Mobil Oil Corporation
No Drawing. Filed Feb. 26, 1969, Ser. No. 802,663
Int. Cl. C07c *149/30*
U.S. Cl. 260—608 **20 Claims**

Reacting free sulfur with an aqueous alkali metal hydrosulfide (NaHS) solution, optionally having a minor monosulfide (Na_2S) content, to convert some of the hydrosulfide and most of any monosulfide present to the alkali metal disulfide (Na_2S_2); thereafter adding benzyl chloride or a similar haloalkylaromatic compound for accelerated and substantially complete conversion by the initial reaction products in the presence of methanol to form benzyl mercaptan and dibenzyl disulfide; adding a strong base (NaOH) after complete conversion of the benzyl chloride to raise the pH of the reaction mixture to about 10–11 to supplement the effect of the methanol in accelerating the reaction between the mercaptan and the sulfur in completing the formation of dibenzyl disulfide.

3,651,151
PREPARATION OF POLYPHENYL ETHER FROM DIHYDRIC PHENOLS

Robert F. Bridger, Hopewell, Robert E. Kinney, Lawrenceville, and Albert L. Williams, Princeton, N.J., assignors to Mobil Oil Corporation
No Drawing. Continuation-in-part of application Ser. No. 490,072, Sept. 24, 1965, which is a continuation-in-part of application Ser. No. 416,127, Dec. 4, 1964. This application May 12, 1969, Ser. No. 823,943
Int. Cl. C07c *41/04*
U.S. Cl. 260—613 R **6 Claims**

Dihydric phenols can be used directly in the Ullmann ether synthesis by using a copper salt catalyst and an amine solvent that dissolves the catalyst by forming coordinate covalent bonds with copper ions.

3,651,152
PROCESS FOR THE ALKOXYLATION OF COMPOUNDS CONTAINING ALCOHOLIC HYDROXYL GROUPS

Wilfried Umbach, Langenfeld, and Werner Stein, Erkrath-Unterbach, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany
No Drawing. Filed Sept. 19, 1969, Ser. No. 859,560
Claims priority, application Germany, Oct. 2, 1968, P 18 00 462.1
Int. Cl. C07c *41/02*
U.S. Cl. 260—611 B **7 Claims**

This invention relates to an improvement in the process of alkoxylation of compounds containing alcoholic hydroxyl groups by reacting compounds containing hydroxyl groups with alkylene oxides in the presence of alkoxylation catalysts. The said improvement involves the use of a stable carbonium ion as the said alkoxylation catalyst.

3,651,153
PRODUCTION OF ALCOHOLS

Gunther Strauss and Klaus Schneider, Marl, and Werner Jacquemin, Sythen, Germany, assignors to Chemische Werke Huls A.G., Marl, Germany
No Drawing. Filed Aug. 24, 1965, Ser. No. 482,238
Claims priority, application Germany, Aug. 24, 1964, P 12 94 960.9–42
Int. Cl. C07c *35/02, 35/08, 31/02*
U.S. Cl. 260—617 H **2 Claims**

Boric acid ester intermediates in the preparation of alcohols of non-aromatic hydrocarbons are produced by introducing boric acid in admixtures with water directly into the hydrocarbons undergoing oxidation.

3,651,154
PROCESS FOR PREPARING POLYHALO-NAPHTHOLS

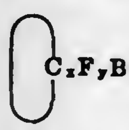
Erwin Klingsberg, Geneva, Switzerland, assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Jan. 29, 1968, Ser. No. 701,115
Int. Cl. C07c *39/38*
U.S. Cl. 260—623 R **1 Claim**

A process for hydrolyzing polyhalonaphthalenes, such as octachloronaphthalene, by reacting the polyhalonaphthalene with an alkali metal hydroxide in a polar high boiling solvent miscible with water and inert to the hydroxide. Typical solvents are dimethyl sulfoxide, dimethyl sulfone, hexamethylphosphoric triamide, and N-methyl-2-pyrrolidone. A typical product is heptachloro-1-naphthol which is useful as a fungicide, algaecide and bactericide.

3,651,155
HIGH DENSITY FLUIDS

Richard Garth Pews and Ralph A. Davis, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Mar. 13, 1969, Ser. No. 807,123
Int. Cl. C07c *23/08, 23/10*
U.S. Cl. 260—648 F **7 Claims**

The present invention is a group of fluorobromocycloalkanes characterized by the formula:



$C_xF_yBr_z$

wherein x is 5 or 6, z is 3 or 4 when x is 6 and 2 or 3 when x is 5 and the ratio of $(y+z)$ to x is 2:1.

Also provided is a process for preparing the compounds as defined above.

3,651,156
PROCESS FOR THE MANUFACTURE OF FLUORINATED ALIPHATIC HYDROCARBON COMPOUNDS

Otto Scherer, Bad Soden, Taunus, and Jurgen Korinth, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Continuation-in-part of application Ser. No. 681,077, Nov. 7, 1967. This application June 20, 1969, Ser. No. 835,238
Claims priority, application Germany, Nov. 12, 1966, F 50,664
Int. Cl. C07c *19/08*
U.S. Cl. 260—653 **8 Claims**

Manufacture of fluorinated aliphatic hydrocarbon compounds by disproportionation of fluorinated aliphatic substances under the influence of a catalyst obtained by fluorination at elevated temperatures of a hydrated oxide of trivalent chromium with hydrogen fluoride.

3,651,157
PROCESS FOR THE MANUFACTURE OF CARBONTETRACHLORIDE

Hans Krekeler, Wiesbaden, and Helmut Meidert, Wilhelm Riemenschneider, and Lothar Hornig, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Oct. 8, 1968, Ser. No. 765,967
Int. Cl. C07c *17/00, 17/24*
U.S. Cl. 260—664 **26 Claims**

Process for the manufacture of carbon tetrachloride from benzene or mixtures of benzene and chlorinated aliphatic or aromatic compounds, or chlorinated aromatic compounds and chlorine in the absence of a catalyst in two reaction stages at temperatures within the range of from 6° to 400° C. in the first, and 400° to 800° C. in the second reaction stage and pressures within the range of from 20 to 200 atmospheres gage, the chlorine being used in an excess amount of up to 300% and the starting products being introduced together with the chlorine advantageously continuously in amounts of 0.2 to 4 moles per liter of reactor volume and per hour into a corrosion-resistant reactor.

3,651,158
MOLYBDENUM-ANTIMONY HYDROGENATION CATALYST

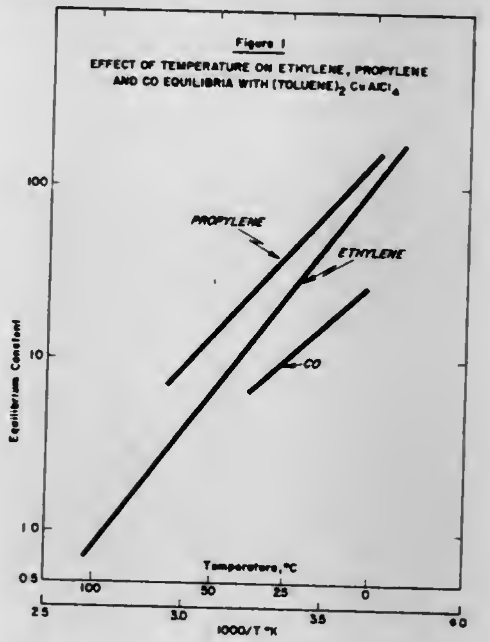
Donald C. Tabler, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed June 25, 1970, Ser. No. 49,992
Int. Cl. C07c *5/10*
U.S. Cl. 260—667 **8 Claims**

A method is disclosed for the hydrogenation of aromatics to naphthenes employing a supported molybdenum-antimony catalyst.

3,651,159
BIMETALLIC SALTS AND DERIVATIVES THEREOF, THEIR PREPARATION AND USE IN THE COMPLEXING OF LIGANDS

Robert B. Long, Atlantic Highlands, and Fred A. Caruso, Elizabeth, N.J., Richard J. de Feo, Baton Rouge, La., and David G. Walker, Baytown, Tex.; said Long, said Caruso, and said de Feo assignors to Esso Research and Engineering Company
Filed Sept. 3, 1968, Ser. No. 805,912
(Filed under Rule 47(b) and 35 U.S.C. 118)
Int. Cl. C07c *7/00, 11/00;* **B01j** *11/22*
U.S. Cl. 260—667 **31 Claims**

Bimetallic salts, having the generic formula $MM'X_n$ wherein M is a Group I–B metal, M' is a Group III–A metal, X is a halide and n is equal to the sum of the valences of M and M', are prepared by reacting the halogen salts of the individual metals, M and M', in a suitable solvent. The bimetallic salt formed thereby is a discrete monomeric species and can be utilized in the separation and recovery of various ligands, by preferential complexation. Complexation can be conducted with the bimetallic salt in the solid state, in solution, or as a slurry, and with the complexible ligand in the gases or liquid state. The ligand is recovered by decomplexation of the bimetallic salt-ligand complex or by displacement of the complexed ligand with another ligand.



3,651,160
PRODUCTION OF STYRENE

Guenter Reuss, Ludwigshafen, and Heinz Engelbach and Juergen Haug, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Sept. 11, 1969, Ser. No. 857,209
Claims priority, application Germany, Sept. 17, 1968, P 17 93 433.7
Int. Cl. C07c *15/10*
U.S. Cl. 260—669 **5 Claims**

A process for the production of styrene by catalytic dehydrogenation of ethylbenzene with oxygen or a gas containing molecular oxygen in the presence of steam in a fluidized bed at a temperature of from 350° to 600° C. using a solid catalyst and regenerating the catalyst by burning off the carbonaceous deposits, which comprises carrying out the regeneration of the catalyst, with incomplete burning off of the carbonaceous deposits with oxygen or a gas containing molecular oxygen, only to such an extent that on an average the catalyst contains during the reaction from 1 to 30% by weight of these carbonaceous deposits with reference to the catalyst. Styrene is a valuable monomer for the production of plastics.

3,651,161
PROCESS FOR THE ALKYLATION OF COMPOUNDS HAVING AN ACTIVE HYDROGEN

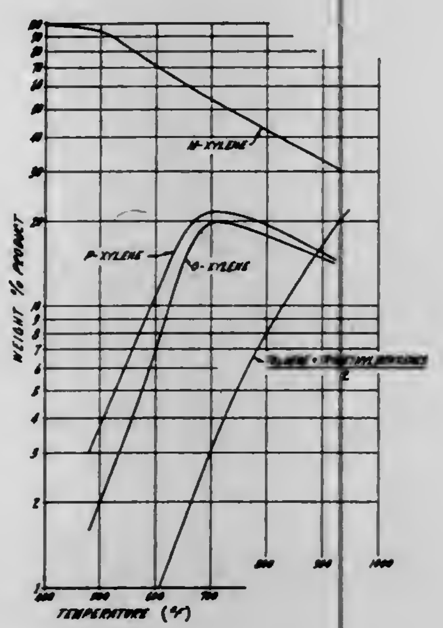
Toshihiko Waragai, Sagamihara-shi, Hideo Kawaguchi, Chigasaki-shi, and Takeo Saegusa, Kyoto-shi, Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan
Filed Sept. 2, 1969, Ser. No. 854,602
Claims priority, application Japan, Sept. 30, 1968, 43/70,588, 43/70,589
Int. Cl. C07c *3/12, 3/52*
U.S. Cl. 260—671 C **3 Claims**

The alkylation of compounds having an active hydrogen, allylic or benzylic, in the presence of complex catalysts such as sodium/pyrene and potassium/biphenyl. These catalysts form a charge transfer complex to which the catalyst activity is believably ascribed.

3,651,162

ISOMERIZATION AND DISPROPORTIONATION OF ALKYL AROMATICS

Hans P. Pohlmann, Highland, Louis C. Gutberlet, Crown Point, and Robert J. Hengstebeck, Valparaiso, Ind., assignors to Standard Oil Company, Chicago, Ill.
Filed Feb. 27, 1969, Ser. No. 803,028
Int. Cl. B01j *11/40, 11/78;* **C07c** *15/00*
U.S. Cl. 260—672 T **7 Claims**



Alkyl aromatic hydrocarbons are isomerized and disproportionated by contacting them at elevated temperatures in the presence of hydrogen gas with a catalyst comprising a silica-alumina cracking base impregnated with a hydrogenation component, a second metal from Group V–A of the periodic table, and a halogen. The preferred hydrogenation component is nickel, the preferred Group V–A metal is arsenic, and the preferred halogen is fluorine.

3,651,163

DEALKYLATION OF ALKYL BENZENES AND NAPHTHALENES

Herschel D. Radford, Flossmoor, Ill., and Hans P. Pohlmann, Highland, and Louis C. Gutberlet, Crown Point, Ind., assignors to Standard Oil Company, Chicago, Ill.
No Drawing. Filed Feb. 27, 1969, Ser. No. 803,107
Int. Cl. C07c *3/58;* **C10g** *13/08, 39/00*
U.S. Cl. 260—672 R **12 Claims**

Alkyl benzenes and/or alkyl naphthalenes are dealkylated by contacting a feed stock rich in these compounds at elevated temperatures and under hydrogen pressure with a catalyst comprising a silica-alumina cracking base impregnated with a hydrogenation component, a second metal from Group V–A of the Periodic Table, and a halogen. The preferred hydrogenation component is nickel, the preferred Group V–A metal is arsenic, and the preferred halogen is fluorine. In the recovered product, at least a portion of the compounds have a reduced number of alkyl groups.

3,651,164

DEHYDROCYCLIZATION OF HYDROCARBONS

Donald C. Tabler and Marvin M. Johnson, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed July 24, 1970, Ser. No. 58,179
Int. Cl. C07c *5/26*
U.S. Cl. 260—673.5 **9 Claims**

A method for dehydrocyclization of alkanes having from about 7 to about 20 carbon atoms by contact with hydrogen and with a catalyst of nickel, cobalt or iron in combination with arsenic or antimony.

3,651,165

METHOD FOR RECOVERY AND PURIFICATION OF ISOBUTYLENE

Tatsuo Horie, Tokyo, Japan, assignor to Nippon Oil Company, Limited, Tokyo, Japan
Filed Aug. 28, 1969, Ser. No. 853,648
Claims priority, application Japan, Sept. 7, 1968, 43/64,171, 43/64,172
Int. Cl. C07c *11/02*
U.S. Cl. 260—677 A **10 Claims**

A process for recovering highly purified isobutylene comprising contacting an isobutylene-containing hydrocarbon mixture with an aqueous solution which is acidified with hydrochloric acid and containing a chloride of a metal selected from the group consisting of zinc, tin, antimony and bismuth to allow the isobutylene to be absorbed in the form of tert-butyl alcohol in the aqueous solution; removing unreacted hydrocarbons from said solution; subjecting the solution to degassing treatment; dehydrating tert-butyl alcohol to isobutylene; and decomposing tert-butyl chloride which is produced as by-product on dehydration step, to isobutylene.

3,651,166

RECOVERY OF ACIDS AND ORGANIC BASES FROM THEIR MIXTURES

David W. Hall, Vancouver, British Columbia, Canada, assignor to Marathon Oil Company, Findlay, Ohio
No Drawing. Filed Apr. 29, 1968, Ser. No. 725,206
Int. Cl. C07c *1/20*
U.S. Cl. 260—681 **20 Claims**

Recovering acids and organic bases from their salts by heating the salt to its dissociation temperature and removing therefrom the acid or base wherein the salt dissociates at a temperature lower than the decomposition temperatures of the acid and base; the acid and base have different volatilities and the salt has a sublimation temperature higher than the dissociation temperature thereof.

3,651,167

SELECTIVE HYDROGENATION OF C_4-ACETYLENIC HYDROCARBONS

Armand J. de Rosset, Clarendon Hills, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 745,963, July 19, 1968. This application Aug. 3, 1970, Ser. No. 60,656
Int. Cl. C07c *7/00*
U.S. Cl. 260—681.5 **8 Claims**

Selective hydrogenation of C_4-acetylenes, for example ethylacetylene and/or dimethylacetylene, in admixture with butadiene, is effected in a fixed-bed system using a Group VIII noble metal component catalyst. A preferred catalyst comprises palladium in an amount of about 0.01% to about 0.2% by weight. Operating conditions include a temperature of from 35° C. to about 70° C. and a pressure in the range of about 10 p.s.i.g. to about 40 p.s.i.g. Catalyst stability is improved since the Group VIII metal components is surface-impregnated onto the porous carrier material.

3,651,168

PRODUCTION OF HEPTENES

Armin Stoessel, Frankenthal, and Heinz Engelbach, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Jan. 7, 1969, Ser. No. 789,586
Claims priority, application Germany, Jan. 9, 1968, P 16 43 735.7
Int. Cl. C07c *3/16*
U.S. Cl. 260—683.15 C **14 Claims**

Production of heptenes by reaction of propene with at least one butene in the presence of steam and a calcined phosphoric acid/silica gel catalyst, using a catalyst which contains from 10 to 50% by weight of phosphoric acid and treating this catalyst with water in the liquid phase before and/or during the reaction. The heptene products of the process are valuable starting materials for the production of plasticizers, synthetic resins and raw materials for surface coatings.

3,651,169

EPOXY RESIN, AMINE OR AMIDEALDEHYDE, AND ORGANIC ESTER OF PHOSPHORIC ACID OR ORGANIC SULFONIC ACID

Lem Davis, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 8, 1970, Ser. No. 70,536

Int. Cl. C08g *45/10*
U.S. Cl. 260—834 **7 Claims**

A thermosettable resin composition containing (A) a hydroxyl-containing resin, (B) a urea-aldehyde resin or a melamine-aldehyde resin, and (C) as a catalyst or reaction promoter, an alkyl or aryl ester of phosphoric acid or an alkyl or aralkyl ester of an organic sulfonic acid.

3,651,170

ARTICLE ADAPTED TO BECOME A POSITIVE PLANOGRAPHIC PRINTING PLATE

Julius L. Silver, Manchester, Conn., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Application May 14, 1968, Ser. No. 728,921, now Patent No. 3,514,288, which is a continuation-in-part of application Ser. No. 685,211, Nov. 22, 1967, which in turn is a continuation of application Ser. No. 406,901, Oct. 27, 1964. Divided and this application Feb. 4, 1970, Ser. No. 8,708

Int. Cl. C08g *37/18;* **G03f** *7/04*
U.S. Cl. 260—838 **10 Claims**

Article of commerce adapted to becoming a positive printing plate by the addition thereto of a photosensitive agent, said article comprising an oleophilic composition of an association product of a phenolic resin and an ethylene oxide polymer and a chromium trioxide component; and process for making such article.

3,651,171

THERMOPLASTIC MOLDING COMPOSITION CONTAINING MALEIC IMIDE COPOLYMERS AND RUBBERY POLYMERS

Wulf von Bonin, Leverkusen, Horst Niermann, Cologne, and Karl-Heinz Ott, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 19, 1970, Ser. No. 38,881

Claims priority, application Germany, May 21, 1969, P 19 25 996.2

Int. Cl. C08g *41/04*
U.S. Cl. 260—857 G **2 Claims**

It is known to convert copolymers of styrene and acrylonitrile which on their own are brittle into highly impact resistant thermoplastic moulding compositions by admixing rubbers.

A thermoplastic moulding composition comprising

(a) from 60 to 97% by weight of a hard maleic imide copolymers, and
(b) from 3 to 40% by weight of a rubber having a second order transition temperature below +10° C.

the rubber being present in the maleic imide copolymer in finely divided form.

3,651,172

METHOD FOR PREPARING LINEAR BLOCK COPOLYESTERS AND PRODUCT PRODUCED THEREBY

Kenneth T. Barkey and Lloyd I. Laird, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 710,751, Mar. 6, 1968. This application May 5, 1969, Ser. No. 822,048

Int. Cl. C08g *39/10*
U.S. Cl. 260—860 **19 Claims**

A linear block copolyester which has good fiber- and film-forming properties and is solvent-spliceable with common low boiling organic solvents is prepared by blending a poly(ethylene phthalate) with a copolyphthalate of ethylene glycol and 1,4-cyclohexanedimethanol and heating the blend under controlled temperature conditions for a period of time sufficient to form block copolyester but insufficient for equilibration and randomnization to occur. The linear block copolyester is especially useful for manufacture of films, particularly photographic film base, and can be utilized as the sole film-forming material or as one or both of the outer layers of a laminated film having a core of poly(ethylene terephthalate).

3,651,173

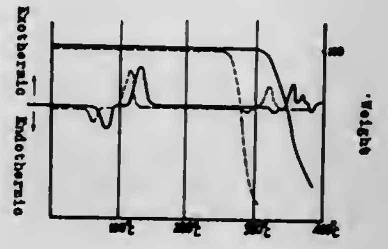
POLYESTER RESINS CROSSLINKED BY ALLYL DERIVATIVES OF ISOCYANURIC ACID

Kazuo Doi, Osaka, Takeru Murakami and Hideo Kawamura, Neyagawa, Katsutoshi Takaishi, Kyoto, and Yoshinobu Nakano, Neyagawa, Japan, assignors to

Matsushita Electric Works, Ltd., Kadoma, Japan
Filed June 1, 1970, Ser. No. 42,151

Claims priority, application Japan, May 31, 1969, 44/42,585, 44/42,586, 44/42,587, 44/42,592

Int. Cl. C08g *19/00, 21/00*
U.S. Cl. 260—868 **5 Claims**



A thermosetting solid resin composition containing one or both of prepolymers of unsaturated polyesters and prepolymers of polydiallylphthalates, an isocyanuric acid derivative as solid cross-linking agent, and an initiator. These compositions are suitable, inter alia, for producing decorative sheets and laminates, and do not become tacky at room temperature.

3,651,174

THERMALLY STABLE ALKALIN EARTH CARBONATE/POLYTETRAFLUOROETHYLENE MODIFIED POLYCARBONATE COMPOSITION

Charles A. Bialous, Mount Vernon, Ind., assignor to General Electric Company

No Drawing. Filed Apr. 15, 1970, Ser. No. 28,987

Int. Cl. C08f *45/54;* **C08g** *39/10*
U.S. Cl. 260—873 **5 Claims**

A polycarbonate composition consisting of an aromatic polycarbonate with 0.1 to about 2.0 weight percent of an alkaline earth carbonate and another material which may be either an organosiloxane polymer or a polytetrafluoroethylene or a mixture of the two. The amounts of the organosiloxane polymer and/or polytetrafluoroethylene may be present in an amount of 0.1–2.0 weight percent based on the weight of the polycarbonate. More specifically, the alkaline earth carbonate which can be employed herein is barium carbonate.

3,651,175
POLYVINYL CHLORIDE RESIN COMPOSITION HAVING EXCELLENT IMPACT RESISTANCE AND WEATHERABILITY

Fumio Ide, Ohtake-shi, and Masanobu Miura, Ramaguchi-ken, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
No Drawing. Filed Nov. 9, 1970, Ser. No. 88,233
Claims priority, application Japan, Nov. 7, 1969, 44/89,180
Int. Cl. C08f *29/24, 41/12, 45/24*
U.S. Cl. 260—876 R **11 Claims**

A polyvinyl chloride resin composition having excellent impact resistance and weatherability can be obtained by blending 100 parts by weight of a vinyl chloride polymer with 5 to 80 parts by weight of a resin which comprises 20 to 80 parts by weight of a core-crust structural crosslinked polyalkyl acrylate elastomer (A) and 80 to 20 parts by weight of a polymer (B) obtained by polymerization of a vinyl monomer or a mixture thereof, at least a part of the monomer for a polymer (B) being graft-polymerized in the presence of elastomer (A), elastomer (A) being obtained by the steps of dissolving an organic peroxide having a decomposition temperature higher than 60° C. in a monomer comprising 80 to 100% by weight of at least one alkyl acrylate whose alkyl group has 1 to 10 carbon atoms and 0 to 20% by weight of a vinyl monomer, polymerizing said monomer in an aqueous solution containing a water soluble redox initiator and an emulsifier at a temperature lower than the decomposition temperature of said organic peroxide to obtain an elastomer latex, heating and stirring said elastomer latex at a temperature higher than the decomposition temperature of said organic perioxide to obtain a crosslinked elastomer latex, adding to a latex containing 100 parts by weight of said crosslinked elastomer 30 to 150 parts by weight of a monomer which comprises 80 to 100% by weight of at least one alkyl acrylate whose alkyl group has 1 to 10 carbon atoms and 0 to 20% by weight of a vinyl monomer and in which an organic peroxide having a decomposition temperature higher than 60° C. is dissolved, seed polymerizing the monomer with a water soluble redox initiator at a temperature lower than 60° C. in the presence of said latex containing crosslinked elastomer and heating the thus obtained latex to a temperature higher than 60° C.

3,651,176
METHOD FOR PREPARING ADHESION-IMPROVED ETHYLENE-PROPYLENE RUBBER COMPOSITION

Teruyoshi Usamoto, Higashiosaka, Masao Yokota, Ibaraki, and Tamotu Kondo, Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
No Drawing. Filed June 11, 1969, Ser. No. 832,884
Claims priority, application Japan, June 11, 1968, 43/40,365
Int. Cl. C08f *37/18*
U.S. Cl. 260—897 C **2 Claims**

A rubber of improved adhesion is prepared by a process comprising mixing an ethylene-propylene rubber with a halogenated butyl rubber or a halogenated ethylene-propylene rubber in an amount of 2–50 parts by weight per 100 parts by weight of the ethylene-propylene rubber.

3,651,177
THERMOPLASTIC POLYMER COMPOSITIONS AND PROCESS OF MAKING THE SAME

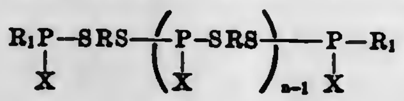
Kazuo Saito, 912 Irving Ave., Syracuse, N.Y. 13210; and Takeshi Tanaka and Ichiro Saito, both of 700 Torigai-mishi, Mishima-cho, Osaka, Japan
No Drawing. Continuation of applications Ser. No. 470,193, July 7, 1965, and Ser. No. 502,396, Oct. 22, 1965. This application June 27, 1969, Ser. No. 837,310
Claims priority, application Japan, Jan. 25, 1965, 40/3,924, 40/3,926
Int. Cl. C08f *19/08, 41/12*
U.S. Cl. 260—876 R **15 Claims**

Thermoplastic vinyl resins having high transparency and high impact resistance, consisting of a polybutadiene interpolymer or containing such interpolymer blended with a vinyl chloride polymer, said interpolymer being formed in two stages, in the first of which a butadiene polymer consisting of polybutadiene or containing at least 50% butadiene is polymerized with monomeric methyl methacrylate and in the second of which, monomeric aromatic vinyl compound is polymerized with the graft polymer formed in the first stage, the methyl methacrylate comprising from 10% to 80% of the total monomer addition, and the vinyl aromatic monomer comprising from 90% to 20% thereof; such polymerization being effected in an aqueous medium which contains, in relation to 100 parts of total resinous constituents, from 0.5 to 10.0 parts of formaldehyde sulfoxylic salt and effective amounts up to 3 parts of peroxides; at least 80% of said butadiene polymer at the start being in the form of particles below 0.2μ in diameter where the interpolymer is to be blended with vinyl chloride polymer, and below 0.1μ in diameter where the interpolymer is to be used alone; said butadiene polymeric material constituting out of each 100 parts of total resinous constituents, from 20 to 70 parts when the interpolymer is to be blended with vinyl chloride polymer, and from 20 to 60 parts when the interpolymer is to be used alone, the remainder of each 100 parts consisting of the sum of the monomeric additions.

3,651,178
POLYMERCAPTO CHLORIDO POLYPHOSPHONITE

Kenneth Rattenbury, Morgantown, W. Va., assignor to Weston Chemical Corporation, New York, N.Y.
No Drawing. Filed June 24, 1969, Ser. No. 836,149
Int. Cl. C07f *9/18, 9/20*
U.S. Cl. 260—928 **9 Claims**

Compounds are prepared of the formula



$$R_1\underset{\displaystyle X}{\underset{|}{P}}-SRS-\left(\underset{\displaystyle X}{\underset{|}{P}}-SRS\right)_{n-1}-\underset{\displaystyle X}{\underset{|}{P}}-R_1$$

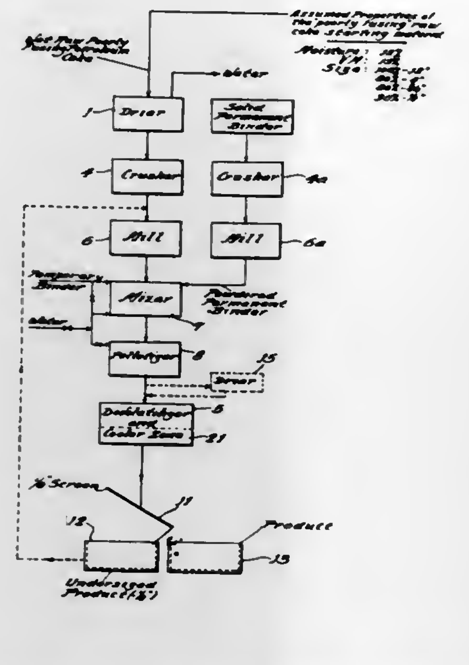
where n is an integer of 1 to 10, X is chlorine or bromine, R_1 is alkyl, haloalkyl, aryl, haloaryl, alkenyl, aralkyl, haloalkenyl, or cycloalkyl, and R is a divalent aromatic, aliphatic or cycloaliphatic group.

3,651,179
AGGLOMERATING OXIDIZED OR WEATHERED CARBONACEOUS MATERIAL USING POWDERED PITCH OR ASPHALT AS BINDER

Frederick L. Shea, Jr., 806 Wedgewood Drive, and Harry L. Hsu, 1608 Woodmont Drive, both of Johnson City, Tenn. 37601
Continuation-in-part of application Ser. No. 565,603, July 15, 1966. This application July 9, 1969, Ser. No. 842,822
Int. Cl. C09c *1/58;* **C10b** *57/02, 57/06*
U.S. Cl. 264—29 **12 Claims**

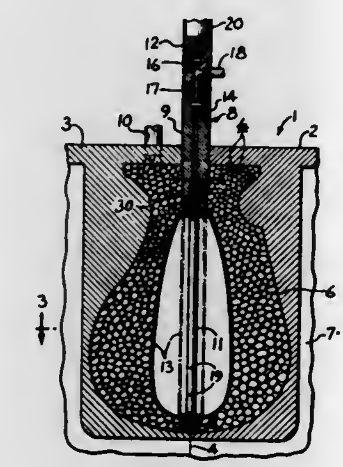
Conventionally granular carbon pellets are made from high volatile content carbonaceous material, such as raw petroleum coke having at least 9% volatile matter, by grinding, mixing with water and a temporary binder such as starch or sulphite liquors, pelletizing on a pelletizing

disk and finally heating to about 1650° F. in an inert atmosphere. It has been found that if the carbonaceous material has been oxidized or badly weathered that strong pellets will not be produced in the conventional manner in spite of the fact that the oxidized or weathered material has a volatile matter content of at least about 9%. This problem is solved by adding more than one and up to twenty parts of a solid powdered (—20 mesh and fines) pitch or asphalt binder, having a softening point above about 150° F., to the mixture prior to pelletizing.



3,651,180
METHOD OF MOLDING EXPANDABLE POLYSTYRENE PARTICLES USING AN INFLATABLE CORE IN THE MOLD CAVITY

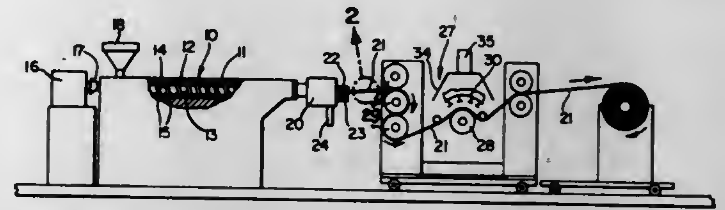
Robert C. Glueckert, Mount Prospect, Ill., assignor to Foam Forms, Inc.
Filed Aug. 8, 1968, Ser. No. 751,189
Int. Cl. B29d *27/00*
U.S. Cl. 264—51 **7 Claims**



A foam molding method utilizing an inflatable core removably positioned in a mold cavity. Pre-expanded foamable polystyrene particles of plastic are introduced into the mold and around the inflated core and are heated, expanding the particles and forming a cellular article with a hollow corresponding to the shape of the inflated core. The mold parts are separated, the core is deflated, and the molded article is stripped from the core. The inflatable core contains a core pin which fixes the position of the core element within the mold cavity.

3,651,181
ODOR REDUCTION IN LOW DENSITY MEDIUM IMPACT POLYSTYRENE FOAM

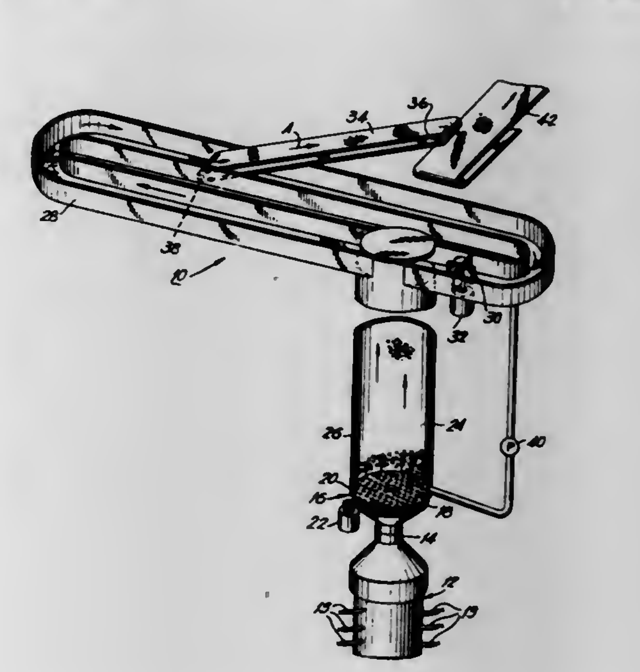
Lawrence T. Ramaika, Media, Pa., assignor to Scott Paper Company, Delaware, Pa.
Original application Sept. 25, 1967, Ser. No. 670,366. Divided and this application July 22, 1969, Ser. No. 859,605
Int. Cl. B29d *27/00*
U.S. Cl. 264—51 **3 Claims**



A method and apparatus are disclosed for reducing or eliminating the odor emitted from low density medium impact polystyrene resin foams, for example, polystyrene foams containing a butadiene component, to enable their use in plastic articles such as containers. The use of both an open flame and a corona discharge for deactivating odor-causing constitutents in such resin foams is disclosed. Chief utility of the invention lies in the treatment of such foams in the form of a sheet having a substantially continuous, impervious, nonporous, integral skin on each surface thereof, and an internal core which comprises the major portion of the thickness of the sheet, which core has undergone further expansion due to foaming after formation of the skins.

3,651,182
METHOD OF MAKING MULTICELLULAR THERMOSET FOAMED PLASTIC BEADS

Daniel Rosenthal, 525 Whitehall St., Lynbrook, N.Y. 11563
Filed Apr. 24, 1969, Ser. No. 818,866
Int. Cl. B29b *1/02;* **B29d** *27/02*
U.S. Cl. 264—51 **10 Claims**



Small, generally spherical cellulate, tough-skinned beads of thermoset plastic material. The beads are suitable for many industrial uses. The heads are made by dropletizing a thermomettable plastic material while the same is still in liquid form and while it contains a blowing agent. The conditions are such that the blowing agent is activated while the thermosettable material is in droplets. The droplets are suspended in a body of fluid so that the influence of gravity is considerably lessened. Thereby the liquid droplets tend to assume a generally spherical shape and not to agglomerate. While still in this spherical configuration the blowing agent forms cells which are able to expand because the material is liquid or gelling. However, the viscosities of the liquid and gel are sufficient to prevent the walls separating the cells from becoming so thin that the ultimate solidified beads are highly frangible. The curing, i.e., setting, time of the material is sufficiently short under the prevailing conditions to permit the cellulated expanded beads to set, i.e., cure, sufficiently for handling purposes within a commercially practical time while the beads still are suspended in the body of fluid. Thereafter the beads are extracted from the fluid and recovered for sale.

3,651,183

SURFACE HEATING OF A FOAMABLE POLYOLEFIN PREFORM PRIOR TO FOAMING AND CROSSLINKING

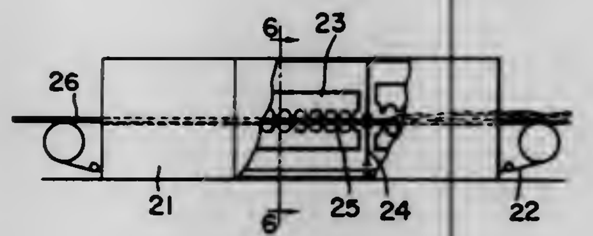
Kirokuro Hosoda, Yokohama, and Naonori Shiina, Tokyo, Japan, assignors to The Furukawa Electric Company Limited, Chiyoda-ku, Tokyo, Japan

Continuation-in-part of applications Ser. No. 442,523, Mar. 24, 1965, Ser. No. 610,880, Jan. 23, 1967, Ser. No. 645,444, June 12, 1967, and Ser. No. 792,180, Oct. 18, 1968. This application Nov. 25, 1968, Ser. No. 778,443

Claims priority, application Japan, Mar. 31, 1964, 39/17,919

Int. Cl. B29d *27/00*

U.S. Cl. 264—54 **16 Claims**



A method of continuously manufacturing foam sheets comprising mixing a polyolefin, decomposable blowing agent and a cross linking agent, shaping the mixture into a sheet, heating only the surfaces of the sheet to about 100° C. to about 300° C. to prevent sticking of the sheet to the supporting medium, immediately cooling said surfaces and then heating the entire sheet to decompose the cross-linking and blowing agents. The supporting medium contains holes which leave a large number of fine areas exposed to direct heat.

3,651,184

PROCESS FOR FAST-FIRE CERAMIC TILE USING NEPHELINE SYENITE AND CLAY

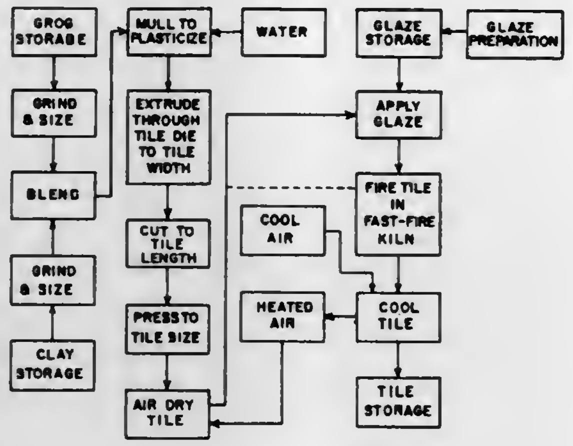
John Everhart and John Lawson Felder, San Antonio, Tex., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Continuation-in-part of application Ser. No. 5,618, Jan. 26, 1970. This application May 18, 1970, Ser. No. 38,370

Int. Cl. C04b *33/00, 33/24, 33/32*

U.S. Cl. 264—56 **4 Claims**

Composition and process for manufacturing fast-fire ceramic tile, particularly large-sized floor and wall tiles of ¼" to 1' x 12" x 12" dimensions or larger, comprise a system in which the function usually performed by the clay ingredient, as the plasticizer and binder in the fired ware in usual ceramic-forming compositions, is performed instead by a fusible material, nepheline syenite, which serves also as the grog ingredient in the pre-fired stages, and in which system the clay, reversely, performs the usual skeleton-forming function of the grog in the fired ware. The tile body making composition consists essentially by weight of 20 to 80% of nepheline syenite and from 80 to 20% of a clay whose incipient fusion point is substantially above that of the nepheline syenite and which contains less than 15%, and preferably less than 5%, by weight of free quartz. The composition is essential for making semi-vitreous, non-glazed or glazed, tile products unusually free of structural defects, such as cracking, warpage and poor dimensional uniformity, by means of a novel fast-fire process in which the tiles are fired in the temperature range of about 1800 to 2200° F. from their greenware state to matured, fired products in from about one to three hours.



3,651,185

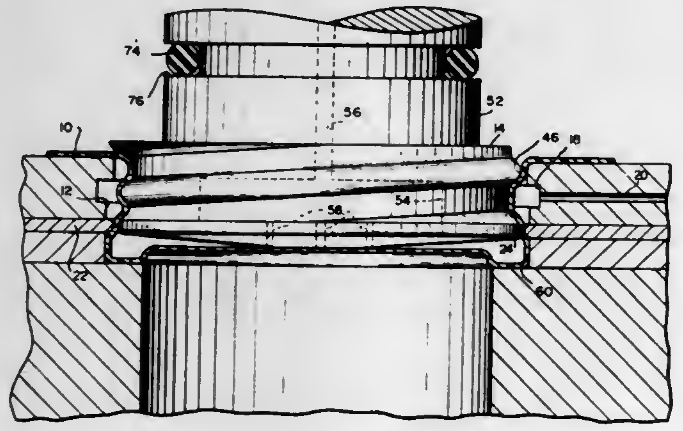
METHOD FOR THERMOFORMING A SCREW CAP CLOSURE

Gary G. Menkel, Holliswood, N.Y., assignor to Design Center, Inc., Long Island City, N.Y.

Filed Dec. 17, 1969, Ser. No. 885,848

Int. Cl. B29c *17/04*

U.S. Cl. 264—89 **6 Claims**



A method for thermoforming a screw cap closure wherein a flat sheet or web of thermoplastic material is initially heated and placed over a female mold cavity and a mating male mold is pressed against the heated plastic sheet to draw a portion of the sheet into the female mold cavity. Air is injected into the mold at two points; the first being through the top of the male mold thereby to expand the plastic sheet against the lower portion of the female mold and the second is through the upper portion of the female mold to force the sheet to conform tightly against thread forming contours which are provided on the male mold. The male mold is then withdrawn bringing the formed cap in the web with it and the mold is twisted out of the formed cap, leaving the formed cap in the web.

3,651,186

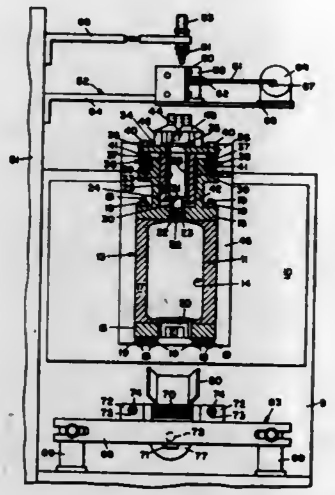
METHOD FOR FORMING BLOW MOLDED ARTICLES OF ORIENTED THERMOPLASTIC MATERIAL

John N. Hall, Brookside Park, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Mar. 29, 1968, Ser. No. 717,083

Int. Cl. B29c *17/07*

U.S. Cl. 264—94 **2 Claims**



This invention relates to blow molding hollow articles such as bottles of oriented plastic material and particularly to forming a well-defined peripheral projection means, such as a cap-receiving screw thread on the periphery of the bottle at the neck, and comprises shifting longitudinally that portion of the screw thread of the bottle after the bottle has been blown and while it is still under blowing pressure.

3,651,187

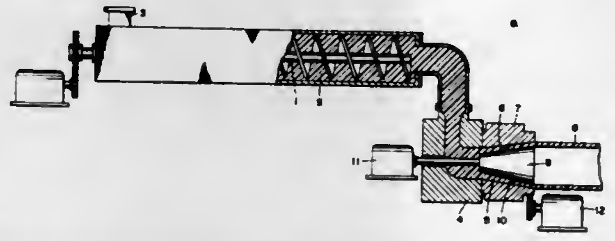
EXTRUSION PROCESS

Lawrence C. Cessna, Jr., Grendon Farms, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 16, 1969, Ser. No. 866,913

Int. Cl. B29d *3/02*

U.S. Cl. 264—108 **3 Claims**



A method is described for effecting circumferential orientation of reinforcing fibers in an extruded tubular plastic shape. The polymer, containing reinforcing fibers, is extruded through an annular tube forming die while being subjected to both longitudinal and circumferential velocity components. The longitudinal component has a gradient in the radial direction, while the circumferential component has gradients in the radial and longitudinal directions. A preferred means of accomplishing the process is by use of a conical rotating die.

3,651,188

METHOD OF PRODUCING A HOLLOW HAMMER HANDLE WITH LONGITUDINALLY TENSIONED FIBERS

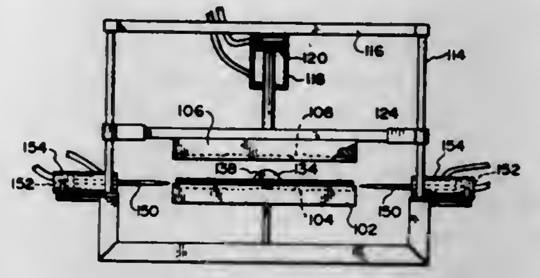
Wayne Wolf, Cedar Rapids, Iowa, assignor to Vaughan & Bushnell Mfg. Co., Hebron, Ill.

Original application Apr. 21, 1969, Ser. No. 817,805, now Patent No. 3,613,753, dated Oct. 19, 1971. Divided and this application Sept. 22, 1970, Ser. No. 74,377

Int. Cl. B29g *1/00*

U.S. Cl. 264—136 **7 Claims**

A method of forming a hollow hammer handle having longitudinally tensioned fiber glass strands extending throughout its length, said method including placing a length of polymerizable plastic-saturated fiber glass roving in a mold, penetrating an end of the saturated roving while in the mold with a pointed mandrel to produce a cavity and tension the fibers by back flow of the plastic, and finally polymerizing the plastic.



3,651,189

WATER TREATMENT PROCESS

Harry T. Anderson, Clarendon Hills, Ill., assignor to Swift & Company, Chicago, Ill.

No Drawing. Filed Apr. 21, 1969, Ser. No. 818,052

Int. Cl. C23f *13/00*

U.S. Cl. 204—147 **7 Claims**

An electrical current system in conjunction with low level chelation treatment has been found to alleviate problems of corrosion and precipitation of unstable dissolved solids at both low and elevated temperatures.

3,651,190

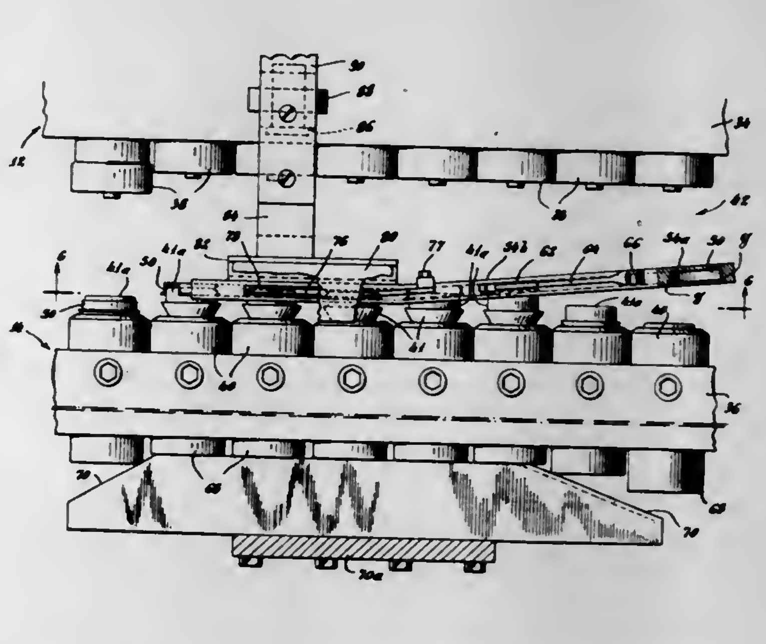
MANUFACTURE OF COMPOSITE ARTICLES OF MOLDABLE AND NONMOLDABLE MATERIALS

Edward J. Fitz, Fairfield, Conn., assignor to Eagle-Picher Industries, Inc.

Continuation of application Ser. No. 674,363, July 3, 1967, which is a division of application Ser. No. 422,354, Dec. 30, 1964, now Patent No. 3,335,458. This application Mar. 10, 1970, Ser. No. 17,047

Int. Cl. B29d *3/00*

U.S. Cl. 264—153 **4 Claims**



Forming a plurality of composite articles by consecutively feeding nonmoldable members into cooperating blanking dies. A projecting portion of one of the dies contacts the leading edge of an inclined nonmoldable member stopped in a chute and moves the nonmoldable member through the end of the chute while seating the member in the projecting die portion. The projecting die portion and member are then retracted and the dies cooperative to blank molding material from a strip and to mold the material against the nonmoldable member. The dies then open and the projecting portion ejects the composite article.

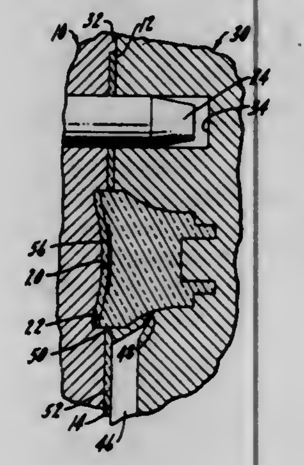
3,651,191
METHOD FOR MOLDING PLASTIC ARTICLES HAVING IMBEDDED INDICIA

Jack E. Glatt, 134 S. Hills Drive, Barrington, Ill. 60010, and Jacob J. Detzel, 4830 W. Cullom, Chicago, Ill. 60641

Original application Oct. 25, 1967, Ser. No. 677,965. Divided and this application Oct. 29, 1969, Ser. No. 871,348

Int. Cl. B29d *19/00*

U.S. Cl. 264—153 **1 Claim**



A method for making plastic articles having a bonded plastic film overlay under which indicia may be protectively imbedded which includes the steps of: (1) positioning a plastic film between two mold parts; (2) forming a line of reduced strength around those portions of the plastic film within the mold cavities; and (3) injecting molten plastic into each mold cavity and fusing the film thereto. Indicia may be applied to the plastic film.

A mold for making plastic articles including a first part and a second part adapted to close in registry to form at least one mold cavity; the first mold part is formed with a recess adapted to receive the plastic film and locator pins for accurately positioning the film therein. The second mold part is formed with a cutting knife extending around each mold cavity so that as the mold parts are closed about the plastic film, each cutting knife forms a closed cut line around those portions of the film within the mold cavities.

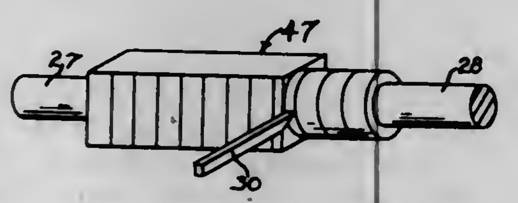
3,651,192
PROCESS FOR MAKING PLASTIC CONTACT LENS BLANKS

John Chester Erickson, P.O. Box 2621, Terminal Annex, Spokane, Wash. 99220

Filed Dec. 11, 1969, Ser. No. 884,263

Int. Cl. B29c *17/10;* **B29d** *11/00*

U.S. Cl. 264—160 **2 Claims**



Plastic contact lens blanks are formed by pouring the plastic between two parallel spaced glass sheets to form a resultant plastic sheet having smooth clear surfaces and a uniform density and refractive index. The plastic sheet is then cut into squares that are slightly larger than the diameter of the desired circular blanks. The square pieces are positioned between spindles and rotated while the periphery is being machined by a cutting tool down to the desired diameter.

3,651,193
PROCESS FOR PRODUCING POTENTIALLY CRIMPED FILAMENTS

George Edward Barlow, Peter Bernard Checkland, and Robert Alexander Edington, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 507,648, Nov. 15, 1965. This application Apr. 7, 1969, Ser. No. 814,186

Int. Cl. D01d *5/22*

U.S. Cl. 264—168 **6 Claims**

Crimped filaments of meltspun synthetic linear polymer are made by drawing the filaments, then asymmetrically heating the drawn filaments by passing them in contact with a heater having a surface maintained at a temperature between 170° C. and 270° C. that the angle of deflection is less than 45° and then relaxing the filaments.

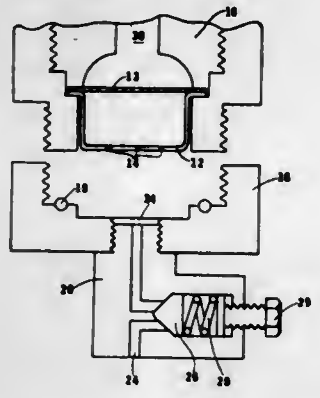
3,651,194
PROCESS AND APPARATUS FOR START-UP OF FIBER-SPINNING SOLUTIONS

Thomas C. Bohrer, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 4, 1968, Ser. No. 781,030

Int. Cl. D01d *1/10, 7/00*

U.S. Cl. 264—169 **6 Claims**



A method and an apparatus for the start-up of a fiber dry spinning operation wherein the spinning solution is maintained at a temperature above the boiling point of the solvent in order to maintain a spinnable solution. The apparatus seals the spinneret jets to permit a build-up of pressure and temperature in the spinning system to the required spinning conditions while permitting solvent bleedoff to produce a flow of spinning solution into the spinneret. Subsequently, the sealing means is disengaged to open the spinneret orifice for spinning.

3,651,195
PROCESS FOR PRODUCING COMPOSITE FILAMENTS

Ole-Bendt Rasmussen, 7 Topstykket, 3460 Birkerod, Denmark

Filed May 29, 1968, Ser. No. 733,090

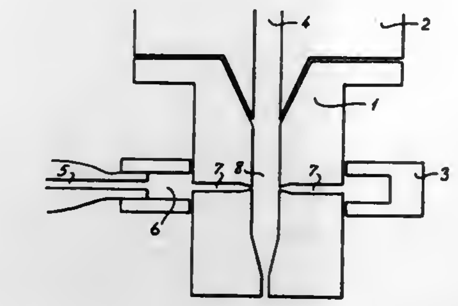
Claims priority, application Great Britain, May 30, 1967, 24,836/67

Int. Cl. B29f *3/10*

U.S. Cl. 264—171 **9 Claims**

A filament material comprises a core consisting of a substantially homogeneous polymer material (A) and a coat consisting of two mutually incompatible polymer materials (B) and (C) where (B) is compatible with

(A) and form a substantially helical fibrous structure on the surface of (A) and (C) is easily removable. To make the filament material, a dispersion of (B) and (C) is applied to the surface of (A) while this is being extruded whereafter the extruded strand is subjected to stretching and twisting.



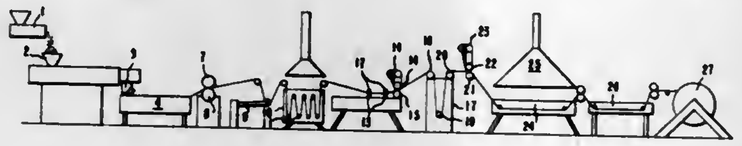
3,651,196
PREPARATION OF ORIENTED POLYMERIC STRAPPING

Howard W. Starkweather, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 29, 1969, Ser. No. 845,692

Int. Cl. B29c *17/00;* **C08f** *29/12;* **D01d** *5/08*

U.S. Cl. 264—178 **9 Claims**



Manufacture of strapping from resin at least 75% of which is polyethylene having a density of at least 0.95 g./cc. and preferably from 0.955 to 0.967 g./cc. and a melt index of from 0.2 to 1.0 and preferably from 0.4 to 0.9 by extruding a billet, roll orienting the billet, followed by stretching at ambient temperature, followed by stretching in a liquid bath maintained at from 93° C. to the melting point of the polyethylene and preferably from 110 to 130° C. to give a total deformation of from 10 to 18 times and preferably from 11 to 13.5 times.

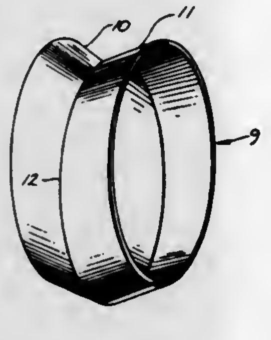
3,651,197
METHOD FOR FABRICATING ELBOW GORES

Edwin C. McKay, Fresno, Calif., assignor to Climate Conditioning Corporation, Stanton, Calif.

Filed Apr. 20, 1970, Ser. No. 29,950

Int. Cl. B29c *25/00*

U.S. Cl. 264—230 **7 Claims**



A method for making elbow segments or gores of thermoplastic pipe such as polyvinyl chloride employs heat shrinking of extruded pipe onto a mold. A short length of pipe is heated, turned inside out, placed on the mold and shrunk in place with the aid of a cable tightened around the midsection of the gore on the inside of the elbow bend. Because the pipe section is turned inside out before shrinking, the elbow gore has cylindrical ends free of flaring.

3,651,198
DRAWING AND HEAT TREATMENTS OF POLYESTER FILAMENTS

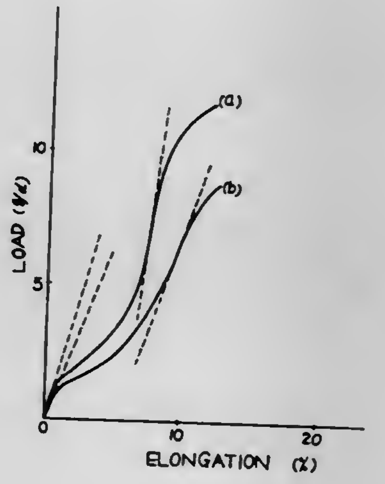
Yukio Mitsuishi, Masanori Matsuura, and Toshimasa Kuroda, Ibaragi-shi, Osaka-fu, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Feb. 11, 1969, Ser. No. 798,426

Claims priority, application Japan, Feb. 15, 1968, 43/9,510; Apr. 20, 1968, 43/26,467

Int. Cl. D02j *1/22*

U.S. Cl. 264—235 **10 Claims**



Process for drawing and heat-treating polyester filaments comprising subjecting undrawn polyester filaments to a first drawing at a relatively low temperature (T_1), subjecting the filaments to a second drawing at a temperature (T_2) lower than T_1 at draw ratio at least 80% of the maximum draw ratio at this stage, subjecting the filaments to a first heat treatment under tension at a temperature (T_3) higher than T_2, and thereafter subjecting the filaments to single or multi-staged second heat treatment performed at temperatures higher than temperature T_3 under tension, the temperature of at least one stage of the second heat-treatment being 110° C.

3,651,199
PROCESS FOR PRODUCING PHENOL-ALDEHYDE RESIN FIBERS

Roe C. Blume, Wilmington, Del., and Ludwig E. Seufert, Boothwyn, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 3, 1969, Ser. No. 813,289

Int. Cl. B29c *25/00*

U.S. Cl. 264—236 **10 Claims**

Phenol-aldehyde resin fibers are produced by extruding molten cross-linkable resin, solidifying the fiber, and treating the solidified fiber with a Friedel-Crafts catalyst (preferably boron trifluoride etherate or methanesulfonic acid) to cross-link the surface of the fiber. The resultant self-supporting fiber with a core of cross-linkable resin encased by a sheath of cross-linked resin is then heated to cross-link substantially all of the remaining cross-linkable resin.

3,651,200
BIAXIALLY DRAWING POLYAMIDE FILM WITH PRETREATMENT

Mutsuo Kuga, Kyoto-shi, and Takeshi Mashimo, Junkichi Watanabe, Teruo Arai, and Yoshihiko Yano, Uji-shi, Japan, assignors to Unitika Kabushiki Kaisha, Hyogo-ken, Japan

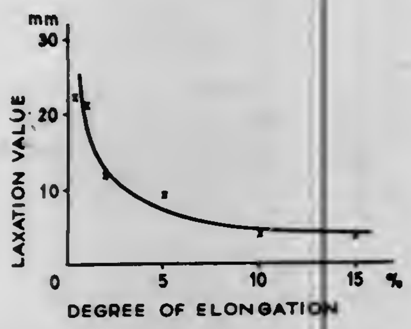
Filed Aug. 28, 1969, Ser. No. 853,687

Claims priority, application Japan, Aug. 31, 1968, 43/62,622

Int. Cl. B29c *17/02*

U.S. Cl. 264—289 **13 Claims**

Prior to biaxially drawing a polyamide film, the film is elongated in the longitudinal direction to an extent of 1 to 15% in addition to the natural elongation due to water adsorption while adsorbing 2 to 10% by weight water.



This pretreatment prevents a nonuniformity defect in the film termed "laxation."

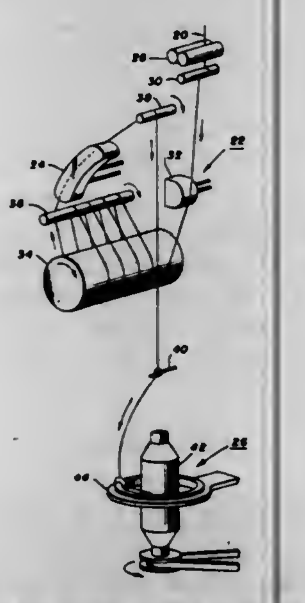
3,651,201
HIGH-ELONGATION-AND-TENACITY NYLON TIRE YARN

Edmond P. Brignac and Billy E. Smith, Pensacola, Fla., Wallace W. Smith, Greenwood, S.C., and Emilio J. Solo, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 21, 1968, Ser. No. 754,254

Int. Cl. B29c *17/02;* **D02g** *3/48*

U.S. Cl. 264—290 **1 Claim**



Elongation of high tenacity yarn is increased by heating the yarn to a temperature between 180° and 235° C., while under a tension between 0.05 and 0.35 gram per denier, for a period of 0.003 to 0.15 second.

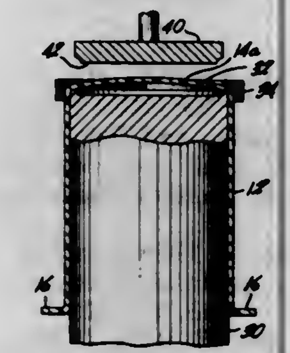
3,651,202
PRODUCTION OF PLASTIC CONTAINERS

Erwin M. Raabe, Westfield, N.J., assignor to Rheem Manufacturing Company, New York, N.Y.

Filed Mar. 31, 1970, Ser. No. 24,238

Int. Cl. B29d *23/13*

U.S. Cl. 264—292 **1 Claim**



Hollow cup-shaped thermoplastic containers are formed by drawing material from a sheet blank of thermoplastic material into a die cavity with a plunger to form the wall section of the container. The partly-formed container is then placed in an inverted position on a mandrel, and the bottom section of the container is formed by working the bottom section material against the mandrel.

3,651,203
PROCESS FOR THE MANUFACTURE OF SOLID PARTS FROM THERMO-PLASTIC MATERIAL

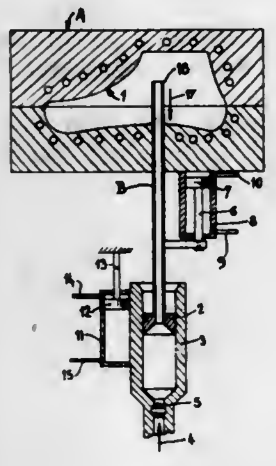
Henry Massonnet, Nurieux, Ain, France

Original application Jan. 13, 1967, Ser. No. 609,045. Divided and this application May 29, 1969, Ser. No. 851,513

Claims priority, application France, Jan. 15, 1966, 46,823

Int. Cl. B29f *1/06*

U.S. Cl. 264—328 **4 Claims**



Large solid objects are moulded from plastic material by injecting the molten material into a mould via a conduit which is progressively withdrawn from the mould during the injection process. The disclosure may be applied directly to a moulding process, or it may be used to repair moulded articles which are defective owing to internal cavities.

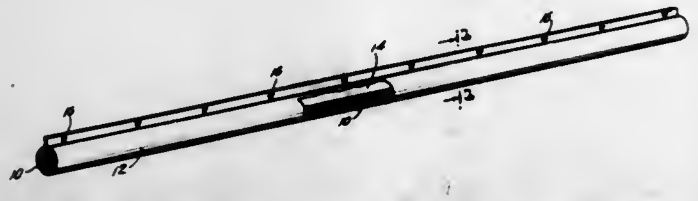
3,651,204
HYDROTHERMAL TREATMENT OF COLLAGEN SUTURES

Joseph Nichols, Princeton, N.J., and Frederick H. Sexsmith, Erie, Pa., assignors to Ethicon, Inc., Somerville, N.J.

Filed Oct. 2, 1969, Ser. No. 863,133

Int. Cl. B29c *25/00*

U.S. Cl. 264—342 **22 Claims**



The pliability and "hand" of an extruded tanned collagen suture is improved by immersing the strand in an aqueous medium for a time sufficient to shrink the suture about 2%-6% of its initial length. After the hydrothermal treatment, the collagen strand is dried and heated at a temperature of about 110° C. to 149° C. for about an hour.

ERRATUM

For Class 424—330 see:
Patent No. 3,651,088

3,651,205
THREE STAGE DRAGÉE

Alfred Hunger, Basel, and Guenther Muller, Arlesheim, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Oct. 28, 1968, Ser. No. 771,322

Claims priority, application Switzerland, Nov. 2, 1967, 15,344/67

Int. Cl. A61k *19/00, 27/00*

U.S. Cl. 424—21 **4 Claims**

A pharmaceutical preparation, in the form of a three-stage dragée, suitable for oral administration containing 4,7-phenanthroline-5,6-quinone together with pancreatin, bromelin, dehydrocholic acid, 5,7-dichloro-8-hydroxyquinoline and a suitable carrier.

The new preparations are particularly suitable for the treatment of digestive disturbance, and troubles, diarrhoses, dyspepsias, obstipations or gastrocardial symptom complex.

3,651,206
ANTICARIES CHEWING GUM

John H. Litchfield, Worthington, and Victor G. Vely, Columbus, Ohio, assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation-in-part of application Ser. No. 790,314, Jan. 10, 1969. This application Sept. 18, 1969, Ser. No. 858,996

Int. Cl. A61k *7/16, 9/00*

U.S. Cl. 424—48 **19 Claims**

Unique chewing gum compositions possessing anticaries activity characteristics comprising a chewing gum base and one or more of the compounds pyruvaldehyde, glycaraldehyde, glycolaldehyde and α-hydroxypropionaldehyde. The chewing gum compositions can and preferably do contain abhesive and flavoring agents.

3,651,207
PREPARATION FOR USE IN MOUTHWASH HAVING EFFERVESCENCE

Frederick L. Lauster, Massillon, and Sheldon W. Fantle, Canton, Ohio, assignors to Lafant Research Company, Canton, Ohio

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,137

Int. Cl. A61k *7/16*

U.S. Cl. 424—50 **2 Claims**

A preparation or formulation is provided, in loose powder form, or in the form of compressed tablets or wafers, which, when added to water, forms an effervescent mouthwash or mouthwash solution. The preparation contains anti-oxidants, preservatives, antacid or buffering agents, anti-irritants, bacteriostatic and therapeutic agents having healing properties, and flavoring agents, which conjointly act to form a mouthwash of pleasing flavor or taste, and after taste.

3,651,208
DENTIFRICE FOR PERIODONTIA PURPOSES

Frederick L. Lauster, Massillon, Ohio, assignor to Lafant Research Company, Canton, Ohio

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,136

Int. Cl. A61k *7/16*

U.S. Cl. 424—54 **2 Claims**

A dentifrice is provided which is particularly effective in creating an improved climate within the mouth for the treatment of inflamed periodontium or periodontal tissues, and is characterized by the inclusion therein of ingredients having bacteriostatic and fungicidal properties, including those which attack gram-positive and gram-negative bacteria, both the aerobic and anaerobic spirochetes, large virus and certain protozoa, in addition to exercising an antifungal activity in oral infections caused by *Candida albicans.* It also acts as a protective for irritated and inflamed mucous membranes and as an oral lavage, and assists in the removal of tenacious mucous.

3,651,209
HYDROGEN PEROXIDE-PERSULFATE HAIR BLEACHING ENHANCED BY AMMONIUM OR AN ALKALI METAL PEROXYDIPHOSPHATE

Bernard Cohen, Trenton, N.J., assignor to FMC Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 733,268, May 31, 1968. This application Nov. 12, 1968, Ser. No. 775,202

Int. Cl. A61k *7/12*

U.S. Cl. 424—62 **4 Claims**

Process of bleaching hair at substantially room temperature with an aqueous solution of hydrogen peroxide (or a compound yielding hydrogen peroxide in aqueous solution) and either ammonium persulfate or an alkali metal persulfate, in which the bleaching effectiveness of the above mixture is enhanced by adding either ammonium or an alkali metal peroxydiphosphate thereto.

3,651,210
SYNTHETIC EMULSION-GRAFT COPOLYMERS FURTHER REACTED WITH PROTEIN

Terry H. Shepler, St. Paul, Minn., and Donald S. Lord, Columbus, Ohio, assignors to Ashland Oil, Inc., Houston, Tex.

No Drawing. Filed May 15, 1970, Ser. No. 37,872

Int. Cl. C08f *29/36*

U.S. Cl. 424—78 **20 Claims**

The chemical reaction of a reactive synthetic emulsion and protein produces a co-polymer which is an excellent adhesive coating or film. This reactive synthetic emulsion—protein polymer is biodegradable in normal sewage facilities. It is an excellent coating material for leather and vinyl fabrics, because of its flexibility and semipermeability. The reactive synthetic emulsion is an interpolymer of: (1) ester of α,β-unsaturated carboxylic acid; (2) ester of an α,β-unsaturated carboxylic acid in which the ester portion contains an oxirane ring; (3) monoethenically unsaturated compound containing a vinyl group; (4) α,β-unsaturated mono- or di-carboxylic acid or salt thereof.

3,651,211
VIRUS INACTIVATION

William C. Gillchriest and William A. Brewer, Los Angeles, Calif., assignors to Lockheed Aircraft Corporation, Los Angeles, Calif.

No Drawing. Filed Oct. 16, 1967, Ser. No. 675,281

Int. Cl. A61k *23/00;* **C12k** *7/00*

U.S. Cl. 424—89 **4 Claims**

A chemical method is provided by which living viruses are biologically deactivated and thereafter restored to activity when desired. A sulfhydryl reagent is introduced to a critical site in the viral phospholipoprotein coat to arrest the activity of the organism. To restore biological activity, an appropriate metal atom is introduced to the site which competes with the sulfide for sulfide ions and thereby restores the protein coat to its original state.

3,651,212

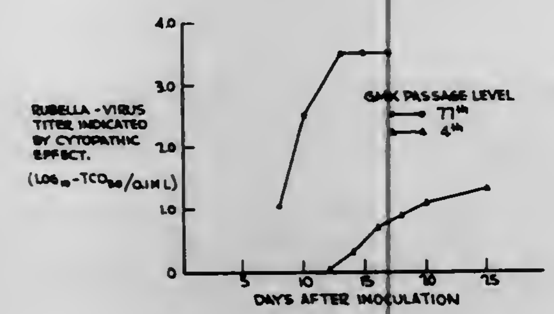
ATTENUATED LIVE RUBELLA VIRUS VACCINE AND METHOD OF PRODUCTION

Harry M. Meyer, Jr., Silver Spring, and Paul D. Parkman, Kensington, Md., assignors to the United States of America as represented by the Secretary of the Department of Health, Education, and Welfare

Filer Dec. 20, 1966, Ser. No. 603,239

Int. Cl. C12k *5/00, 7/00*

U.S. Cl. 424—89 **8 Claims**



Production of an antigenically active, attenuated, live rubella virus vaccine by introducing a virulent live rubella virus into a monkey kidney tissue cell culture, incubating the tissue cell culture at a temperature compatible with growth of the tissue and the virus, harvesting a portion of the virus so-produced and reintroducing said harvested virus into fresh cultures, and repeating the tissue culture passages of the virus serially for a sufficient number of passages to produce the antigenically active, noncommunicable, live rubella virus and then forming a vaccine therefrom.

3,651,213

METHOD FOR THE IMMUNIZATION OF A LIVING ANIMAL BODY AGAINST VIRAL DISEASE

Craig Wallis and Joseph L. Melnick, Houston, Tex., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed May 29, 1969, Ser. No. 829,148

Int. Cl. A61k *27/00*

U.S. Cl. 424—89 **7 Claims**

Increased antibody production is obtained in a living animal body by injecting a living animal body susceptible to virus attack with a complex of a virus and a water-insoluble polyelectrolyte polymer containing basic groups. The polymer is polycationic or polyampholytic in nature and contains imide groups in the form of diloweralkylaminoloweralkylimide groups or loweralkyliminodi(loweralkylimide) linkages. Exemplary of the virus-polyelectrolyte complex is the product of polio virus and a crosslinked dimethylaminopropylimide derivative of isobutylene/maleic anhydride copolymers.

3,651,214

ORALLY ADMINISTRABLE POLYVALENT VACCINES FOR INTESTINAL INFECTIONS

Hansjurgen Raettig, Berlin, Germany, assignor to Schering A.G., Berlin, Germany

No Drawing. Filed Aug. 7, 1969, Ser. No. 848,349

Claims priority, application Germany, Aug. 10, 1968, P 17 92 256.4

Int. Cl. A61r *27/00*

U.S. Cl. 424—92 **10 Claims**

For prophylactic immunization against a wide variety of local intestinal infections, e.g. salmonellal enteritis, there is provided an oral polyvalent vaccine composition containing a synergistic mixture of different inactivated vaccine types specific against different groups of microorganisms.

3,651,215

BACTERIAL MOSQUITO LARVA-KILLING AGENT

Satohiro Ibuki and Nobuo Fujiyoshi, Saitama-ken, Japan, assignors to Juro Morita, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 620,268, Mar. 3, 1967. This application Aug. 12, 1968, Ser. No. 751,750

Int. Cl. A01n *15/00*

U.S. Cl. 424—93 **8 Claims**

The present bacterial mosquito larva-killing agent comprises spores of *Bacillus cereus* var. *juroi* ATCC 21281 as an active ingredient and has a positive toxic effect only on mosquito larvae and is quite non-toxic to humans, cattle and fish.

The sufficiently effective spore concentration of the mosquito larva-killing agent is 10^{10} to 10^{11} spores per gram of the agent, and the agent can be used directly or in combination with a filler, emulsifier, or oleaginous liquid in any form such as powders, tablets, capsules or aqueous emulsions.

3,651,216

ANTIBIOTIC SUBSTANCES PRODUCED BY *POLYANGIUM CELLULOSUM* VAR. *FULVUM*

Samuel Morris Ringel, Rockaway, Sidney Roemer, Parsippany, and Ann Lee Gutt, Passaic, N.J., and John E. Peterson, Columbia, Mo., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 11, 1970, Ser. No. 36,158

Int. Cl. A61k *21/00*

U.S. Cl. 424—115 **7 Claims**

The present invention discloses new antibiotics produced by the organism *Polyangium cellulosum* var. *fulvum*, Mishustin, 1938 (SMP-78). These antibiotics, designated as A, B and C, are effective against a variety of fungi, for example, *H. capsulatum*, *T. mentagrophytes*, etc.

3,651,217

ANTIBIOTIC EFFECTIVE AGAINST GRAM-POSITIVE BACTERIA AND METHOD OF PREPARATION

Alma W. Goldstein, Lake Bluff, and Joseph F. Prokop, Libertyville, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of application Ser. No. 339,589, Jan. 23, 1964. This application Jan. 9, 1968, Ser. No. 696,548

Int. Cl. A61k *21/00*

U.S. Cl. 424—116 **8 Claims**

An antibacterial agent effective against gram positive bacteria made by the cultivation of various strains of the microorganism *Streptomyces impexus*.

3,651,218

ANTIFUNGAL COMPOSITIONS

Morris Emmanuel Stolar, Trumbull, and Assad Sami Sawaya, West Haven, Conn., assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Continuation of application Ser. No. 742,494, July 5, 1968, which is a continuation-in-part of application Ser. No. 517,059, Dec. 28, 1965. This application June 3, 1970, Ser. No. 43,182

Int. Cl. A61k *21/00*

U.S. Cl. 424—120 **3 Claims**

Composition and process utilizing a combination of nystatin and an 8-hydroxyquinoline compound which combination shows antifungal activity when used as a dermatological.

3,651,219

ANTIBIOTIC INGRAMYCIN AND PROCESS FOR PREPARING THE SAME

Malcolm E. Bergy, Kalamazoo, Herman Hoeksema, Cooper, and Le Roy E. Johnson and Donald G. Kinch, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Sept. 27, 1968, Ser. No. 763,158

Int. Cl. A61k *21/00*

U.S. Cl. 424—122 **7 Claims**

Antibiotic ingramycin is producible by culturing *Streptomyces maizeus* sp. nov. in an aqueous nutrient medium. Ingramycin inhibits the growth of *Staphylococcus aureus* and can be used as a disinfectant on washed and stacked food utensils contaminated with this bacterium.

3,651,220

RUGULOVASINE

Matazo Abe, Tokyo, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 17, 1969, Ser. No. 818,469

Claims priority, application Japan, Apr. 17, 1968, 43/25,687

Int. Cl. A61k *21/00*

U.S. Cl. 424—122 **10 Claims**

Rugulovasine A and B, metabolites of Penicillium, Corticium, Pellicularia or Lenzites microorganisms, are hypotensor-active substances, useful in the treatment of high blood pressure. They are also useful in the treatment of bradycardia.

3,651,221

SUGAR SUBSTITUTE ADDITIVE PREPARATIONS OF SORBITOL AND GLUCONIC ACID

Ernst Conrad, Lyckeby, and Olof Theander, Vallingby, Sweden, assignors to Lyckeby Starkelseforadling AB, Lyckeby, Sweden

No Drawing. Filed May 14, 1970, Ser. No. 37,304

Claims priority, application Sweden, May 19, 1969, 7,039/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **14 Claims**

The present invention relates to the preparation of a modified saccharide material containing a combination of sugar alcohol and gluconic acid units which is suitable as an additive in foodstuffs and drugs. The process is characterized by partially hydrolysing an aqueous starch slurry, preferably of potato starch or corn starch, to a DE value of 5–60%, preferably up to 50% by acid and/or enzymatic hydrolysis to the formation of mono, di and higher oligosaccharides as well as dextrines, partial and specific oxidation of reducing glucose units to gluconic acid units, preferably to 25–70%, the present mono and/or disacharides being removed by fermentation to alcohol before or after the oxidtaion, partly or completely hydrogenating the remaining glucone units to sorbitol units and, if required, adjusting the pH to a suitable value, if desired after having partly or completely removed the cations and after neutralization of the acids with a base of a suitable metal and, finally, concentration or complete evaporation of the product.

3,651,222

NEMATOCIDAL USE OF SUBSTITUTED DIMETHYLSULFONIUM TETRAPHENYLBORATES

Abron B. Gee, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 15, 1969, Ser. No. 858,181

Int. Cl. A01n *9/12*

U.S. Cl. 424—185 **8 Claims**

Nematocidal use of substituted dimethylsulfonium tetraphenylborates which are produced by reacting a substituted dimethylsulfonium halide with a sodium tetraphenylborate.

3,651,223

ANTICOAGULATING COMPOSITIONS CONTAINING NEW DERIVATIVES OF 4 - HYDROXY COUMARINE

Eugene Boschetti, Venissieux, Darius Molho, Boulogne-sur-Seine, and Louis Fontaine, Lyon, France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique

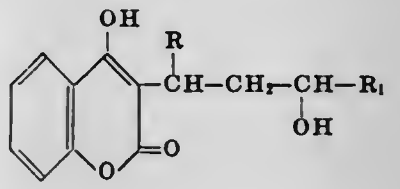
No Drawing. Original application Dec. 11, 1967, Ser. No. 689,347, now Patent No. 3,574,234, dated Apr. 6, 1971. Divided and this application June 11, 1970, Ser. No. 45,589

Claims priority, application France, Dec. 13, 1966, 82,213; Nov. 13, 1967, 127,915

Int. Cl. A61k *27/00*

U.S. Cl. 424—275 **6 Claims**

4-hydroxy coumarines represented by the formula



in which R is a member of the group formed by the thienyl, methylthienyl, halothienyl and nitrothienyl radicals; and R_1 is a member of the group formed by the methyl, phenyl, halophenyl, nitrophenyl, diphenyl, halodiphenyl and nitrodiphenyl radicals, and processes for their preparation.

3,651,224

PESTICIDAL PYRIMIDINE DERIVATIVE

Stuart Peter Sharpe and Brian Kenneth Snell, Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Sept. 9, 1968, Ser. No. 758,579

Claims priority, application Great Britain, Sept. 21, 1967, 43,133/67

Int. Cl. C07d *51/42*

U.S. Cl. 424—200 **3 Claims**

O(2-diethylamino-4-methyl - 6 - pyrimidinyl) O,O dimethyl phosphorothioate. This compound has pesticidal properties and is characterized by its extremely low toxicity to mammals. Pesticidal compositions and methods of using the same to combat pests are also disclosed. The acid addition salts of the indicated compound may also be used.

3,651,225

SYNERGISTIC INSECTICIDAL AND NEMATOCIDAL COMPOSITIONS

Fred Morris Gordon, Princeton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 10, 1969, Ser. No. 831,997

Int. Cl. A01n *9/36*

U.S. Cl. 424—200 **3 Claims**

A synergistic insecticidal, and nematocidal composition is given containing an alkylmercaptoalkyl O,O-dialkyldithiophosphate and a dialkyl pyrazinyl phosphorothioate. More particularly, this invention relates to compositions of O,O-diethyl S-(ethylthio)methyl phosphorodithioate and O,O-diethyl O-(2-pyrazinyl) phosphorothioate wherein said components are present in the ratio of about 2 to 10 parts of O,O-diethyl S-(ethylthio)methyl phosphorodithioate to 1 part of O,O-diethyl O-(2-pyrazinyl) phosphorothioate and the efficacy of each of said compounds is inordinately enhanced by the presence of the other.

3,651,226

MITICIDAL COMPOSITIONS CONTAINING PHENYLAZOPROPENOATE ESTERS AND METHODS OF USE

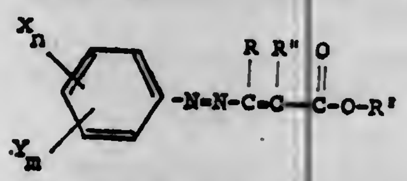
Robert Earl Sticker, Middleport, N.Y., assignor to FMC Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 777,200, Nov. 19, 1968, which is a continuation-in-part of application Ser. No. 712,351, Mar. 12, 1968. This application Mar. 18, 1970, Ser. No. 20,839

Int. Cl. A01n *9/20*

U.S. Cl. 424—226 **10 Claims**

A new class of miticides comprises phenylazopropenoate esters of the formula



wherein R is hydrogen or an aliphatic group having one to three carbon atoms inclusive; R'' is hydrogen or methyl; R' is a lower aliphatic hydrocarbon group, saturated or unsaturated, or lower alkoxyalkyl; X is halogen, lower alkyl, lower alkoxy, or lower alkylthio; Y is methyl or chloro; *n* is 0 or 1; and *m* is 0, 1, or 2. Synthesis of many of this class of compounds, their physical properties, and their effectiveness against mites and mite eggs are described.

3,651,227

VETERINARY COMPOSITIONS AND METHODS

John S. Sickles, Portola Valley, Calif., assignor to Syntex Corporation, Apartado, Panama

No Drawing. Filed Aug. 11, 1969, Ser. No. 849,167

Int. Cl. A61k *27/00*

U.S. Cl. 424—238 **7 Claims**

Compositions containing and methods employing a corticosteroid for stimulating growth and lactation in domestic animals. $6\alpha,9\alpha$-difluoro-16α-methylpregna-1,4-diene-$11\beta,17\alpha$,21-triol-3,20-dione is illustrated as representative of the useful corticosteroid class.

3,651,228

17 - TERTIARY AMINOALKOXYIMINOANDROSTANES FOR CONTROLLING PATHOGENIC FUNGI INFECTIONS

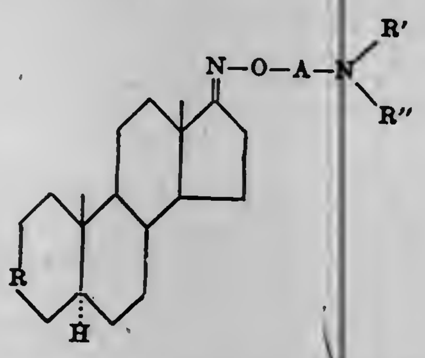
Wataru Nagata, Nishinomiya, and Haruo Nishimura, Ashiya, Japan, assignors to Shionogi & Co., Ltd., Higashi-ku, Osaka, Japan

No Drawing. Application Oct. 11, 1968, Ser. No. 766,944, now Patent No. 3,492,317, dated Jan. 27, 1970, which is a continuation-in-part of application Ser. No. 493,880, Oct. 7, 1965. Divided and this application Nov. 6, 1969, Ser. No. 871,257

Int. Cl. A61k *17/00*

U.S. Cl. 424—238 **4 Claims**

17 - tertiary aminoalkoxyiminoandrostanes of the formula:



wherein A is alkylene having not more than five carbon atoms, R is methylene, hydroxymethylene, halogenomethylene or carbonyl, R' and R'' are each alkyl having not more than three carbon atoms or, when taken together with the adjacent nitrogen atom, they represent a five- or six-membered saturated nitrogen-containing heterocyclic ring which is unsubstituted or substituted with alkyl having not more than three carbon atoms, and where a double bond can be present between the 2- and 3-positions, and salts thereof are useful as anti-fungal agents.

3,651,229

2-METHYL - 3-AMIDINO-QUINOXALINE-1,4-DI-N-OXIDES AS ANTIBACTERIAL AGENTS AND PHARMACEUTICAL COMPOSITIONS COMPRISING SAID OXIDES

Kurt Ley, Odenthal-Globusch, Ulrich Eholzer, Cologne-Stammheim, and Karl Georg Metzger, Wuppertal-Elberfeld, Germany (all % Farbenfabriken Bayer AG, Leverkusen, Germany), and Dieter Fritsche, Wuppertal-Vohwinkel, Germany (Lindenthal, Krielerstr 74, Cologne, Germany)

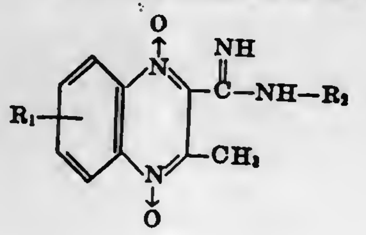
No Drawing. Original application Oct. 2, 1968, Ser. No. 764,612. Divided and this application Nov. 12, 1969, Ser. No. 871,282

Claims priority, application Germany, Oct. 4, 1967, F 53,668

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **19 Claims**

Pharmaceutical compositions comprising 2-methyl-3-amidino-quinoxaline-1,4-di-N-oxides of the formula:



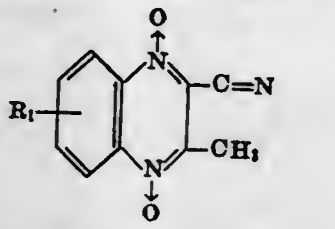
(I)

wherein:

R_1 is hydrogen, lower alkyl, lower alkoxy or chlorine, and

R_2 is hydroxy or amino,

in combination with a pharmaceutically acceptable insert carrier are useful as antibacterial agents.



(II)

These compositions or the active compound can be administered subcutaneously or orally to humans and animals.

3,651,230

COMPOSITIONS AND METHODS FOR TRANQUILIZING WITH SUBSTITUTED 3-PHENYL-4-QUINAZOLINONE DERIVATIVES

Hisao Yamamoto and Shigeho Inaba, Nishinomiya, Seitetsu Arasaki and Isamu Maruyama, Minoo, Kei Takahaski, Takarazuka, Chiharu Saito, and Shigeru Sakai, Toyonaka, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

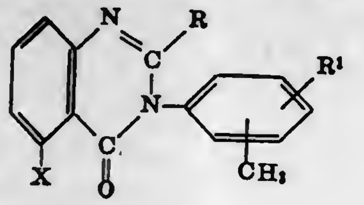
No Drawing. Continuation-in-part of application Ser. No. 871,241, June 27, 1969, which is a division of application Ser. No. 680,046, Nov. 2, 1967. This application Apr. 29, 1970, Ser. No. 33,079

Claims priority, application Japan, Nov. 15, 1966, 41/75,386

Int. Cl. A61k *27/00*

U.S. Cl. 424—251 **5 Claims**

A tranquilizing agent comprising an effective amount of a quinazolinone derivative of the formula



wherein R is an ethyl or propyl group, R^1 is a halogen atom, and X is a halogen atom, and a pharmaceutically acceptable carrier. The tranquilizer exhibits potent sedative activity with minimal hypnotic and toxic activity.

3,651,231

PROCESS FOR PREPARING LACTOGENIC FACTOR

Samuel H. Eppstein, Charleston Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 362,938, Apr. 27, 1964, now Patent No. 3,275,516, and a continuation of application Ser. No. 522,401, Jan. 24, 1966. This application Sept. 10, 1969, Ser. No. 857,643

Int. Cl. A61k *17/08*

U.S. Cl. 424—108 **2 Claims**

An improved process for the purification of lactogenic factor of porcine pituitaries utilizes a combination of simple elution chromatography and displacement chromatography to provide greater chromatographic selectivity and resolution of components.

3,651,232

COMPOSITIONS AND METHODS FOR LOWERING BLOOD SUGAR LEVELS

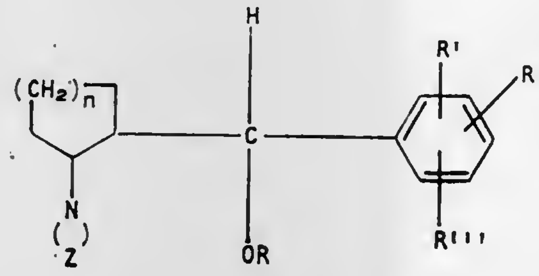
Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 556,892, June 13, 1966. This application Sept. 10, 1968, Ser. No. 758,664

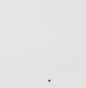
Int. Cl. A61k *27/00*

U.S. Cl, 424—267 **22 Claims**

Therapeutic composition and method for stimulating insulin secretion, reducing the blood sugar level and treating diabetes wherein the principal active ingredient is a compound of the formula:



wherein *n* has the value of 1 to 4, inclusive, wherein



—NZ represents a heterocyclic amino radical containing from 5 to 10 nuclear atoms, inclusive, wherein R is alkyl containing from 1 to 6 carbon atoms, inclusive, wherein R', R'' and R''' are selected from the group of substituents consisting of hydrogen, halogen, alkyl and alkoxy containing from 1 to 6 carbon atoms, inclusive, and —CF_3, the acid addition salts, N-oxides and alkyl quaternary ammonium halide salts thereof, in which the alkyl group has from 1 to 12 carbon atoms, inclusive.

3,651,233

METHODS FOR TREATING POSTOPERATIVE GASTROINTESTINAL CONDITIONS WITH 5-HYDROXYTRYPTAMINE

Jeanette L. Rubricius, Jamaica, N.Y., assignor to Beecham Group Limited, Brentford, Middlesex, England

No Drawing. Filed Oct. 3, 1969, Ser. No. 864,300

Int. Cl. A61k *27/00*

U.S. Cl. 424—274 **3 Claims**

An orally administrable composition is provided for the treatment of postoperative gastrointestinal conditions such as paralytic ileus and abdominal distention. The active agent is 5-hydroxytryptamine which is administered in tablet form with suitable excipents in the amount of 2.5 to 25 mg., preferably in the unit dosage amount of 5 milligrams. The composition may also contain a potentiating amount of a parasympatheticomimetic agent such as neostigmine.

3,651,234

MICROBIOCIDAL 1,2-DITHIOLONES HAVING SULPHUR CONTAINING SUBSTITUENTS AND METHODS OF CONTROLLING FUNGI AND BACTERIA THEREWITH

Jorg Bader, Alsheim, Basel-Land, and Karl Gatzi, Basel, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Application June 5, 1967, Ser. No. 643,359, now Patent No. 3,546,235, dated Dec. 8, 1970, which is a continuation-in-part of application Ser. No. 555,994, June 8, 1966. Divided and this application Aug. 5, 1970, Ser. No. 61,393

Claims priority, application Switzerland, June 15, 1966, 8,566/65

Int. Cl. A01n *9/12, 9/22;* **C07d** *31/50*

U.S. Cl. 424—277 **8 Claims**

1,2-dithiol-3-ones having substituents which comprise certain organic radicals bonded to the 5-position of the dithiolone nucleus via a sulphur atom which may be mono- or dioxidized, which are of excellent microbicidal activity especially against fungi and bacteria; a novel process for the production of those of the new compounds in which the bridge is a sulphur or mono-oxidized sulphur bridge; methods of inhibiting microbial growth with the aid of the novel compounds, and antimicrobial compositions containing the latter as active ingredients.

3,651,235

ANTIBACTERIAL THERAPEUTIC COMPOSITION CONTAINING THIAMPHENICOL DERIVATIVE

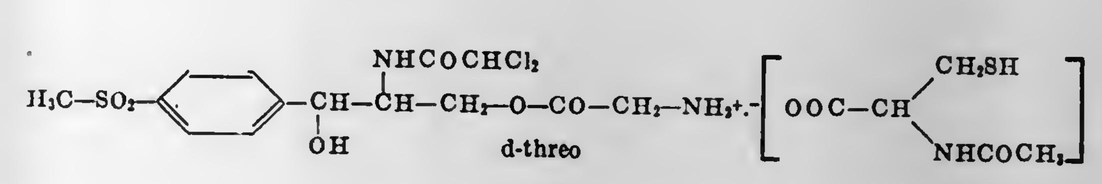
Uberto M. Teotino, Milan, Italy, assignor to Whitefin Holding S.A., Lugano, Switzerland

No Drawing. Original application Mar. 9, 1966, Ser. No. 532,883, now Patent No. 3,542,854, dated Nov. 24, 1970. Divided and this application Mar. 31, 1970, Ser. No. 24,333

Int. Cl. A61k *27/00*

U.S. Cl. 424—311 **2 Claims**

A new thiamphenicol derivative has been prepared, having the formula:



which is water-soluble, tasteless, odorless and exercises a strong mucolytic action as well as an antibacteric action higher than that of the thiamphenicol, with respect to many microorganisms which are responsible for respiratory diseases.

3,651,236
METHOD FOR INHIBITING HISTAMINE FORMATION

Robert Gerard Kelly, Monsey, and Leon Ellenbogen, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 811,661, Mar. 28, 1969. This application Nov. 20, 1970, Ser. No. 91,579

Int. Cl. A61k *27/00*

U.S. Cl. 424—317 **5 Claims**

This disclosure describes compositions of matter useful for inhibiting the formation of histamine in mammals and the method of inhibiting histamine formation in mammals therewith, the active ingredients of said compositions of matter being 4-bromo-3-hydroxybenzyl alcohol and/or 4-bromo-3-hydroxybenzoic acid.

3,651,237
TREATING OF AGGRESSION AND REDUCTION OF FATIGUE SYNDROMES WITH L-TYROSINE

Henri Laborit, Paris, France, assignor to Centre d'Etudes Experimentales et Cliniques de Physiobiologie de Pharmacologie et d'Eutonologie

No Drawing. Filed Feb. 11, 1970, Ser. No. 10,658

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 **1 Claim**

A pharmaceutical composition for the treatment of shock which comprises L-tyrosine in a 5 to 10% solution of glucose in water, which composition when administered brings about the restoration of a working reserve of catecholamines and thus maintains normal metabolic activity. The administration of the composition acts to relieve symptoms of body fatigue in mammals.

ELECTRICAL

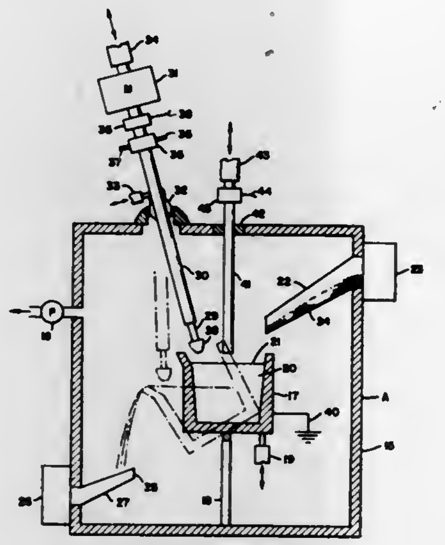
3,651,238
ARC FURNACE ELECTRODE WHEEL MOUNTING SYSTEM

Max P. Schlienger, 19 Rollingwood Drive, San Rafael, Calif.

Filed July 17, 1970, Ser. No. 55,869

Int. Cl. H05b *7/10, 7/12*

U.S. Cl. 13—9 **10 Claims**



An arc furnace having a rotating electrode wheel which is pivotably and extendably mounted to permit arc formation in any desired area of the melt. Preferably, the electrode wheel mounting structure is disposed outside of the vertical projection of the melt, so that the electrode wheel will be inclined with respect to the melt regardless of the position of the electrode wheel with respect thereto. Furthermore, the electrode wheel may be so mounted adjacent the pouring end of the crucible, so that when the crucible is poured, the electrode wheel may be positioned for arc heating during pouring. In addition, a consumable electrode may be provided and may be employed simultaneously with, or instead of, the electrode wheel.

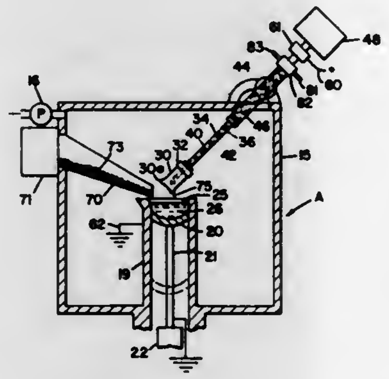
3,651,239
POINT COOLED ROTATING WHEEL ELECTRODE

Max P. Schlienger, 136 Mitchell Boulevard, San Rafael, Calif.

Filed Feb. 18, 1971, Ser. No. 116,430

Int. Cl. H05b *7/08*

U.S. Cl. 13—18 **11 Claims**



An improved coolant distribution system for a rotating non-consumable electrode wheel in an arc melting furnace. A rotating tubular drive shaft suspends the electrode wheel above the melt surface in an obliquely inclined orientation whereby successive portions of the wheel periphery are brought into arc-forming proximity to the melt surface as the wheel is rotated. A non rotating nozzle is positioned within the electrode wheel with its discharge orifice in heat dissipating proximity to the interior surface of the wheel at the portion of the wheel periphery in arc-forming proximity to the melt at any given instant.

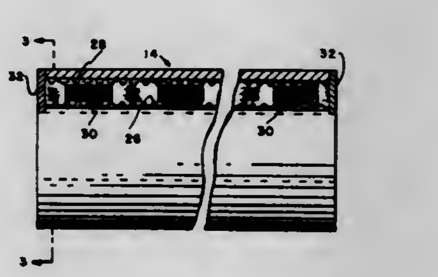
3,651,240
HEAT TRANSFER DEVICE

Milton E. Kirkpatrick, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of application Ser. No. 637,193, May 9, 1967, now abandoned. This application Jan. 31, 1969, Ser. No. 797,725

Int. Cl. H05b *3/66;* **F28d** *15/00*

U.S. Cl. 13—22 **17 Claims**



Spaced inner and outer tubes form a closed annular chamber whose inner surfaces contain coverings of wick material that are interconnected through vane-like wicks. The wick material transports a vaporizable working fluid from cold areas where the vapor condenses to warm areas where the fluid vaporizes. An isothermal working space is produced within the central volume bounded by the inner tube and along its entire length, which may be used to advantage for oven or furnace applications or for providing an isothermal jacket.

3,651,241
AUTOMATIC RHYTHM PERFORMANCE DEVICE

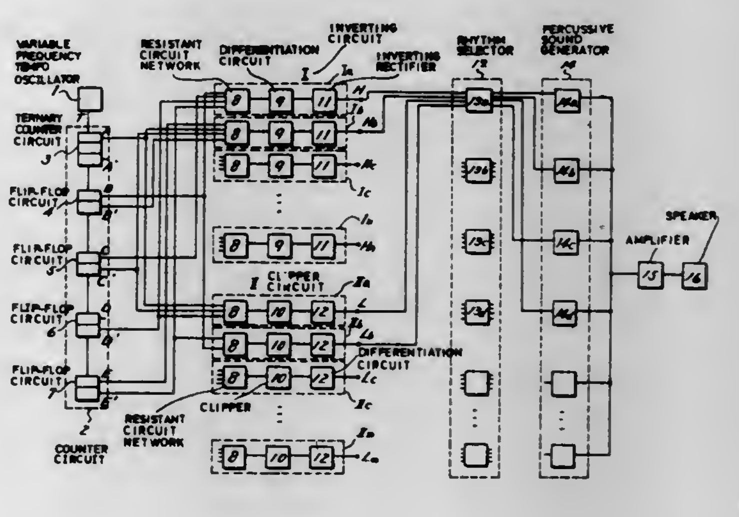
Ikutaro Kakehashi, c/o Ace Electronic Industries, Inc., 75-17 Kitajima-cho, Sumiyoshi-ku, Osaka-shi, Japan

Filed June 3, 1971, Ser. No. 149,464

Claims priority, application Japan, June 10, 1970, 45/50566

Int. Cl. G10f *1/00*

U.S. Cl. 84—1.03 **1 Claim**



A plurality of inverting circuits and/or clipper circuits are connected to a counting circuit to synthesize the output signal of the counting circuit. The synthesized output signal becomes a desired rhythm.

3,651,242

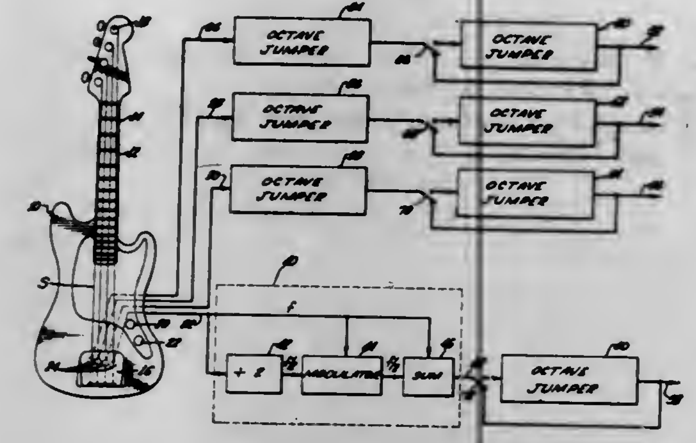
OCTAVE JUMPER FOR MUSICAL INSTRUMENTS

Chauncey R. Evans, Costa Mesa, Calif., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed June 15, 1970, Ser. No. 46,249

Int. Cl. G10h *1/06, 3/00*

U.S. Cl. 84—1.11 26 Claims



A bass or other guitar has a transducer for each of its strings, and each transducer is connected to an octave jumping circuit which lowers the musical tone produced by the individual string, all without loss of either harmonics or amplitude variations. The wave form of the fundamental frequency of each musical tone is squared, divided by two and then amplitude modulated to follow the amplitude envelope of the original tone. The modulated square wave contains only odd harmonics of the lowered frequency fundamental. The missing even harmonics are restored by combining with the modulated square wave the original tone containing all of its harmonics.

3,651,243

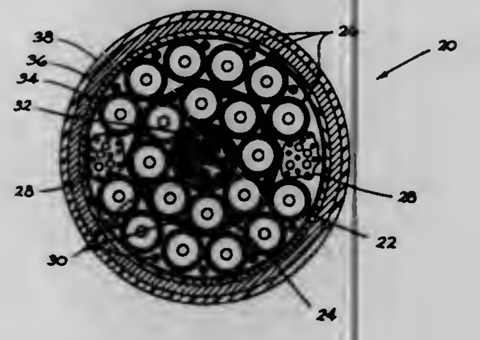
HIGH-FREQUENCY CABLES

Eugene M. Hornor, Rosedale, and William J. Hyde, Baltimore, both of Md., assignors to Western Electric Company, Incorporated, New York, N.Y.

Original application Aug. 30, 1968, Ser. No. 756,541. Divided and this application Apr. 29, 1970, Ser. No. 32,987

Int. Cl. H01b *11/02*

U.S. Cl. 174—34 16 Claims



Cables are provided in which components of the cable having high-frequency conductors, such as coaxial units or waveguides, are combined with each other or other elements of the cable in a spiral configuration wherein the pitch of the spiral configuration is varied throughout the length of the cable. The variation of pitch of the spiral reduces the potential for the development of regularly spaced impedance discontinuities which can cause high reflection losses of energy in the coaxial or waveguide-type components in situations where the cable has been slid or rolled across a rigid surface. Undesirable secondary effects associated with a periodicity of variation in the spiral configuration can be reduced by employing a sinusoidal pattern in varying the pitch of the component in the cable.

3,651,244

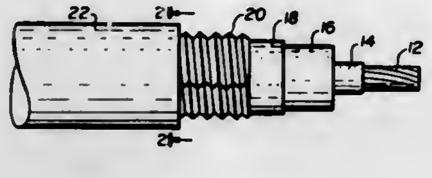
POWER CABLE WITH CORRUGATED OR SMOOTH LONGITUDINALLY FOLDED METALLIC SHIELDING TAPE

David A. Silver, Roslyn, N.Y., and George Bahder, Edison, N.J., assignors to General Cable Corporation, New York, N.Y.

Filed Oct. 15, 1969, Ser. No. 866,589

Int. Cl. H01b *9/02*

U.S. Cl. 174—36 12 Claims



This electrostatic shielding tape is a metal strip of low resistance and low reactance folded longitudinally over the length of an insulated power cable having a semi-conducting insulating layer surrounding its insulation. The longitudinally folded metallic tape permits expansion of the insulation and insulation shield, located directly under it, without significant deformation of the insulation and the insulation shield. When the tape is of a metal requiring a thin corrosion-protective coating, the coating on the side adjacent to the insulation shield is preferably semi-conducting to accept charging current from the insulation. It is a feature that the metal of the electrostatic shield is in electrical communication with the insulation shield.

3,651,245

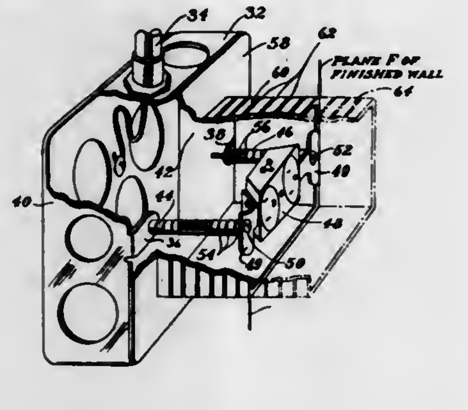
JUNCTION BOX AND GROUNDING MEANS THEREFOR

Oswin C. Moll, 1640 Chippendale Circle, Bethlehem, Pa.

Filed Dec. 22, 1969, Ser. No. 887,077

Int. Cl. H05k *5/02*

U.S. Cl. 174—51 9 Claims



An electrical receptacle or the like is grounded directly and positively by means of a screw extending through axially shortenable spacer means positioned between the metallic frame of the receptacle and a portion of the metallic junction box on which it is mounted. The junction box is also provided with a cover member having a tubular portion whose length can be reduced as required in order to provide a plane that is substantially flush with the finished wall surface.

The aforementioned abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,651,246

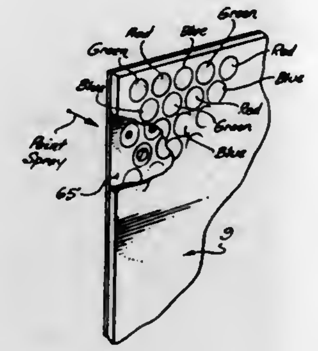
ELECTRO-MECHANICAL COLOR REPRODUCTION SYSTEM

Ramon Bergero, Los Angeles, Calif., assignor to BSR Optronics Corporation

Filed Aug. 25, 1969, Ser. No. 862,588

Int. Cl. H04n *1/46*

U.S. Cl. 178—5.2 R 16 Claims



An electro-mechanical system for preparing a color matrix for the reproduction of images appearing on a color positive transparency, the matrix defining a pattern of identical red, blue and green spot groupings similar to that utilized in color television interlace scanning, wherein points on the color transparency are selected in accordance with the spacing of the matrix spot groups, these points being optically scanned and the red, blue and green color component intensities at each point detected and used to determine the areas of the similarly colored spots in the corresponding matrix spot group to be blackened in accordance with a color subtraction technique.

3,651,247

VIDEO SIGNAL GENERATING APPARATUS

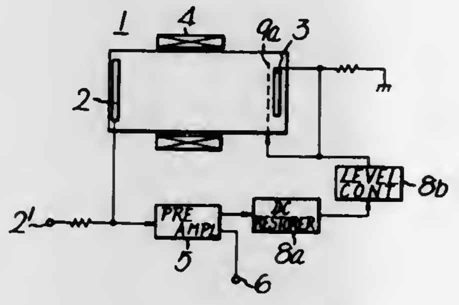
Takashi Okada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 27, 1970, Ser. No. 40,781

Claims priority, application Japan, May 31, 1969, 44/42810

Int. Cl. H04n *9/06*

U.S. Cl. 178—5.4 ST 6 Claims



An illustrative embodiment of the invention converts two field-sequential color television signals to dot-sequential signals for combination into a composite color television signal. Through a feedback circuit connected to a field-sequential responsive image tube, a portion of the signal that characterizes one color is stored on the tube target while the image for another color is registered. This combined field sequential signal is taken from the target and is processed with another delayed field-sequential signal to provide two simultaneous dot-sequential signals.

3,651,248

BLACK LEVEL CLAMPING BY COLOR SIGNAL DIFFERENCE GATED TO STORAGE DURING BEAM BLOCKING

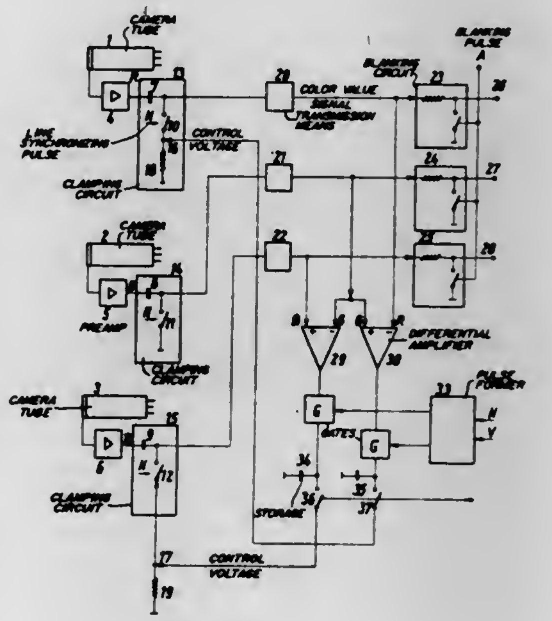
Hans-Dieter Schneider, Gross-Gerau, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Filed Jan. 7, 1970, Ser. No. 1,154

Claims priority, application Germany, Jan. 11, 1969, P 19 01 296.5

Int. Cl. H04n *5/18*

U.S. Cl. 178—5.4 R 10 Claims



A system for controlling the black level value of primary color signals by comparing the black levels of two primary signals with that of a third primary signal to generate difference signals, and gating these difference signals into respective clamping circuits for feedback control of the black level values.

3,651,249

METHOD OF REPRODUCING POLYCHROMATIC PICTURE ORIGINALS

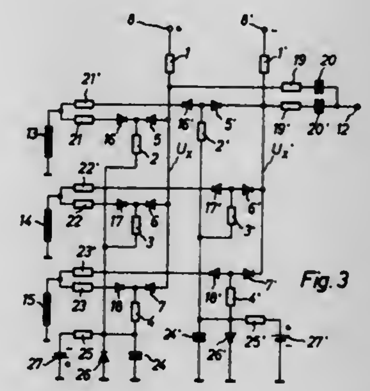
Hans Keller, Kiel-Wik, Germany, assignor to Dr.-Ing. Rudolf Hell

Filed Feb. 16, 1970, Ser. No. 11,702

Claims priority, application Germany, Feb. 25, 1969, P 19 09 292.3

Int. Cl. H04n *9/02*

U.S. Cl. 178—5.4 R 6 Claims

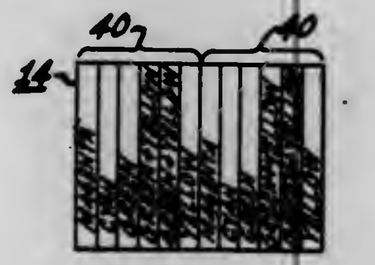


A method of reproducing polychromatic picture originals employs the continuous comparison of color separation voltages derived by means of an interposed color separation filter system and extraction of the smallest voltage at any one time of the color signal voltages for producing a white separation. The white separation is superimposed on the color separation as a mask, preferably a highlight mask, wherein only those portions of the white separation voltage which exceed a predetermined threshold value are utilized for the highlight mask. The white separation may also advantageously be employed in the reproduction of negative picture originals as a negative black separation.

3,651,250
TELEVISION CAMERA UTILIZING A PARALLEL-STRIPED COLOR ENCODING FILTER

Robert Adams Dischert, Burlington, N.J., assignor to RCA Corporation

Filed June 30, 1969, Ser. No. 837,651
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.4 ST **19 Claims**

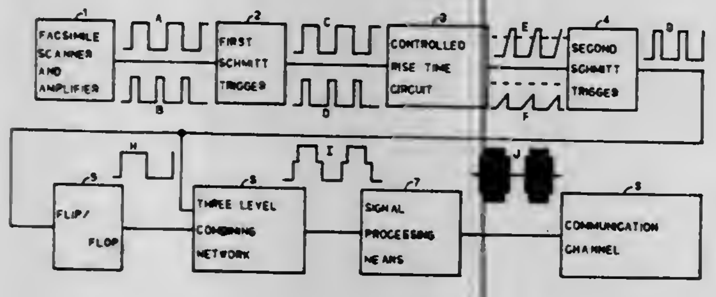


A parallel-striped color encoding filter balanced for white light is placed in front of a television camera pickup tube to encode scene light. The signal obtained from the pickup tube is decoded electrically to yield two color difference signals which may be matrixed to produce signals representative of the red, green and blue light from the scene. The average transmission of the encoding filter produces low frequency components which are representative of the brightness of the scene.

3,651,251
FACSIMILE SIGNAL MODIFICATION REDUCING THE INFORMATION CHANNEL BAND-WIDTH

John H. Clark, Northport, N.Y., assignor to International Scanatron Systems Corp., Wyandanch, N.Y.

Filed May 1, 1970, Ser. No. 33,652
Int. Cl. H04n *7/10;* **H04n** *7/12*
U.S. Cl. 178—6 **6 Claims**



Shortening the marking pulses (non-background) by an amount equal to the shortest pulse which the system is intended to pass improves the performance of the three level, band-width reducing system described in the application entitled "Facsimile Signal Modification Reducing the Information Channel Band-Width" filed on Dec. 21, 1967 and bearing Ser. No. 701,511 now U.S. Pat. No. 3,588,330.

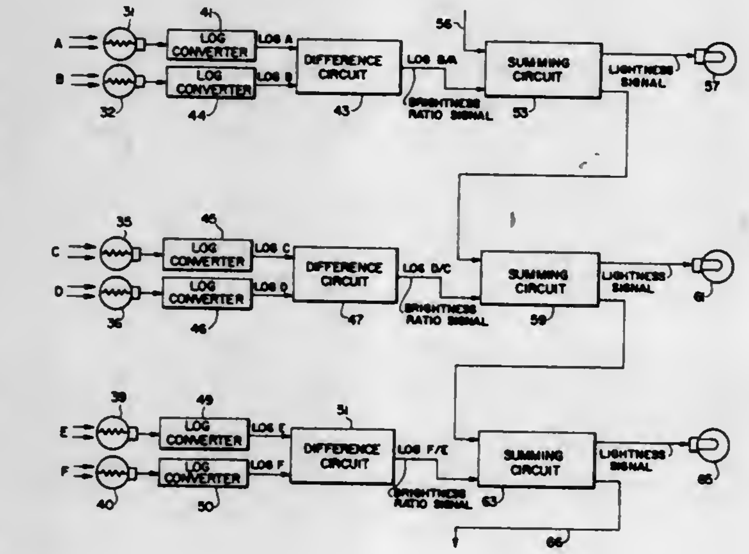
As pointed out in the above referred to patent the three level signal generated in accordance with the disclosure is asymmetric with the background being represented by the outside pair of levels and the line information as the center level. This mode of operation results in a system wherein the band-width required for background-to-background transitions is halved. In such a system, however, closely spaced black to white transitions in series approach the symmetrical alternating condition and therefore are passed with varying efficiency. For transitions representing small segments of background in a field of markings, no band-width compression occurs. This causes a deficiency in the actual copy.

Another characteristic of the original system described in the above referred to application is that modulation depth varies as the keying speed is increased above a certain point. Note that for a symmetrical three level wave the channel band-width restriction filters process a three level signal at the limit of resolution to a sine wave having a peak-to-peak value of one-half the value of the original wave.

3,651,252
IMAGE REPRODUCTION SYSTEM WHICH DETECTS SUBJECT BY SENSING INTENSITY RATIOS

Edwin Land, Cambridge, Mass.; Leonard A. Ferrari, San Dimas, Calif.; Sholly Kagan, Natick, and John J. McCann, Belmont, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 22, 1970, Ser. No. 4,895
Int. Cl. H04n *5/30;* **H01j** *39/12*
U.S. Cl. 178—6 **19 Claims**



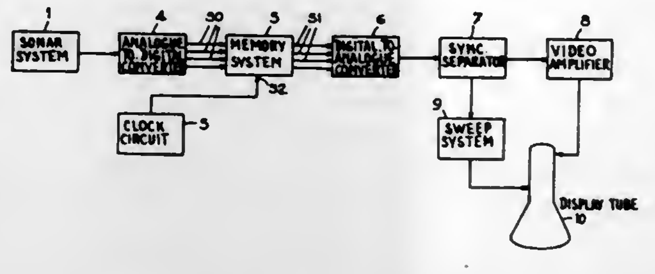
This specification discloses an image reproduction system in which an array of photocells is employed to sense intensity ratios in the subject image focused in the array. An analog circuit responsive to the signals developed by the photocells produces logarithmic output signals representing the lightness of discrete areas in an image focused on the photocell array. The output signals of the analog system energize lamps of a lamp array to reproduce the subject image.

3,651,253
VISUAL DISPLAY SYSTEM WITH DIGITAL STORAGE OF VIDEO INFORMATION

Jean Paul Morgand; Henri Magnan, and Bernard Romagny, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 17, 1970, Ser. No. 12,078
Claims priority, application France, Feb. 20, 1969, 6904287; Dec. 17, 1969, 6943699
Int. Cl. G08b *5/22;* **H04n** *5/76, 7/12*
U.S. Cl. 178—6.6 A **12 Claims**

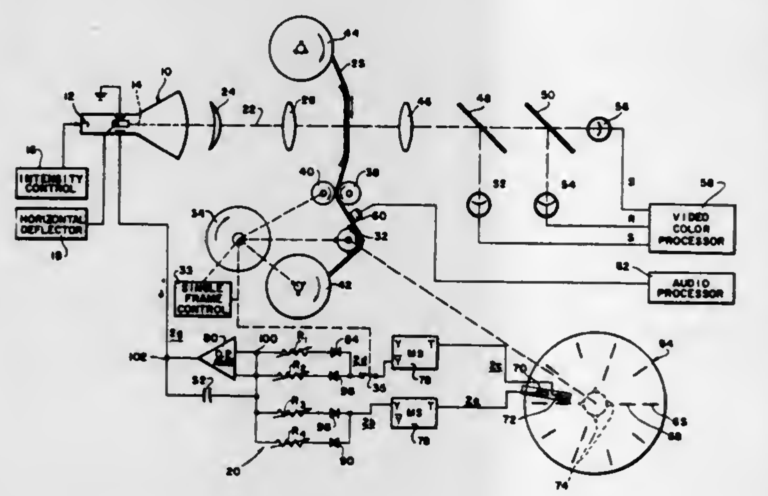
A visual display system for visualizing an image represented by a video signal comprising an analogue-to-digital converter for translating this video signal into a digital signal, a memory for storing this digital signal while supplying it continuously and a digital-to-analogue converter connected to the memory and restituting an analogue image signal to a conventional display tube.



3,651,254
SCANNING APPARATUS RESPONSIVE TO THE MOVEMENT OF IMAGE BEARING MEDIA

Lenard M. Metzger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,502
Int. Cl. H04n *5/36*
U.S. Cl. 178—7.2 **18 Claims**



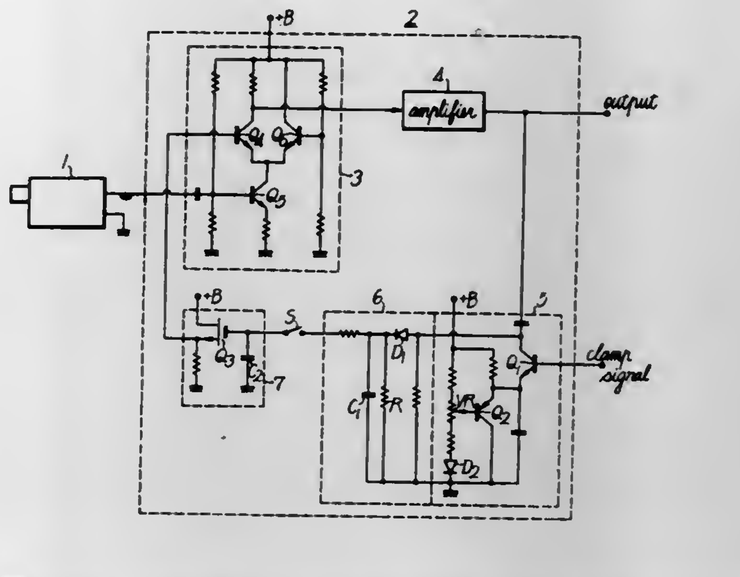
The frames of a continuously moving image bearing medium are scanned in a raster pattern to produce an image signal representative thereof, the raster pattern being generated in accordance with the detected rate of movement of the image bearing media. The rate of movement may be detected from the movement of sprocket holes or indicia associated with image bearing frames on the information bearing media or from the synchronized rotation of a disc bearing indicia and synchronized with the movement of the information bearing media. Signals are developed from the detected sprocket holes or indicia that establish the repetitive rate of production of the raster pattern and control the positioning of the raster pattern in synchronism with the movement of the image frames of the information bearing media. The signal representative of the repetitive rate of production of the raster pattern is developed when a single image frame is to be scanned.

3,651,255
AUTOMATIC GAIN CONTROL SYSTEM FOR TELEVISION CAMERAS

Yasuharu Kubota, Kanagawa-ken, and Takashi Shiono, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 17, 1970, Ser. No. 12,069
Claims priority, application Japan, Feb. 22, 1969, 44/13410
Int. Cl. H04n *5/19*
U.S. Cl. 178—7.2 R **4 Claims**

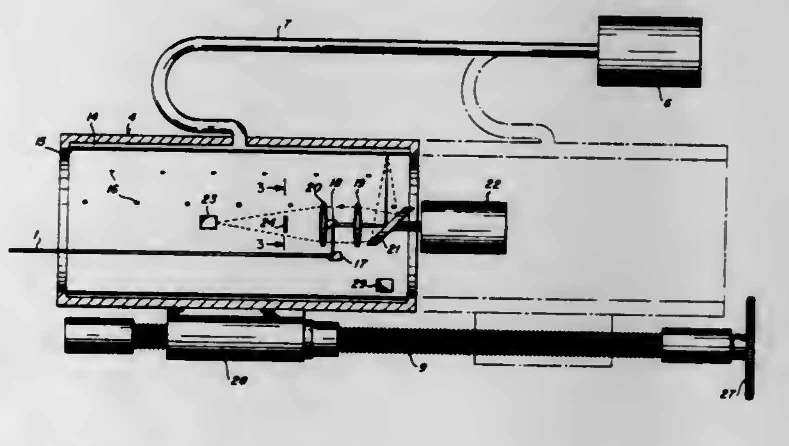
An automatic gain control system for television camera which has an amplifier circuit and a memory circuit for selecting the gain of the amplifier in response to a signal applied thereto. The memory circuit stores the signal selectively applied thereto with a manual switch.



3,651,256
LASER DOCUMENT TRANSLATOR

Randy J. Sherman, Phoenix, and Jerald F. Hanson, Tempe, both of Ariz., assignors to McCown Laboratories, Inc.

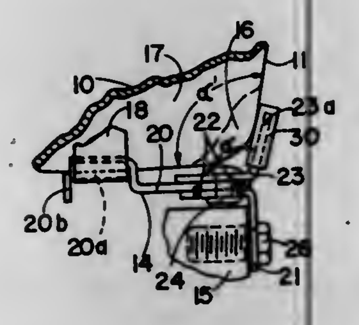
Filed Nov. 19, 1970, Ser. No. 91,117
Int. Cl. H04n *3/08*
U.S. Cl. 178—7.6 **5 Claims**



A laser page scanner is disclosed in which the information bearing sheet to be scanned is disposed in a cylinder which translates axially past an opto-mechanical scanning apparatus fixed coaxially within the cylinder. A laser beam is directed from outside the cylinder along a path parallel to the cylinder axis into the interior of the cylinder where it is redirected by relay mirrors to the cylinder axis and to a rotating mirror which reflects the beam radially outwardly whereby the beam scans the cylinder in a continuous circle. As a result of the longitudinal translation of the cylinder, the document is, in effect, line scanned. The light reflected back to the rotating mirror at a given instant is an analog of information which is present at the scanned spot. The reflected light is redirected by the rotating mirror back along the axis of the cylinder through a pair of spot forming lenses to a first photo-diode which is utilized as the input sensor to suitable electronics for storing or reproducing the scanned information. A second photo-diode is fixed radially outwardly from the rotating mirror in order to intercept the laser beam once each revolution of the rotating mirror to provide a synch signal. A circular mask is disposed between the first photo-diode and the nearest spot forming lens to prevent a selected core portion of the beam from reaching the photo-diode to improve the signal-to-noise ratio. In order to simplify the optical system, one of the relay mirrors is cemented to the center of the spot forming lens nearest the first photo-diode to redirect the laser beam through the other spot forming lens before it impinges on the rotating mirror.

3,651,257
MOUNTING BRACKET FOR TELEVISION PICTURE TUBE

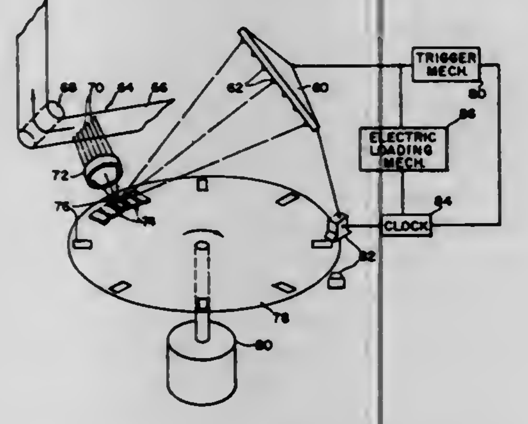
Frederick J. Goetz, Jr., Arlington Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 19, 1970, Ser. No. 81,971
Int. Cl. H04n *5/645*
U.S. Cl. 178—7.8 **8 Claims**



A mounting bracket for mounting a television picture tube in a housing of the type in which the bracket is securable to the housing and is adapted to support the side of the tube, the bracket having a pivotable portion for supporting the peripheral edge of the front screen of the tube. The pivotable portion is pivotable in conformance with positional shifts of the tube and is coverable with a shock-absorbent hood for providing a soft engaging contact with the front screen over an area of contact, which area is substantially maintained throughout the positional shifts of said tube.

3,651,258
METHOD AND APPARATUS FOR THE FORMATION OF ALPHA-NUMERICAL CHARACTERS ON LIGHT SENSITIVE SURFACES

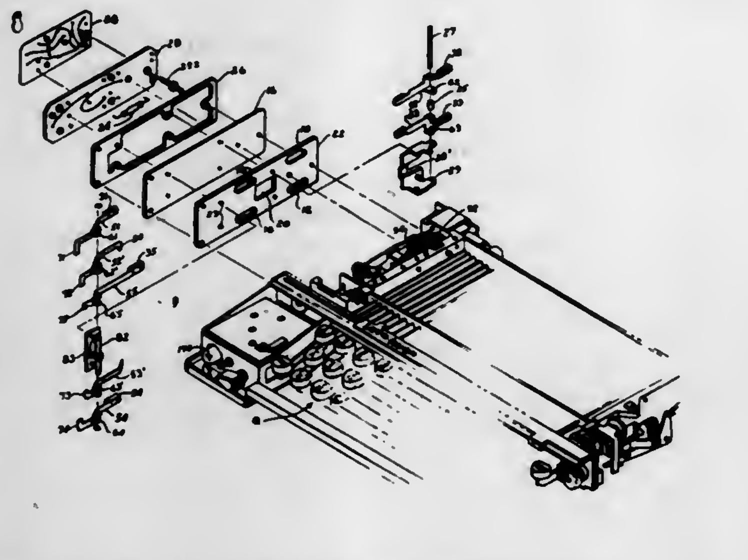
Stephen K. Ammann, Cupertino, Calif., assignor to Bessemer Securities Corporation, New York, N.Y.
Filed Jan. 26, 1970, Ser. No. 5,822
Int. Cl. H04l *15/34*
U.S. Cl. 178—15 **19 Claims**



A high speed line printer for recording computer outputs and the like on light sensitive materials. A light source capable of blinking at high frequencies is provided for each character space on the print-out line and is projected onto a corresponding character field on the material. The material is moved in the X-direction and the projected image of the light sources is moved in the Y-direction across the width of the corresponding character field by a mirror to form scan lines which are spaced in the X-direction. The light sources are selectively energized whenever the projected images are at predetermined X, Y positions to thereby simultaneously form all characters in a given print-out line. The apparatus provides means for moving the light sensitive material, mounting the light sources, projecting the light source images onto the film and moving the projected images in the Y-direction while projecting light flashes emitted by the light sources to form 35-bit character matrixes in each character field.

3,651,259
KEYBOARD OPERATED TELEGRAPH TRANSMITTER USING REED SWITCHES AND MAGNETIC SHUNTS

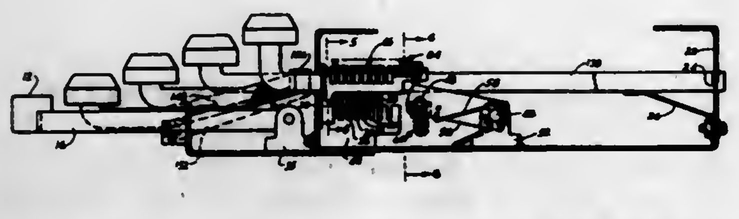
Ernest G. Hoffman, Middlefield, and William P. Ryan, Bethany, both of Conn., assignors to Mite Corporation, New Haven, Conn.
Filed Nov. 12, 1968, Ser. No. 775,076
Int. Cl. H04l *15/12*
U.S. Cl. 178—17 C **17 Claims**



There are five "reed switches" for a five level code, spaced apart and housed in a metal shielding compartment. A motor driven serializer or commutator having a rotatable contact arm movable over a ring of contacts is also mounted inside the shielding compartment. There are five magnets outside the compartment moved by code bars to either of two positions, the code bars being themselves moved in conventional fashion by the keys of the keyboard. One magnet position is close to its related switch, and serves to close the switch, and the other magnet position is more remote and causes opening of its switch. The magnetic differential between the two positions of the movable magnets is increased by the provision of a magnetic shunt adjacent the retracted positions of the magnets.

3,651,260
KEYBOARD OPERATED TRANSMITTER

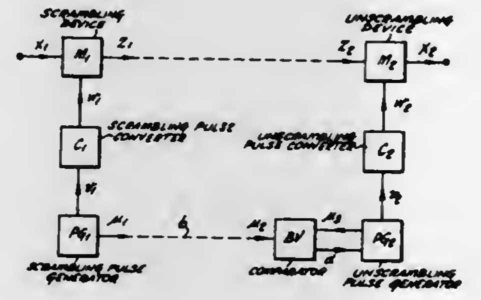
Timothy F. Donovan, Huntington, and William P. Ryan, Bethany, both of Conn., assignors to Mite Corporation, New Haven, Conn.
Filed Sept. 4, 1969, Ser. No. 855,260
Int. Cl. H04l *17/12*
U.S. Cl. 178—17 C **15 Claims**



A keyboard operated telegraph transmitter having an array of keys is provided. The transmitter includes a plurality of code bars which are shiftable by the depression of the keys and also includes switching means operatively connected to and actuated by the shifting of the code bars. The switching means includes a circuit board having a plurality of conductive areas positioned on a surface thereof, and a contact means which is secured to each of the code bars and electrically connects several of the conductive areas on the circuit board. When the code bars are shifted the movement is transformed into an output coded signal from the circuit board. Additional features of the transmitter include a parity check system, and a motion multiplying mechanism which is designed to facilitate the operation of the keyboard. Still another feature is the inclusion of three shift keys for the purpose of transmitting a maximum number of indicia with a minimum number of keys.

3,651,261
MESSAGE SCRAMBLING APPARATUS FOR USE IN PULSED SIGNAL TRANSMISSION

Gustav Guanella, Zurich, Switzerland, assignor to Patelhold Patentverwertungs-und Elektro-Holding AG, Glarus, Switzerland
Filed Aug. 5, 1965, Ser. No. 477,504
Claims priority, application Switzerland, Aug. 6, 1964, 10308/64
Int. Cl. H04l *9/02*
U.S. Cl. 178—22 **7 Claims**

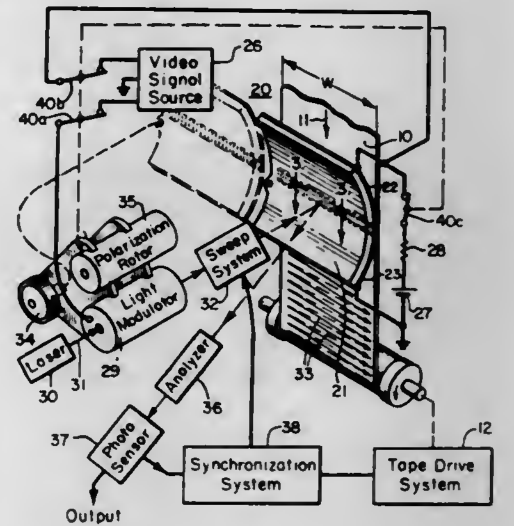


SCRAMBLING DEVICE
UNSCRAMBLING DEVICE
SCRAMBLING PULSE CONVERTER
UNSCRAMBLING PULSE CONVERTER
SCRAMBLING PULSE GENERATOR
COMPARATOR
UNSCRAMBLING PULSE GENERATOR

A pair of binary counters controlled by identical clock pulses are synchronized by means of a plurality of comparison devices in the form of exclusive OR-circuits having their inputs excited each by a pair of signals derived from corresponding stages of said counters and having their outputs connected to the stage of the respective pair to be maintained in phase synchronism with the other stage of said pair. There is maintained as a result thereof an automatic synchronism between the instantaneous states of the counters after a relatively small number of counting operations following an initial out-of-step condition of the counters. In order to synchronize counters located at widely remote stations, such as a pair of counters serving as basic scrambling and unscrambling pulse generators at the transmitter and receiver of secrecy pulse signal transmission system, the instantaneous states of the transmitting counter are reproduced at the receiver by means of a shift register having an equal number of stages to the stages of said counter and being excited by a time-division control pulse series produced by scanning the stages of the transmitting counter at a frequency at least equal to the clock frequency times the number of counter stages, said control pulse series being transmitted from the transmitting to the receiving station through a suitable synchronizing signal channel. In this case, synchronization is effected between the receiving counter and said register replacing the transmitting counter. By the use of an adequate number of counter stages, repetitive patterns in the final scrambling pulse signal, facilitating deciphering by unauthorized persons, may be increased beyond the average message duration.

3,651,262
LASER SYSTEM FOR MAGNETIC RECORDING AND PLAYBACK

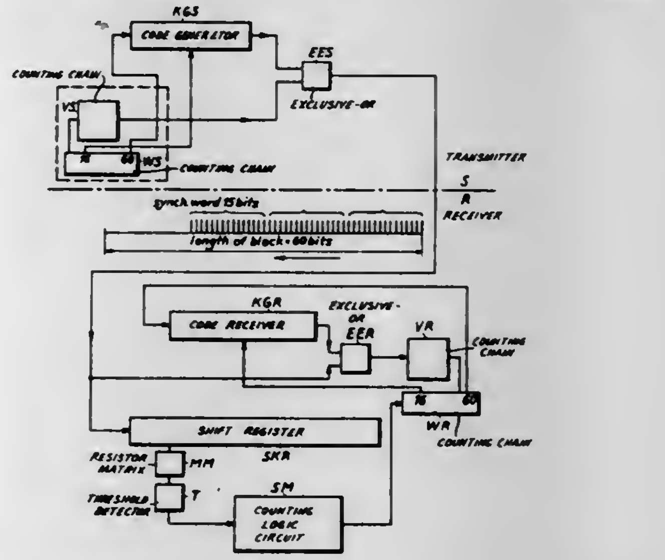
Adrianus Korpel, Prospect Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed June 1, 1970, Ser. No. 42,114
Int. Cl. G11b *7/00, 11/10*
U.S. Cl. 178—6.6 A **2 Claims**



Video recording in a transverse format on magnetic tape is achieved by scanning a laser beam across a series of spaced photoconductive strips closely adjacent the magnetic tape recording medium. Playback is accomplished by projecting a plane-polarized laser beam on the magnetized tape for rotation of the polarization plane by magnetic fields present, and directing the reflected beam through an analyzer set to block polarization components in the original polarization plane but passing components whose polarization planes are rotated by the reading process. A photodetector or photomultiplier translates the light passed by the analyzer to a conventional video signal. An alternate embodiment provides for optically direct recordation and retrieval of two dimensional images.

3,651,263
METHOD FOR SYNCHRONIZING DIGITAL SIGNALS AND AN ARRANGEMENT FOR CARRYING OUT THE METHOD

Ulf Robert Oscarson Lindback, Tyreso, and Herman Josef Burghardt Vollmer, Vendelso, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Mar. 13, 1970, Ser. No. 19,310
Claims priority, application Sweden, Mar. 26, 1969, 4248/69
Int. Cl. H04j *3/06;* **H04l** *7/08*
U.S. Cl. 178—69.5 R **8 Claims**

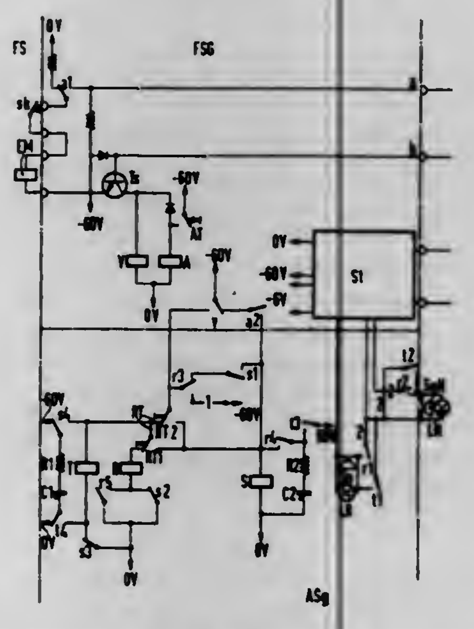


The invention relates to a method and an arrangement for synchronizing blocks of digital signals transferring information from a transmitter to a receiver. A cyclically repeated counting process the greatest value of which corresponds to the number of bits in the block controls a parallel-series conversion on the transmitter side and a series-parallel conversion on the receiver side. A cyclically generated synchronizing word formed of ones and zeros is logically superposed on the digital signal on the transmitter side and on the receiver side the same synchronizing word is again logically superposed on the combined signals in order to restore the original digital signal. During intervals occurring necessarily in continuous speech the synchronizing word appears alone and is identified and the number of its occurrence is counted. After a definite number occurrences of the synchronizing word a control pulse is generated which starts the cyclically repeated counting process on the receiver side.

3,651,264
APPARATUS FOR CALL SIGNALLING IN TELETYPEWRITER SUBSCRIBER STATIONS

Ronald Zott, and Klaus Schliefer, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 27, 1969, Ser. No. 870,183
Claims priority, application Germany, June 28, 1968, P 17 62 504.6
Int. Cl. H04l *11/00*
U.S. Cl. 178—69.6 **12 Claims**



A circuit arrangement for call signalling in teletypewriter subscriber stations, each having long distance switching apparatus with switching devices and associated contacts to establish connections between teletypewriter subscriber stations, and a voltage supply source.

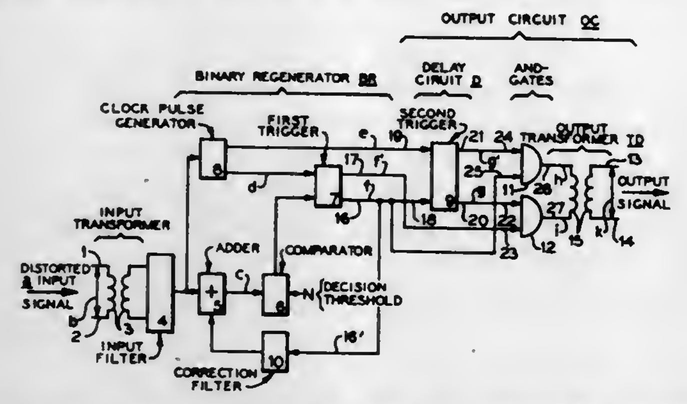
At least one of optical and acoustical call signalling indicator devices having associated switching means controllable over said associated contacts are located at each teletypewriter subscriber station. The voltage supply of the long distance switching apparatus is connectable to operate the indicator devices.

3,651,265
BIPOLAR REPEATER

Derk Van Der Houwen, Leidschendam, Netherlands, assignor to De Staat der Nederlander, Ten Deze Vertegenwoordiga Door de Directeur-Generaal der Posterijen, The Hague, Netherlands

Filed Apr. 30, 1970, Ser. No. 33,182
Claims priority, application Netherlands, June 5, 1969, 6906935
Int. Cl. H04l *25/52*
U.S. Cl. 178—70 R **18 Claims**

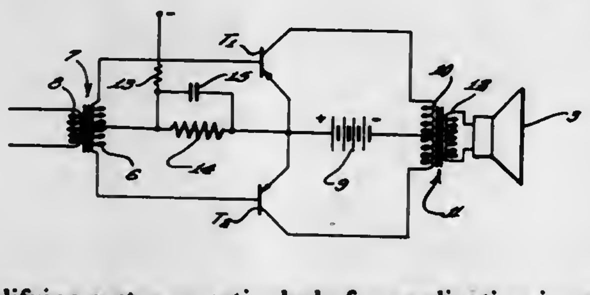
The invention relates to a bipolar repeater to be used in any system in which the transmission of information takes place by means of pulses in bipolar or pseudo-ternary form. The sensitivity of such a repeater to disturbances in limited to a value characteristic of a binary repeater. An input filter converts the distorted bipolar signal received from the transmission path into a binary signal. A binary regenerator provided with feedback and having two output terminals makes good the low-frequency shortage of this signal. An output circuit restores the signal to the bipolar form. This circuit has two AND-gates, one of which combines the first regenerator output, delayed by one bit in a delay circuit, with the second, the other combining bit in second regenerator output, delayed by one bitin the delay circuit, with the first. The output terminals of the two gates are connected to the primary side of the output transformer.



3,651,266
AMPLIFYING SYSTEM WITH REDUCED FEEDBACK

Daniel L. Queen, Chicago, Ill., assignor to Chamberlain Manufacturing Corporation, Chicago, Ill.

Filed Aug. 11, 1969, Ser. No. 849,016
Int. Cl. H03f *21/00*
U.S. Cl. 179—1 FS **10 Claims**

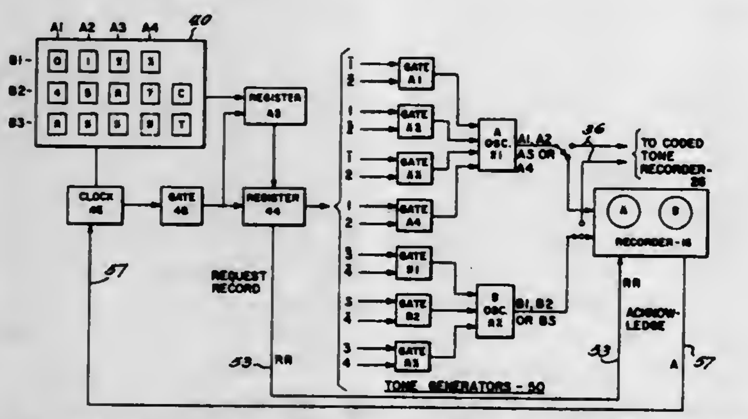


An amplifying system, particularly for application in which the input and output transducers are closely coupled acoustically, for example, hand-held power megaphones and the like, as a result of which feedback howl may occur, in which an amplifier stage thereof is constructed for class B operation and is provided with a capacitor in the input circuit thereof, arranged to be charged by an input signal and apply a reverse bias to said input circuit operative, in the presence of a sustained feedback howl, to effect a reduction in the gain of such stage and the amplifier sufficient to cut off such howl.

3,651,267
DATA COLLECTING AND TRANSMITTING SYSTEM AND APPARATUS

Wallace Wayne Wittenberger, Evanston, Ill., assignor to Computer Management Consultants, Inc., Skokie, Ill.

Filed May 12, 1969, Ser. No. 823,586
Int. Cl. H04m *11/06*
U.S. Cl. 179—2 DP **6 Claims**

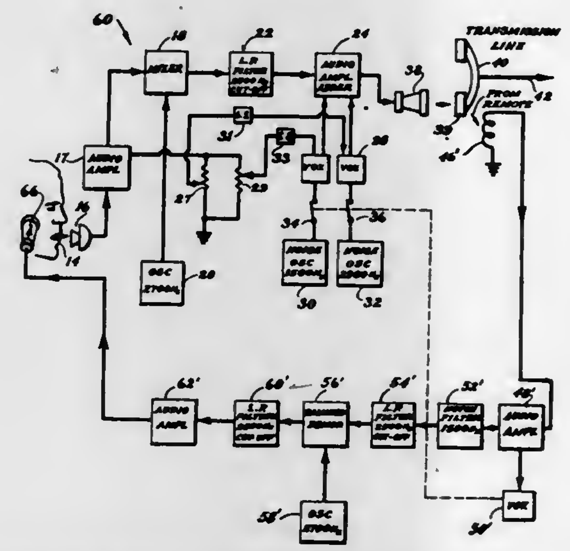


A data collecting and transmitting system and apparatus collecting digital data and converting the data to a series of coded tones for transmission to a central data terminal, and means for recording the coded tones for subsequent reconversion to the original digital data. In one specific embodiment the original digital data is converted into coded tones compatible with transmission over a voice grade telephone line interconnecting the central data terminal and one or more data collecting stations, and means are provided for the immediate recording of the coded tones either at the data station and/or at the central data terminal. Apparatus providing a coded ring-in timing sequence, station "status tones," and a selective playback operation are included in the overall system interconnecting the central data terminal with a plurality of collecting data stations.

3,651,268
COMMUNICATION PRIVACY SYSTEM

Bernard W. Rivkin, East Meadow, N.Y., assignor to Scrambler and Seismic Sciences, Inc., Hemptead, N.Y.

Filed Apr. 1, 1969, Ser. No. 811,795
Int. Cl. H04m *1/70*
U.S. Cl. 179—1.5 M **16 Claims**

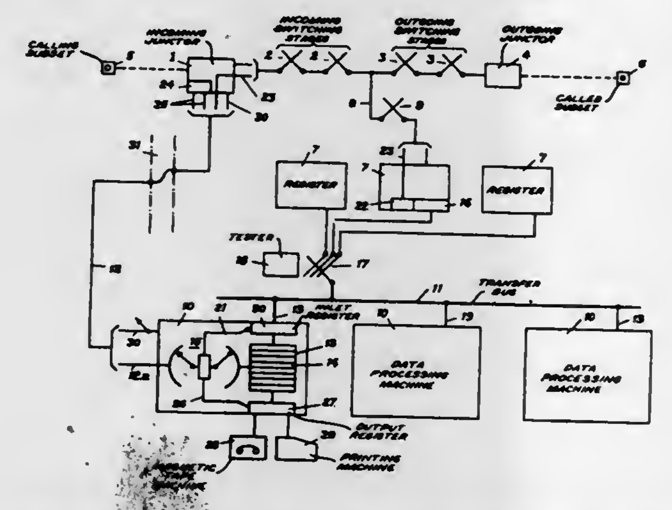


A communication system which employs masking signals to encode the transmitted signal and means to strip the masking signals at the receiving end. Provision is made for simple, replaceable, plug-in modules which determine the frequency of the masking signals. Provision is made for switching between a multiplicity of masking signals on a random basis. Further, the masking signals are present in the carrier only during transmission of intelligence making detection of the frequencies employed difficult.

3,651,269
ACCOUNTING SYSTEM FOR TELEPHONE EXCHANGES

Guy Jean Le Strat, Meudon, and Michel Bradane, Lannion, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 4, 1969, Ser. No. 882,044
Int. Cl. H04m *15/00*
U.S. Cl. 179—7 R **4 Claims**

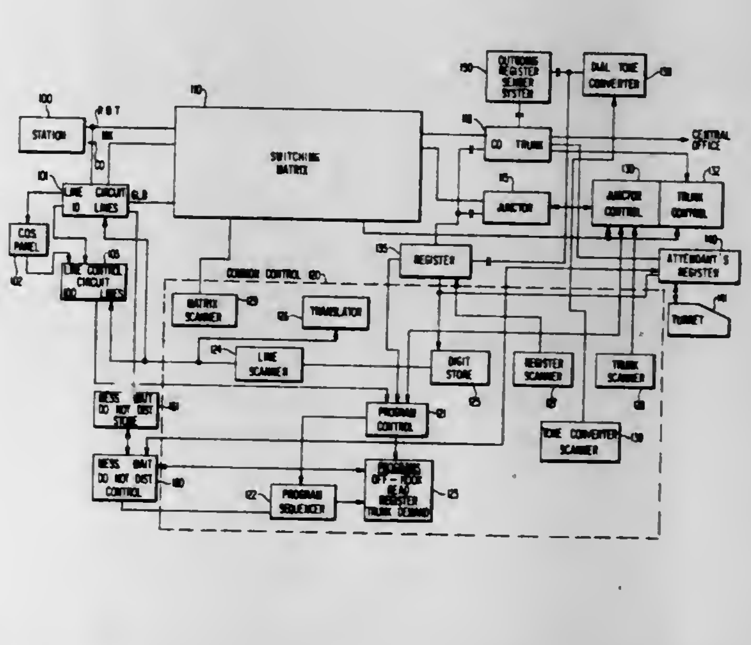


Data on telephonic toll communications are recorded in an automatic toll exchange by means of computers and magnetic tape machines instead of by ticketing in the several originating exchanges. Incoming toll junctors in a group are scanned from a computer associated with the groups. A definite cell in the computer's store is allotted to each of the associated junctors to simplify operation and shorten recurrent cycles. Initial data on an incoming call is transferred from the register which serves the call to the computer. When the release of a junctor is stated, final data in its allotted cell is transferred to the recording machine. The charges can be computed in a later handling of the records, in an accounting office.

3,651,270
MESSAGE WAITING AND DO-NOT-DISTURB ARRANGEMENT

Ernest O. Lee, Jr.; John A. Adams, Jr., and Ignas Budrys, all of Fairport, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Oct. 26, 1970, Ser. No. 84,082
Int. Cl. H04m *3/42*
U.S. Cl. 179—18 B **23 Claims**



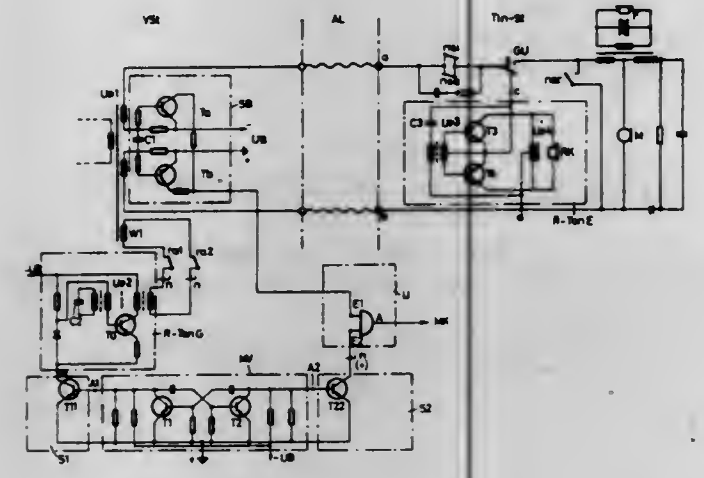
A PBX telephone system, particularly adapted for hotel and motel use, includes a message-waiting and a do-not-disturb arrangement. A lamp is mounted at the telephone in each hotel room, and is controlled by logic and storage circuitry which receives signals from the attendant's register and turret. To place a line in a particular mode, either do-not-disturb or message-waiting the attendant merely depresses a respective key on her turret and dials the line number. The lamp will flash on and off for a message-waiting indication and steadily for a do-not-disturb indication. During either mode the telephone may be used to place outgoing calls.

3,651,271
CIRCUIT ARRANGEMENT INCLUDING A RELAXATION OSCILLATOR FOR ALTERNATELY PROVIDING RINGING-TONE AND SUPERVISORY SIGNALS TO SUBSCRIBER STATIONS

Hans-Ulrich Knauer, Ludwigsburg, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 9, 1970, Ser. No. 26,940
Claims priority, application Germany, Apr. 17, 1969, P 19 19 585.8
Int. Cl. H04m *1/26;* **H04q** *9/00*
U.S. Cl. 179—18 HB **9 Claims**

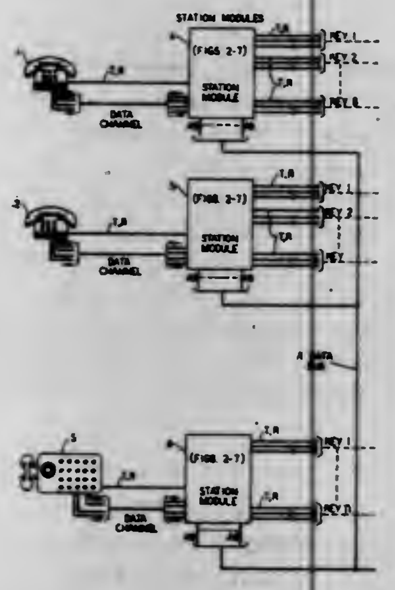
A loop current supervisory device and a central tone generator are coupled to a line leading to a called subscriber. Each is alternately rendered operative via a central astable relaxation oscillator. Thus loop current supervision and the ringing phase are clearly separated from each other.



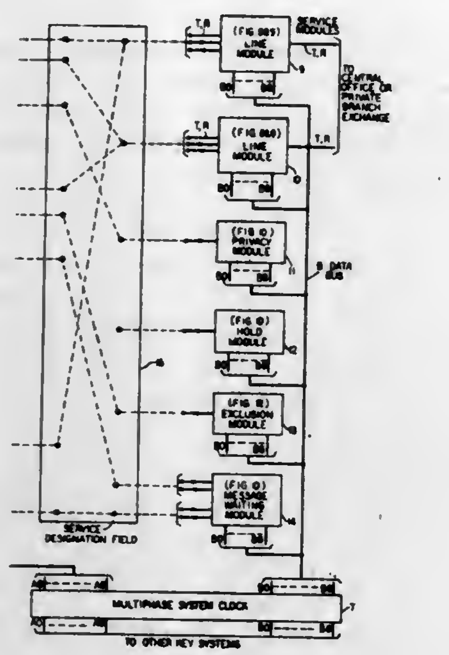
3,651,272
PROGRAM CONTROLLED KEY TELEPHONE SYSTEM FOR AUTOMATICALLY CONNECTING UNANSWERED CALLS TO STATIONS

Dieter John Henry Knollman, Guttenberg, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 5, 1970, Ser. No. 43,813
Int. Cl. H04m *1/00;* **H04q** *3/54*
U.S. Cl. 179—18 ES **8 Claims**



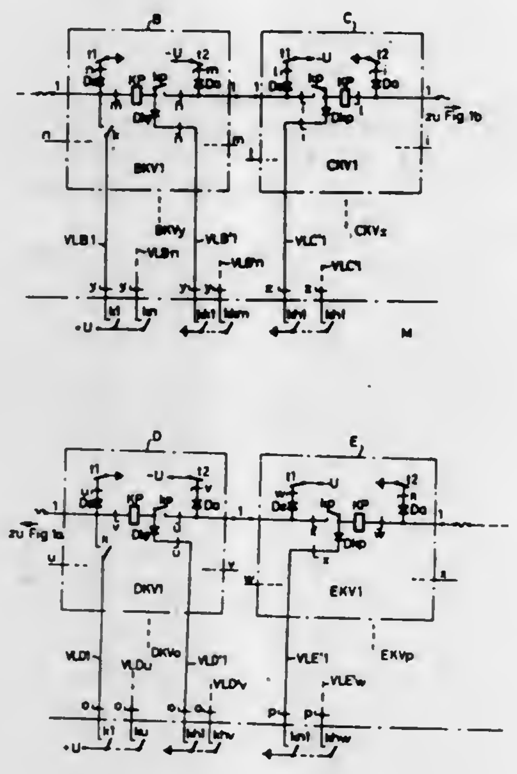
A program controlled key telephone system which includes line modules and station modules for providing the interface circuitry between PBX/CO lines and stations is disclosed. System operations are controlled by a multi-phase clock which generates a reiterative list of binary coded signals based on a master program. The system is arranged for controlling the connection of calling lines to a first one of a group of stations after a prescribed interval upon detection of an off-hook condition at the station.



3,651,273
CIRCUIT ARRANGEMENT FOR COUPLING, HOLDING AND RELEASING OF CROSSPOINT RELAYS IN A CONNECTION PATH IN TELECOMMUNICATION SYSTEMS

Heinrich Halfmann, Korntal, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 13, 1969, Ser. No. 865,833
Claims priority, application Germany, Oct. 16, 1968, P 18 03 220.7
Int. Cl. H04q *3/495*
U.S. Cl. 179—18 GE **9 Claims**

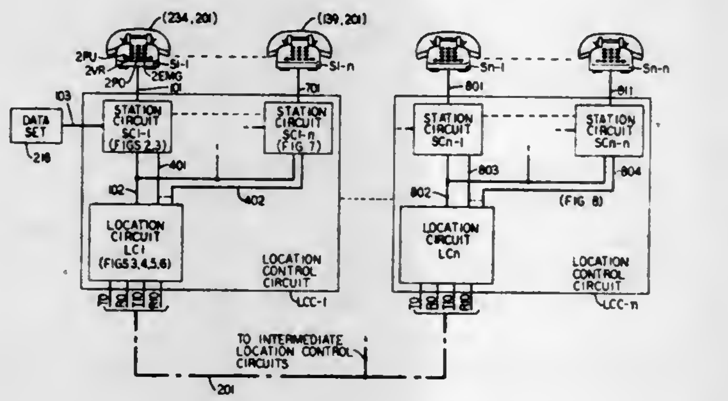


A marking and holding circuit for cross-point relays in a plural stage communications switching network. In each stage, the winding of the cross-point relay is held through an individual hold path including its own contacts. The holding potential in successive stages is connected in a back-to-back arrangement to allow selected relays in successive stages to be seized in multiple to complete a path through the network. In the path, the selected relay in each stage is held individually through its own cross-point contacts.

3,651,274
SELECTIVE SIGNALING SYSTEM

Ronald Joseph Angner, Freehold, and Anthony Koscinski, Brick Town, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 5, 1970, Ser. No. 78,053
Int. Cl. H04m *3/16*
U.S. Cl. 179—19 **24 Claims**

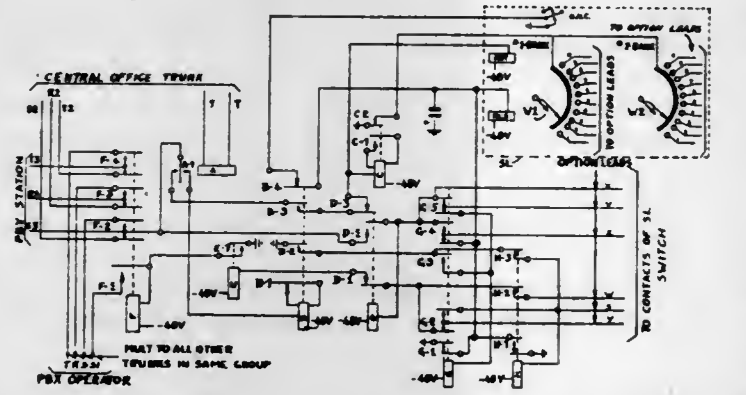


A multilocation private line selective signaling system is arranged to generate privacy lockout tones when a first station at any location goes off-hook. The first such off-hook station is designated a controlling station and circuitry at each location responds to the lockout tones by removing signaling and communicating capability from all but the controlling station. Communication capability is extended only to those stations signaled by the controlling station and busy tone is returned to any off-hook station which has not been given such capability. Each location is arranged with circuitry for controlling data transmission between stations and for preventing any station from interfering with the data.

3,651,275
TOLL DIVERTING CIRCUIT

J. Ernest Regniere, St. Foy, Quebec, Canada, assignor to The Bell Telephone Company of Canada, Montreal, Quebec, Canada

Filed Nov. 24, 1969, Ser. No. 879,395
Int. Cl. H04m *3/60*
U.S. Cl. 179—27 CB **3 Claims**

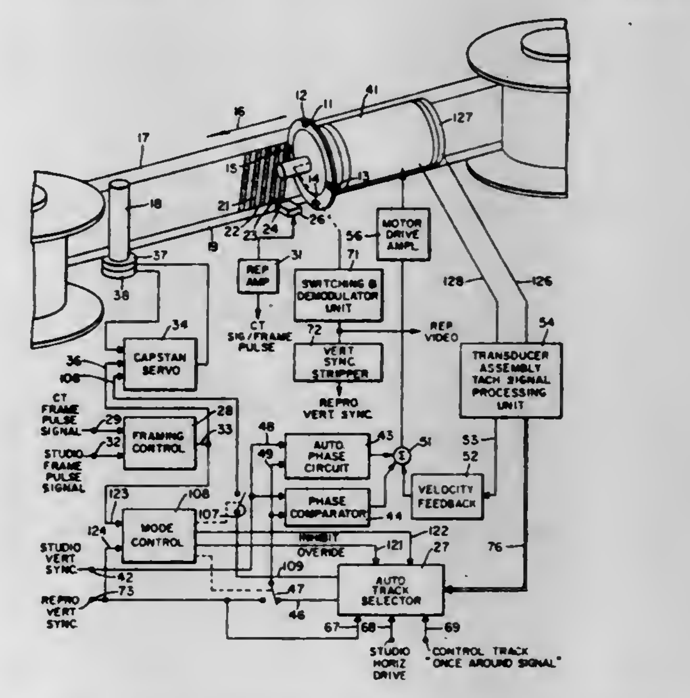


A toll diverting circuit for use at a PBX location comprising a device for repeating the digits dialed from a PBX station towards a Central Office and a second device responsive to said digit repeating device for registering and analyzing at least the first three non-repetitive digits dialed to the Central Office. The analyzing device comprises first switching means for diverting a call to a PBX operator when the digits dialed are unauthorized, second switching means for opening the pulse repeating path and the diverting path when the digits dialed are authorized, and a third switching device for absorbing a first digit dialed and for diverting the call to the PBX operator when a subsequent non-authorized digit is dialed.

3,651,276
AUTOMATIC PHASING OF SERVO SYSTEMS

Harold V. Clark, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 2, 1970, Ser. No. 25,052
Int. Cl. G11b *5/52*
U.S. Cl. 179—100.2 T **6 Claims**



In a rotary scan magnetic tape transport, mistiming between the prerecorded control track signal and the prerecorded information signal tracks is compensated for by automatically advancing or retarding the phase angle of the rotary transducer assembly in discrete steps in response to a measured magnitude and direction of the timing error. During preliminary servo modes of the tape transport system in preparation for reproducing a prerecorded information signal, the tape is initially driven by a capstan servo so that synchronizing pulses carried by the tape control track assume a preselected phase relationship with a reference signal. The rotary transducer assembly is driven to phase synchronize with the same reference signal and is thereafter selectively advanced or retarded in phase in accordance with a detected timing error between the control track and the reproduced information signal. Thereupon, the capstan servo is coupled to synchronize the control track and thus the longitudinal tape position with the rotation of the transducer assembly while the assembly is rotatably driven to synchronize the reproduce information signal with the reference signal.

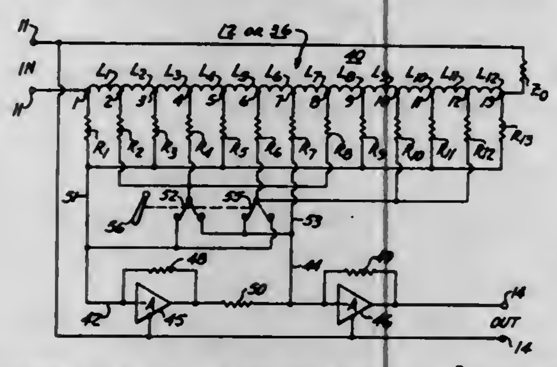
3,651,277
INFORMATION RECORDING AND REPRODUCTION APPARATUS WITH SIGNAL DISPERSION AND RESTORATION FILTERS

Wayne Kassell Hodder, Glendora, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Continuation-in-part of application Ser. No. 643,119, June 2, 1967, now Patent No. 3,530,256, dated Sept. 22, 1970. This application Feb. 10, 1970, Ser. No. 10,167. The portion of the term of this patent subsequent to Sept 22, 1987, has been disclaimed.

Int. Cl. G11b *5/02*
U.S. Cl. 179—100.2 K **7 Claims**

Apparatus for recording and reproducing time-varying electric information signals having means for recording information corresponding to elemental fractions of the electric information signals on extended sections of a recording medium, and means for converting information recorded on ex-


11
IN
11
12 or 26
40
L1 L2 L3 L4 L5 L6 L7 L8 L9 L10 L11 L12
20
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13
51
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OUT
14

tended sections of the recording medium into elemental fractions of reproduced information signals, whereby the energy of momentary error signals is dispersed relative to the elemental fractions of the reproduced information signals.

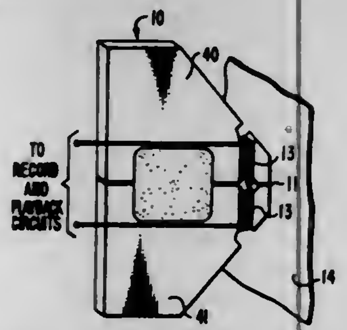
3,651,278
MAGNETIC TRANSDUCER ASSEMBLY WITH WINDINGS POSITIONED SO AS TO PICK UP LEAKAGE FLUX

Joseph Chupity, Mt. View, and Burnet M. Poole, Los Altos, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation of application Ser. No. 822,745, May 7, 1969, which is a continuation of application Ser. No. 462,272, June 8, 1965, now abandoned. This application May 6, 1970, Ser. No. 37,362

Int. Cl. G11b *5/20*

U.S. Cl. 179—100.2 C **9 Claims**



A magnetic transducer defining a substantially closed magnetic circuit including a pair of core halves separated by a front non-magnetic gap and defining an internal aperture having a diverging side wall portion extending from the rear of the front gap. A head winding is disposed about the core half and through the aperture and encompasses the core half so that there is no magnetic shunt across the winding. The turns of the winding closer to the front gap are disposed adjacent the front gap on the diverging side wall portion and in the path of the principal concentration of flux at the back of the front gap so as to significantly reduce the amount of flux which does not link the winding.

3,651,279
COMMUTATOR CONTROLLED MAGNETIC RECORDING AND REPRODUCING SYSTEM

Hisao Kinjo, Yokohama, and Toshi Suzuki, Kamakura, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Continuation of application Ser. No. 550,398, May 16, 1966, now Patent No. 3,445,608, dated May 20, 1969. This application Jan. 13, 1969, Ser. No. 790,583

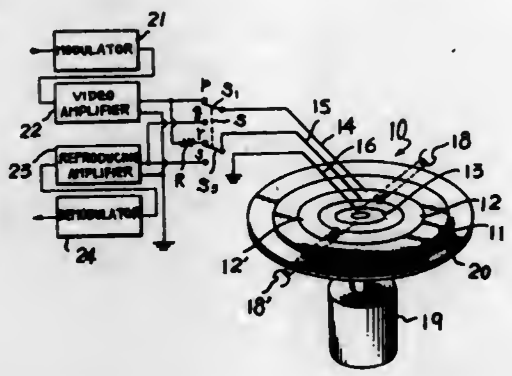
Claims priority, application Japan, May 21, 1965, 40/29915.

The portion of the term of this patent subsequent to May 20, 1986, has been disclaimed.

Int. Cl. G11b *15/14*

U.S. Cl. 179—100.2 T **6 Claims**

A magnetic tape recorder for television video signals uses two sequentially active magnetic heads mounted on a revolving disk. A commutator is arranged to rotate in synchronism with the revolving disk and to act as a program switch for selecting the magnetic head switching points and for controlling the associated circuitry. The program selectively



changes the instantaneous electrical characteristics of a path leading from the heads to the associated circuitry, these changes occurring as a function of whether one or two heads is operative at the instant of change.

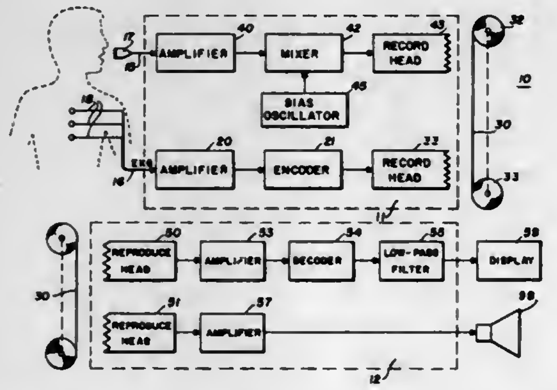
3,651,280
RECORDING AND REPRODUCING APPARATUS

George L. Streckmann, Dallas, Tex., assignor to Intermedcraft Corp., Columbia, Md.

Filed Apr. 1, 1969, Ser. No. 811,856

Int. Cl. A61b *5/04*

U.S. Cl. 179—100.2 **5 Claims**



Disclosed are novel encoder and decoder networks for respective incorporation into magnetic medium recording and reproducing apparatus. The encoder includes a pulse generating operational amplifier with positive and negative feedback, the input signal and a capacitor coupled to the inverting input of the operational amplifier. The decoder includes a pulse generating operational amplifier, the input signal respectively coupled to the non-inverting and inverting terminals of the operational amplifier through a resistor and paralleled combination of diodes connected in opposite polarity, a capacitor coupled to ground from the inverting terminal of the amplifier. The magnetic recording and reproducing apparatus is employed in electrocardiographic monitoring apparatus having dual channels for the simultaneous recording or reproduction of EKG signal information from a human being and voice communication from that human being.

3,651,281
LASER RECORDING SYSTEM USING PHOTOMAGNETICALLY MAGNETIZABLE STORAGE MEDIUM

Carl H. Becker, 425 Seale, Palo Alto, Calif.

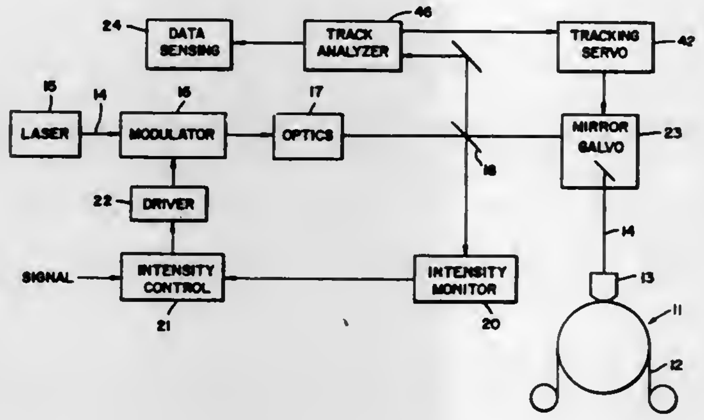
Filed June 6, 1969, Ser. No. 830,965

Int. Cl. G11b *7/24*

U.S. Cl. 179—100.2CH **30 Claims**

An optical coherent light data recording and reading system utilizing an erasable and/or permanent recording medium. The recording medium is formed of a layer of sub-

stantially transparent photomagnetically responsive magnetizable material having a anisotropic optical response under magnetization coated on a substrate or carrier. The substrate may have a reflective surface or a thin reflective metal layer may be interposed between the substrate and the layer of magnetizable material. A polarized beam of coherent light generated by a laser in a wavelength suitable for optical pumping of exchange resonance spinwave modes of the magnetizable material is focused by an optical recording head onto the photomagnetically responsive layer of magnetizable material in a diffraction limited spot size. Optical pumping is achieved by either parametric excitation or quantum-mechanical excitation. The laser beam and recording medium are translated relative to each other and the rate of translation and laser intensity are adjusted so that the thermal



temperature developed in the layer of magnetizable material is less than the Curie temperature of the material during recording. The recording laser beam is optically modulated to induce localized photomagnetization along the recording medium to thereby provide remanent tracks of variable birefringence in the magnetizable material as a function of a signal to be recorded. Readout is accomplished with a reading laser by means of the Faraday effect. Preferably optical recording takes place in the spectral region of maximum absorption efficiency by the exchange resonance modes of the recording material while optical readout takes place in the spectral region of maximum Faraday rotation. Ramanent data tracks are erased by secondary scanning of the recording laser at an intensity and/or scanning rate sufficient to heat the record material above the Curie temperature.

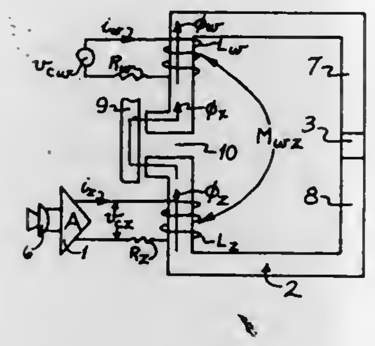
3,651,282
DISTORTIONLESS MAGNETIC COMPONENTS

Martin E. Gerry, 13452 Winthrope Street, Santa Ana, Calif.

Continuation-in-part of application Ser. No. 599,335, Oct. 31, 1966, now Patent No. 3,504,229. This application June 19, 1969, Ser. No. 840,121

Int. Cl. G11b *5/12*

U.S. Cl. 179—100.2 C **9 Claims**



The principles and use of magnetic main core flux and ways for eliminating mutual flux components contributing to distortion in a group of magnetic devices results in these magnetic devices having better operating characteristics and hence results in better and higher fidelity products. Included are components such as record and reproduce heads. A basic core structure provides distortion-free properties in magnetic heads, and its use in computer applications contributes to faster computation time. The freedom from distortion enhances pulse handling ability, reduces the quantity of wave shape restoration components needed in equipment wherever used, and enables a greater amount of information to be stored in a smaller amount of space on a recording medium in view of the freedom from distortion components, which actually use up a large portion of frequency spectrum and hence recording space.

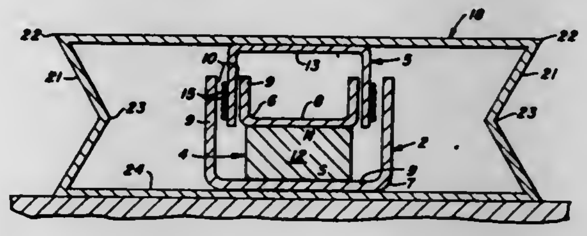
3,651,283
LOUDSPEAKER HAVING ELONGATED RECTANGULAR MOVING COIL

Antony Z. Doschek, Crafton, Pa., assignor to Audio Arts Incorporated, Pittsburgh, Pa.

Filed Dec. 18, 1968, Ser. No. 784,669

Int. Cl. H04r *9/06*

U.S. Cl. 179—115.5 R **53 Claims**



An acoustic transducer of planar shape. Specifically, the electromagnetic driving means for the acoustic transducer may have (i) magnetized means having thin-wall portions for forming pairs of spaced apart elongated gaps containing fixed magnetic fields, preferably by positioning second magnetized elongated substantially U-shaped member about first magnetized elongated substantially U-shaped member, and (ii) driver means consisting of a non-magnetizable conductor forming means for positioning electric conductor means in said gaps. The non-magnetizable, preferably rigid diaphragm for the acoustic transducer is operably attached to the electromagnetic driving means and may be supported by flexible means. The diaphragm may be a self-supporting tubular diaphragm, having a driver part and flexible support parts, which houses the electromagnetic driving means.

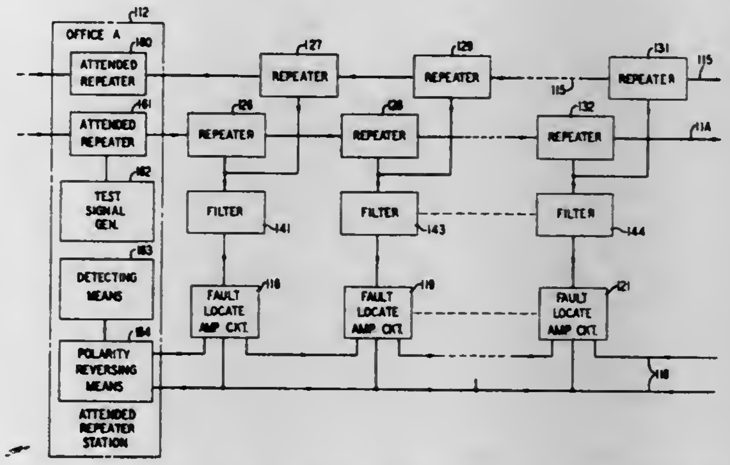
3,651,284
EXTENDING THE CAPABILITY OF A FAULT LOCATE LINE

Theodore Lincoln Malone, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Nov. 10, 1970, Ser. No. 88,297

Int. Cl. H04b *1/60*

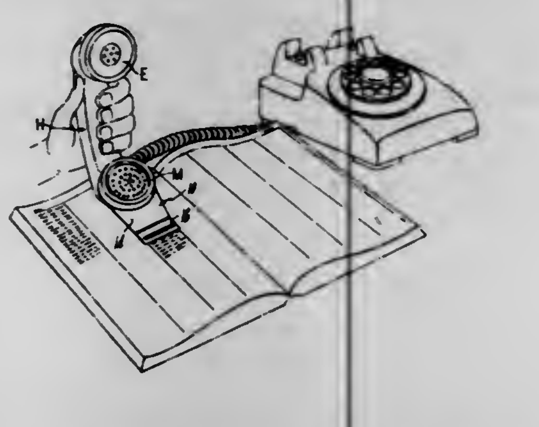
U.S. Cl. 179—175.31R **5 Claims**



The capability of a fault locate line in a transmission system is extended through selective powering of fault locate amplifiers by polarity reversal of the line power. A standard test procedure can be duplicated to evaluate the operation of unattended repeater stations associated with fault locate amplifiers in each section of the fault locate line as a separate group by simply reversing the powering polarity.

3,651,285
TELEPHONE HANDSET ATTACHMENT FOR FACILITATING DIRECTORY READING

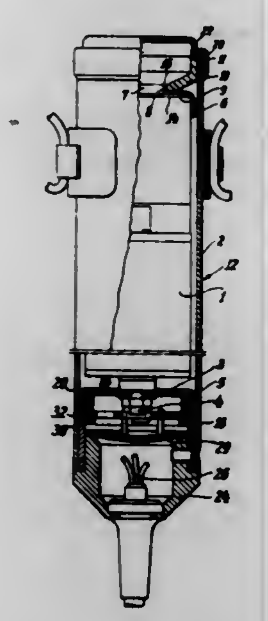
Theodore J. Tomaiuolo, 16 Standish St., Hartford, Conn.
Filed Mar. 9, 1970, Ser. No. 17,455
Int. Cl. H04m *1/21*
U.S. Cl. 179—178 **8 Claims**



A telephone attachment adapted to fit over the ear piece or mouthpiece of a telephone handset as an aid to locating a telephone listing. The attachment is in the form of a tab having a rectangular aperture at one end that can be flattened against the telephone directory by manipulating the handset. The aperture is commensurate in size with a telephone listing so that a listing, once located in the aperture, is highlighted for the telephone user while the telephone number is dialed.

3,651,286
LAVALIER MICROPHONE ASSEMBLY PROTECTED AGAINST FRICTION NOISES

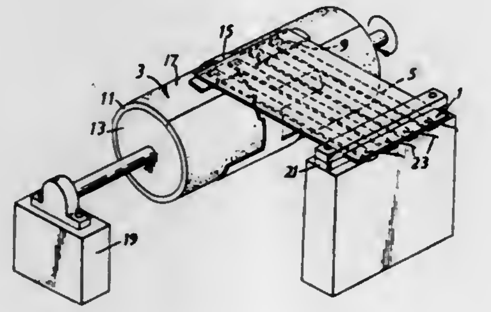
Rudolf Gorike, and Karl Lemoch, both of Wien, Austria, assignors to AKG Akustische U. Kino-Gerate Gesellschaft mbH, Wien, Austria
Filed Jan. 12, 1970, Ser. No. 2,596
Claims priority, application Austria, Jan. 13, 1969, A 300/69
Int. Cl. H04r *1/28*
U.S. Cl. 179—180 **9 Claims**



A microphone assembly includes a longitudinally elongated microphone capsule which is supported within a substantially cylindrical outer casing having an electrical wire connection entering the casing from one end. The microphone is provided with an acoustic inlet at the opposite end of the casing and it is supported in the casing at least at each end by a vibration absorbing support. The support isolates the microphone capsule from noise transmitted to the outer casing. The support at the acoustic inlet end of the microphone capsule comprises a resilient vibration absorbing annular molding which has an inward and radially extending inner end which bears against a collar of a cap which is fitted over the acoustic ends of the microphone. The outer periphery of the annular molding engages against the inner wall of the casing and is held in place by friction or by an adhesive. The cap includes an annular surface which is arranged over the end of the microphone capsule and it includes a collar forming a "Helmholtz resonator" together with an air chamber defined between the protective cap and the diaphragm of the microphone capsule. The molding holding the cap in position forms a funnel which opens outwardly and is engaged by a perforated cap and its associated ring nut at its outer end.

3,651,287
ELECTRICAL SWITCH ASSEMBLY WITH IMPROVED PRINTED CIRCUIT CONTACT STRUCTURE

Leonard Rubenstein, 27 Chessington Court N3, London, England
Filed Feb. 26, 1970, Ser. No. 14,615
Claims priority, application Great Britain, Feb. 26, 1969, 10,397/69
Int. Cl. H01h *19/58;* **H05k** *1/00*
U.S. Cl. 200—11 R **8 Claims**

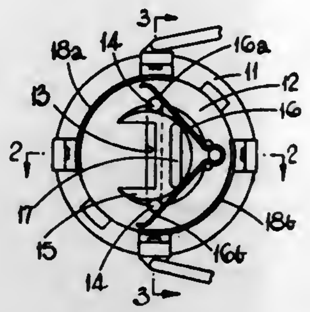


An electrical switch wherein one or more contacts are provided on a first contact member which is resilient and is formed of a layer of electrically conductive material on a base layer of insulating material. This contact member is biassed into engagement with a second contact member when the switch is closed. The second contact member is preferably a similar resilient member which may be secured to one face of a supporting member. Resilient sheets from which a plurality of different contact members can be cropped are also disclosed.

3,651,288
ELECTRICAL SWITCHES

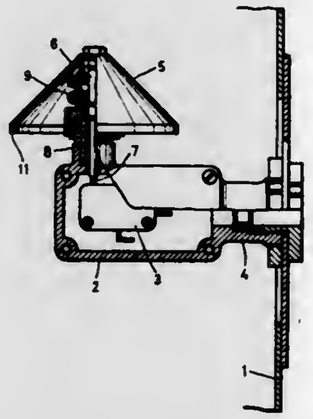
Edward Cryer, Higham, near Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Feb. 5, 1970, Ser. No. 9,011
Claims priority, application Great Britain, Feb. 18, 1969, 8,612/69; July 8, 1969, 34,388/69
Int. Cl. H01h *21/00*
U.S. Cl. 200—44 **8 Claims**

An electrical switch for use in conjunction with a key operated ignition control for a road vehicle includes a hollow body carrying a pair of fixed contacts. A movable bridging contact is movable by an insulating operating member into engagement with the fixed contacts to bridge the fixed contacts when the operating key is inserted into the ignition control. The switch is used in conjunction with an alarm device and a switch operated by the driver's door of the vehicle, so that the alarm device is operated when the driver's door is opened with the key left in the ignition control.



3,651,289
APPARATUS FOR SENSING THE PREDETERMINED LEVEL OF CONTINUOUSLY FED PARTICLES

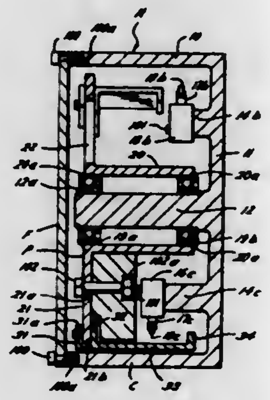
Hiroshi Nagashima, Osaka, Japan, assignor to Noken Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Dec. 19, 1969, Ser. No. 886,497
Int. Cl. H01h *35/00, 3/00*
U.S. Cl. 200—61.2 **2 Claims**



The apparatus according to this invention is adapted to be fixed within a receptacle into which particles are continuously fed. When the level of the particles reach the apparatus and the particles cover a cone provided with said apparatus, said cone descends and closes the switch of the electrical circuit containing a signalling apparatus and, if desired, apparatus for suspending the feed and discharging the contents of the receptacle. Several forms of the cones are also shown.

3,651,290
GRAVITY SWITCH ASSEMBLY

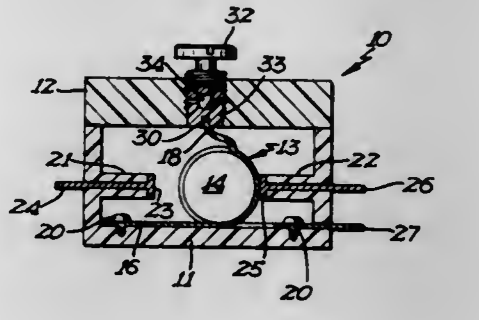
Larry E. Durbin, and Robert Thomas, both of Houston, Tex., assignors to Big Three Industrial Gas & Equipment Co.
Filed June 1, 1970, Ser. No. 42,242
Int. Cl. H01h *35/02*
U.S. Cl. 200—61.45 **12 Claims**



A gravity actuated control apparatus useful in controlling the operation of pipe welding equipment or other equipment used on pipes, beams, or other members, which control apparatus is actuated by gravity to generate triggering or control operations at preselected points along the periphery of the pipe or other member. The assembly uses switches, or other suitable control mechanisms, which are selectively engageable in accordance with the angular position of the control apparatus with respect to the member, to initiate and terminate operations of the equipment and to properly position such equipment with respect to the member.

3,651,291
ROLLER-BAND DEVICE WITH OVER-CENTER MEANS

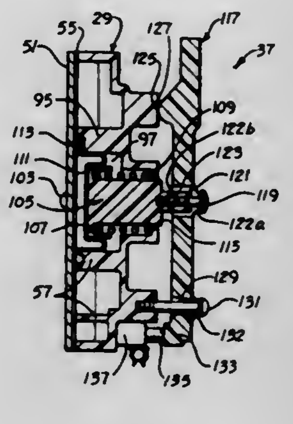
Gary Raymond Bluem, Golden Valley, Minn., assignor to Kroy Industries, Inc., Minneapolis, Minn.
Filed Feb. 9, 1970, Ser. No. 9,606
Int. Cl. H01h *13/48*
U.S. Cl. 200—67 DA **12 Claims**



A roller-band device including a housing, a roller and a band encircling the roller and having its ends attached to the housing in tension. A portion of the band acts as a leaf spring to provide over-center action of the roller between two end positions. Means is provided for adjusting the spring force of the over-center means and thus the force required to move the roller between the two end positions.

3,651,292
PRESSURE RESPONSIVE SWITCH WITH ACTUATOR PIVOTAL ABOUT DIFFERENT AXES FOR LOW AND HIGH PRESSURE ACTUATION

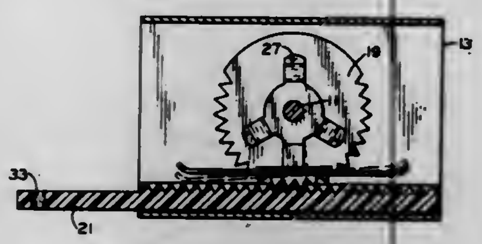
Ezra D. Hartley, 2700 Jalmia Drive, Los Angeles, Calif.
Filed July 2, 1970, Ser. No. 51,930
Int. Cl. H01h *35/24, 35/34*
U.S. Cl. 200—81 R **8 Claims**



A switch for a pumping system turns a pump off whenever pressure in the accumulator increases above a first level or drops below a second level and allows the pump to run at accumulator pressures intermediate such first and second pressure levels. A pressure responsive switch actuator pivots about one pivot axis in response to a high pressure condition and another, spaced pivot axis in response to a low pressure condition. In both cases the same switch is actuated. A manual override is also provided.

3,651,293
ELECTRIC TEETER TOTTER SWITCH

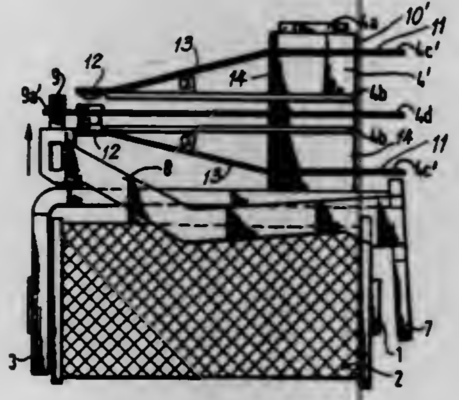
Benedict J. Hoffman, 2230 Chestnut Street, Fort Wayne, Ind.
Filed Oct. 22, 1970, Ser. No. 82,976
Int. Cl. H01h *3/40, 3/14*
U.S. Cl. 200—153 P **8 Claims**



A mechanically actuated multicontact electrical switch having an electrical status dependent upon its history is disclosed comprising a linear toothed member, a gear supported on and rotatable about an axis and a contact device frictionally driven by the gear. When the gear is rotated from an initial position sufficiently far to cause slippage of the frictional engagement between the gear and the contact device and then returned to its initial position the electrical status of the switch may be different. The switch has particular utility when mechanically linked to an automobile accelerator pedal and electrically connected with a series of indicator lights to indicate to another driver how the so equipped automobile is being operated.

3,651,294
CONTACT ASSEMBLY WITH AN UNCHANGEABLE SWITCHING STATE AT THE INSTANT OF WELDING

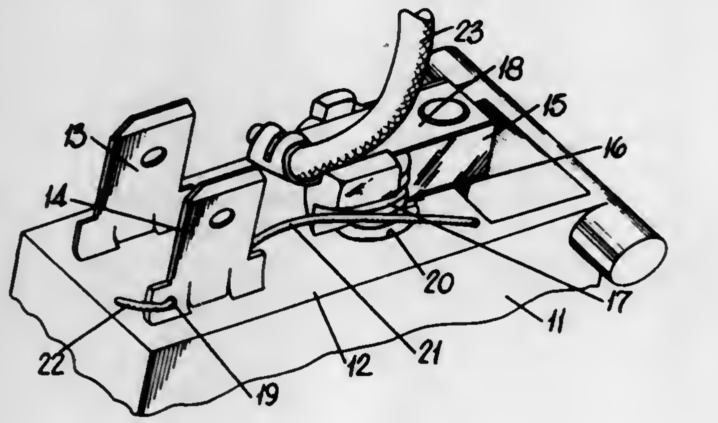
Heinz Dames, and Gerhard Furtwaengler, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Feb. 26, 1970, Ser. No. 14,524
Claims priority, application Germany, Mar. 10, 1969, P 19 12 077.5
Int. Cl. H01h *1/28*
U.S. Cl. 200—166 J **10 Claims**



A contact arrangement such as a relay having at least a pair of substantially stationary contact springs and a movable contact spring which are mounted with the movable contact spring disposed between the pair of stationary springs characterized in that the substantially stationary contact springs have a portion extending at an angle of at least 10° to the movable contact spring so that a welding of the movable contact spring to either one of the stationary contact springs caused by arcing therebetween provides a rigid triangular structure to prevent movement of the movable contact spring into engagement with the other stationary contact spring and a short circuiting between the two stationary contact springs. Preferably the movable contact spring is moved by an actuating means having an operating member forming a connection with the movable contact spring which is either a conical slot or a ball shaped slot receiving an end of the movable contact member to guide the movable contact spring without play. To further resist movement of the substantially stationary contact springs, in a direction toward the other stationary contact spring, a support plate is provided for each of the stationary contact springs.

3,651,295
ELECTRICAL SWITCHES WITH INDICATOR MEANS

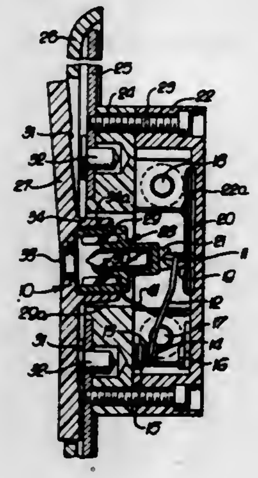
David Foley, 89 Mosley Road, Burnley, England
Filed July 15, 1970, Ser. No. 55,020
Claims priority, application Great Britain, Aug. 12, 1969, 40,186/69
Int. Cl. H01h *9/18*
U.S. Cl. 200—167 A **3 Claims**



An electrical switch includes a body, a first terminal member supported by the body and electrically connected to a fixed contact of the switch, and a bulb holder detachably engaged with the body. A second terminal member is secured on the bulb holder and is arranged to engage one of the contacts of a bulb supported in the bulb holder in use. A resilient, conductive, connector is secured to the first terminal member and is arranged to engage the other contact of a bulb supported in the bulb holder in use, the connector being stressed when engaged with the other contact of the bulb so that the other contact is engaged firmly by the connector.

3,651,296
TOGGLE SWITCH HAVING ILLUMINATION MEANS

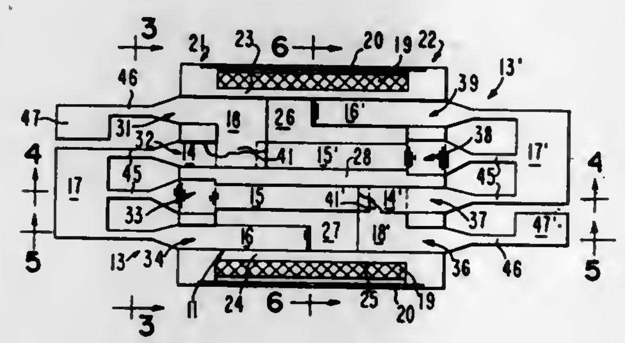
William R. Yarbrough, Cerritos, Calif., assignor to Sierra Electric, Inc., Gardena, Calif.
Filed Aug. 20, 1970, Ser. No. 65,438
Int. Cl. H01h *9/18*
U.S. Cl. 200—167 A **8 Claims**



An electrical toggle switch is provided with an actuator made to include an inner section having an initially open cavity containing a lamp, and a subsequently applied outer section in the form of a rocker plate which closes the cavity and is illuminated by the lamp.

3,651,297
SWITCH WITH HOUSING OF SEALED RIGID AND THERMAL PLASTIC MEMBERS

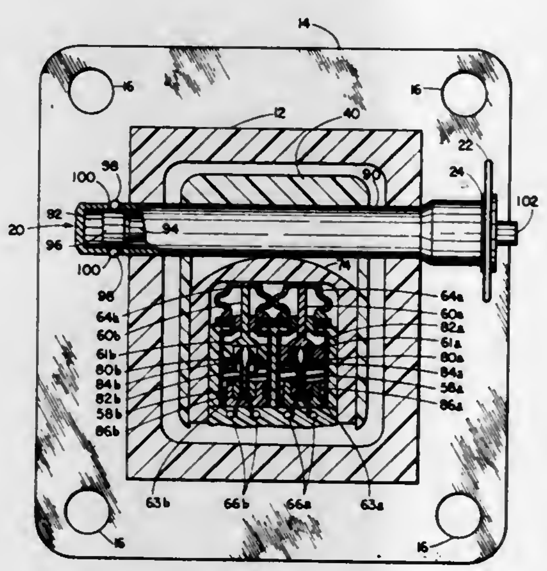
James W. Jones, Hollister, Calif., assignor to Compac Engineering Inc., Hollister, Calif.
Filed Dec. 16, 1968, Ser. No. 783,912
Int. Cl. H01h *9/04*
U.S. Cl. 200—168 G **12 Claims**



An electrical device having a rigid base member supporting electrical conductive elements and a thermal plastic member heat sealed thereto. A reed relay is described with blades mounted on a rigid ceramic base and hermetically sealed into a switching chamber by a thermal plastic cover member sealed at the periphery to the base member as by heating with a peripheral metal strip or sonic bonding. Localized deformation of the enclosure sets the gap of the contact blade. A blade is positioned in a slanted notch to spring bias the blade against another and the switching blade can be provided with a perforation filled with a precious metal contact material.

3,651,298
WEATHER AND SHOCK PROOF SWITCH CASING WITH INSERTABLE KEY SWITCH OPERATING MEMBER

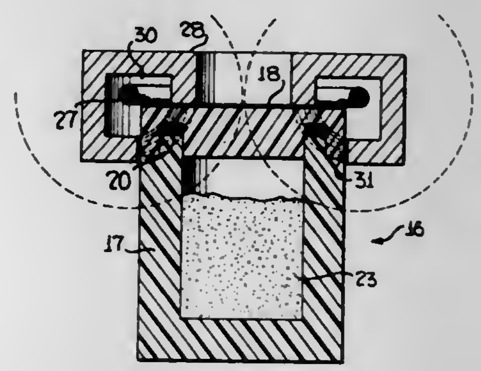
Paul H. Omohundro, 1131 Barker Street, Costa Mesa, Calif.
Filed Aug. 27, 1970, Ser. No. 67,348
Int. Cl. H01h *9/04, 13/06*
U.S. Cl. 200—168 G **5 Claims**



A switch structure including a pair of electrical switches that are arranged so that when one of the pair of switches is closed the other is open. Each of the pair of switches has an actuator for changing the electrical state of the switch. The actuators are displaced in unison by a bridge member that bridges across the actuators. The pair of electrical switches and the bridge member are disposed within an inner housing. The inner housing is enclosed within an outer housing that has a mounting flange co-extensive with an exterior surface thereof. An operating pin is insertable through the inner housing and the outer housing through aligned holes so that when the operating pin is inserted, the bridge member and the actuators are displaced causing a change of the electrical state of each of the pair of switches. The operating pin has a ring on an enlarged portion of one end thereof for providing ease of access.

3,651,299
METHOD FOR SEALING CONTAINERS USING HEAT ACTIVATED MAGNETIC SEALING COMPOUND

Roger M. O'Neill, Oaklawn, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed June 22, 1970, Ser. No. 48,004
Int. Cl. B23k *13/02*
U.S. Cl. 219—10.53 **3 Claims**

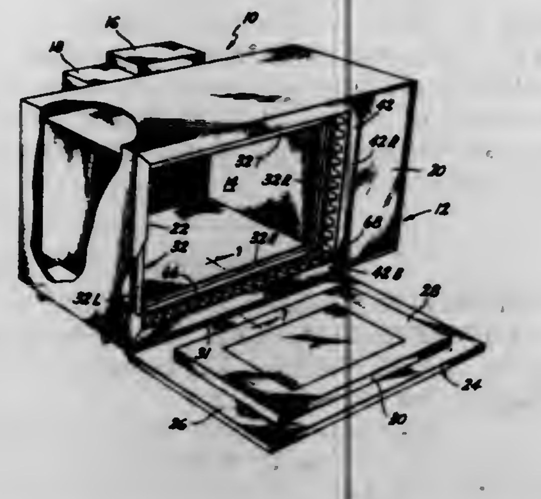


This disclosure relates to apparatus for inductively coupling energy into heat activated magnetic sealing material to effect the sealing of containers. Such apparatus includes a coil generally conforming to the shape of the container portion to be sealed and a flux concentrator or relatively high permeability and electrical resistivity for concentrating magnetic flux only in those areas of the container including the sealing material. The flux concentrator houses the coil and is formed with an air gap shaped to accommodate the container portion to be sealed. Further, this application discloses a method of sealing containers by coupling energy into heat activated magnetic sealing materials while limiting the heating of adjacent portions of the container and the container contents.

3,651,300
MICROWAVE HEATING APPARATUS WITH RADIATION CONTROL AND MONITORING

Duane B. Haagensen, Edina, Minn., assignor to Matsuhita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 25, 1971, Ser. No. 109,303
Int. Cl. H05b *5/00*
U.S. Cl. 219—10.55 **20 Claims**

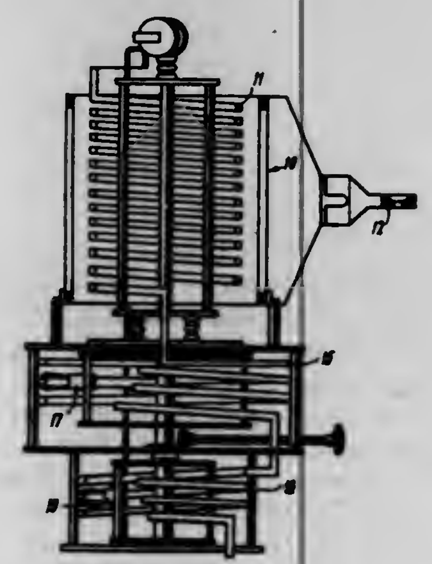
A radiation safety device located about the entrance to a microwave oven is comprised of a wave trough-type of transmission line within which a printed circuit cross-polarized antenna is disposed to permit induction of radiation of either transverse electric or transverse magnetic waves into propagation circuits containing both dissipative and conductive elements for reducing environmental radiation leakage.



3,651,301
INSTALLATION FOR CASTING MICROWIRE IN GLASS INSULATION

Leonid Petrovich Menchikov; Kim Ivanovich Kopylov; Evsei Lvovich Okun; Vasily Mikhailovich Smirnov; Viktor Stepanovich Gavrikov; Ilya Davidovich Fridman; Vyacheslav Evgenievich Markov, and Alexandr Alexandrovich Sopin, all of Leningrad, U.S.S.R., assignors to The National Cash Register Company, Dayton, Ohio

Filed May 7, 1969, Ser. No. 822,408
Claims priority, application U.S.S.R., May 12, 1968, 1238410
Int. Cl. H05b *5/00, 9/00*
U.S. Cl. 219—10.75 **3 Claims**

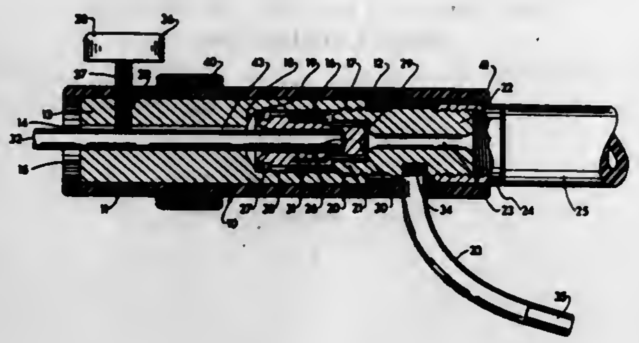


An installation for casting microwire in glass insulation with the aid of a high-frequency inductor whose oscillating system comprises at least two oscillating tank circuits with voltage stabilization; each oscillating tank circuit contains an element for regulating the equivalent or resonance impedance of the circuit and an element for stabilization of the resonant frequency or frequency of generation of the tank circuit synchronously coupled to it. The element for regulating the equivalent or resonance impedance of the circuit is designed in the form of a variable inductance coil, while the element for stabilization of the resonant frequency or frequency of generation of the tank circuit is designed either in the form of a variable capacitor or a variable inductance coil, the movable parts of the two elements being mechanically connected to one another.

3,651,302
ELECTRODE HOLDER FOR GAS-ARC GOUGING TORCH

John Henry Maddison, 509 Latimer Street, Nelson, British Columbia, Canada

Filed Apr. 6, 1970, Ser. No. 25,856
Int. Cl. B23k *9/28;* **B23p** *1/08*
U.S. Cl. 219—70 **2 Claims**

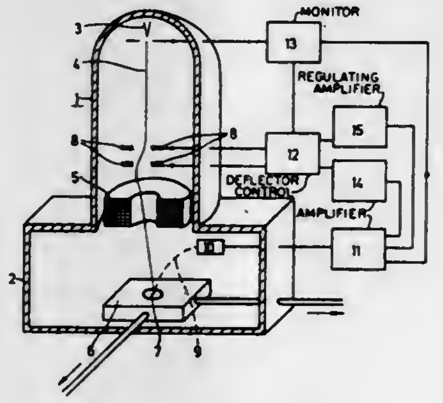


A holder for an electric arc gouging electrode, in which an auxiliary gas supply is delivered to the holder and jetted from a nozzle at its forward end in a single stream offset but adjacent to and directionally parallel with the electrode. The auxiliary gas supply is normally air, and is used to eject the molten metal pool formed at the arc. The direction of offset of the gas jet is controllable by rotation of the forward portion of the nozzle. A safety valve within the holder interrupts the air supply in the event of accidental disengagement of the electrode from its clamping member, to prevent air-projection of the electrode in missile-fashion.

3,651,303
METHOD AND APPARATUS FOR TREATING OBJECTS IN A CORPUSCULAR RAY DEVICE

Hans Rehme, Munich, and Kurt Togel, Karlsruhe, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Oct. 20, 1969, Ser. No. 867,781
Claims priority, application Germany, Oct. 18, 1968, P 18 04 646.3
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 EB **14 Claims**

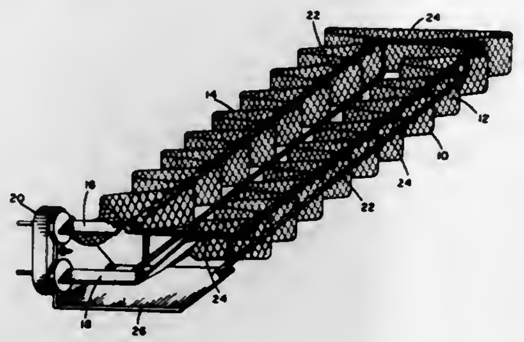


A method and apparatus for treating objects in a corpuscular ray device. A beam source provides a beam of corpuscular rays. This beam is focused at the object plane and coils coact with the beam to deflect the latter. A table supports the object at the object plane and this table is adjustable transversely with respect to the beam. The accuracy with which the table is constructed and adjusted is only sufficient to achieve a course adjustment of the object with respect to the treating beam. On the other hand, the deflecting coils deflect the beam with respect to the object which has been coarsely adjusted so as to achieve in this way a highly precise fine adjustment of the beam with respect to the object.

3,651,304
ELECTRIC RESISTANCE HEATING ELEMENT

Robert J. Fedor, Westlake, Ohio, assignor to Gould Inc., Chicago, Ill.

Continuation-in-part of application Ser. No. 96,322, Dec. 9, 1970, now abandoned. This application Mar. 31, 1971, Ser. No. 129,893
Int. Cl. H05b *1/00*
U.S. Cl. 219—200 **9 Claims**

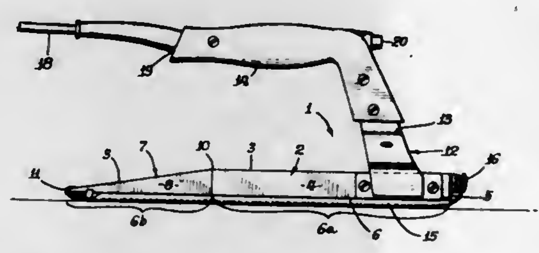


An electric resistance heating element for a moving air system in which the element is composed of a thin strip of apertured, foil-like material formed with a series of continuous and generally parallel extending corrugations which establish a wavy pattern. The foil is supported by a central, longitudinally extending, electrically insulated rod.

3,651,305
APPARATUS FOR CARPET SEAMING

Robert E. Shimota Fox River Grove, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Dec. 8, 1969, Ser. No. 882,944
Int. Cl. H05b *1/00*
U.S. Cl. 219—243 **11 Claims**



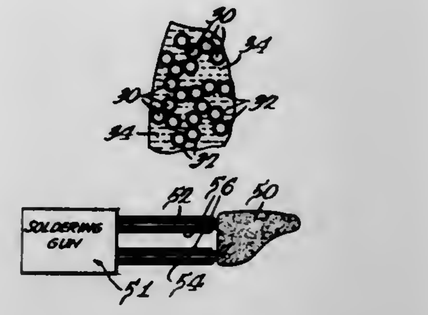
A thermal activator for use in the seaming of adjacent sections of carpeting. The activator comprises a heater body with a protective heat insulating means on its bottom surface and a handle carried above the heater body by a handle attachment section extending from one side of the heater body. In seaming carpeting with heat activatable adhesive tape the activator may be positioned so that the heater body is under the edges of the carpet sections to be joined, with a strip of heat activatable adhesive tape between the carpeting and the heater body's top surface, the adhesive surface of said tape contacting the abutting edges of the carpet sections and the non-adhesive surface of said tape contacting the heater body, and the handle is above the carpeting. The heater body is raised to a temperature sufficient to make tacky the adhesive on the tape by contacting the non-adhesive surface of the tape and may then be moved along the tape by the handle during the operation of seaming the carpet segments together.

3,651,306
ELECTRIC SOLDERING GUN AND TIP THEREFOR

Nicholas D. Glyptis, 16 West 148 Timber View Drive, Elmhurst, Ill.

Filed Apr. 28, 1969, Ser. No. 819,922
Int. Cl. H05b *3/12;* **B23k** *3/04*
U.S. Cl. 219—233 **3 Claims**

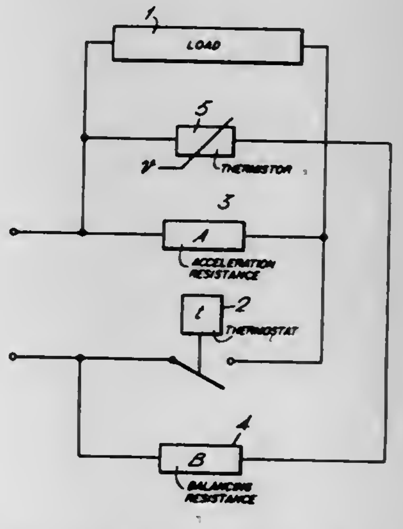
A porous metal element, e.g., porous bronze, such as a mass of sintered tin-coated copper spheres, filled with a solder base material, is used as an element in a soldering device for delivering solder to the place where needed. The porous material is usually about 40–50 percent by volume, or more, interconnected voids and the voids are preferably completely filled with the solder base material to the exclusion of air. The soldering element is maintained filled with solder by surface tension while the solder is in molten condition during use of the device. The soldering element may be in the form of a tip on a soldering gun or soldering iron, or in the form of a stamping plate for stamping printed circuits or any other convenient form.



3,651,307
ROOM-TEMPERATURE REGULATOR FOR ELECTRIC HEATERS

Oddvar Johansen, Trondheim, Norway, assignor to Nobo Fabrikker A/S, Trondheim, Norway

Filed Oct. 13, 1970, Ser. No. 80,319
Claims priority, application Norway, Oct. 13, 1969, 4076/69; Oct. 20, 1969, 4155/69
Int. Cl. H05b *1/02*
U.S. Cl. 219—505 **3 Claims**



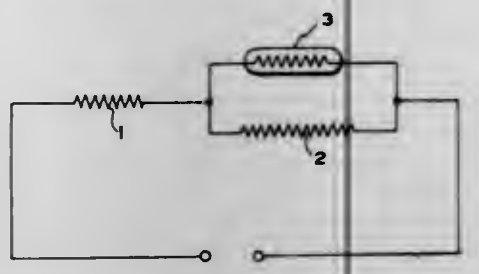
A temperature controlled regulator for electric heaters with a thermostat having an acceleration resistance and a balancing resistance, the current through the balancing resistance being controlled by a thermistor which is subjected to the temperature of the heater in such a manner that the supply of heat from the balancing resistance to the thermostat will be large with little heat requirement and little when the heat requirement is great in the room to be heated.

3,651,308
AUTOMATIC ELECTRIC COOKER

Eisuke Kurokawa; Yoshihiro Matsuo, and Hiromu Sasaki, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Nov. 14, 1969, Ser. No. 876,915
Claims priority, application Japan, June 27, 1969, 44/51995
Int. Cl. H05b *1/02*
U.S. Cl. 219—505 **8 Claims**

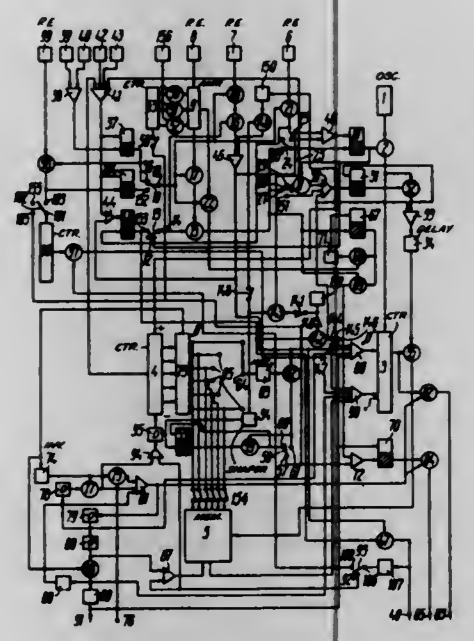
An automatic electric cooker having a heating unit consisting of a metallic alloy heater having a lower resistance and a metallic alloy heater having a higher resistance which are electrically connected in series, and a positive temperature coefficient of resistance ceramic element made of barium titanate semiconductor material electrically connected in parallel with said metallic alloy heater having a higher resistance. The circuit of said heating unit first cooks the material by heat supplied mainly from said lower resistance alloy heater, and then the resistance of said ceramic element abruptly rises to reduce the current flow so as to keep the cooked material warm by heat supplied mainly from the higher resistance alloy heater.



3,651,309
DEVICE FOR READING MULTICHANNEL OSCILLOGRAMS

Petr Mikhailovich Chegolin, ulitsa Kedyshko, 15-a, kv. 39; Gennady Vasilievich Rimsky, Akademicheskava, 23, kv. 15; Eduard Nikolaevich Leonovich, ulitsa Akademicheskaya, 23, kv. 12; Fridrikh Grigorievich Milner, ulitsa Opanskogo, 45, Korpus 7, kv. 108; Nikolai Nikolaevich Samuilov, ulitsa Tipografskaya, 21, kv. 13, and Nikolai Nikolaevich Anishkevich, ulitsa Cheljuskintsev, 22, kv. 3, all of Minsk, U.S.S.R.

Filed Dec. 31, 1969, Ser. No. 889,619
Int. Cl. G06k *7/10, 9/12*
U.S. Cl. 235—61.6 A **6 Claims**

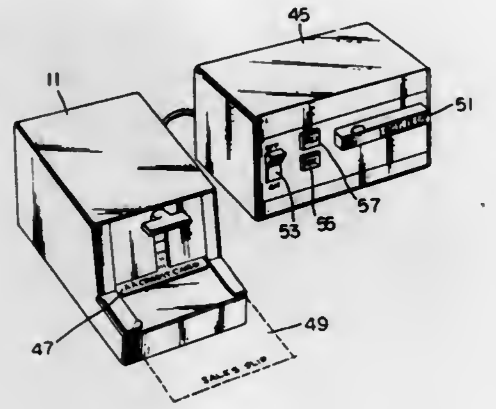


A device for reading multichannel oscillograms comprising: a circuit for the automatic adjustment of the sensitivity of an amplifier in association with a recorded line registration photoelectric cell; a circuit for producing signals indicative of the zone where a gap between oscillographic curves becomes critical; a circuit for grouping data on the ordinates of curves that have been read off a tape and for feeding said data to an electronic computer for further processing; a circuit for counting timing marks and generating signals indicative thereof, and a circuit for adjusting the pitch of the curve sampling process. The device makes it possible to provide a speed of reading graphic information commensurate with that of an electronic computer which is being supplied with this information.

3,651,310
SYSTEM FOR CREDIT CARD VALIDATOR AND IMPRINTER

John T. Link, New Haven, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Mar. 26, 1970, Ser. No. 22,957
Int. Cl. G07f *7/02*; **H01h** *43/08*; **G06k** *7/04, 17/00*
U.S. Cl. 235—61.7 B **4 Claims**

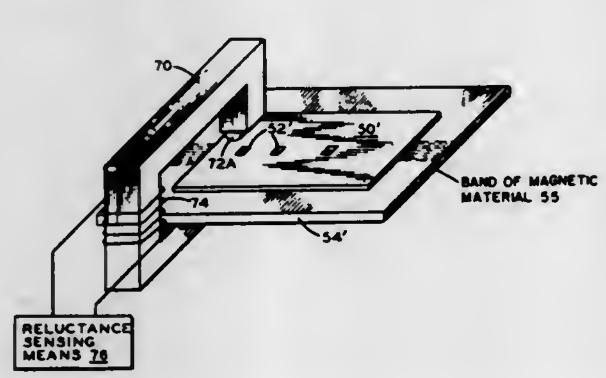


A self contained system for both imprinting the information present on a credit card and determining if that credit card has been invalidated for any of several reasons is disclosed. The system serially senses the multi-digit credit card number while the imprinting is taking place and transmits this number to a scratch pad memory. This number is then compared serially to a list of invalid credit card numbers and if a match takes place, an indicator is energized to indicate invalidity of the card.

3,651,311
INFORMATION SIGNAL GENERATION APPARATUS

Evelyn Berezin, New York; Edgar Wolf, New Hyde Park; William D. Cohen, and Francis C. Marino, both of Huntington, all of N.Y., assignors to Digitronics Corporation, Albertson, N.Y.

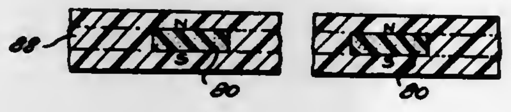
Filed Nov. 26, 1969, Ser. No. 880,322
Int. Cl. G06k *7/08*
U.S. Cl. 235—61.11 D **8 Claims**



An information signal generating apparatus including a planar magnetic field shielding element which is provided with apertures representing coded information and through which a magnetic flux from a magnetic field source disposed on one side of the planar element is adapted to pass. A signal generator which may be in the form of a pair of facing pole pieces disposed on opposite sides of the planar element is adapted to move across the planar element and is provided with an inductively coupled winding. A current is induced in the winding when the pole pieces cut lines of force passing through the apertures thereby to produce electrical signals.

3,651,312
MAGNETICALLY CODED CARD STRUCTURE

Walter W. Barney, 4837 Woodley Avenue, Encino, Calif.
Original application June 30, 1967, Ser. No. 650,483, now Patent No. 3,430,200, dated Feb. 25, 1969. Divided and this application Feb. 10, 1969, Ser. No. 797,868
Int. Cl. G06k *19/00*
U.S. Cl. 235—61.12 **2 Claims**

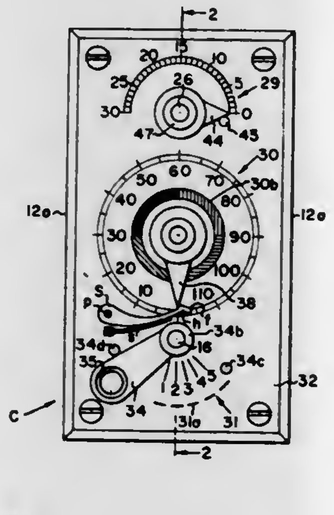


A monolithic card is formed of three plastic sheets bonded together, wherein the center sheet has a plurality of holes, each filled with a magnetic disc adapted to be axially poled. The center sheet is punched at one station, then located at a second station beneath a flexible card of magnetic material, and with its holes aligned with respective punches which simultaneously punch discs from the card and force them into holes. The center and outer sheets are stacked, and bonded under heat and pressure. The discs are magnetized with polarities at one card face distributed in a desired pattern.

3,651,313
GAME COUNTER

John D. MacKenzie, and Edwin O. Klemm, both of Saginaw, Mich., assignors to Pegless Cribbage Board Company, Saginaw, Mich.

Filed Oct. 9, 1969, Ser. No. 865,005
Int. Cl. G04b *17/14*; **G04c** *7/00*
U.S. Cl. 235—112 **17 Claims**

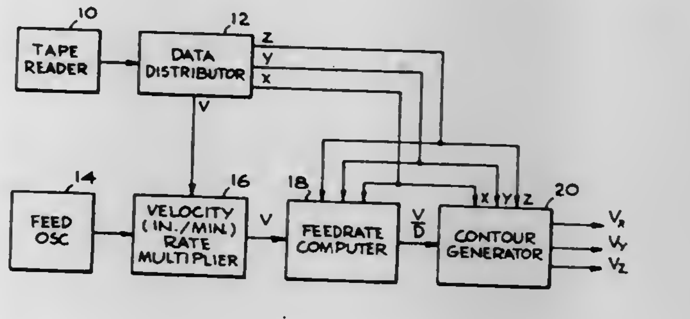


A score indicating device for the game of cribbage including a rotatable total score indicator and a rotatable partial score indicator drivingly connected therewith. Manually movable indexing apparatus is provided for simultaneously indexing the partial and total score indicators from their respective starting positions. The partial score indicator is manually returnable to its starting position and means is provided for retaining the total score indicator in an indexed position when the partial score indicator is so returned. Additional score indicators may also be provided for individually indicating the points individually accumulated in the dealer's crib and also points accumulated during the play of the individual hands.

3,651,314
FEEDRATE COMPUTER USING A READ ONLY MEMORY

Marion Kosen, Wickliffe, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.

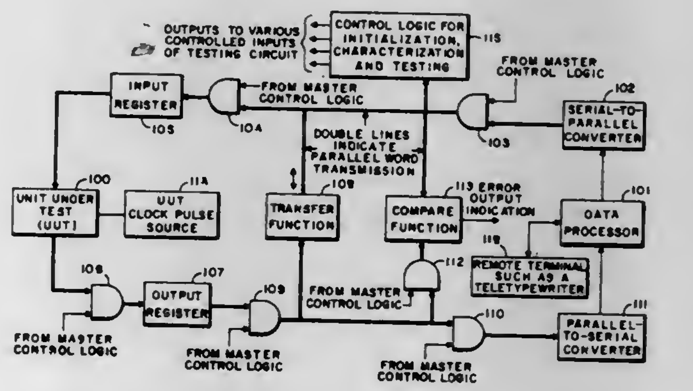
Filed Jan. 22, 1970, Ser. No. 881,397
Int. Cl. G05b *19/18*; **G06c** *3/00*
U.S. Cl. 235—151.11 **8 Claims**



An arrangement for the numerical control of a machine tool is provided wherein, instead of a feedrate number being entered into the system, the desired velocity in inches per minute is entered. Provision is further made for a feedrate computer which computes the value of 1/D from the departure information provided for the various machine tool axes. Provision is then made to compute the feedrate number which equals V/D, which is then applied to the contour generator which controls the operation of the machine tool with its output.

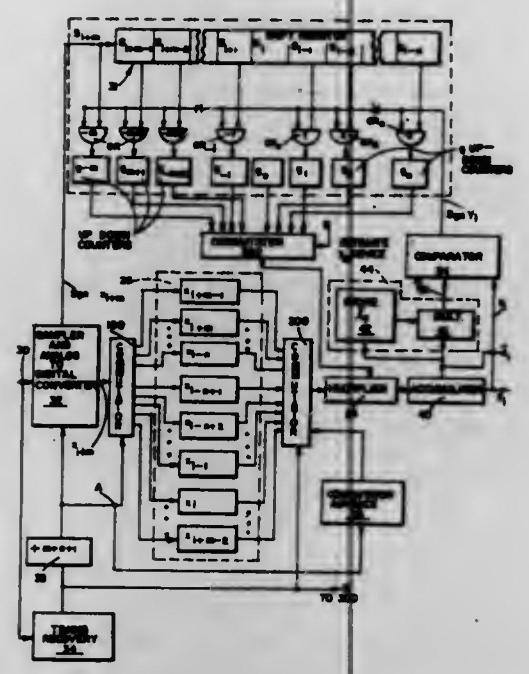
3,651,315
DIGITAL PRODUCTS INSPECTION SYSTEM

Arthur A. Collins, Dallas, Tex., assignor to Collins Radio Company, Cedar Rapids, Iowa
Continuation-in-part of application Ser. No. 33,018, Apr. 29, 1970, now abandoned. This application May 14, 1970, Ser. No. 37,320
Int. Cl. G01r *31/28, 17/02*
U.S. Cl. 235—151.31 **31 Claims**


OUTPUTS TO VARIOUS CONTROLLED INPUTS OF TESTING CIRCUIT
CONTROL LOGIC FOR INITIALIZATION, CHARACTERIZATION AND TESTING
115
FROM MASTER CONTROL LOGIC
INPUT REGISTER
105
FROM MASTER CONTROL LOGIC
104
DOUBLE LINES INDICATE PARALLEL WORD TRANSMISSION
103
102
SERIAL-TO-PARALLEL CONVERTER
100
UNIT UNDER TEST (UUT)
114
UUT CLOCK PULSE SOURCE
108
TRANSFER FUNCTION
113 ERROR OUTPUT INDICATION
COMPARE FUNCTION
101
DATA PROCESSOR
118
REMOTE TERMINAL SUCH AS A TELETYPEWRITER
112
106
107
OUTPUT REGISTER
109
FROM MASTER CONTROL LOGIC
110
111
PARALLEL-TO-SERIAL CONVERTER
FROM MASTER CONTROL LOGIC
FROM MASTER CONTROL LOGIC
FROM MASTER CONTROL LOGIC

A Digital Product Inspection System using a digital pseudo-random generator in combination with a charactertistic of the product being inspected to produce a unique set of data combinations which when compared with previously taken data from the test of a "known good unit" will provide an output indicating whether or not the characteristic of the unit under test is within acceptable limits.

3,651,316
AUTOMATIC TRANSVERSAL EQUALIZER SYSTEM
Earl D. Gibson, Huntington Beach, Calif., assignor to North American Rockwell Corporation
Filed Oct. 9, 1970, Ser. No. 79,380
Int. Cl. H04b *1/62, 3/04*
U.S. Cl. 235—152 **12 Claims**



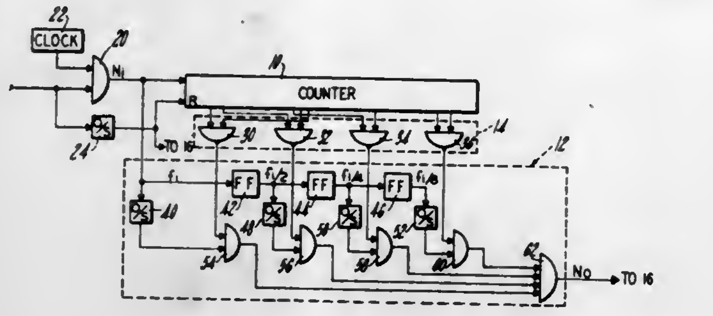
The invention is directed to a system for automatically adjusting the multiple gain taps in a transversal equalizer so as to minimize the errors in a received signal caused by intersymbol interference and noise. In a preferred embodiment, the sign of a delayed replica of the sampled input signal is multiplied by the sign of a derived error signal to form an incremental signal, which signal is used to increment a selected gain tap in the transversal equalizer by a fixed amount and in a direction determined by the sign of the incremental signal. This type of procedure is applied to each of the tap-gains of the transversal equalizer to drive the *k*th tap-gain, for example, to the value that minimizes the cross-correlation function.

$$\sum_{j=-\infty}^{\infty} \rho_j h_{j-k}$$

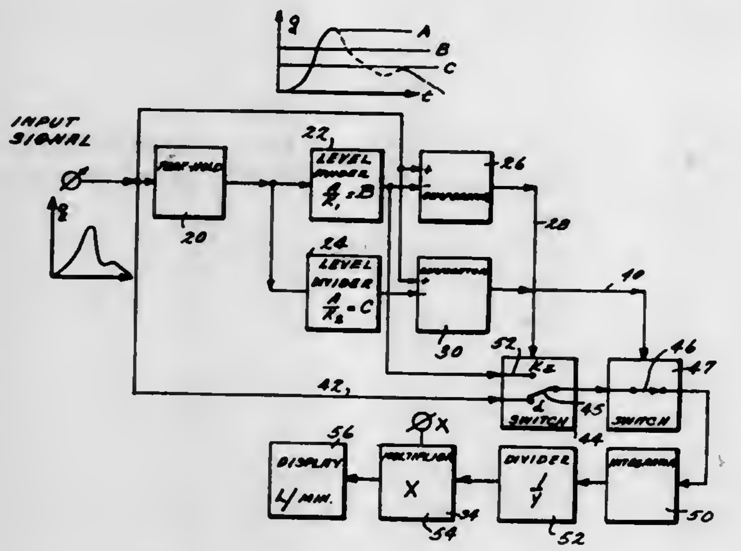
where ρ_j is the error in the *j*th sample of the system's pulse response as seen at the equalizer output and h_{j-k} is the $(j-k)^{th}$ sample of the system's pulse response as seen at the equalizer's input. The derived error signal is formed by comparing the actual system's output signal with a computed desired signal, with the error signal being the difference between the two.

3,651,317
DIGITAL FUNCTION GENERATOR
Ronald E. Falk, Bristol, Conn., assignor to Chandler Evans, Inc., West Hartford, Conn.
Filed June 26, 1970, Ser. No. 50,212
Int. Cl. G06f *15/34*
U.S. Cl. 235—197 **7 Claims**

A digital function generator which may be programmed to provide an output signal which is an arbitrary function of the applied input is disclosed. An input signal is applied simultaneously to a counter and binary divider. The input counter and divider are interconnected by logic circuitry which controls the division rate in accordance with the number in the counter whereby the output of the divider will be commensurate with the number of input pulses delivered to the function generator divided by the factors decoded from the incremental position of those input pulses during each sampling period.



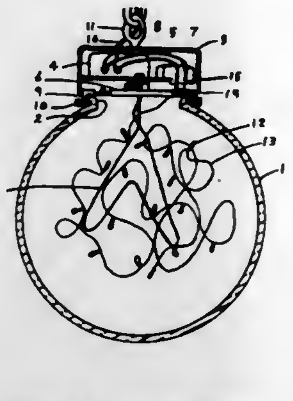
3,651,318
CARDIAC OUTPUT COMPUTER
Jan A. Czekajewski, 1591 Presidential Drive, Columbus, Ohio
Filed Jan. 26, 1970, Ser. No. 5,888
Int. Cl. G06g *7/18;* **A61b** *5/02*
U.S. Cl. 235—183 **18 Claims**



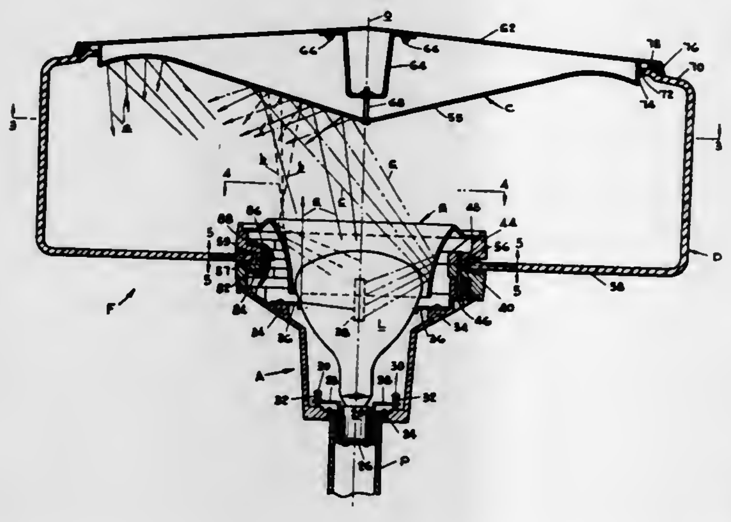
A method and apparatus for determining the rate of flow of a substance such as blood in a closed circulatory system whereby a detectable indicator substance is injected into the blood upstream of the heart and the density of that substance in the blood downstream measured and integrated in time to determine the flow of blood pumped through the heart in volume units per time. Distortion of the density waveform by recirculation and consequent error in the calculated flow rate is avoided by detecting two points on the exponential decay from the density peak and extrapolating the integral of the remainder of the wave form from these points. In contrast to prior art techniques, an analogue signal reflecting the integral of the waveform is produced and employed to obtain the flow of blood through the heart.

3,651,319
DISPLAY DEVICE
Raymond H. Norris, Tall Timbers, Md., and Richard H. Bradford, Jr., 3206 Edgewood Drive, Kensington, Md.
Filed Sept. 14, 1970, Ser. No. 46,179
Int. Cl. F21p *1/03*
U.S. Cl. 240—10.1 **6 Claims**

A display device comprising an envelope of diffuse material enclosing a plurality of individually flashing lamps disposed within a cluster of opaque light barriers which may be the conductive wires leading the the lamps. Flashing of the lamps displays irregular patterns on the envelope which vary randomly in regard to point of origin, distinctness and character of pattern and color.



3,651,320
LIGHTING FIXTURES
Martin Lawrence Lasker, Metuchen, N.J., assignor to Moldcast Manufacturing Company, Newark, N.J.
Filed June 1, 1970, Ser. No. 42,385
Int. Cl. F21p *1/00*
U.S. Cl. 240—25 **9 Claims**

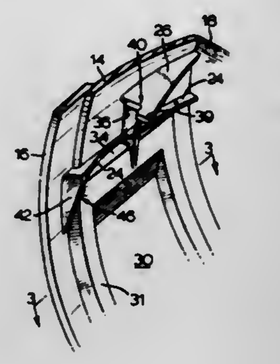


A lighting fixture employs a pair of reflectors related to a lamp housing which includes socket means for a lamp. One reflector is substantially tubular and extends into the housing to surround a portion of a lamp. The second reflector having a diameter larger than the diameter of the first reflector is positioned above in spaced relationship with respect to the first reflector. An enclosure of light transmitting material extends between the spaced reflectors and has a diameter which is not less than the diameter of the second reflector. The second reflector is formed to distribute light directed thereto from a lamp and from the first reflector through the enclosure.

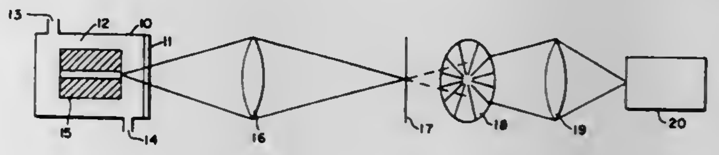
By selecting tubular reflectors having differently angled inner reflecting surfaces, different illumination patterns are obtained without changing the outer dimensions of the tubular reflector or of the fixture.

3,651,321
SNAP-IN LENS FOR LAMP HOUSING
Hugo Magi, Etobicoke, and John Smith, Willowdale, Ontario, both of Canada, assignors to Dominion Auto Accessories Limited, Toronto, Ontario, Canada
Filed May 6, 1970, Ser. No. 35,133
Int. Cl. F21v *17/06;* **B60q** *1/30*
U.S. Cl. 240—151 **2 Claims**

A bulb-housing having a window in a wall that is conically curved, and a transparent insert adapted to snap into the window. The internal surface of the conical wall has a ridge along either side, so positioned as to firmly grip the transparent insert. The insert has a projection which extends across one ridge and as far as a locking ridge parallel with the said one ridge. The projection locks into a hook on the locking ridge, and the insert itself catches under a ledge on the bulb-housing which prevents the insert from removal in the direction parallel to the said ridges.

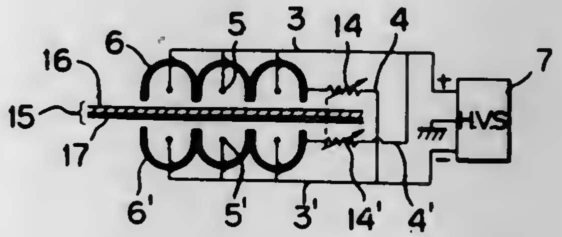


3,651,322
DEVICE FOR GAS ANALYSIS
William G. Elliott, Lincoln, Mass., assignor to SpectraMetrics, Incorporated, Burlington, Mass.
Continuation-in-part of application Ser. No. 710,992, Apr. 5, 1968, now abandoned. This application May 6, 1970, Ser. No. 35,250
Int. Cl. G01n *21/26*
U.S. Cl. 250—43.5 R **30 Claims**



A gas analysis device comprising a housing with a heated element and a gas therein as the source of radiation and a detector for the emitted radiation. Preferably, a chopper or other means are employed to permit the emission from the element and the gas to fall alternately on the detector. In an alternate embodiment, the gas in the source is of known emission characteristics and a gas to be analyzed is interposed between the source and the detector.

3,651,323
DOUBLE DISCHARGE SYSTEM AND DEVICE THEREOF
Hiroshi Tanaka; Giichi Marushima, and Shinkichi Takahashi, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 27, 1967, Ser. No. 678,614
Int. Cl. G03g *15/02*
U.S. Cl. 250—49.5 ZC **13 Claims**



A system for imparting charge to a chargeable member wherein corona discharge electrodes each having an associated auxiliary electrode are disposed on alternate sides of the member. A voltage of first polarity is applied exclusively to all corona discharge electrodes on one member side and to all auxiliary electrodes on the other member side. A voltage of opposite polarity is applied to all other corona discharge electrodes and auxiliary electrodes. The system is further disclosed in preferred charging apparatus having said electrodes insulatively supported therein and incorporating a passage for transport of said chargeable member through the apparatus. Circuit means is shown for providing dissimilar potentials for the auxiliary electrodes and the corona discharge electrodes.

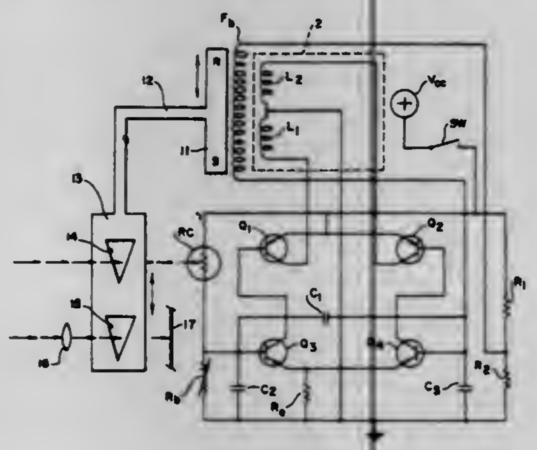
3,651,324
ELECTROMAGNETIC AUTOMATIC APERTURE CONTROL UTILIZING A VELOCITY SENSING WINDING TO PROVIDE ACTIVE FEEDBACK VISCOUS DAMPING

Daniel E. Carter; David B. Lederer, and David E. Perlman, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of application Ser. No. 823,426, May 9, 1969, now abandoned. This application Aug. 24, 1970, Ser. No. 66,642

Int. Cl. G01j *1/32;* **G03b** *9/02;* **H01j** *39/12*

U.S. Cl. 250—201 **8 Claims**



An automatic exposure control arrangement includes a transducer driven in respectively opposite directions by a differential amplifier which operates in accordance with changes in scene illumination. A light masking member, movable by the transducer, serves to regulate the amount of light reaching both the film and a photocell. A feedback coil is provided at the transducer for controlling the amplifier so as to provide damping.

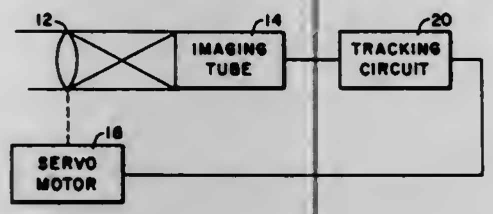
3,651,325
IMAGE STABILIZATION SYSTEM

Frederick C. Alpers, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 1, 1965, Ser. No. 485,675

Int. Cl. G01s *3/78*

U.S. Cl. 250—203 **3 Claims**



A device for image stabilization in an electro-optical guided missile which utilizes a feedback loop that includes a lens, signal detecting means and a servomotor for moving the lens.

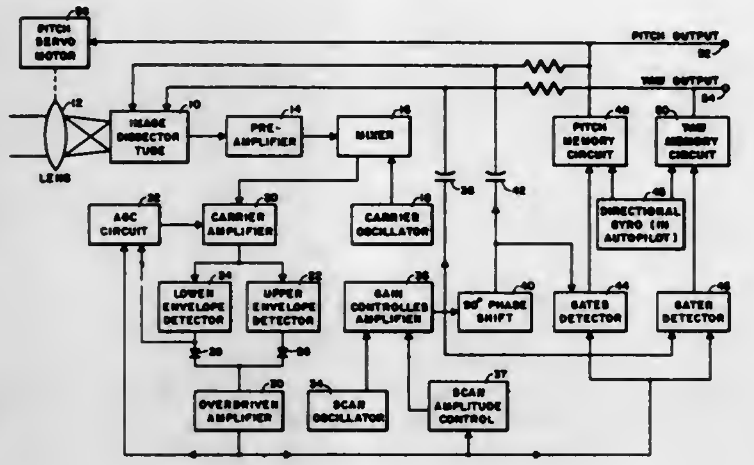
3,651,326
PASSIVE ELECTRO-OPTICAL SEEKER

Frederick C. Alpers, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 1, 1965, Ser. No. 485,676

Int. Cl. G01s *3/78*

U.S. Cl. 250—203 CT **10 Claims**



An electro-optical seeker requiring a simple circular scan centered on the target which can track a wide variety of targets with respect to size, range degree of brightness, and extent of background contrast, and provide coordinate information regarding the position of the object tracked.

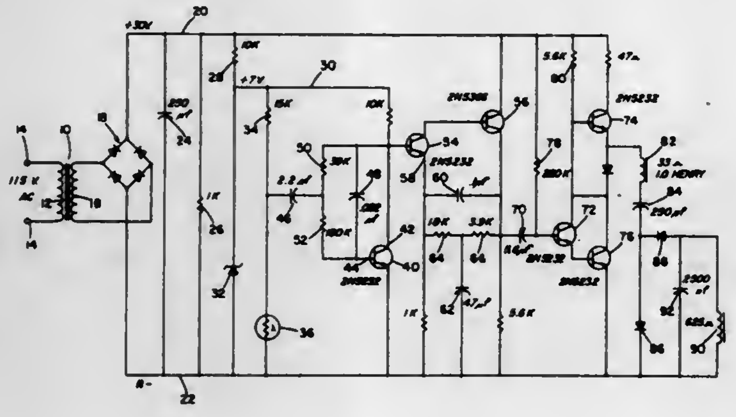
3,651,327
RADIATION SENSITIVE CONDITION RESPONSIVE SYSTEM

Elihu Craig Thomson, Wellesley, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.

Filed Aug. 25, 1970, Ser. No. 66,841

Int. Cl. G08b *21/00*

U.S. Cl. 250—217 F **9 Claims**



A condition responsive system comprises a condition sensor for producing a fluctuating output signal having a predetermined frequency component in response to sensing of the condition to be detected, an output device arranged to assume a first state indicative of the presence of the condition being sensed when the sensor senses the condition and produces the fluctuating output signal and a second state indicative of the absence of the condition when the sensor does not produce the fluctuating output signal, and means responsive to the fluctuating output signal and connected in circuit between the sensor and the output device including an inductor for blocking signals of higher frequency than the frequency of the fluctuating output signal, a capacitor connected in series with the indicator for blocking signals of lower frequency than the frequency of the fluctuating output signal and a fail safe rectification circuit connected in circuit between the series combination of the capacitor and the inductor and the output device.

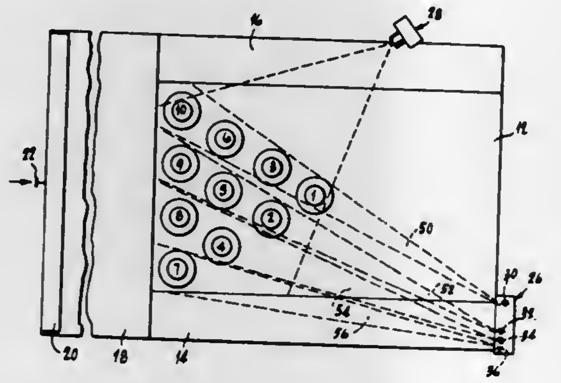
3,651,328
BOWLING PIN DETECTOR

Edgar Hutto, Jr., Cherry Hill, and James P. Mahoney, Mt. Holly, both of N.J., assignors to RCA Corporation

Continuation of application Ser. No. 809,663, Mar. 24, 1969, now abandoned. This application Feb. 11, 1971, Ser. No. 111,606

Int. Cl. G06m *11/00*

U.S. Cl. 250—222 R **5 Claims**



An apparatus is disclosed for noting the number of pins that are standing on a bowling alley and thereby indicating how many pins have been knocked down, the apparatus including alternate lighting of adjacent zones including the pins and an array of light sensitive means to note whether respective pins are standing or are down. To prevent false indications, any indication of a standing pin in an unlighted zone may be blocked.

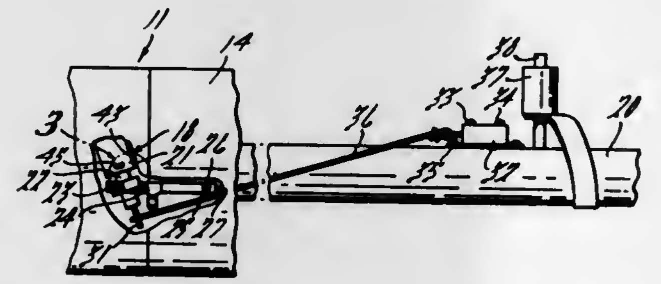
3,651,329
AUTOMOTIVE ANTI-THEFT SYSTEM

Philip Marlowe, 20744 Camden Square, Apt. 104, Southfield, and Joel Greenberg, 18045 Strathmoor, Detroit, both of Mich.

Filed Jan. 20, 1970, Ser. No. 4,316

Int. Cl. H02g *3/00*

U.S. Cl. 307—10 AT **9 Claims**



An anti-theft device for automotive vehicles that precludes operation of the ignition circuit if the ignition switch is tampered with. Two embodiments are disclosed that may be combined in a single system. In one embodiment, a microswitch is placed in the ignition circuit and is connected to the lock by means of a frangible element. If the lock is removed the frangible element breaks and opens the switch thus disabling the circuit. In the second embodiment, an anti-theft lock is provided that operates on the structure that interconnects the lock to the ignition switch and engages upon removal of the lock to preclude operation of the ignition switch.

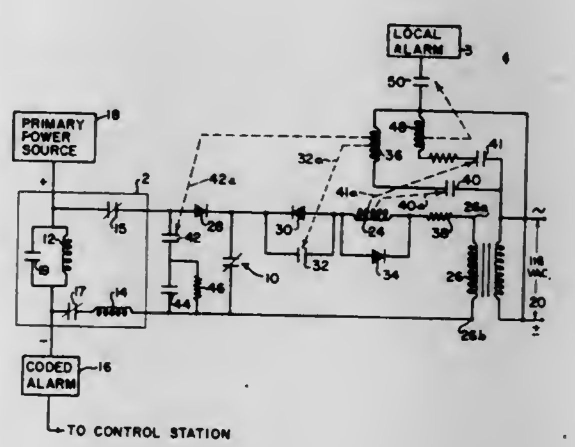
3,651,330
DUAL ALARM AND MASTER BOX CONTROL CIRCUIT

Frederick Vincent Hayes, Medway, Mass., assignor to Gulf & Western Systems Company, New York, N.Y.

Filed Jan. 14, 1971, Ser. No. 106,515

Int. Cl. H02g *9/00*

U.S. Cl. 307—64 **10 Claims**



The circuit uses diodes to direct half-wave alternating current signals through a signaling relay when the remote station is closed, and through the master box tripping mechanism when the remote station is open. This circuit therefore provides positive operation without using resonant circuits, and insures positive operation even when the primary power source is defective. An associated circuit tie-in between a master station tripping mechanism and its independent primary power source and a remote station actuation and its independent power source is provided whereby the circuit is operative from the primary power source when such source is normally available without effecting the secondary power source, but where the secondary power source is introduced into the circuit after a predetermined time delay if the primary power source is unavailable for any reason. The secondary power source is delayed approximately ¼ second using a time delay relay to allow the primary source time to trip the master box when the primary source is available.

3,651,331
CONTROL INSTALLATION FOR A HYDRO-ELECTRIC POWER STATION

Victor Raeber, Vevey, Switzerland, assignor to Ateliers de Constructions Mecaniques de Verey S.A., Vevey, Vaud, Switzerland

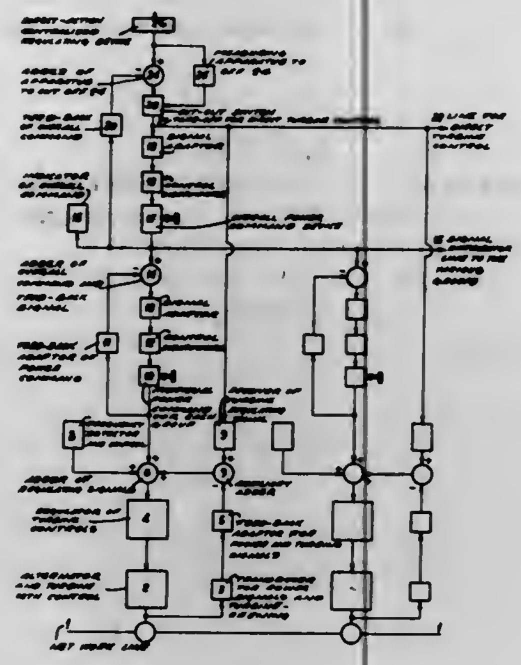
Filed Mar. 2, 1970, Ser. No. 15,622

Claims priority, application Switzerland, Mar. 25, 1969, 4548/69

Int. Cl. H02j *3/46*

U.S. Cl. 307—84 **5 Claims**

A control installation for a hydro-electric power station comprises slow-action integrated means for controlling the power outputs of each of a plurality of turbines to bring them to desired values and for equalizing the desired values, and a direct-action regulator which acts without substantial dephasing on output-adjusting members of the turbines.



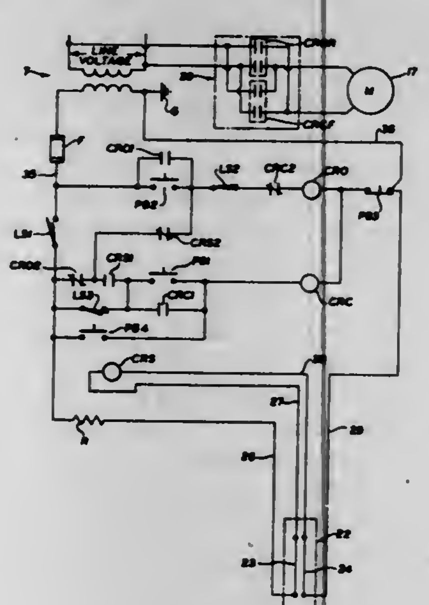
3,651,332
ELECTRICAL CONTROL CIRCUIT FOR A DOOR OPERATOR INCLUDING AN AUTOMATIC CONTROL FUNCTION FOR RETURNING A DOOR WHICH IS CLOSING TO AN OPEN POSITION IF AN OBJECT IS ENCOUNTERED

Paul E. Cochran, Columbus, Ohio, assignor to Kinnear Corporation, Columbus, Ohio

Filed June 23, 1970, Ser. No. 48,989

Int. Cl. H02p *1/00*

U.S. Cl. 307—119 **8 Claims**



An electrical control circuit is provided for a door operator to return a door to an open position should an object be encountered by the door while moving to a closed position. The control circuit includes circuit means and a pair of normally open contacts that are closed by engagement of the closing door with an intervening object with closing of the contacts actuating the circuit means to reverse the direction of movement of the door. The contacts comprise a pair of elongated electrical conductors that are series connected with the operating coil of a relay switch which is connected in the circuit means to cause the direction of movement of the door to reverse, if initially moving to a closed position, should the contacts be caused to engage or if the interconnecting electrical conductors should either be inadvertently broken or grounded, thereby providing a fully fail-safe circuit.

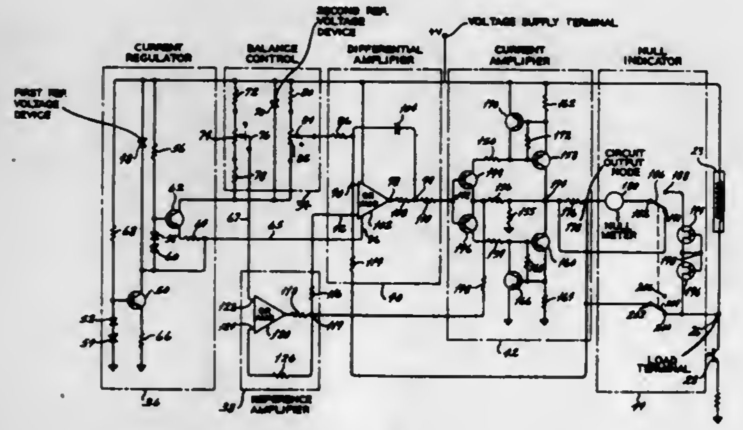
3,651,333
CONTROLLER BY-PASS TRANSFER STATION FOR AN ELECTRON PROCESS CONTROL SERVOSYSTEM

Jack Goldberg, and Louis H. Fricke, Jr., both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 2, 1970, Ser. No. 24,988

Int. Cl. G05f *1/56*

U.S. Cl. 307—130 **12 Claims**



The controller bypass transfer station disclosed herein is operative to be connected electrically in parallel with a main automatic process controller of a process control system. The transfer station includes a differential amplifier and its associated voltage balance control circuitry, and a DC control potential from this voltage balance control circuitry is adjusted so that the difference of potential between the transfer station circuit output node and a voltage supply terminal is made equal to the difference of potential developed across a final control element of the process control system. The transfer station current, which is proportional to this voltage, can therefore be made equal to the same current flowing simultaneously through the final control element and the automatic process controller. Thus, when the transfer station is connected to provide an alternate current path for the final control element, and the automatic process controller is electrically disconnected from the final control element, there is no undesirable interruption in the current flowing in the final control element and a "bumpless" transfer is achieved. The transfer station described herein also includes means for sourcing current to or sinking current from a process control system to also achieve a bumpless transfer when the main controller is reinserted in the system.

3,651,334
TWO-PHASE RATIOLESS LOGIC CIRCUIT WITH DELAYLESS OUTPUT

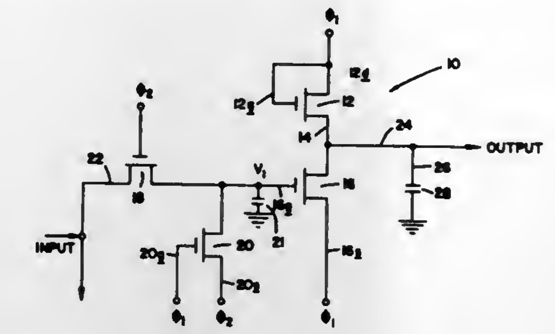
Andrew V. Thompson, and Richard F. Herlein, both of Sunnyvale, Calif., assignors to American Micro-Systems, Inc., Santa Clara, Calif.

Filed Dec. 8, 1969, Ser. No. 883,066

Int. Cl. H03k *17/60*

U.S. Cl. 307—208 **5 Claims**

A logic circuit providing a delayless inversion of a data input signal which employs one clock phase for simultaneously precharging the output node and discharging a storage node that is the gate of a logic transistor and is connected to the data input through a gating transistor. A second clock phase causes the gating transistor to conduct and, depending on the data input signal, the input node either remains discharged or is charged negative, thereby causing the output node to either remain negative or to be discharged through the logic transistor.



3,651,335
ELECTRIC CIRCUIT FOR SEQUENTIALLY OPERATING A PLURALITY OF AC LOADS

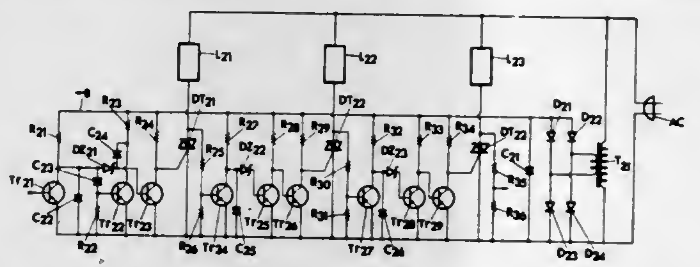
Tetsuji Shimizu, and Makoto Iwakura, both of Nagoya-City, Japan, assignors to Kabushikikaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi Prefecture, Japan

Filed Nov. 13, 1969, Ser. No. 876,261

Claims priority, application Japan, Nov. 13, 1968, 43/98321; 43/103577; Feb. 24, 1969, 44/15471

Int. Cl. H03k *17/00*

U.S. Cl. 307—223 B **10 Claims**



An electric circuit for sequentially operating AC loads wherein a plurality of loads are sequentially energized and deenergized substantially simultaneously after said loads are all energized, which consists of a plurality of stages each comprising at least a transistor; a time constant circuit; a Zener diode; and a controlled rectifier element; the Zener current flowing through said Zener diode to a gate of said controlled rectifier element when the voltage at both terminals of a capacitor of said time constant circuit is raised to exceed the voltage predetermined by a time constant of said circuit whereby said controlled rectifier element is turned on, thereby energizing the load. The simultaneous deenergization of the loads is effected at a predetermined time interval after energization of the load of last stage of circuit, and no mechanical type electric contact is used, resulting in elimination of mechanical trouble, so that the operational effect of said circuit is greatly improve, and the range of its application is increased.

3,651,336
FREQUENCY-DIVIDING CIRCUIT FOR SIGNALS OF SAWTOOTH WAVEFORM

Yasuji Uchiyama, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

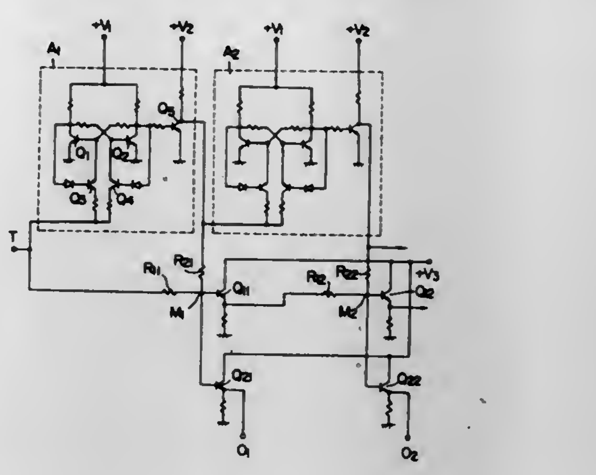
Filed Apr. 23, 1970, Ser. No. 31,152

Claims priority, application Japan, Apr. 30, 1969, 44/33434; 44/33435

Int. Cl. H03k *21/00, 3/12*

U.S. Cl. 307—225 **3 Claims**

A frequency-dividing circuit for producing a sawtooth wave comprises at least one stage of a square wave frequency divider and a mixing circuit. Receiving a sawtooth wave or a square wave of a known frequency as a trigger input signal, the square wave frequency diver produces a square wave of half the frequency. The mixing circuit includes: resistors for mixing a sawtooth wave of the original frequency and the frequency divided square wave by equal peak amplitudes thus producing a sawtooth wave of half the frequency; a transistor amplifier of an emitter follower type for supplying the resultant sawtooth wave to a succeeding state; and a further transistor amplifier of an emitter follower type for supplying the resultant sawtooth wave to an output terminal.



3,651,337
SAW-TOOTH WAVE FREQUENCY DIVIDER CIRCUIT

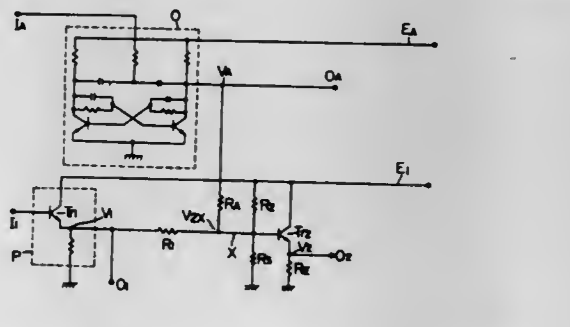
Norio Tomisawa, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed June 2, 1970, Ser. No. 42,705

Claims priority, application Japan, June 10, 1969, 44/45039

Int. Cl. H03k *21/00, 3/12*

U.S. Cl. 307—225 **5 Claims**



In frequency divider circuit for saw-tooth wave including a circuit for producing a saw-tooth wave of a frequency *f*, a circuit for producing a square wave having a frequency *f*/2, mixing resistors, and a buffer circuit for obtaining a desired output saw-tooth wave of frequency *f*/2; the peak amplitude of the square wave is so selected as to be greater than the peak amplitude of the saw-tooth wave of a frequency *f* before mixing, and the ratio of the resistances of the mixing resistors is so selected that the peak amplitudes of the square wave component and the saw-tooth wave component in the mixed resultant wave become equal after mixing, whereby the resultant saw-tooth wave of a frequency *f*/2 has an amplitude at least equal to that of the original saw-tooth wave of frequency *f*.

3,651,338
WAVEFORM GENERATOR

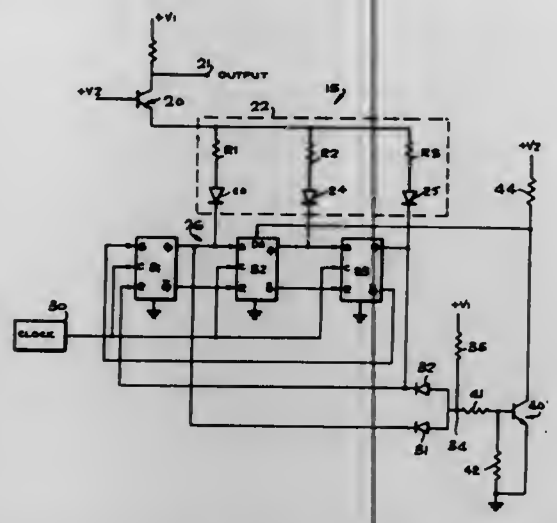
William O. Swan, Jr., Saratoga, and David M. Krupp, Palo Alto, both of Calif., assignors to Anderson Jacobson, Inc., Mountain View, Calif.

Filed Nov. 7, 1969, Ser. No. 874,847

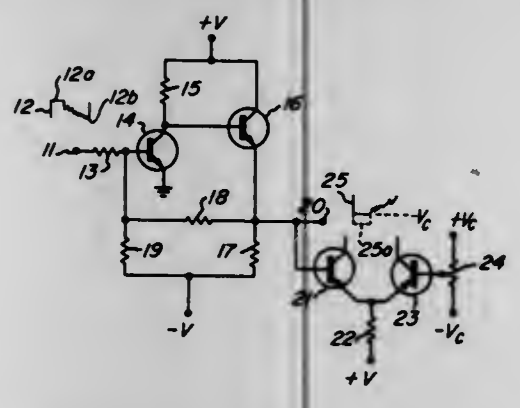
Int. Cl. H03k *7/00*

U.S. Cl. 307—227 **4 Claims**

A generator for generating a waveform containing only a fundamental frequency and all odd harmonics except the third. The generator includes a transistor connected in a common base configuration. The transistor's emitter current is made to be a function of the states of the three stages of a clocked circulating shift register. The current contribution of the middle stage to the emitter's current is twice that of either the first or the last stage. The register is controlled to circulate through a six state sequence. The output waveform consists of a succession of six step sequences where each of two of the transitions of each sequence has an amplitude which is double the amplitudes of the transitions which precede and succeed it in the sequence.



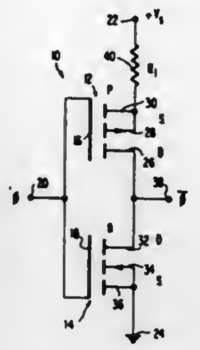
3,651,339
FEEDBACK CLIPPER
Donald Charles Herrmann, Hartsville, Pa., and Lucas John Bazin, Stratford, N.J., assignors to RCA Corporation
Filed Apr. 22, 1970, Ser. No. 30,642
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **5 Claims**



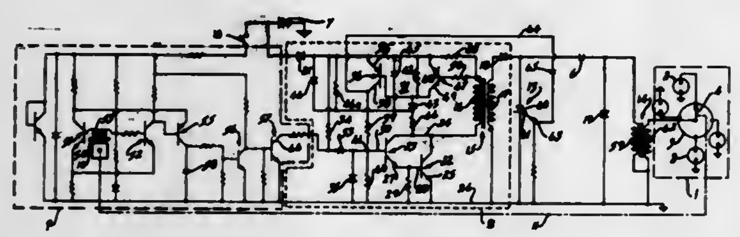
An amplifier including first and second stages and a feedback loop has an output terminal coupled to a temperature compensated clipping circuit. A signal appearing at the amplifier output terminal and approaching a predetermined clipping level causes a diode in the clipping circuit to conduct. The conduction of the diode alters the feedback to the amplifier such that the altered gain of the amplifier compensates for the nonlinear conduction characteristics of the clipping diode whereby the signal is linearly translated until clipping occurs.

3,651,340
CURRENT LIMITING COMPLEMENTARY SYMMETRY MOS INVERTERS
Steven K. Cliff, Lancaster, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.
Filed June 22, 1970, Ser. No. 48,007
Int. Cl. H03k *17/60*
U.S. Cl. 307—251 **5 Claims**

Disclosed is a complementary symmetry MOS inverter having a current limiting resistor or diode. The instantaneous current occurring during switching when both transistors are "on" is limited to reduce the average current drawn by the inverter. This further reduces the already low power drain of the inverter.



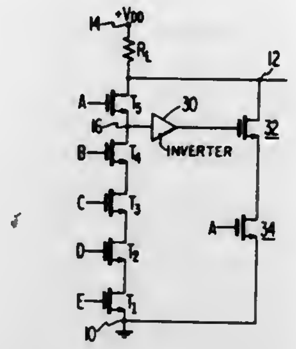
3,651,341
CAPACITOR DISCHARGE PULSE SOURCE
Charles L. Shano, 321 E. Wagon Wheel Drive, Phoenix, Ariz.
Filed May 28, 1970, Ser. No. 41,371
Int. Cl. H03k *17/00*
U.S. Cl. 307—246 **12 Claims**



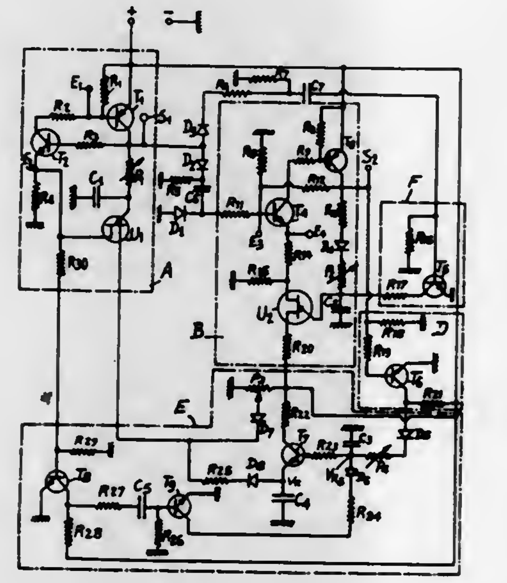
A pair of main charging transistors are connected in a Darlington circuit in series with the primary of a step-up transformer having a saturable nonlinear core to a battery. The secondary of the transformer is connected in series with diodes to charge a capacitor. A holding transistor connects the base of one charging transistor to the battery. A pair of resistors are connected in series with each other and in series with the main charging transistors. The junction of the resistors is connected to the base of the holding transistor. A bypass transistor in parallel with the one resistor permits turnoff of the holding transistor. A current-sensing resistor is connected across the input elements of the bypass transistor and in series with the primary winding and the main charging transistors. A controlled rectifier or other rapid-acting and gated switch means connects the capacitor to the spark plugs of an internal combustion engine. The gate is connected to the output circuit of the holding transistor by means of a simple capacitor couple and fires to discharge the capacitor upon turn-on of the holding transistor.

3,651,342
APPARATUS FOR INCREASING THE SPEED OF SERIES CONNECTED TRANSISTORS
Andrew Gordon Francis Dingwall, Somerset, N.J., assignor to RCA Corporation
Filed Mar. 15, 1971, Ser. No. 124,208
Int. Cl. H03k *17/60*
U.S. Cl. 307—251 **11 Claims**

Two paths connected in parallel between an output terminal and a point of reference potential. One path is comprised of N field-effect transistors having their conduction paths connected in series and the second path is comprised of two transistors having their conduction paths connected in series, where $N > 2$. One transistor in the second path is turned on concurrently with the transistor in the first path connected to the output terminal and the other transistor in the second path is turned on in response to the turning on of all of the remaining N−1 transistors in the first path. The transistors in the second path speed up the production of an output signal.

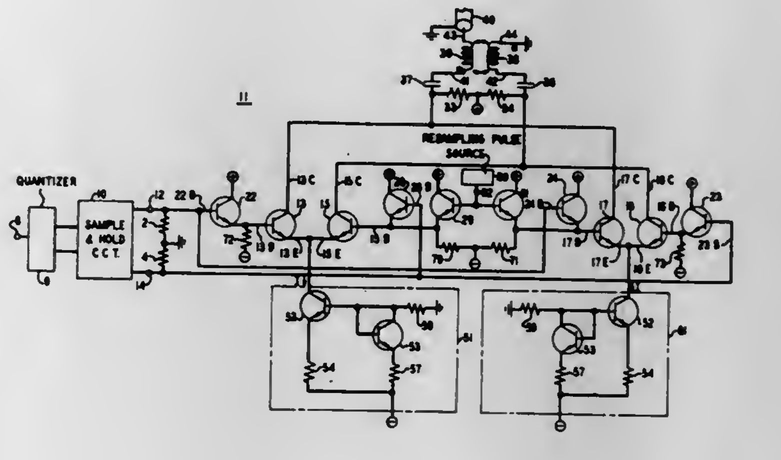


3,651,343
METHOD OF REGULATION OF THE DURATION OF REPEATED RECTANGULAR ELECTRIC SIGNAL AND DEVICES FOR THE PRACTICAL APPLICATION OF THE SAME METHOD
Louis A. Monpetit, Etang-la-Ville, France, assignor to Societe des Procedes Modernes d'Injection Sopromi, Les Mureaux, France
Filed Sept. 20, 1968, Ser. No. 761,117
Claims priority, application France, Sept. 25, 1967, 722241
Int. Cl. H03k *5/04*
U.S. Cl. 307—265 **9 Claims**



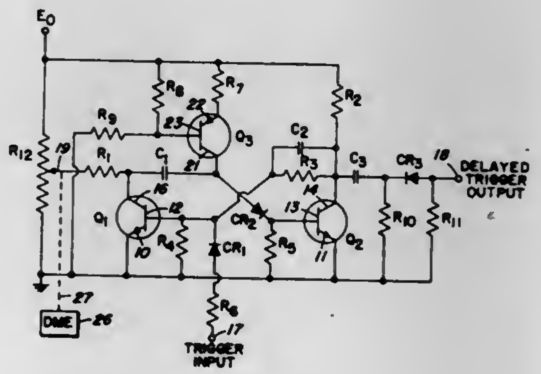
Method and apparatus are disclosed for varying the width of a rectangular pulse which controls the opening of an electromagnetic fuel injector, in accordance with engine speed. Reference pulses of short duration are generated in synchronism with engine rotation and these pulses are utilized to generate injection pulses, and control pulses. The termination of the control pulse, which is of predetermined width, is utilized to generate a linearly increasing reference voltage which reaches a predetermined voltage level, depending on the spacing between the preceding reference pulse and the following reference pulse. The voltage level reached by the reference voltage is utilized to cut off the injection pulse. The width of the injection pulse, and in consequence the quantity of fuel injected, is thus directly controlled by engine speed, i.e., by the spacing of the reference pulses.

3,651,344
BALANCED RESAMPLER
Thomas Edward O'Shea, Laurence Harbor, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 7, 1970, Ser. No. 61,935
Int. Cl. H03k *17/00*; 330 *30 D*
U.S. Cl. 307—270 **4 Claims**



A circuit comprising two differential amplifiers which are driven by the complementary output of a flip-flop circuit is used to generate a balanced polar binary variable duty cycle signal. Each input to the circuit has emitter-follower transistors for low impedance coupling to enhance switching speed of the differential amplifiers. A resampling signal acts to gate the differential amplifiers simultaneously. A polar binary output signal is obtained from a balun transformer which combines the two outputs that are derived from the two differential amplifiers that operate in such a manner that similar contributions of the feed-through characteristics of the circuit are present in each output.

3,651,345
VOLTAGE VARIABLE PULSE DELAY MONOSTABLE MULTIVIBRATOR
Michael W. Lundgreen, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa
Filed May 25, 1967, Ser. No. 641,213
Int. Cl. H03k *3/10*
U.S. Cl. 307—273 **3 Claims**

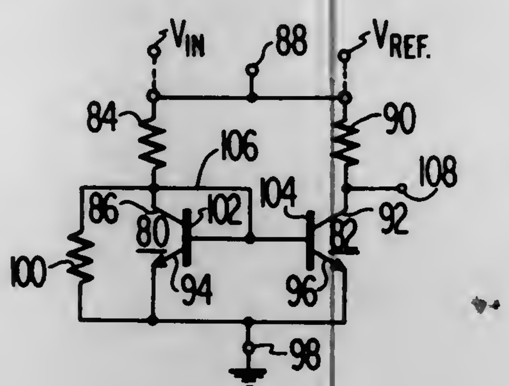


A monostable vibrator connected in a circuit, with a constant current source producing an output which is delayed from an input pulse in time depending upon a control voltage. Variation in the control voltage linearally adjusts the time spacing between the input and output pulses.

3,651,346
ELECTRICAL CIRCUIT PROVIDING MULTIPLE V BIAS VOLTAGES

Allen LeRoy Limberg, Somerville, N.J., assignor to RCA Corporation

Filed Sept. 24, 1970, Ser. No. 75,015
Int. Cl. H03k *1/00*
U.S. Cl. 307—296 **9 Claims**

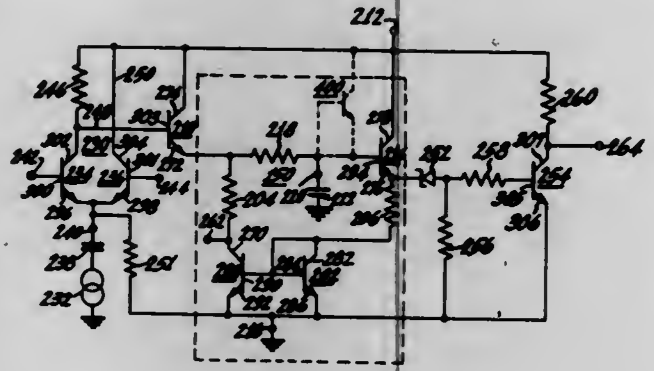


An electrical circuit includes a transistor having base and emitter electrodes coupled in parallel with a PN-junction poled in the same direction as the base-emitter junction of the transistor. A first resistor couples the collector electrode of the transistor to a direct voltage source, while second and third resistors serially couple the source to the transistor's emitter electrode. The base electrode of the transistor is coupled to the junction of the second and third resistors, the resistance values of which are selected to provide a predetermined resistance ratio there-between. With the PN-junction then coupled across the third resistor, the resistance value of the first and second resistors are further selected substantially equal to provide a direct voltage output at the collector electrode of the transistor which is primarily dependent on the predetermined resistance ratio between the second and third resistors and independent of the value of the direct voltage source.

3,651,347
SIGNAL TRANSLATING STAGE PROVIDING DIRECT VOLTAGE TRANSLATION INDEPENDENT OF SUPPLIED OPERATING POTENTIAL

Allen LeRoy Limberg, Somerville, N.J., assignor to RCA Corporation

Filed Sept. 28, 1970, Ser. No. 76,031
Int. Cl. H03k *1/12*
U.S. Cl. 307—297 **8 Claims**

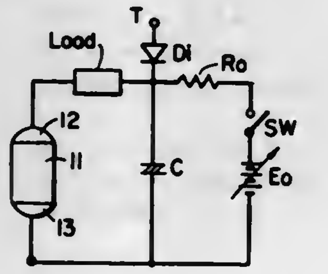


A signal translating stage includes a transistor having base and emitter electrodes coupled in parallel with a PN-junction poled in the same direction as the base-emitter junction of the transistor. A first resistor couples the collector electrode of the transistor to a terminal supplying input signals referenced to a first direct current level, while a second resistor couples the base electrode of the transistor to the emitter electrode of a further transistor, the base electrode of which is coupled via a third resistor to the signal supply terminal. By selecting the resistance values of the first and second resistors to be substantially equal and by providing a signal bypass within the network so formed by these interconnections, an output signal will be developed at the collector electrode of the first mentioned transistor referenced to a second direct current level. Such second level is primarily dependent on the number of base-to-emitter offset voltages between the second and third resistors and independent of the value of the first direct current level.

3,651,348
SEMICONDUCTOR LOGIC DEVICE EMPLOYING THE GUNN EFFECT ELEMENT

Yasuo Matsukura; Toshio Wada, and Kuniichi Ohta, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Oct. 3, 1969, Ser. No. 863,566
Claims priority, application Japan, Oct. 7, 1968, 43/73365
Int. Cl. H03k *19/08*
U.S. Cl. 307—299 **5 Claims**

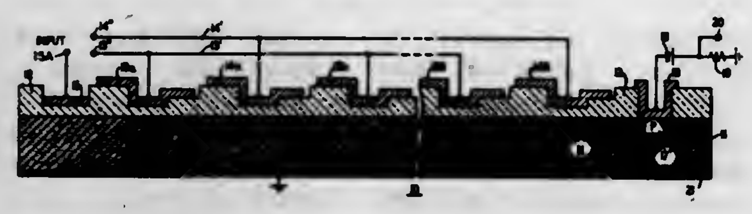


A logic device comprises a Gunn effect element having a capacitive element connected across its electrodes. The Gunn effect element is normally biased below the threshold value, and an input pulse is applied to raise the internal field of the Gunn effect element above the threshold value. The resultant charging of the capacitive element causes the Gunn effect element to be maintained in a state of oscillation.

3,651,349
MONOLITHIC SEMICONDUCTOR APPARATUS ADAPTED FOR SEQUENTIAL CHARGE TRANSFER

Dawon Kahng, Bridgewater Township, Somerset County, and Edward Haig Nicollian, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 16, 1970, Ser. No. 11,448
Int. Cl. H01l *11/14*
U.S. Cl. 307—304 **16 Claims**

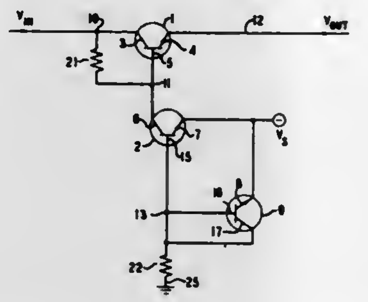


In monolithic semiconductor devices of the type wherein storage and manipulation of electronic signals representing information are accomplished by the storage and sequential transfer of packets of excess minority carriers localized in artificially induced potential wells, predictable directionality of charge-packet transfer requires that the potential well be asymmetrical, at least during the transfer operation. The instant invention includes the use of overlapping gate electrodes and/or nonuniform dielectric thicknesses under the gate electrodes of MIS structures so that an appropriately asymmetrical potential well always is formed whenever a voltage is applied to any gate electrode.

3,651,350
TEMPERATURE-COMPENSATED VOLTAGE SHIFTER

Veikko Reynold Saari, Matawan Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 17, 1970, Ser. No. 64,323
Int. Cl. H03k *1/04, 1/12*
U.S. Cl. 307—310 **6 Claims**

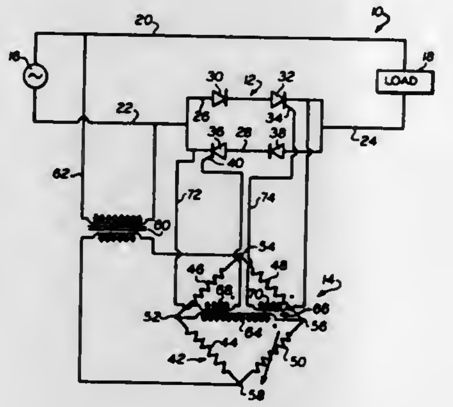


A voltage level shifter produces a shift in voltage level that is substantially independent of temperature variations. The voltage shift is made up of the V_{BE} of a pass transistor and the voltage drop across a resistor connected between the collector and base of the pass transistor. The voltage drop across the collector-to-base resistor is maintained by a transistor current source whose output is dependent on the V_{BE} of its transistors. The two transistors of the current source are chosen to have the same V_{BE} temperature coefficient as the pass transistor, thereby substantially canceling the effects of temperature on the circuit except such as are introduced through the supply voltage.

3,651,351
RAPIDLY ACTING CONDITION RESPONSIVE SWITCH

Frederic R. Quinn, Red Hook, N.Y., assignor to Zyrotron Industries, Inc., South Hackensack, N.J.

Continuation-in-part of application Ser. No. 584,602, Oct. 5, 1966, now abandoned. This application Dec. 24, 1969, Ser. No. 888,084
Int. Cl. H03k *17/00*
U.S. Cl. 307—310 **3 Claims**

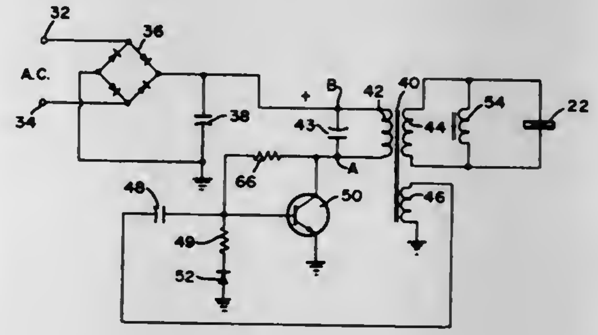


A rapidly acting condition responsive switch for selectively connecting an input circuit with an output circuit which includes a pair of silicon controlled rectifiers connected in inverse parallel relationship between the input and output circuits wherein respective diodes are connected in series with each of the silicon controlled rectifiers to prevent leakage currents from flowing therethrough. Control means is provided to produce gate signals to render the rectifiers conductive. Lead means is adapted to connect an energizing source to the control means. A thermal sensing device which is operable to rapidly change from a high impedance state to a low impedance state at a preselected temperature is provided and is connected with the energizing source and the control means. A heater is in heat exchanging relationship with the thermal sensing device and is responsive to a predetermined condition to heat the thermal sensing device to the preselected temperature whereby the impedance of the thermal sensing device drops rapidly to the low impedance state to provide for the flow of current through the control means.

3,651,352
OSCILLATORY CIRCUIT FOR ULTRASONIC CLEANING APPARATUS

William L. Puskas, Trumbull, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Filed Dec. 10, 1970, Ser. No. 96,771
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.1 **15 Claims**



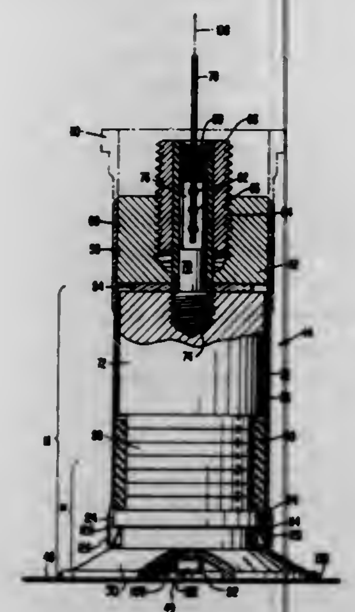
A high-efficient oscillatory circuit drives a piezoelectric crystal (transducer) which is coupled to an ultrasonic cleaning tank. The circuit includes a transistor switching means in the driver side of the oscillator. The primary winding of the transformer is coupled in parallel with a capacitor and forms a circuit having a resonant frequency which is a multiple even integer of the resonant frequency of the crystal which is coupled to the transformer secondary winding.

3,651,353
PIEZOELECTRIC PRESSURE TRANSDUCER WITH ACCELERATION COMPENSATION

Hans W. Hugli, Buffalo, and Vernon H. Siegel, Clarence, both of N.Y., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Oct. 13, 1969, Ser. No. 865,651
Int. Cl. H04r *17/00*
U.S. Cl. 310—8.4 **2 Claims**

Disclosed is a microphone in the form of a piezoelectric pressure transducer for detecting high intensity noise. The microphone incorporates a lightweight endpiece, preferably of beryllium metal, having a cavity for receiving an acceleration compensation weight. A preloading sleeve is attached at one end to a support while its other end is slipped over a portion of the endpiece and secured by a retaining ring. The microphone is provided with a separate compartment for



housing an electric circuit receiving the output from the preloaded quartz crystals of the transducer.

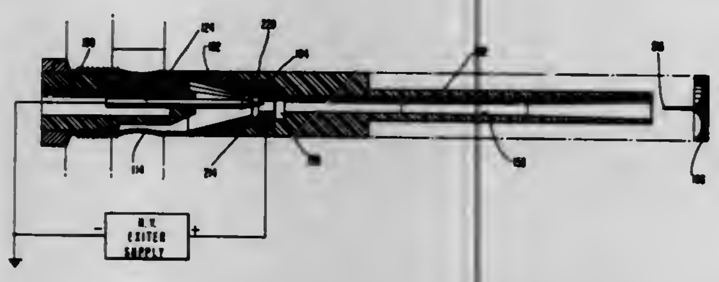
3,651,354
ELECTROGASDYNAMIC POWER GENERATION

Philip L. Cowan, 112 Galloping Hill Road, Basking Ridge, N.J.

Continuation-in-part of application Ser. No. 788,149, Dec. 31, 1968, now abandoned. This application Dec. 19, 1969, Ser. No. 886,487

Int. Cl. H02n *3/00*

U.S. Cl. 310—10 **25 Claims**



Improved constructions for electrogasdynamic power generators wherein localized disruptive disturbance of the streamlined flow path of vapor containing gas therethrough is effected by selectively located sharp edged surface discontinuities in the flow defining channels thereof.

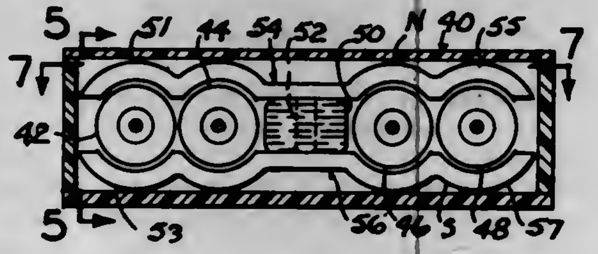
3,651,355
MULTI-ARMATURE MOTORS

Elmer B. Mason, 901 Vickie Drive, Oklahoma City, Okla.

Filed May 8, 1970, Ser. No. 35,685

Int. Cl. H02k *17/02*

U.S. Cl. 310—112 **3 Claims**



A direct current motor having at least two armatures arranged in parallel between parallel magnetic circuits established through the armatures independently exciting the armatures.

In one embodiment a pair of iron core coils, positioned on respective opposing sides of a pair of armatures, provides the magnetic circuit.

In another embodiment an iron core coil, interposed between two or more parallel armatures, forms the magnetic circuit. This common source of magnetic excitation forms parallel magnetic circuits wherein the motor has a dual operating characteristic in that the speed of one armature varies inversely with the speed of the other armature and vice versa until the higher speed armature reaches its critical rpm permitting the load to be increased without further change in the speed of either armature.

3,651,356
WAVE WINDING FOR DYNAMO ELECTRIC MACHINE

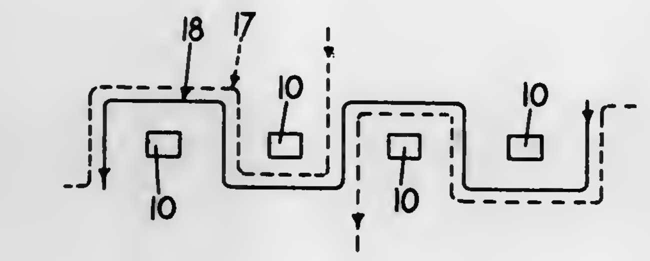
Alec Harry Seilly, North Wembley, England, assignor to C.A.V. Limited, Birmingham, England

Filed June 12, 1970, Ser. No. 45,885

Claims priority, application Great Britain, June, 1969, 30,116/69

Int. Cl. H01v *3/28*

U.S. Cl. 310—180 **1 Claim**



A dynamo electric machine having four pole pieces and windings through which electric current can be passed to polarize the pole pieces, the winding being formed by physically deforming a pair of coils having equal length, the deformation of the coils producing four substantially straight coil portions which are disposed between adjacent pole pieces respectively. The end connectors for each coil are spaced by 180°.

3,651,357
DYNAMO-ELECTRIC MACHINES

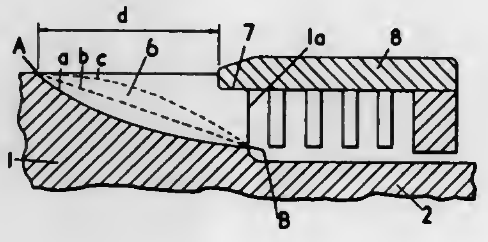
Philip Richardson, Newcastle-upon-Tyne, England, assignor to Reyrolle Parsons Limited, Hebburn, County Durham, England

Filed Aug. 5, 1970, Ser. No. 61,371

Claims priority, application Great Britain, Aug. 5, 1969, 39057

Int. Cl. H02k *1/12*

U.S. Cl. 310—256 **10 Claims**



A rotary dynamo-electric machine comprising a field winding and an armature winding one of which windings is carried by a rotor of the machine so that the magnetic flux due to the field winding moves relative to the electrical conductors in the armature winding when the rotor rotates, both the field and armature windings being associated with cores of magnetic material through which the magnetic flux circuit of the machine passes, in which machine the cross-sectional area of the magnetic core associated with the field winding is progressively reduced, at least in the regions of the magnetic poly centers, at the axially opposed ends of the core so as to progressively increase the reluctance of the magnetic flux circuit towards the axially opposed ends of the cores.

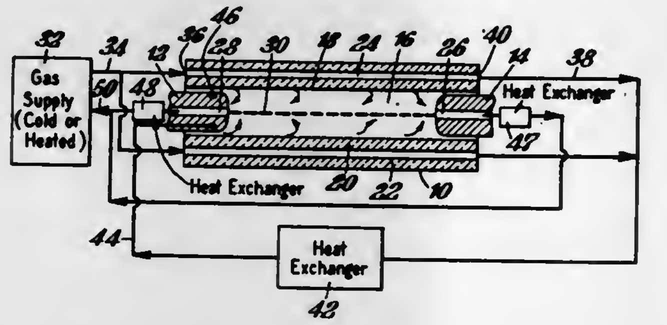
3,651,358
METHOD AND APPARATUS FOR EXTENDING THE USEFUL LIFE OF AN ARC RADIATION SOURCE

Harden Henry Troue, Indianapolis, Ind., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 4, 1970, Ser. No. 34,381

Int. Cl. H01j *1/02*

U.S. Cl. 313—12 **5 Claims**



An arc radiation source having a pair of concentric envelopes, the inner envelope of which defines the arc chamber, and including a cooling system comprising means for passing a gas coolant between the envelopes, and means for thereafter passing the gas into the arc chamber in a direction coaxial with the gas flow between the envelopes, the gas being continuously recirculated in a closed loop.

3,651,359
ABBERATION CORRECTION OF PLURALITY OF BEAMS IN COLOR CATHODE RAY TUBE

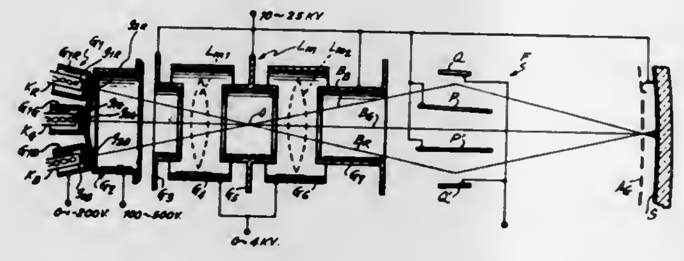
Senri Miyaoka, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed June 2, 1969, Ser. No. 829,421

Claims priority, application Japan, Apr. 23, 1969, 44/31398; Apr. 26, 1969, 44/32546

Int. Cl. H01j *29/50, 31/20*

U.S. Cl. 313—70 C **6 Claims**



In a cathode ray tube of the single-gun, plural-beam type in which the plurality of beams are made to intersect each other at a location in the tube between the beam producing means and the screen, a focusing lens for focusing all of the beams on the screen is made up of a plurality of lens components arranged in axial succession and defining an optical center of the focusing lens disposed within the latter, and such focusing lens is positioned so that the optical center thereof is substantially at the location where the beams intersect. The lens components of the focusing lens may be symmetrical or asymmetrical with respect to the optical center, and in the latter case may be effective to compensate for any optical aberrations imparted to certain of the beams when the latter are converged to intersect by means of an auxiliary lens.

3,651,360
TRIODE ELECTRON GUN WITH POSITIVE GRID AND MODULAR CATHODE

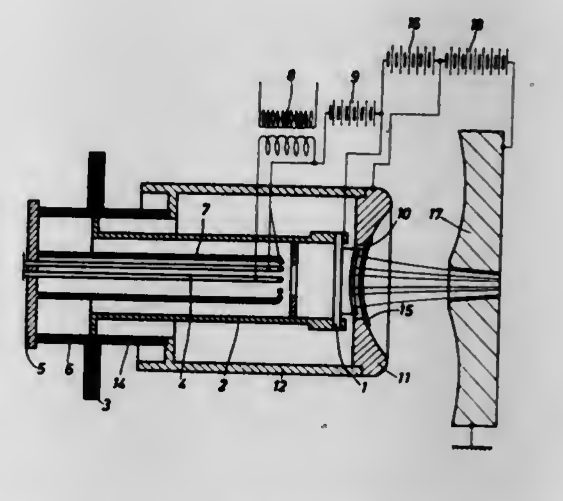
Jean Sommeria, Annecy, France, assignor to Societe Anonyme Alcatel-Heurtey, Paris, France

Filed Apr. 23, 1969, Ser. No. 818,735

Claims priority, application France, Apr. 26, 1968, 149764

Int. Cl. H01j *29/02, 29/46*

U.S. Cl. 313—82 R **1 Claim**



An electron gun in which the space for electron extraction is physically separated from the space for electron acceleration. A non-emissive screen grid is located on the cathode and a second grid is located in the electron shadow of the screen grid. An anode is located beyond the second grid for accelerating the beam.

3,651,361
CATHODE RAY TUBE CHARACTER MASK WITH PLURALITY OF PERFORATIONS FOR EACH CHARACTER

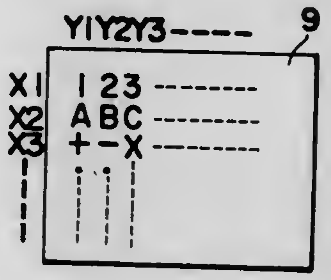
Shigeaki Tanaka; Yoshimasa Tamanaka, and Tadashi Nakamura, all of Ise, Japan, assignors to Ise Electronics Corporation

Filed Oct. 8, 1969, Ser. No. 864,797

Claims priority, application Japan, Nov. 19, 1968, 43/84152

Int. Cl. H01j *29/06, 29/46*

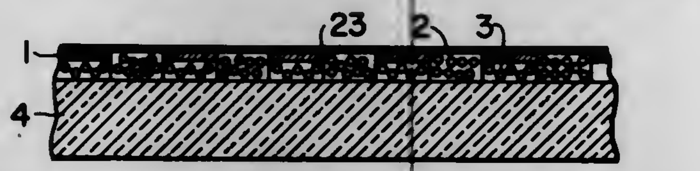
U.S. Cl. 313—86 KM **5 Claims**



A cathode ray tube for displaying characters and the like is provided with a character forming means comprising a character substrate provided with a plurality of character pattern perforations arranged in the form of characters, a plurality of parallel X-axis electrode elements each having a plurality of perforations and a plurality of parallel Y-axis electrode elements each having a plurality of perforations and these X- and Y-axis electrode elements are arranged in a matrix so that a desired character pattern region is determined by selecting the matrix coordinates of the electrode elements to shape the electron beam passing through the region by the character perforations of the character substrate.

3,651,362
SCREENS FOR CATHODE RAY TUBES WITH DISCRETE PHOSPHOR LAYERS

Hajime Takita, Tokyo, Japan, assignor to Iwatsu Electric Company, Limited, Tokyo, Japan
Filed July 22, 1969, Ser. No. 843,408
Claims priority, application Japan, July 23, 1968, 43/52030; 43/52031; 43/52032
Int. Cl. H01j *29/32, 31/68*
U.S. Cl. 313—92 R **6 Claims**



A screen for use in a cathode ray tube comprises two discrete phosphors of the same or different type applied on the face plate, one of the phosphors being exposed to the vacuum in the cathode ray tube whereas the other covered by an electroconductive layer. When irradiated with electron beams of different speeds the screen displays different colors. When the exposed phosphor is constructed to have high resistance the screen can act as a storage screen. A metal back layer may be provided to cover both exposed phosphor and the electroconductive layer.

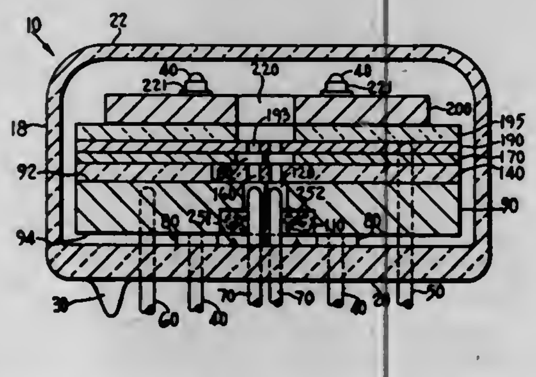
3,651,363
DIVALENT EUROPIUM-ACTIVATED BARIUM-MAGNESIUM PYROSILICATE

Thomas L. Barry, Beverly, Mass., assignor to Sylvania Electric Products Inc.
Filed Dec. 23, 1968, Ser. No. 785,981
Int. Cl. C09k *1/54;* **H01j** *1/63*
U.S. Cl. 313—109 **8 Claims**

Divalent europium-activated $BaMg_2Si_2O_7$ phosphors are useful in fluorescent lamps. The phosphors have spectral energy distribution curves which peak at 400 nanometers and which have a very narrow emission band.

3,651,364
MULTIPLE CATHODE DISPLAY TUBE

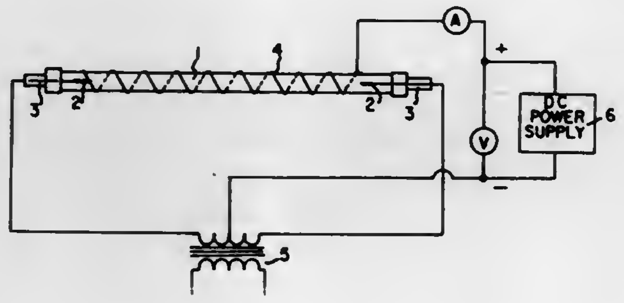
Thomas C. Maloney, Bernardsville, N.J., assignor to Burroughs Corporation, Detroit, Mich.
Continuation-in-part of application Ser. No. 618,138, Feb. 23, 1967, now abandoned. This application Mar. 4, 1969, Ser. No. 806,020
Int. Cl. H01j *61/04, 61/10, 61/64*
U.S. Cl. 313—109.5 **12 Claims**



The drawing discloses a tube which includes a large number of cathode rods arrayed in rows and enclosed in cavities in a stack of plates including, from bottom to top, a metal focusing plate for controlling the location of glow on the cathode rods, an opaque insulating disk, an opaque disk shaped to trap cathode sputtering and to prevent the spread of cathode glow from one cathode aperture to an adjacent aperture, and an anode plate.

3,651,365
XENON SLASH LAMP WITH SODIUM STARTING BAND AND METHOD OF MAKING SAME

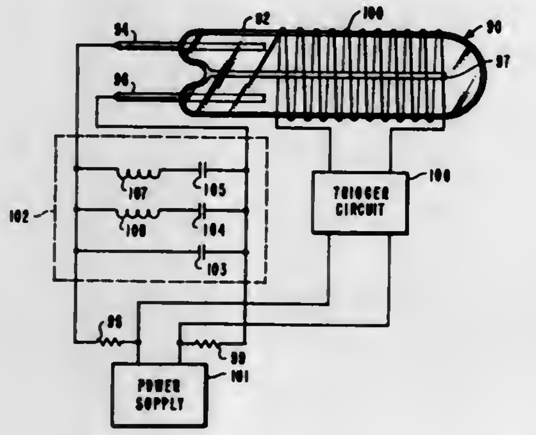
John F. Waymouth, Marblehead, Mass., assignor to Sylvania Electric Products Inc.
Filed Oct. 9, 1968, Ser. No. 766,162
Int. Cl. H01j *61/35, 61/54*
U.S. Cl. 313—198 **5 Claims**



A band of sodium metal is electrolyzed onto the inner surface of a xenon flash lamp glass envelope. The sodium band reduces the ignition voltage required to flash the lamp throughout its useful life.

3,651,366
FLASH TUBE APPARATUS

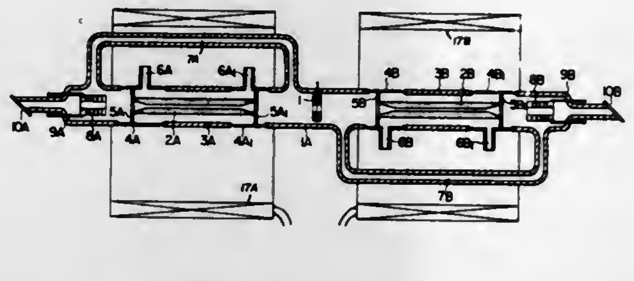
Gabriel M. Giannini, Indio, Calif., assignor to Giannini Institute
Filed May 28, 1969, Ser. No. 828,526
Int. Cl. H01j *17/04;* **H05b** *37/00*
U.S. Cl. 313—204 **4 Claims**



A system is provided for producing repeatable, short-duration pulses of infrared radiation suitable for optical purposes. Radiation is produced by electrically parallel arcs, which are induced within a flash tube containing an inert gas at low pressure and are guided into paths in the form of nonplanar loops whose branches are adjacent one another. The flash tube, which is of a volume sufficient to maintain relatively low gas density during arc discharge, is shaped to accommodate the arc paths and to provide a compact optical source for the radiation.

3,651,367
ELECTRICAL DISCHARGE TUBE

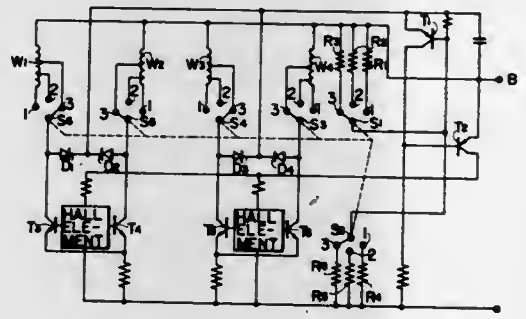
Manabu Yamamoto, Odawara-shi; Shunsuke Tomiyama, and Susumu Saito, both of Tokyo-to, all of Japan, assignors to Kabushiki Kaisha Hitachi Seisakusho, Tokyo-to, Japan
Filed June 16, 1969, Ser. No. 833,345
Claims priority, application Japan, June 21, 1968, 43/43288
Int. Cl. H01j *17/22*
U.S. Cl. 313—204 **7 Claims**



A plurality of capillary discharge tubes are interconnected in serial alignment with orientations such that the mutually nearest electrodes of adjacent discharge tubes are of the same polarity to form a single long discharge tube to thereby eliminate cataphoresis or electrophoresis of the discharge gas occurring within this tube during gaseous discharging operation thereof.

3,651,368
HALL MOTOR INCLUDING MEANS FOR SELECTIVELY VARYING THE EFFECTIVE NUMBER OF TURNS OF THE EXCITING WINDINGS

Toshihide Hanada, Yokohama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed June 24, 1970, Ser. No. 49,479
Claims priority, application Japan, June 24, 1969, 44/49319
Int. Cl. H02k *29/00*
U.S. Cl. 318—254 **4 Claims**

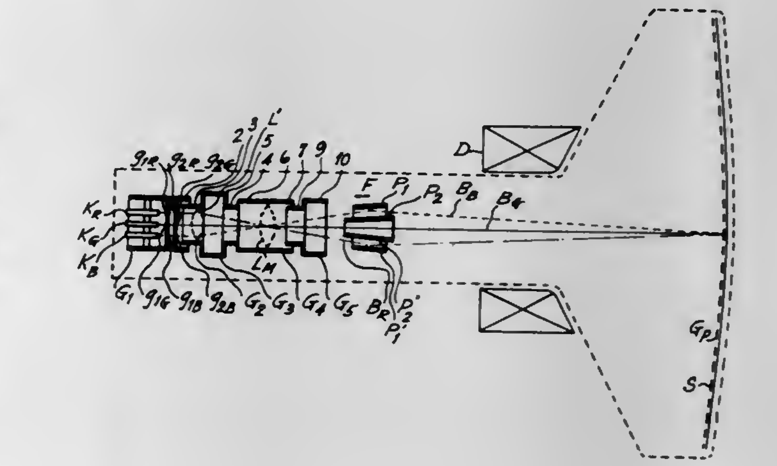


A Hall motor utilizing Hall elements in place of the conventional commutators provides for speed variation with the motor efficiency unchanged. The motor comprises a control circuit having speed control switches and resistors. Speed control switches selectively switch the resistors into the control circuit which includes a transistor the base of which is controlled by the potential across the resistors. The motor further comprises driving transistors connected with exciting windings of the motor having intermediate taps. Switches are provided for selectively coupling the intermediate taps of the exciting windings to the driving transistors. Hall elements with their voltage terminals connected in the base circuits of the driving transistors are provided for varying the bias to the base circuits of the driving transistors. The speed control switches and the switches for selectively connecting the intermediate taps to the driving transistors are coupled in an interlocked relationship.

In a modified form of the invention, the Hall motor includes double-pole double-throw switches for changing the flow direction of the exciting current passing through the exciting windings thus providing bidirectional operation as well as variable speed control.

3,651,369
CATHODE RAY TUBE

Masahide Sawai, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 24, 1969, Ser. No. 869,025
Claims priority, application Japan, Nov. 13, 1968, 43/83143
Int. Cl. H01j *29/50*
U.S. Cl. 315—13 **9 Claims**

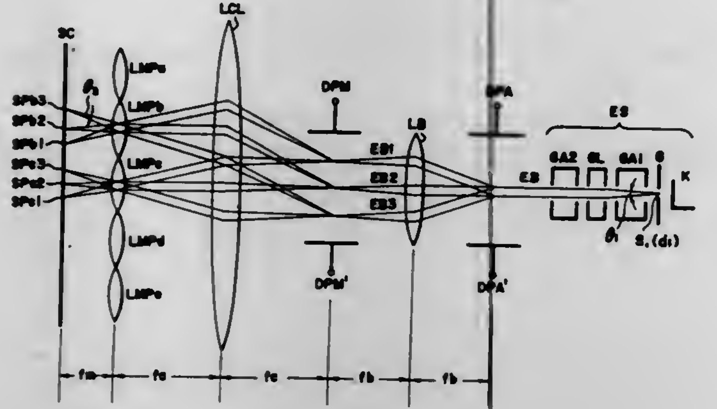


In a cathode ray tube comprising beam producing means to direct a plurality of electron beams from spaced apart locations to impinge on an electron receiving screen, the beams are focused on the screen by a main focusing lens which is common to all of the beams and has an optical center, and an auxiliary lens disposed between the beam producing means and the main focusing lens and having all of the beams passing therethrough with at least two of the beams being at different distances from the optical axis of the auxiliary lens, such auxiliary lens is operative to cause the beams to intersect at the optical center of the main focusing lens and has pre-focusing effects on the beams which are different at least with respect to the said two beams, and an additional focusing lens means is disposed between the main focusing lens and the screen and acts on less than all of the beams to correct for the different pre-focusing effects and thereby cause all of the beams to be focused precisely at the screen.

3,651,370
CHARGED-PARTICLE-BEAM FOCUSING AND DEFLECTING SYSTEM UTILIZING A PLURALITY OF ELECTRONIC LENSES FOR FOCUSING THE BEAM

Eiichi Goto, Fujisawa-shi, Japan, assignor to Rikagaku Kenkyusho Hirowasa, Yamato-machi, Kitaadachi-gun, Saitama-ken, Japan
Filed July 18, 1969, Ser. No. 843,128
Claims priority, application Japan, June 12, 1969, 44/46258; July 19, 1968, 43/51061
Int. Cl. H01j *29/70*
U.S. Cl. 315—18 **8 Claims**

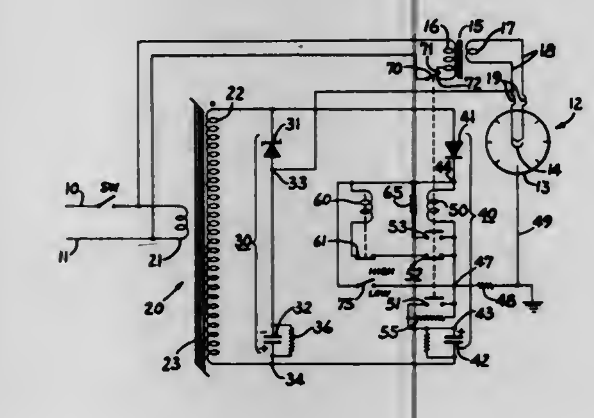
This invention relates to a system for focusing and deflecting a beam of charged particles comprising a charged particle gun, means for generating a beam of charged particles and electromagnetically deflecting the emitting direction of the beam and a surface or screen to be illuminated with said beam, characterized by the fact that at least two sets of means for deflecting the charged beam are provided between said beam generating means and said screen, so that the position and direction of incidence of said beam upon said lens or group of lenses can be controlled independently of each other to focus said beam on a desired minute region on said screen. This novel system makes it possible to reduce the size of the focal spot of the beam on the screen and improve the deflection accuracy of such beam.



3,651,371
POWER SUPPLY FOR MAGNETRON IN MICROWAVE OVEN OR THE LIKE

Egbert M. Tingley, Kankakee, Ill., assignor to Roper Corporation, Kankakee, Ill.

Filed Sept. 3, 1970, Ser. No. 69,346
Int. Cl. H03b *9/10;* H05b *9/06*
U.S. Cl. 315—102 **12 Claims**

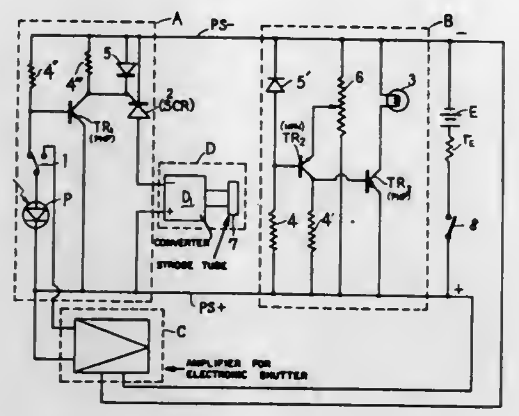


A power supply for a permanent magnet type magnetron tube in which a high impedance transformer furnishes power to two half-wave, oppositely poled voltage doubler circuits in which a time delay is provided, responsive to the load current of the magnetron, to delay the turning on of one of the half-wave voltage doubler circuits to insure operation in the desired oscillating mode. Switching of the second half-wave voltage doubler into the circuit is accomplished by normally open contacts on a main relay, preferably shunted by high value resistor. In the preferred modification additional time delay is achieved by employing an auxiliary time delay relay to inhibit operation of the main relay, thereby to establish successive low power and high power modes. The filament of the magnetron is preferably fed by a separate filament transformer turned on at the same time as the high impedance transformer, but which includes means for lowering the filament voltage incident to switching to the high power mode.

3,651,372
WARNING INDICATOR APPARATUS FOR USE IN A CAMERA HAVING A FLASH DISCHARGE DEVICE CONTAINED THEREIN

Yasuo Uchida, and Hideo Akimoto, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd.

Filed Aug. 6, 1970, Ser. No. 61,673
Claims priority, application Japan, Aug. 9, 1969, 44/62752
Int. Cl. G03b *15/05;* H05b *41/30*
U.S. Cl. 315—134 **3 Claims**

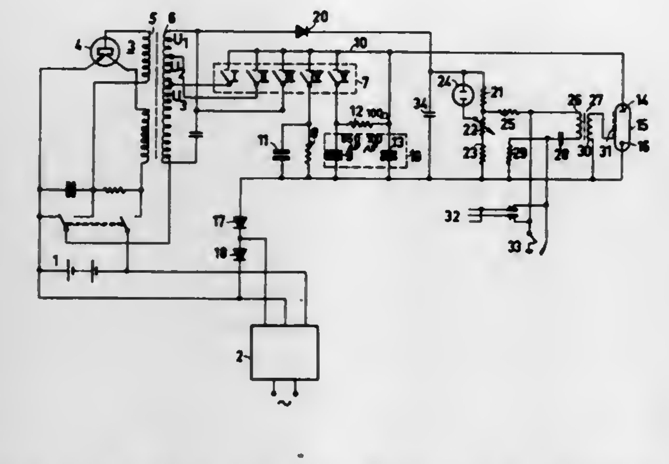


A warning indicator apparatus for use in an automatic exposure camera having a flash discharge device, a warning lamp and strobe flash equipment which strobe flash equipment containing a capacitor for flashing the strobe. In one embodiment the warning indicator apparatus comprises a single warning lamp lighted by means of semiconductor devices during the charging of the capacitor. In an alternative embodiment, the lamp is normally energized by a power source. Alternate shunting circuits are provided, one turning off the lamp when the photographic subject has a brightness higher than a predetermined reference value and the other turning the lamp off when the capacitor has been completely charged.

3,651,373
ELECTRONIC FLASH UNIT WITH ADJUSTABLE FLASH ENERGY

Joachim Ratsch, Berlin, Germany, assignor to Loewe Opta GmbH, Berlin, Germany

Filed May 2, 1969, Ser. No. 826,302
Claims priority, application Germany, May 22, 1968, P 17 64 360.6
Int. Cl. H05b *37/00*
U.S. Cl. 315—241 **8 Claims**

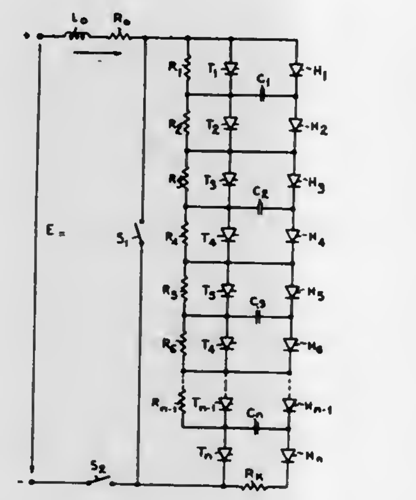


An electronic flash unit with flash energy adjustable by switching on or off storage capacitors interconnected in parallel which are connected to a high-tension source. For increasing the number of flash energy stages (guide numbers) obtainable with a definite number of storage capacitors an energy switch is provided with whose contacts the storage capacitors can be as required connected in parallel and are at the same time connectable at various high potentials of the high-tension source.

3,651,374
SWITCHING ARRANGEMENT FOR DISCONNECTING HIGH-VOLTAGE DIRECT-CURRENT LINES

Werner Faust, Wettingen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Feb. 17, 1971, Ser. No. 116,177
Claims priority, application Switzerland, Feb. 20, 1970, 2422/70
Int. Cl. H02h *7/22;* H03k *17/72*
U.S. Cl. 317—11 A **6 Claims**



A switching arrangement for disconnecting a high-voltage direct-current line includes a commutation device constituted by even number of main electric valves of the controllable semiconductor type each of which except the last as seen from the positive terminal of the line is paralleled by an ohmic resistance, an auxiliary valve correlated to each of the main valves and which are also connected in series, and commutation condensers between the cathode sides of the main and auxiliary valves. A first circuit breaker arranged in series with the commutation device serves to connect the device to the line and a second circuit breaker is connected in parallel with the commutation device.

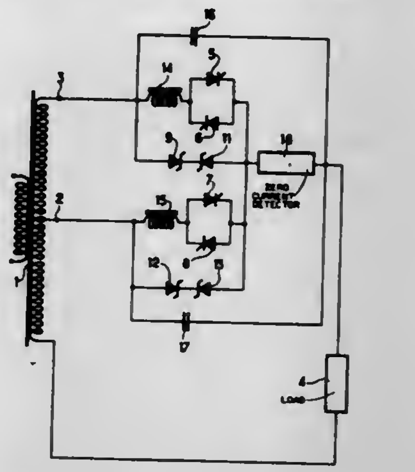
Transmission of a disconnecting command to the circuit breaker paralleling the electric valves also serves to render the main valves conductive thus commutating the load current so that the circuit breaker opens in an arc-free manner. The load current commutated to the string of main valves is then progressively reduced through the resistances by sequential ignition of the auxiliary valves which produces a sequential extinction of the main valves. The series connected circuit breaker then opens isolating the load circuit from the high-voltage line.

3,651,375
PROTECTIVE CIRCUIT FOR A THYRISTOR TYPE SWITCH

Gerard Ebersohl, Aix-les-Bains, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed May 8, 1970, Ser. No. 35,799
Claims priority, application France, May 8, 1969, 6914830
Int. Cl. H02h *3/00, 7/00;* H03k *17/00*
U.S. Cl. 317—11 E **8 Claims**

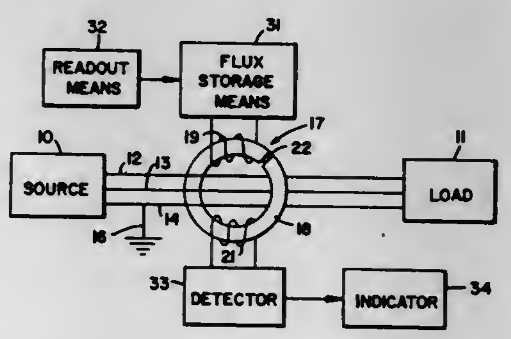
The invention concerns a protection device for a thyristor type switch comprising a protection circuit consisting of two Zener diodes of opposite conductivity in series with each other and in parallel with the thyristor type switch. In addition a reactance which can be saturated and has slight magnetic losses is connected in series with the thyristor type switch and thus in parallel with the Zener diodes. In modifications of the basic invention a capacitor is connected in parallel with both the lead containing the thyristor and reactance and with the Zener diodes. Finally, a resistor can be connected to the lead containing the thyristor and reactance. The invention is applied in particular to synchronous transformer tap changing switches.



3,651,376
GROUND FAULT PROTECTION WITH A SATURABLE MAGNETIC CORE

Ellwood S. Douglas, Orinda, Calif., assignor to The Rucker Company, Oakland, Calif.

Filed Aug. 20, 1970, Ser. No. 65,640
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 D **12 Claims**

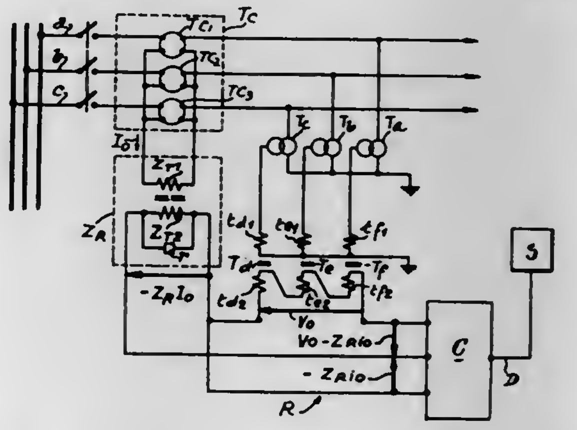


Ground fault protective system utilizing a saturable magnetic core for limiting the level of signals produced by fault currents.

3,651,377
BALANCED CURRENT-DIRECTIONAL RELAY FOR THE DETECTION OF MULTIPHASE LINE DEFECTS

Michel Henry Pierre Souillard, Fontenay-aux-Roses, France, assignor to Compagnie Des Compteurs, Paris, France

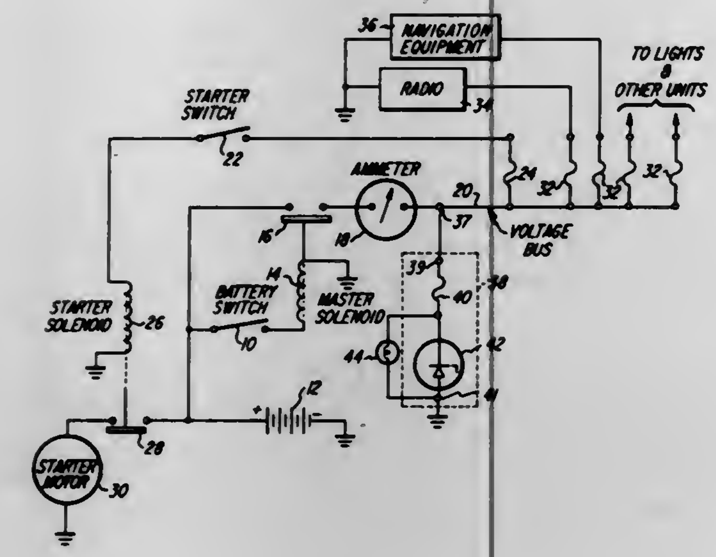
Filed Aug. 10, 1970, Ser. No. 62,400
Claims priority, application France, Aug. 11, 1969, 6927551
Int. Cl. H02h *3/26*
U.S. Cl. 317—27 R **4 Claims**



A triphase line current-directional relay includes a reference impedance fed by symmetrical components of the currents, a reference voltage and a phase computer connected both to the reference impedance and to the reference voltage.

3,651,378
TRANSIENT PROTECTION SYSTEM FOR AVIONICS EQUIPMENT

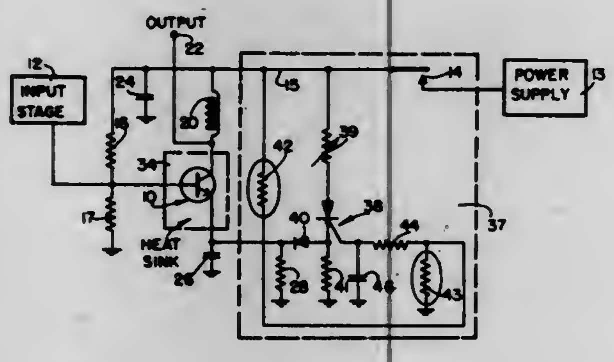
Charles R. McWilliams, 15 Patriot Lane, Willingboro, N.J.
Filed May 21, 1970, Ser. No. 39,360
Int. Cl. H02h *3/22*
U.S. Cl. 317—31 **3 Claims**



The operation of electric motors and other inductive loads in the electric system of an aircraft induces high energy transients that tend to damage the transistors and other semiconductors in the aircraft's avionic equipment. These damaging effects are cumulative and tend to reduce the effective life of such components. Such transients may have peak values of hundreds of volts and several amperes of current. An energy absorbing device in the form of a reverse-characteristic diode is connected in series with a fuse, and the series combination is connected between the power bus and ground. This diode conducts at high transient voltages and effectively absorbs the energy of such transients and diverts the damaging effects thereof from the avionic semiconductors.

3,651,379
TEMPERATURE RESPONSIVE CIRCUIT FOR PROTECTING AN ELECTRON DEVICE

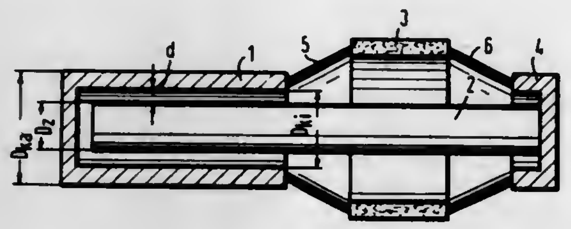
Brian H. Moisand, Chicago, and William A. Schilb, Lombard, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 30, 1970, Ser. No. 85,427
Int. Cl. H02h *5/04, 7/20*
U.S. Cl. 317—41 **10 Claims**



The protection circuit for an electron device includes a silicon controlled rectifier (SCR) selectively triggered by a voltage divider including first and second thermistors. The first thermistor monitors the temperature of a heat sink which is thermally connected with the device, and the second thermistor monitors the ambient temperature. When the sink and ambient temperatures indicate the device is about to overheat, the divider provides a voltage which triggers the SCR to change the bias thereby decreasing the power level of the device. The temperature of the device decreases in response to the decrease in power level. The protection circuit can be used with the power amplifier of a radio transmitter wherein the energizing circuit of the SCR is broken each time the transmitter is keyed to reset the protection circuit.

3,651,380
GAS DISCHARGE OVER VOLTAGE ARRESTER FILLED WITH A NOBLE GAS

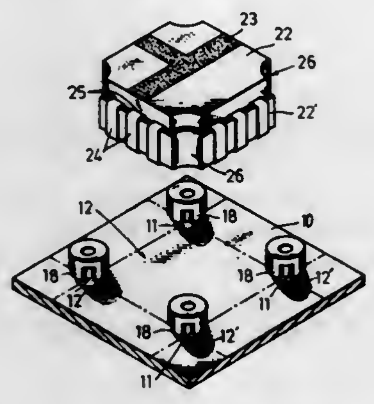
Gerhard Peche, and Werner Seiffarth, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Mar. 3, 1971, Ser. No. 120,638
Claims priority, application Germany, Mar. 16, 1970, P 20 12 453.2
Int. Cl. H02h *9/06*
U.S. Cl. 317—62 **5 Claims**



A gas discharge over voltage arrester having a cylindrical electrode coaxially surrounded by a hollow tubular electrode which forms a part of a gas filled vacuum-tight housing. The cylindrical electrode carries an end cap which with the hollow electrode, an intermediate annular insulator and a pair of thin wall connecting portions forms the vacuum-tight housing. The arrester is constructed and arranged to withstand brief high loads and extended low loads, and is dimensioned materially and geometrically to provide optimum performance and to provide a short circuit very rapidly without rupture when overloaded by alternating and lightning loads.

3,651,381
ELECTRONIC DEVICE USING BLOCK UNITS

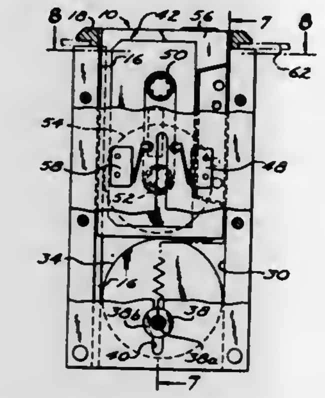
Takasi Nojiri, 28–4 Aza Chogatsubo, Oaza-Inuyama, Inuyama-shi, Japan
Filed July 1, 1970, Ser. No. 51,493
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 CC **5 Claims**



An electronic device for constructing various electronic circuits by arranging block units substantially in two dimensions comprising block units, which are of a substantial rectangular plane view with an area equal to or integral multiple of a unit square, encasing a circuit element such as a resistor or an interconnection and being provided at its four corners with concave surfaces and on its side surfaces with resilient lead pieces which are bending slightly outwards to be deformable inwards and are connected electrically to the circuit element or the interconnection contained in the block unit, a basic board, a plurality of posts set up on said basic boards at vertexes of said unit squares supposed on said board, a plurality of resilient cap members attached to said posts and a case to receive said basic board, said block unit being individually held at said concave surfaces by said resilient cap members.

3,651,382
ERASE MECHANISM FOR A TWO-SPINDLE TAPE CASSETTE

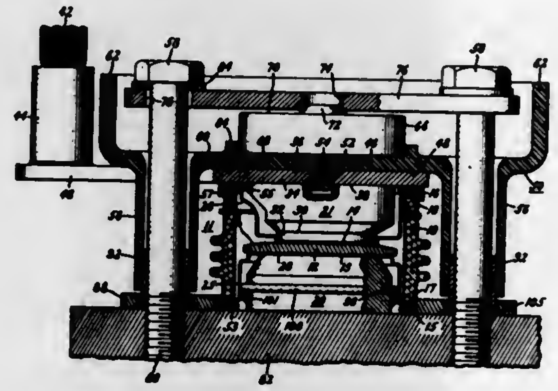
James R. Trammell, Parma Heights, Ohio, assignor to Scanfax Systems Corporation, New York, N.Y.
Filed Oct. 22, 1969, Ser. No. 868,304
Int. Cl. H01f *13/00*
U.S. Cl. 317—157.5 **1 Claim**



An erase system for degaussing a magnetic tape in a cassette including a receptacle-forming housing defining a receptacle for insertion of the cassette in one orientation and preventing insertion in another orientation. The system also includes a degaussing means mounted for providing a quick and simple degaussing operation whereby the magnetic tape is twice exposed to the field produced by the degaussing means. A mechanism is provided to insure a quick return of the cassette to the operator with the degaussing means being energized by a switch operable by the action of the return mechanism.

3,651,383
UNITARY HIGH POWER SEMICONDUCTOR SUBASSEMBLY SUITABLE FOR MOUNTING ON A SEPARABLE HEAT SINK

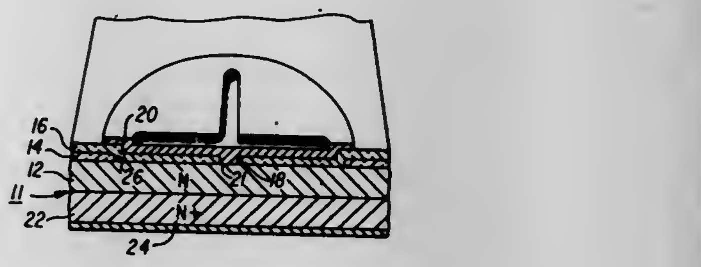
John P. Livezey, Broomall, and Daniel B. Rosser, Springfield, both of Pa., assignors to General Electric Company
Filed Feb. 5, 1970, Ser. No. 8,887
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **14 Claims**



A unitary subassembly which is adapted to be mounted on a heat sink. A pair of bolts is adapted to secure a spring member to the heat sink, and a semiconductor device is captured between the spring member and a retainer. The retainer is releasably fastened to the pair of bolts, whereby the bolts, the spring member, the device, and the retainer form the subassembly in which these parts are properly joined together prior to mounting on the heat sink. A main electrode of the semiconductor device is exposed through the retainer for seating on the heat sink when the unitary subassembly is anchored thereto.

3,651,384
PLANAR SCHOTTKY BARRIER

Warren P. Waters, 5943 Willow Lane, Dallas, Tex., and Byron K. Lovelace, 806 E. 13th, Apt. 102, Georgetown, Tex.
Continuation of application Ser. No. 718,643, Jan. 15, 1968, now abandoned, which is a division of application Ser. No. 397,413, Sept. 18, 1964, now Patent No. 3,388,000. This application Mar. 8, 1971, Ser. No. 122,135
Int. Cl. H01l *9/00*
U.S. Cl. 317—234 R **7 Claims**



There is disclosed a high-frequency metal semiconductor junction diode which comprises two layers of insulating material having different etching characteristics so that a very small opening may be formed in the oxides; a metal film is connected to said small exposed area to define a diode construction

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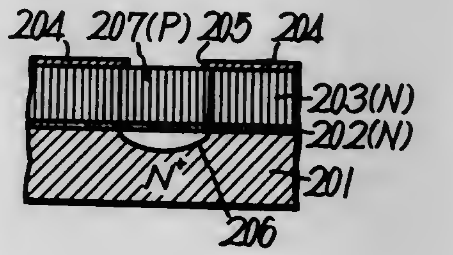
3,651,385
SEMICONDUCTOR DEVICE INCLUDING A POLYCRYSTALLINE DIODE

Isamu Kobayashi, Yokohama-shi, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sept. 16, 1969, Ser. No. 858,287
Claims priority, application Japan, Sept. 18, 1968, 43/67380; 43/67382
Int. Cl. H01l *3/00*
U.S. Cl. 317—234 **6 Claims**



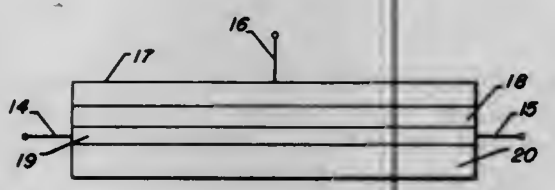
A semiconductor device consisting of a single crystal region, a polycrystalline region integrally formed on the single crystal region and a PN junction formed in the polycrystalline region.

3,651,386

PYROPOLYMERIC SEMICONDUCTING ORGANIC-REFRACTORY OXIDE MATERIAL

Karl J. Youtsey, Chicago; William C. Holt, Jr., Arlington Heights; Robert D. Carnahan, Barrington, and David H. Spielberg, Wheeling, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 24, 1970, Ser. No. 66,521
Int. Cl. H01l *3/24*
U.S. Cl. 317—237 **17 Claims**



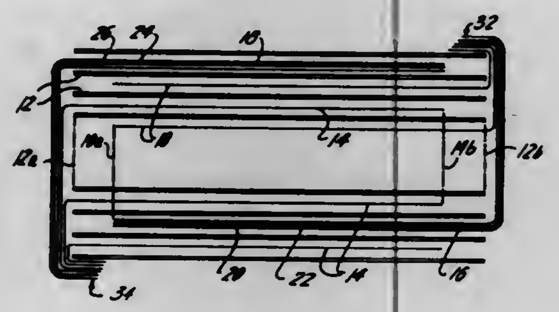
A semiconducting material comprising a carbonaceous pyropolymer formed on a refractory oxide having a surface area of from about 1 to about 500 square meters per gram. A refractory oxide is heated to at least about 400° C. in an atmosphere containing an organic pyrolyzable substance. The semiconducting material has a conductivity at room temperature of from about 10^{-8} to about 10^{0} inverse ohm-centimeters, and is used for electrical applications such as heterojunction transistors, field-effect transistors, thermoelements in thermoelectric generators and refrigerators and temperature sensing devices, and electrodes in electrochemical cells, charge and energy storage devices, memory devices, inductive elements, and a variety of other electrical applications.

3,651,387

STACKED MICA CAPACITORS

James Francis McHugh, Oak Bluffs, Mass., assignor to Cornell-Dubilier Electric Corporation, Newark, N.J.

Filed Mar. 18, 1971, Ser. No. 125,729
Int. Cl. H01g *1/01, 1/14*
U.S. Cl. 317—258 **10 Claims**



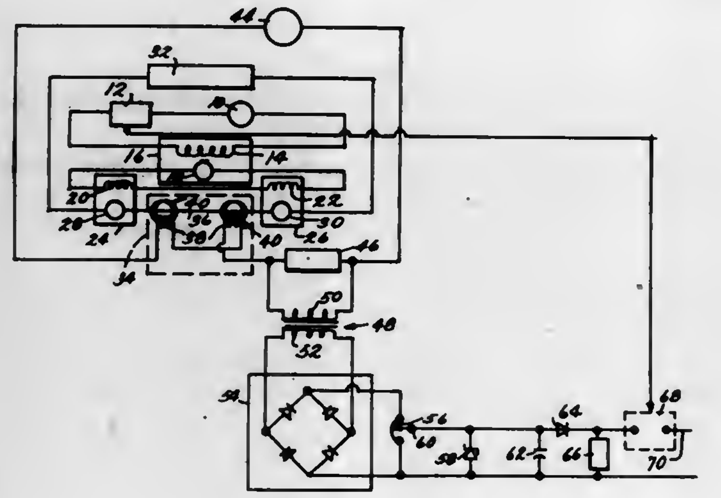
A capacitor capable of resisting extremely high inertial stresses consists of interconnected capacitor sections. Each capacitor section includes a stack of synthetic mica sheets alternating with aluminum foils serving as electrodes, plus outermost terminal electrodes. The latter are formed of copper foils sandwiched between much thinner and softer aluminum foils. The electrode foils and the terminal electrodes are recessed alternately from opposite ends of the stack in marginal areas and extend respectively outside the opposite ends of the stack and are doubled back over the outer surfaces of the stack in the respective recessed marginal areas. The stack is flattened and is unified by a solidified silicone-resin impregnant. The doubled-back copper foils provide solderable connection areas.

3,651,388

DYNAMIC BRAKING CONTROL SYSTEM FOR PLURAL TRACTION MOTORS

Charles M. Machin, Jr., Ellicott, Md., and John E. Fawcett, Huntington, W. Va., assignors to The Chesapeake and Ohio Railway Company, Cleveland, Ohio and The Baltimore and Ohio Railroad Company, Baltimore, Md.

Filed Apr. 17, 1970, Ser. No. 29,627
Int. Cl. H02p *3/14*
U.S. Cl. 318—88 **11 Claims**



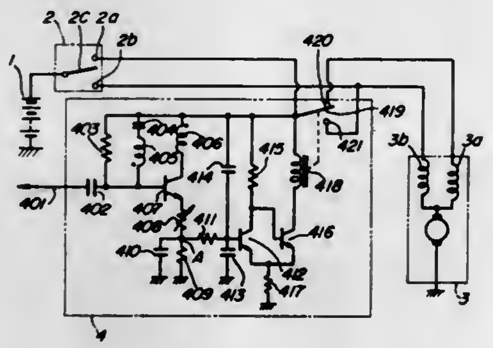
A control system for controlling the condition of a plurality of electric motors in a single unit or a plurality of electrically powered units connected together for multiple unit operation whereby the units are enabled to operate uniformly. Where the system is adapted for use as a dynamic braking control system for controlling the dynamic braking of a plurality of electric traction motors in a plurality of electrically powered vehicles connected together for multiple vehicle operation, the system enables the percent of maximum braking which occurs in each vehicle to be equal so that each vehicle exerts the same percentage braking effort with respect to ever other vehicle in the multiple vehicle arrangement.

3,651,389

SAFETY DEVICE FOR USE WITH AUTOMATIC AUTOMOBILE WINDOW REGULATOR

Shigehiko Ito, Kariya-shi, and Hiroshi Arai, Toyota-shi, both of Japan, assignors to Nippon Denso Kabushiki Kaisha, Showa-cho, Kariya-shi, Aichi-ken, Japan

Filed Nov. 3, 1969, Ser. No. 873,320
Claims priority, application Japan, Nov. 9, 1968, 43/97823
Int. Cl. H02p *1/22*
U.S. Cl. 318—266 **5 Claims**



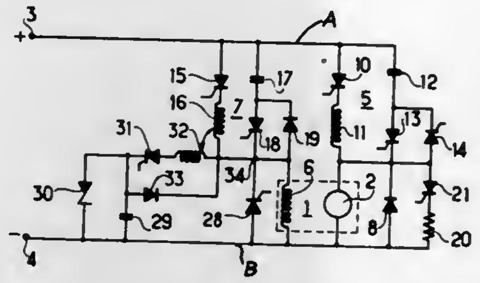
A safe automatic window regulator so designed that if the human body and the like touches the upper end of the window glass, it is sensed so that even if the switch has been closed in the direction to close the window, the electric circuit is automatically changed over so as to reopen the window thereby preventing harm to the human body and the like due to any inadvertency.

3,651,390

METHOD AND ARRANGEMENT FOR QUENCHING A BRAKING THYRATRON FOR MOTORS

Gilbert Vidal, Draveil, and Bernard Peron, Villetaneuse, both of France, assignors to Societe Generale de Constructions Electriques et Mechaniques (Alsthom), Paris, France

Filed Apr. 14, 1970, Ser. No. 28,319
Claims priority, application France, Apr. 14, 1970, 6911898
Int. Cl. H02p *3/12*
U.S. Cl. 318—269 **5 Claims**



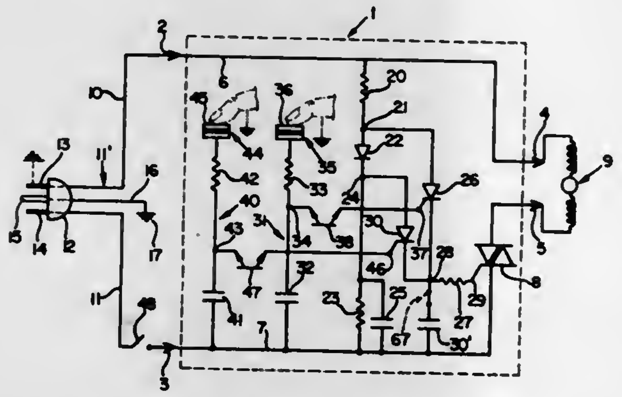
A supply and control circuit for a DC motor having a separately excited field coil and armature, and a method of operating such circuit. The field coil and armature are supplied with current interrupters. Connected in parallel with the separately excited field coil of the motor there is a first thyristor which plays a "free wheeling" role. A second circuit connected in parallel with the field coil includes an inductance, a second thyristor, and a zener diode connected in series. A condenser is connected in parallel with the zener diode. A diode is connected in parallel with the inductance and first thyristor. The parts are so arranged that the firing of the principal thyristor of the current interrupter for the field coil of the motor, after the operation of braking the motor, produces the extinction of the second thyristor, thereby bringing the current flow in the field coil to zero. When the current flow has been restored to its positive value and attains a predetermined potential, the principal thyristor in the interrupter which supplies the armature of the motor with current may be fired to restore the functioning of the motor as a driving motor.

3,651,391

ELECTRONIC SWITCH ARRANGEMENTS

Walter H. Vogelsberg, Carversville, Pa., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Sept. 26, 1969, Ser. No. 861,233
Int. Cl. H01h *3/14*
U.S. Cl. 318—446 **40 Claims**



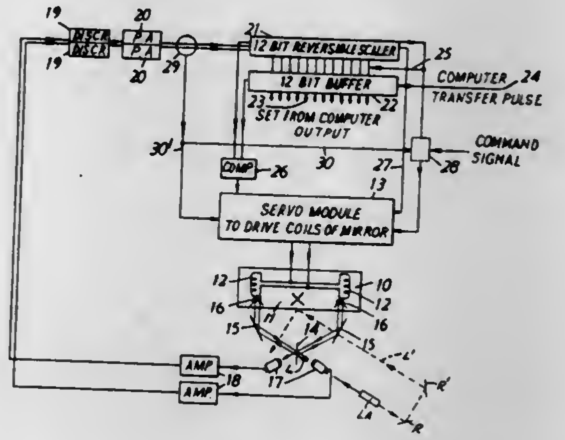
This disclosure relates to electronic switches in which touch elements, separate from each other, must be touched to actuate the electronic switch to operate a load. In a first embodiment, the electronic switch energizes a load when the operator brings his finger near or touches a first touch element, and the electronic circuit deenergizes the load when the operator's finger is removed from the first touch element. A second touch element latches the electronic switch on when the operator touches or brings his finger close to the second touch element. Unlatching is then accomplished by momentarily touching the first touch element. In a second embodiment, the circuit is of the "AND" type and the operator must touch two touch elements continuously to maintain the electronic switch on and the load energized. In a third embodiment, two touch elements must be touched simultaneously to initially energize the load and thereafter the operator need only maintain his touch on or near one of the touch elements to maintain the load energized. In all the embodiments, the electronic switch is of the solid state type and is packaged in a small size electronic module capable of being mounted within the handle or casing of tools or appliances such as a portable electric drill, a router, or a grinder. In each embodiment, two SCR's each controlled by its respective touch element, cooperate to trigger a triac on for full wave conduction, or for half wave conduction, if desired.

3,651,392

BANG-BANG MIRROR POSITION SERVOMECHANISM CONTROLLING A LASER SCANNING DEVICE FOR USE IN A TRACK-FOLLOWING MACHINE

Otto R. Frisch, 22 Warts Causeway; and Graham S.B. Street, Pembroke College, both of Cambridge, England

Filed Nov. 10, 1969, Ser. No. 875,139
Claims priority, application Great Britain, Nov. 12, 1968, 53,685/68
Int. Cl. G05b *13/00, 19/36*
U.S. Cl. 318—561 **8 Claims**



Apparatus for steering a light beam, suitable for use in a track-following machine, in which two steering mirrors are each controlled by a servomechanism which determines the position of the mirror by counting interference fringes from an interferometer and which accelerates the mirror to the midpoint of its movement and then decelerates it, the approach to the final position being controlled asymmetrically in dependence upon the divergence from the set position to apply a larger force when the mirror is moving away from the required position.

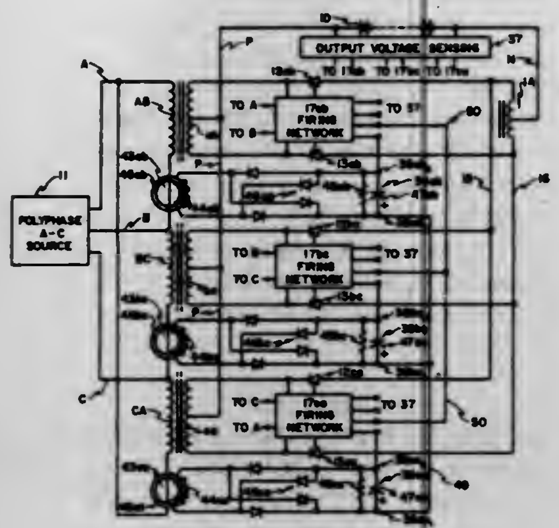
3,651,393

CURRENT EQUALIZING CIRCUIT

George H. Pohm, Lorain, Ohio, assignor to Lorain Products Corporation

Filed Apr. 21, 1971, Ser. No. 135,982
Int. Cl. H02m *7/00;* **H02h** *3/00;* **G05f**
U.S. Cl. 321—5 **7 Claims**

A circuit for equalizing the AC input currents drawn by a polyphase rectifier. A plurality of sensing networks are connected in current sensing relationship to respective phases of a polyphase source, each sensing network providing an output voltage which is proportional to the current sensed thereby. The outputs of these sensing networks are connected in parallel to establish a plurality of circulating currents, the magnitude and direction of each circulating current being dependent upon the output voltage of all sensing networks. The latter currents are utilized to simultaneously change each of the sensed currents, as required, to achieve input current equality.



3,651,394

DIFFUSED LIGHT DETECTING CELL FOR AND IN OPTICAL PUMPING APPARATUS

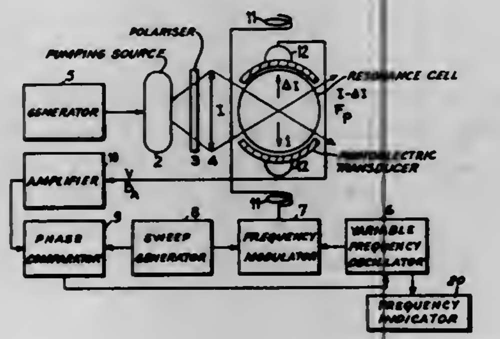
Leon Malnar, and Jean-Louis Meilleroux, both of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation-in-part of application Ser. No. 667,557, Sept. 13, 1967, now abandoned. This application Apr. 14, 1970, Ser. No. 28,491

Claims priority, application France, Sept. 23, 1966, 77458

Int. Cl. G01r *33/08*

U.S. Cl. 324—0.5 R **5 Claims**



A vessel, filled with a vapor, the quantum transition of which is to be detected, has photosensitive transducer means applied around the walls thereof in a region remote from the axis of a pumping beam applied to the vessel, so that the photosensitive transducers are responsive to essentially all radiated energy impinging on the walls of the vessel at random angles with respect to the axis of the pumping beam; the cell is included in apparatus including an RF generator of variable frequency, the output of which is coupled to the cell to generate within the cell a radio-frequency electromagnetic field. The frequency of the RF generator is controlled by a feedback control circuit coupled to the output from the photosensitive transducers, so that, when their output is a maximum, the frequency of the RF generator will be locked in.

3,651,395

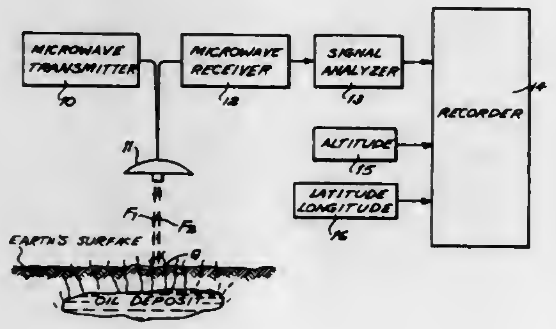
METHOD FOR EXPLORING THE SURFACE OF THE EARTH WITH ELECTROMAGNETIC ENERGY INCLUDING COMPARING RERADIATION CHARACTERISTICS OF GASES TO LOCATE ESCAPING HYDROCARBON GASES AT THE SURFACE EMITTED BY DEPOSITS OF PETROLEUM AND/OR NATURAL GAS AT DEPTH

Robert L. Owen, New York, N.Y., and Julian M. Busby, Muskogee, Okla., assignors to Advanced Geophysics, Inc., New York, N.Y., by said Owen

Filed Sept. 12, 1969, Ser. No. 857,488

Int. Cl. G01v *3/12*

U.S. Cl. 324—6 **6 Claims**



The present invention makes use of the discovery of the fact that producing or potentially producing oil and/or gas fields usually have associated therewith at the earth's surface, the presence of escaping or permeating gases which have risen from underground stratigraphic and structural traps from which oil and/or natural gases may be recovered through drilled wells. Detection of the permeating gases is accomplished by focusing a beam of microwave radiation of known predetermined parameters thereupon, from remote locations, and measuring the parameters of the returned "reflected" microwave signals i.e., signals which are re-radiated by the hydrocarbons at the surface. Comparison of the frequency shift, and other parameters of the returned signal with the parameters of the transmitted microwave signal and correlation of the modified parameters of the returned wave with predetermined "microwave re-radiation characteristics" (MRC) of known gases will enable an immediate qualitative identification of a detected gas to be made and will enable an approximation of the quantitative concentrations of the detected gas to be made. Furthermore, by employing conventional navigational and cartographic procedures in association with the gas detecting practices of the present invention, it is possible to use ground vehicles and aircraft to explore, to prospect for, and to map gas and/or oil producing fields.

3,651,396

FOURIER TRANSFORM NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY

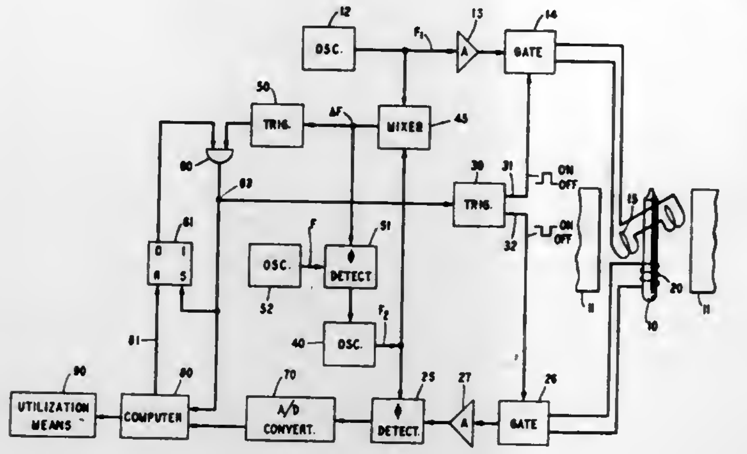
Richard C. Hewitt, Colonia, and Saul Meiboom, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 4, 1969, Ser. No. 855,206

Int. Cl. G01n *27/78*

U.S. Cl. 324—0.5 R **10 Claims**

Improved NMR spectroscopy is realized by selectively positioning a spectrum excitation pulse with respect to the spectrum of frequencies to be observed. The excitation pulse may be positioned at a frequency anywhere within or outside the spectrum of interest as required. This is achieved by relating the excitation pulse to a reference signal having a frequency other than the excitation frequency and by maintaining a fixed phase relationship between the excitation pulse and the reference signal.



3,651,397

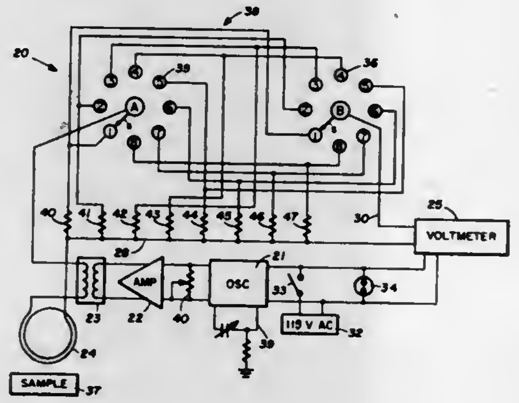
METHOD AND DEVICE FOR TESTING APPARATUS FOR SUSCEPTIBILITY TO MAGNETIC FIELD

David W. Bodenheimer, Carrollton, and Elbert W. Paschetag, Jr., Garland, both of Tenn., assignors to LTV Electrosystems, Inc., Dallas, Tex.

Filed Mar. 9, 1970, Ser. No. 17,650

Int. Cl. G01r *33/00*

U.S. Cl. 324—34 R **8 Claims**



Disclosed is improved apparatus and an improved method for use in testing the susceptibility of electrical apparatus to magnetic fields, wherein current is provided to an antenna for producing a directional magnetic field within each of a plurality of known ranges of intensity and is further varied within each of the respective ranges, as required, to obtain readings corresponding to a voltage falling within a range of voltages which are capable of being sensed and therefore measured by other than a narrow-band voltmeter.

3,651,398

METHOD OF AND DEVICE FOR CONTINUOUSLY MEASURING THE THICKNESS OF ELECTRICALLY CONDUCTIVE MOVING SHEET MATERIAL AND COMPENSATING SAID MEASUREMENT FOR SHEET TEMPERATURE

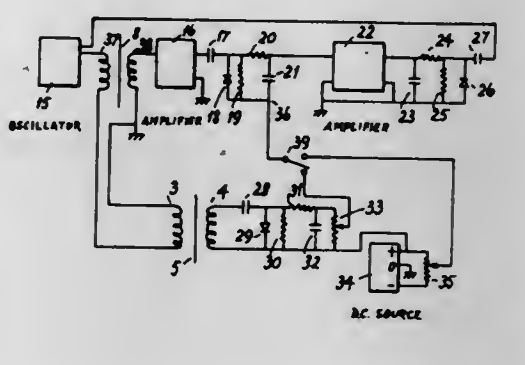
Laszlo Urmenyi, 18 Ernle Road, London, S. W. 20, England

Filed Aug. 19, 1968, Ser. No. 753,796

Int. Cl. G01r *33/12*

U.S. Cl. 324—40 **6 Claims**

The invention refers to a method of and device for continuously measuring the thickness of electrically conductive moving sheet material consisting in providing an eddy current type thickness gauge which is affected by the thickness and temperature of the sheet material, a rotatably mounted tubular metallic body of essentially cylindrical shape which is longer than the width of the sheet material and is in contact with the whole width of the sheet material whereby the sheet material and the metallic body both acquire the same temperature, electrical means are provided to sense the temperature of the metallic body giving an electrical signal and means are provided to apply said signal to the eddy current gauge to compensate automatically for the effect of temperature variations of the sheet material on the thickness measurement. In one example of the invention the electrical means to sense the temperature of the metallic body consists of two coils of which the primary carries alternating current, a disc shaped body which is in thermal contact with said metallic body is positioned between the two coils and the secondary voltage is thus a function of the temperature of the metallic body. Since this latter means is identical with the means used in the eddy current gauge for thickness measurement, the said secondary voltage follows the same law as far as temperature dependence is concerned as the eddy current gauge and therefore the temperature compensation is exactly correct over the whole temperature range.



3,651,399

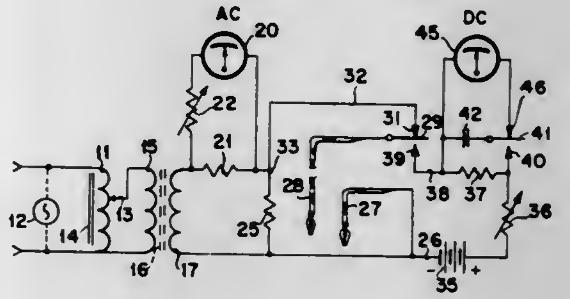
APPARATUS AND METHOD FOR DETERMINING CONDUCTIVITY OF WIRING INSTALLATIONS

Douglas A. Florance, 1110 Hillside Drive, Vestal, N.Y., and Lloyd P. Nordholm, 215 Castle Creek Road, Binghamton, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,108

Int. Cl. G01r *27/00, 31/02*

U.S. Cl. 324—51 **5 Claims**

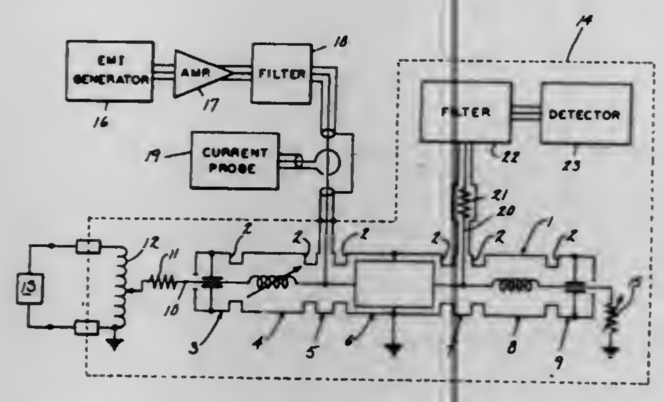


An apparatus and method for determining the conductivity of wiring installations of power distribution circuits is described. Selected portions of the circuit are subjected to alternating and direct current potentials of predetermined magnitude from distinct sources. The resultant currents are alternately indicated on distinct meters at a rate higher than the mechanical inertia thereof, permitting substantially simultaneous visual observation of both indications.

3,651,400
APPARATUS AND METHOD FOR TESTING THE INSERTION LOSS OF ELECTRICAL FILTERS

William J. McMartin, Cedar Rapids, Iowa, and Hans E. Weidmann, Glendale, Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed May 26, 1969, Ser. No. 827,674
Int. Cl. G01r *27/00, 27/04*
U.S. Cl. 324—57 R **22 Claims**

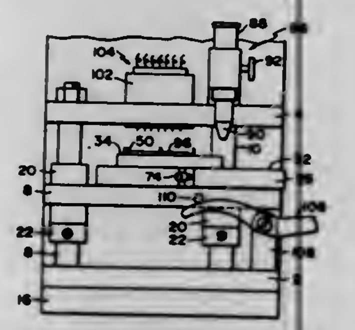


An apparatus for testing electrical filters is disclosed which includes an enclosed cavity made up of a plurality of sections joined to one another with plug-in connections. The cavity has a feed-in capacitor section at each end for introducing a low frequency current representative of a rated load current for a filter under test. The feed-in capacitor sections are each joined to one end of an inductor section, one of which inductor sections represents a power source impedance and the other inductor section representing a load impedance. The inductor sections are each connected at their opposite ends to a test section, one of which introduces high frequency signals representing electromagnetic interference into the cavity, and the other being used for measuring voltage across the load impedance. The cavity is completed by a filter section disposed between the two test sections which houses a filter under test. The complete circuit also includes a source of low frequency current to represent rated filter load, a high frequency generator attached to the test section that introduces high frequencies to the cavity, means for measuring high frequency current delivered to the circuit, and a detector connected to the other test section for reading measured voltage of the load impedance. Use of the apparatus involves a method of testing in which high frequency signals are introduced in parallel with the filter under test and the power source impedance, and measurements of the high frequency source current are made with the filter both in and removed from the circuit for a fixed load impedance voltage, from which current readings the filter insertion loss is calculated.

3,651,401
ARTICLE LOCATING AND POSITIONING APPARATUS

James S. Cooney, Attleboro, Mass., assignor to Pylon Company, Inc., Attleboro, Mass.

Filed Apr. 9, 1970, Ser. No. 27,082
Int. Cl. G01r *31/02;* B23g *3/18*
U.S. Cl. 324—158 **13 Claims**

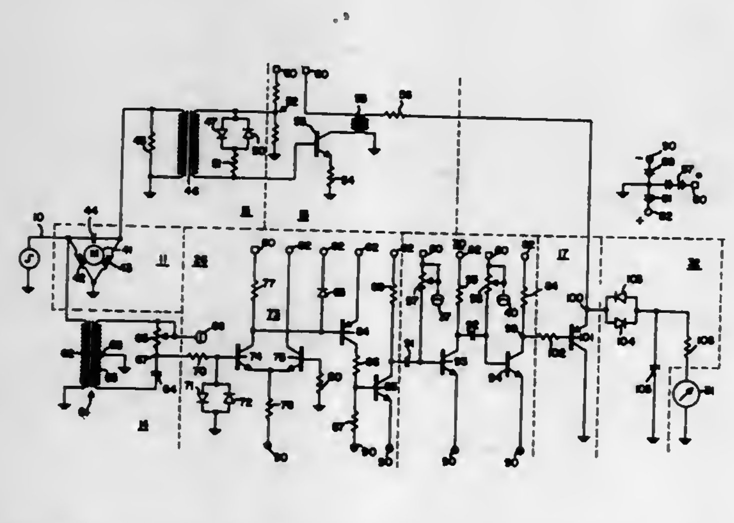


The invention is an apparatus for locating and positioning a wafer containing thereon a miniature printed circuit or integrated circuit on a test apparatus including two tables, one movable on the other. The wafer is first positioned on the one table, the second table is moved to a second position at which the one table is moved to further position the wafer, and then both tables are moved to a test position.

3,651,402
SUPERVISORY APPARATUS

Paul H. Leffmann, Scottsdale, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of application Ser. No. 520,400, Jan. 13, 1966. This application Jan. 27, 1969, Ser. No. 797,355
Int. Cl. G01r *31/00, 25/00*
U.S. Cl. 324—158 MG **5 Claims**

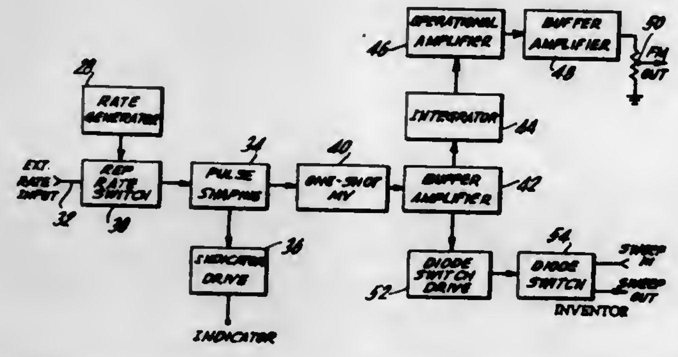


1. The method of testing a hysteresis synchronous motor having a rotor and a pair of stator windings the first of which is energized directly from an alternating voltage source and the second of which is energized from the source through a capacitor, which comprises the steps of energizing the motor, monitoring the phase angle relation between the alternating voltage across said second winding and a reference alternating voltage of preset fixed phase, and confirming the presence in said relation of a characteristic representative of satisfactory motors.

3,651,403
SIMULTANEOUS SWEEP TESTING SYSTEM FOR CATV

Sidney Fluck, Jr., Levittown, Pa., assignor to Jerrold Electronics Corporation, Hatboro, Pa.

Filed May 18, 1970, Ser. No. 38,295
Int. Cl. H04h *1/04;* H04b *3/46*
U.S. Cl. 325—31 **16 Claims**

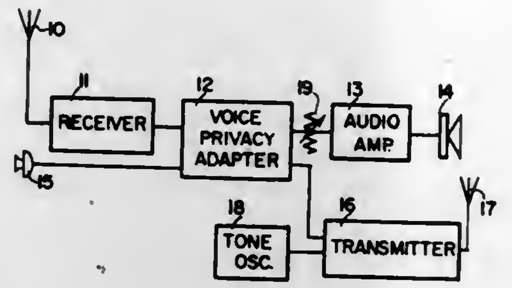


An apparatus and method for applying a test sweep signal onto a CATV line during full operation of the system without introducing observable distortion at the television receivers. The test signal is in the form of a series of discrete frequency-swept pulses of a predetermined duration appearing at a predetermined rate.

3,651,404
VOICE PRIVACY ADAPTER

Thomas J. Rollins, Arlington Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 12, 1970, Ser. No. 2,238
Int. Cl. H04k *1/00*
U.S. Cl. 325—32 **15 Claims**

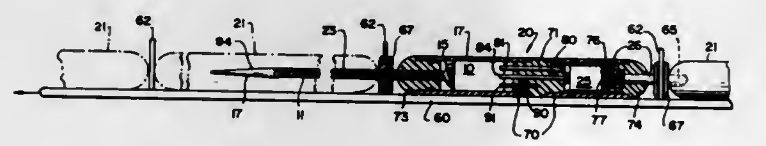


A voice privacy adapter inverts the order of frequencies in a band of frequencies transmitted by radio to prevent unauthorized reception. The adapter includes an input circuit for selecting signals from one of either a transmitter or receiver in a two-way radio. A balanced modulator-chopper heterodynes the modulation signal with signals from a bistable multivibrator which is driven by an oscillator to produce a double sideband, suppressed carrier signal. The upper sideband is attenuated and the lower sideband is coupled to either the transmitter or receiver. The inversion of the signal at the transmitter followed by a second inversion at the receiver restores the modulation signal. Use of the balanced modulator-chopper eliminates all of the frequency components of the modulation signal thereby insuring privacy. The balanced modulator-chopper may be easily disabled allowing use of the radio without frequency inversion.

3,651,405
TELEMETERING TRANSMITTER

John A. Whitney, and Richard E. Woods, both of Fort Wayne, Ind., assignors to Peter Eckrich & Sons, Inc.

Continuation of application Ser. No. 680,111, Nov. 2, 1967, now abandoned. This application Feb. 25, 1970, Ser. No. 18,015
Int. Cl. A47j *37/00;* H04b *1/04*
U.S. Cl. 325—113 **11 Claims**



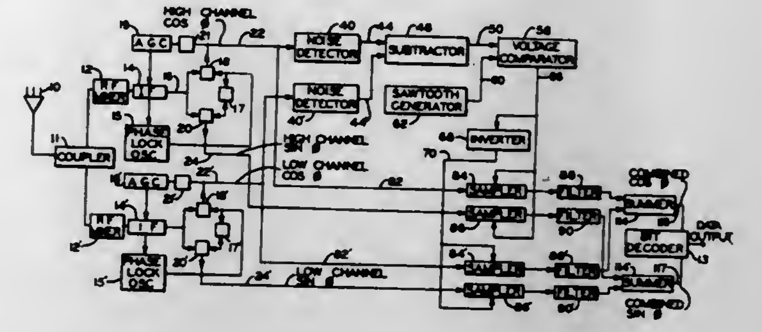
A temperature sensor in circuit with a unijunction transistor drives a tunnel diode FM transmitter for generating discontinuous bursts of a frequency modulated oscillatory output signal. The transmitter is mounted within a unitary housing which is conveyed along with linked meat products whose internal temperature is being monitored.

3,651,406
SYSTEM FOR PLURAL CHANNEL SIGNAL RECEPTION AND READOUT AND METHOD OF OPERATION

John G. Mohr, Woodburn, Ind., and Ross G. Stacer, Niles, Ill., assignors to The Magnavox Company, Ft. Wayne, Ind.

Filed Oct. 3, 1969, Ser. No. 863,473
Int. Cl. H04b *1/12*
U.S. Cl. 325—304 **12 Claims**

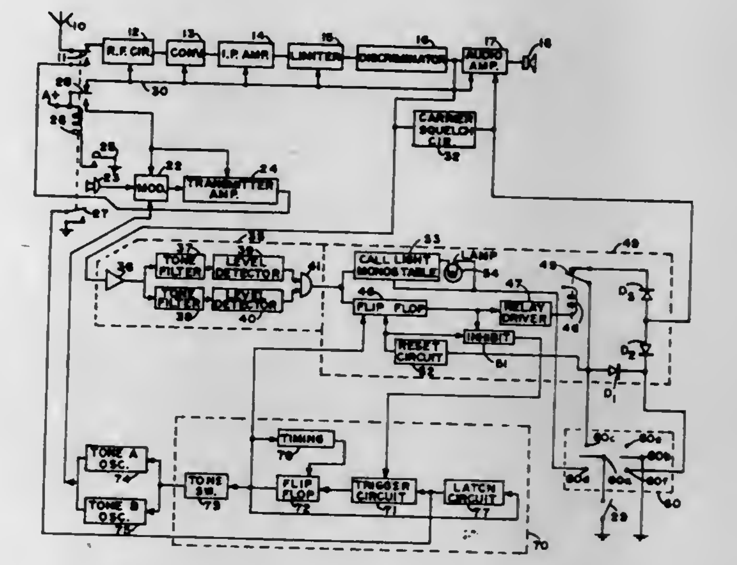
The invention pertains to a radio receiver system, and to a method of operation thereof, in which two channels having the same message thereon are received. The noise levels in the respective channels are measured and the two channels are continuously sampled proportionately on the basis of sampling the quieter channel for a greater length of time than the noisier channel. The samples are combined and the resulting composite signal has a better signal to noise ratio than either channel before sampling. A proportionately combined binary representing signal with its improved signal to noise ratio is further enhanced by bit decoding using integration over a full bit period.



3,651,407
AUTOMATIC ENCODER-DECODER CIRCUIT FOR RADIO COMMUNICATIONS UNIT

John F. Sarallo, Arlington Heights, and George W. Shetzley, Roselle, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

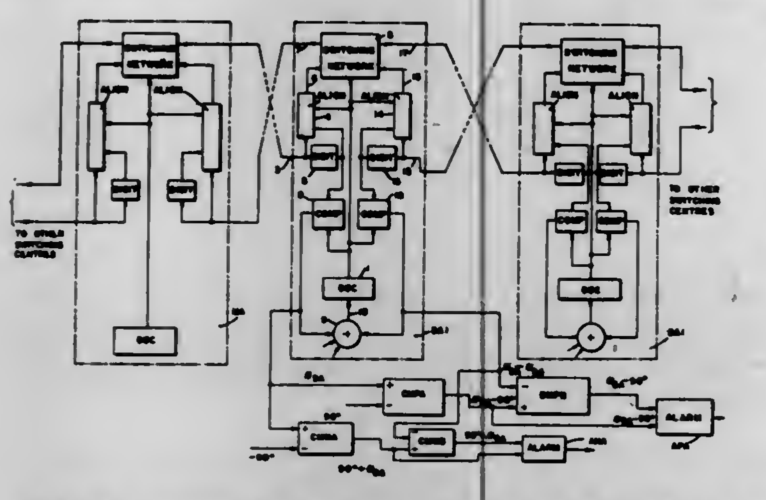
Filed Oct. 5, 1970, Ser. No. 77,958
Int. Cl. H04b *1/48*
U.S. Cl. 325—18 **9 Claims**



An encoder-decoder for a radio communications unit includes oscillator control circuitry, actuated for a predetermined period of time in response to initiation of a transmission. The oscillator control circuitry actuates oscillator circuitry for applying one or more tones to the transmitter, disables the tone decoder, and is then inhibited from further activating the oscillator circuitry. The decoder is operative in response to the receipt of one or more tones of particular frequency to render the receiver audio operative in response to carrier squelch signals, and inhibits subsequent operation of the oscillator control circuitry. Placing the microphone in the hang-up box at the end of a message resets the encoder-decoder. A subsequent transmission will now include the tone signals and the receipt of the correct tone frequencies will be required to again enable the receiver circuitry. A select switch allows the communication unit to be operated with or without the automatic encoder-decoder squelch circuit.

3,651,408
DIGITAL COMMUNICATION SYSTEMS

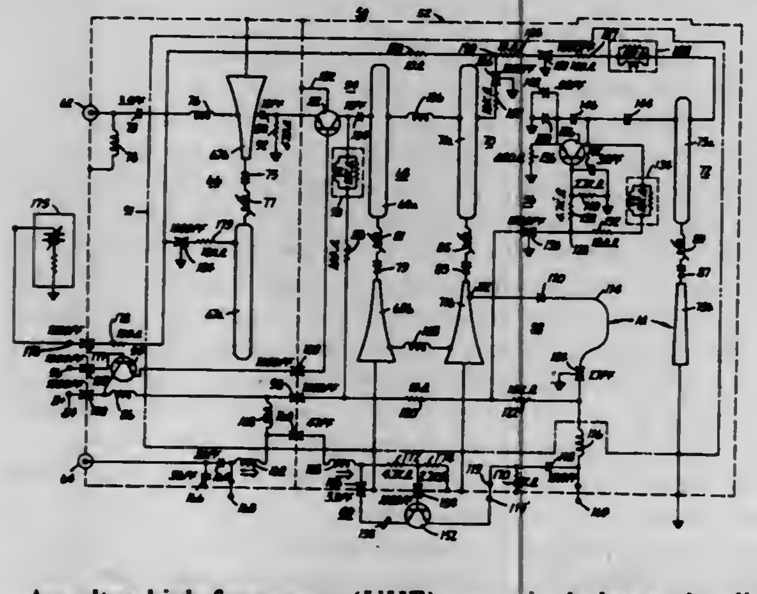
Michael Robert Miller, Watford, England, assignor to Her Majesty's Postmaster General, London, England
Filed May 26, 1969, Ser. No. 827,680
Claims priority, application Great Britain, May 31, 1968, 26,270/68
Int. Cl. H04b *1/00*
U.S. Cl. 325—58 **8 Claims**



A digital communications system including a plurality of transmission centers interconnected by transmission paths, in which each center has a local oscillator determining the digit times at that center and the frequencies of the oscillators are controlled in response to the adjacent oscillators by reference to incoming signals. In such a system it has been found that incorrect modes can be set up in which large phase differences between oscillators persist as a result of the presence of closed control rings in the system, and according to this invention the presence of an incorrect mode is detected by obtaining an indication whenever the phase of any oscillator departs by more than 90° from that of the oscillator of a particular center designated as the reference center. When the indication has been produced for a predetermined period of time the closed control rings are disabled leaving only oscillator control paths radiating from the reference center, until the indication is removed. The information transmission paths are not affected by the presence of the indication.

3,651,409
ELECTRONICALLY TUNED ULTRA HIGH FREQUENCY TELEVISION TUNER WITH FREQUENCY TRACKING TUNABLE RESONANT CIRCUITS

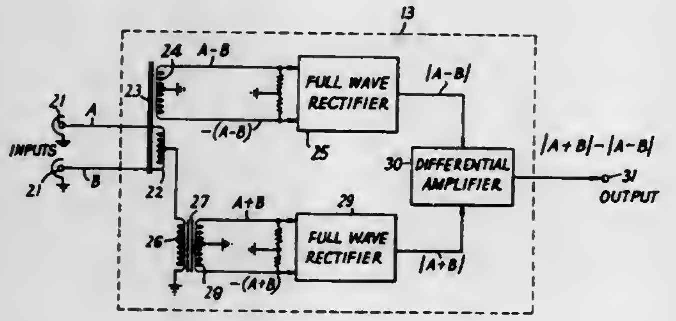
John Barrett George, Indianapolis, and Stephen Earl Hilliker, Mooresville, both of Ind., assignors to RCA Corporation
Filed Mar. 23, 1970, Ser. No. 21,898
Int. Cl. H04b *1/26*
U.S. Cl. 325—445 **19 Claims**



An ultra high frequency (UHF) tuner includes a plurality of tunable transmission lines formed on a dielectric plate. At least two of the transmission lines are tunable over different bands of frequencies and each includes first and second conductive sections, coupled by voltage responsive capacitance devices, disposed on one surface of the dielectric plate, and a conductive ground plane disposed on the other surface overlying the first and second sections. One end of the first section of each of the transmission lines is connected to the ground plane and is shaped to provide tracking as the transmission lines are tuned across their respective frequency bands. An adjustable inductor serially connected with the variable capacitance devices also provides a tracking adjustment between the circuits.

3,651,410
ADDING FREQUENCY-MODULATED ELECTRICAL SIGNALS

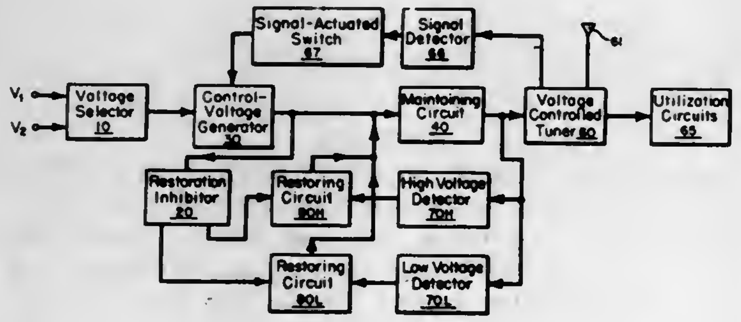
Robin Evan Davies, Horley, England, assignor to The Marconi Company Limited and Standard Telephones & Cables Limited, London, England
Filed Oct. 8, 1969, Ser. No. 864,735
Claims priority, application Great Britain, Oct. 10, 1968, 48,149/68
Int. Cl. H04b *1/26*
U.S. Cl. 325—446 **7 Claims**



Apparatus for generating an output signal the frequency of which is equal to the sum of the frequencies of two frequency-modulated input signals without demodulating the input signals is used in averaging two frequency-modulated signals and consists of a balanced mixer, and a band-pass filter and an amplitude limiter connected in series to the output of the mixer. The mixer consists of two transformers, two full-wave rectifiers and a differential amplifier connected to generate from two input signals A and B a signal A+B *1* A−B

3,651,411
AUTOMATIC-RECYCLING SIGNAL-SEEKING VOLTAGE-CONTROLLED TUNER

Fredrick Zlotnick, Addison, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Aug. 31, 1970, Ser. No. 68,081
Int. Cl. H04b *1/32*
U.S. Cl. 325—461 **4 Claims**

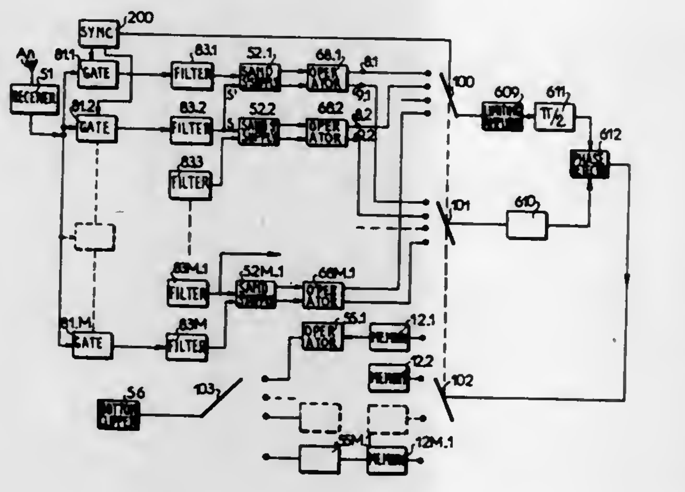


A signal-seeking system for a voltage-controlled tuner wherein automatic recycling is achieved when the control voltage exceeds one limit of the control voltage range. A detector senses the control voltage exceeding its range and activates a restoring circuit which restores a storage capacitor

to the voltage corresponding to the opposite end of the control voltage range. A switching circuit is responsive to the restoration operation to automatically shift the control voltage from one tuner to another in a multi-tuner embodiment. The switching circuit is also used to change the scanning rate of the signal-seeking system.

3,651,412
RECEIVERS FOR PULSED SIGNALS

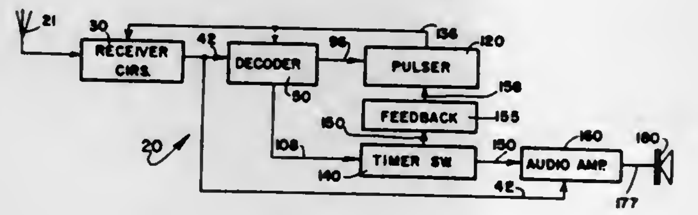
Henri Poinsard, and Marie-Jacques Jullien, both of Paris, France, assignors to Thomson-CSF
Filed Apr. 22, 1970, Ser. No. 30,808
Claims priority, application France, Apr. 28, 1969, 69/13415
Int. Cl. H03k *9/04;* **H04b** *1/10*
U.S. Cl. 325—476 **9 Claims**



In receivers of pulsed signals of a predetermined duration τ, the useful signal is elaborated as a trigonometric function of the phase angle ϕ between the sum signal Σ and difference signal of two samples, A, and B, of a received pulse at respective instants differing by t, t being smaller than τ.

3,651,413
COMMUNICATION RECEIVER INCORPORATING TONE OPERATED PULSER CIRCUIT AND ELECTRONIC SWITCH

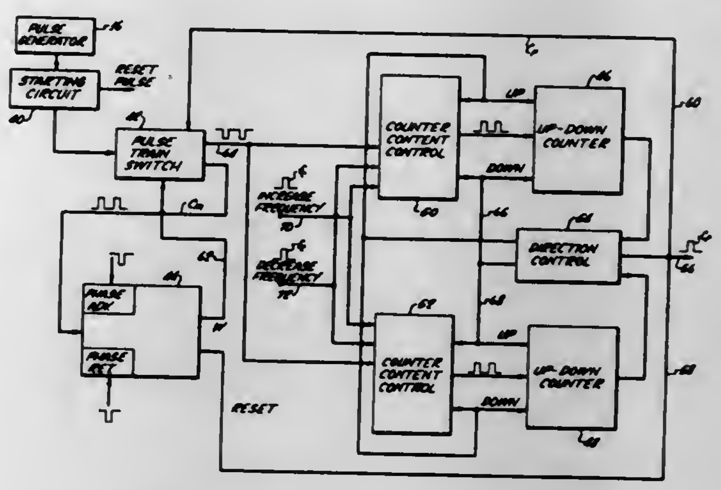
Keith H. Wycoff, P.O. Box 308, Lexington, Nebr.
Filed Sept. 29, 1969, Ser. No. 861,719
Int. Cl. H04b *1/06*
U.S. Cl. 325—492 **28 Claims**



A communication receiver comprising a processing circuit for receiving modulated carrier signals and detecting one or more control tones therein, a pulser circuit coupled to the processing circuit and operative to produce a series of pulses for intermittently rendering the processing circuit operative, and a decoder circuit coupled to the processing circuit and responsive to the control tone or tones for generating at the output thereof a control signal, the pulser circuit being coupled to the output of the decoder circuit and responsive to the application thereto of the control signal to furnish a continuous supply voltage for the processing circuit for an interval substantially longer than the duration of each pulse in the series of pulses.

3,651,414
VARIABLE FREQUENCY SYSTEM

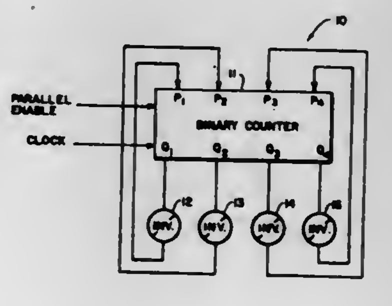
Robert S. Jamieson, assignor to Lorain Products Corp., Lorain, Ohio
Filed Apr. 30, 1970, Ser. No. 33,343
Int. Cl. H03k *21/30*
U.S. Cl. 328—44 **27 Claims**



A digital timing system of high precision and stability is provided with a selectively variable frequency and phase by employing a variable frequency dividing circuit that is responsive to a highly accurate precision crystal clock generator. The variable divider includes a fixed modulus counter which in turn triggers a variable modulus counter. High frequency precision clock pulses are fed first to the fixed counter which upon completion of its count, switches the clock pulses to the variable counter. The latter, when it completes its count, provides an output pulse that (a) constitutes one element of the system output, (b) resets the fixed counter, and (c) switches the clock pulses to the fixed counter whereby the above cycle is repeated. To vary the frequency or repetition rate of the described cycle of operation, the magnitude of the count provided by the variable counter is changed to thereby change the total interval or period of a single cycle. To control the phase of the output signal, the count of the fixed counter is changed during but one of its counts. The variable counter is formed of a pair of reversible, up-down counters each of which provides an output upon reaching the count of one when counting down. The frequency of the output is changed by controllably varying the number to which these variable reversible counters count.

3,651,415
BIDIRECTIONAL COUNTER

Jerry M. Glasson, Skokie, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Dec. 21, 1970, Ser. No. 99,881
Int. Cl. H03k *23/24*
U.S. Cl. 328—44 **7 Claims**

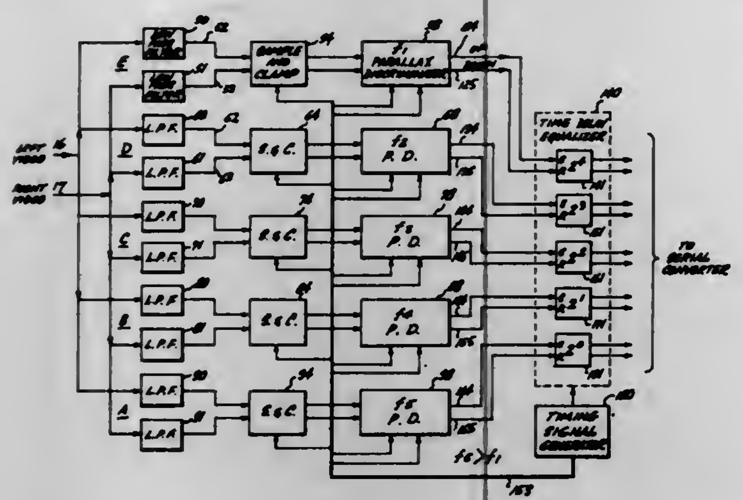


A clock pulse advances a first count into a binary counter, each clock pulse increasing the stored count by one. To subtract one count from the first stored count, the count is inverted and then increased by one count. The increased and inverted count is then re-inverted, resulting in a final stored count which is one count less than the first count.

3,651,416
DIGITAL PARALLAX DISCRIMINATOR SYSTEM

Gilbert L. Hobrough, Vancouver, British Columbia, Canada, assignor to Hobrough Limited, Vancouver, British Columbia, Canada

Filed May 23, 1969, Ser. No. 827,428
Int. Cl. H03d *13/00*
U.S. Cl. 328—133 **11 Claims**

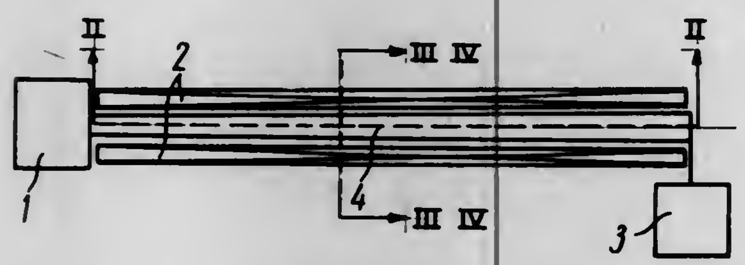


This specification discloses a system which operates on a pair of video signals using digital circuitry for determining the phase relationship between the two signals. The system is particularly adapted for determining the parallax between the left and right video signals in an orthophoto printer system of the type disclosed in my copending application Ser. No. 760,435, filed Sept. 18, 1968. The left and right video input signals derived from the stereophotograph scanning devices in that application are applied to novel frequency band-selection and video-to-digital converter circuits which operate to provide binary signals corresponding to selected frequency bands of the input signals. The output signals from the converter circuits are applied to a plurality of novel parallax discriminators connected in parallel circuit arrangement so that a multi-bit binary representation of the parallax existing between the pair of video input signals is obtained. Details of the overall system as well as of the video-to-digital converters and the digital parallax discriminators are provided.

3,651,417
METHOD FOR LINEAR ACCELERATION OF HEAVY CHARGED PARTICLES AND DEVICE FOR ITS REALIZATION

Alexei Sergeevich Bogomolov, Morskoi prospekt, 16, kv. 40, Novosibirsk, U.S.S.R.

Filed Feb. 17, 1970, Ser. No. 12,015
Claims priority, application U.S.S.R., Feb. 18, 1969, 1303552; 1303551
Int. Cl. H05h *9/02*
U.S. Cl. 328—233 **3 Claims**



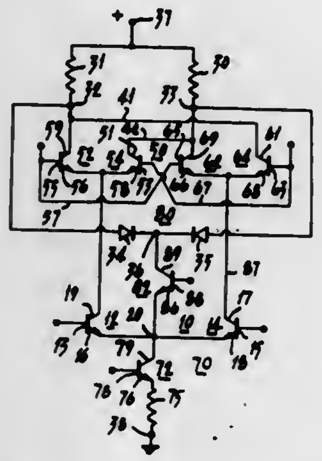
A method for the linear acceleration of heavy charged particles wherein that there is produced a travelling-wave electromagnetic field which propagates against the accelerated beam and whose reverse spatial harmonic is travelling with a velocity which is in synchronism with the velocity of the accelerated beam, and the accelerated beam interacts with the longitudinal electric component of said electromagnetic field.

A linear heavy-particle accelerator in which the accelerating system is in the form of a waveguide fitted with means to secure synchronism between the velocity of the accelerated beam and the velocity of the reverse spatial harmonic of the travelling-wave electromagnetic field produced by an oscillator. The oscillator and the heavy-particle injector are coupled to the opposite ends of the waveguide.

3,651,418
SYNCHRONOUS DETECTOR CONTROL

Erwin Johann Wittmann, N. Plainfield, N.J., assignor to RCA Corporation

Filed Nov. 16, 1970, Ser. No. 89,583
Int. Cl. H03d *3/18*
U.S. Cl. 329—50 **9 Claims**

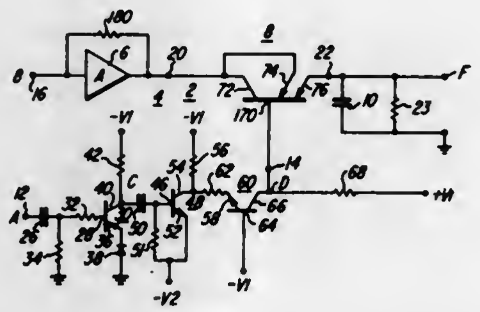


A synchronous detector includes a differential amplifier section formed from two transistors with input signals applied to their base electrodes and output signals taken from their collector electrodes for application to an included synchronous switching section. A current source section is also included to supply substantially constant quiescent current to each of the transistor emitter electrodes, while a control section is additionally included for diverting some of this current away from the differential amplifier transistors when it is desired to reduce the gain of the detector or inhibit its operation. The electrical control section, however, re-inserts the diverted current into the switching section at a point such that the direct output voltage of the detector does not change as the gain is reduced or as its operation is inhibited.

3,651,419
PEAK DEMODULATOR

Donald Walter Janz, Framingham, Mass., assignor to RCA Corporation

Filed July 6, 1970, Ser. No. 52,537
Int. Cl. H03d *1/18*
U.S. Cl. 329—101 **6 Claims**

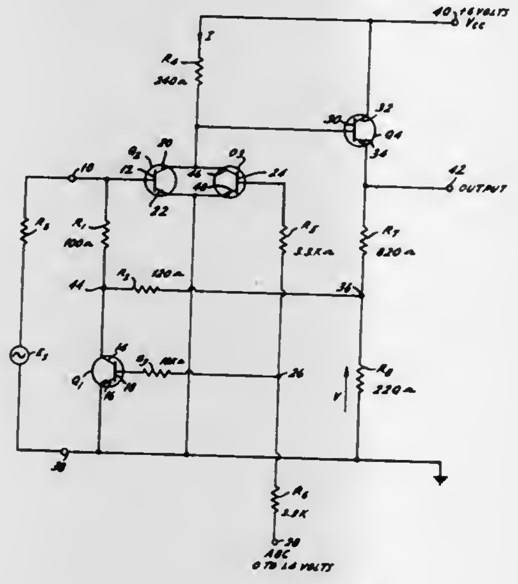


A switch is connected between the output terminal of an amplifier receptive of an amplitude modulated carrier, and a charge storage means. The switch is closed only during each peak of given polarity of an unmodulated carrier of the same frequency as the modulated carrier for permitting the storage means to charge. The time constant of the storage means discharge circuit is sufficiently long so that the storage means does not discharge appreciably during the times the switch is open, whereby a voltage corresponding to the modulation on the carrier develops across the storage means.

3,651,420
VARIABLE GAIN DIRECT COUPLED AMPLIFIER

Kiamil Giontzeneli, Plano, Tex., and Philip E. Hermann, Lansdale, Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed Jan. 13, 1970, Ser. No. 2,488
Int. Cl. H03f *3/42;* **H03g** *3/30*
U.S. Cl. 330—19 **12 Claims**



A transistor amplifier comprising input circuitry for simultaneously adjusting, in response to a control signal, the gain of a transistor amplifying stage and the magnitude of its input signal, and output circuitry for maintaining constant the DC output voltage of the stage as the gain of the stage is varied.

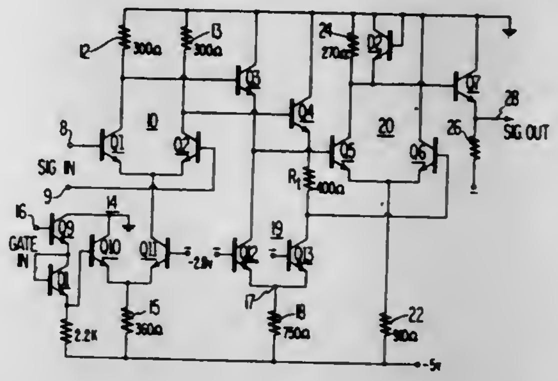
The input circuitry includes a control transistor whose collector to emitter path is comprised in the output legs of first and second voltage dividers. A gain control signal, e.g., an AGC signal, applied to the base of the control transistor controls the collector to emitter resistance of the control transistor, thereby controlling simultaneously the respective voltage divisions effected by the two dividers. The first divider controls the gain of the transistor amplifying stage by controlling its operating bias, and the second divider determines the fraction of the input signal applied to the amplifying stage.

The output circuitry includes a third transistor the collector and emitter of which are directly connected to the collector and emitter respectively of the amplifying transistor and the base of which is supplied with the gain control signal. The two transistors share the same collector load resistor. As the gain control signal varies, the DC collector current of the third transistor changes in a direction opposite to that in which the collector current of the amplifying transistor changes, and by a substantially equal amount. Since the amplifying and third transistors share the same load resistor, the net DC current therethrough remains constant. Hence the DC output voltage of the stage also remains constant.

3,651,421
GATED AMPLIFIER

Howard Raymond Beelitz, Princeton, N.J., assignor to RCA Corporation

Filed June 8, 1970, Ser. No. 44,237
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 D **1 Claim**

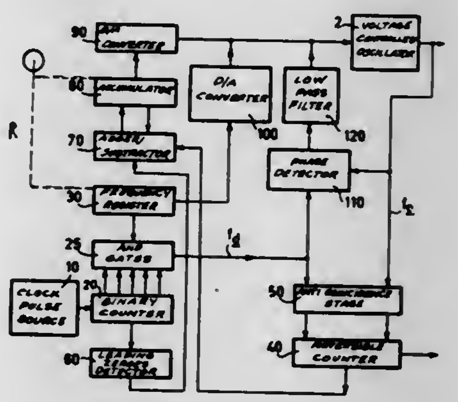


A gated amplifier which is useful, for example, as a sense amplifier in a semiconductor memory includes a first differential amplifier having two normally non-conducting transistors. The two transistors are rendered conductive for amplifying an input signal by a switchable constant-current source responsive to a gating signal. A first normally conducting emitter follower is coupled from the output of one transistor in the first differential amplifier to the input of a corresponding transistor in a second differential amplifier. A second normally conducting emitter follower is coupled from the output of the other transistor in the first differential amplifier through a threshold determining impedance to the input of the corresponding transistor in the second differential amplifier. The second differential amplifier switches in response to an input signal of one polarity exceeding a predetermined threshold, and is unresponsive to common mode signal disturbances coupled thereto from the first differential amplifier.

3,651,422
FREQUENCY SYNTHESISER

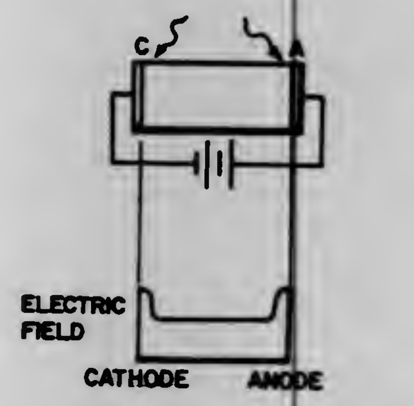
Michael James Underhill, Ifield, Crawley, England, assignor to U.S. Philips Corporation

Filed July 29, 1970, Ser. No. 59,066
Claims priority, application Great Britain, July 31, 1969, 38,503/69
Int. Cl. H03b *3/04*
U.S. Cl. 331—1 A **6 Claims**



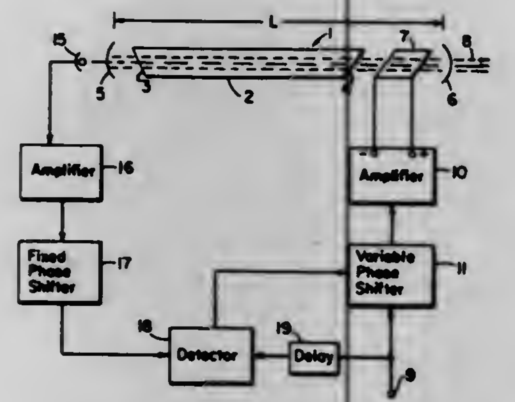
The frequency synthesiser consists of a binary rate multiplier giving an output at the desired frequency of the synthesizer, the output however being spectrally impure. The actual output of the synthesiser is taken from a voltage controlled oscillator; in order to maintain the voltage controlled oscillator at the correct frequency its output and that of the binary rate multiplier are supplied to opposite inputs of an up/down counter. The counter gives an error signal when its count varies from a predetermined range. The magnitude of the error is obtained from the binary rate multiplier, and the error signals are supplied via an accumulator to a digital-to-analogue converter controlling the voltage controlled oscillator.

3,651,423
LOGIC DEVICE EMPLOYING LIGHT-CONTROLLED GUNN-EFFECT OSCILLATIONS
Kenneth G. Sewell, Palo Alto, Calif., assignor to Advanced Technology Center, Inc., Grand Prairie, Tex.
Filed June 24, 1970, Ser. No. 49,409
Int. Cl. H03b *7/00*
U.S. Cl. 331—66 **7 Claims**



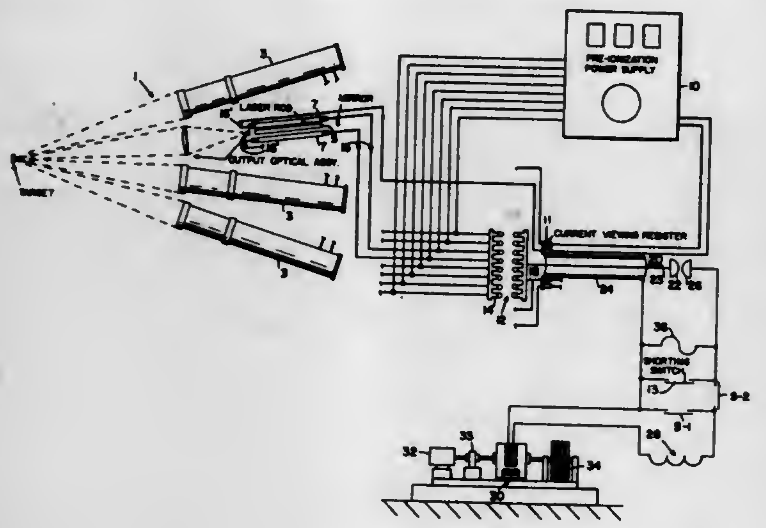
Disclosed is a Gunn-effect device which is sensitive to light, comprising a semiconductor such as a crystal of N-type gallium arsenide having high-resistance, alloyed contacts of, for example, indium and gold, characterized by the capability of being switched on and off by regulating the bias voltage across the crystal and the incident light on narrow portions of the crystal. In particular, incident light on the domain-forming and domain-terminating portions of the crystal is adjusted as to selectively foster or inhibit oscillation of the crystal.

3,651,424
MODE-LOCKED PHASE-STABILIZED LASER DEVICE
Yoshito Ueno, and Youichi Matsumoto, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan
Filed July 23, 1970, Ser. No. 57,641
Claims priority, application Japan, July 24, 1969, 44/58624
Int. Cl. H01s *3/10*
U.S. Cl. 331—94.5 **4 Claims**



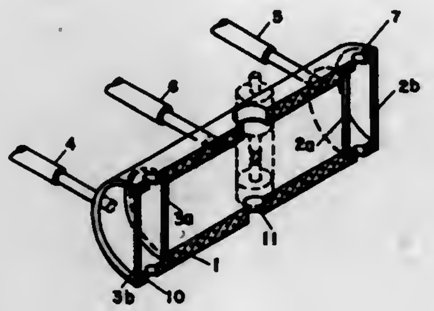
In a mode-locked laser device the phase shift of the output pulse and the mode locking signal are compared. The latter signal is controlled in response to this comparison to thereby maintain the laser output pulse in phase with the mode locking signal.

3,651,425
MULTIPLE UNIT LASER SYSTEM
William B. McKnight, Somerville, Ala., assignor to The United States of America as represented by the Secretary of the Army
Filed Dec. 22, 1964, Ser. No. 421,153
Int. Cl. H01s *3/02, 3/09*
U.S. Cl. 331—94.5 **6 Claims**



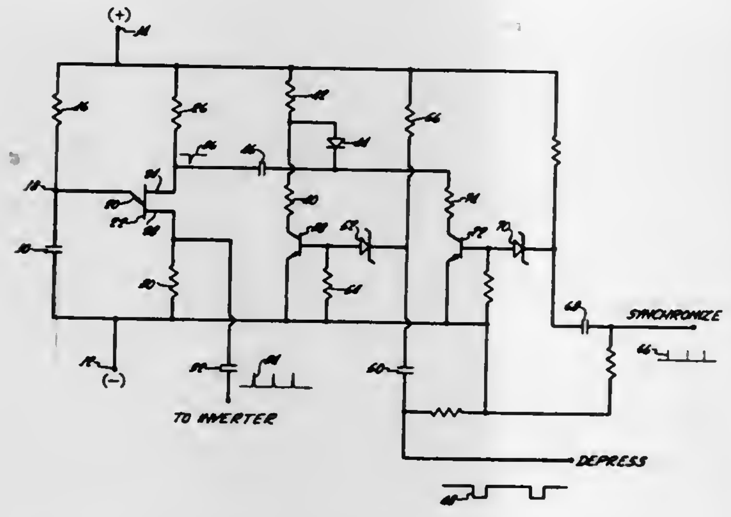
A system for concentrating high energy laser beams having a plurality of laser modules directed to a common point. A single inductive energy source is connected to the modules for simultaneously energizing the lasers.

3,651,426
LIGHT-SENSITIVE GUNN-EFFECT DEVICE
Lynn A. Boatner, Irving, Tex., and Kenneth G. Sewell, Palo Alto, Calif., assignors to Advanced Technology Center, Inc., Grand Prairie, Tex.
Filed June 24, 1970, Ser. No. 49,408
Int. Cl. H03b *7/06*
U.S. Cl. 331—107 G **16 Claims**



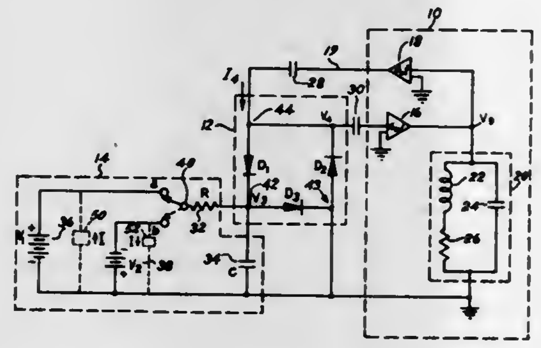
Disclosed is a Gunn-effect device comprising, for example, a crystal of *n*-type gallium arsenide having alloyed contacts (e.g., indium and gold) which is switched from one frequency of oscillation to another by controlling the incident light while maintaining an appropriate temperature and bias voltage. It is believed that trap zones which are localized within the crystal by virtue of introducing acceptor impurities account for a frequency of oscillation different from the usual transit-time frequency. The Gunn domains and the incident light are made to dynamically perturb the trap system so as to achieve a non-equilibrium condition.

3,651,427
OSCILLATOR SYNCHRONIZATION
Paul E. Rolfes, Costa Mesa, Calif., and Robert S. Jamieson, Guadalajara, Mexico, assignors to Lorain Products Corporation, Lorain, Ohio
Filed Dec. 17, 1969, Ser. No. 885,898
Int. Cl. H03k *3/08*
U.S. Cl. 331—153 **12 Claims**



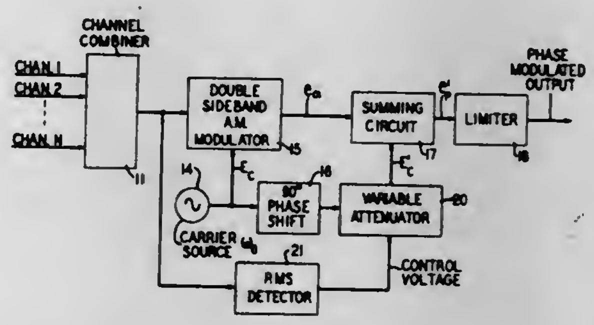
A relaxation oscillator having a natural frequency substantially the same as the frequency of a source of AC power is synchronized from the power source without the use of any DC connection to or from the oscillator. The natural frequency of the oscillator is momentarily depressed just prior to and during the application of synchronizing pulses to the oscillator from the AC source. The arrangement is particularly useful in a standby power supply system which is synchronized to an AC power line at all times and which continues to supply power after the line fails. The standby power, supply includes an inverter that is driven at the AC power source frequency by the synchronized oscillator.

3,651,428
GRADUAL ON-OFF KEYING CIRCUIT FOR AN OSCILLATOR
Richard Brander, Cicero, Ill., assignor to Beltone Electronics Corp.
Filed May 25, 1970, Ser. No. 40,115
Int. Cl. H03b *3/00, 5/08*
U.S. Cl. 331—173 **13 Claims**



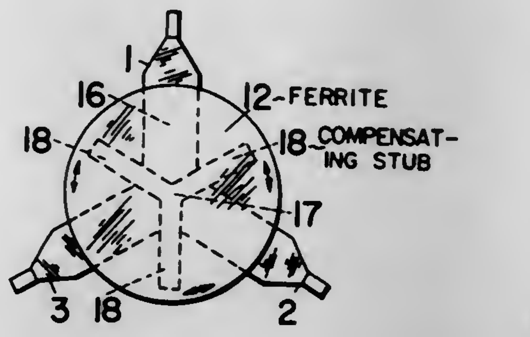
A diode network controls the amplitude of oscillation of an oscillator signal. A resistor and capacitor and series connected keying switch connectable to either one of two DC voltage sources function to vary the bias on the diodes gradually between a first and a second level so that the oscillator may be smoothly keyed on and off.

3,651,429
MODULATOR COMPENSATED FOR VARYING MODULATING SIGNAL LEVEL
Clyde Leslie Ruthroff, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights,, N.J.
Filed Dec. 9, 1970, Ser. No. 96,346
Int. Cl. H03c *3/04*
U.S. Cl. 332—18 **7 Claims**



A phase or frequency modulator of the quadrature or Armstrong type is modified such that the amplitude of the quadrature component will be reduced in proportion to any reduction in the power of the modulating signal so that the modulation index remains constant despite variation in the level of the modulating signal.

3,651,430
STRIP-LINE CIRCULATOR HAVING MOVABLE COMPENSATING STUB STRIP OVERLYING CENTRAL STRIP-LINE CONDUCTORS
Yukio Ito; Haruo Yokouchi, and Kenji Konno, all of Kawasaki-shi, Japan, assignors to Fujitsu Limited, Kawasaki-shi, Kanagawa-ken, Japan
Filed Sept. 30, 1965, Ser. No. 491,676
Claims priority, application Japan, Oct. 6, 1964, 39/57000
Int. Cl. H01p *1/32, 5/12*
U.S. Cl. 333—1.1 **2 Claims**



1. In a strip-line microwave circulator comprising at least three central strip conductors disposed between parallel outer conductors and connected at one of their ends at a central point with said strip conductors, being parallel to said outer conductors and extending radially outwardly from said point, including predetermined angles with each other, a pair of concentric gyromagnetic discs disposed at said point each between one side of said strip conductors and the adjacent outer conductors, and means to magnetize said discs in a direction substantially at right angle to said conductors, to create microwave circulators switching action; the improvement consisting in the provision of unitary stub conductors disposed between any two adjacent ones of said strip conductors, each of said stub conductors having one end coupled with the junction between the respective strip conductors

and extending outwardly along the symmetry line thereof to a distance being in excess of half the radius and less than the full radius of said discs, said strip conductors being in the form of an integral Y-shaped conducting spider strip with the axes thereof including equal angles of 120° between them, said stubs consisting of a further spider strip concentric with and overlying said first spider strip and movable in a parallel plane relative to the latter so as to compensate for any minor imbalance of admittances at the input terminals of the circulator, said outer conductors comprising a first cover member and a bottom member extending over the respective ferrite discs, a casing ring connecting the first cover member to the bottom member, said means to magnetize said discs consisting of a single permanent magnet extending over said first cover member, a second cover member extending over said permanent magnet, the first and second cover members, a substantial portion of the casing ring and the bottom member being formed of magnetic material to provide a magnetic circuit for said permanent material.

3,651,431

ZERO TEMPERATURE COEFFICIENT ULTRASONIC TRANSMISSION MEDIUM HAVING TEMPORAL STABILITY

John T. Krause, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 5, 1969, Ser. No. 821,693
Int. Cl. H03f *3/68;* **C03c** *3/04, 3/10*
U.S. Cl. 333—30 R **3 Claims**

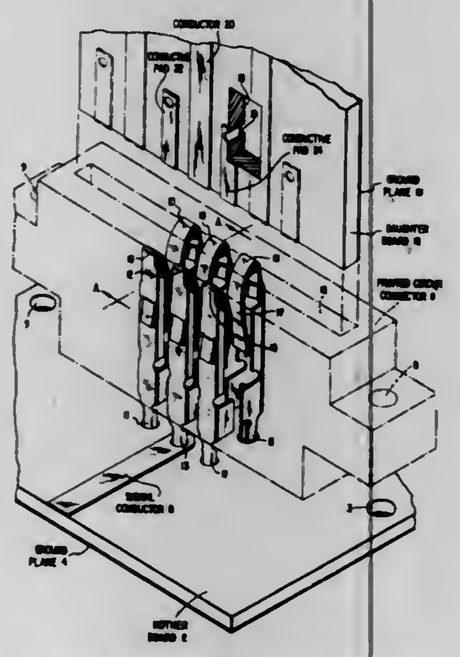
An ultrasonic delay line, having as the delay medium a glass of the nominal composition in mole per cent 17 per cent lead oxide, 95 per cent barium oxide and 73.5 per cent silicon dioxide, exhibits an average temperature coefficient of delay time of not more than about ±5 parts per million per degrees centigrade over the range 0° to 100° C., a thermal after-effect of not more than about 10 p.p.m., and an aging of delay time of not more than −10 parts per million per decade (decade is an order of magnitude of time in days).

3,651,432

IMPEDANCE MATCHED PRINTED CIRCUIT CONNECTORS

Homer Ernst Henschen, Carlisle, and Emerson Marshall Reyner, II, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 14, 1970, Ser. No. 28,485
Int. Cl. H03h *7/38;* **H01p** *3/08, 5/08*
U.S. Cl. 333—33 **9 Claims**



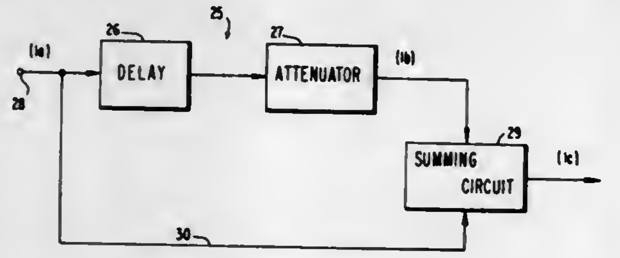
A unique means is disclosed for interconnecting and impedance matching microstrip circuits mounted on printed circuit boards using conventional printed circuit connectors. For coupling and matching a microstrip on one board to a microstrip on another board, the invention utilizes a printed circuit board with novel grounded conductive pads formed thereon. By grounding alternate connector contacts to the ground plane of one of the printed circuit boards and by connecting the conductive pads of the other board to the alternate grounded contacts of the connector, matching is accomplished. Similar matching means are used to match a coaxial line to a microstrip circuit mounted on a printed circuit board.

3,651,433

CIRCUIT FOR PROCESSING REFLECTED SIGNALS

Lawrence W. Langley, Severna Park, Md., assignor to Symbionics, Incorporated, Annapolis, Md.

Filed Mar. 2, 1970, Ser. No. 15,583
Int. Cl. H03h *7/10, 9/00;* **H03k** *5/159*
U.S. Cl. 333—70 T **6 Claims**



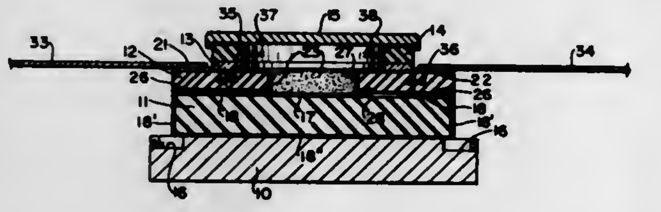
A circuit for processing reflected signals is described. The reflected signal is delayed for a period of time which is equal to the period of the first half cycle of the reflected signal. It is also attenuated by an amount equal to the difference in amplitude between the first and second half cycles of the reflected signal. The delayed and attenuated signal is then combined with the reflected signal so that only the first half cycle of the reflected signal and the last half cycle of delayed signal remain.

3,651,434

MICROWAVE PACKAGE FOR HOLDING A MICROWAVE DEVICE, PARTICULARLY FOR STRIP TRANSMISSION LINE USE, WITH REDUCED INPUT-OUTPUT COUPLING

Patrick L. McGeough, Somerville; George J. Gilbert, Whitehouse Station, and Donald F. Henrikson, Somerset, all of N.J., assignors to Microwave Semiconductor Corp., Somerset, N.J.

Filed Apr. 30, 1969, Ser. No. 820,392
Int. Cl. H01p *3/08;* **H05k** *9/00, 1/18*
U.S. Cl. 333—84 M **25 Claims**



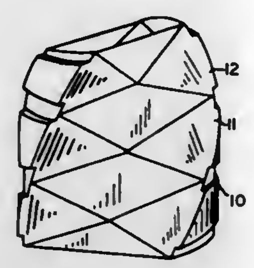
An hermetically sealed microwave package for holding a transistor or other microwave device has a multiplane terminal arrangement which facilitates use with strip transmission line. Input and output circuits are shielded to reduce mutual coupling, and degenerative coupling in the common or ground plane connection is largely avoided. The input and output circuits have a strip transmission line configuration and may be designed for impedance matching purposes. A thermally conductive path is provided from the mounting surface to the exterior, and a heat sink may readily be attached.

3,651,435

GRADED STEP WAVEGUIDE TWIST

Henry J. Riblet, 35 Edmunds Road, Wellesley, Mass.

Filed July 17, 1970, Ser. No. 55,857
Int. Cl. H01p *1/02, 11/00*
U.S. Cl. 333—98 R **8 Claims**



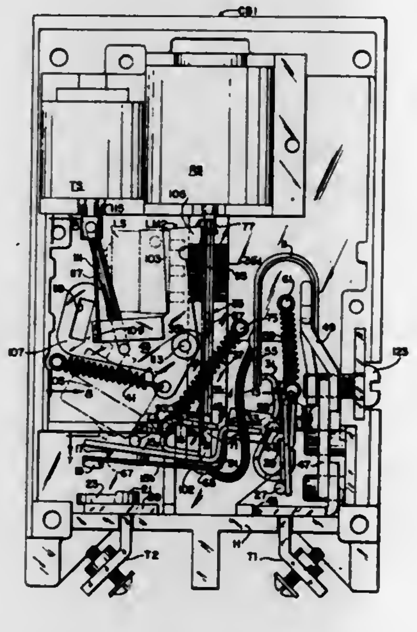
A waveguide twist is constructed of basic sections arranged to form a continuous waveguide which rotates the plane of polarization of the guided waves through a large angle in a short distance without appreciable wave energy reflection. Each basic section is approximately one quarter wavelength long and has portions of its broad walls sloped to cause the plane of polarization of the wave energy propagating through the waveguide to be gradually rotated without storage of an appreciable amount of energy in the section and without encountering any abrupt change in cross-sectional area within the waveguide twist. The sloped wall portions form graded steps which replace the abrupt steps that occur at the transitions between segments of a shear twist and "capacitive" recesses in the basic section are provided to tune out the shunt inductance of the section.

3,651,436

CIRCUIT BREAKER

Lawrence E. Cooper, and Robert W. Peterson, both of Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1970, Ser. No. 479
Int. Cl. H01h *77/06*
U.S. Cl. 335—13 **16 Claims**



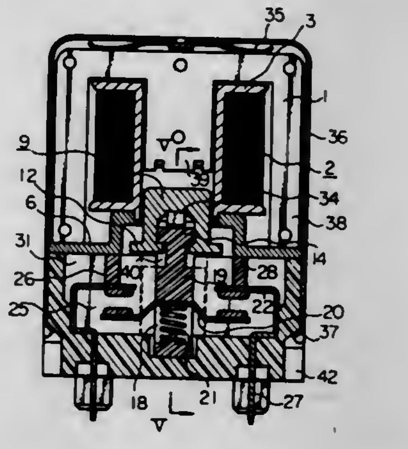
A miniature remote control circuit breaker in which a movable contact member including a movable contact is engageable with a fixed contact. Motor means, such as a solenoid and an armature actuated thereby, move the contact member from a contacts-open position to a contacts-closed position when the solenoid is energized by remote switch means. Preferably a linkage including two resiliently connected driving members is employed to couple the motor means to the contact member. Condition-sensing (e.g., current-sensing) latch means retain the contact member in its contacts-closed position until the condition sensed varies beyond a predetermined value whereupon the latch means releases the contact member, thereby opening the contacts independently of the energization of the motor means. Further latch means are provided to retain the contact member in its closed position. The latter latch means are responsive to further actuation of the remote switch means thereby to release the contact member and separate said contacts. A further solenoid and armature are preferably provided to effect the release of the further latch means in response to further actuation of the remote switch means.

3,651,437

ELECTROMAGNETIC CONTACTOR

Yamada Kiyoshi, Kadoma, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Mar. 19, 1971, Ser. No. 125,950
Int. Cl. H01h *50/00*
U.S. Cl. 335—131 **4 Claims**



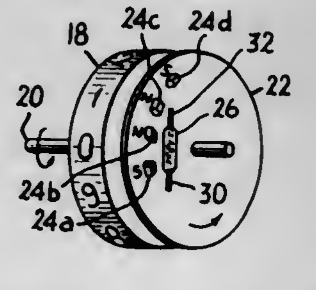
A small type electromagnetic contactor including a pivotless carrier for a movable core adapted for stable magnetic coupling to a fixed core and to easy-assembly structure. The movable core substantially of rectangular body and having a reverse U-shaped section has at the lower end of both legs a lateral inward and outward extension so as to provide a downward groove in the body of substantial T-shape. The carrier includes an upward projection of a substantially complementary shape to the T-shaped groove of the core, and the core is resiliently mounted on the carrier projection. The carrier holds in its body a plurality of resiliently movable contacts. Fixed contacts to oppose these movable contacts are arranged in arrays within an insulating box separated from each other by walls of the box. An insulating lock means is mounted on the fixed contacts to lock them in a fixed position.

3,651,438

PULSE GENERATOR

Masayuki Hayashi, and Mitsunori Yamane, Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1969, Ser. No. 887,943
Claims priority, application Japan, Jan. 6, 1969, 44/1915
Int. Cl. H01h *51/28*
U.S. Cl. 335—207 **8 Claims**

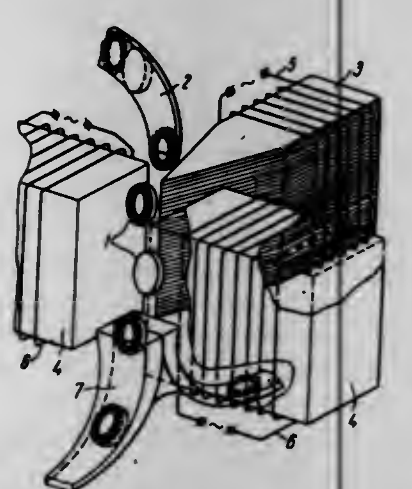


The pulse generator disclosed comprises five magnetic reed switches disposed above a rotary magnetic disc and at equal angular intervals on a circle concentric with the disc and four permanent magnet pairs disposed on the disc to selectively face the switches during rotation of the disc such that selected two of the switches are put in their closed position for each of incremental rotations of the disc. In this way 10 different coded outputs are provided.

3,651,439
METHOD OF ORIENTING ELECTRICALLY CONDUCTIVE BODIES, PREFERABLY NON-MAGNETIC ONES, IN A MAGNETIC FIELD AND APPARATUS FOR PERFORMING SAME

Benyamin Alexandrovich Ioffe, ulitsa Raunas, 45/2, kv. 81, Riga; Artur Eduardovich Mikelson, ulitsa Miera, 16, kv. 36, poselok Salapils Rizhsky raion; Aron Judovich Makhlin, Schelkovskoe shosse, 67, korpus 2, kv. 6, Moscow; Mikhail Khaimovich Lapidus, ulitsa Suvorova, 70, kv. 9, Riga; Jury Nikolaevich Salnikov, ulitsa Radistov, 8, kv. 9, Gorky; Alexandr Zhanovich Kazhe, ulitsa Bikernieku, 9, kv. 26, and Ivan Avgustovich Trushelis, ulitsa Aluksnes, 3, kv. 27, both of Riga, all of U.S.S.R.

Filed Dec. 15, 1969, Ser. No. 885,193
Claims priority, application U.S.S.R., Dec. 25, 1968, 1289058
Int. Cl. H01f *1/100*
U.S. Cl. 335—219 3 Claims



There are disclosed a method of orienting electrically conductive bodies, preferably, made of non-magnetic materials, in a magnetic field and an apparatus for performing this method, according to which a body is oriented by the action thereupon of a non-uniform magnetic field created by an alternating electric current, by means of a electromagnet, the orientation operation being determined by the features of the body, giving different electric conductivity to the portions of this body, disposed at the opposite sides thereof.

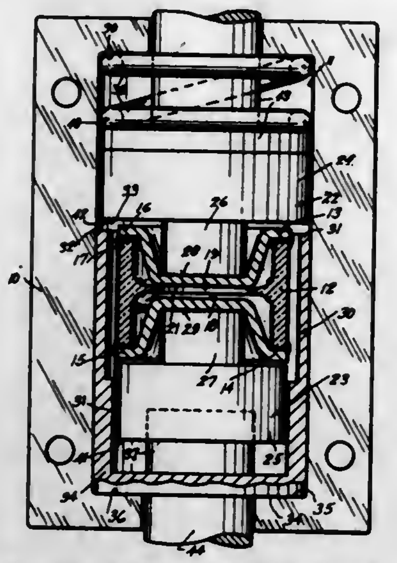
Such method can be used for orienting various articles and workpieces having hidden internal characteristic features, such as flat bi-metal workpieces of non-magnetic electrically conductive articles having asymmetrical opposite sides, or else articles enclosed within an external casing, so that their characteristic structural or technological features are hidden from view.

3,651,440
OVER VOLTAGE ARRESTER

Alex Bahr, and Gerhard Lange, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 4, 1970, Ser. No. 34,400
Claims priority, application Germany, May 5, 1969, P 19 22 823.0
Int. Cl. H01h *39/00*
U.S. Cl. 337—31 3 Claims

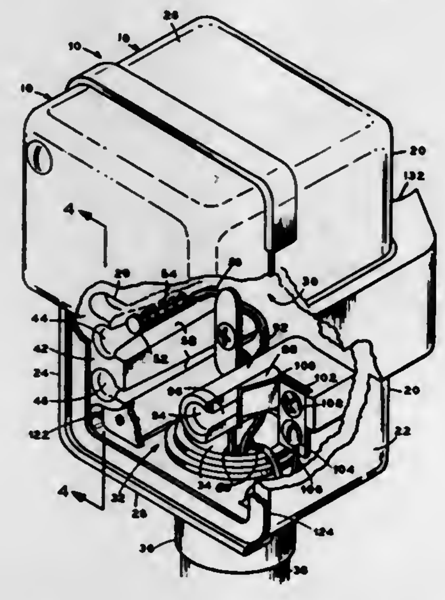
A voltage arrester having a tubular insulating member with a pair of electrodes disposed at opposite ends of the tubular member and facing inwardly thereof. The electrodes are frustum-shaped and have surfaces facing each other and spaced apart adjacent the center of the tubular insulating member. A relatively large contact block is placed in good thermal conductive relationship with each of the respective electrodes. The contact blocks are formed of a good thermal conducting material and are slidably disposed in a housing which contains the voltage arrester. The housing is tubular shaped, and a bias spring urges one of the contact blocks together with the insulating member and the associated electrodes toward the other contact block. The other contact block is held in fixed position by a fusible material which when melted allows the entire assembly to slide within the housing. A further electrode is formed as a cylindrical member disposed within the housing and electrically coupled to one of the contact blocks and having a surface positioned to and spaced from the other contact block. When the fusible material is melted, the other contact block is moved into engagement with the surface of the further electrode.



3,651,441
ELECTRICAL JUNCTION BOX

Angelo Boudouris, Sylvania, Ohio, assignor to Eprad Incorporated, Toledo, Ohio

Filed Dec. 1, 1969, Ser. No. 881,073
Int. Cl. H01h *85/50*
U.S. Cl. 337—186 6 Claims

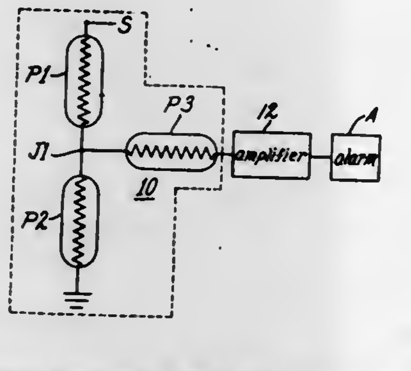


An electrical junction box includes a base and a cover, with the cover having fuses mounted thereon and extending outwardly therefrom. An electrical device such as a portable electric heater for a drive-in theater has conductors extending into the cover and electrically connected to ends of the fuses held thereby. The base has recesses to receive the opposite ends of the fuses, when the cover and base are assembled, with supply lines supplying power to the fuses through electrical contacts in the recesses. When the cover is removed, the circuit is broken between the fuses and the supply lines in the base, thereby disconnecting the electrical device associated with the cover for safety. The base and cover preferably are made of fiberglass-reinforced plastic or similar insulating material for shock-resistance and durability.

3,651,442
DETECTION DEVICE

Alfred W. Vasel, 222 Linwood St., Abington, Mass.

Filed Dec. 10, 1969, Ser. No. 883,969
Int. Cl. H01c *7/08*
U.S. Cl. 338—17 5 Claims

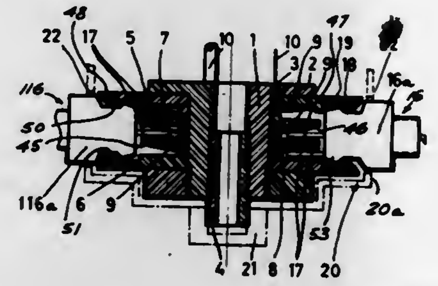


An optical fire detector in which a red-responsive cell and a blue-responsive cell are connected into a voltage divider circuit, and a third cell non-responsive to a specific frequency band is connected between the junction of the first two cells and the input of an amplifier of an alarm circuit.

3,651,443
DISTRIBUTOR FOR ELECTRIC CURRENT

Juan Jose Mas Quilez, Santiago Apostol, 91-bis, Hospitaler, Barcelona, Spain

Filed Aug. 4, 1969, Ser. No. 847,347
Claims priority, application Spain, Aug. 2, 1968, 356,838
Int. Cl. H01r *9/00, 13/54*
U.S. Cl. 339—20 11 Claims



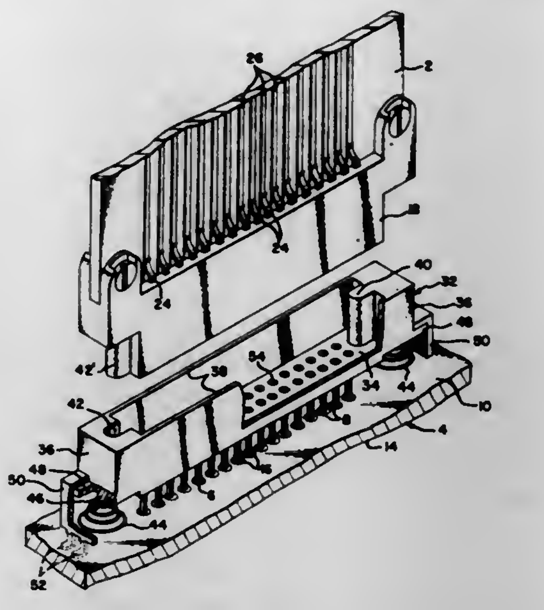
A distributor for electric current wherein the receptacle comprises a set of insulating walls which define three compartments for ring-shaped conductors. The open sides of the compartments are located at the periphery or at one axial end of the receptacle. The plugs have blades which extend radially inwardly or in parallelism with the axis of the receptacle, and the conductors have axially parallel tongues which extend from the receptacle and can engage complementary terminals in an outlet.

3,651,444
PRINTED CIRCUIT BOARD CONNECTOR

Jerome Andrew Desso, Oberlin, and Homer Ernst Henschen, Carlisle, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 23, 1970, Ser. No. 49,061
Int. Cl. H01r *13/44;* **H05k** *1/02*
U.S. Cl. 339—42 4 Claims

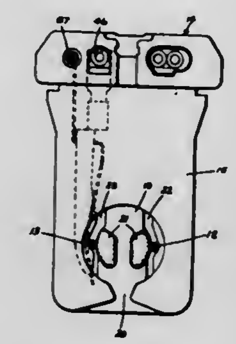
Electrical connector adapted to receive a mating connector is mounted on panelboard having terminal posts therein. Holes in the connector receive the ends of the terminal posts and connector is resiliently biased above surface of panelboard so as to protect the posts. Upon engagement with the mating connector, the connector is moved downwardly towards the surface of the panelboard, the posts move relatively through the holes, and enter contact sockets in the mating connector.



3,651,445
LAMPHOLDER

Wallace R. Francis, Milford, Conn., assignor to General Electric Company

Filed Mar. 23, 1970, Ser. No. 21,711
Int. Cl. H01r *9/08, 33/14*
U.S. Cl. 339—53 5 Claims



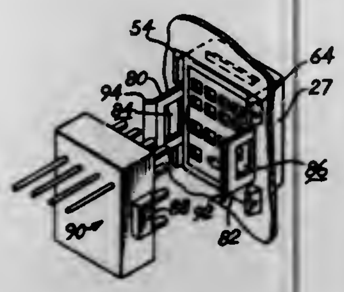
A lampholder for connecting a fluorescent lamp to a supply circuit and for connecting a ballast or other starting circuit for the fluorescent lamp to the supply circuit. The lampholder includes a housing defining an opening for insertion of a lamp connection pin and a contact accommodating recess communicating with the opening. First and second elongated contacts are mounted in the recess in overlying relationship and are held in spaced apart relationship. The first contact includes a planar contact making section which makes a pin seat section of the second contact so the first contact engages the connection pin whenever the second contact engages the connection pin.

3,651,446
PANEL MOUNTING APPARATUS

Walter C. Sadogierski, Park Ridge, and William W. Wright, Wheaton, both of Ill., assignors to Guardian Electric Manufacturing Company, Chicago, Ill.

Filed Nov. 12, 1969, Ser. No. 875,855
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R 2 Claims

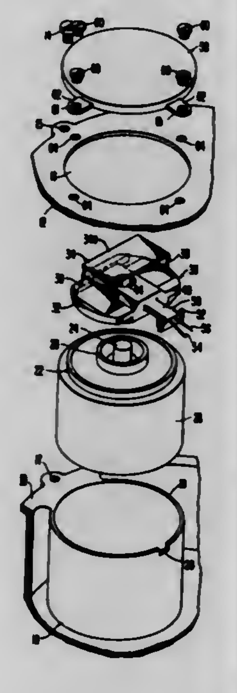
An adapter for mounting an electric socket or the like in a panel board. The adapter is shaped to receive and hold the socket. Spaced lugs extend outwardly from opposite sides of the adapter and engage the rear side of the panel. First and second flanges also extend outwardly from the adapter adjacent the lugs for holding the appliance against the front side of the panel. The flanges are fastened to the adapter by resilient, outwardly biased segments that hold the flanges in engagement with the front side of the panel. The biased segments may be releasably moved toward the adapter to install or remove the adapter from the panel board thereby allowing the socket to be wired prior to the time it is mounted in the panel board.



3,651,447
ELECTRIC DEVICE AND COAXIAL CONNECTION

Richard P. Branco, Bridgeport; Edgar O. Sprude, Philadelphia, and Albert W. Diener, Willow Grove, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed June 29, 1970, Ser. No. 50,733
Int. Cl. H01r *13/58, 17/06*
U.S. Cl. 339—102 R **6 Claims**



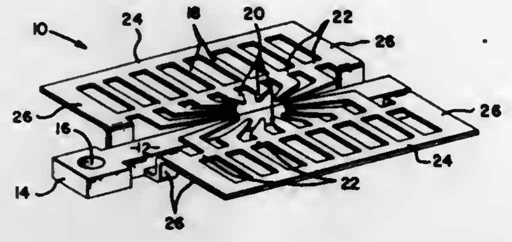
An electric device and a terminal connection which includes a connector for electrically connecting the device to conductors of a circuit. The terminals of the device are coaxial and located at the same end of the device. The connector has a handle which facilitates disconnecting it and which folds compactly when the electric device and terminal connection are packaged. The connector is so mounted that it retains its orientation whenever it is disconnected from the electric device.

3,651,448
POWER FRAME FOR INTEGRATED CIRCUIT

William Vito Pauza, Palmyra, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 20, 1970, Ser. No. 21,348
Int. Cl. H01r *13/00*
U.S. Cl. 339—112 R **4 Claims**

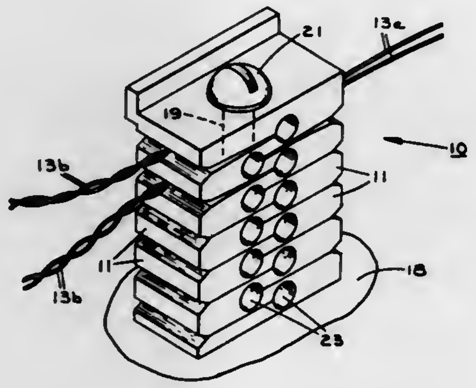
This disclosure relates to power frames for mounting integrated circuits and, more particularly, to a metallic mounting member upon which a semiconductor device may be mounted and connected to form a completed device utilizing automatic equipment for assembly encapsulation, the mounting member including provision for efficient and rapid dissipation of heat produced in the semiconductor device.



3,651,449
RESILIENT TERMINAL BLOCKS

Frederick W. Hall, and George Poehlmann, both of Indianapolis, Ind., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed June 18, 1969, Ser. No. 834,329
Int. Cl. H01r *7/08*
U.S. Cl. 339—244 R **5 Claims**



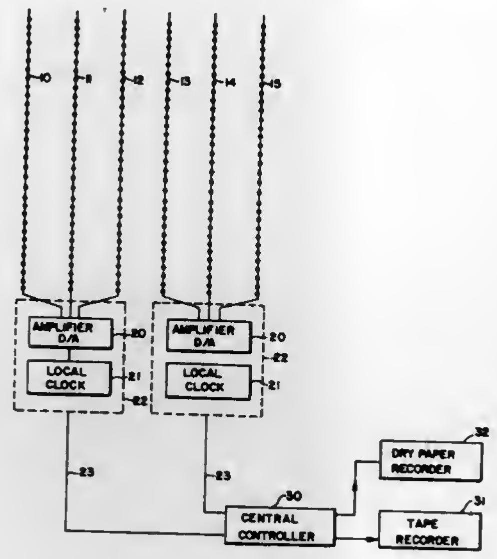
A terminal block which in one embodiment comprises a serpentine array of integrally molded plastic clamping members with pre-formed spaces therebetween. In a second embodiment, the terminal block is molded in two units, with a double row array of spaced clamping members in one unit being interleaved with those in the other unit when assembled. Such terminal blocks as a whole, and the clamping members thereof, in particular, are sufficiently resilient so that the latter by spring action facilitate the selective insertion of terminals therebetween, as well as the selective removal of terminals therefrom without adversely affecting any other terminal connections.

3,651,450
RECORDING SYSTEM FOR SEISMIC SIGNALS

Thomas W. Lamb; Robert E. Lee; William C. Montgomery, Jr., all of Houston; William R. Orr, Bellaire, and Charles B. Vogel, Houston, all of Tex., assignors to Shell Oil Company, New York, N.Y.

Filed Oct. 20, 1969, Ser. No. 867,523
Int. Cl. G01v *1/28*
U.S. Cl. 340—15.5 **10 Claims**

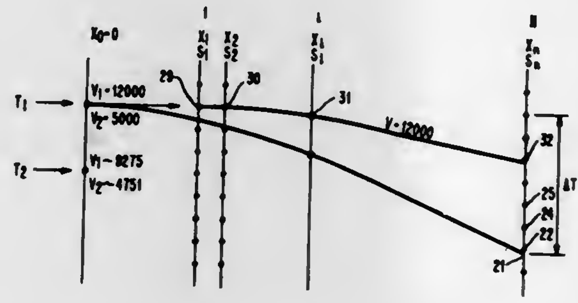
A recording system adapted to digitally record the data from a large number of geophones wherein the geophones are divided into subgroups with the data from each subgroup being multiplexed with a local clock signal and transmitted to a central recording station where it is partially demultiplexed, stretched in time, and recorded.



3,651,451
CONTINUOUS VELOCITY ESTIMATION

William H. Ruehle, Duncanville, Tex., assignor to Mobil Oil Corporation

Filed Oct. 23, 1969, Ser. No. 868,784
Int. Cl. G01v *1/00*
U.S. Cl. 340—15.5 **11 Claims**



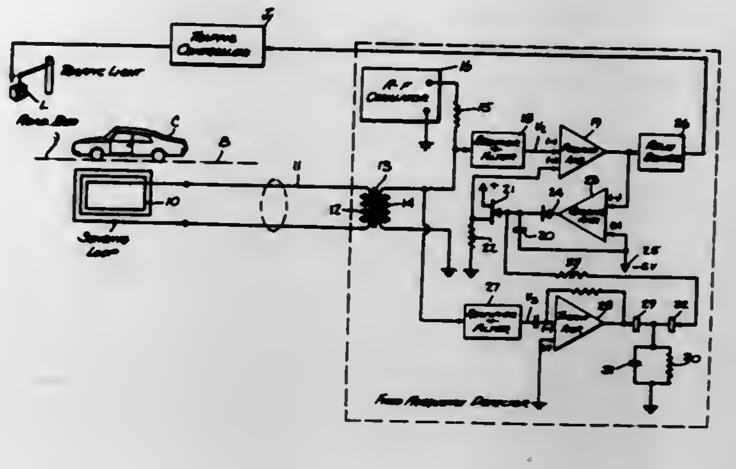
In seismic exploration, an index set of travel time curves is specified. This index set of travel curves is used to determine velocity by a signal detection technique. At different values of zero offset time, different velocities are associated with each of the curves. Since the index set of travel time curves is computed only once, for a prescribed velocity time range, considerable computer time is saved.

3,651,452
FIXED-FREQUENCY VEHICLE DETECTOR

Milton Friedman, Roslyn, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Apr. 17, 1970, Ser. No. 29,393
Int. Cl. G08g *1/00*
U.S. Cl. 340—38 L **8 Claims**

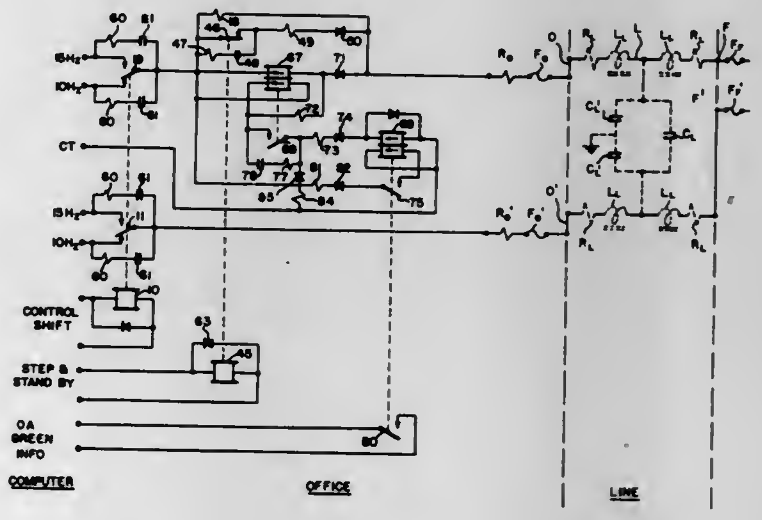
A vehicle detector for sensing the presence of a vehicle and for producing a control signal to activate a traffic controller or other vehicle-responsive system associated with the detector. The detector includes an inductive loop buried in the road bed, the loop being coupled to a fixed-frequency R-F oscillator. An output signal is derived from the loop whose amplitude depends on the impedance thereof, which impedance is subject to a rapid change in value when a vehicle or other metallic mass passes in the vicinity thereof and to slow changes in value as a result of varying environmental conditions. This output signal is compared with a reference signal also derived from the loop, which reference signal has a level unaffected by said rapid change but depends on said slow changes to produce a control signal which reflects the presence of a vehicle. The control signal serves to activate the associated system.



3,651,453
VEHICLE TRAFFIC CONTROL SYSTEM

Norman A. Bolton, Scottsville, and Klaus H. Frielinghaus, Rochester, both of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Mar. 12, 1970, Ser. No. 18,979
Int. Cl. G08g *1/00*
U.S. Cl. 340—42 **11 Claims**

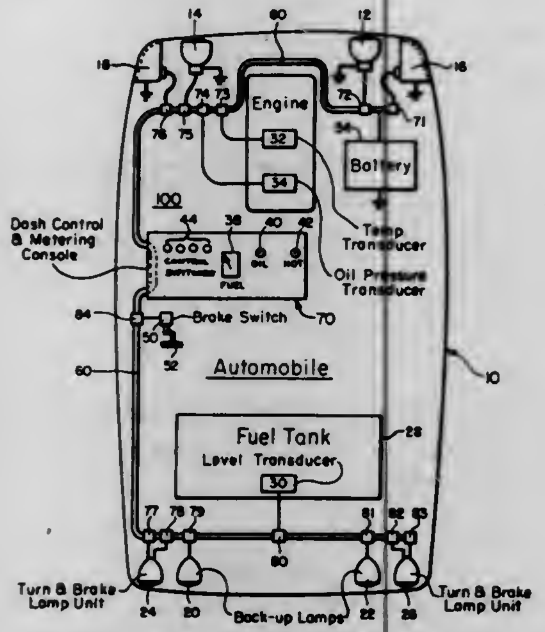


A vehicle traffic control system has been provided having communication means including a pair of line wires and remotely located control apparatus for transmitting control signals to and receiving traffic information from, a local controller over said communications means. The controller operates to provide signals for controlling vehicle traffic in accordance with control signals and also operates to provide signals for controlling the vehicle traffic independently when remote control is terminated. The improvement for communicating controls between the remotely located controller and at least two control devices coupled to said remote controller includes means at the control point for selectively designating a control frequency and auxiliary means coupled to the local station control devices responsive to the initiation of said control frequency for selectively energizing one or the other of said control devices in accordance with the duration of the control frequency.

3,651,454
AUTOMOTIVE MULTIPLEX SYSTEM

Harry J. Venema, Wheat, and Kenneth W. Padgitt, Arlington Heights, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 15, 1969, Ser. No. 885,384
Int. Cl. G08c *15/12*
U.S. Cl. 340—52 F **7 Claims**

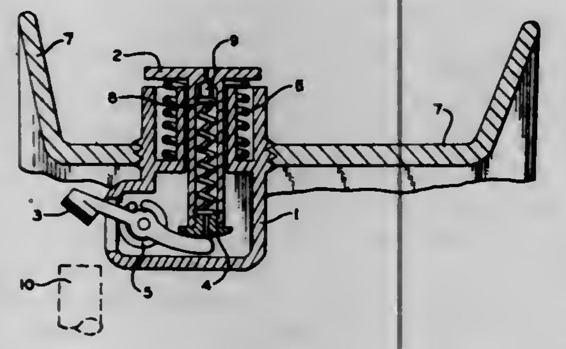


A multiplex system for controlling and sensing various component parts such as head lights, engine temperature, fuel level, and turn signal lights is disclosed. The system employs a single two-wire cable to communicate both power and signals between such components and a central control and metering console which may be the instrument dash console. Time multiplex is employed using a reverse polarity for clock pulses from that of the information pulses. Both analog and digital data may be accommodated by using pulse-width modulation as well as bi-level modulation. Receiving units employ a N delay one-shot triggered by the clock pulse and an AND circuit driven by the output of the N delay one-shot and the signal present on the single signal wire, to drive a one-shot which controls a switching device. Similar circuitry is employed for the digital transmitting and the analog transmitter and receiver. A socket input unit for tapping into the single cable in parallel to other input units by employing a piercing plug is disclosed.

3,651,455
PNEUMATIC TIRE SAFETY DEVICE

Duane Hurlbutt, P.O. Box 302, and Tito Scarponi, 124 Coddington Road, both of Ithaca, N.Y.

Filed Mar. 19, 1969, Ser. No. 808,585
Int. Cl. B60c *23/04*
U.S. Cl. 340—58 **7 Claims**

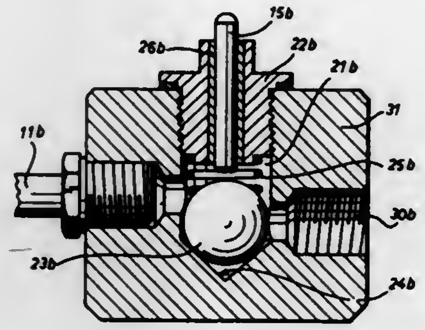


A pneumatic tire safety device that signals an alarm with loss of air pressure and releases air with over inflation.

3,651,456
WARNING DEVICE FOR USE IN VEHICLE HYDRAULIC BRAKE SYSTEM

Philip Sidney Baldwin, Florence, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed Sept. 24, 1969, Ser. No. 860,597
Claims priority, application Italy, Oct. 10, 1968, 53431-A/68
Int. Cl. B60q *1/00;* **B60t** *17/22*
U.S. Cl. 340—60 **15 Claims**

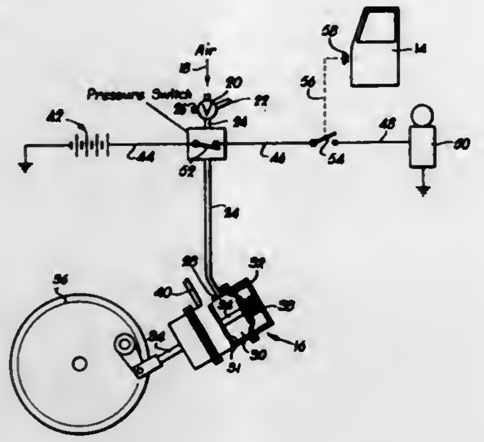


The invention provides a warning device for providing an automatic warning of a fall in braking pressure in an hydraulic brake system. The device is connected in the fluid circuit between the master cylinder and the brake actuators and includes a metal ball which, in normal operation of the brake, rests, for example under spring pressure, against an abutment surface in a chamber formed in the body of the device. Should the pressure in the system downstream of the device fall, the ball is drawn away from this abutment surface by the resulting fluid flow through the chamber and contacts an insulated metal pin in the chamber to complete an energizing circuit of a warning indicator device, conveniently a warning lamp.

3,651,457
WARNING SYSTEM FOR VEHICLES WITH AIR-TYPE PARKING BRAKES

Reuben Sprouse, Route 2, Trenton, Mo.

Filed Aug. 14, 1970, Ser. No. 63,701
Int. Cl. B60t *17/22*
U.S. Cl. 340—69 **1 Claim**

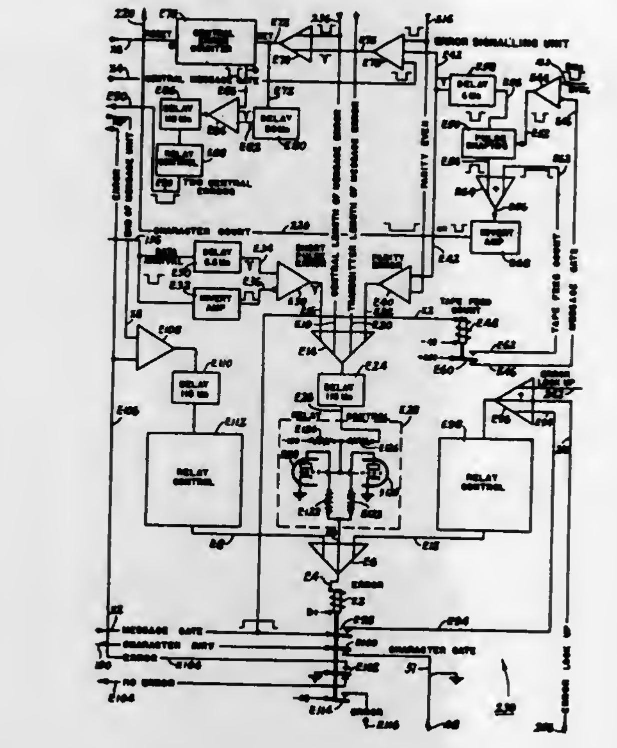


A system for pneumatically sensing failure of a vehicle operator to relieve the pneumatic pressure preventing setting of a spring-set, air-released type parking brake which employs an electric circuit containing an alarm device, a switch responsive to pressure in the pneumatic line to the brake cylinder, and a switch operated by opening the door of the vehicle to activate the warning system as the operator is about to leave the vehicle.

3,651,458
ERROR DETECTION APPARATUS

Andrew C. Reynolds, Jr., Waterbury; John F. Carragan, Woodbury, and George J. Yagusic, Watertown, all of Conn., assignors to Control Data Corporation, Minneapolis, Minn.

Original application Dec. 31, 1959, Ser. No. 863,227, now Patent No. 3,519,139, dated May 12, 1970. Divided and this application Oct. 1, 1969, Ser. No. 870,983
Int. Cl. G08c *25/00;* **G06f** *11/00*
U.S. Cl. 340—146.1 **12 Claims**

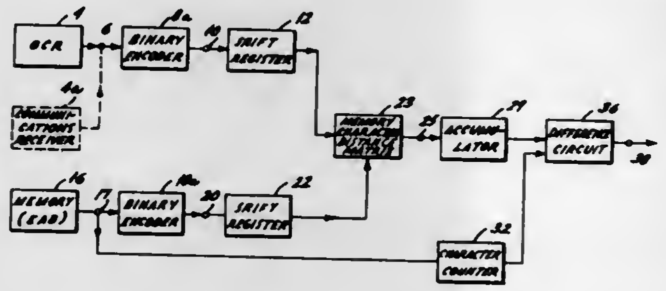


This invention describes a central receiver-recorder for a data collection system having parity monitoring means for monitoring the state of multiple binary devices whose outputs are gated to a second plurality of bi-stable devices, the state of those devices recording an output when a preselected combination is present. Additional error detection means are disclosed including the transmission of a number corresponding to the number of characters of a variable length message transmitted from any one of a plurality of data transmitters to a central receiver-recorder, means at the receiver-recorder for counting the number of characters in the variable length message received and means for comparing the counted number with the transmitted number with an error signaling device activated when the numbers do not compare.

3,651,459
CHARACTER DISTANCE CODING

Peter M. Hahn, Wyndmoor, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed May 15, 1970, Ser. No. 37,580
Int. Cl. G06k *9/08*
U.S. Cl. 340—146.3WD **12 Claims**



A data processing system for improving the performance of information handling systems, such as an automatic letter sorting system, wherein the class of permissible received messages is known in advance.

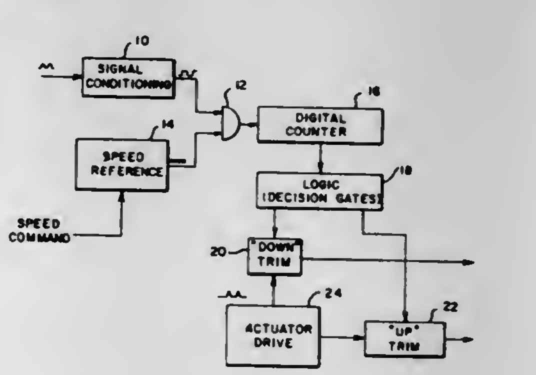
Received words are compared to stored words, character by character. Each comparison is given a score which is a function of the probability of confusing the particular received character with the particular character in storage to which the received character then is being compared. The scores for each character are added and a match is accepted for the stored word whose comparison with the received word yields a score indicating the highest probability of confusion.

In one embodiment, each received character is given a binary representation according to a code in which the Hamming distance between characters is indicative of their probability of interchange. Each stored character also is given a binary representation according to the same code. The binary representations of the characters of the received words are then compared to corresponding representations of the characters of stored words in an "exclusive or" gate which measures the Hamming distance between corresponding characters by making a bit by bit comparison. The Hamming distances are then added in a digital "adder" to obtain a score for the complete word. The score for the word is then compared in a "difference" circuit to the number of characters in the stored word. A match is accepted for that stored word yielding a score less than the number of characters in the word.

3,651,460
FIXED RATE INTEGRAL CONTROLLER

Edward F. Gebelein, Jr., Harwinton, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed May 21, 1970, Ser. No. 39,431
Int. Cl. F02d *11/10;* **G06f** *7/02*
U.S. Cl. 340—146.2 **7 Claims**



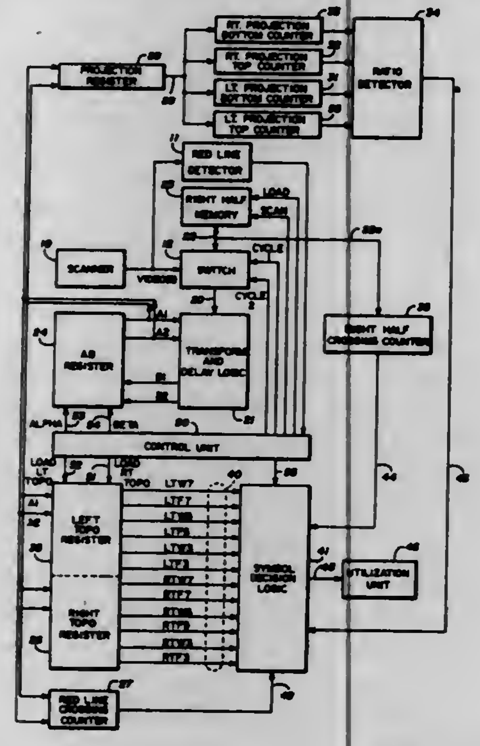
A control signal generator which employs digital logic techniques to classify an input signal commensurate with a monitored parameter as being either above, below, or within a nominal range of the parameter. The input signal is converted to a pulse train and the pulses are employed to gate high-frequency clock pulses to a counter which is interrogated and filled at the same time. Decision gates suitably interconnected with the counter detect when numbers commensurate with the upper and lower limits of the nominal range of the monitored parameter are counted and, depending upon the number loaded into the counter during each pulse commensurate with the input signal, the decision gates will control the generation of steady-state output signals which may be employed to control a mechanism which adjusts the monitored parameter in the proper direction.

3,651,461
CENTER REFERENCED CHARACTER IDENTIFICATION

Arthur W. Holt, Annapolis, Md., assignor to Recognition Equipment Incorporated, Irving, Tex.

Filed Apr. 17, 1970, Ser. No. 29,485
Int. Cl. G06k *9/10*
U.S. Cl. 340—146.3AC **25 Claims**

Printed characters, superimposed upon a contrasting center bar extending through a character field, are identified by scanning each character along a plurality of vertically aligned laterally spaced paths to generate character signals dependent upon encountering a character portion. The center bar is sensed to generate a control signal. In response to the character signal and the control signal an output signal is produced. In a preferred mode for alphanumeric characters white signals and black signals representative of white and black fields at each of a plurality of points along each said path are generated. The signal from each given point is compared with signals representing points immediately above, immediately below and next most remote, with reference to the center bar, to modify the signal from the given point and thereby generate enclosed point signals when any white field is within a boundary formed by a black character portion and the said center bar. The enclosed point signals for a plurality of separate zones of said field are compared with a code for each symbol to produce character identification signals. The number of crossings of the center bar, projection signals dependent upon the projections onto the center bar, and crossing signals representative of the number of crossings by the character of a vertical line spaced to one side of the center bar are selectively employed.


PROJECTION REGISTER
RT. PROJECTION BOTTOM COUNTER
RT. PROJECTION TOP COUNTER
LT. PROJECTION BOTTOM COUNTER
LT. PROJECTION TOP COUNTER
RATIO DETECTOR
RED LINE DETECTOR
RIGHT HALF MEMORY
SCANNER
VIDEO
SWITCH
CYCLE
AB REGISTER
TRANSFORM AND DELAY LOGIC
RIGHT HALF CROSSING COUNTER
CONTROL UNIT
LEFT TOPO REGISTER
RIGHT TOPO REGISTER
SYMBOL DECISION LOGIC
UTILIZATION UNIT
RED LINE CROSSING COUNTER

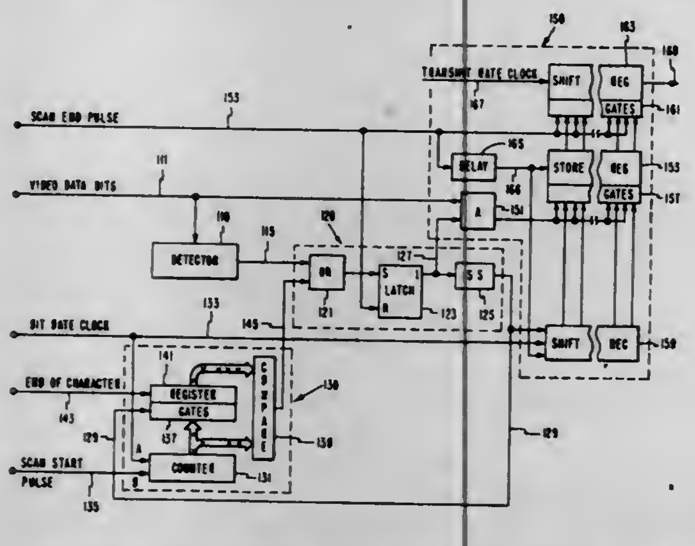
3,651,462
SINGLE SCAN CHARACTER REGISTRATION

Gerald J. Balm, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 20, 1970, Ser. No. 57,381

Int. Cl. G06k *9/04*

U.S. Cl. 340—146.3 H **14 Claims**



An improved method and apparatus are shown for selecting and registering data bits from a single scan line which data bits represent only a portion of an alpha-numeric character. Registration is controlled by the location of the data bits representing the portion of the character from each scan and a registration reference signal determined from the location of data bits from previous scans.

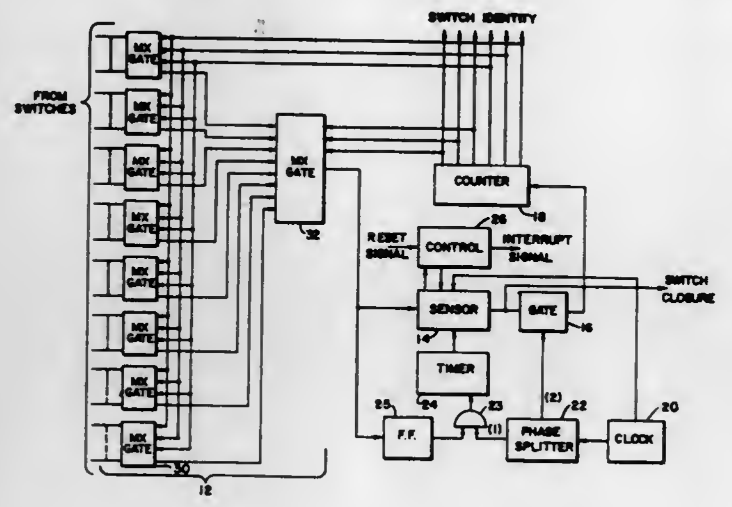
3,651,463
SWITCH CODING CIRCUITRY

Edward B. Rawson, Lincoln, and John B. Dowling, Stow, both of Mass., assignors to Medidata Sciences, Inc., Waltham, Mass.

Filed Apr. 17, 1970, Ser. No. 29,422

Int. Cl. H04q *3/00*

U.S. Cl. 340—147 R **7 Claims**



Switch coding circuitry common to a plurality of mechanically unrelated input switches and operative to provide detection of a valid switch actuation and to provide a digital representation of the identity of an actuated switch.

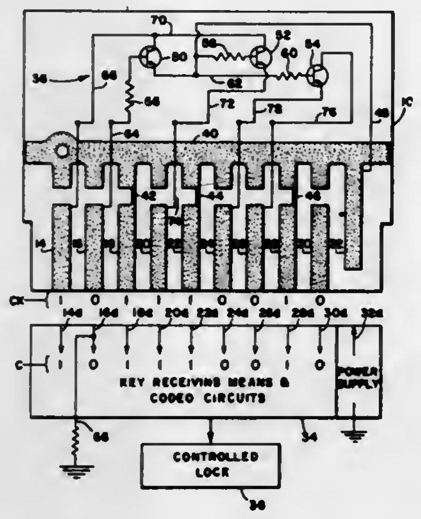
3,651,464
HIGH SECURITY ELECTRICAL KEY

Robert A. Hedin, Yorba Linda, and Robert H. Du Quesnay, Buena Park, both of Calif., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Feb. 22, 1971, Ser. No. 117,271

Int. Cl. H04q *9/00;* **G05b** *1/00;* **H01h** *47/00*

U.S. Cl. 340—149 R **17 Claims**



A key for use with an electrical security system includes a plurality of contacts for conveying a binary coded permutation of electric signals to key receiving means of the system for actuating the system when the key is the proper key, a plurality of conductor paths for interconnecting at least a portion of the plurality of contacts, and control means associated with the conductor paths for controlling the conductivity therethrough. The control means has a first condition when the key is engaged with the key receiving means and second condition when the contacts are disengaged from the key receiving means. When the control means is in its first condition the contacts convey the predetermined binary coded permutation to the key receiving means so as to actuate the security system and when the control means is in its second condition the contacts are inoperable to convey the predetermined code stored on the key. Accordingly, deciphering of the key by an unauthorized person is prevented when the key is disengaged from the key receiving means and the control means is in its second condition.

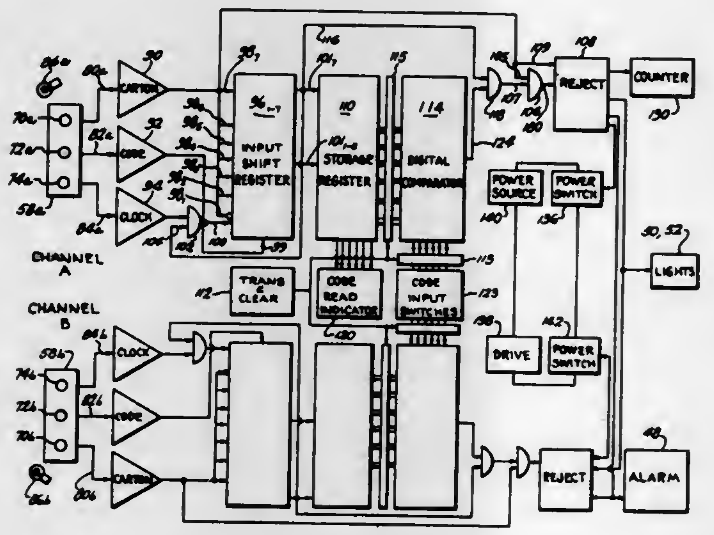
3,651,465
METHOD AND APPARATUS FOR PACKAGE INSPECTION AND VERIFICATION

Kenneth J. Law, Southfield, and Gordon R. Brown, Livonia, both of Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Continuation of application Ser. No. 605,704, Dec. 12, 1966. This application May 1, 1970, Ser. No. 31,850

Int. Cl. H04q *1/00*

U.S. Cl. 340—149 R **26 Claims**



By way of information and not by way of limitation, a six bit bar code and six clock bars, one clock bar being paired with each bit, are printed on a carton. The bar code positively identifies the article for which the carton is labeled. During a packaging operation the code is scanned and detected and then compared against a reference code identifying the article being placed in the carton. The arrangement of the code bits or code bars relative to the clock bars and to the scanning sequence is such that a complete code is read bit-by-bit into a digital logic circuit only after enabling of the logic circuit by a clock pulse produced in response to the paired clock bar for each bit. This is done by entering the code into a shift register bit-by-bit with register shifting being under the control of the clock bars. If the code read is not true to the reference code, a reject indication is provided or the carton bearing the incorrect code is automatically rejected from the packaging line.

3,651,466
VENDING MACHINE CONTROL METERING SYSTEM

Harold Henry Galpin, Belmont, England, assignor to Quickmaid Vending Services Limited, London, England

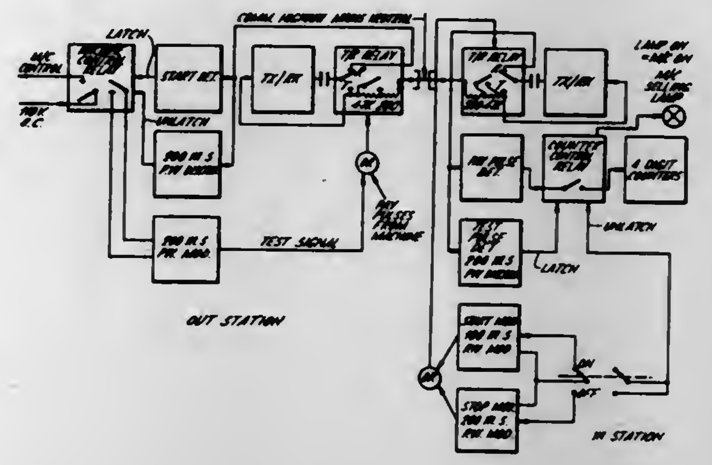
Filed Feb. 5, 1970, Ser. No. 8,800

Claims priority, application Great Britain, Feb. 5, 1969, 6,197/69

Int. Cl. H04q *9/00*

U.S. Cl. 340—150 **19 Claims**

Vending and recording apparatus comprising one or more vending machines, a central recording station, signal generator including a radio frequency carrier generator generating a range of radio frequency capable of affording a number of spaced carrier channels of which at least one individual channel is allocated to each of the machines, circuitry for modulating said carrier channels with trains of pay pulses representing cost units indicative of the value of a dispensed



article to obtain, when an article is dispensed from the vending machine modulated carrier radio frequency signals capable of being transmitted over a physical transmission line between said central station and said machine, and at said central station circuitry demodulating and amplifying said carrier frequency signals and recording and indicating a signal output representing the value of the dispensed article.

3,651,467
ELECTRONIC MULTISELECTOR HAVING LARGE AND SMALL GEOMETRY MOS TRANSISTOR CROSSPOINT CONTROL

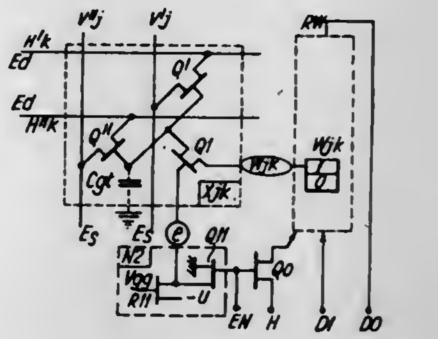
Jacques Henri De Jean, Ris-Orangis; Marc Jean Pierre Leger, Chaville, and Claude Paul Henri Lerouge, Maurepas, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 3, 1970, Ser. No. 94,839

Claims priority, application France, Sept. 19, 1969, 6944164

Int. Cl. H04q *3/00*

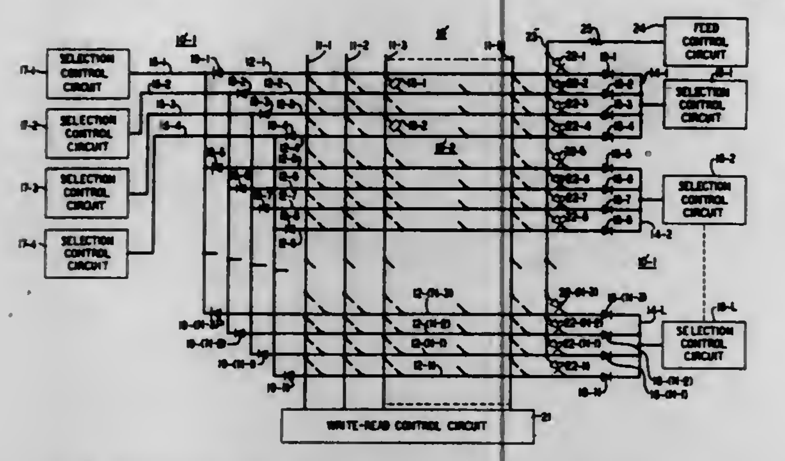
U.S. Cl. 340—166 **3 Claims**



A memory unit is provided at each crosspoint of an electronic multiselector. The memory comprises a bistable element and a capacitor which keeps the crosspoint latched while external determinations are made concerning future changes of state of the crosspoint.

3,651,468
ARRANGEMENTS FOR REDUCING NOISE IN TANDEM MATRIX CIRCUITS

Sigurd Gunther Waaben, Princeton, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of application Ser. No. 83,445, Oct. 23, 1970, now abandoned. This application Dec. 9, 1970, Ser. No. 96,310
Int. Cl. H04q *3/00;* **G11b** *5/00;* **G11c** *7/00*
U.S. Cl. 340—166 R **13 Claims**

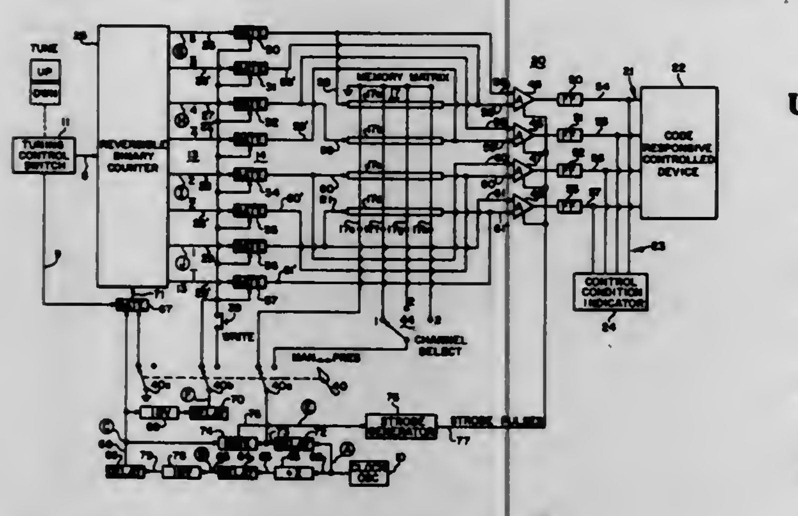

SELECTION CONTROL CIRCUIT
SELECTION CONTROL CIRCUIT
SELECTION CONTROL CIRCUIT
SELECTION CONTROL CIRCUIT
FEED CONTROL CIRCUIT
SELECTION CONTROL CIRCUIT
SELECTION CONTROL CIRCUIT
SELECTION CONTROL CIRCUIT
WRITE-READ CONTROL CIRCUIT

An arrangement for decreasing the noise in tandem matrix access circuits which employ diodes to interconnect their primary and secondary sets of matrices. In particular, each rail circuit of the secondary matrix is coupled to its respective pair of rail circuits of the primary matrix by diodes which are oppositely poled with respect to one another. Connection of the rail circuits in this manner permits the nonselected rails of the secondary matrix to be coupled to ground through low impedances during selection of a particular rail of the matrix. As a result, leakage currents appearing in the nonselected rails are shunted to ground, thereby eliminating the noise effects of these currents in the matrix.

In one embodiment of the invention, the two diodes coupled to each rail of the secondary matrix are charge-storage diodes. In another embodiment, one of the diodes is a charge-storage diode whereas the other is a Schottky diode.

3,651,469
BINARY TOUCH-TUNE SYSTEM WITH MEMORY

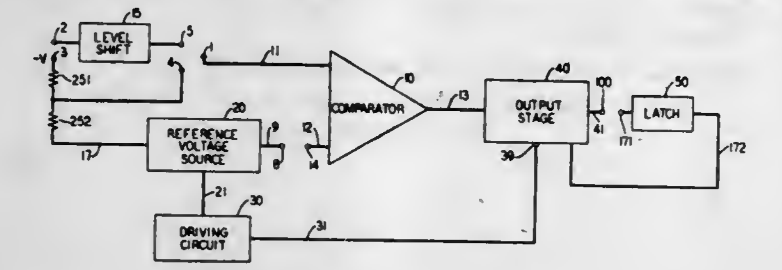
David F. Keese, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa
Filed Mar. 22, 1971, Ser. No. 126,776
Int. Cl. H04b *1/16;* **H04q** *9/00*
U.S. Cl. 340—168 R **14 Claims**



A remote control system employing a binary memory matrix is disclosed. A binary control code word is generated by selective application of clock pulses to a step-controlled code generating means. The memory matrix is employed in conjunction with a control indicator to effect bidirectional incremental control steps of a controlled device. Pre-set word channels of the memory matrix may have written therein readily changeable selected code words for subsequently commanded read-out to control the device to one of a plurality of predetermined controlled conditions.

3,651,470
INTEGRATED LEVEL DETECTOR CIRCUIT WITH GATING ARRANGEMENT TO INHIBIT TRANSIENT OUTPUT SIGNALS IN RESPONSE TO ENERGIZATION OF THE CIRCUIT

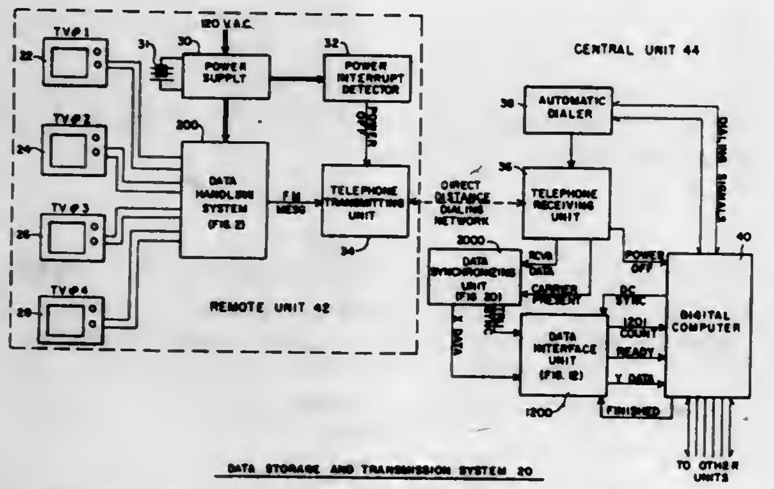
Robert Joseph Healey, Morris Township, Morris County, and Joseph Plany, Parsippany, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 8, 1970, Ser. No. 44,159
Int. Cl. H04q *1/00*
U.S. Cl. 340—172 **4 Claims**



A level detector circuit suitable for embodiment in integrated circuit form includes a comparator circuit and reference voltage generator energized by a common voltage source. The level detector monitors the voltage of an incoming signal by utilizing the comparator circuit to compare this signal with the generated reference voltage. The reference voltage is generated in response to a current source energizing a breakdown diode. The output of the comparator is temporarily inhibited during the transient initial energization of the comparator and the reference voltage generator to prevent false alarm signals. The output is inhibited by an inhibit gate circuit arrangement which is energized by a driving circuit operative prior to breakdown of the breakdown diode. An additional feature of the invention is a signal inversion scheme energized by the reference voltage generator which permits voltages of opposite polarity to that of the reference and energization voltages to be compared with the magnitude of the reference voltage by the comparator.

3,651,471
DATA STORAGE AND TRANSMISSION SYSTEM

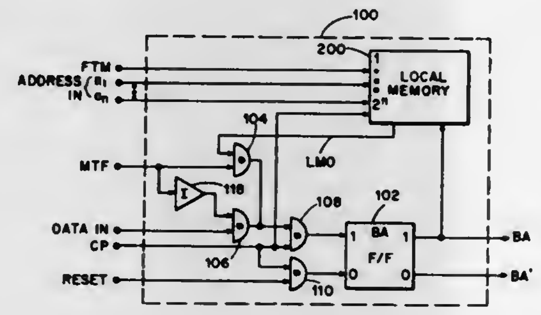
Donald E. Haselwood, Deerfield, and Carl M. Solar, Glenview, both of Ill., assignors to A. C. Nielsen Company, Chicago, Ill.
Filed Mar. 2, 1970, Ser. No. 15,696
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **25 Claims**



A system for economically monitoring via telephone a large number of remotely located television receivers or the like. Remotely located data handling systems check the status of receiver groups once every 30 seconds. Whenever a change in status is detected, the altered status is recorded as a "change line data set" in a continuously circulating memory which can store 40 such data sets. At periodic intervals a central unit contacts the remotely located data handling system via telephone. The data sets are then repeatedly transmitted to the central unit in the form of a frequency modulated audio tone. With the aid of a marker bit that reverses its sign each time the circulating memory fully circlates, the central unit is able to extract the 40 data sets from the modulated tone and is also able to check for transmission errors.

3,651,472
MULTISTATE FLIP-FLOP ELEMENT INCLUDING A LOCAL MEMORY FOR USE IN CONSTRUCTING A DATA PROCESSING SYSTEM

Thomas O. Holtey, Newton Lower Falls, Mass., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Mar. 4, 1970, Ser. No. 16,448
Int. Cl. G11c *19/00*
U.S. Cl. 340—172.5 **17 Claims**

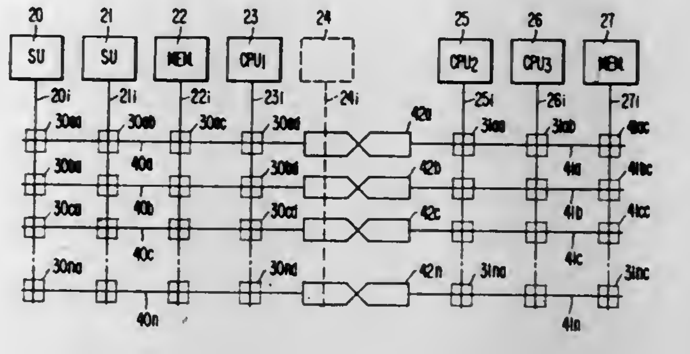


A multi storage element for use as a computer system register stage includes a basic storage device and a small bit wide addressable local memory which provides multi storage for the device. Logic circuits interconnect the addressable local memory and basic storage device for either selectively loading or selectively unloading the device of information contents. Additionally, the multi storage element can include an auxiliary storage device which provides an alternate path for either selective loading or selective unloading the contents of the elements basic storage device. The auxiliary storage devices of each element connect in series to form an auxiliary shift register for either readout or alteration of the basic storage device and local memory contents.

3,651,473
EXPANDABLE INTERLOCK EXCHANGE FOR MULTIPROCESSING SYSTEMS

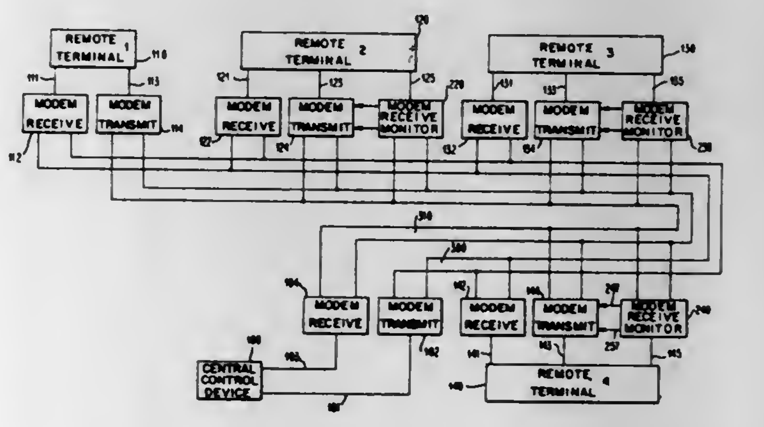
Ulbe Faber, Honeybrook, Pa., assignor to Burroughs Corporation, Detroit, Mich.
Filed Mar. 27, 1970, Ser. No. 23,167
Int. Cl. G06f *15/16, 15/26*
U.S. Cl. 340—172.5 **10 Claims**

This disclosure relates to an expandable interlocking exchange for a multiprocessing system that allows additional processors, memory modules and peripheral devices to be coupled to the exchange without incurring signal degradation and increased noise during data transfer. The exchange is a cross matrix of input-output buses or ports, for each of the accessing units, and interconnecting buses. Expansion is achieved by removing one of the accessing units from the exchange and employing the gates, which coupled that unit to the exchange, to couple the interconnecting buses to a new set of interconnecting buses to service the additional units.



3,651,474
SYNCHRONIZATION SYSTEM WHICH USES THE CARRIER AND BIT TIMING OF AN ADJACENT TERMINAL

Richard A. Liberman, Stratford, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 31, 1970, Ser. No. 24,311
Int. Cl. G06f *3/04;* **H04l** *7/04*
U.S. Cl. 340—172.5 **6 Claims**

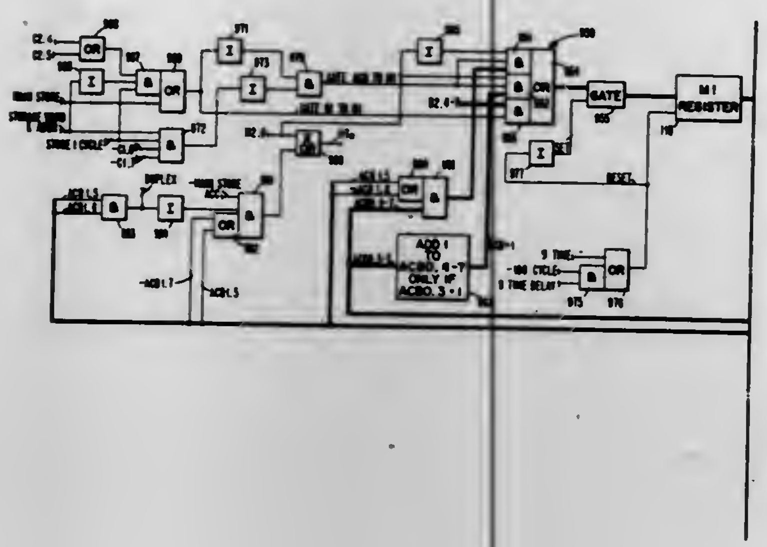


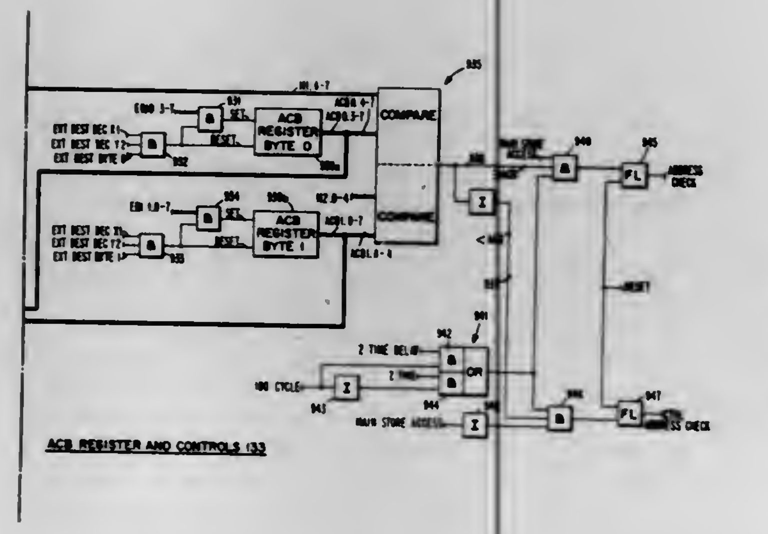
A data communications system including apparatus at each remote location for detecting the carrier phase and bit timing of transmitted data from an adjacent, more remote terminal, to maintain synchronization for subsequent data transmissions from each remote terminal without the need for resynchronizing.

3,651,475
ADDRESS MODIFICATION BY MAIN/CONTROL STORE BOUNDARY REGISTER IN A MICROPROGRAMMED PROCESSOR

Robert G. Dunbar, Jr., Apalachin, and Karl K. Womack, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 16, 1970, Ser. No. 29,226
Int. Cl. G06f *9/20*
U.S. Cl. 340—172.5 **4 Claims**

An address check boundary (ACB) register is initialized in accordance with the total amount of control/main storage with common addressing and with the relative amounts of control and main storage for the purpose of:





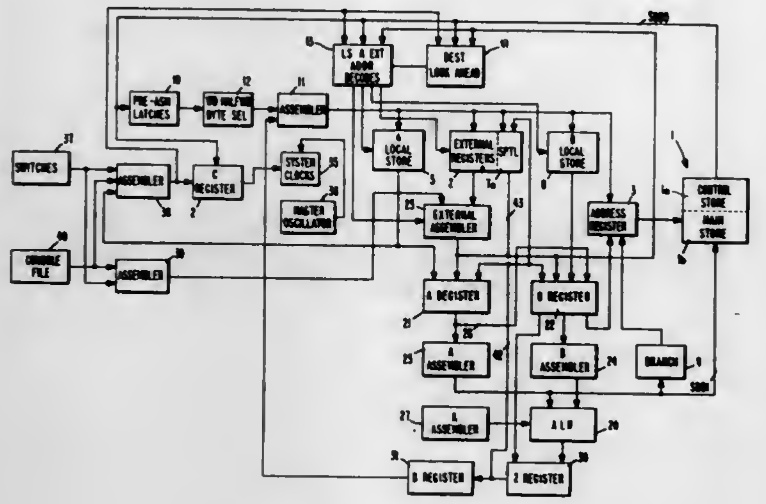
1. providing the higher order bits of control store address thus permitting fewer bits in the microprogram supplied control store address with resulting reduction in the control word size;
2. modifying the ACB supplied higher order bits and/or the microprogram supplied address bits where required;
3. supplying the boundary address between control/main store to initiate an error signal if main store is accessed when control store should have been accessed and vice versa;
4. providing data regarding the type (internal-external) and amount of main storage and regarding the system type-simplex (one processor) or duplex (two processors).

3,651,476
PROCESSOR WITH IMPROVED CONTROLS FOR SELECTING AN OPERAND FROM A LOCAL STORAGE UNIT, AN ALU OUTPUT REGISTER OR BOTH

Thomas A. Metz, and Karl K. Womack, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1970, Ser. No. 29,227
Int. Cl. G06f *7/38*
U.S. Cl. 340—172.5 **5 Claims**

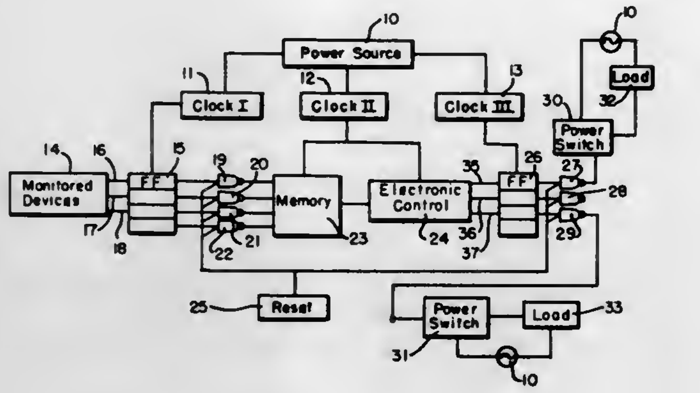
In a high performance microprogrammed processor, ALU results obtained during one microprogram cycle are destined to a pair of high speed local storage units during the next succeeding cycle. During each write operation, identical data is stored in corresponding register positions of each local storage unit. This permits simultaneous accessing of any two operands from the local storage units during read operations for application to ALU input registers. Means are effective early in each cycle for comparing the operand addresses with the destination address of ALU results (if any) from the next preceding cycle. If one of the operand addresses equals the destination address, only that portion (one to four bytes) of the local store operand data, which is not updated due to the results not being destined, is blocked from entry to the ALU input register; and, instead, the corresponding ALU results are gated directly to the appropriate ALU input register for processing. Later in the cycle the ALU results are also destined to the register positions of both local storage units corresponding to the destination address.



3,651,477
PROCESS CONTROL SYSTEM

Peter G. Bartlett, and Donald E. Henry, both of Davenport, Iowa, assignors to Struthers-Dunn, Inc., Pitman, N.J.

Filed June 18, 1970, Ser. No. 47,328
Int. Cl. G06f *1/04, 15/46*
U.S. Cl. 340—172.5 **10 Claims**



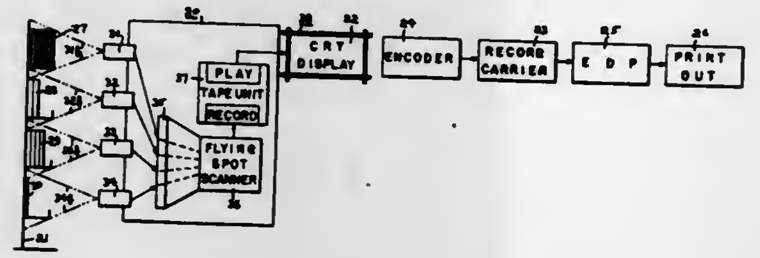
The present invention provides a process control system which minimizes the effect of noise on the system and also minimizes the amount of noise produced by the system. This is accomplished by properly timing all operations, both sensing and control, so as to both minimize the possibility of a spurious signal caused by noise and also minimize the amount of noise produced by the system in its operation. The sensing function is timed to occur when the power source

voltage is at a maximum. When the power source voltage goes through zero the control operations, i.e., switching or relays, etc., is effected. After completion of the sensing function, but prior to the control operations, the indications previously sensed are stored in a high-speed memory and the process control decision making apparatus is enabled.

3,651,478
INVENTORY CONTROL SYSTEM

John J. Shandlay, 489 Robbins Ave., Philadelphia, Pa.

Filed July 7, 1970, Ser. No. 52,948
Int. Cl. G01d *5/12, 5/39*
U.S. Cl. 340—172.5 **20 Claims**

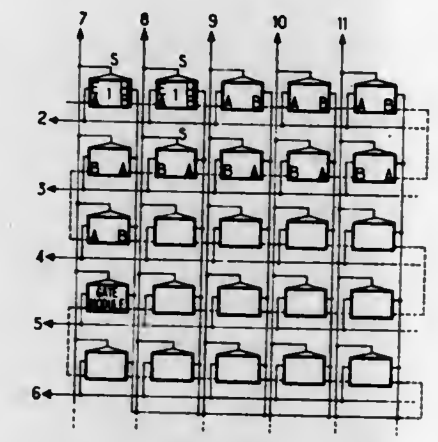


An inventory control system for rapidly taking an inventory of items in an array including an optical scanning system which provides an image of variable size of each item in accordance with the number of units of the item in the inventory, a larger image denoting more units, a signal generator which converts the image to a train of electrical signals, a storage device for storing the signals for later use, retrieval apparatus for regenerating the stored signals at a subsequent time, and a display system for displaying and size quantizing the original image. The item identified by its quantized image is checked against a data bank to determine for that item how many units correspond to the particular image size displayed. The checking may be automatic or manual, and an automatic print-out may be provided if desired.

3,651,479
APPARATUS FOR DETERMINING THE DIRECTION OF PROPAGATION OF A PLANE WAVE

Andre Simon Georges Lambert, Fresnes, France, assignor to Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique "Alcatel", Paris, France

Filed June 18, 1970, Ser. No. 47,472
Claims priority, application France, June 18, 1969, 6920412
Int. Cl. G01s *3/00*
U.S. Cl. 340—172.5 **11 Claims**

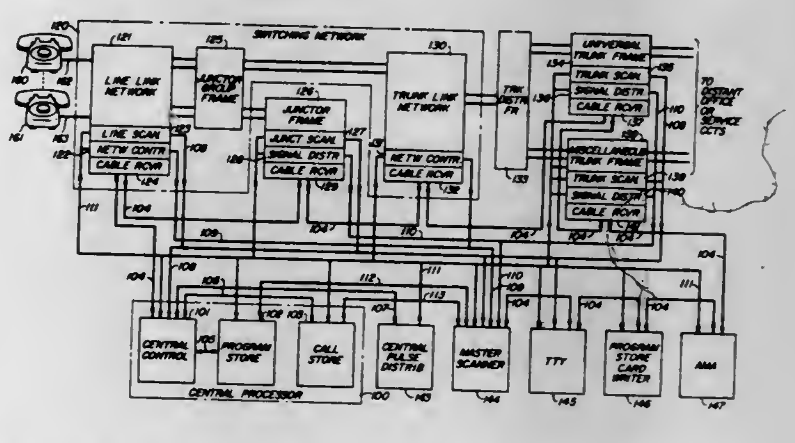


A switching system used in a system for determining the direction of propagation of a plane wave. The switching system comprises a matrix wherein each module connects a detector to an aggregation circuit according to predetermined coded data corresponding to predetermined wave directions.

3,651,480
PROGRAM CONTROLLED DATA PROCESSING SYSTEM

Randall W. Downing; John S. Nowak, both of Wheaton; Frank F. Taylor, West Chicago, and Werner Ulrich, Glen Ellyn, all of Ill., assignors to Bell Telephone Laboratories, Incorporated, New York, N.Y.

Original application Dec. 31, 1963, Ser. No. 334,875. Divided and this application Nov. 24, 1967, Ser. No. 685,636
Int. Cl. G06f *15/16*
U.S. Cl. 340—172.5 **55 Claims**

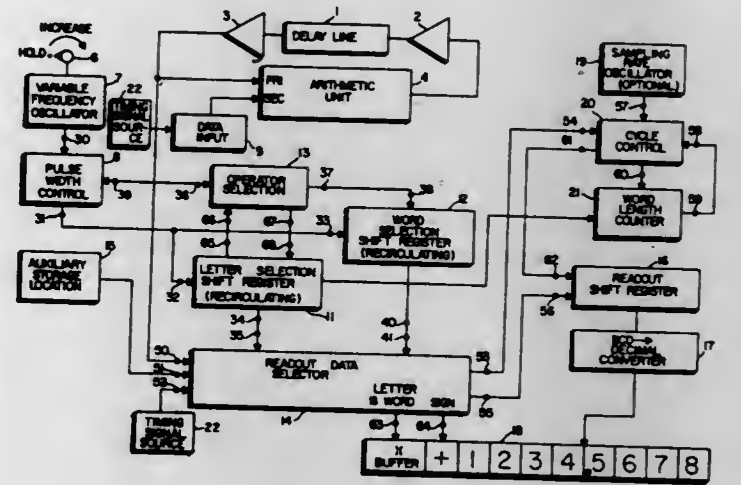


A program controlled data processor system which employs functionally equivalent first and second control units on a mutually exclusive basis to control an input-output system. The processor system comprises a plurality of independent memory units and communication between the control means and the independent memory units is by way of communication paths which may be selectively associated with any of the memory units and with either of the control means. The processor arrangement includes means for insuring that the two control means simultaneously carry out identical work functions.

3,651,481
READOUT SYSTEM FOR VISUALLY DISPLAYING STORED DATA

John T. Evans, and Leroy U. C. Kelling, both of Waynesboro, Va., assignors to General Electric Company

Filed Feb. 29, 1968, Ser. No. 709,429
Int. Cl. G06f *7/30, 13/02;* **G06h** *3/14*
U.S. Cl. 340—172.5 **5 Claims**



A system for visually displaying interlaced data stored in a recirculating delay line. The stored data is in six functions, each function comprising three eight digit words. Data within each function is interlaced by presenting the least significant digit of all three words, followed by the next to least significant digit of all three words and so on. The data display may be single selected words or may comprise display of particular words in predetermined sequence. Sequential display of all three words in selected functions is accomplished by providing a three bit recirculating shift register. The sequencing rate is controlled by a variable frequency oscillator. It is also possible to sequentially select the data associated with each letter address. This is accomplished by way of a second recirculating shift register whose sequencing rate is also controlled by the variable frequency oscillator. As the data is selected, it is fed into a third shift register where it is stored in binary coded decimal. A BCD to decimal converter converts the contents of the third shift register to decimal format. THe output of the BCD to decimal converter feeds the display device. The rate at which the contents of the third shift register are "updated" may also be controlled by providing an oscillator whose frequency determines the "update" rate.

3,651,482

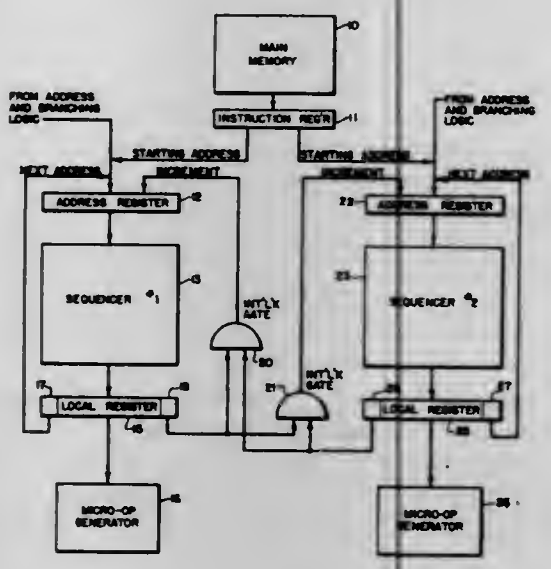
INTERLOCKING DATA SUBPROCESSORS

Victor M. Benson, Belmont, and Stuart K. Klein, Framingham, both of Mass., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Apr. 3, 1968, Ser. No. 718,493

Int. Cl. G06f *9/18*

U.S. Cl. 340—172.5 **11 Claims**



Electronic data processing systems in which two or more microprogram controlled subprocessors are interlocked by interlock indicators placed in microinstructions. The microinstructions containing the interlock indicators are at critical sequence points in operations requiring two or more of said subprocessors to act concurrently and dependently. This permits interlock points in time to be unique and tailored to microprogram sequences requiring them. Operation is by blocking advance of a sequence of microinstructions for one subprocessor upon receiving an internal interlock indicator in the absence of an external interlock indicator from a microinstruction of another subprocessor operating interdependently therewith. The microprogram control and interlocks permit the subprocessors to proceed independent of the commencing instruction thus facilitating instruction look ahead.

3,651,483

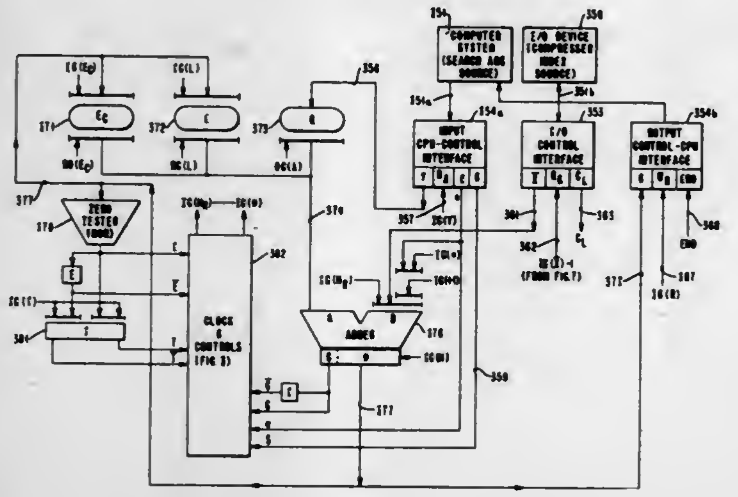
METHOD AND MEANS FOR SEARCHING A COMPRESSED INDEX

William A. Clark, IV, Poughkeepsie, N.Y.; Kent A. Salmond, Los Gatos, Calif., and Thomas S. Stafford, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1969, Ser. No. 788,835

Int. Cl. G06f *7/10*

U.S. Cl. 340—172.5 **52 Claims**



Electronically searching a Compressed Index for a representation of a search argument (SA). The index comprises a sequence of compressed keys (CK's) generated with the method in patent application Ser. No. 788,807, in which the sequence of compressed keys represents a sorted sequence of uncompressed keys, and each compressed key (CK) has the FLK format as defined therein. As ascending sorted index is assumed for the described embodiments. An Equal Counter is used during the search to represent which byte (called A-byte) of the SA is being searched for. The A bytes are handled one byte at a time beginning with the highest order byte in the SA. The counter is initially set to reflect this beginning and it is incremented each time the A-byte compares equal with one of the key bytes (called K byte) in a current CK being searched.

Electronic means compares the Equal-Counter setting, E_c, with a factor-byte count, F, the latter being obtained from the F field in a CK. If E_c is greater than F, the search is completed. If E_c is less than F, the search continues using the next sequential CK in the compressed index. But, if E_c is equal to F, the highest order K-byte in the current CK is compared against the current A-byte. If K<A, the search also continues using the next sequential CK. But if K>A, the search of the compressed index ends with the current CK. However, if K=A, the Equal Counter is incremented as indicated previously, the next lower order A-byte being obtained from the SA, and the next lower order K-byte being obtained from the current CK. These next A- and K-bytes are then compared; and if they are equal, the process is repeated until the last K-byte in the current CK has been found equal to an A-byte. If no A-byte remains in the SA for comparison to a remaining K-byte, the search of the compressed index is completed. If uncompared A-bytes remain in the SA, and no K-bytes remain uncompared in the current CK, the search continues using the next sequential CK.

Whenever the search ends at a CK, that CK is expected to represent the SA. A pointer associated with that CK is readout as part of the search ending operation. A data item addressed by that pointer is obtained, and the SA is verified against the data item to assure that the SA also represents the retrieved data item.

3,651,484

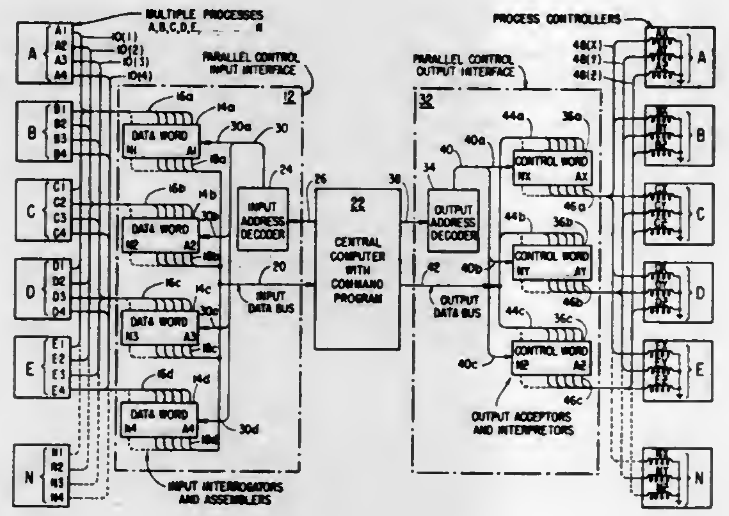
MULTIPLE PROCESS CONTROL SYSTEM

George R. Smeallie, Mentor, Ohio, assignor to Bailey Meter Company

Filed Aug. 12, 1969, Ser. No. 849,936

Int. Cl. G06f *3/05, 9/00;* **G05b** *15/00*

U.S. Cl. 340—172.5 **8 Claims**


MULTIPLE PROCESSES A,B,C,D,E, — — N
PROCESS CONTROLLERS
PARALLEL CONTROL INPUT INTERFACE
PARALLEL CONTROL OUTPUT INTERFACE
DATA WORD
INPUT ADDRESS DECODER
22
CENTRAL COMPUTER WITH COMMAND PROGRAM
OUTPUT ADDRESS DECODER
CONTROL WORD
INPUT DATA BUS
OUTPUT DATA BUS
OUTPUT ACCEPTORS AND INTERPRETORS
INPUT INTERROGATORS AND ASSEMBLERS
A
B
C
D
E
N

In a process control system employing a digital computer, an apparatus for and method of simultaneously controlling a plurality of processes. A parallel control input interface interrogates a set of output variables from each process and forms a plurality of data words which are addressed for display to the digital computer. The computer develops control words from the data words by the execution of a command program and addresses a parallel control output interface. The parallel control output interface accepts the control words from the digital computer and interprets the control words to simultaneously control the plurality of processes.

3,651,485

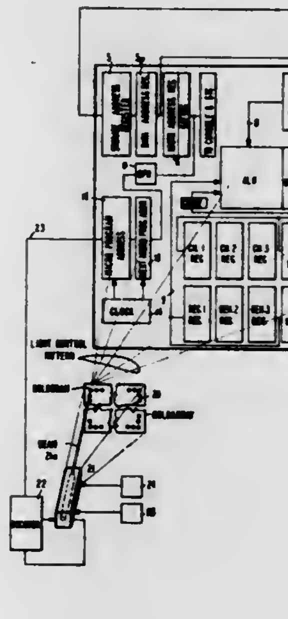
HOLOGRAPHIC DATA PROCESSING SYSTEM

James A. McDonnell, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 16, 1969, Ser. No. 866,979

Int. Cl. G06f *9/00*

U.S. Cl. 340—172.5 **9 Claims**



Large scale integration techniques are combined with holographic techniques to provide a highly compact data processing system of extreme high speeds of operation. A single integrated circuit control module containing light responsive devices is selectively actuated by different patterns of light beams generated by appropriate holograms each selected from a single holoarray to provide all of the arithmetic and logic functions of a data processing system.

3,651,486

TIME INTERVAL GENERATING APPARATUS

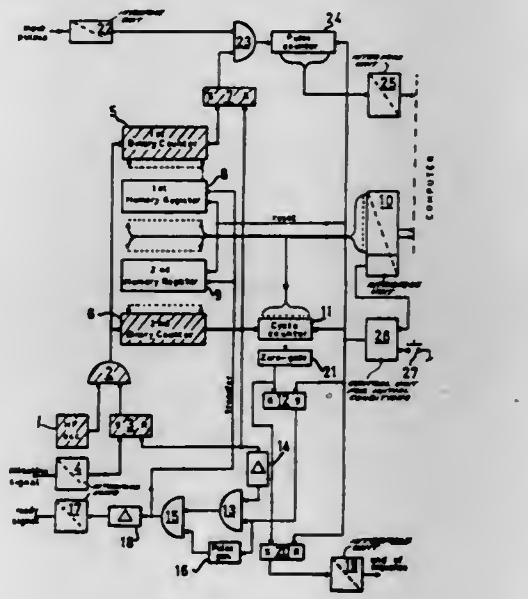
Sixten Abrahamsson, Sodermalmsgatan 31, 43139 Molndal, Sweden

Filed Nov. 6, 1969, Ser. No. 874,665

Claims priority, application Sweden, Nov. 6, 1968, 15053/68

Int. Cl. G06f *3/00*

U.S. Cl. 340—172.5 **5 Claims**



An apparatus is disclosed to be used in conjunction with a suitable general purpose digital computer in programmed time-of-flight mass spectrometric measurements to provide well defined aperture signals with an adjustable time delay from an initiating pulse, adjustable repetition times and adjustable pulse length. A high-frequency generator, e.g., a 100 megacycles/second generator, is used as a clock pulse generator. Two subtract-1-counters are used for time determination. The computer supplies the counters with a first and second numerical quantity, designating the time delay from the initiating pulse, and the sum of the time delay and the pulse length respectively, in terms of the number of pulses from the pulse generator required to measure out the respective time spans. The counters are provided with zero-content outputs connected to the setting and resetting inputs respectively of a bistable flip-flop. At an instant determined by an initiating signal both counters start a countdown at a rate determined by the HF-generator. The flip-flop changes its output state when the first counter has become emptied, i.e., after a time interval corresponding to the desired delay, and returns to its initial output state when the second counter has become emptied. Thus the output from the flip-flop represents the desired time aperture signal.

3,651,487

PRINTER CONTROL SYSTEM

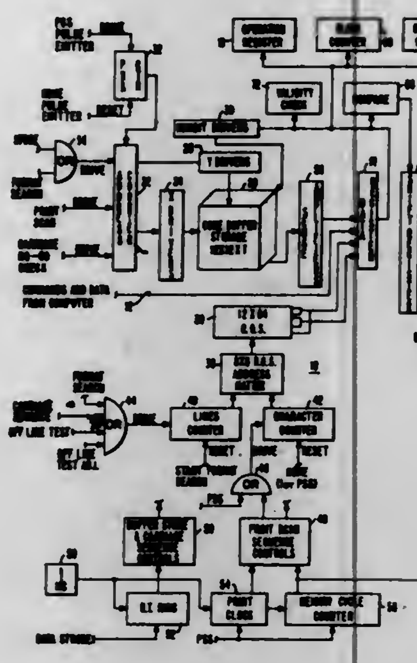
Richard S. Washington, Reston, Va., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 9, 1969, Ser. No. 883,528

Int. Cl. G11c *9/00*

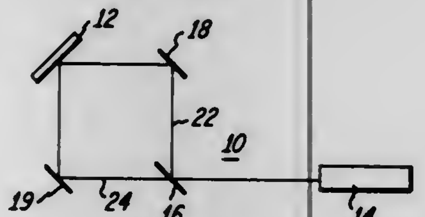
U.S. Cl. 340—172.5 **11 Claims**

A printer utilizes a core storage print buffer for characters to be printed, and a read only storage device for document carriage or format control and type chain character reference. The carriage control and type chain character portions of the read only storage device, and the print buffer all have a common data register used for readout to print or operate the carriage.



3,651,488
INFORMATION STORAGE SYSTEM EMPLOYING OPTICAL ENTRY AND REMOVAL OF INFORMATION
Juan Jose Amodei, Langhorne, Pa., assignor to RCA Corporation

Filed June 8, 1970, Ser. No. 44,195
Int. Cl. G11c *11/22, 11/42*
U.S. Cl. 340—173 CC **10 Claims**

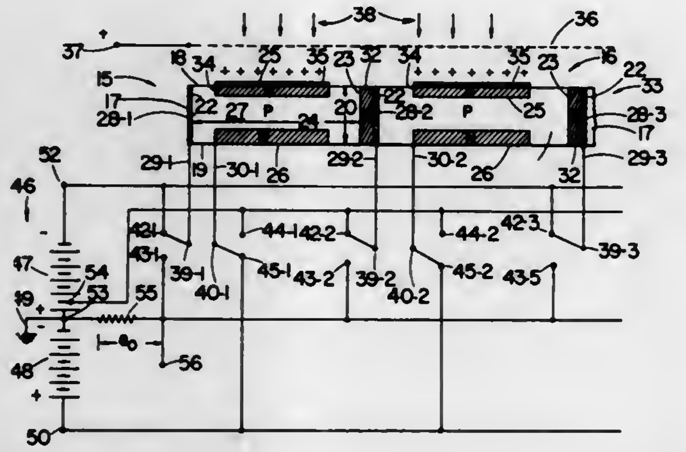


An information storage system including a storage medium comprising a first material characterized by a change in its index of refraction under the influence of an electric field and a different second material characterized by the inducibility of an electric field therein by optical means. The storage medium can be an admixture of two different materials that respectively exhibit these characteristics. Alternatively, the storage medium comprises a plurality of interleaved layers, alternate ones of these layers comprising material exhibiting one of these characteristics and the other layers comprising material exhibiting the second type of characteristic.

3,651,489
SECONDARY EMISSION FIELD EFFECT CHARGE STORAGE SYSTEM
Robert C. Beutel, Fort Wayne, Ind., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

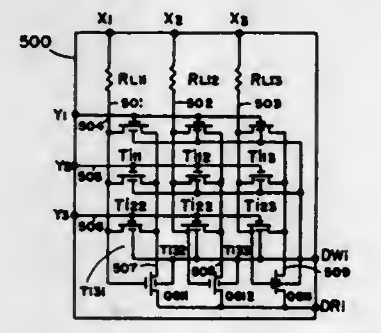
Filed Jan. 22, 1970, Ser. No. 5,024
Int. Cl. G11c *11/40, 5/02*
U.S. Cl. 340—173 CR **21 Claims**

A secondary emission field effect charge storage system utilizing a combined NPN and P-channel field effect transistor device. The device includes a body of P-type semiconductor material and a pair of bodies of N-type semi-conductor material respectively forming PN junctions with opposite sides of the P-type body in a first dimension thereby forming the NPN transistor, the P and N-type bodies forming the P-channel field effect transistor in a second dimension generally perpendicular to the first dimension. One of the N-type bodies has an outer surface having secondary emissive properties, and a collector electrode is provided for collecting secondary electrons emitted from that surface in response to electron bombardment thereof, with the surface thus having a positive charge stored thereon. A switching system is provided for respectively selectively making first, second and third electrical connections of the other of the pair of N-type bodies and the opposite ends of the P-channel transistor to predetermined potentials. The potentials are applied in the first connection to bias both the NPN transistor and the P-transistor to cut-off thereby to permit charge storage on the surface of the one N-type body. The potentials are applied in the second connection to bias the NPN transistor to cut-off and the P-channel transistor to below cut-off thereby to permit current flow in the P-channel, as modulated by the charge on the surface of the one N-type body to provide a read-out signal. The potentials are applied in the third connection to bias the NPN transistor into conduction and to bias the P-channel transistor to cut-off thereby to neutralize or erase the charge on the surface of the one N-type body.



3,651,490
THREE DIMENSIONAL MEMORY UTILIZING SEMICONDUCTOR MEMORY DEVICES
Katsuhiro Onoda; Ryo Igarashi; Toshio Wada; Sho Nakanuma, and Toru Tsujide, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

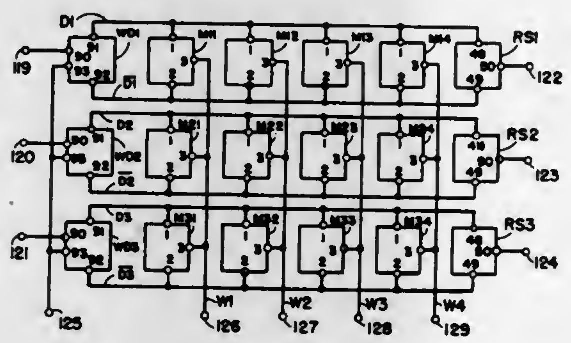
Filed June 8, 1970, Ser. No. 44,358
Claims priority, application Japan, June 12, 1969, 44/46580; Aug. 18, 1969, 44/65112
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **14 Claims**



A three-dimensional memory includes MIS-type transistors as the memory elements formed on a plurality of integrated matrix boards. The transistor includes an insulating film capable of storing an electric charge in response to the application of a voltage across the gate and substrate exceeding a critical value. The row and column drive lines are respectively connected to row and column select circuitry, and a third select circuit applies a select voltage to one of the matrix boards.

3,651,491
MEMORY DEVICE HAVING COMMON READ/WRITE TERMINALS
Akira Kobayashi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1970, Ser. No. 82,988
Claims priority, application Japan, Oct. 25, 1969, 44/85355
Int. Cl. G11c *11/40, 7/00, 5/02*
U.S. Cl. 340—174 FF **7 Claims**

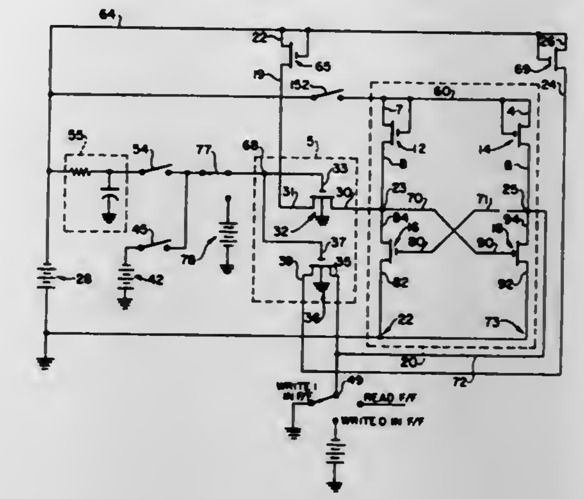


A memory device, such as for use in a digital computer or the like, comprises a plurality of memory circuits arranged in a plurality of intersecting rows and columns to thereby form a memory matrix. Each of the memory circuits has common read-write terminals respectively connected to a pair of digit signal lines and a terminal for receiving a selection pulse. A memory section of the memory read-out circuit is coupled to each pair of digit signal lines. During a write operation one of the pair of digit lines has a write pulse produced thereon. The section stores information as to which of the digit lines the write pulse was applied until the write pulse has decreased to a negligible level. The output on the other digit signal line, that is, the digit line having no write pulse thereon, controls the production of a read-out signal at the memory output, As a result, a read-out operation may be performed on the memory immediately following a write operation.

3,651,492
NONVOLATILE MEMORY CELL
George C. Lockwood, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Nov. 2, 1970, Ser. No. 86,191
Int. Cl. G11c *11/40, 5/02*
U.S. Cl. 340—173 R **11 Claims**

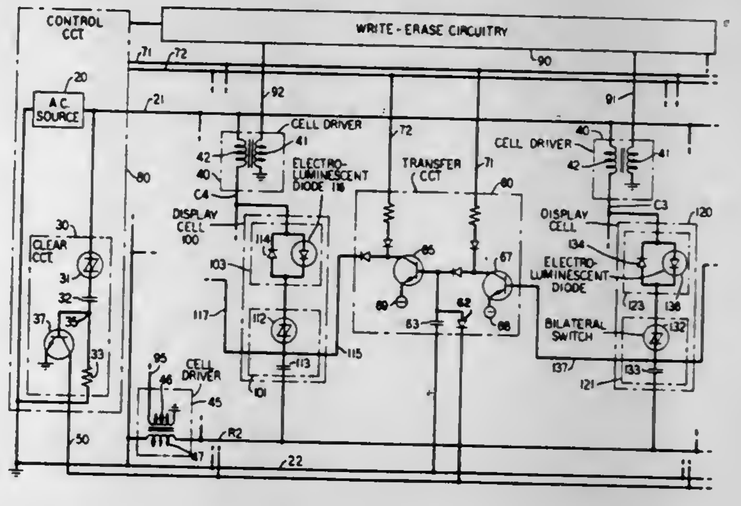
The present invention relates to a nonvolatile memory cell comprising two nonvolatile alterable threshold voltage field effect transistors. The drain electrodes of the two nonvolatile alterable threshold voltage field effect transistors are coupled through load transistors to a common negative power supply. Their gates are connected together and to an external source of negative pulses. Their sources are connected to circuits sensitive to current in the two alterable transistors. The first nonvolatile alterable threshold voltage field effect transistor is placed at a first threshold voltage, and the second alterable threshold voltage field effect transistor is placed at a second threshold voltage. The different threshold voltages set the nonvolatile memory cell in a one state or in a zero state. A current will first pass through the alterable threshold voltage field effect transistor having the less negative threshold voltage, before it passes through the alterable threshold field effect transistor having the more negative threshold voltage during the application of a negatively increasing gate voltage to both alterable threshold voltage field effect transistors.



The state of the nonvolatile memory cell is thus determined by which nonvolatile alterable threshold voltage transistor conducts first.

3,651,493
SOLID STATE TRAVELING DISPLAY CIRCUIT
Dinh-Tuan Ngo, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 20, 1969, Ser. No. 878,401
Int. Cl. G09b *13/00;* **H05b** *39/00*
U.S. Cl. 340—173 R **13 Claims**

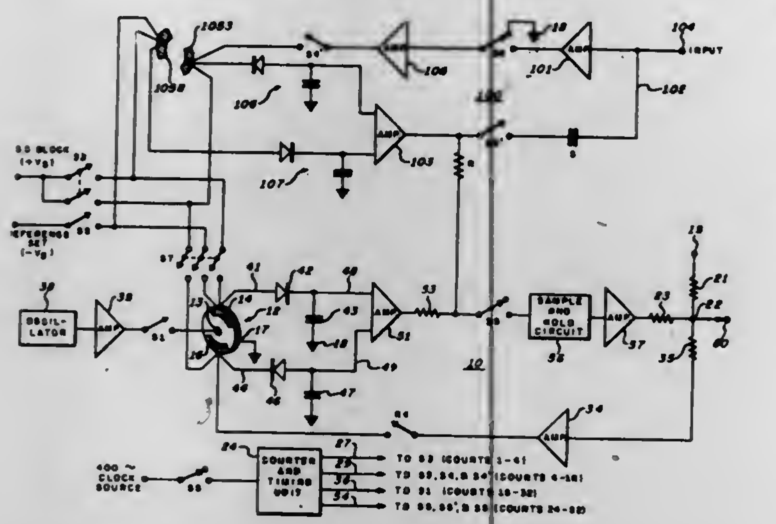


A plurality of solid state display cells, individually including a light-emitting element and a memory element, are connected in tandem via transfer circuitry to provide a traveling display image. The transfer circuitry interconnects the memory elements of adjacent display cells and operates in conjunction with an AC bias voltage applied in common to the display cells for moving the display image through successive display cells.

3,651,494
FERROELECTRIC SYNCHRONIZING AND INTEGRATING APPARATUS
Frederick W. Lynch, and Gerald F. Simons, both of Phoenix, Ariz., assignors to Sperry Rand Corporation

Filed Mar. 27, 1970, Ser. No. 23,131
Int. Cl. G11c *11/22*
U.S. Cl. 340—173.2 **18 Claims**

Solid state synchronizing and integrating apparatus including a ferroelectric member having a permanently polarized motor section and a plurality of variably polarizable generator sections providing output signals in accordance with their instantaneous polarization in response to an excitation signal applied to the motor. Two generators are utilized in each integrator or synchronizer, one for storing and reading out signal information and the other functioning as a reference



with which the signal information is compared. Switching and timing circuits are incorporated to provide for periodic updating of the stored signal information and allocation of discrete timing intervals for signal storage and read out.

3,651,495
ACTIVE MEMORY

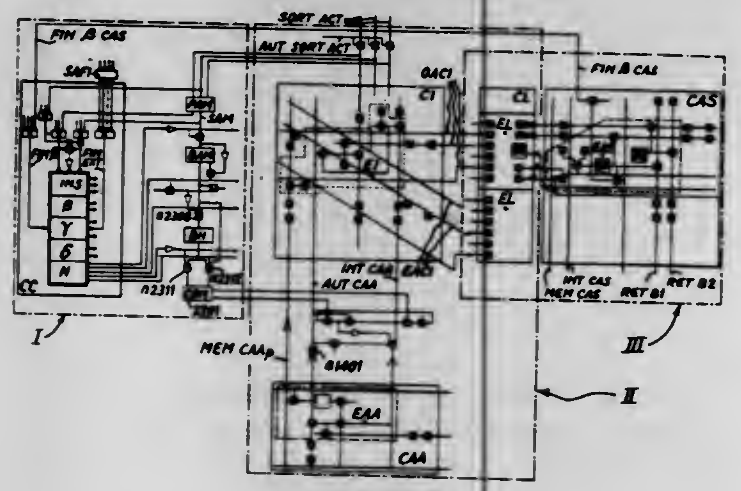
Jacques Louis Sauvan, Paris, France, assignor to Societe Anonyme dite: Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, S.N.E.C.M.A., Paris, France

Filed Sept. 15, 1969, Ser. No. 858,027

Claims priority, application France, Sept. 19, 1968, 166.845

Int. Cl. G11c *11/00*

U.S. Cl. 340—173 R **8 Claims**



An active memory for use in data processing apparatus for storing information data relating to a system defined by several parameters, each capable of taking a finite number of values, called situations. Each of these situations may be changed in value by a finite number of variations, called actions. For each parameter, a recording center is provided consisting of a matrix having two dimensions, one of which is allocated to the situations (i.e., the values of the parameters) and the other to the actions (that is, the change in value of the parameters). The parameters together are joined by at least one center of Association of Situations or a Center of Association of Actions. These centers are formed of matrices having storage elements the inputs of which correspond to the situations or to the actions, respectively, to be joined. Upon interrogation of the memory, an output will be provided indicating the shortest path (if a path exists) between an initial and a final situation—that is, the memory will supply the shortest transformation making such a connection possible.

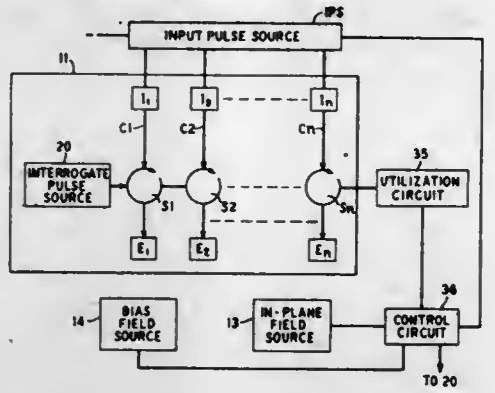
3,651,496
MAGNETIC DOMAIN MULTIPLE INPUT AND CIRCUIT

Irynej Danylchuk, Morris Plains, and Paul Charles Michaelis, Watchung, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.Y.

Filed Oct. 1, 1970, Ser. No. 77,072

Int. Cl. G11c *11/14, 19/00*

U.S. Cl. 340—174 TF **8 Claims**



A single wall domain, multiple-input, logical AND circuit is defined by an arrangement of magnetically soft overlay elements adjacent a sheet of material in which the domains can be moved. A plurality of propagation channels defined by the overlay elements include an orthogonal channel which comprises positions where domains are merely recirculated. When interrogated, the orthogonal channel provides an output only when all the idler positions are occupied.

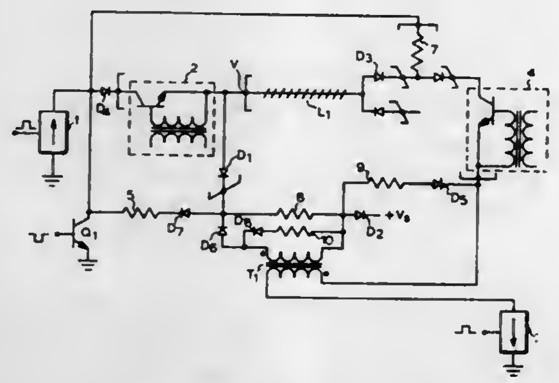
3,651,497
DYNAMICALLY TERMINATED MEMORY LINE SELECTION SCHEME

William M. Cook, Westminster, Calif., assignor to Electronic Memories and Magnetics Corporation, Los Angeles, Calif.

Filed June 29, 1970, Ser. No. 50,366

Int. Cl. G11c *7/00, 11/06*

U.S. Cl. 340—174 LA **25 Claims**



A drive system for a magnetic core memory is disclosed using a pulsed current source to charge a selected group of lines common at one (sink) end and simultaneously raising the bias on the other open (drive) end. When the group has been charged sufficiently to forward bias a diode connected to a supply voltage V_S, a termination resistor having a resistance approximately equal to the characteristic impedance of all lines common at the sink end, suppresses reflections and ringing. The output of the sink current source is connected to an isolating diode at the drive end of each line by a resistor, whereby the bias across the diode remains substantially constant as the lines are charged. A drive current

source is selectively connected to one line of the selected (sink) group. A coupling diode in series with a resistor connected to a source of bias potential terminates the drive end of the selected line during the drive current rise time. When the sink current source is turned off after a memory cycle, a shunt switch is turned on to allow the selected group of lines to discharge to a level of approximately zero volts with respect to circuit ground. Two corresponding, but complementary sets of components are provided for read and write cycles with one shunt switch on during any given cycle to reduce voltage stresses on selection elements.

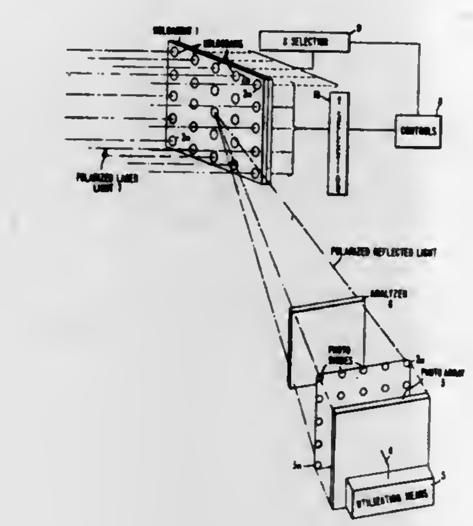
3,651,498
HOLOGRAPHIC STORAGE AND RETRIEVAL SYSTEM

Peter J. Magill, Endwell; Robert E. McCurry, Vestal, and Charles A. Speicher, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 2, 1970, Ser. No. 15,542

Int. Cl. G11c *11/14*

U.S. Cl. 340—174.1 M **6 Claims**



Random selection of holograms from an array comprised of a plurality of holograms is achieved by light reflections from the selected holograms upon illuminating the entire array with a broad beam of coherent light. The array of discrete holograms is overlaid with a reflective magnetizable film, normally uniaxially oriented. When the magnetization vector in the film is rotated in any one or more of the discrete hologram areas, a proportional rotation in the plane of polarization of the reflected light will occur and be directed to a readout diode array. Disposed in the path of the reflected light is an analyzer which is set for maximum extinction when no readout is desired and minimum extinction when a readout is desired, the diode array providing electrical readout signals corresponding to the information read out from the selected hologram.

3,651,499
RECORDER WITH CIRCULAR STORAGE ELEMENT

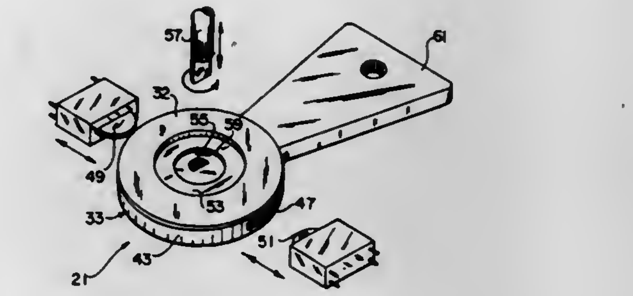
John F. Hynes, Jr., 12356 Creekhaven, St. Louis, Mo.

Filed Jan. 29, 1970, Ser. No. 6,745

Int. Cl. G11b *5/00;* **G18b** *5/78*

U.S. Cl. 340—174.1 R **12 Claims**

Information storage apparatus utilized as a credit instrument for use in a credit system having point-of-sale terminals in places of business, the terminals each having magnetic recording and playback head means. The credit instrument includes a single circular rotatable element having magnetizable material concentrically secured thereto which is adapted to have encoded credit information magnetically recorded on its surface. An enclosure closely confines the element for rotation and has at least one aperture permitting the recording and playback head means to be placed in close proximity to the surface. The size of the instrument permits it to be conveniently grasped between one's fingers. Means, such as a spindle-receiving arrangement, is cooperative with any of the point-of-sale terminals for causing rotation of the element to move the surface of the magnetizable material by the aperture when the recording and playback head means is placed in close proximity to the surface, permitting credit information to be recorded on the surface of the magnetizable material and to be read therefrom by the recording and playback head means for use in consummating credit transactions.



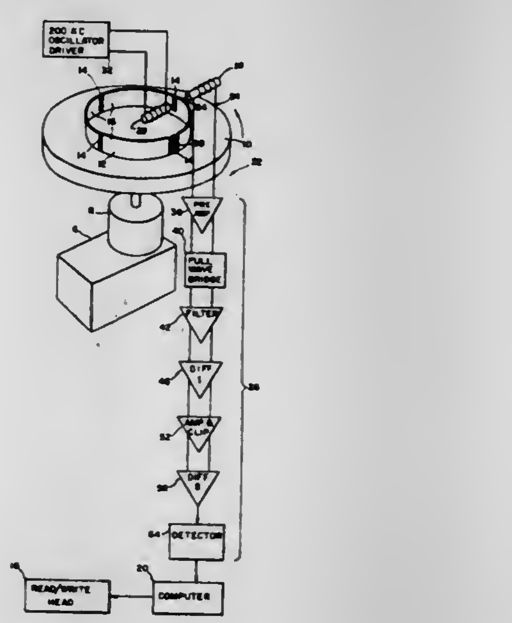
3,651,500
METHOD AND APPARATUS FOR DETECTING THE POSITION OF MOVING PARTS

Richard D. Weir, San Jose, Calif., assignor to Iomec, Incorporated, Santa Clara, Calif.

Filed Apr. 6, 1970, Ser. No. 25,764

Int. Cl. G11b *5/00*

U.S. Cl. 340—174.1 A **7 Claims**



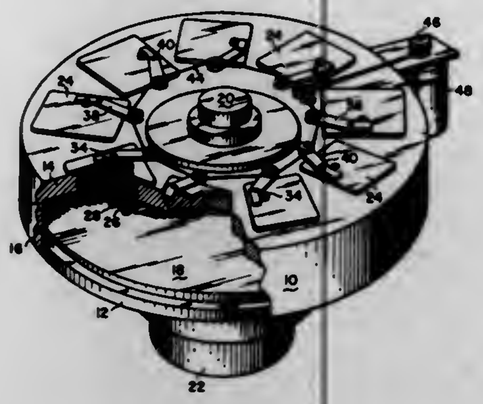
An axially extending annular metal ring having a plurality of spaced slots is attached to a rotating disk. A driven magnetic inductor is placed on one side of the ring and a pick-up inductor is placed on the other side of the ring and opposite the driven inductor for the emission of output signals each time one of the slots comes into alignment with the two inductors. The output signals are transformed into digital pulses which coincide with the alignment of the center of the slot with the two inductors. The pulses, together with a reference or index signal that is generated during each revolution of the ring, are used to determine the relative position of the rotating member.

3,651,501

TRANSDUCER HEAD ACTUATOR FOR MAGNETIC DISC MEMORY

Martin J. Cote, Burbank, Calif., assignor to The Singer Company

Filed Aug. 31, 1970, Ser. No. 68,286
Int. Cl. G11b *5/54, 21/12, 5/60*
U.S. Cl. 340—174.1 F **4 Claims**



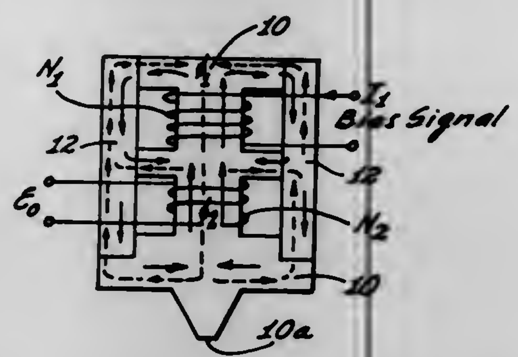
A system for urging a normally retracted magnetic read/write head into working relationship with a magnetic memory disc. The retracting force of a head supporting leaf spring is overcome by a simple system of levers actuated by the tightening of a cable connected with a plurality of other lever systems around the disc. The cable is looped around the capstan on a motor shaft so that the motor, when driven to its stalled condition, will tighten the cable.

3,651,502

MAGNETIC SENSING TRANSDUCER WITH A FLAT UNITARY LAMINATE CORE STRUCTURE

James D. Flora, North Hollywood, Calif., assignor to The Singer Company

Filed June 15, 1970, Ser. No. 46,356
Int. Cl. G11b *5/16, 5/22*
U.S. Cl. 340—174.1 F **2 Claims**



A magnetic transducer capable of sensing binary digital data as represented by the polarity of a magnetic dipole recorded either vertically or horizontally on a magnetic medium such as barium ferrite, iron oxide, or appropriate thin film magnetic plating. The transducer can determine the polarity of the magnetic dipole on a moving or stationary magnetic medium, and it is suitable for use in high density easily programmed magnetic encoders.

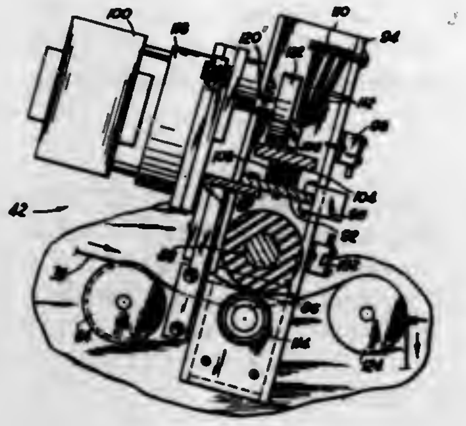
3,651,503

SYSTEM FOR PROCESSING MERCHANDIZING TAGS HAVING PRINTED AND MAGNETIC INFORMATION THEREON

Harry W. Kono, Lido Beach, L. I., N.Y., assignor to Tag-A-Tron, Inc., New York, N.Y.

Filed July 22, 1969, Ser. No. 843,454
Int. Cl. B41j *45/00*
U.S. Cl. 340—174.1 **5 Claims**

A system for processing merchandizing tags cut from stock having a magnetizable portion and a portion for receiving visible printed information. The stock is carried through a magnetic recording station and a printing station where indicia are respectively magnetically and visually recorded on the stock on each of the portions corresponding to tags which are cut from the stock at the last station. A reader is also provided which reads the magnetic indicia on a tag by being actuated when the tag is properly positioned to move a magnetic reader over the magnetic indicia on the tag.

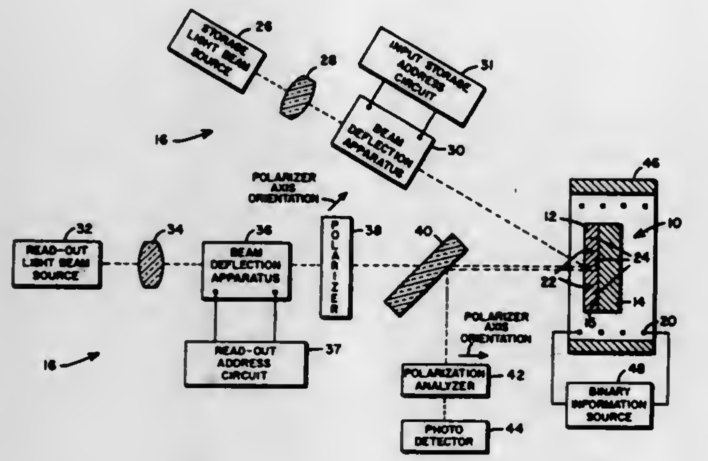


3,651,504

MAGNETO-OPTIC INFORMATION STORAGE APPARATUS

Norman Goldberg, Dresher, Pa., and Roger Newman, Wayland, Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 17, 1969, Ser. No. 867,206
Int. Cl. G11c *11/42;* G11b *11/10*
U.S. Cl. 340—174.1 M **4 Claims**


STORAGE LIGHT BEAM SOURCE
26
28
INPUT STORAGE ADDRESS CIRCUIT
31
BEAM DEFLECTION APPARATUS
30
16
POLARIZER AXIS ORIENTATION
READ-OUT LIGHT BEAM SOURCE
32
34
BEAM DEFLECTION APPARATUS
36
POLARIZER
38
40
46
12
10
24
22
14
20
POLARIZER AXIS ORIENTATION
READ-OUT ADDRESS CIRCUIT
37
16
POLARIZATION ANALYZER
42
48
BINARY INFORMATION SOURCE
PHOTO DETECTOR
44

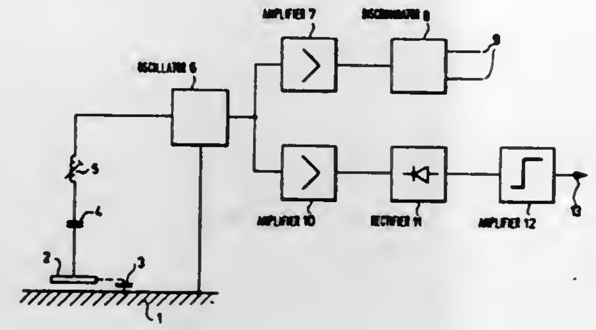
A magneto-optic information storage apparatus in which the memory is a wafer of a ferrimagnetic material having a heat-radiating, light-reflecting metallic sheet secured thereto. Following the storage of a bit of binary information at a selected region of the wafer, by simultaneously raising the temperature of the region above the magnetic compensation temperature of the material and exposing the wafer to a magnetic field, the metallic sheet restores quickly the temperature of the region to the compensation temperature. Readout of information stored at a region of the wafer is enhanced by reflection of the read-out light beam by the metallic sheet whereby the beam makes two excursions through the region.

3,651,505

CAPACITIVE DISTANCE MEASURING

Claus Schmidt, Sandweier near Baden-Baden, Germany, assignor to Margit Schmall nee Mutscher, Baden-Baden, Germany

Filed Feb. 20, 1970, Ser. No. 13,139
Claims priority, application Germany, Mar. 24, 1969, P 19 14 876.6
Int. Cl. G08c *19/16*
U.S. Cl. 340—200 **6 Claims**



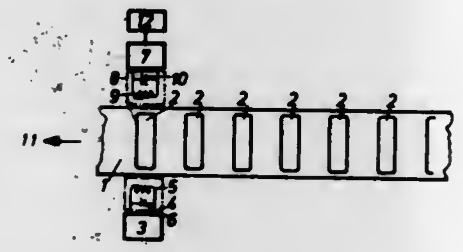
The measuring device comprises a feeling electrode disposed above a conductive working piece surface the distance of which is to be measured. An oscillator is controlled by a series tank circuit that comprises a series connected feeling electrode and an inductance and, in addition, a separating condenser having substantially greater capacity than that of the measuring capacitor formed by the feeling electrode and the working piece surface. A first selective amplifier is tuned to amplify only the measuring frequency that results during the normal measuring conditions. A second selective amplifier is connected to the output of the oscillator parallel to the first amplifier, and it is tuned to amplify the low frequency that will be generated if the measuring capacitor is short-circuited.

3,651,506

CONVEYOR BAND MONITORING APPARATUS

Jorn Olaf, Essen, and Walter Ratz, Gelsenkirchen, both of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Filed Sept. 30, 1969, Ser. No. 862,253
Int. Cl. G08b *21/00*
U.S. Cl. 340—259 **9 Claims**



Conductive loops uniformly spaced along the conveyor band complete the signal transmission path between a high frequency transmitter and receiver at uniformly spaced time instants. Damage of conveyor band damages loop, interrupting signal path and consequent interruption of signal from receiver causes stopping of band.

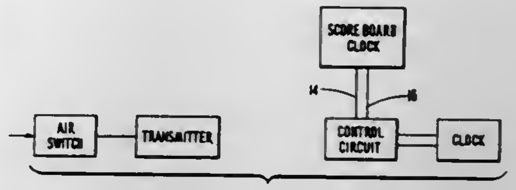
3,651,507

REMOTE CONTROLLING DEVICE

John F. Abbott, 416 Grove Street, Melrose, Mass.

Filed Aug. 20, 1969, Ser. No. 855,453
Int. Cl. G08b *27/00*
U.S. Cl. 340—323 **10 Claims**

A remote controlling device including a control circuit which drives external apparatus, as for example a clock. The circuit is operated remotely by a portable transmitting circuit which generates an electrical signal in response to an input stimulus. The input stimulus may be supplied by an air switch with an air tube connected thereto, and the air switch may be operated by blowing into the air tube. The air tube may be coupled to a whistle for actuating the air switch and emitting an audible signal simultaneously. The control circuit may include a time delay circuit which prevents actuation of the clock for a predetermined period of time after the first input stimulus is applied. The transmitter-air switch combination may be carried by the operator, as for example a referee at a hockey game.

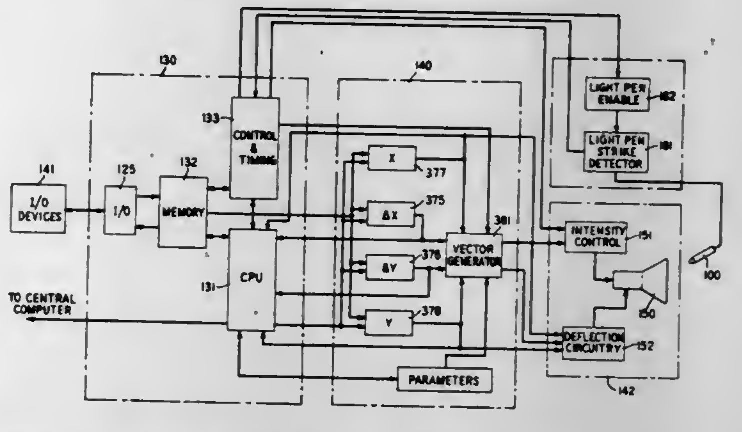


3,651,508

SYSTEM FOR EVALUATING LIGHT PEN STRIKES

Paul Edward Scarborough, Jr., Burlington, and David Stuckey Watson, Winston Salem, both of N.C., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 23, 1970, Ser. No. 91,842
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **9 Claims**



Data processing apparatus and methods for identifying a point on a continuous displayed image are described. In the case of a continuous vector, an iterative sequence of pairs of decreasingly smaller vectors are generated and evaluated to detect the location of a light pen strike on the continuous vector. In particular, when a vector in the iterative sequence is detected which is found to have sufficiently small magnitude, the process is terminated and one end of that vector is considered to be the desired point.

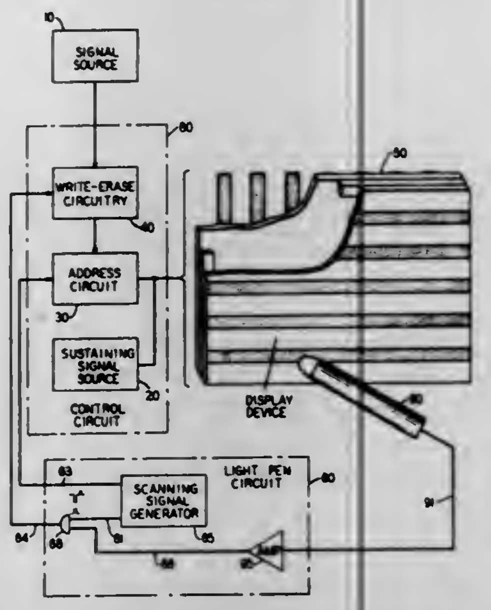
3,651,509

LIGHT PEN FOR DISPLAY HAVING INHERENT MEMORY

Dinh-Tuan Ngo, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 6, 1970, Ser. No. 87,486
Int. Cl. G08b *5/22*
U.S. Cl. 340—324 R **9 Claims**

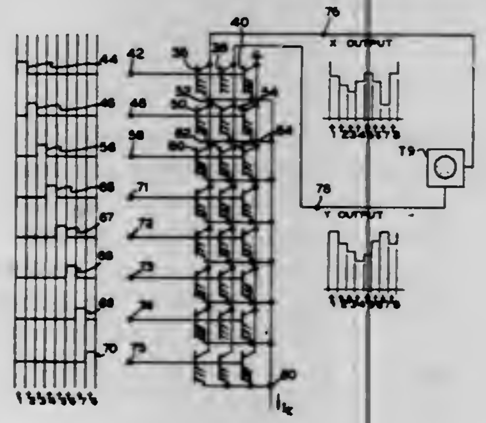
A light pen arrangement for display systems having inherent memory (e.g., plasma display systems) which operates in conjunction with display scanning signals for writing or erasing information on the display, such as for interactive graphics applications. The scanning signals generate momentary light pulses on the display which are detected by the light pen arrangement and used to selectively produce conventional write or erase signals as the light pen is manipulated adjacent the display. The light pen arrangement can be employed also to generate "store now-display later" information and to check existing display images.



3,651,510
CHARACTER GENERATOR APPARATUS

Barrie Gilbert, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed July 28, 1969, Ser. No. 845,393
Int. Cl. G08b *23/00*
U.S. Cl. 340—324 A **15 Claims**

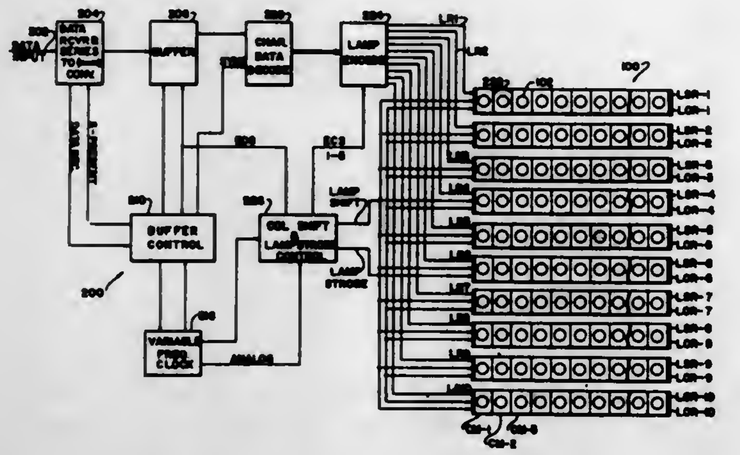


Sets of transistors each having a selectable number of emitters are employed for dividing current between the X and Y deflection means of an XY display device wherein each set of transistors defines a break point on a given alphanumeric character. Smooth transitions are made between each set of transistors and the next set, defining separate character break points, so as to generate a character stroke therebetween. Innumerable combinations of emitters are possible for generating different characters, each with a different group of transistor sets, and a large number of transistor sets for defining many characters are easily accommodated on a common integrated circuit structure.

3,651,511
TRAVELING MESSAGE DISPLAY

Russell W. Andrews, Chicago; Paul M. Kolesar, Hanover Park; Robert M. Payne, Des Plaines, and Howard G. Posner, Chicago, all of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Division of Ser. No. 703,057, Feb. 5, 1968, Pat. No. 3,493,956.
Filed Dec. 2, 1969, Ser. No. 881,546
Int. Cl. G09f *13/00*
U.S. Cl. 340—324 R **15 Claims**

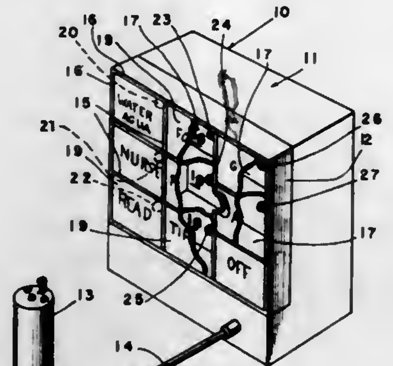


A completely electronic traveling message display system in which the input data is loaded into a buffer at the rate received and read out to a lamp encoder for actuating the lamps at a rate dependent on but nonsynchronous with the input rate. A control circuit determines the contents of the buffer and controls the readout rate so that a smooth transition is made in the visual display rate despite fast changes in the rate of input. A shift register is shown for sequentially enabling the lamps in a lamp matrix display board and the control circuit controls the shift rate through the register. Provisions are made to fire the lamps a controlled number of times for each shift of the shift register and only for a short period to prevent image distortions to the observer. The brightness of the display is both automatically and manually controllable to adjust for variations in the display rate and for ambient light conditions.

3,651,512
VISUAL DISPLAY COMMUNICATION APPARATUS FOR ENABLING A HANDICAPPED OR INFIRM INDIVIDUAL TO COMMUNICATE INFORMATION

George D. Summers, Bethesda, Md., assignor to Fairchild Industries, Inc., Montgomery County, Md.

Filed May 5, 1970, Ser. No. 34,749
Int. Cl. G08b *7/06*
U.S. Cl. 340—325 **15 Claims**

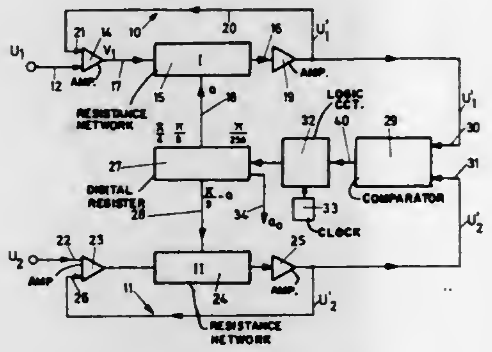


An apparatus for permitting a handicapped or infirm individual to visually communicate information including a display unit that has a display panel that has a series of compartments containing lamps and has translucent windows located over the compartments that have messages or other similar information. An illuminating circuit is provided to cause sequential illumination of the lamps in either a vertical or horizontal direction upon receipt of appropriate input signals. Various control units are also provided for permitting a handicapped or infirm individual to readily transmit input signals to the illuminating circuit to cause sequential illumination of the lamps.

3,651,513
DATA-CONVERTING APPARATUS

Charles Meyer, St. Germain-en-Laye; Francois Maison, Eaubonne, and Paul Sangouard, Fontenay-le-Fleury, all of France, assignors to Electronique Marcel Dassault, Paris, France

Filed Jan. 18, 1968, Ser. No. 698,762
Claims priority, application France, Jan. 20, 1967, 91,862
Int. Cl. G06g *7/22;* **G06j** *1/00;* **H03k** *13/00*
U.S. Cl. 340—347 AD **6 Claims**



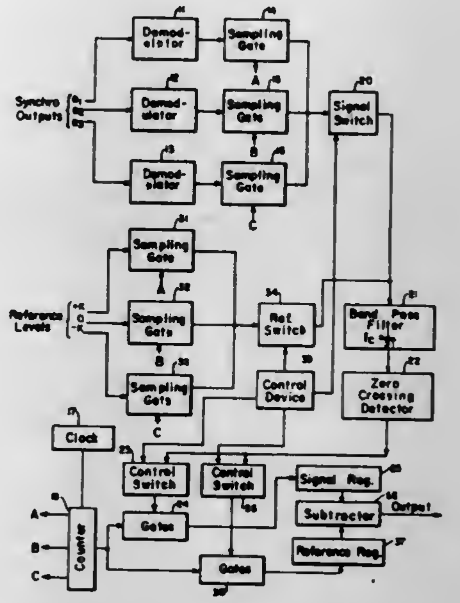
An analogue/digital converter includes a digital register for the storage of the magnitude of an angle *a*, this magnitude *a* and its complement $\pi/2-a$ being fed by respective outputs of the register to a pair of calculating networks each inserted between a first and a second amplifier stage. The first amplifier stage associated with either network receives an analogue signal in the form of a respective input voltage U_1, U_2 together with a degeneratively feed-back voltage U'_1, U'_2 from the corresponding output stage. The two first stages have the same gain G so that, if the combined gain of each network and its second amplifier stage is unity, $U'_1 = Ga(U_1 = U'_1)$ and $U'_2 = G(\pi/2 - a)(U_2 - U'_2)$ which for a value $G = 0.3534$, *yields the relationship* $U_2/U_1 -$ tan *a* whenever $U'_1 = U'_2$. This identity can be established by a comparator, connected to the two second-stage outputs, which feeds back an error signal to the digital register to modify the value of *a* until the two output voltages are equal. Conversely, with $U_1 = U_2$, tan *a* equals the ratio of voltages $U'1$ to U'_2 which are therefore proportional to sin *a* and cos *a*, respectively.

3,651,514
SYNCHRO-TO-DIGITAL CONVERTER

Robert Walter Klatt, Glastonbury, Conn., assignor to Fairchild Industries, Inc., Farmingdale, L.I., N.Y.

Filed Mar. 25, 1970, Ser. No. 22,585
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 SY **16 Claims**

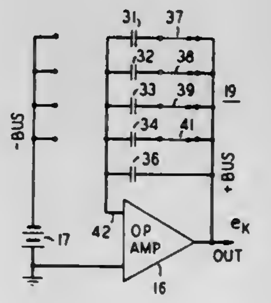
A synchro-to-digital converter in which the synchro output signals are demodulated and successively sampled and the samples combined to provide a sinusoidal waveform, the phase of which depends upon the angle of the synchro rotor. The phase difference between this sinusoidal waveform and a reference signal is measured by a digital counter which provides a digital readout which corresponds to the angle of the synchro rotor.



3,651,515
CAPACITIVE SWITCHED GAIN RATIO OPERATIONAL AMPLIFIER PCM DECODER

Robert L. Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 25, 1969, Ser. No. 879,783
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 DA **7 Claims**



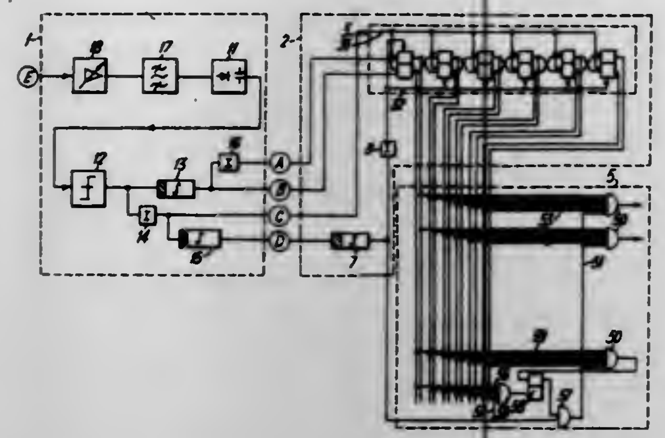
A self-companding pulse code modulation converter employs switched gain ratio of an operational amplifier. Capacitors, weighted to correspond to the quantizing characteristic, are switched between the input and feedback circuits of an operational amplifier to change the gain ratio.

3,651,516
CODE CONVERTER

John Hugh Andreae, London, England, assignor to Standard Telephones and Cables Limited, London, England

Filed Mar. 2, 1970, Ser. No. 15,423
Claims priority, application Great Britain, Mar. 7, 1969, 12,223/69
Int. Cl. H04l *3/00*
U.S. Cl. 340—347 DD **5 Claims**

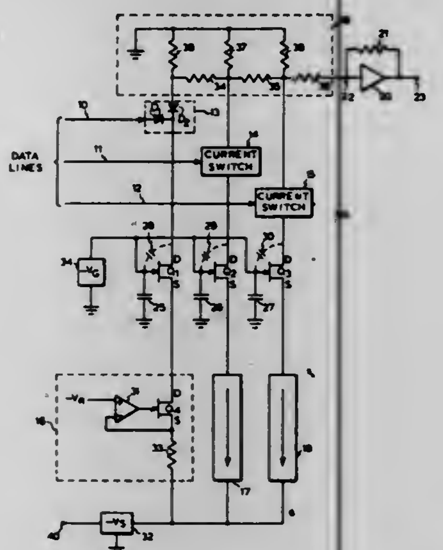
This invention relates to a code converter which converts a variable length serial code (such as a code of the Morse Code type) into a fixed length parallel code. It temporarily stores a representation of each input code group in a shift register provided with a "dummy 1" which is shifted along the register in front of any received code group so as to indicate its length. The code converter forms part of a selector which can be attached to an electrically operated typewriter to enable it to be controlled by dictation using a form of code similar to Morse Code.



3,651,517
DIGITAL-TO-ANALOG CONVERTER WITH ISOLATED CURRENT SOURCES

Nicholas B. Kurek, Granada Hills; James F. Gruder, Manhattan Beach, and Dan Cameron, Jr., Woodland Hills, all of Calif., assignors to Information International, Inc., Boston, Mass.

Filed July 13, 1970, Ser. No. 54,490
Int. Cl. H03k *13/04*
U.S. Cl. 340—347 DA **10 Claims**

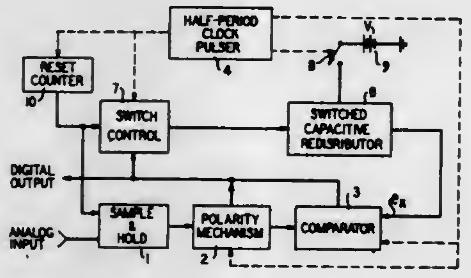


A digital-to-analog converter is disclosed employing a binary weighted current divider connected to the summing junction of an operational amplifier. Current switches selectively couple constant current sources to junctions in the current divider in accordance with binary digits at data input terminals. Each of the current sources consist of an operational amplifier having its output connected to the gate of a field-effect transistor (FET). The source of the FET is connected to a regulated power supply through a high resistance resistor and the drain of the FET is connected to a current switch through an isolation FET having its gate connected to circuit ground by a source of bias voltage and a filter capacitor in parallel. By controlling the regulated voltage to current sources, the analog output signal may be multiplied by a factor to form a product proportional to NS, where N is the number being converted and S is the control signal for the regulated voltage.

3,651,518
REDISTRIBUTION CIRCUIT FOR ANALOG TO DIGITAL AND DIGITAL TO ANALOG CONVERSION AND MULTILEVEL PRE-EQUALIZERS

Robert Lawrence Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 11, 1970, Ser. No. 18,447
Int. Cl. H03k *13/12*
U.S. Cl. 340—347 AD **7 Claims**



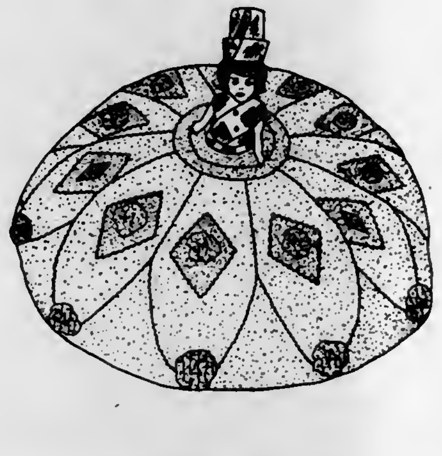
Each of a plurality of capacitors is charged to a weighted reference charge or discharged in response to digital information. At a subsequent time, all capacitors are connected in parallel and charge redistributes among them. The redistribution voltage which thereby settles across the parallel combination corresponds to an analog sample voltage.

DESIGNS

MARCH 21, 1972

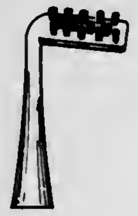
223,135
PILLOW

Cornelia R. Nash, 291 Leicester, Detroit, Mich. 48202
Filed July 22, 1970, Ser. No. 24,067
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D3—9



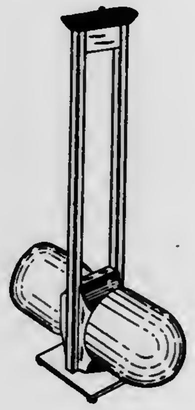
223,136
BRUSH

John Jedora, 33 Cedar St. N.,
Timmins, Ontario, Canada
Continuation-in-part of design application Ser. No. 20,141, Nov. 17, 1969. This application Dec. 21, 1970, Ser. No. 26,733
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—15



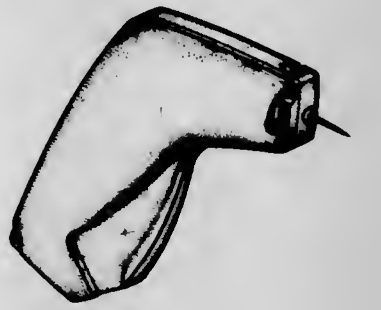
223,137
SHOE POLISHER MACHINE

William A. Beck, River Hills, Wis., assignor to Beck, Inc., Grafton, Wis.
Filed Nov. 2, 1970, Ser. No. 25,760
Term of patent 14 years
Int. Cl. D4—*03*
U.S. Cl. D4—37



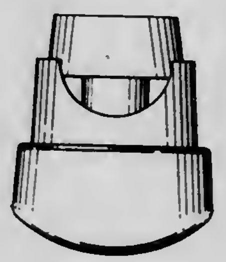
223,138
TAG ATTACHER

Robert P. Mulholland, Centerville, Ohio, assignor to The Monarch Marking System Company, Dayton, Ohio
Filed Sept. 30, 1970, Ser. No. 25,678
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51



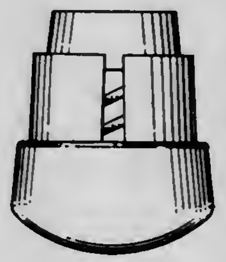
223,139
DOOR KNOB SAFETY LATCH FOR AUTOMOBILES

Frederick Trinca, 6412 83rd St.,
Middle Village, N.Y. 11379
Filed Oct. 14, 1970, Ser. No. 25,488
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—109



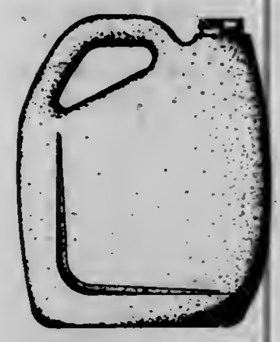
223,140
DOOR KNOB SAFETY LATCH FOR AUTOMOBILES

Frederick Trinca, 6412 83rd St.,
Middle Village, N.Y. 11379
Filed Oct. 14, 1970, Ser. No. 25,489
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—109



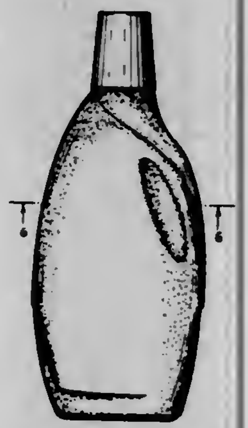
223,141
JUG OR SIMILAR ARTICLE

Earl E. Gilkeson, Carnegie, William C. Waterloo, York, and Richard L. Kennedy and Raymond E. Kennedy, Birdsboro, Pa., assignors to Graham Engineering Corporation, York, Pa.
Filed Oct. 26, 1970, Ser. No. 25,633
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—41



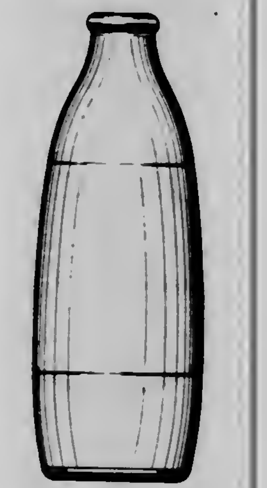
223,142
JUG OR SIMILAR ARTICLE

Victor Koenigsberg, Franklin Square, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Original design application Nov. 14, 1969, Ser. No. 20,093, now Patent No. 219,954, dated Feb. 23, 1971. Divided and this application May 25, 1970, Ser. No. 23,178
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—45



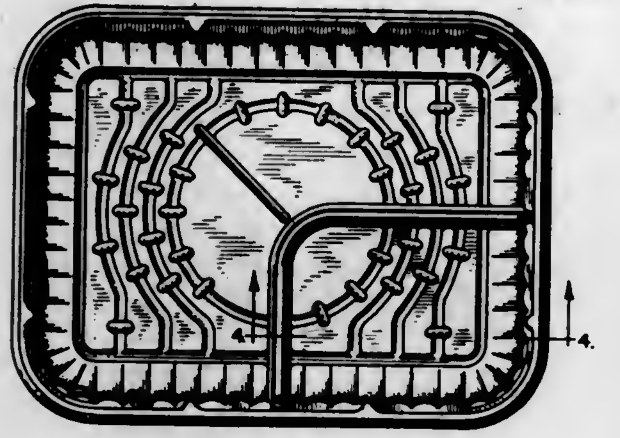
223,143
BOTTLE

Kurt Becker, Obernkirchen, Germany, assignor to Hermann Heye, Ailee, Germany
Filed Aug. 26, 1970, Ser. No. 24,697
Claims priority, application Germany Mar. 6, 1970
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—135



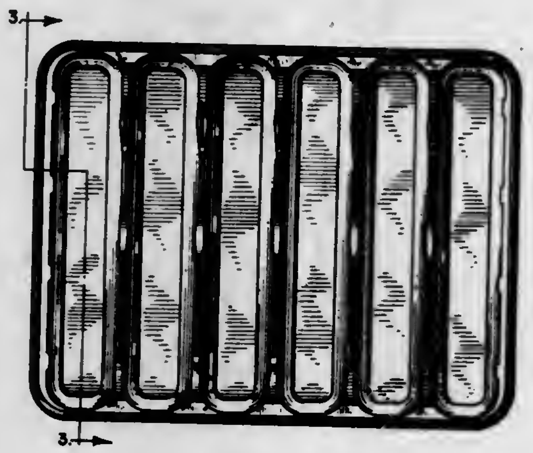
223,144
FOOD PACKAGING TRAY

Roy W. Bloch, Northbrook, Ill., assignor to Ekco Products, Inc., Wheeling, Ill.
Filed Sept. 14, 1970, Ser. No. 24,985
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185



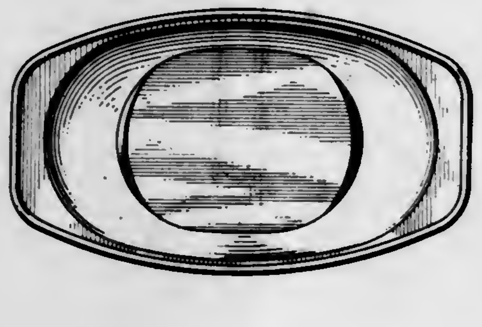
223,145
PACKAGING CONTAINER FOR COMESTIBLES OR THE LIKE

Roy W. Bloch, Northbrook, Ill., assignor to Ekco Products, Inc., Wheeling, Ill.
Filed Oct. 28, 1970, Ser. No. 25,689
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—189



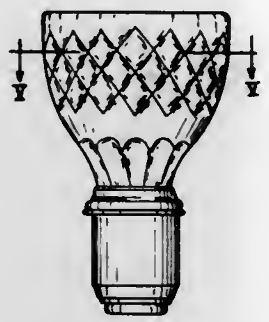
223,146
PACKAGING CONTAINER

Gunter Maasshoff, Glenview, Ill., assignor to Ekco Products, Inc., Wheeling, Ill.
Filed Oct. 8, 1970, Ser. No. 25,390
Term of patent 14 years
Int. Cl. D9—*03;* D7—*01*
U.S. Cl. D9—219



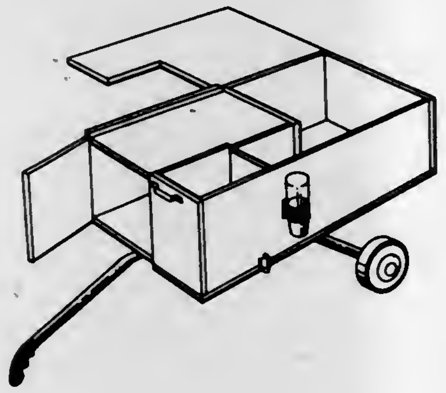
223,147
STOPPER FOR BOTTLE

Franklin Douglas Northgrave, Arva, Ontario, and Samuel Joseph Cino, Hamilton, Ontario, Canada, assignors to London Winery Limited, London, Ontario, Canada
Filed Oct. 22, 1970, Ser. No. 25,601
Claims priority, application Canada Feb. 16, 1970
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—285



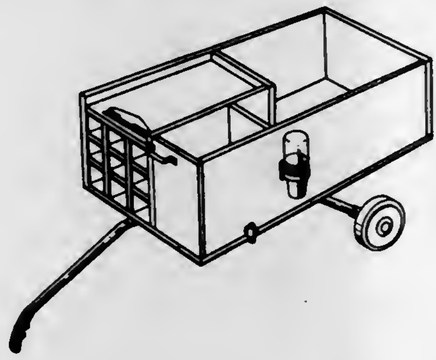
223,148
PORTABLE PICNIC CART

Ralph A. Gonzalez, 2114 Heloise Way, Placentia, Calif. 96270
Filed July 27, 1970, Ser. No. 24,158
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D14—3



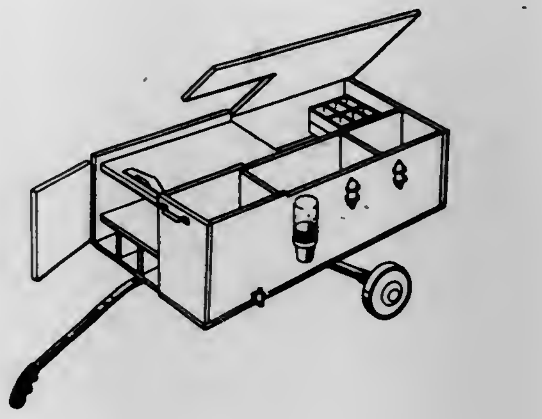
223,149
PORTABLE BASEBALL CART

Ralph A. Gonzalez, 2114 Heloise Way, Placentia, Calif. 96270
Filed July 27, 1970, Ser. No. 24,161
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D14—3



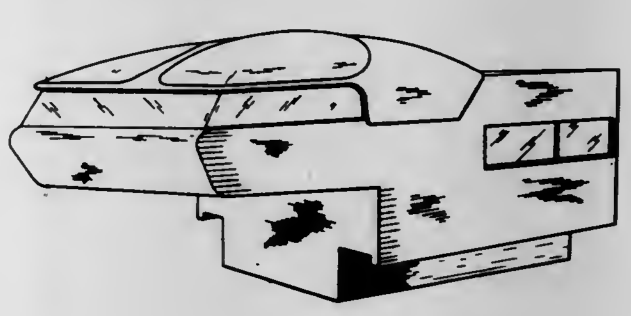
223,150
PORTABLE FISHING CART

Ralph A. Gonzalez, 2114 Heloise Way, Placentia, Calif. 96270
Filed July 27, 1970, Ser. No. 24,162
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D14—3



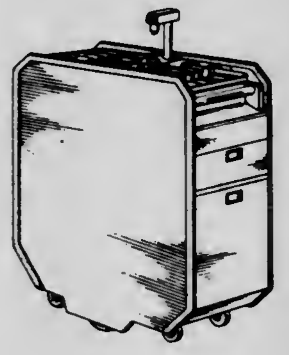
223,151
CAMPER

Grant W. Stroud, 920 21st St., Lewiston, Idaho 83501
Filed Oct. 16, 1970, Ser. No. 25,530
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3



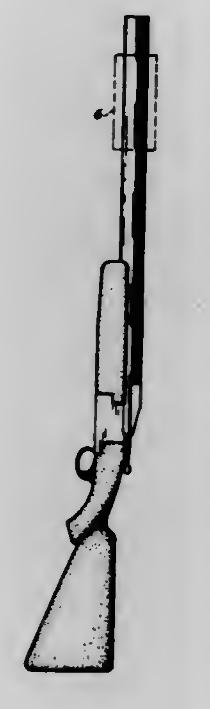
223,152
BEVERAGE SERVING CART

Fred Kauffman, Philadelphia, Pa., and Donald C. Siverts, Torrance, Calif., assignors to Hitco
Filed Oct. 30, 1970, Ser. No. 25,745
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—3



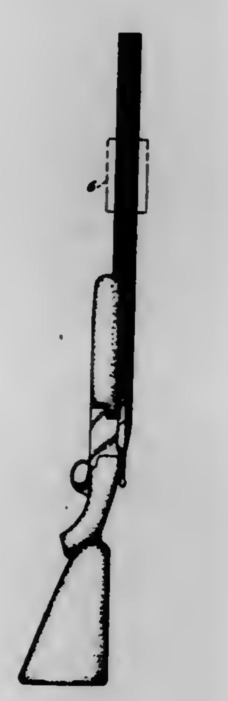
223,153
FIREARM

Kenji Murakami, 458 Hiyoshi-cho, Kohoku-ku,
Yokohama, Japan
Filed May 11, 1970, Ser. No. 22,913
Claims priority, application Japan Feb. 14, 1970
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—6



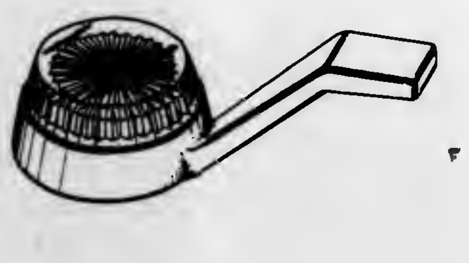
223,154
FIREARM

Kenji Murakami, 458 Hiyoshi-cho, Kohoku-ku,
Yokohama, Japan
Filed May 11, 1970, Ser. No. 22,914
Claims priority, application Japan Feb. 14, 1970
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—6



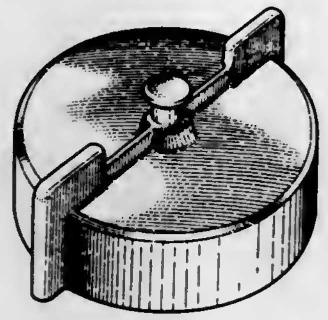
223,155
HANDLE FOR A PLUMBING FITTING

Joseph William Owings, Jeffersonville, Ind., assignor to
American Standard Inc., New York, N.Y.
Filed Sept. 3, 1970, Ser. No. 24,820
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—29



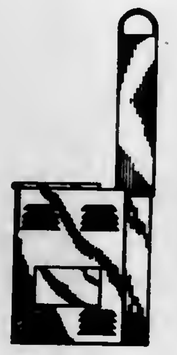
223,156
THREAD PROTECTOR CLOSURE CAP

Duncan Horatio Campbell, Etobicoke, Ontario, Canada,
assignor to Wilson & Cousins Co. Limited, Brampton,
Ontario, Canada
Filed Nov. 30, 1970, Ser. No. 26,230
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—41



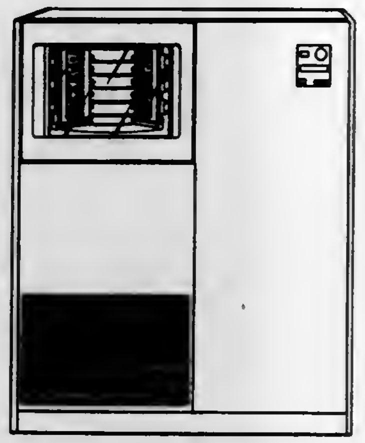
223,157
OUTDOOR INCINERATOR

Phillip G. Larue, Bay City, Mich., assignor to Calcinator
Corporation, Bay City, Mich.
Filed Nov. 16, 1970, Ser. No. 26,007
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—85



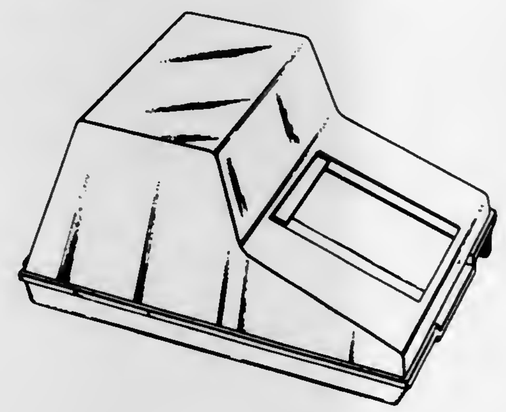
223,158
MAGNETIC DISK, FIXED HEAD FILE

Edward D. Lucey, Los Gatos, and Dallas G. Molerin, San
Jose, Calif., assignors to International Business
Machines Corporation, Armonk, N.Y.
Filed Jan. 30, 1970, Ser. No. 21,172
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



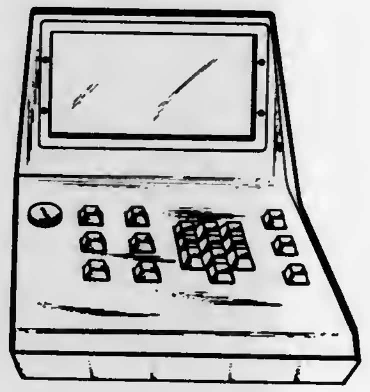
223,159
FORM READER

Demosthenis Chryssopoulos and George F. Minka, Torrance, Calif., assignors to TRW Data Systems, Inc.,
Torrance, Calif.
Filed Oct. 21, 1970, Ser. No. 25,581
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



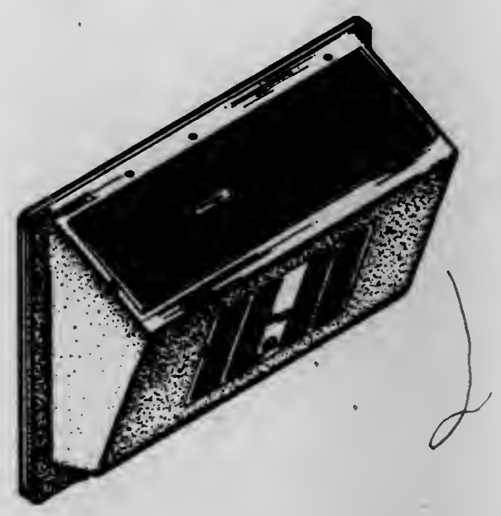
223,160
DATA TERMINAL

Dan Nelson and John C. Hutton, Los Angeles, Calif.,
assignors to TRW Data Systems, Inc., Torrance, Calif.
Filed Oct. 21, 1970, Ser. No. 25,569
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



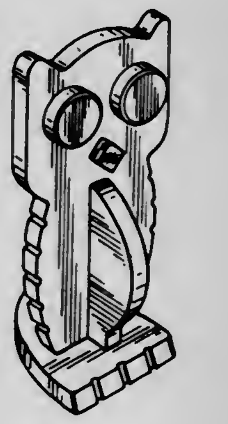
223,161
MULTIPLE STEREO SPEAKER UNIT FOR AUTOMOTIVE USE

Jonas H. Anchel, Milford, Pa., assignor to Sparkomatic
Corporation, Milford, Pa.
Filed Oct. 28, 1970, Ser. No. 25,699
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



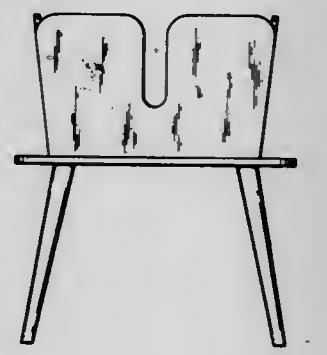
223,162
OWL FIGURE

Harry Meth, Cincinnati, Ohio, assignor to General Mills
Fun Group, Inc., Minneapolis, Minn.
Filed Oct. 26, 1970, Ser. No. 25,668
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23

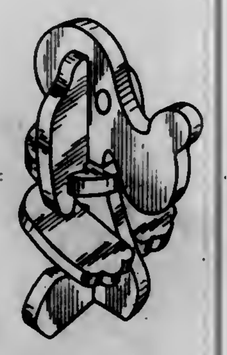


223,163
UTILITY TABLE

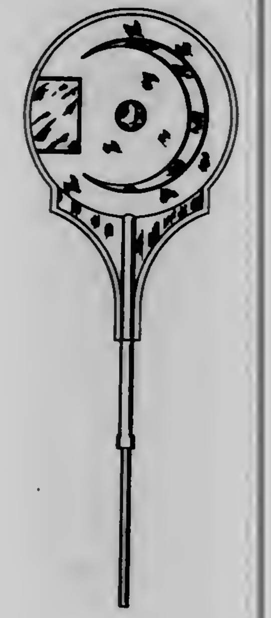
Arthur S. Gray, 1115 Carlyle Drive,
San Mateo, Calif. 94402
Filed May 25, 1970, Ser. No. 23,146
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D33—14



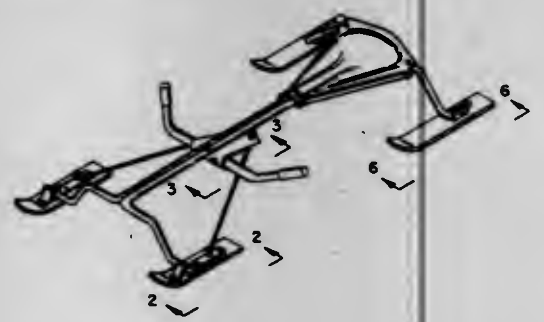
223,164
TOY DOG FIGURE
Harry Meth and Susan Lake, Cincinnati, Ohio, assignors to General Mills Fun Group, Inc., Minneapolis, Minn.
Filed Oct. 26, 1970, Ser. No. 25,669
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2



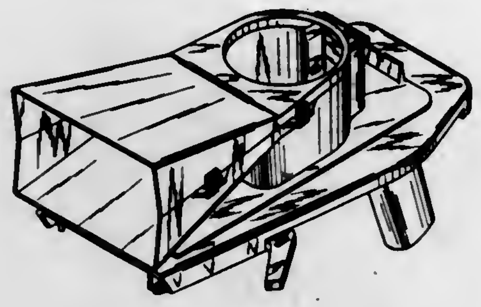
223,165
FOOTBALL DOWN AND BALL MARKER
Michael B. Komendat, Jr., 524 Plum St., Fairport Harbor, Ohio 44077
Filed Sept. 22, 1970, Ser. No. 25,146
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



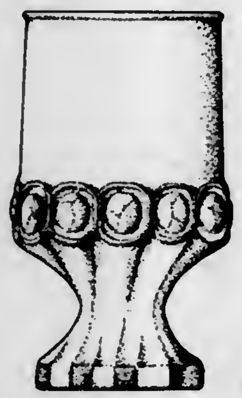
223,166
SKI BOB
Dieter E. W. Kuntz, 859 Cortez St., Costa Mesa, Calif. 92626
Filed Sept. 29, 1970, Ser. No. 25,245
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15



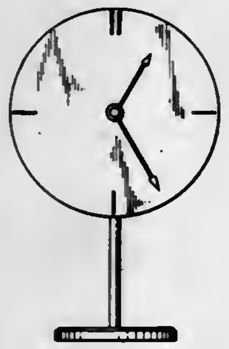
223,167
TOY PROJECTOR
Anthony D. Miller, Torrance, Derek J. Gay, Palos Verdes Peninsula, and William H. Smedley, Garden Grove, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Nov. 2, 1970, Ser. No. 25,762
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



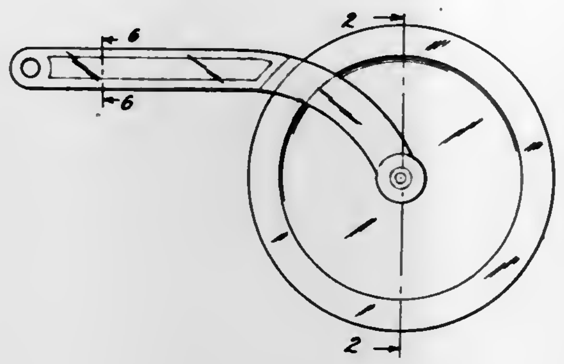
223,168
GOBLET
Mary Jane Winans, Glendale, Calif., assignor to Interpace Corporation, Parsippany, N.J.
Filed Nov. 23, 1970, Ser. No. 26,109
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D36—8



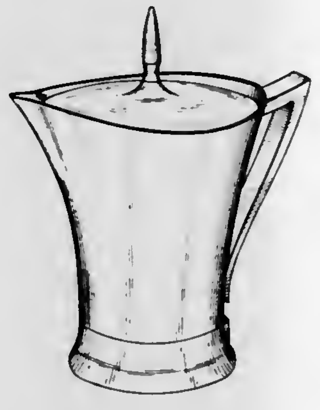
223,169
CLOCK OR SIMILAR ARTICLE
Mark Wallach, 220 E. 63rd St., New York, N.Y. 10021
Filed Mar. 2, 1970, Ser. No. 21,686
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



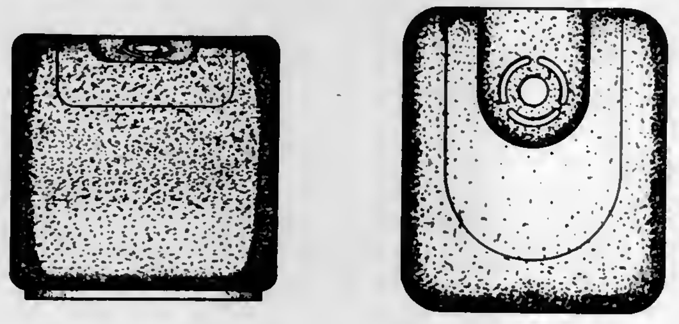
223,170
PASTRY CUTTER
Ernest J. Camos, 9078 Villaridge Court, St. Louis, Mo. 63123
Filed June 1, 1970, Ser. No. 23,249
Term of patent 7 years
Int. Cl. D7—*99*
U.S. Cl. D44—1



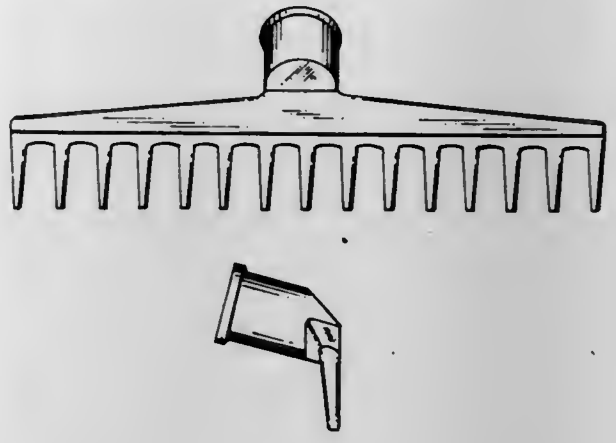
223,171
ELECTRIC BEVERAGE HEATER
Alfred W. Madl, Glendale, Wis., assignor to John Oster Manufacturing Co., Milwaukee, Wis.
Filed June 18, 1970, Ser. No. 23,555
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—26



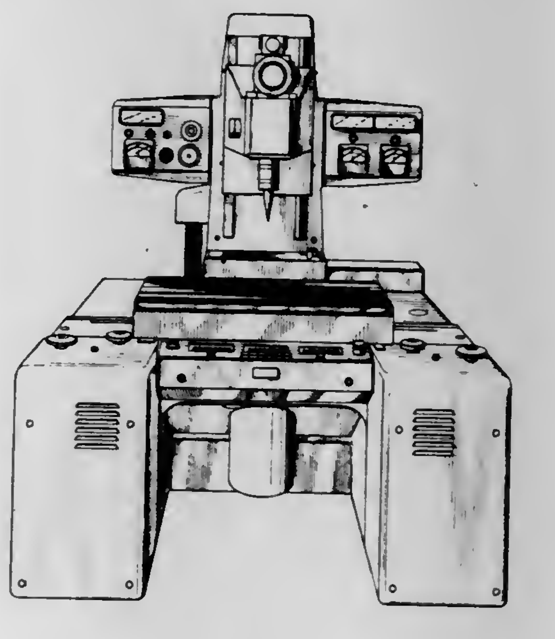
223,172
TABLE CIGARETTE LIGHTER
Dieter Rams, Konigstein, Taunus, Germany, assignor to Braun A.G., Frankfurt am Main, Germany
Filed Nov. 18, 1970, Ser. No. 26,050
Claims priority, application Germany May 25, 1970
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27



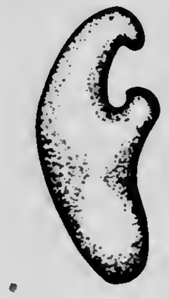
223,173
VACUUM CLEANER NOZZLE
Sol Howard and Robert Schaaf, Brooklyn, N.Y., assignors to Air Filters, Inc., Brooklyn, N.Y.
Filed Dec. 4, 1970, Ser. No. 26,295
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—18



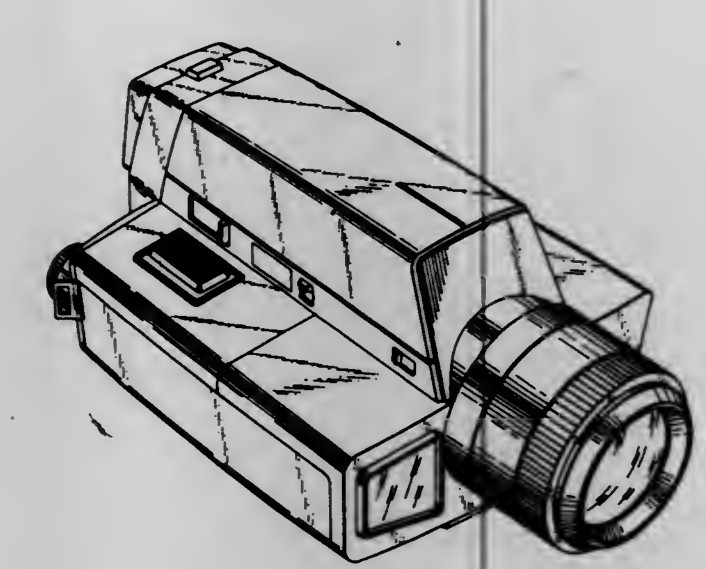
223,174
HIGH PRECISION MEASURING MACHINE
Jacques Pettavel, Geneva, Switzerland, assignor to Societe Genevoise d'Instruments de Physique
Filed Nov. 16, 1970, Ser. No. 25,995
Claims priority, application Switzerland May 19, 1970
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D55—1



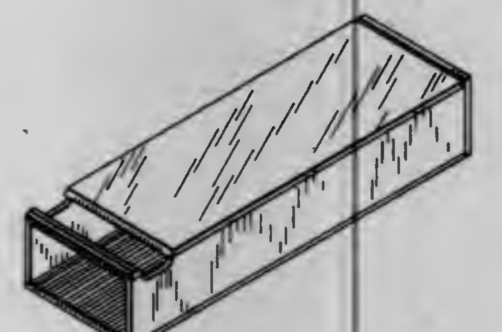
223,175
BIFOCAL SPECTACLES ELEVATOR
Charles I. Stoloff, 46 E. 91st St., New York, N.Y. 10028
Filed Sept. 28, 1970, Ser. No. 25,218
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1



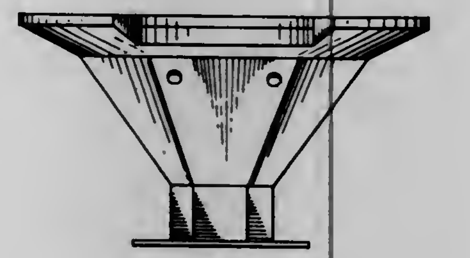
223,176
MOTION PICTURE CAMERA
Samuel F. Swayze, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 8, 1970, Ser. No. 24,890
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1



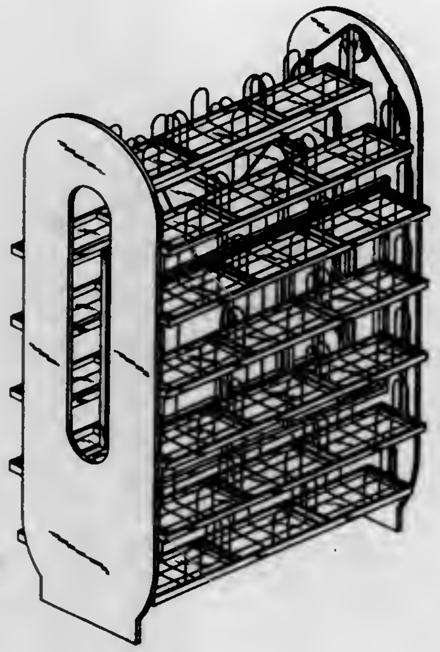
223,177
FILM STRIP CARTRIDGE
Bram Kool, Saratoga, Calif., assignor to Microform Data Systems, Inc., Menlo Park, Calif.
Filed Dec. 24, 1970, Ser. No. 26,641
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1



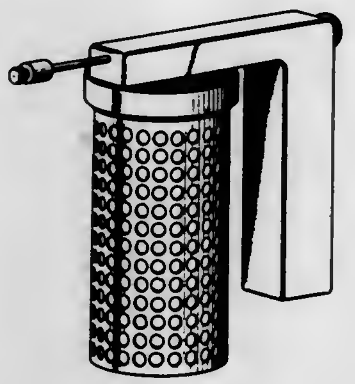
223,178
DISPLAY STAND
Charles E. Broudy, Penn Valley-Narberth, Pa., assignor to Henry I. Siegel Co., Inc., New York, N.Y.
Filed Nov. 4, 1970, Ser. No. 25,824
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D80—9



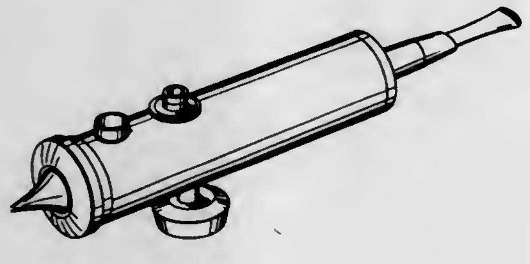
223,179
COMBINED DINING AND COOKING TABLE
Ron Shimosawa, Chicago, Ill., assignor to Kiku Co., Chicago, Ill.
Filed June 19, 1970, Ser. No. 23,575
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10



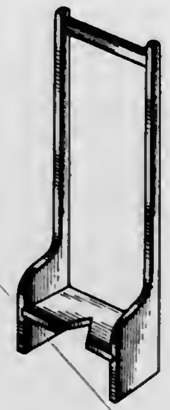
223,180
CRYOSURGICAL INSTRUMENT
Michael D. Bryne, Vernon, Conn., assignor to Brymill Corp., Vernon, Conn.
Filed Oct. 19, 1970, Ser. No. 25,553
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12



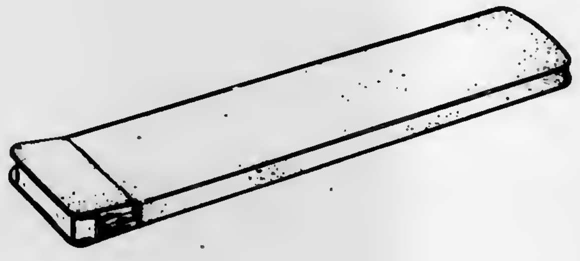
223,181
SMOKING PIPE
John R. Shepard, 1511 Gregory St., San Diego, Calif. 92102
Filed Nov. 19, 1970, Ser. No. 26,077
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D85—8



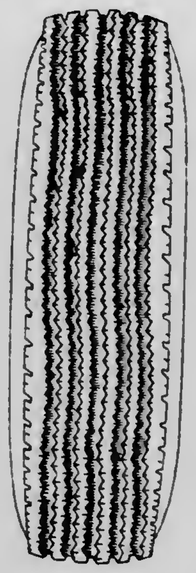
223,182
BOOTJACK
Freda L. Powell, Northbrook, Ill. (Rte. 5, Box 335B, Benton, Ky. 42025)
Filed Feb. 2, 1970, Ser. No. 21,198
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D86—10



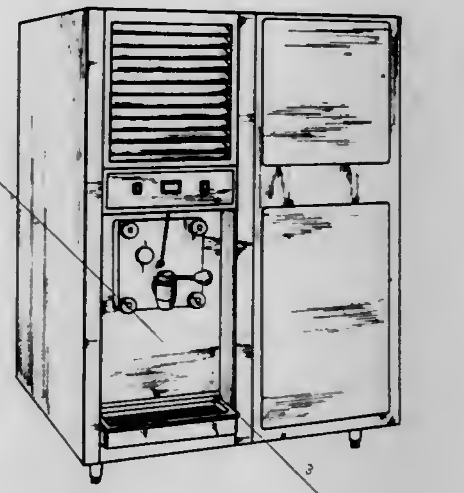
223,183
COMBINED UMBRELLA AND SHEATH
Manfred Bremshey, Mount Royal, Quebec, Canada, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada
Continuation-in-part of design application Ser. No. 14,441, Nov. 13, 1968. This application Jan. 21, 1970, Ser. No. 21,017
Claims priority, application Canada June 5, 1968
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



223,184
AUTOMOBILE TIRE
Paul J. Felker, Marshfield, Wis., assignor to Penetred Corporation, Marshfield, Wis.
Filed Jan. 26, 1970, Ser. No. 21,069
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



223,185
SEMI-FROZEN PRODUCT DISPENSER, OR SIMILAR ARTICLE
Robert B. Hartley, Columbia Heights, Minn., assignor to The Cornelius Company, Anoka, Minn.
Filed Nov. 9, 1970, Ser. No. 25,900
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3



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TO WHOM

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  - Platz, Stephen; Peter, Leverkusen; and Gref, Hans, 3,650,292.
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  - Okamoto, Toshiaki; Inada, Masami; and Mori, Koziro, 3,650,574.
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- Aldridge, Anthony Peter, to Simon-Carves Limited. Treatment of biological sludge. 3,650,403, Cl. 210-180.
- Alessi, Patrick A.; and Jansky, Joel W., to Advanced Instruments, Inc. Article treating apparatus. 3,650,038, Cl. 34-45.
- Alexeff, Alexander V.; and Snyder, Harvey, to Alexeff-Snyder Enterprises, Inc. Web guiding and expanding apparatus. 3,650,000, Cl. 26-65.
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  - Aggen, George, 3,650,731.
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- Allen, Edward M., to PPG Industries, Inc. Process for preparing pigmentary metal oxide. 3,650,694, Cl. 23-202.
- Allen, Lloyd R. Hybrid casting-hot working process for shaping magnesium, aluminum, zinc and other die casting metals. 3,650,312, Cl. 164-55.
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- Shimizu, Munetaka, to Kabushiki Kaisha Koparu. Bulb and time exposure control device for photographic camera. 3,650,193, Cl. 95-53.

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Snow, Austin Matthew, Jr., to Du Pont de Nemours, E. I., and Company. Process for preparing high-solids chloroprene polymer latex. 3,651,038, Cl. 260-92.3

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Vetter, Robert J. Paper materials impregnated with polysiloxanes. T896,046, 3-21-72, Cl. 117—138.8.
Wright, Donald L. Fish, oyster and crustacean food comprising particular proteins derived from hydrocarbons. T896,037, 3-21-72, Cl. 99—3.

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ISSUED MARCH 21, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

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CLASS 104	
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CLASS 105	
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106 3,650,815
109 3,650,816
118 3,650,817
126GB 3,650,818
136 3,650,819
3,650,820
155L 3,650,821
201 3,650,822
3,650,823
212 3,650,824
217 3,650,825
3,650,826
218 3,650,827
235 3,650,828

CLASS 118
2 3,650,241
246 3,650,242
308 3,650,243

CLASS 119
4 3,650,244
20 3,650,245
48 3,650,246
81 3,650,247

CLASS 122
235R 3,650,248

CLASS 123
41.32 3,650,249
41.69 3,650,250
90.57 3,650,251
103B 3,650,252
117A 3,650,253
120 3,650,254
3,650,255
136 3,650,256
139AX 3,650,258
139BG 3,650,257
140 3,650,259
148E 3,650,260
198DB 3,650,261

CLASS 126
110R 3,650,262

CLASS 127
60 3,650,829

CLASS 128
2.06A 3,650,264
2.06G 3,650,263
2.1E 3,650,265
17 3,650,266
132 3,650,267
145.7 3,650,268
212 3,650,269
252 3,650,270
3,650,271
275 3,650,272
287 3,650,273
335 3,650,274
350R Re.27,310
407 3,650,275
419C 3,650,277
419E 3,650,276

CLASS 131
215B 3,650,278
262 3,650,279

CLASS 132
7 3,650,280

CLASS 134
19 3,650,830
27 3,650,831
58R 3,650,281
122 3,650,282
143 3,650,283

CLASS 135
26 3,650,284

CLASS 136
6 3,650,832
3,650,833
22 3,650,834
25 3,650,835
86A 3,650,837
86D 3,650,840
86R 3,650,836
86 3,650,838
3,650,839
132 3,650,841
134 3,650,842
217 3,650,843
237 3,650,844

CLASS 137
81.5 3,650,285
87 3,650,286
106 3,650,287
219 3,650,288
3,650,289
339 3,650,290
491 3,650,291
509 3,650,294

561 3,650,292
578 3,650,293
614.17 3,650,295
624.18 3,650,296
624.27 3,650,297

CLASS 138
103 3,650,298
149 3,650,299

CLASS 139
420 3,650,300

CLASS 140
93.4 3,650,301
119 3,650,302

CLASS 141
1 3,650,303
2 3,650,304
50 3,650,305
238 3,650,306

CLASS 144
3R 3,650,307
28.5 3,650,308

CLASS 148
2 3,650,845
4 3,650,846
9 3,650,847
12 3,650,848
12.4 3,650,849
13.1 3,650,850
31.55 3,650,851
143 3,650,853
187 3,650,854

CLASS 149
19 3,650,855
3,650,856
36 3,650,857
109 3,650,858

CLASS 151
23 3,650,309

CLASS 156
2 3,650,859
3 3,650,860
18 3,650,861
51 3,650,862
79 3,650,863
85 3,650,864
119 3,650,865
181 3,650,866
183 3,650,867
203 3,650,868
212 3,650,869
264 3,650,870
269 3,650,871
304 3,650,872
465 3,650,873
559 3,650,875
584 3,650,876

CLASS 161
47 3,650,877
48 3,650,878
89 3,650,879
3,650,880
111 3,650,881
122 3,650,882
162 3,650,883
175 3,650,884
189 3,650,885
217 3,650,874

CLASS 162
3 3,650,886
25 3,650,887
30 3,650,888
3,650,889
49 3,650,890
259 3,650,891
275 3,650,892

CLASS 164
52 3,650,311
55 3,650,312
3,650,313
270 3,650,314
274 3,650,315
278 3,650,316

CLASS 165
9 3,650,317
22 3,650,318
40 3,650,320
44 3,650,310
88 3,650,319
106 3,650,321
143 3,650,322

CLASS 166
.5 3,650,323
68.5 3,650,324
182 3,650,325
246 3,650,326
303 3,650,327

CLASS 169
19 3,650,328
31P 3,650,329

CLASS 172
19 3,650,330

21 3,650,331
22 3,650,332
311 3,650,333
540 3,650,334

CLASS 173
91 3,650,335
110 3,650,336

CLASS 174
34 3,651,243
36 3,651,244
51 3,651,245

CLASS 175
17 3,650,337
76 3,650,338
85 3,650,339
339 Re.27,316

CLASS 176
1 3,650,893
12 3,650,894
44 3,650,895
68 3,650,896

CLASS 177
136 3,650,340

CLASS 178
5.2R 3,651,246
5.4ST 3,651,247
3,651,250
5.4R 3,651,248
3,651,249
6 3,651,251
3,651,252
6.6A 3,651,253
3,651,262
7.2R 3,651,255
7.2 3,651,254
7.6 3,651,256
7.8 3,651,257
15 3,651,258
17C 3,651,259
3,651,260
22 3,651,261
69.5R 3,651,263
69.6 3,651,264
70R 3,651,265

CLASS 179
1FS 3,651,266
1.5M 3,651,268
2DP 3,651,267
7R 3,651,269
18ES 3,651,272
18GE 3,651,273
18HB 3,651,271
18B 3,651,270
19 3,651,274
27CB 3,651,275
100.2CH 3,651,281
100.2C 3,651,278
3,651,282
100.2K 3,651,277
100.2R 3,651,280
100.2T 3,651,276
3,651,279
115.5R 3,651,283
175.31R 3,651,284
178 3,651,285
180 3,651,286

CLASS 180
5R 3,650,341
3,650,342
3,650,343
27 3,650,344
44 3,650,349
65A 3,650,345
79.2B 3,650,346
114 3,650,347

CLASS 181
33HC 3,650,348
40 3,650,354

CLASS 182
14 3,650,350
33.3 3,650,351

CLASS 184
1.5 3,650,352
6.12 3,650,353
59 3,650,355

CLASS 187
17 3,650,356

CLASS 188
71.5 3,650,357
296 3,650,358
310 3,650,359
330 3,650,360

CLASS 192
30V 3,650,361
56R 3,650,362
64 3,650,363
85AA 3,650,364

CLASS 195
28N 3,650,897
3,650,898
29 3,650,899

63 3,650,900
3,650,901
66A 3,650,902
66B 3,650,903
80 3,650,904

CLASS 198
7BL 3,650,365
30 3,650,366
33AA 3,650,367
3,650,368
3,650,369
36 3,650,370
45 3,650,371
75 3,650,372
85 3,650,373
104 3,650,374
127R 3,650,375
129 3,650,376
190 3,650,377

CLASS 200
11R 3,651,287
44 3,651,288
61.2 3,651,289
61.45 3,651,290
67DA 3,651,291
81R 3,651,292
153P 3,651,293
166J 3,651,294
167A 3,651,295
3,651,296
168G 3,651,297
3,651,298

CLASS 203
10 3,650,905
89 3,650,906
96 3,650,907

CLASS 204
15 3,650,908
18PC 3,650,909
28 3,650,910
29 3,650,912
30 3,650,911
3,650,913
38B 3,650,914
52R 3,650,915
59 3,650,916
3,650,917
80 3,650,918
99 3,650,919
130 3,650,920
143M 3,650,922
3,650,923
147 3,650,924
3,651,189
153 3,650,925
158 3,650,926
159.22 3,650,928
159.24 3,650,927
164 3,650,929
177 3,650,930
180R 3,650,931
181 3,650,932
3,650,933
192 3,650,921
195 3,650,934
206 3,650,935
212 3,650,936
213 3,650,937
218 3,650,938
219 3,650,939
224 Re.27,312
3,650,940
243R 3,650,941

CLASS 206
1 3,650,378
1.5 3,650,379
1.8 3,650,380
45.11 3,650,381
45.14 3,650,382
45.31 3,650,383
45.34 3,650,384
46FN 3,650,385
46F 3,650,386
3,650,387
52F 3,650,388
53 3,650,389
56AA 3,650,390
3,650,391
56AC 3,650,392
63.2 3,650,393
65E 3,650,395
65S 3,650,394

CLASS 208
31 3,650,942
60 3,650,943
65 3,650,944
111 3,650,945
120 3,650,946

CLASS 209
3 3,650,396
80 3,650,397
80.5 3,650,398
3,650,399
111.5 3,650,400

325 3,650,401
430 3,650,402

CLASS 210
15 3,650,947
33 3,650,948
36 3,650,949
60 3,650,950
180 3,650,403
238 3,650,404
241 3,650,405
242 3,650,406

CLASS 211
14 3,650,407
57 3,650,408

CLASS 214
1CM 3,650,410
1QA 3,650,409
1QD 3,650,411
1.5 3,650,412
8.5F 3,650,414
10 3,650,415
10.5R 3,650,416
17DA 3,650,417
3,650,418
38B 3,650,419
44R 3,650,420
77 3,650,421
146.5 3,650,422
149 3,650,423
454 3,650,424
762 3,650,425

CLASS 215
9 3,650,426
13R 3,650,427
42 3,650,428

CLASS 219
10.53 3,651,299
10.55 3,651,300
10.75 3,651,301
70 3,651,302
121EB 3,651,303
200 3,651,304
233 3,651,306
243 3,651,305
505 3,651,307
3,651,308

CLASS 220
2.1R 3,650,429
23.8 3,650,430
42B 3,650,432
88R 3,650,431

CLASS 221
65 3,650,433

CLASS 222
31 3,650,434
52 3,650,435
70 3,650,436
136 3,650,437
402.22 3,650,438
445 3,650,439
565 3,650,440

CLASS 223
66 3,650,441
87 3,650,442

CLASS 224
42.03A 3,650,443
42.42R 3,650,444

CLASS 225
93 3,650,445
97 3,650,446

CLASS 226
34 3,650,447
45 3,650,448
142 3,650,449

CLASS 227
67 3,650,451
3,650,452
138 3,650,453

CLASS 228
1 3,650,454
6 3,650,455
19 3,650,456
44 3,650,457
46 3,650,450

CLASS 229
17 3,650,458
23A 3,650,459
55 3,650,460
66 3,650,461
68R 3,650,462
81 3,650,463

CLASS 232
35 3,650,464

CLASS 233
13 3,650,465

CLASS 235
61B 3,650,466
61.11D 3,651,311
61.12 3,651,312
61.6A 3,651,309

61.7B 3,651,310
89R 3,650,467
112 3,651,313
151.11 3,651,314
151.31 3,651,315
152 3,651,316
183 3,651,318
197 3,651,317

CLASS 238
10E 3,650,468
264 3,650,469

CLASS 239
1 3,650,470
67 3,650,471
265.13 3,650,472
333 3,650,473
418 3,650,474
419.3 3,650,475
431 3,650,476
490 3,650,477
516 3,650,478
527 3,650,479

CLASS 240
10.1 3,651,319
25 3,651,320
151 3,651,321

CLASS 241
28 3,650,480
46.11 3,650,481
153 3,650,482
186R 3,650,483
192 3,650,484
245 3,650,485

CLASS 242
43 3,650,486
55.3 3,650,487
67.3 3,650,488
71.2 3,650,489
75.3 3,650,490
75.51 3,650,491
86.7 3,650,492
118.3 3,650,493
118.61 3,650,494
192 3,650,495

CLASS 244
3.29 3,650,496
12CW 3,650,497

CLASS 248
18 3,650,498
62 3,650,499
125 3,650,500
146 3,650,501
225 3,650,502
285 3,650,503
466 3,650,504

CLASS 250
43.5R 3,651,322
49.5ZC 3,651,323
201 3,651,324
203CT 3,651,326
203 3,651,325
217F 3,651,327
222R 3,651,328

CLASS 251
11 3,650,505
26 3,650,506
149.6 3,650,507
174 3,650,508

CLASS 252
8.5 3,650,951
33.6 3,650,952
49.9 3,650,953
63.2 3,650,954
66 3,650,955
79.1 3,650,957
3,650,958
3,650,959
79.3 3,650,960
90 3,650,956
99 3,650,961
102 3,650,962
3,650,963
106 3,650,964
3,650,965
3,650,966
135 3,650,967
142 3,650,968
143 3,650,969
181 3,650,970
182 3,650,971
186 3,650,972
301.2 3,650,973
301.4F 3,650,974
3,650,975
301.4 3,650,976
313S 3,650,977
356 3,650,978
358 3,650,979
384 3,650,980
389 3,650,981
394 3,650,982
412 3,650,983
431C 3,650,986

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431 3,650,985
442 3,650,987
451 3,650,988
3,650,989
455Z 3,650,990
500 3,650,991

CLASS 259
1 3,650,509
9 3,650,510
104 3,650,511

CLASS 260
2.5AM 3,650,994
2.5BD 3,650,993
2.5B 3,650,992
2.5L 3,650,995
20 3,650,996
21 3,650,997
3,650,998
22D 3,650,999
28.5AS 3,651,000
29.6TA 3,651,002
29.6 3,651,001
31.2XA 3,651,003
31.2N 3,651,004
31.2 3,651,005
33.2 3,651,006
37R 3,651,008
41R 3,651,009
45.95 3,651,010
3,651,011
46.5R 3,650,852
47UA 3,651,012
49 3,651,013
64 3,651,015
75NH 3,651,027
75R 3,651,014
3,651,016
3,651,017
3,651,018
77.5AN 3,651,021
77.5UA 3,651,020
78L 3,651,023
3,651,024
78R 3,651,022
78.4D 3,651,025
78.5E 3,651,029
78.5R 3,651,026
78.5T 3,651,028
79 3,651,031
79.3 3,651,030
79.5B 3,651,032
80.72 3,651,033
3,651,034
88.1P 3,651,035
89.5R 3,651,036
92.3 3,651,037
3,651,038
112.5 3,651,039
207.1 3,651,040
209R 3,651,041
3,651,043
210AB 3,651,042
211.5R 3,651,044
3,651,045
239BD 3,651,047
239.1 3,651,050
239.3P 3,651,046
239.5 3,651,048
239.55D 3,651,049
240TC 3,651,051
240A 3,651,057
242 3,651,058
243R 3,651,052
3,651,053
247.2A 3,651,059
247.5R Re.27,311
3,651,054
249 3,651,055
249.8 3,651,056
250R 3,651,060
251QA 3,651,061
256.4C 3,651,062
3,651,063
270R 3,651,064
270 3,651,065
290HL 3,651,066
293.83 3,651,067
294.8B 3,651,068
294.8F 3,651,069
295R 3,651,070
296D 3,651,071
297R 3,651,073
297 3,651,072
304 3,651,074
306.8D 3,651,075
306.8R 3,651,076
307D 3,651,078
307F 3,651,077
309 3,651,080
309.5 3,651,079
310C 3,651,081
314.5 3,651,082
326.15 3,651,086
326.3 3,651,084
326.5B 3,651,083
326.5J 3,651,085

327B 3,651,087
340.3 3,651,089
340.9 3,651,090
343.2R 3,651,091
345.1 3,651,092
345.9 3,651,093
346.2 3,651,094
346.4 3,651,095
347.5 3,651,096
347.8 3,651,097
348A 3,651,098
348R 3,651,007
377 3,651,099
397.4 3,651,100
410.5 3,651,101
410.6 3,651,102
410.9R 3,651,104
413 3,651,103
414 3,651,105
429R 3,651,106
429.7 3,650,984
3,651,107
3,651,108
431 3,651,109
439R 3,651,110
3,651,111
448AD 3,651,131
448A 3,651,112
3,651,114
448R 3,651,113
448.2N 3,651,115
448.8R 3,651,116
3,651,117
453PH 3,651,118
458 3,651,119
3,651,120
465K 3,651,121
470 3,651,122
473A 3,651,123
474 3,651,124
475P 3,651,125
475R 3,651,126
479C 3,651,128
3,651,129
479R 3,651,127
483 3,651,130
501.13 3,651,132
519 3,651,133
520 3,651,134
533R 3,651,135
534L 3,651,137
3,651,138
534M 3,651,136
553R 3,651,139
561N 3,651,140
562A 3,651,141
570.5CA 3,651,142
575 3,651,143
584R 3,651,144
586R 3,651,145
606.5B 3,651,146
3,651,148
3,651,149
606.5P 3,651,147
608 3,651,150
611B 3,651,152
613R 3,651,151
617H 3,651,153
623R 3,651,154
648F 3,651,155
653 3,651,156
664 3,651,157
667 3,651,158
669 3,651,160
671C 3,651,161
672R 3,651,163
672T 3,651,162
673.5 3,651,164
677A 3,651,165
677 3,651,159
681 3,651,166
681.5 3,651,167
683.15C 3,651,168
772 3,651,019
834 3,651,169
838 3,651,170
857G 3,651,171
860 3,651,172
868 3,651,173
873 3,651,174
876R 3,651,175
3,651,177
897C 3,651,176
928 3,651,178

CLASS 261
7 3,650,512
87 3,650,513

CLASS 264
29 3,651,179
51 3,651,180
3,651,181
3,651,182
54 3,651,183
56 3,651,184
89 3,651,185
94 3,651,186

108 3,651,187
136 3,651,188
153 3,651,190
3,651,191
160 3,651,192
168 3,651,193
169 3,651,194
171 3,651,195
178 3,651,196
230 3,651,197
235 3,651,198
236 3,651,199
289 3,651,200
290 3,651,201
292 3,651,202
328 3,651,203
342 3,651,204

CLASS 266
23S 3,650,515
23 3,650,514
34T 3,650,516
3,650,518
34V 3,650,517
36H 3,650,519

CLASS 267
152 3,650,520

CLASS 269
41 3,650,521
228 3,650,522
328 3,650,523

CLASS 270
54 3,650,524

CLASS 271
29 3,650,525
48 3,650,526
76 3,650,527

CLASS 272
57B 3,650,528
69 3,650,529
78 3,650,530
79A 3,650,531

CLASS 273
1R 3,650,532
86G 3,650,533
134AE 3,650,534
143R 3,650,535

CLASS 274
4F 3,650,413
10S 3,650,539

CLASS 277
93 3,650,536
160 3,650,537

CLASS 279
51 3,650,538

CLASS 280
124B 3,650,540
140 3,650,541
150B 3,650,542
154.5 3,650,543
293 3,650,544
421 3,650,545
423 3,650,546

CLASS 285
3 3,650,547
3,650,548
27 3,650,549
55 3,650,550
158 3,650,551

CLASS 287
90R 3,650,552
130 3,650,553

CLASS 292
127 3,650,554
145 3,650,555

CLASS 296
23C 3,650,556
28A 3,650,558
28C 3,650,557
95R 3,650,559

CLASS 297
140 3,650,560
391 3,650,561
439 3,650,562
441 3,650,563

CLASS 299
11 3,650,564
86 3,650,565

CLASS 302
11 3,650,566
52 3,650,567

CLASS 303
2 3,650,568
6 3,650,569
7 3,650,570
10 3,650,571
15 3,650,572
21AF 3,650,574
21CF 3,650,575
21F 3,650,573

CLASS 307
10AT 3,651,329
64 3,651,330
84 3,651,331
119 3,651,332
130 3,651,333
208 3,651,334
223B 3,651,335
225 3,651,336
3,651,337
227 3,651,338
237 3,651,339
246 3,651,341
251 3,651,340
3,651,342
265 3,651,343
270 3,651,344
273 3,651,345
296 3,651,346
297 3,651,347
299 3,651,348
304 3,651,349
310 3,651,350
3,651,351

CLASS 308
3A 3,650,576
3.6 3,650,577
3.8 3,650,578
4A 3,650,579
9 3,650,580
10 3,650,581
36.3 3,650,582
230 3,650,583

CLASS 310
8.1 3,651,352
8.4 3,651,353
10 3,651,354
112 3,651,355
180 3,651,356
256 3,651,357

CLASS 312
7TV 3,650,584
71 3,650,585
195 3,650,586
198 3,650,587
231 3,650,589
306 3,650,588
312 3,650,591
319 3,650,590
330 3,650,592

CLASS 313
12 3,651,358
70C 3,651,359
82R 3,651,360
86KM 3,651,361
92R 3,651,362
109 3,651,363
109.5 3,651,364
198 3,651,365
204 3,651,366
3,651,367

CLASS 315
13 3,651,369
18 3,651,370
102 3,651,371
134 3,651,372
241 3,651,373

CLASS 316
4 3,650,593

CLASS 317
11A 3,651,374
11E 3,651,375
18D 3,651,376
27R 3,651,377
31 3,651,378
41 3,651,379
62 3,651,380
101CC 3,651,381
157.5 3,651,382
234R 3,651,383
3,651,384
234 3,651,385
237 3,651,386
258 3,651,387

CLASS 318
88 3,651,388
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DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

10 : 896,042
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PATENT OFFICE NOTICES

Notice—Annual Index of Patents

The 1970 edition of the Annual Index of Patents has been published. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

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Dedications

3,252,882.—*Lynn A. Williams,* Winnetka, Ill. APPARATUS FOR REMOVING SLUDGE FORMED DURING ELECTROLYTIC SHAPING AND CAVITY SINKING FROM CONTAMINATED ELECTROLYTE. Patent dated May 24, 1966. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,254,013.—*Lynn A. Williams,* Winnetka, Ill. ELECTROLYTIC CAVITY SINKING APPARATUS. Patent dated May 31, 1966. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,256,165.—*Lynn A. Williams,* Winnetka, Ill. METHOD AND APPARATUS FOR USE IN ELECTRILYTIC SHAPING. Patent dated June 14, 1966. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,257,300.—*Lynn A. Williams,* Winnetka, Ill. METHOD FOR ELECTROLYTICALLY FORMING TAPERED OR CONTOURED CAVITIES. Patent dated June 21, 1966. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,275,543.—*Lynn A. Williams,* Winnetka, Ill. ELECTROLYTIC CAVITY SINKING APPARATUS. Patent dated Sept. 27, 1966. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,276,987.—*Lynn A. Williams,* Winnetka, Ill. ELECTROLYTIC SHAPING APPARATUS. Patent dated Oct. 4, 1966. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,276,988.—*Lynn A. Williams,* Winnetka, Ill. ELECTROLYTIC REMOVAL OF WORK MATERIAL. Patent dated Oct. 4, 1966. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,287,245.—*Lynn A. Williams,* Winnetka, Ill. METHOD AND APPARATUS FOR USE IN ELECTROLYTIC MACHINING. Patent dated Nov. 22, 1966. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company.*

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 22, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-08-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-04-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-02-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-14-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	6-23-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-11-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-05-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-04-71
PHYSICS, GROUP 280—R. L. EVANS, Director Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	1-04-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	1-04-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	1-06-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	1-04-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-02-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	2-22-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	1-15-71

Expiration of patents: The patents within the range of numbers indicated below expire during March 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents—Numbers 2,702,901 to 2,705,321, inclusive
Plant Patents—Numbers 1,355 to 1,373, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED MARCH 28, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T896,048

METHOD FOR MAKING SEMICONDUCTOR JUNCTION DEVICES

John M. Fairfield, Wappingers Falls, and Madhukar Joshi and Guenter H. Schwuttke, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 704,058, Feb. 8, 1968. This application Aug. 20, 1970, Ser. No. 65,666

Int. Cl. B01j *17/00*

U.S. Cl. 148—188

1 Sheet Drawing. 16 Pages Specification

In the method for diffusing an impurity into a semiconductor substrate, a coating which includes the impurity to be diffused is applied to the surface of the substrate and a pulsed laser beam is directed to one or more localized areas of the coated surface of the substrate. The duration and relative location of the beam and substrate is controlled to achieve the desired diffused region configuration.

T896,049

MODIFIED BOBBIN CHUCK

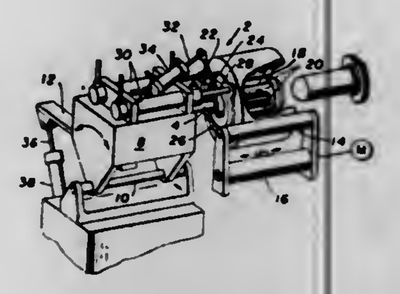
William D. Decker, 1312 Runnymeade SW; and Andrew P. Carter, Jr., 2008 Nelson St. SE., both of Decatur, Ill. 35601; and Charles R. Lewis, 506 Greendale Drive, Huntsville, Ala. 35806

Filed Sept. 25, 1970, Ser. No. 75,510

Int. Cl. B65h *54/00, 67/04*

U.S. Cl. 242—18 R

1 Sheet Drawing. 7 Pages Specification



A device for winding packages of textile yarn on a bobbin is provided with electropneumatic means for convenient removal of the bobbin from the winding device. The device includes a driven bobbin chuck having a free-end spindle journalled in a pivotally mounted casing and clutch bars expandable outwardly to hold the bobbin during winding and rotatable to release the bobbin during removal. An annular plate is concentrically mounted about the spindle and is accuated forwardly towards the free end of the spindle to push the bobbin off the chuck during doffing. During winding, the plate is in a retracted position. Electropneumatic means is connected to the plate, the chuck, and the casing, and is operable to remove the bobbin.

T896,050

COMMINUTED MEAT COMPOSITION CONTAINING UNDENATURED WATER-SOLUBLE LACTALBUMIN

Floyd C. Olson, 505 N. Midvale Blvd., Madison, Wis. 53705, and Donald W. Hoar, 2033 Colorado Ave., Sun Prairie, Wis. 53590

Filed Sept. 25, 1970, Ser. No. 75,707

Int. Cl. A22c

U.S. Cl. 99—108

No Drawing. 13 Pages Specification

Comminuted meat compositions such as sausage containing undenatured water-soluble lactalbumin. Lactalbumin concentrate is used in the comminuted meat composition in an amount in the range from 1% to 20%. Protein concentration in the lactalbumin concentrate may vary from 15 to 90%. The lactalbumin concentrate which is used in accordance with this invention is prepared from whey by methods which do not incur heat denaturation, and which do not require addition of chemicals, e.g., long chain polyphosphates, to the whey. Suitable lactalbumin concentrates may be prepared by concentration of whey by evaporation at low temperatures so as to crystallize and separate lactose, by electrodialysis, which provides lower ash content, by reverse osmosis with selected membranes which allows lactose and salt to go through while holding back lactalbumin protein, or by initial refinement of the dispersed protein by passing whey or slightly concentrated whey through a Sephadex column of selected resins which holds lactose and salt and allows lactalbumin to go through. In accordance with this invention, concentrated aqueous lactalbumin, or solid lactalbumin concentrates can be employed. The invention is particularly applicable to the manufacture of wieners, for example.

T896,051

PROCESS FOR FORMING COLLODIAL POLYMERIC DISPERSIONS FOR MAKING MICROPOROUS MATERIALS

Arthur H. Hamlin, Kennett Square, Pa., Henn Kilkson, Wilmington, Del., and Harry P. Wood, Wilton, Conn., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 667,411, Sept. 13, 1967. This application Nov. 12, 1970, Ser. No. 89,136

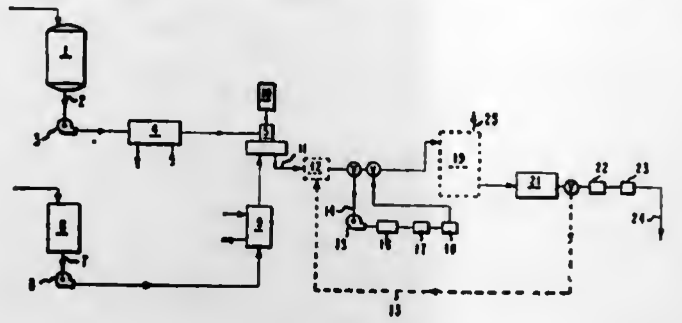
Int. Cl. C08g *22/04, 53/18*

U.S. Cl. 260—29.2 TN

1 Sheet Drawing. 21 Pages Specification

A process for forming a colloidal polymeric dispersion used in making microporous sheet material having a secant tensile modulus at 5% elongation of about 600 p.s.i. by microblending a solution of a polymeric component and a solution of a solvent and a non-solvent for the polymeric component. The microblending being achieved in about 0.5–5 seconds in a high shear mixing zone having a shear rate of 1,000–150,000 reciprocal seconds and of a stream of a solution of a polymeric component, and particularly a linear polyurethane or a blend of a linear

polyurethane and poly (vinyl chloride), at about 15–60° C. and of a stream of an organic solvent and non-solvent, particularly water, at about 20–50° C. The quantity of organic solvent being about 95–25% and the quantity of non-solvent being about 5–75%. The temperature of the blend being thereafter reduced about 2–50° C. to form a colloidal polymeric dispersion having a non-solvent content of about 3–5% by weight.



T896,052

WIRE AND CABLE WRAPPING MATERIAL

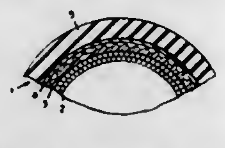
Gerald H. Zimmerman, Claymont, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 4, 1970, Ser. No. 95,228

Int. Cl. B32b *3/00*

U.S. Cl. 161—123

1 Sheet Drawing. 5 Pages Specification



An improved dielectric protective barrier for electrical conductive wire and cable is provided by a striated film of a plastic material having high dielectric strength. Preferred plastic materials are polyethylene terephthalate and polypropylene. The striated film acts as an improved thermal insulator because of the natural insulating effect of the polymer and also due to the entrapment of air between the raised ribs of the film. During periods of over potential on the wire conductors the barrier sheet helps to prevent a dielectric failure of the insulation on the conductors.

T896,053

RETOUCHING COLORED PHOTOGRAPHIC IMAGES

Charleton C. Bard and Joseph O. Kleffner, both of 1669 Lake Ave., Rochester, N.Y. 14650

Filed Feb. 12, 1971, Ser. No. 115,090

Int. Cl. G03c *7/00*

U.S. Cl. 96—56

No Drawing. 5 Pages Specification

Colored photographic images obtained in multilayer color films by means of color development are retouched to reduce the cyan dye density by treatment of the images composed of the cyan dye with an iodine-potassium iodide solution having a pH of about 5.5 to 6.5. The images are then treated with ammonium thiosulfate and washed.

T896,054

PLASTICIZERS FOR HYDROXYPROPYL CELLULOSE

William P. Long, Jr., Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Mar. 12, 1971, Ser. No. 123,876

Int. Cl. C08h *17/34*

U.S. Cl. 106—188

No Drawing. 6 Pages Specification

Extrudable compositions of hydroxypropyl cellulose resins are obtained by the addition of up to 20% by weight of a plasticizer selected from the group of polyolethers consisting of polyoxypropylene(10)sorbitol, polyoxypropylene(1)sorbitol, polyoxyethylene(4)phenol, and decaglycerol. Such polyol-ether plasticizers are produced by reacting propylene oxide with sorbitol; ethylene oxide with phenol; and the dehydration of glycerine, respectively. The plasticizers are especially useful in hydroxypropyl cellulose compositions having an average of 2–5 hydroxypropyl groups per anhydroglucose unit. The compositions of the invention have excellent thermoplasticity and are particularly useful in manufacturing cold water-soluble films, coatings, and shapes.

T896,055

COORDINATED IONIC HYDROCARBON COPOLYMERS

Victor Clarence Long, Parkersburgh, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 569,045, Aug. 1, 1966, and a continuation of application Ser. No. 863,384, Oct. 2, 1969. This application Mar. 16, 1971, Ser. No. 124,925

Int. Cl. C08f *15/40*

U.S. Cl. 260—88.1 R

No Drawing. 21 Pages Specification

Coordinated ionic hydrocarbon copolymers of ethylene and alpha,beta-ethylenically unsaturated carboxylic acids of 3 to 8 carbon atoms containing at least 50 mole percent ethylene based on the copolymer, the alpha,beta-ethylenically unsaturated carboxylic acid content of the copolymer being from .2 to 25 mole percent based on the copolymer, the carboxylic acid groups of the copolymers being at least partially ionized by metal ions such as Cu^{+2}, Co^{+2}, Ni^{+2}, Mg^{+2}, and Zn^{+2}, the metal ions being present in an amount equivalent to from about 10 to 180 percent of the carboxylic acid groups, at least some of the metal ions of the copolymer being coordinated with at least one of the following: alkylene amines, n-heptyl amine, t-octyl amine, octadecyl amine, piperidine, piperazine and its derivatives, 8-hydroxyquinoline, o-phenylene diamine, hexamethylenediamine, morpholine and its derivatives, salicylaldehyde, salicylic acid, acetylacetone, o-dihydroxybenzene, 2-aminobenzene thiol, picolinic acid, anthranilic acid, electron donor dyes, poly(ethylene imine), and substituted poly(ethylene imine).

T896,056

AMMONIUM POLYPHOSPHATE SOLUTIONS FROM SUPERWET ACID

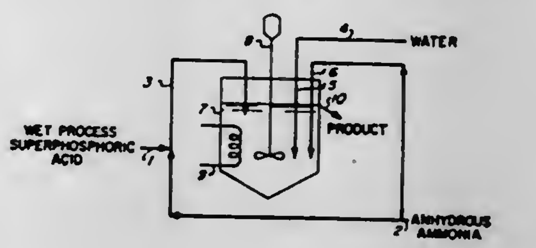
Robert S. Meline, 310 McKinley Ave., Florence, Ala. 35630

Filed Mar. 22, 1971, Ser. No. 126,680

Int. Cl. C05b *7/00*

U.S. Cl. 71—34

2 Sheets Drawing. 24 Pages Specification



Superwet-process phosphoric acid having from about 5 to about 50 percent of its phosphorus values in the polyphosphate form (i.e., equivalent to about 68.5 to about 72 percent P_2O_5 concentration) is reacted with ammonia under conditions that simultaneously neutralize and further molecularly dehydrate the acid whereby the resulting ammonium polyphosphate product is a true solution having improved self-sequestering properties and whereby at least about 80 percent of the phosphorus values therein is in the polyphosphate form (nonorthophosphate). The reaction takes place in a common pipe line through which the phosphoric acid and all or part of the ammonia required for a given grade of liquid fertilizer are fed to the liquid fertilizer vessel. The anhydrous melt formed by the reaction is quenched in the liquid fertilizer which is maintained at a temperature in the range of 130–180° F. by a cooling system. In this vessel the additional ammonia, if required, and the water required are added. Any of the conventional cooling systems may be used. The heat of reaction between the phosphoric acid and ammonia provides the energy for the molecular dehydration of the acid. In established processes for producing liquid fertilizer, this heat of reaction is dissipated as rapidly as it is produced and consequently no use of this energy is made and the polyphosphate content of the liquid fertilizer is no greater than was in the acid used.

The subject matter of this disclosure is claimed in a continuation-in-part application.

REISSUES

MARCH 28, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

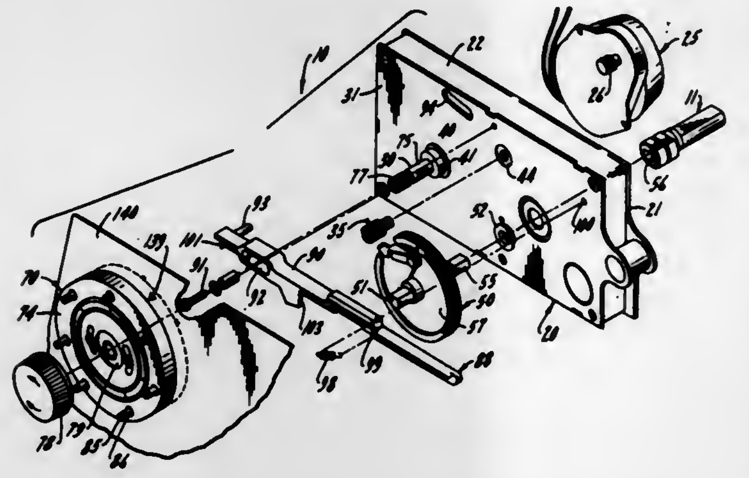
27,317
TIMER

Edward J. Tischler, St. Paul, Minn., assignor to Ecodyne Corporation, Chicago, Ill.

Original No. 3,448,625, dated June 10, 1969, Ser. No. 679,722, Nov. 1, 1967. Application for reissue Nov. 16, 1970, Ser. No. 90,030

Int. Cl. F16h *5/74*

U.S. Cl. 74—3.5 **9 Claims**



A timing device for operating a mechanism at a predetermined time on a given day or days. The device includes a timer dial and a pinion driven by separate gear trains from the same motor and constantly in operation. A mechanism drive gear is connected to the pinion and rotated by it at said time through an actuator arm manipulated by the timer dial.

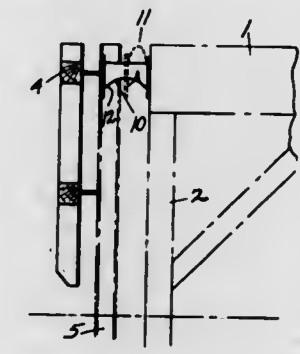
27,318
DOCK FENDER

Joseph R. Gensheimer, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Original No. 3,172,268, dated Mar. 9, 1965, Ser. No. 356,364, Mar. 30, 1964, which is a continuation-in-part of Ser. No. 140,036, Sept. 22, 1961. Application for reissue Sept. 25, 1970, Ser. No. 75,796

Int. Cl. E02b *3/22;* **F16f** *7/12*

U.S. Cl. 61—48 **6 Claims**



A fender extends along and is spaced in front of and presented to an edge of a dock and has means supporting the same for movement toward and away from and along the dock. A plurality of mountings are spaced along and extend between the fender and the edge of the dock and each comprises a generally horizontally extending body of elastomer in the form of a column having length, width and thickness. Each body is arranged with its width extending along the edge of the dock and its length extending out from the edge of the dock. A plate is fastened to each end of the body with one plate being attached to the fender and the other to the edge of the dock. The greater ratio of the length to the minimum width and of the length to the minimum thickness is at least substantially two whereby the body will sustain load from the fender in compression until the load reaches a threshold and will thereafter buckle with further deflection without a substantial increase in load.

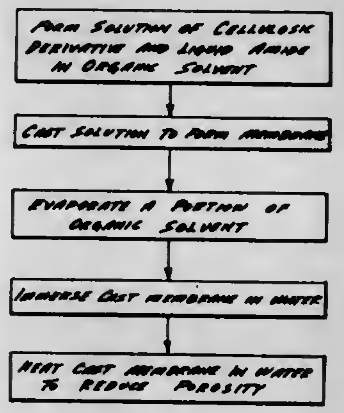
27,319
METHOD OF PREPARING A SEMIPERMEABLE MEMBRANE

Serop Manjikian, Del Mar, Calif., Sidney Loeb, Laurel, Md., and Joseph W. McCutchan, Los Angeles, Calif., assignors to The Regents of The University of California, Berkeley, Calif.

Original No. 3,344,214, dated Sept. 26, 1967, Ser. No. 354,775, Mar. 25, 1964. Application for reissue Sept. 16, 1969, Ser. No. 866,414

Int. Cl. B99d *27/04;* **C08b** *29/10, 29/16*

U.S. Cl. 264—41 **13 Claims**


FORM SOLUTION OF CELLULOSIC DERIVATIVE AND LIQUID AMIDE IN ORGANIC SOLVENT
CAST SOLUTION TO FORM MEMBRANE
EVAPORATE A PORTION OF ORGANIC SOLVENT
IMMERSE CAST MEMBRANE IN WATER
HEAT CAST MEMBRANE IN WATER TO REDUCE POROSITY

A method of preparing a semipermeable membrane adapted to permit substantially selective diffusion therethrough of a component of a solution. The membrane is prepared from a solution containing a cellulosic ester or ether derivative and a water-soluble liquid amide having the formula $R_6CONR_7R_8$ wherein R_6 is from the class consisting of hydrogen, methyl and ethyl groups and R_7 and R_8 are from the class consisting of hydrogen, ethyl and propyl groups without both R_7 and R_8 being hydrogen. The solution is cast on a support. A portion of the liquid amide is evaporated to transform the cast solution into a membrane. The cast membrane is then immersed in water and heated to reduce its porosity.

27,320
PHOTOGRAPHIC PROCESSING APPARATUS

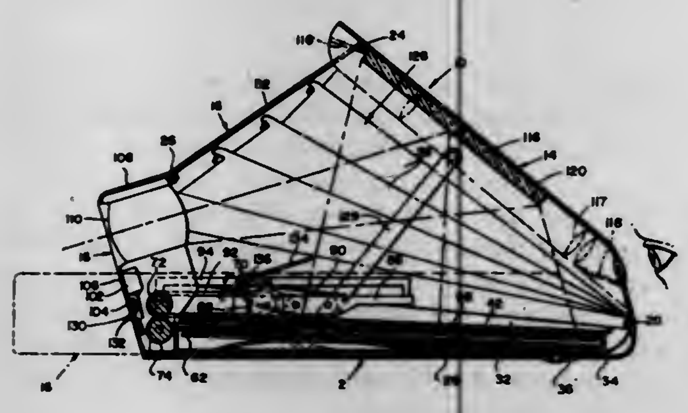
Douglas B. Tiffany, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Original No. 3,447,437, dated June 3, 1969, Ser. No. 655,808, July 25, 1967. Application for reissue Aug. 7, 1969, Ser. No. 860,445

Int. Cl. G03b *17/52*

U.S. Cl. 95—13 **16 Claims**

A self-developing camera including a pair of processing rollers for advancing a film unit between the rollers to process the film unit and a feed roller driven simultaneously with the processing rollers for frictionally engaging and feeding the film units, one at a time, from a film pack container into the bite of the processing rollers. The mounting for the feed roller is coupled with one of the processing rollers so as to disenable the feed roller to feed a film unit into the bite of the processing rollers as long as a film unit is engaged therebetween.



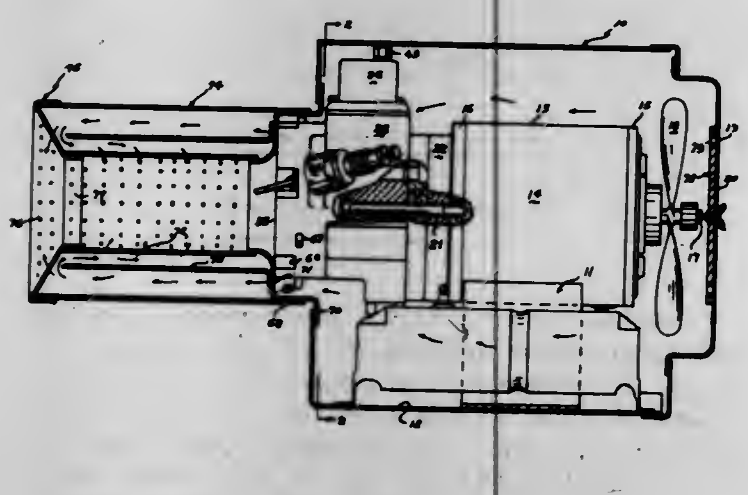
27,321
OIL BURNER

Eugene C. Briggs, Dayton, Ohio, assignor to Koehring Company, Milwaukee, Wis.

Original No. 3,298,418, dated Jan. 17, 1967, Ser. No. 358,356, Apr. 8, 1964. Application for reissue Jan. 14, 1969, Ser. No. 806,749

Int. Cl. F23d *15/02*

U.S. Cl. 431—352 **17 Claims**



1. An oil burner unit consisting of a burner head and, connected integral therewith, a compressor and a drive motor in end to end relation, means defining a nozzle recess in said head and, in connection therewith, a fuel passage, a low pressure aspirating nozzle having a portion anchored in said head to form a flow passage thereabout in said nozzle recess and have one end thereof communicate with said fuel passage, means defining a further passage in said head communicating said compressor with said flow passage whereby on drive of said motor, air will flow under pressure to swirl in said recess about said nozzle, said nozzle having aspirating passages which open at one end to receive the swirling air and deliver it at a high velocity to the interior of said nozzle whereby to suck fuel from said fuel passage to exit therewith from said nozzle and flow regulator means interposed to normally block the flow of fuel through said fuel passage, said regulator means having two chambers and a diaphragm forming a wall therebetween, one of said chambers having an inlet and an outlet interposed in respect to said fuel passage, the other said chambers having a vent and means included in said one chamber operative to block the flow of fuel through said fuel passage except on the occurrence of a high velocity flow of air to and through said nozzle.

27,322
ISOLATION OF THREONINE AND ALLOTHREONINE FROM THEIR MIXTURE

Kiichi Fujii, Kyoto-shi, Mutsuo Oda, Tokyo-to, Junichiro Arita, Moriguchi-shi, Mikio Takeda, Saitama-ken, and Kango Sakai, Toyonaka, Japan, assignors to Tanable Seiyaku Co., Ltd., Osaka, Japan

No Drawing. Original No. 3,068,281, dated Dec. 11, 1962, Ser. No. 814,374, May 20, 1959, which is a continuation of Ser. No. 293,573, July 2, 1962. Application for reissue Apr. 4, 1968, Ser. No. 757,805

Claims priority, application Japan Oct. 1, 1958
(Filed under Rule 47(a) and 35 U.S.C. 116)

Int. Cl. C07c *101/30*

U.S. Cl. 260—534 M **17 Claims**

In a process of purifying crude threonine contaminated with allothreonine, the improvement comprising reacting a copper chelate of the crude material with a lower aliphatic aldehyde to form the aldehyde-copper chelates of both the threonine and allothreonine, separating the chelates by differential crystallization and decomposing they separated threonine chelate to recover purified threonine.

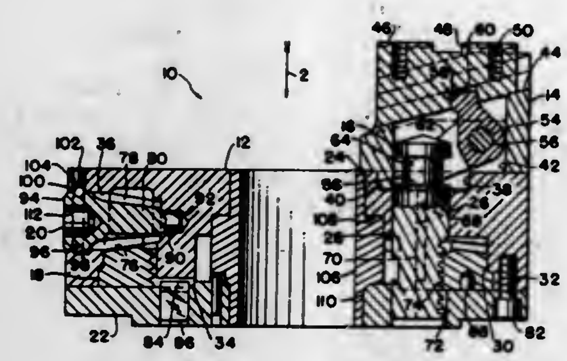
27,323
CHUCK

William G. Platt, Detroit, and Roy T. Jacks, Warren, Mich., assignors to George E. Blake, Grosse Pointe, and Raymond J. Youngblood, Jr., Grosse Pointe Woods, Mich., fractional part interest to each

Original No. 3,468,550, dated Sept. 23, 1969, Ser. No. 552,040, May 23, 1966. Application for reissue Aug. 24, 1970, Ser. No. 66,662

Int. Cl. B23b *31/14*

U.S. Cl. 279—2 **16 Claims**



Chuck structure for lathes or the like capable of internal or external chucking either manually or automatically. The chuck structure disclosed has a pulldown feature in both internal and external chucking and is adapted to receive bar work in one modification thereof. Internal and external chucking is accomplished by providing separate spaced apart jaw structures which are rotatable about separate axes parallel to and spaced radially from the axis of rotation of the chuck. An inclined slide is provided in each jaw structure actuated by bell crank means secured to the jaw structure for providing the pulldown feature. The bell cranks of the jaw structures are actuated by separate rods in accordance with rotation of an internally threaded ring gear engaged with external threads on the rods in one modification and in accordance with a pull rod connected to an actuating member having portions engaged in recesses in the actuating rods in another modification.

27,324
AUTOMOBILE SPEED CONTROL

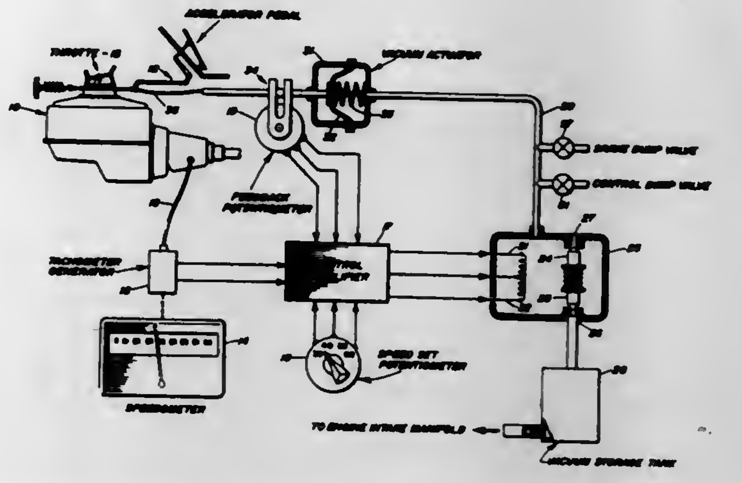
Cyrus M. Granger, Green Bay, Wis., Michael Slavin, Towson, and Ralph W. Carp, Baltimore, Md., and Peter St. C. Manson, Barrington, Ill., assignors to The Bendix Corporation, Baltimore, Md.

Original No. 3,381,771, dated May 7, 1968, Ser. No. 550,744, May 17, 1966. Application for reissue May 6, 1970, Ser. No. 34,951

Int. Cl. B60k *31/00*

U.S. Cl. 180—105 **11 Claims**

A control amplifier combines a first electrical signal corresponding to desired automobile speed, a second electrical signal corresponding to actual automobile speed and a third electrical signal corresponding to throttle position so as to generate an error signal. The error signal is applied to a vacuum modulator which in response thereto provides to a vacuum motor a vacuum pressure related to the error signal. The vacuum motor is mechanically ganged to the throttle and controls throttle position.



PLANT PATENTS

GRANTED MARCH 28, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,082
POINSETTIA PLANT

Thormod Hegg, Lierbyen, Norway, assignor to Paul Ecke, Inc., Encinitas, Calif.

Filed Jan. 21, 1970, Ser. No. 4,787

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinct variety of poinsettia plant, substantially as herein shown and described, characterized particularly as to novelty by being substantially identical in all respects to the poinsettia variety known as "Annette Hegg" (U.S. Plant Pat. No. 2,962) except for its bract color, with the bracts having a distinctive and attractive white color as essentially distinguished from the red bracts of the variety "Annette Hegg."

3,083
MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Jan. 28, 1970, Ser. No. 6,604

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of hybrid miniature rose plant of hardy, moderately dwarf, much branched, upright, bush type, as illustrated and described, characterized by resemblance to the Cricri miniature rose (not patented) in general form of bud and flower (with less petals) but more nearly resembling Starina miniature rose (U.S. Plant Pat. No. 2,646) in color, the general color effect of the freshly opened flower being an all over orange red color of uniform shade with little tendency to fade, the flowers having extremely long lasting quality both on the plant and as cut flowers; and further characterized by a plant which is moderately dwarf, much branched and vigorous in growth, easy to propagate from cuttings and by buding; with medium small, dark green mildew resistant foliage, an abundance of bloom borne in repeated succession throughout the growing season with flowers borne usually in loose clusters on stiff wiry stems.

3,084
MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Jan. 28, 1970, Ser. No. 6,605

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, rounded, much branched, bush type, as illustrated and described, characterized by resemblance to the Pink Cameo miniature rose (U.S. Plant Pat. No. 1,451) in general form of bud and flower but with color usually darker rose-pink in bud stage than Pink Cameo, the general color effect of the freshly opened flower being an all over pink or rose pink; further characterized by the flower buds having moss-like hairy appendages on bud surface which emits a fragrance whenever hairs (oil glands are rubbed or bruised; and further characterized by a plant which is vigorous and compact in growth, easy to propagate by building and from cuttings; with small medium green foilage, an abundance of bloom borne almost continuously throughout the growing season with flowers borne singly and in loose clusters.

3,085
ALMOND TREE

St. Joseph Toy, Rte. 3, Box 73, Chico, Calif. 95926

Filed Feb. 9, 1970, Ser. No. 10,060

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—30 **1 Claim**

1. A new and improved variety of almond tree characterized by more favorable bloom time, heavier bearing, higher kernel content, greater disease resistance, and more favorable harvest characteristics than present late maturing varieties.

3,086
AZALEA PLANT

Joseph H. Klupenger, Aurora, Oreg., assignor to Geo. J. Ball Inc., West Chicago, Ill.
Filed Feb. 13, 1970, Ser. No. 11,360
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—55 **1 Claim**

A new variety of azalea plant having an abundance of variegated light red, pink and white blossoms of medium to large size borne in clusters on an erect and spreading bush of a generally vase-shaped form; the new plant being further distinguished by the long lasting quality of its blossoms, which hold without fading in color until completely past an unusually long blooming season, and by its strong, sturdy and rapid growth to a fully mature, marketable plant in less time than many other azaleas in commercial production.

3,087
NECTARINE TREE

Chris Floyd Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351
Filed July 24, 1969, Ser. No. 844,672
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree as illustrated and described which bears large to medium, cling stone fruit having yellow flesh; characterized by ripening approximately 10 days earlier than the Grand River nectarine (Plant Pat. No. 1,248) and the Merrill Sunrise nectarine (Plant Pat. No. 1,256); and further characterized, in comparison with said other varieties, by heavier production of larger size fruits of red color shading to maroon which overspreads a yellow ground color.

3,088
ASH TREE

Richard Eugene Schlapfer, Arlington, Nebr., assignor to Marshall Nurseries, Arlington, Nebr.
Filed July 29, 1969, Ser. No. 845,920
Int. Cl. A01h *5/12*
U.S. Cl. Plt.—51 **1 Claim**

This invention relates to a new and distinct variety of ash tree which is believed to be related to the species *Fraxinus pennsylvanica* (red ash). In contrast to this known variety the new variety (a) bears no flowers or fruit, (b) has less serrated leaflets which are broader and a darker green, (c) has longer petiolules, (d) has a slower growth habit which produces an ovoid more compact crown, (e) has rounded dark brown buds, (f) has leaf scars which are prominently notched at the upper margin, and (g) has resilient bark which can be depressed by pressure of the finger.

3,089
AZALEA PLANT

Hubert B. Lewis and Helen H. Lewis, both of 761 Country Hill Drive, La Habra, Calif. 90631
Filed Nov. 10, 1969, Ser. No. 875,600
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—56 **1 Claim**

1. A new and distinct variety of azalea plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an attractive plant form, an usually large flower size for azalea flowers of the pink color class, a distinctive and attractive pink flower color, good keeping qualities of the flowers, particularly when pre-cooled, and flowers hold well under refrigeration, and excellent suitability for greenhouse forcing.

3,090
DOGWOOD TREE

Peter E. Costich, Center Moriches, N.Y., assignor to Treesearch, Kingston, N.J.
Filed Dec. 29, 1969, Ser. No. 889,005
Int. Cl. A01h *5/12*
U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of dogwood tree of the Japanese dogwood type, substantially as herein shown and described, characterized particularly as to novelty by its general similarity to typical varieties of the species botanically known as *Cornus kousa*, but being primarily distinguished therefrom by its prolonged and spectacular summer flowering habit, with its flowers retaining their white color and remaining unblemished from about mid-June to late August or mid-September, and said flowers being about 25% more abundant in average quantity and about 20% larger in average size in comparison with the normal flowers typical of the *Cornus kousa* species which fade in about two weeks after their normal June 10 to June 15 blooming date when grown under the same conditions in the same region of Central New Jersey and Southern New York.

3,091
ROSE PLANT

Samuel McGredy, % McGredy & Son Ltd., Portadown, Northern Ireland
Filed Dec. 29, 1969, Ser. No. 889,006
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class substantially as herein shown and described primarily characterized by:

the flower is smaller than Karl Herbst with much clearer scarlet color, having a stronger neck and a more compact plant than most other red hybrid teas.

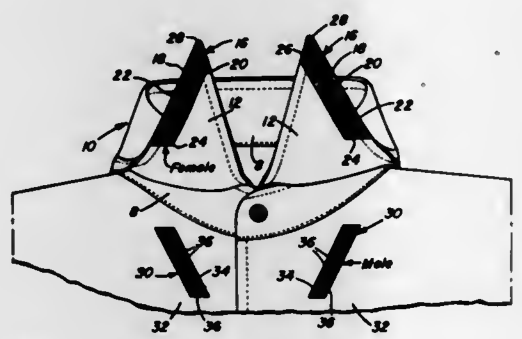
PATENTS

GRANTED MARCH 28, 1972

GENERAL AND MECHANICAL

3,651,519
CONCEALED COLLAR WING FASTENERS

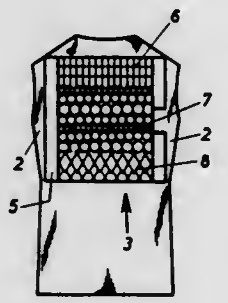
Harold Glick, Elberta Ave., Salisbury, Md.
Filed July 14, 1970, Ser. No. 54,805
Int. Cl. A41b *3/00*
U.S. Cl. 2—132 **2 Claims**



A "button-down" collar attached shirt wherein the collar has extra long pointed wings and wherein the pointed tips of the wings are provided with tapes which are alignable and mated with holddown tapes on the front of the shirt. The female tapes have loops arranged to accommodate flexible and resilient hooks on the coacting male tapes. These paired and oriented self-adhering tapes, when firmly pressed together, fasten tightly, hold the wings neatly in place and prevent unsightly wrinkling. These interconnected tapes can be easily and equickly peeled apart and separated, are capably adjustable and adaptable, and have been found to be ideal for the purposes desired.

3,651,520
MEN'S COAT

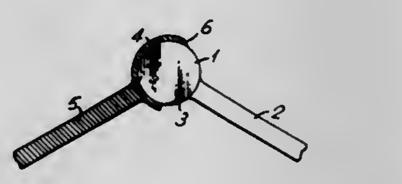
Oscar Ernst Otto Jacob, Weinberg, Germany, assignor to Greiff-Werke Gustav Winkler KG, Bamberg, Germany
Filed May 25, 1970, Ser. No. 40,336
Claims priority, application Germany, May 23, 1969, G 69 20 948.9
Int. Cl. A41d *27/02*
U.S. Cl. 2—272 **3 Claims**



A lightweight suit coat for men's sportwear has an open-mesh netlike transparent fabric lining that is firmly secured to the surface area of the back of the coat's lining. The fabric has different size mesh in selective portions of the back. The fabric arrangement permits air to circulate through the coat.

3,651,521
PROSTHETIC JOINT FOR USE IN THE HUMAN BODY

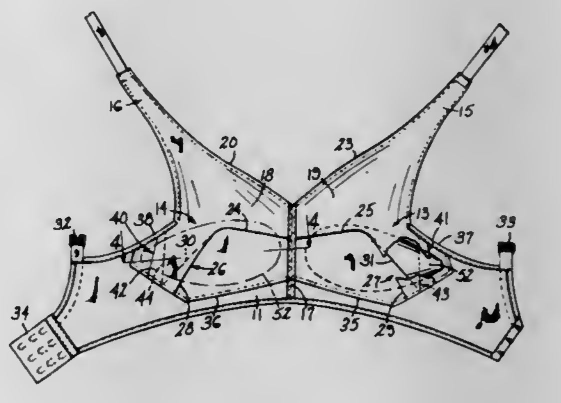
Michael Bertrand Devas, Hastings, England, assignor to National Research Development Corporation, London, England
Filed Feb. 5, 1970, Ser. No. 8,806
Claims priority, application Great Britain, Feb. 7, 1969, 6,803/69
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **9 Claims**



A prosthetic device comprising mutually engageable male and female components to afford pivotal rotation in a plane, the female component including a socket member having a concave bearing surface with a cross section in said plane substantially in the form of a first circular segment subtending an angle greater than 180°, and a first shaft projecting from the rear of said socket member, and the male component including a head member having a convex bearing surface with a cross section in said plane substantially in the form of a second circular segment of equal radius to said first segment, subtending an angle significantly greater than said first segment, and relieved towards one end over a segmental angle of at least similar order to that by which said first segment exceeds 180°, and a second shaft projecting from the rear of said head member.

3,651,522
PROSTHETIC BRASSIERE FOR USE AFTER SURGICAL BREAST REMOVAL

Isabel M. Bernfeld, Allendale, N.J., assignor to The Berger Brothers Company, New Haven, Conn.
Filed Apr. 23, 1970, Ser. No. 31,282
Int. Cl. A61f *1/00;* **A41c** *3/10*
U.S. Cl. 3—36 **8 Claims**



A prosthetic brassiere for use after surgical removal of one or both breasts comprising a torso encircling member, a pair of breast cups in said member, each cup including a fabric liner conforming to the shape of said cup and adhered to said cup on the periphery thereof, the space between said cup and said liner defining a first pocket for holding breast simulating means, a first inverted V-seam across the exterior of each cup, a second inverted V-seam across a portion of said liner, said first and second seams being superposed when said liner is pressed against the interior of said cup, a vertical seam separating said cups, a first slit in said liner for insertion of said breast simulating means, said first slit being an extension of the line of said second seam, and shoulder straps attached to said cups.

3,651,523
SHOWER DEVICE PROVIDED WITH WATER HEATERS

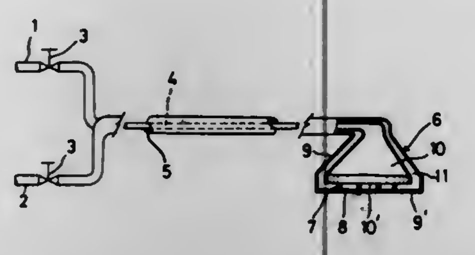
Hideaki Miyahara; Tamiyosi Kawai, and Michio Takatsuki, Mito-City, all of Japan, assignors to Kabushiki Kaisha Hokusan, Sapporo City, Hokkaido, Japan

Filed July 28, 1970, Ser. No. 58,822

Claims priority, application Japan, Nov. 16, 1969, 44/91693

Int. Cl. A47k *3/22, 3/24*

U.S. Cl. 4—145 **4 Claims**



In a shower device wherein a mixture of hot water from a water heater and cold water from a source of supply is supplied to a shower head through cocks, the shower head is provided with at least one hot water discharge port and at least one cold water discharge port. The hot water from the water heater is supplied to the hot water discharge port through a hot water conduit including a cock and the cold water is supplied to the cold water discharge port through a cold water conduit also including a cock whereby the hot water and cold water are admixed near the hot and cold water discharge ports of the shower device.

3,651,524
VACUUM DRAIN SYSTEM

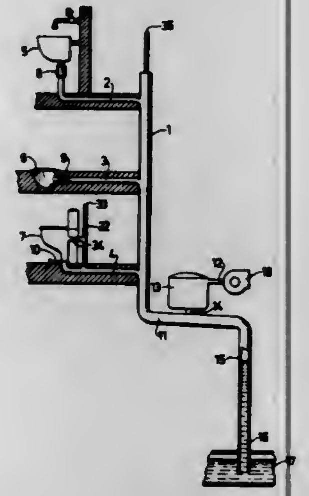
Lars-Erik Bengtsson, and Claes G. Allander, both of Stockholm, Sweden, assignors to AB Gustavsbergs Fabriker, Gustavsberg, Sweden

Filed Feb. 16, 1970, Ser. No. 11,764

Claims priority, application Sweden, Feb. 14, 1969, 2111/69

Int. Cl. E03d *9/04*

U.S. Cl. 4—211 **5 Claims**



A sanitary drain system for a building in which a plurality of waste water drains are connected to a soil pipe and with the outlet end of the soil pipe being provided by a hydraulic closure. A vacuum is provided in the soil pipe and an inlet valve is provided in the connection between each waste pipe and the soil pipe. The inlet valve is of the type which is responsive to the vacuum in the soil pipe to remain closed in the absence of waste water in the drain at the inlet side of the valve. However, the inlet valve opens when there is water in the drain at the valve's inlet side so that waste water and also solid wastes can readily pass through the valve and thence through the soil pipe to the sewer.

3,651,525
ONE-POINT MOORING BUOY FOR LOADING OR UNLOADING SHIPS

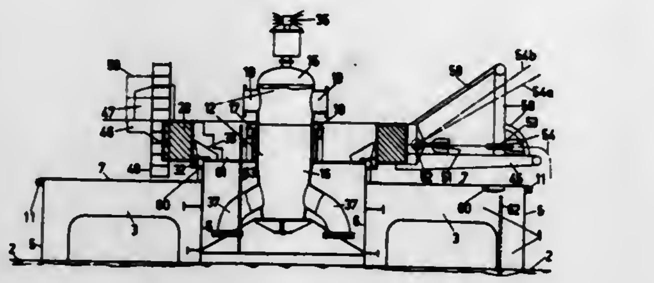
Hendrikus S. Rutten, Voorburg; Gerard Kruisman, Reeuwijk; Johan DeGroot; Simon Westra, and Abraham P. Bavelaar, The Hague, all of Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Dec. 5, 1969, Ser. No. 882,800

Claims priority, application Netherlands, Dec. 20, 1968, 6818357

Int. Cl. B63b *21/00*

U.S. Cl. 9—8 P **3 Claims**



Single buoy mooring for (un)loading tankers comprising a floating body anchored to the seabottom, a ring arranged on top of the body in such a way that it is rotatable around a vertical axis relative to the body and mooring cables or chains secured to the ring tangentially.

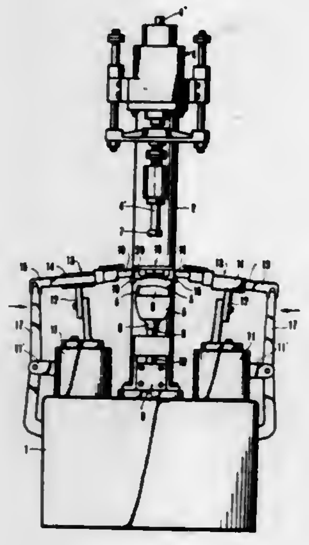
3,651,526
LASTING DEVICE FOR SHOES

Takero Ogawa, No. 33–12, 4-chome, Kamineguro, Meguro-ku, Tokyo, Japan

Filed Mar. 3, 1970, Ser. No. 16,186

Int. Cl. A43d *21/00*

U.S. Cl. 12—12 **10 Claims**



A lasting device for shoes. A machine stand has means supporting a wood last on its upper face at its center and has a support pillar standing upright on the back of the stand. A piston rod is mounted on the upper part of said support pillar and has a suitable device for moving said rod up away from and down toward the shoe last. A lasting mechanism is located on both sides of the shoe last in a freely reciprocating manner and is adapted to last the shank portion by pressing the leather placed over the last against the insole of the shoe. A base plate is provided and is freely slidable in the direction of the toe of the shoe last and has a semicircular form open at the frontal portion thereof and having a corresponding circular stepped shoulder portion. A pair of platelike plungers are positioned within the shouldered portion on the base plate and together form a forwardly open generally semicircular notch and are freely pivotally connected to one another and oppositely rotatable so that the forward facing semicircular notch is made narrow following the sliding action of the base plate. A pair of fixed wiper plates is provided for lasting the toe portion and have a shape resembling the shape of the circular end of the toe part of shoes, and the circular edge corresponding to the circular shoulder portion for the platelike plungers. The wiper plates are securely attached to the platelike plungers. A pair of reciprocably movable wipers are respectively outwardly adjacent and hold the pair of fixed wiper plates therebetween and are connected in a freely resilient biased manner to the platelike plungers.

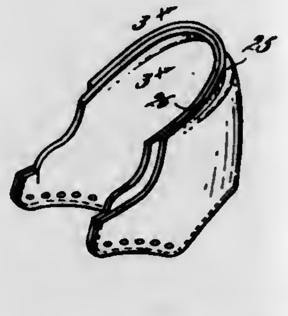
3,651,527
METHOD OF MAKING SHOES

Anthony P. Forma, Claremont, N.H., assignor to Lowell Molding Corporation, Lawrence, Mass.

Filed Apr. 1, 1970, Ser. No. 24,621

Int. Cl. A43d *13/18*

U.S. Cl. 12—142 D **1 Claim**



The method of making shoes, especially infants' shoes, which comprises molding the back part assembly of a shoe upper comprised of outer and inner plies with a counter material therebetween and wherein the lower edges of the plies and the counter material are substantially contiguous, to form at the lower edge inwardly and downwardly extending flanges, assembling the premolded upper with an insole having a rib at one broad side so that the inwardly extending flange engages the underside of the insole outwardly of the rib, the downwardly extending flange engages the outer side of the downwardly extending rib and the edge face of the insole engages the inner side of the back part, holding the inner edge of a welt strip engaged with the outer side of the downwardly extending flange and inserting fastening means through the inner edge of the welt strip, downwardly extending flange and rib.

3,651,528
FLOTATION DEVICE EQUIPPED WITH A ROAD-SECTION FOR THE CONSTRUCTION OF FLOATING BRIDGES OR MOTOR-FERRIES

Georg Behrmann, Lauf A. D. Pergnitz, and Rudolf Schubart, Nurnberg, both of Germany, assignors to Dipl.-Ing. Karl Heinz Schmidt, Kreis Hersbruck, Germany

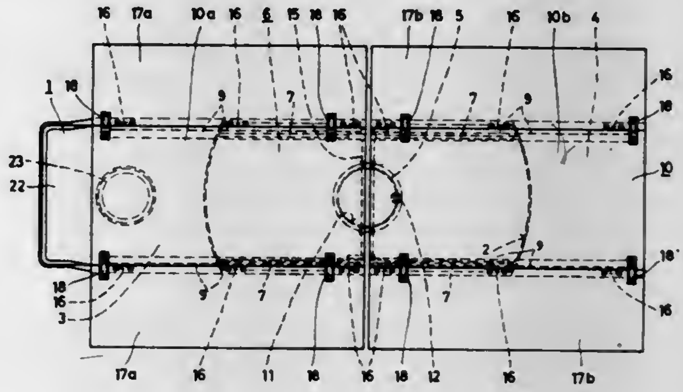
Filed Oct. 22, 1969, Ser. No. 868,360

Claims priority, application Germany, Oct. 22, 1969, P 18 04 498.9

Int. Cl. E01d *1/00*

U.S. Cl. 14—1 **14 Claims**

A float, preferably an amphibious vehicle for use in erecting pontoon bridges or powered rafts, is provided with a road section having rigid extensions pivotally connected to the longitudinal sides thereof for downward movement about axes parallel to the longitudinal axis of the road section with coupling means at its ends and being pivotable by power



means about an axis perpendicular to the road section of the vehicle.

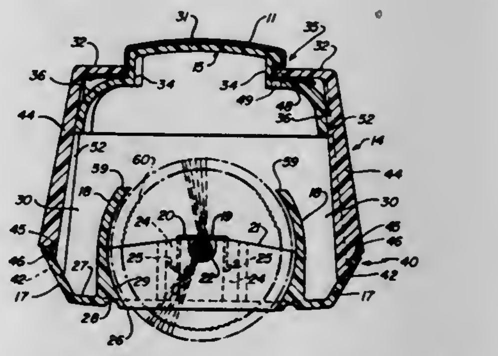
3,651,529
CLEANING BRUSH

Samuel J. Popell, and Raymond Popeil, both of Chicago, Ill., assignors to Popeil Brothers, Inc., Chicago, Ill.

Filed Nov. 24, 1969, Ser. No. 879,278

Int. Cl. A47l *11/00;* **A46b** *13/08*

U.S. Cl. 15—4 **18 Claims**



A cleaning brush for fabric and upholstery is provided in which two opposed operating surfaces are presented: the first has a rotating brush which will sweep crumbs and dirt from upholstery or carpeting and entrap the same within the housing; and the second, a reverse side, containing an oriented cloth which will remove from upholstery, carpeting, and other fabrics, lint, cotton and tangle fibers which cannot be readily engaged by the sweeper. An interlocking construction is provided which effectively isolates the entrapped dirt picked up by the rotating brush from the oriented cloth, and at the same time serves to physically interlock the fabric into the back of the dirt retaining member in a dust and leakproof engagement. A curvilinear shield is provided adjacent the rotating brush to improve the sweeping action and retention of dirt. A blade edge adjacent the brush aperture loosens the dirt in carpeting and fabric for a ready pickup by the brush. A case body snap-actingly engages the brush and dirt holder portion to prevent inadvertent discharge of retained sweepings while the oriented cloth portion is being used. The case body is squeezed for the removal of the brush and dirt holder for cleaning. The cloth holder is snap-fitted into the case and thus the cleaning brush, when assembled, has only two parts.

3,651,530
MEANS FOR CLEANING PIPELINES

Ronald W. Schultz, Lodgepole, Alberta, Canada

Division of Ser. No. 751,844, Aug. 12, 1968, Pat. No. 3,573,985

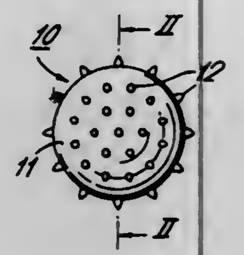
Filed Dec. 8, 1970, Ser. No. 96,187

Claims priority, application Canada, Aug. 15, 1967, 997884

Int. Cl. B08b *9/04*

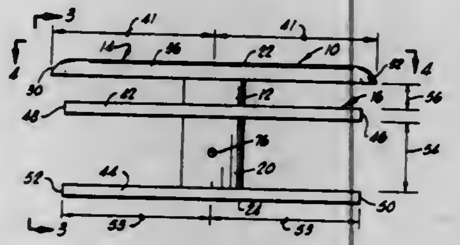
U.S. Cl. 15—104.06 R **17 Claims**

A pipeline-cleaning travelling "pig" ball having a generally spherical main body formed of a resiliently deformable material. The main body of the ball is provided with plurality of discrete, discontinuous, spaced-apart protuberances upstanding from the surface thereof; the protuberances being of a hardness greater than that of the main body. Preferably, the protuberances are spaced substantially uniformly over the spherical surface of the main body. The invention also contemplates the provision of a pipeline-cleaning kit comprising a first lead "pig" ball and a second follower pig ball; the second or follower pig ball having a main body formed of a resiliently deformable material having a hardness greater than the hardness of the main body of the first or leading pig ball.



3,651,531
BROOM GUIDE

Billy J. Wietelman, Rt. Box 196, Guthrie, Okla.
Filed July 2, 1970, Ser. No. 51,974
Int. Cl. A46b *15/00*
U.S. Cl. 15—171 **16 Claims**

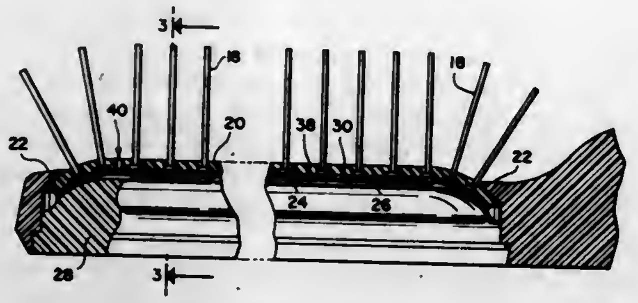


A broom guide adapted to facilitate the manufacture of broom assemblies, which includes a base adapted to be secured to a lower end portion of a broom handle. The base includes, a form guide, a first guide bar assembly, and a second guide bar assembly, all of which are secured to the base. The form guide is sized to provide the basic shape about which the final layer of broom corn is formed. The first and second guide bar assemblies are each shaped and disposed to provide a space there between, the space being to accommodate a predetermined amount of broom corn. The first and the second guide bar assemblies are also shaped to accommodate the wire banding, which is utilized to secure the broom corn disposed in the space between the first and the second guide bar assemblies to the broom handle.

3,651,532
WIG BRUSH

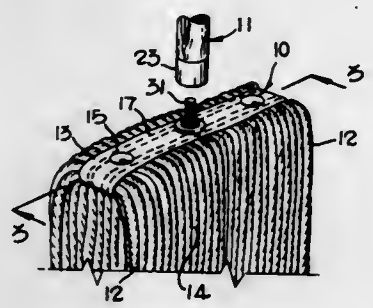
Jochen Wettburg, Beerfelden, Odenwald, Germany, assignor to Braun, Wettberg & Co., Beerfelden, Odenwald, Germany
Filed May 13, 1970, Ser. No. 36,912
Int. Cl. A46b *3/20*
U.S. Cl. 15—186 **6 Claims**

A wig brush having å plurality of metallic bristles anchored to a pliable cushioning material for providing flexible support for the bristles. The cushioning material is mounted to the brush by inserting same through an elongated aperture in the brush frame. A convex forming piece is snap fit into the elongated aperture to firmly secure the cushioning material against a peripherally extending lip surrounding the aperture to thereby snugly retain the cushioning material within the aperture. The forming piece is adapted to flex the cushioning material so that it will assume a curved contour extending outwardly from the aperture and will also provide an air space between the cushioning material and the convex surface of the forming piece.



3,651,533
MOP HEAD CONSTRUCTION

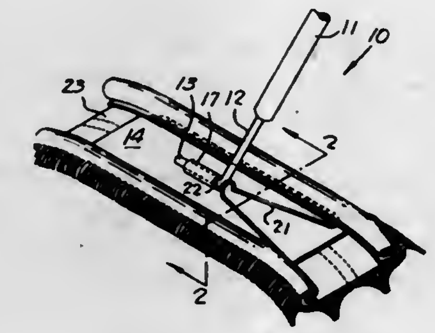
James R. Bouras, St. Louis, Mo., assignor to Bouras Mop Mfg. Co., St. Louis, Mo.
Filed May 13, 1970, Ser. No. 36,710
Int. Cl. A47l *13/24*
U.S. Cl. 15—229 A **3 Claims**



This mop construction includes a flat bundle of parallel mop cords connected by a tape wrapped around the center portion. The taped connection is reinforced by a transverse clamping plate which is shorter than the width of the taped cord bundle to provide the mop with lateral cushioning pads. The clamping plate is disposed below the mop bundle and the fastening between the clamping plate and the taped bundle provides an elongate stem extending through the mop bundle and providing rigid attachment for the mop handle.

3,651,534
CLEANING DEVICE WITH INTERCHANGEABLE HEAD

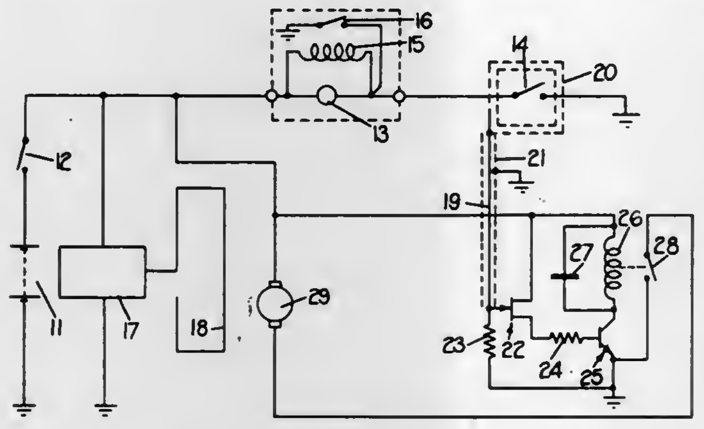
Ragnvald G. Leland, 2334 W. 241st St., Lomita, Calif.
Filed Aug. 14, 1970, Ser. No. 63,806
Int. Cl. A47l *13/46*
U.S. Cl. 15—231 **5 Claims**



A cleaning device having an interchangeable head including a handle and a pad. A resilient holding member releasably securing the pad to the head and simultaneously releasably secures the handle to the head.

3,651,535
ELECTRICAL SYSTEMS FOR ROAD VEHICLES

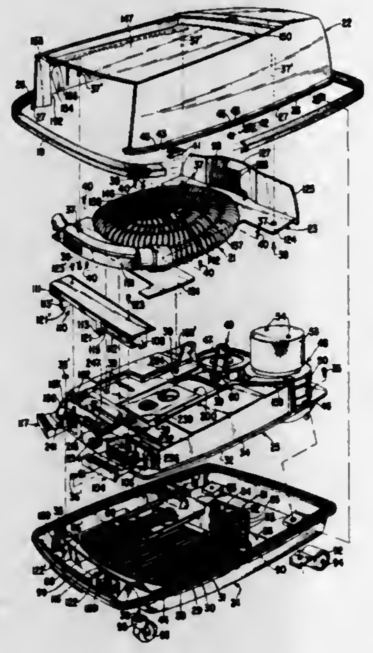
John Granville Baldwin, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed July 9, 1970, Ser. No. 53,383
Claims priority, application Great Britain, Aug. 11, 1969, 40,007/69
Int. Cl. B60s *1/02*
U.S. Cl. 15—250.02 **1 Claim**



In an electrical system for a road vehicle, a manually operable switch controls one electrical circuit of a vehicle. The switch has a metallic part associated with it, and this metallic part acts as the sensing element of a proximity switch which controls another electrical circuit of the road vehicle. One circuit may be the windshield wiper circuit, and the other the windshield washer circuit.

3,651,536
CANISTER VACUUM CLEANER WITH RETRACTABLE HOSE

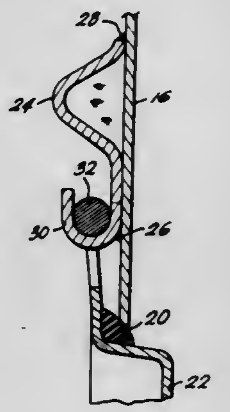
James J. Bolzan, Jr., 406 Beinewood Lane, and Charles T. Fromknecht, 2007 College Ave., both of Anderson, S.C.
Filed Jan. 8, 1970, Ser. No. 1,498
Int. Cl. A47l *9/00*
U.S. Cl. 15—323 **7 Claims**



A vacuum cleaner of the canister variety for domestic use having lower and upper housings secured together by U-shaped clips, and an intermediate housing. Between the upper and intermediate housings is disposed a hose storage compartment within which the hose is coiled when the cleaner is not in use. A spring motivated hose reel mechanism retracts the hose into its stored position upon depression of a foot pedal. The spring is wound into an energized condition by extracting the hose from the storage area. A pawl and ratchet mechanism maintains the spring in its energized condition until the pedal is depressed. Also disclosed is a selectively operable lever controlled slide valve for converting the cleaner from suction to blower operation and vice versa. A dust bag, located within the vacuum chamber between the intermediate and lower housing, is attached to a bracket on an access door located at the bottom of the lower housing. To change the filter bag and a pair of secondary filters which are also removably mounted on the door, the cleaner is set on end and the access door opened to a table-like position. A front panel, mounted on the intermediate housing and secured to the lower housing, operably mounts the hose retraction pedal, the power switch pedal, the suction/blower levers and a filter bag change indicator.

3,651,537
DOOR HINGE ASSEMBLY FOR BINS

Dwight E. Nichols, Beatrice, Nebr., assignor to Hoover Ball and Bearing Company, Saline, Mich.
Filed Aug. 19, 1969, Ser. No. 851,337
Int. Cl. E05d *9/00, 1/06;* **B65d** *43/16*
U.S. Cl. 16—128 **3 Claims**

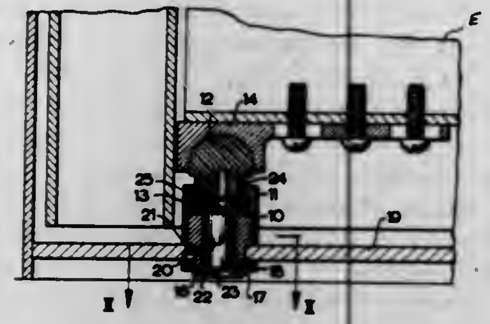


An improved hinge assembly for mounting a discharge door on the front wall of a large bin capable of transporting and storing bulk material. The hinge assembly consists of a generally S-shape hinge bar which is secured to the front wall of the bin and terminates at its lower end in a plurality of depending generally U-shape supports which are spaced apart in a horizontal direction. A hinge rod which supports the door is rotatably supported in the depending supports on the hinge bar.

3,651,538
PIVOTABLE SUPPORT FOR A DOOR OR ANALOGOUS SWINGABLE ELEMENT

Dietrich Jentsch, Ennepetal-Voerde, Germany, assignor to Dorken & Mankel KG, Ennepetal-Voerde, Germany
Filed Oct. 8, 1970, Ser. No. 79,148
Claims priority, application Germany, Oct. 17, 1969, P 19 52 411.9
Int. Cl. E05d *2/04*
U.S. Cl. 16—134 **10 Claims**

A stationary tubular guide member has a upwardly directed open end and a vertically oriented longitudinal axis. A pivot pin has an upper portion projecting above the open end for engaging and supporting a swingable element, an intermediate portion between the upper portion and the open end, and a lower portion located within the guide member with limited freedom of axial displacement therein. A retaining pin prevents the pivot pin from turning with reference to the guide member. A downwardly open cap surrounds with its upper section the intermediate portion of the pin and with its lower section the guide member. Cooperating screw threads on the intermediate portion of the pin and on the upper section of the cap permit rotation of the latter with

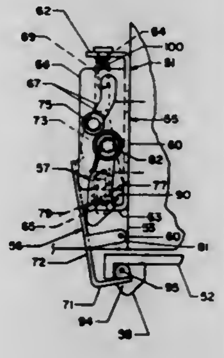


reference to the pin with a concomitant axial displacement of the latter relative to the guide member.

3,651,539
DOOR HINGE

Theodore R. Breunich, Stanford, Conn., and Henry B. Klatte, Yonkers, N.Y., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 5, 1970, Ser. No. 77,787
Int. Cl. E05d *9/00*
U.S. Cl. 16—128 **9 Claims**

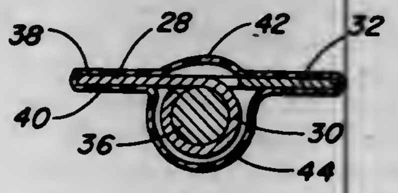


A hinge which in the closed position thereof is completely set back from the outer surface of the framing encompassing a door associated with the hinge and which permits substantially 180° of rotation of the door to an open position. The hinge is comprised of a hinge member which is movably connected to a support bracket. Restraining means is provided for maintaining the hinge member in a first predetermined position whereby the door can be rotated to the closed position. Releasing means is provided for freeing the movable hinge member from the restraining means whereby it can be moved to a second predetermined position permitting substantially 180° rotation of the door to the open position thereof.

3,651,540
ENCASED HINGE

Sudhir N. Rana, 116 Nob Ave., Del Mar, Calif.

Filed Sept. 28, 1970, Ser. No. 76,155
Int. Cl. E05d *11/00*
U.S. Cl. 16—148 **5 Claims**

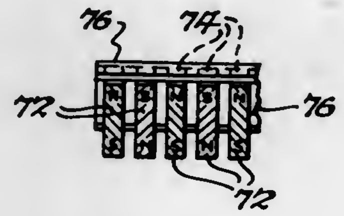


One aspect of the invention comprises a composite hinge structure, including a piano type hinge and a flexible sealing membrane on opposite sides of the hinge. Another aspect of the invention comprises two strips of flexible sealing membranes. A plurality of leaf type hinges are spaced along and between the strips. The leaves of the hinges are fixed in sealing relationship with the strips.

3,651,541
METHOD OF GUIDING PIERCING INSTRUMENTS

Andre Robert Jaccard, Buffalo, N.Y., assignor to Jaccard Corporation, Erie County, N.Y.

Continuation-in-part of application Ser. No. 776,851, Oct. 31, 1968, now Patent No. 3,583,025, dated June 8, 1971. This application Aug. 13, 1970, Ser. No. 63,473
Int. Cl. A22c *7/00*
U.S. Cl. 17—45 **5 Claims**

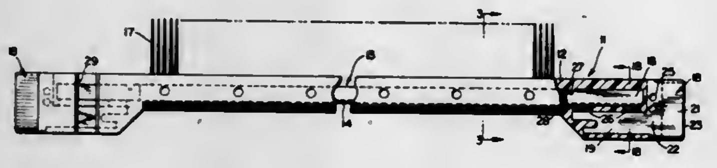


Magnetic bars are used to guide knives or other piercing instruments in machines, such as meat tenderizers, where the piercing instruments are repeatedly thrust deeply into a body and then withdrawn. Thus, the instruments are firmly, but yieldingly, guided to maintain the desired alignment and spacing and minimize bending and breaking thereof.

3,651,542
FALLER BARS

Matthew Kenneth Mann, Shipley, and Norman Rushworth, Baildon, both of England, assignors to Plastex Limited, Dublin, Ireland

Continuation-in-part of application Ser. No. 702,333, Feb. 1, 1968, now Patent No. 3,532,077, dated Oct. 6, 1970. This application Mar. 16, 1970, Ser. No. 19,947
Int. Cl. D01g *19/10*
U.S. Cl. 19—129 R **11 Claims**

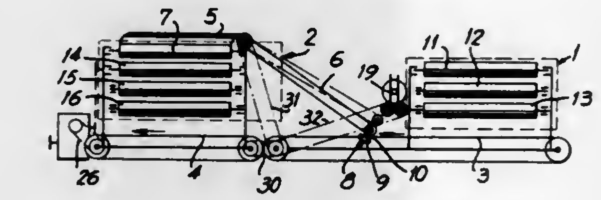


A faller bar for a textile combing machine comprises an integral plastic body from which extend a row of metal comb pins, a longitudinally extending metal strengthening member imbedded in the body and extending at opposite ends beyond the row of pins at each end of said body to be directly mechanically secured to respective fixed metal mounting plates that cooperate with parts of the textile machine; and a notched or similarly formed region in said strengthening member provides a weakened connection that maintains the strengthening member attached to the end plates during normal operation but permits relative flexing of or separation between the strengthening member and end plates when more than a predetermined torque is applied.

3,651,543
APPARATUS FOR TREATING CARDED FIBROUS MATERIAL FOR FORMING A WEB OF SAID MATERIAL

Madis Valdurovich Loo, Mustamyae tee 173, kv. 34; Argo Alexandrovich Sillaots, ulitsa Keemne, 6, and Jury-Eduard Khansovich Kekhler, ulitsa Tekhnika 99, kv. 6, all of Tallin, U.S.S.R.

Filed May 8, 1969, Ser. No. 823,015
Int. Cl. D04h *11/04*
U.S. Cl. 19—161 R **2 Claims**

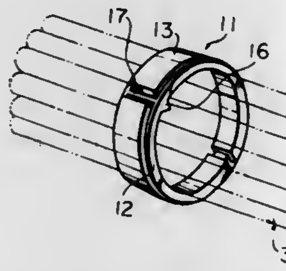


An apparatus for treating carded fibrous material for forming a web of such material, to be used in the production of nonwoven textile materials, wherein, in addition to two systems of longitudinal conveyors and a pair of aligned transverse conveyors disposed under these two systems of longitudinal conveyors, there are provided a device for turning a lap of fibrous material by 90°, disposed above the second one of the two systems of longitudinal conveyors, and a pair of additional conveyors. One of these two additional conveyors is inclined toward the transverse conveyor which is disposed under the first system of longitudinal conveyors and is itself disposed intermediate the two systems of longitudinal conveyors, the other of these two additional conveyors being disposed between the device for turning the lap of fibrous material by 90° and the second one of the two systems of longitudinal conveyors, the direction of travel of this last-mentioned one of the two additional conveyors being opposite to that of the topmost one of the conveyors of the second system.

3,651,544
GRIPPING BAND FOR BUNDLE OF WIRES

Yoshio Soma, Tokyo, Japan, assignor to Nikko Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1970, Ser. No. 61,366
Claims priority, application Japan, Mar. 12, 1970, 45/23270
Int. Cl. A44b *21/00*
U.S. Cl. 24—16 R **3 Claims**

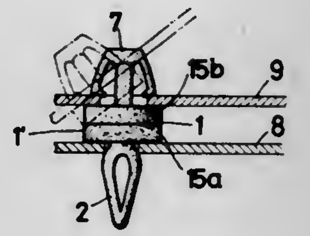


A combination of a resilient inner ring having a portion cut away to form an expansible gap and a resilient outer ring similarly having a portion cut away to form an expansible gap. The outer ring is slidably received in a circumferential groove formed in the outer peripheral surface of the inner ring. The inner ring is provided with an axial ridge on the inner surface thereof for preventing relative rotation of a bundle of wires gripped thereby and with an axial ridge on the outer surface thereof across the circumferential groove for engagement with one end of the outer ring to prevent relative rotation of said inner and outer rings.

3,651,545
BINDING DEVICE FOR FASTENING TWO PLATES

Kunio Hara, Sagamihara, Japan, assignor to Nifco, Inc., Tokyo, Japan

Filed Sept. 25, 1970, Ser. No. 75,586
Claims priority, application Japan, Sept. 27, 1969, 44/91683
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 P **6 Claims**

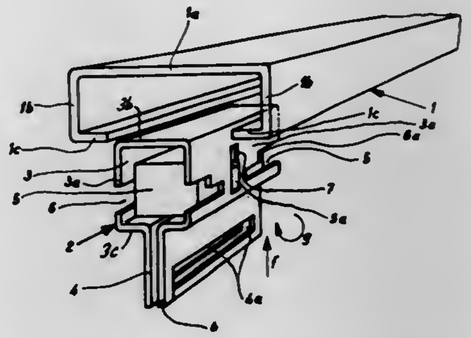


A binding device made of synthetic resin for fastening two plates at a given fixed distance, which device comprises a flange, a pin member erected on one side of the flange and a check member erected on the other side thereof.

3,651,546
FASTENING ELEMENT DEPENDENTLY SUPPORTED FROM A C-SHAPED MOUNTING MEMBER

Manfred Hartmann, Frastanz, Austria, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Oct. 9, 1970, Ser. No. 79,374
Claims priority, application Germany, Oct. 17, 1969, P 19 52 431.3
Int. Cl. A44b *21/90;* **E21f** *17/02;* **A47f** *5/00*
U.S. Cl. 24—73 SA **25 Claims**



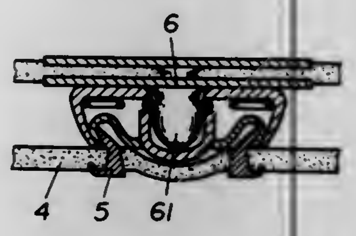
A fastening element for dependently supporting pipe clamps and similar devices from an elongated C-shaped mounting member includes an elongated tubular-shaped member containing a resilient body formed of an elastically deformable material, such as rubber. The tubular-shaped member has a pair of slotted side walls and its dimensions relative to the C-shaped mounting member are such that it can be inserted through the opening formed by the mounting member and then rotated until the slotted portion of its side walls bear on the mounting member. Further, when the tubular member is supported within the mounting member, the resilient body is in deformed contact with the mounting member for holding the tubular-shaped member in its supported position.

3,651,547
SOCKET MEMBER OF SNAP FASTENER

Hidenosuke Ishizaki, 289-46, Kitahata Motoyama-cho, Higashenada-ku, Kobe, Japan

Filed July 21, 1970, Ser. No. 56,919
Int. Cl. A44b *17/00*
U.S. Cl. 24—218 **2 Claims**

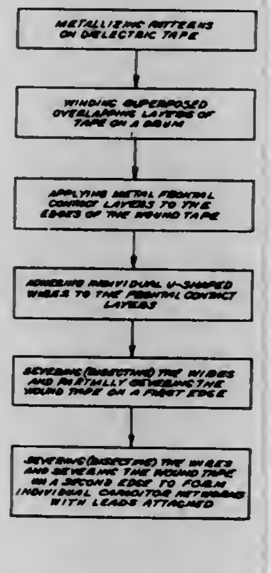
A socket member comprises a main body, a resilient bent wire and a seating element for enclosing the resilient bent wire in the main body. At least two straight portions of the resilient wire spaced apart in parallel by a desired distance are disposed in a recessed portion of the main body for receiving the head of a stud member so as to retain the stud head in engaged position in clamping contact therewith. The socket member has a seating element which is provided with walls defining an annular inclined groove and secured within the body in spaced relation to the bent wires by abutment with the stud receiving portion and the outer walls of the body, so that said seating element receives and effects the upsetting of the prongs of a pronged attaching member.



3,651,548

CAPACITIVE NETWORK

Reinhard Behn, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Aug. 3, 1970, Ser. No. 60,517
Claims priority, application Germany, Aug. 6, 1969, P 19 40 036.3
Int. Cl. H01g *13/06*
U.S. Cl. 29—25.42 **3 Claims**


METALLIZING PATTERNS ON DIELECTRIC TAPE
WINDING SUPERPOSED OVERLAPPING LAYERS OF TAPE ON A DRUM
APPLYING METAL FRONTAL CONTACT LAYERS TO THE EDGES OF THE WOUND TAPE
ADHERING INDIVIDUAL U-SHAPED WIRES TO THE FRONTAL CONTACT LAYERS
SEVERING (BISECTING) THE WIRES AND PARTIALLY SEVERING THE WOUND TAPE ON A FIRST EDGE
SEVERING (BISECTING) THE WIRES AND SEVERING THE WOUND TAPE ON A SECOND EDGE TO FORM INDIVIDUAL CAPACITOR NETWORKS WITH LEADS ATTACHED

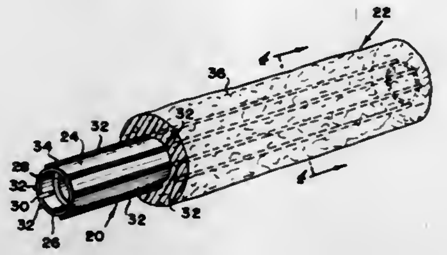
A capacitive network particularly suited for radio frequency shielding is formed as a layer or stack type condenser having a gap cut therein normal to the planes of the layers to divide the structure into stack portions. Adjacent groups of dielectric and metallic coating layers form ranges of capacitance wherein each range includes internal series capacitive circuits interconnected by bridging coatings between the stack sections in accordance with desired capacitance circuit configurations.

3,651,549

PLATE RUBBING MEMBER FOR LITHOGRAPHIC PLATE DEVELOPING MACHINE

Edward A. Casson, Jr., Airpark Drive, Easton, Md.
Filed July 28, 1969, Ser. No. 845,446
Int. Cl. B21b *31/08*
U.S. Cl. 29—129 **6 Claims**

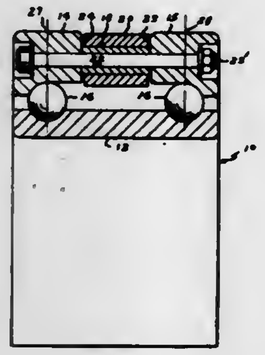
A plate rubbing member for a lithographic plate developing machine which includes a core of tubular conformation. A plurality of spaced rods are secured to the outer periphery of the core and extend longitudinally thereof. The exterior surface of each rod is provided with a friction surface. A tubular member of yieldable absorbent material is sleeved over the core and the friction surfaces of the rods grip the inner periphery of the tubular member in a manner to prevent rotary and longitudinal movement of the tubular member relative to the core upon rotation and oscillation of the rubbing member. Disks on the rubbing member engageable with the terminals of the tubular member positively preclude the absorbent material from sliding back and forth on the core during oscillating movement of the rubbing member.



3,651,550

METHOD OF PRELOADING A BEARING

John E. R. Bennett, Palos Verdes Peninsula, Calif., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Aug. 19, 1970, Ser. No. 65,043
Int. Cl. B23p *11/00*
U.S. Cl. 29—148.4 A **1 Claim**



A method of preloading a bearing wherein races are made of steel, and spacers between the races are made of a more elastic material, such as aluminum, with the desired preload being provided by preload bolts passing through the races and spacers. The preload is adjusted by applying the desired axial load to the races without the spacers installed. The distance is then measured between fixed points on the races approximately in the plane of the ball to race contact at several points around the bearing. The spacers and closure ring are then installed and the bolts are tightened until the measured distance between the fixed points on the races are reached.

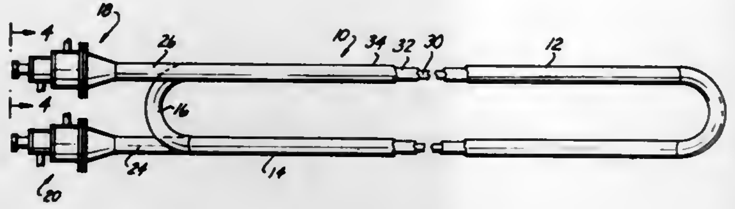
3,651,551

HEADER STRUCTURE FOR HEAT TRANSFER APPARATUS

Robert B. Cannon, 40 Woodhull Pl., Northport, N.Y.
Filed Feb. 26, 1970, Ser. No. 14,576
Int. Cl. B21d *53/00;* **B21k** *29/00;* **B23p** *15/26*
U.S. Cl. 29—157.3 C **3 Claims**

An improved header construction for a heat transfer apparatus is provided. The header includes a plurality of connected longitudinally stepped concentric annular rings each adapted to be coupled to the base of a hollow frustoconical member. The top end of each of the frustoconical members

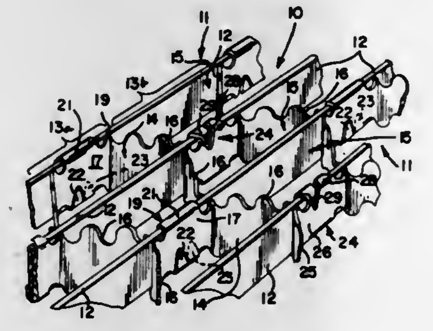
is secured to one tube of a plurality of concentric tubes proximal an end of that tube. A method of assembling a heat transfer apparatus utilizing an improved header in accordance with the above is also provided.



3,651,552

METHOD OF MAKING RETICULATED BAR GRATING

John W. Allen, Flossmoor, Ill., assignor to Stanray Corporation, Chicago, Ill.
Original application Aug. 30, 1968, Ser. No. 756,684. Divided and this application May 25, 1970, Ser. No. 40,164
Int. Cl. B23p *15/12*
U.S. Cl. 29—160 **6 Claims**



A bar grate and the method of making the same. The bar grate includes a reticulated grate made from a unitary flat sheet and a plurality of lengthwise extending and transversely spaced bars fastened thereto within saddles formed during the making of the reticulated grate. The saddles include projecting tab portions which are folded over and retain the bars in the grate so that no additional fastening is required.

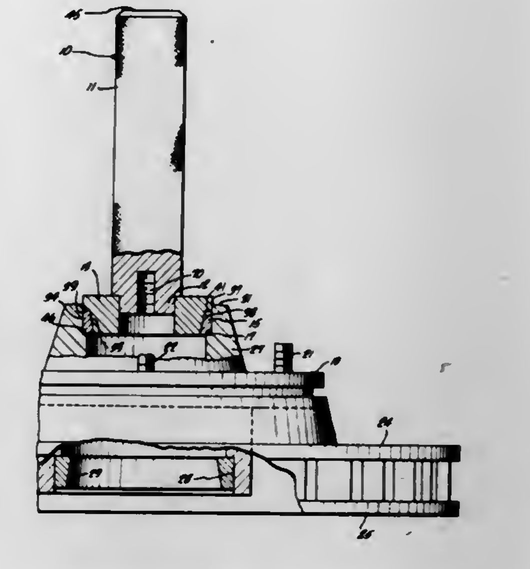
The method includes the steps of forming a reticulated grate from a flat sheet to provide a plurality of lines of bar receiving saddles, each having integral therewith tab fastening means, and inserting bars into the respective lines of saddles and bending the tabs about the bars to retain the latter fastened to the reticulated grate.

3,651,553

BEARING RACE DRIVER

Russell O. Dodd, 1010 North Vernon Pl., Azusa, Calif.
Filed Oct. 8, 1970, Ser. No. 79,047
Int. Cl. B23p *19/04;* **B25b** *27/14*
U.S. Cl. 29—201 **10 Claims**

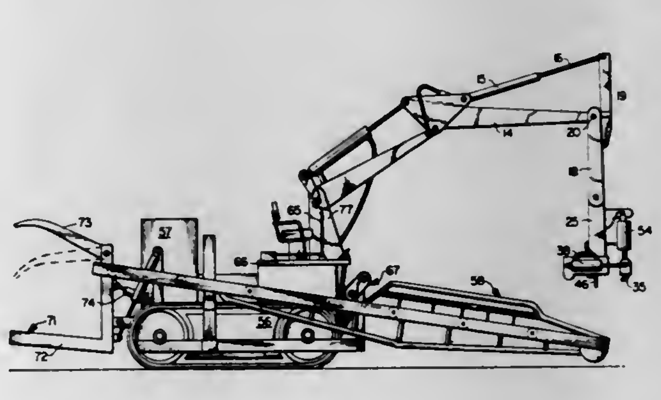
A driving tool having a drive handle with a reduced diameter boss to which any one of a plurality of drive collars is attachable. Each collar has a central bore which makes a snug fit with the driver boss and a shoulder adapted to contact the outer face of a friction bearing race. The shoulder abuts a frustoconical exterior wall adapted to fit within the tapered race. The shoulder has an outer diameter slightly less than the outer diameter of the race. A threaded bore in the boss end of the driver affords means for attaching a suspension attachment for suspending the drive collar and race within a housing bore until the race is properly positioned to be driven.



3,651,554

NAILED BOARD REMOVING DEVICE

Francis A. Herbert, P.O. Box 81, Schriever, La.
Original application May 12, 1969, Ser. No. 830,184, now Patent No. 3,525,503, dated Aug. 25, 1970, Continuation-in-part of application Ser. No. 590,907, Oct. 31, 1966, now abandoned. Divided and this application May 4, 1970, Ser. No. 46,579
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 B **6 Claims**



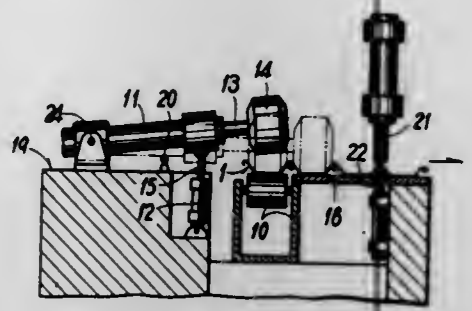
An apparatus for salvaging nailed boards used in the building of temporary roads over marsh land etc. The apparatus includes a frame having a fixed and a movable jaw adapted to grip a board therebetween and a rocker heel member about which said jaws are pivoted to raise the board from its support. Means are provided to close the jaws and pivot the frame about the rocker heel. The apparatus also includes a shaker conveyor for advancing thus removed boards to a nail bending device and thence to a board stacking device.

3,651,555

APPARATUS FOR AUTOMATICALLY CONNECTING SHUTTER SLAT AND PREVENTING ITS DISENGAGEMENT

Hiroshi Kataoka, 12, NaKa 1-chome, Owada, Nishiyodogawa-ku, Osaka, Japan
Filed Sept. 16, 1970, Ser. No. 72,732
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 D **1 Claim**

Apparatus for automatically connecting shutter slat and preventing its disengagement, which automatically connects one shutter slat with another having a notch and slots for preventing its disengagement and cut in the specified dimension, and also prevents the connected shutter slats from being disengaged from each other.



3,651,556

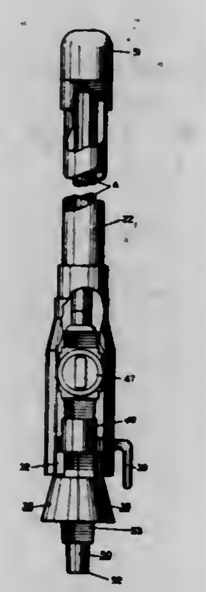
MAINTENANCE TOOL

John L. Mechan, 1193 East 200 N., Orem City, Utah

Filed May 15, 1970, Ser. No. 37,624

Int. Cl. B23p *19/04*

U.S. Cl. 29—213 **9 Claims**



A maintenance tool usable by workmen involved in the maintenance of hydraulic systems such as water-line installations for homes and other buildings. The tool is constructed for each valve removal and replacement, and line removal and replacement, without the necessity of shutting off water pressure relative to the main or branch line affected. Flared guide means is employed in the tool for directing water streams centrally of the tool for proper valve or other installations.

3,651,557

OIL SEAL PULLER

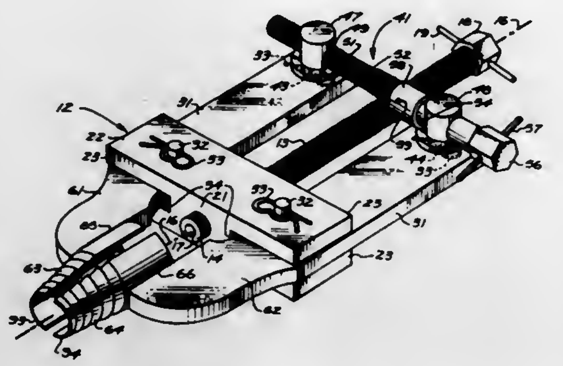
Millard Bagley, 6267 Pentz Road, Paradise, Calif.

Filed Mar. 27, 1970, Ser. No. 23,361

Int. Cl. B23p *19/04*

U.S. Cl. 29—260 **5 Claims**

A chassis includes a pair of arcuate in section pivoted jaws dimensioned so as to encircle with some clearance the portion of a crankshaft projecting from the block of an internal combustion engine. The ends of the jaws are tapered and serrated so that upon being urged toward the block they are forcefully and securely interposed between the crankshaft and the encircling resilient member of an oil seal. The oil seal is lodged within the customary oil seal well formed in the block where the crankshaft emerges from the block. Thus, when the two jaws are thereafter spread apart with substantial force, and the two adjacent portions of the resilient seal member are deformed radially outwardly, the gripping effort between the serrated jaws and the resilient seal member is so great that the seal can thereafter be moved axially out of its well. Axial movement is effected by rotation of a threaded axial stem having a thrust shoulder bearing against the outer end of the crankshaft, the threaded stem being in threaded engagement with the chassis so as to afford selective relative movement between the chassis and the serrated jaws on the one hand and the outer end of the crankshaft on the other hand.



3,651,558

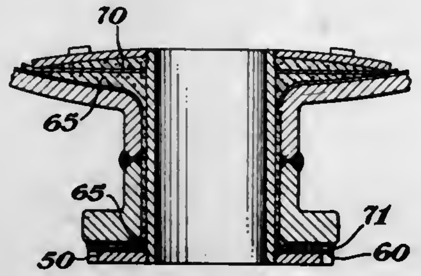
METHOD OF REPAIRING A CERAMIC-LINED NOZZLE

Raymond Burt Chase, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 726,034, May 2, 1968, now abandoned. This application June 8, 1970, Ser. No. 35,558

Int. Cl. B22d *19/10;* **B23p** *7/00*

U.S. Cl. 29—401 **3 Claims**



In a glass or ceramic-lined reactor vessel for use with corrosive contents, to repair major damage of a nozzle, damaged portions of the nozzle are first removed as by cutting torch, the remaining nozzle neck wall is edge-tapered for welding, a replacement nozzle opening comprising a flange is provided and attached by welding inside and out, any surplus inside bead or rod slag being brought to a conforming surface; the nozzle and adjacent portions of the reactor vessel are sheathed with a metal cover, the metal being from one-eighth to one-half inch, both inclusive, in thickness, and being such as is substantially inert under the conditions of use of the equipment being repaired; the cover comprising essentially an outer face disc and an inner face disc each defining a threaded central opening, a tubular nozzle interior sheath, the ends of the nozzle interior sheath and the inner aspects of the openings of the discs being cooperatively threaded; any space otherwise void between repair sheath and nozzle interior surface being filled with a curable resin filler that is inert and insoluble when cured; the nozzle being drawn securely into place and cooperating deformable chemically gaskets being deformingly seated, by tightening of especially the threaded outer face disc onto the threaded tubular sheath.

3,651,559

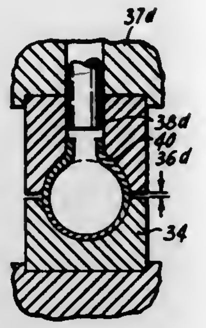
MANUFACTURING A SEAMLESS PRESSURE VESSEL

Andrew W. Lawlor, Erie, Pa., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Apr. 13, 1970, Ser. No. 27,785

Int. Cl. B23p *17/00;* **B21h** *1/14*

U.S. Cl. 29—422 **8 Claims**



Improved method of manufacturing metallic seamless spherical pressure vessel wherein the vessel is controllably worked and heat treated during fabrication in such fashion that the final vessel has no localized weakened areas and full advantage is taken of the spherical shape of the vessel.

3,651,560

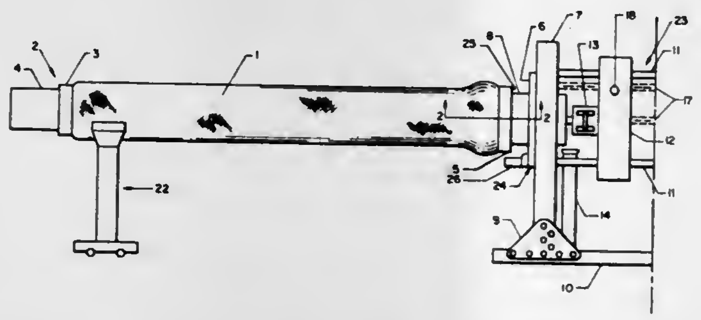
METHOD OF MAKING A RESIN IMPREGNATED FILAMENT WOUND ARTICLE

Russell J. Phillips, Delafield, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 25, 1970, Ser. No. 49,639

Int. Cl. B23p *17/00*

U.S. Cl. 29—423 **4 Claims**



An improved method of making a filament wound article. The mandrel upon which the article is filament wound is first fitted with an annular collar at an end thereof. The article is produced by winding resin impregnated filaments about the mandrel with filaments bearing against the annular collar. A mandrel extracting device is used to remove the mandrel from the filament wound article produced. The mandrel is drawn through an aperture in a pressure surface on the mandrel extracting device, the aperture having a diameter larger than that of the mandrel but smaller than the outer diameter of the annular collar. The annular collar thereby bears against the pressure surface and the annular collar and the filament wound article are forced off the mandrel.

3,651,561

METHOD FOR ASSEMBLING A LINE GUIDE TO A FISHING ROD

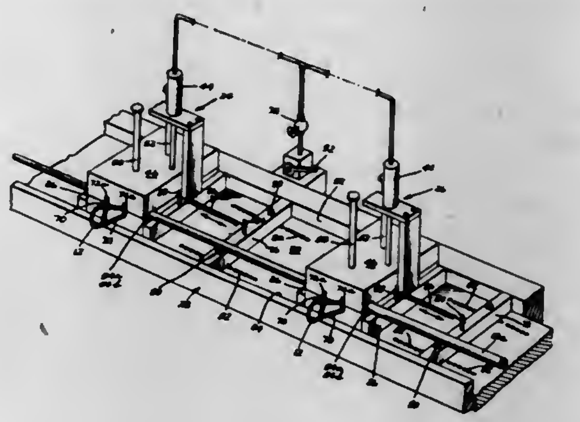
Barry D. Cousin, Walkerton, Ind., assignor to Plas/Steel Products, Inc., Walkerton, Ind.

Filed Apr. 20, 1970, Ser. No. 30,133

Int. Cl. B23p *11/02*

U.S. Cl. 29—450 **4 Claims**

This invention relates to a method for attaching a line guide to a fishing rod. The line guide has two collinearly extending legs flush with the surface of a fishing rod securely affixed thereto by means of preformed helical wire coils surrounding both the legs and the rod. The method and apparatus for attaching the line guide to the rod includes a pair of relatively movable fixtures having die cavities adapted to receive an assembly of helical wire coils and a line guide in such position that the legs of the line guide are fitted into the coils. The fixtures are provided with collinear die bores through which may be inserted in succession a tapered rod, the die bores being in registry with the wire coils such that the rod can pass therethrough. The rod is forced into tight engagement with the coils relative movement between the fixtures facilitating engagement first with the coils in the recess of one fixture and secondly with the coils in the recess of the other fixture.



3,651,562

METHOD OF BONDING SILICON TO COPPER

Kenneth G. Hambleton, Baldock, England, assignor to National Research Development Corporation, London, England

Filed Nov. 25, 1969, Ser. No. 879,895

Claims priority, application Great Britain, Nov. 30, 1968, 56,981/68

Int. Cl. B23k *31/02*

U.S. Cl. 29—473.1 **9 Claims**

The present invention concerns a method of mounting a silicon semiconductor device onto a copper heat sink in which a flash of titanium is first evaporated onto the contacting surface of the semiconductor device followed by coating the titanium and the contacting surface of the heat sink with either silver or gold and bonding the semiconductor device and the heat sink together by thermo-compression.

3,651,563

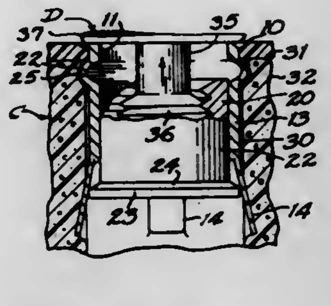
DOUBLE ANCHORING MECHANICAL SANDWICH PANEL FASTENER INSERT

Josef F. Volkmann, Tustin, Calif., assignor to Shur-Lok Corporation, Santa Ana, Calif.

Filed Dec. 18, 1969, Ser. No. 886,292

Int. Cl. E04c *2/36;* **F16b** *39/22*

U.S. Cl. 29—523 **3 Claims**

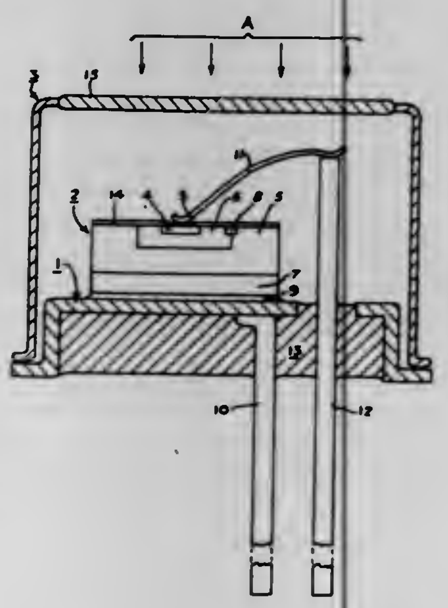


A fastener insert which develops clamping anchorage to a panel skin by forming a bulbed secondary head in a shell by compression resulting from drawing a nut into the shell under interfering engagement between the two, and secondary anchorage in the panel core by a plurality of petals which are expanded into the core by action of an annular head on the nut as the nut is drawn into the shell.

3,651,564
METHOD OF MANUFACTURING RADIATION-SENSITIVE SEMICONDUCTOR DEVICES

William Brian Glass, London, England, assignor to Westinghouse Brake and Signal Company Limited, London, England

Filed Jan. 24, 1969, Ser. No. 793,742
Claims priority, application Great Britain, Feb. 2, 1968, 5,361/68
Int. Cl. B01j *17/00;* **H01l** *7/00*
U.S. Cl. 29—574 **7 Claims**

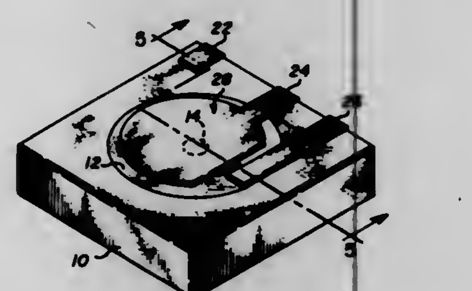


A method of manufacturing semiconductor devices of the type including a radiation-sensitive region wherein the radiation-sensitive region of each device is purposely made to have a sensitivity greater than a required sensitivity. The sensitivity of each device is then determined and a translucent screen is provided for the device, the translucence of the screen being dependent upon the radiation sensitivity of the particular device.

3,651,565
LATERAL TRANSISTOR STRUCTURE AND METHOD OF MAKING THE SAME

David V. Talbert, Santa Cruz, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sept. 9, 1968, Ser. No. 758,340
Int. Cl. B01j *17/00;* **H01l** *7/24*
U.S. Cl. 29—590 **6 Claims**

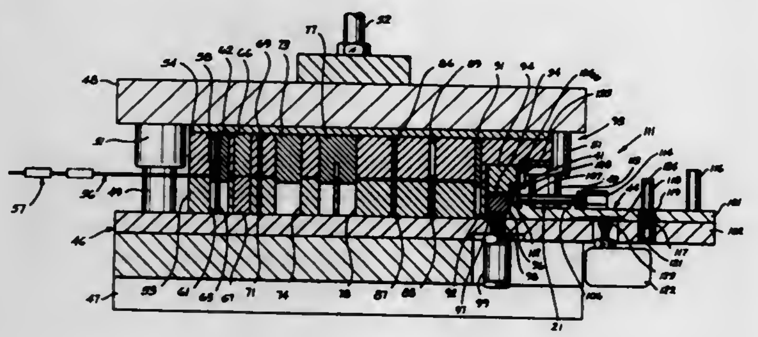


A process for making a lateral PNP semiconductor device having a β within the range of 5 to 500 wherein, during a heating stage, a metallic layer is left covering the surface of the water above substantially all of the base region separating the emitter and collector regions. The resultant effect is to cause a marked increase in the current gain of the transistor thus constructed over those similar devices manufactured in accordance with prior art processes.

3,651,566
METHODS OF FORMING AND ASSEMBLING ARTICLES WITH A SUPPORT

Jack W. Kincaid, Heath, and Michael M. Simpson, Columbus, both of Ohio, assignors to Western Electric Company Incorporated, New York, N.Y.

Filed May 26, 1969, Ser. No. 827,647
Int. Cl. H01f *7/05;* **H01r** *9/00*
U.S. Cl. 29—602 **7 Claims**

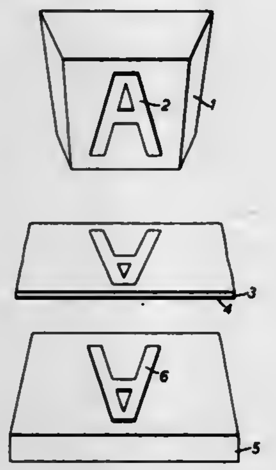


A plurality of terminals are notched, sheared and formed successively and simultaneously from a blank metallic strip. A plastic bobbin is located adjacent to a final forming and inserting station where the terminals are inserted into associated openings of prepositioned bobbins. Facilities are provided for gripping and carrying the successively and simultaneously notched, sheared and formed terminals during the insertion of the terminals into the bobbins and for holding the facilities in a withdrawn position during a period when the bobbins, with the inserted terminals, are withdrawn from the final forming and inserting station.

3,651,567
ELECTRICAL COMPONENTS

John A. Fenner, Ilford, Essex, and William L. Welman, Ilford, both of England, assignors to The Plessey Company Limited, Ilford, England

Filed June 13, 1969, Ser. No. 833,088
Claims priority, application Great Britain, June 14, 1968, 28,573/68
Int. Cl. B41m *3/08;* **H05k** *3/00*
U.S. Cl. 29—625 **4 Claims**

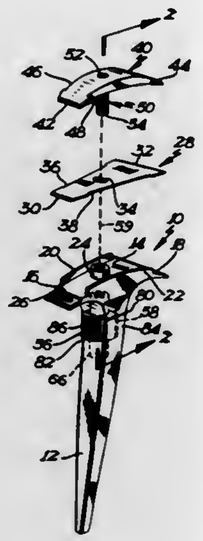


An electrical or electronic component including a substrate carrying an electrically conductive film, the film having been laid down by a dry printing process. This process uses a heated die and a thin plastics foil carrying a metal layer a portion of which layer is embossed onto the substrate to give the required film.

3,651,568
TRIMMING RAZOR

James L. Barry, Bloomington, and Terrance R. Mitchell, Minneapolis, both of Minn., assignors to Barbers Hairstyling for Men, Inc., Minneapolis, Minn.

Filed Oct. 3, 1969, Ser. No. 863,619
Int. Cl. B26b *21/20*
U.S. Cl. 30—70 **8 Claims**

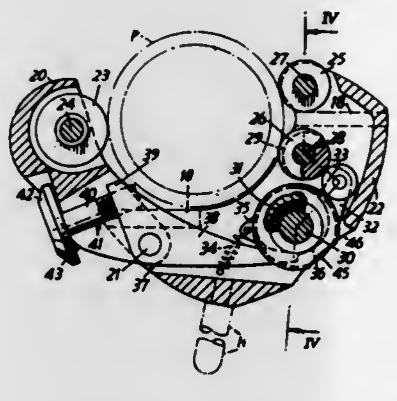


A trimming razor has blade support edges of unequal lengths for the corresponding cutting edges of a two-edged blade. One blade edge is preferably less than half the length of the other blade edge, and both blade edges are preferably less than 1 inch long. A razor subassembly is also disclosed in which one of two interengaging body and handle members has an axial recess, with an adjusting knob rotatably supported in the recess. The knob is inserted axially when the body and handle are separated and is retained in the recess when the body and handle are assembled. Rotation of the knob moves a cap member into or out of a blade retaining position.

3,651,569
DEVICE FOR WORKING A CYLINDRICAL WORK-PIECE

Alfred Erwin Reginald Arnot, The Bell House, Baughurst, Basingstoke, Hampshire, England

Filed Apr. 18, 1969, Ser. No. 817,313
Claims priority, application Great Britain, Apr. 22, 1968, 1,899/68
Int. Cl. B23d *21/04;* **B23b** *5/14*
U.S. Cl. 30—95 **24 Claims**

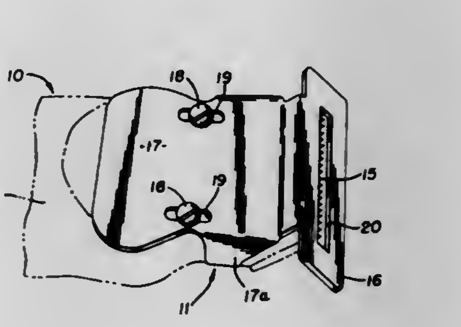


A pipe cutter or the like, comprising a frame carrying a movable cutting tool; rollers mounted on the frame to engage the pipe, and one of said rollers being driven by rotation of the cutter relative to the pipe; and a drive arrangement operated by the driven roller to feed the cutting tool radially into the pipe material as the cutter revolves relatively around the pipe. The drive which feeds the tool includes a one-way clutch device and a manually-operated adjustor is provided to reset the cutting tool prior to the start of a cutting operation.

3,651,570
HAIR CUTTING CLIPPER ATTACHMENT

Ermy W. Groves, Columbus, Ohio, assignor to Donald L. Groves, Columbus, Ohio, a part interest

Filed June 8, 1970, Ser. No. 44,141
Int. Cl. B26b *19/38*
U.S. Cl. 30—233 **3 Claims**

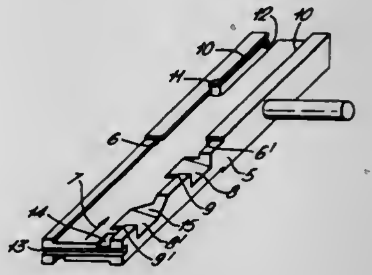


An adjustable attachment for standard hair cutting clippers which includes a slotted bearing head that bears flat against the hair so that it can be effectively used by an amateur to cut and trim the hair in a proper manner.

3,651,571
CARPET CUTTER BLADE HOLDER

Richard Bernard Neale, Langston, Newport, England, assignor to Better Cutting Tools (Newport) Limited, Newport, Great Britain

Filed Dec. 23, 1969, Ser. No. 887,697
Claims priority, application Great Britain, Dec. 24, 1968, 61,439/68
Int. Cl. B26b *29/02*
U.S. Cl. 30—162 **7 Claims**



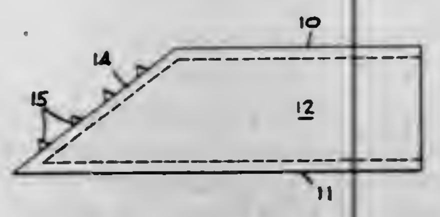
The invention relates to cutter blade holders and cutter blades for use in the manufacture of tufted carpets. The conventional strip like blades slide into the holders and are rigidly located therein by raised projections in the surface of the blade located in slots in the holder.

3,651,572
WINDSHIELD ICE SCRAPER

Steve Marich, 7 Marine Drive, Buffalo, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,497
Int. Cl. B26b *3/00*
U.S. Cl. 30—169 **4 Claims**

A windshield ice scraper in the form of a relatively flat box open at one end and having an oblique wall at its opposite end. The oblique wall and one of the flat walls of the box structure form a chisel-like scraping edge and the oblique wall has surface projections forming a rasp surface for scraping tenacious ice from a windshield. The user inserts his fingers in the open end of the box for using either the chisel



edge or the rasp surface, the box being reversed in position in changing from one to the other.

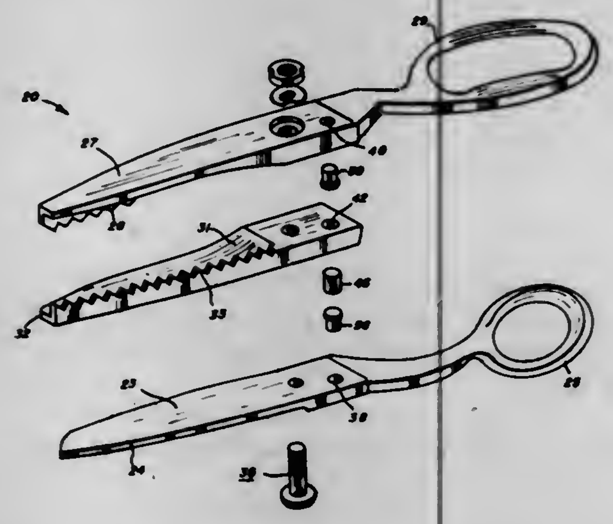
3,651,573
BLADE LOCK FOR SCISSORS

Herman L. Kaplan, Woodmere, N.Y., assignor to Cole National Corporation

Filed Apr. 22, 1970, Ser. No. 30,748

Int. Cl. B26b *13/00*

U.S. Cl. 30—226 **14 Claims**



Locking means for a pair of scissors which have a straight cutting blade, a pinking blade and an intermediate combined straight cutting and pinking blade. The locking means comprises openings which extend laterally through each of the aforementioned blades which openings are aligned in a given pivotal position of the blades. A locking pin is located in the opening of the combined straight cutting and pinking blade and is slightly longer than this opening. The locking pin, therefore, alternately extends into the opening in either the straight cutting blade or the pinking blade. The combined straight cutting and pinking blade is alternately locked to the straight cutting blade or the pinking blade depending upon the opening in each of these blades into which the locking pin extends. Means are provided for moving the locking pin between the aforementioned positions. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,651,574
APPARATUS FOR PLOTTING AND MEASURING COURSES ON MAPS

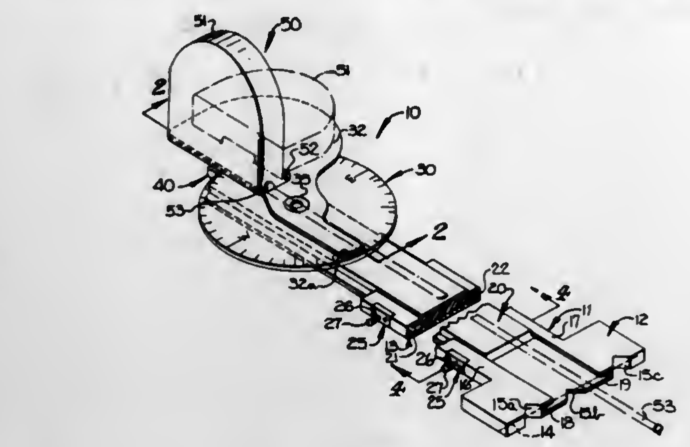
Ronald F. Burkart, 3101 Shenandoah, Charlotte, N.C.

Filed Aug. 3, 1970, Ser. No. 60,522

Int. Cl. A47b *85/02*

U.S. Cl. 33—1 SB **11 Claims**

An apparatus for plotting and measuring courses on maps between points of departure and destination including a base having reference means for alignment with an edge of the map and arm means slidably and adjustably mounted on the base. A compass rose is rotatably and adjustably mounted on the arm for positioning relative to the point of departure and the directional orientation of the map. A retractable rule means is independently mounted for rotation about the axis of rotation of the compass rose and is retractably extendible radially thereof from the point of departure to the point of destination for indicating the distance and direction between the points of departure and destination.



3,651,575
RECTANGULAR, LARGE-SIZED CHEESE MOULD

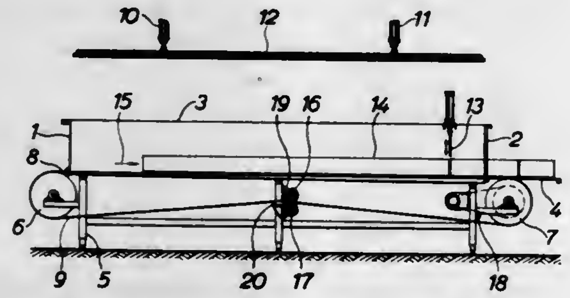
Vaino Kataja, Helsinki, Finland, assignor to MKT-tehtaaty Oy, Helsinki, Finland

Filed Apr. 9, 1970, Ser. No. 26,968

Claims priority, application Finland, Apr. 11, 1969, 1066/69

Int. Cl. A01j *25/08, 25/15*

U.S. Cl. 31—44 **4 Claims**



This invention relates to an improvement in a rectangular, large cheese mould, one end of which has been designed as a door through which the bottom of the mould and the cheese mattress resting upon this may be extracted in its own plane from the mould, the bottom of the mould consisting of perforated band or net webbing permeable to whey. The invention is characterized in that the bottom of the mould consists of an endless wire, the upper run of which supports the cheese mattress and in connection with the lower run of which a wire-cleaning device has been fitted.

3,651,576
ELECTROACOUSTIC MASSAGER FOR THE GUMS

Frank Massa, Cohasset, Mass., assignor to Massa Division Dynamics Corporation of America, Hingham, Mass.

Filed May 18, 1970, Ser. No. 37,953

Int. Cl. A61c *3/00*

U.S. Cl. 32—40 R **20 Claims**

A waterproof dental probe is mounted at one end of a slender handle. The probe includes an ultrasonic transducer

for vibrating the surface of the probe. Thus, ultrasonic vibrations may be transferred to the gums and teeth by applying the vibratile probe to the surface thereof.

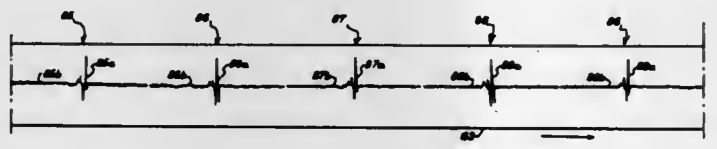
3,651,577
METHOD AND MEANS FOR VISUAL PRESENTATION OF OCCLUSAL SOUNDS AND FOR ANALYSIS AND COMPARISON THEREOF

Henry Stephen Brenman, Suite 2850 Medical Towers 255 South 17th St., Philadelphia, Pa.

Filed Oct. 10, 1969, Ser. No. 865,304

Int. Cl. A61c *9/00*

U.S. Cl. 32—19 **17 Claims**



Occlusal sounds recorded by a microphone attached to a patient's head are recorded as electrical signals in real time and converted to a visual wave pattern on tape with an expanded time base to permit analysis; individual records can also be collected by a central computer from different locations and converted to a digital basis for comparison of a multitude of separate recordings.

ERRATA

For Classes 33—1 and 33—180 see:
Patent Nos. 3,651,574 and 3,651,581

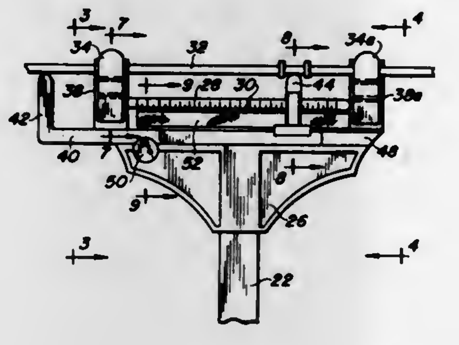
3,651,578
BOW CHECKING AND CALIBRATING DEVICE

Thomas Allen Saunders, 2223 25th St., and Charles A. Saunders, 313 Morton Road, both of Columbus, Nebr.

Filed Feb. 2, 1970, Ser. No. 7,888

Int. Cl. G01b *3/38*

U.S. Cl. 33—180 R **4 Claims**



A bow square for checking and recording the bracing height, nocking point, and locations for a kisser and peep sight of an archery bow. The device comprises an elongated plate provided with a graduated scale for measuring the bracing height, and a cross bar extending transversely of the elongated plate and having a scale extending parallel to the bowstring. A pointer mounted on a slidable bar may be moved along the scale on the cross bar to indicate the nocking point and the correct locations of the kisser, and peep sight. Marking receiving means are provided parallel to each scale for recording the correct locations and adjustments.

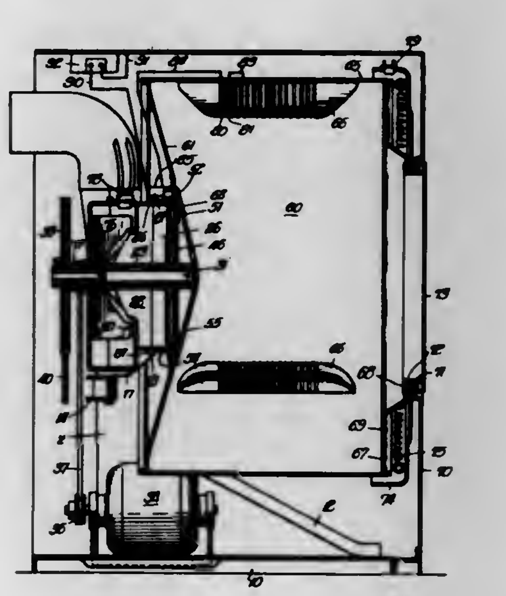
3,651,579
DRIER CONTROL

Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Original application Dec. 9, 1963, Ser. No. 329,155, now Patent No. 10191971, Continuation of application Ser. No. 22,323, Apr. 14, 1960, now abandoned. Divided and this application Dec. 27, 1966, Ser. No. 604,757

Int. Cl. F26b *19/00*

U.S. Cl. 34—45 **28 Claims**



This invention is directed to a control for determining the moisture content of articles. Electrodes are positioned to be bridged by samples of articles in a treatment apparatus. In at least one embodiment, a capacitor is connected in circuit with the electrodes so that the charge thereon varies with the moisture content of the material as measured by the resistance of the material between the electrodes. A trigger circuit containing an electrical breakdown device having an effectively infinite resistance in one condition, as, for example, a neon lamp, provides a signal when the material achieves a predetermined moisture content. A switch responds to the signal for operating a control.

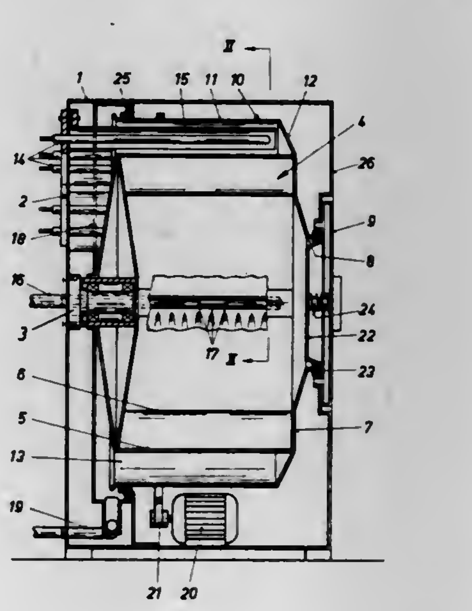
3,651,580
DRUM DRYER FOR LAUNDRY

Anfried Meyer, Neckargartacherstrasse, 7101 Frankenbach, Germany

Filed Oct. 20, 1969, Ser. No. 867,446

Int. Cl. F26b *11/04*

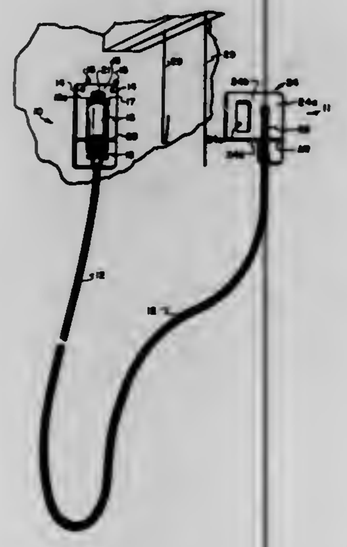
U.S. Cl. 34—133 **15 Claims**



A drum dryer for laundry, consisting of an inner drum with a perforated inner drum jacket rotatably mounted in a stationary housing, a heating unit for heating the air conducted into the inner drum and an outer drum surrounding this inner drum, the inner surface of which outer drum is cooled by a liquid in order to condense the steam emanating from the inner drum. The outer drum likewise executes a rotary movement, and the cooling fluid is conducted by means of a feed line directly into the annular space formed between the inner drum and the outer drum.

3,651,581
METHOD AND APPARATUS FOR HANGING CEILINGS

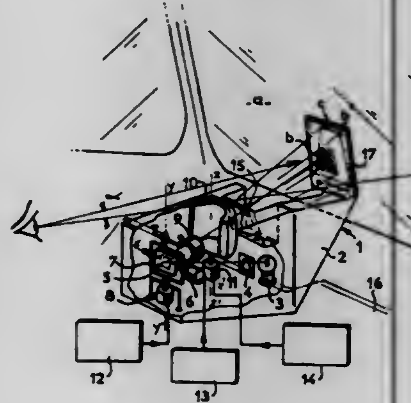
Ervin Lehman, 558 East 1st N., Logan, Utah
Filed Nov. 24, 1969, Ser. No. 879,046
Int. Cl. G01c *5/04*
U.S. Cl. 33—209 **1 Claim**



A method of easily determining the ceiling suspension height of support wires for a hanging ceiling and apparatus including a reservoir container having a marker line thereon and a wire bending level indicator with a marker line thereon interconnected by a transfer tube, whereby the ceiling elevation can be easily set and then be transferred to any support wire point within the reach of the transfer tube.

3,651,582
METHOD OF GENERATING A NON-COLLIMATED SYNTHESIZED DISPLAY TO ASSIST IN PILOTING AN AIRCRAFT, AND SYSTEM FOR PERFORMING THE SAME

Jean Lavarenne, Villecresnes, France, assignor to Nord-Aviation Societe Nationale de Constructions Aeronautiques, Seine, France
Filed Oct. 24, 1969, Ser. No. 868,984
Claims priority, application France, Oct. 24, 1968, 171260
Int. Cl. G09b *9/08;* **G06g** *7/78*
U.S. Cl. 35—10.2 **11 Claims**

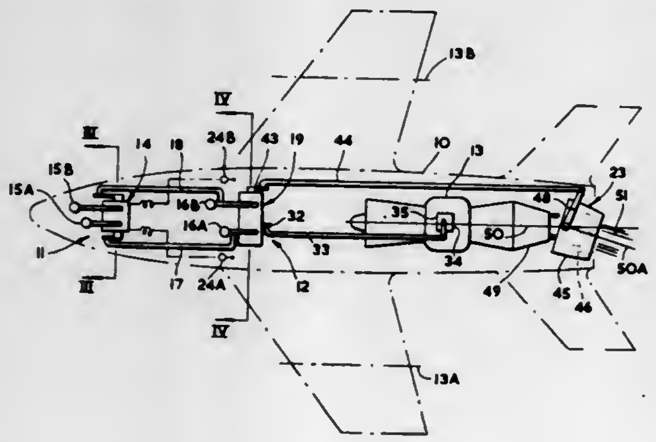


A system for providing a non-collimated synthesized display, by way of a pilot's aid, notably during the approach and precision landing phase in poor visibility.

A movable and deformable synthesized picture of the runway, as the pilot would normally see it at any time, is supplied and so correlated with a fixed reference frame on the front window of the cockpit that the overall interpretation of these two data provides the pilot with clear and intuitive indications enabling him to carry out the necessary maneuvers or providing him with confirmation of the proper functioning of an operative automation system.

3,651,583
TRAINER AIRCRAFT

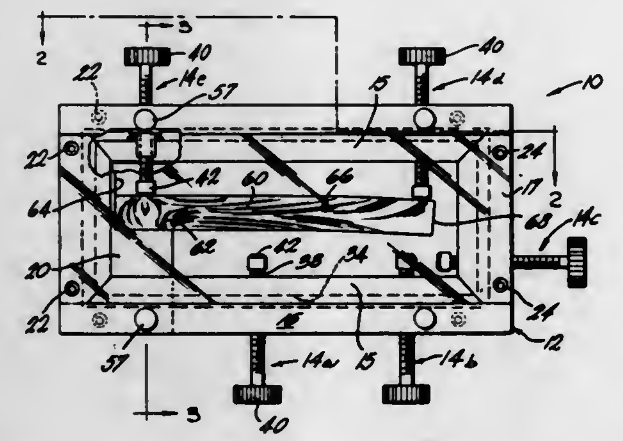
Kenneth William Clark, Filton, and Reginald Frank Hopton, Fishponds, both of England, assignors to Rolls-Royce Limited, Derby, England
Filed Apr. 24, 1970, Ser. No. 31,720
Int. Cl. B64g *7/00;* **G09b** *9/08*
U.S. Cl. 35—12 B **3 Claims**



A trainer aircraft having an actual engine and means for simulating one-sided power loss in a pair of imaginary engines situated at opposite sides of the aircraft. Two throttle control levers are connected to feed to the actual engine a signal proportionate to the sum of the lever settings while a signal proportionate to difference of the lever settings in fed to a means for imparting a yawing moment on the aircraft, so that if one of the levers is retracted while the other remains advanced the effect will be as if one of the imaginary engines has suffered a power loss while the other remains at power.

3,651,584
APPARATUS FOR VISUALLY DEMONSTRATING STRESS PATTERNS IN A PHOTOELASTIC MODEL

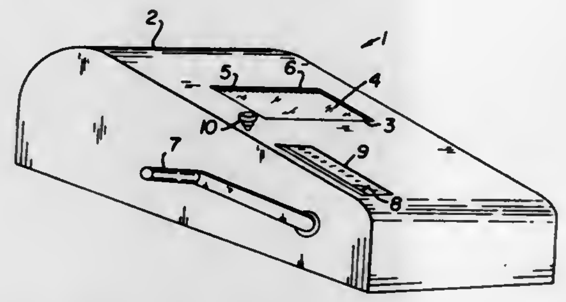
Charles C. Perry, Ann Arbor, Mich., assignor to Vishay Intertechnology, Inc., Malvern, Pa.
Filed May 27, 1970, Ser. No. 41,015
Int. Cl. G09b *23/06*
U.S. Cl. 35—19 R **7 Claims**



Apparatus consisting of a frame in which a photoelastic model of a structural member is mounted in a floating position and a plurality of separately actuatable load applying members are movably mounted on the frame for applying various loads to the model to visually demonstrate various stress patterns in the model corresponding to the various loads applied thereto.

3,651,585
TESTING MACHINE

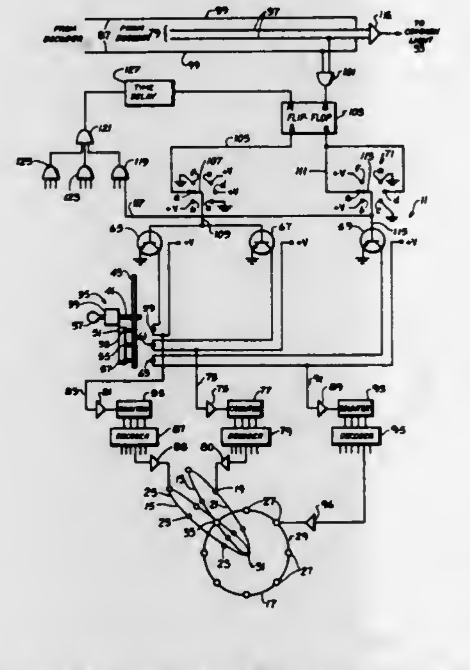
Guido Perrella, Montreal, and Robert Genest, Outremont, Quebec, both of Canada, assignors to Testograph Limited, Lachine, Quebec, Canada
Filed Mar. 30, 1970, Ser. No. 23,777
Claims priority, application Canada, Apr. 10, 1969, 048,322
Int. Cl. G09b *19/00*
U.S. Cl. 35—22 R **4 Claims**



A psychological test taking apparatus having its own source of energy, independent of electrical outlets and the like. A series of questions on a paper roll in the machine sequentially appear in a window large enough for the testee to provide an answer beneath the question. Means is provided for actuation by the testee to open the window and to effect actuation of a timing mechanism. Expiry of a given time period prior to the completion of the answer automatically closes the window and marks the expired time on the paper and there is means responsive to actuation by the testee for closing the window and marking the paper if the answer is completed prior to the expiry of the time.

3,651,586
DISPLAY DEVICE

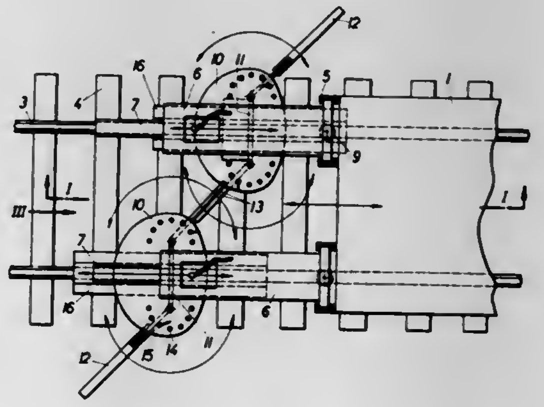
James W. Funk, 9019 Reading Ave., Los Angeles, Calif.
Filed June 18, 1970, Ser. No. 47,292
Int. Cl. G09b *27/02, 29/00*
U.S. Cl. 35—45 **9 Claims**



A display device comprising first and second sets of lights arranged in an elliptical pattern and a third set of lights arranged in a generally circular pattern. The elliptical patterns intersect and one light which is common to both of the first and second sets is located at the region of intersection. The common light is also located substantially along the circular pattern. First and second circuits alternately and sequentially illuminate the lights of the first and second sets, respectively, to create the illusion of movement along the elliptical patterns. Eventually both of the circuits will simultaneously illuminate the common light. When this occurs, a third circuit becomes operative to alternately and sequentially illuminate and extinguish the lights in the circular pattern to provide an illusion of movement along the circular path. At the same time, the lights of the two elliptical patterns are extinguished.

3,651,587
MOBILE BALLAST TREATING MACHINE

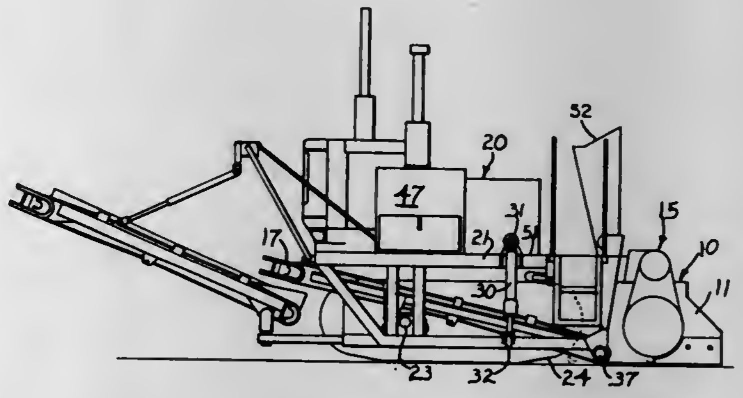
Franz Plasser, and Josef Theurer, both of Johannesgasse 1010, Vienna, Austria
Filed July 17, 1969, Ser. No. 842,564
Claims priority, application Austria, July 26, 1968, A 7317/68
Int. Cl. E01b *27/02*
U.S. Cl. 37—105 **10 Claims**



A mobile ballast treating machine carries a plow unit including two plows respectively associated with one of the track rails. The plow unit extends across the ballast bed and one of the plows is adjustable in relation to the other plow in the direction of elongation of the track.

3,651,588
GRADE TRIMMING APPARATUS

Raymond A. Hanson, Box 19148 Spokane International Airport, Spokane, Wash.
Filed Sept. 18, 1969, Ser. No. 859,146
Int. Cl. E02f *5/00*
U.S. Cl. 37—108 R **3 Claims**



A mobile supporting unit for a surfacing apparatus such as a transverse rotary trimmer for excavating and trimming a pavement base to grade along a sidewalk, curb or roadway. The mobile supporting unit comprises a longitudinally open rigid framework carried by transversely spaced track assemblies. The rigid frame is pivotally connected to each track assembly about a common transverse axis and is further mounted for pivotal movement about a longitudinal center axis between the track assemblies. Power suspension means is provided to selectively modify the orientation of the frame and surfacing apparatus relative to the track assemblies for maintaining a preselected grade and cross leveling attitude during surface operations along a longitudinal path.

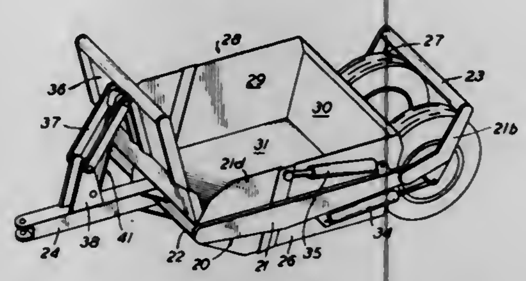
3,651,589
EARTH MOVING SCRAPER AND ACTUATOR SYSTEM THEREFORE

Eldon J. Reynolds, Austin, Tex., assignor to Reynolds Research & Manufacturing Corporation

Continuation of application Ser. No. 714,830, Mar. 21, 1968, now abandoned. This application Apr. 16, 1970, Ser. No. 29,126

Int. Cl. E02f *3/00*

U.S. Cl. 37—129 **7 Claims**



An earth moving scraper comprising an open, rectangular frame supported at its rear end by wheels and having a tongue at its front end for connection with a tractor. A bucket having a blade across the lower edge of its open front end is pivotally mounted on the frame for swinging between a generally horizontal, loading position and a generally vertical, unloading position. The sides of the frame are hinged intermediate their ends to permit the bucket to be raised above the surface of the soil upon breaking of the hinge. A reciprocating actuator is connected between the bucket and the frame for swinging the bucket between horizontal and vertical positions, and another reciprocating actuator connects the sides of the frame on opposite sides of the hinge for selectively breaking it to raise the bucket and blade above loading position. In one embodiment of the scraper, the opening into the bucket is adapted to be closed by a gate while, in another embodiment, this opening is adapted to be partially closed by an apron. Each of the gate and apron are swung between open and flow restricting positions by means of still another reciprocating actuator connected between it and the frame. Hydraulic systems for operating the actuators include means which prevent these components from moving between their alternative positions in other than a desired sequence.

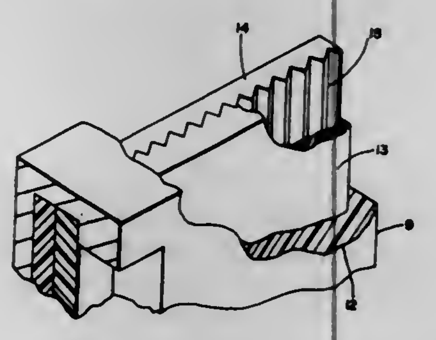
3,651,590
REFLECTION SIGNS AND MARKERS

Floyd O'Neill Thomas, 2316 Harcroft Road, Timonium, Md.

Filed Aug. 4, 1969, Ser. No. 847,206

Int. Cl. G09f *7/100*

U.S. Cl. 40—135 **4 Claims**



Signs having indicia-shaped apertures in an outer framework exposing through the apertures reflective cores recessed within the framework; textured surfaces on the reflective cores provide multi-directional reflectivity contrasting with the outer framework.

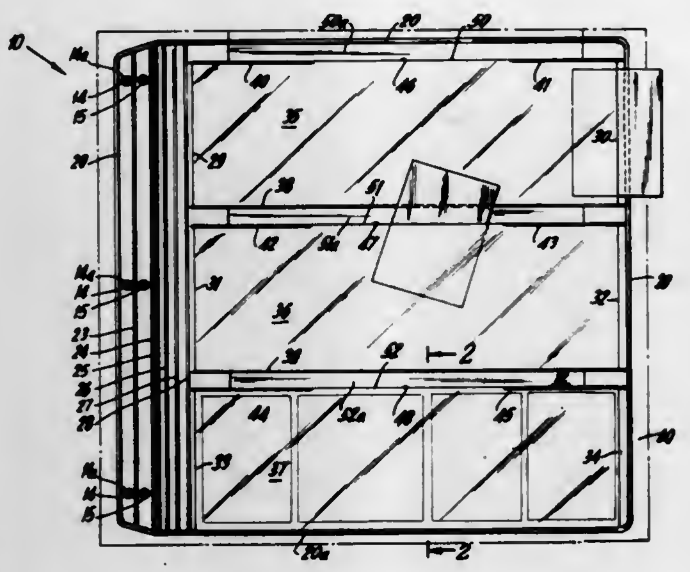
3,651,591
PHOTO ALBUM PAGE

John B. Woodyard, New Providence, N.J., assignor to The C. R. Gibson Company, Norwalk, Conn.

Filed Oct. 20, 1970, Ser. No. 82,372

Int. Cl. B42f

U.S. Cl. 40—104.19 **8 Claims**



A photograph album page is made of precut sheets of a transparent flexible film material which are sealed to and over the faces of an opaque flexible backing sheet so as to form thereupon photo-protective sleeves extending between slits formed along opposite margins of the transparent sheets. The sheets are made of thermoplastic resin materials and are heat-sealed together along their edges and along the bottom border and partly along the top border of each sleeve portion. Each sleeve thus has a side opening and open ends for easy insertion and removal of photographs which fit under and are viewed through the sleeve. cutaway portions of the transparent sheets along the sleeve portions expose matte areas of the backing which are receptive to photo-identifying pen or pencil markings.

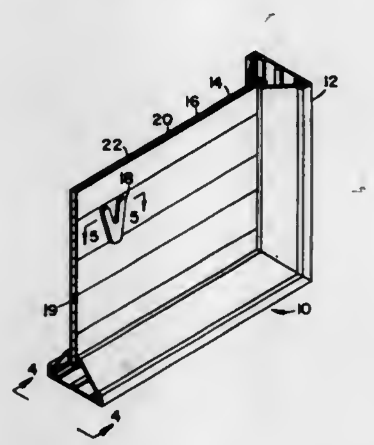
3,651,592
LAMINATED MAGNETIC SIGNBOARD

Harold H. McCormick, 405 Vista Grande, Newport Beach, Calif., and Robert F. Schroeder, 1821 Santiago Drive, Newport Beach, Calif.

Filed May 21, 1970, Ser. No. 39,417

Int. Cl. G09f *7/02*

U.S. Cl. 40—142 A **4 Claims**



A signboard comprising a lightweight laminate incorporating a core of strong lightweight material such as polystyrene between a ferromagnetic sandwich sheet, with a suitable frame and lightweight magnetic symbols presented thereon. The lightweight magnetic symbols are fabricated from a strong lightweight material such as fiberglass or plastic, and are magnetically affixed to selected points on the ferromagnetic surface of the signboard by a magnetic sheet material on each symbol.

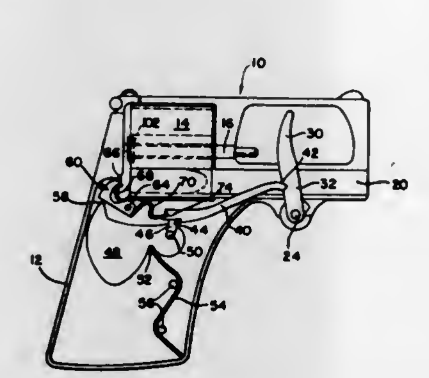
3,651,593
REVOLVER FIRING MECHANISM WITH THE TRIGGER EXTENDING ABOVE AND STRADDLING THE BARREL

Athol Ben Clark, 3804 Westlawn, Amarillo, Tex.

Filed Mar. 27, 1970, Ser. No. 23,259

Int. Cl. F41c *1/00*

U.S. Cl. 42—65 **10 Claims**



A body means has a cartridge cylinder rotatably supported thereby. A barrel is also supported by the body means and is aligned with the lower part of the cylinder. A trigger is pivotally supported by the body means and includes a pair of portions extending on opposite sides of the barrel so that a portion of the trigger straddles the barrel. Revolving means for revolving the cylinder is operatively connected with one of said portions of the trigger at one side of the revolver and is disposed within a handle portion of the body means. A firing means for firing the revolver is operatively connected with the other of said portions of the trigger at the opposite side of the body means and is also disposed within said handle portion.

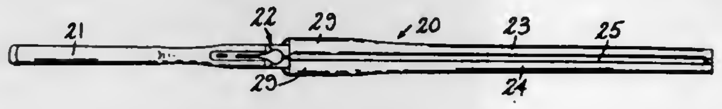
3,651,594
SHOTGUN BARREL CONSTRUCTION

Robert L. Hillberg, 780 West Main St., Cheshire, Conn.

Original application Jan. 22, 1968, Ser. No. 699,476, now Patent No. 3,546,417. Divided and this application Oct. 6, 1969, Ser. No. 870,858

Int. Cl. F41c *21/08, 21/06*

U.S. Cl. 42—76 R **5 Claims**



A double-barrel assembly for a double-barrel shotgun wherein the barrels are joined at the muzzle ends thereof by a member which spaces and rigidly holds the barrels in fixed relation. A rib of molded nonmetallic is so formed as to be locked to the barrel assembly.

3,651,595
ELECTRIC SHRIMP TRAWL

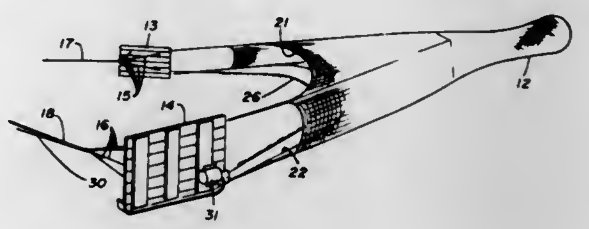
James Lee Newman, 1321 Glen Cove, Richardson, Tex.

Filed Aug. 14, 1970, Ser. No. 63,835

Int. Cl. A01k *73/02*

U.S. Cl. 43—9 **14 Claims**

A first electrode is attached to the footrope of an otter-type shrimp trawl net and a second electrode is attached to the tickler chain of the net. The two electrodes are periodically energized by a power supply located on the towing boat which charges and discharges a capacitor located on one of the otter doors of the net. The capacitor periodically discharges through the two electrodes and stimulates shrimp embedded in the surface of the sea bottom lying between the electrodes.



3,651,596
FUEL ELEMENT, IN PARTICULAR FOR GRILLING AND SMOKING FOOD

John Harry Orsing, Avangsgatan 2, Raa, Sweden

Filed Feb. 13, 1969, Ser. No. 799,030

Claims priority, application Sweden, Nov. 1, 1968, 14830/68

Int. Cl. C10l *11/00;* **A23b** *1/04*

U.S. Cl. 44—40 **7 Claims**

A fuel element for grilling or smoking comprises a refractory casing enclosing the fuel, which retains the fuel and combustion residues thereof but is sufficiently permeable to allow the air necessary for the combustion of the fuel to pass therethrough.

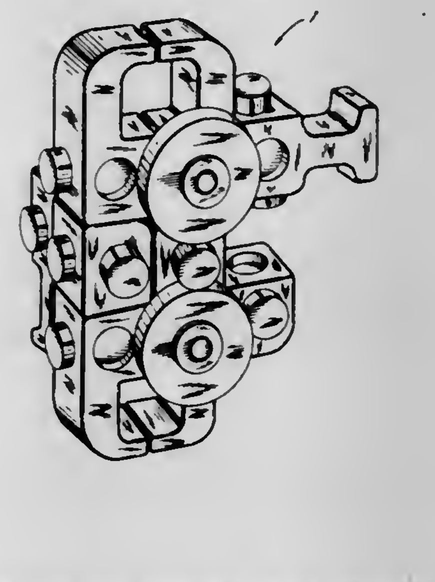
3,651,597
INTERCONNECTING TOY BLOCK SET

Robert Daenen, Erembodegem, Belgium, assignor to Dart Industries, Inc., Los Angeles, Calif.

Filed Aug. 8, 1969, Ser. No. 848,445

Int. Cl. A63h *33/08*

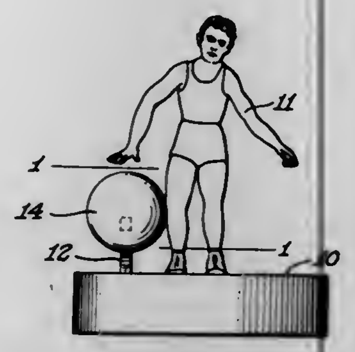
U.S. Cl. 46—25 **9 Claims**



An interconnecting toy building block set that has as its basis a modular concept and in which the basic module is a cube. Each block-like piece of the set has this cubic construction which further includes appropriately positioned male projections and female recesses. These respective projections and recesses provide the means for interconnecting the various blocks. Several of the block-like pieces also include variously shaped protrusions which, although being framed within the confines of cube of similar size to the basic cube, add distinctively to the overall block shapes. It is principally these distinctive shapes which contribute to the many items that may be formed by interconnecting the blocks.

3,651,598
FIGURE AND OSCILLATABLE BALL ASSEMBLY

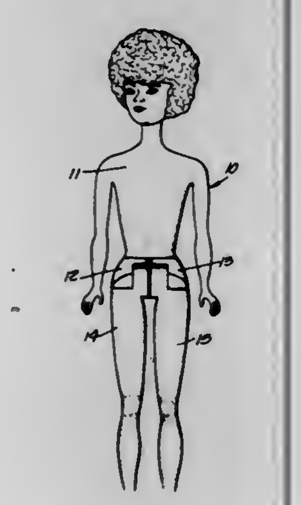
Dean D. Lang, W220, N5459 Town Line Road, Sussex, Wis.
Filed Mar. 19, 1970, Ser. No. 21,115
Int. Cl. A63h *13/00*
U.S. Cl. 46—116 **1 Claim**



A miniature figure of a human being affixed to a base, with one arm outstretched forwardly, the base having a leaf spring fastened by one end to its upper surface adjoining the rear thereof, said spring when at rest being inclined upwardly and forwardly with a simulated basketball fastened to the free end thereof just under the outstretched hand of the figure, whereby when the ball is set in up and down movement it will continue to move for a protracted period as if it were bounding under the hand of the figure.

3,651,599
DOLL LIMB CONSTRUCTION

Carl Akira Morita, Oahu, Hawaii, assignor to Waimanalo Research Laboratory, Waimanalo, Hawaii
Filed May 7, 1970, Ser. No. 35,408
Int. Cl. A63h *3/46*
U.S. Cl. 46—161 **10 Claims**

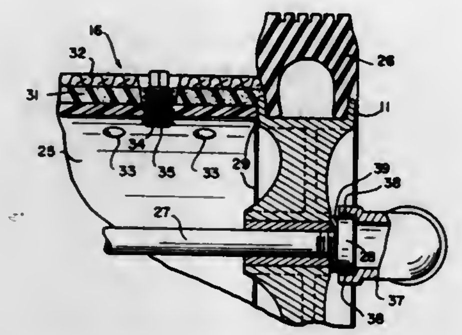


Each limb of a doll includes a hip member removably secured to the torso for individual swiveling movement about an axis parallel to the doll body long dimension. A buttock and thigh member is pivotably secured to each hip member for adjustive rotation about a transverse axis. As a result of the segmented construction of the doll limbs and lower trunk, each leg can be adjustably pivoted about two axes to provide the doll with any desired limb pose.

3,651,600
HERBICIDE APPLICATOR

Bernard E. Ewing, 1717 S. Arlington Ave., Indianapolis, Ind.
Filed May 14, 1970, Ser. No. 37,159
Int. Cl. A01c *23/00*
U.S. Cl. 47—1.5 **5 Claims**

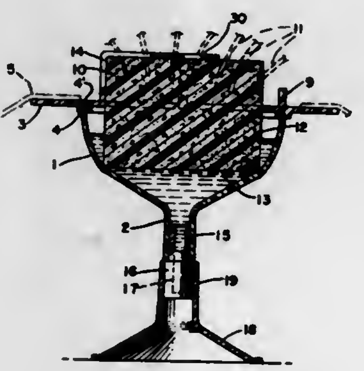
An applicator for applying a liquid herbicide to lawns comprises a hollow drum having an absorbent, herbicide-permeable covering which is fed with herbicide from a supply thereof contained within the drum. Rigid with the drum at its ends are wheels somewhat larger than the drum to maintain the absorbent covering of the drum spaced above the ground. The drum has a hollow, rigid core provided over a limited segment of its periphery with feed openings through which herbicide within the core can reach the absorbent covering.



The interior of the drum is sealed against communication with the atmosphere except through the feed openings, so that when the device is not in use and the openings are disposed either wholly above or wholly below the liquid level in the ground, escape of herbicide will be prevented. An appropriate means is provided for propelling the applicator over a lawn with the wheels supporting the absorbent drum-surface spaced above the ground.

3,651,601
FLOWER HOLDERS

Richard L. La Montagne, 1112 N. Federal Hwy., Boynton Beach, Fla.
Filed July 31, 1970, Ser. No. 59,920
Int. Cl. A47g *7/02*
U.S. Cl. 47—41.12 **3 Claims**



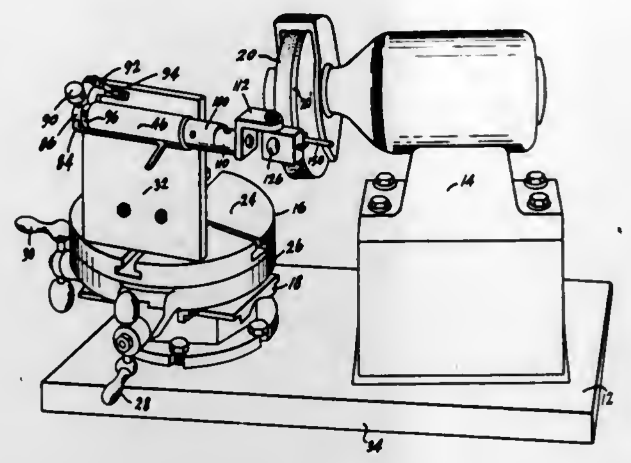
Improvements are set forth in portable flower holders usable for bouquets that are handheld or for stationery decorations. The holder includes a dish or a plurality of interlocked, vertically supportable means for dishes with removable lip means encircling a bouquet arranged in the dish or dishes and for attaching decorative material to enframe a bouquet; spongelike means that is efficiently kept uniformly moist to maintain flowers fresh over a longer period; and a removable funnel-shaped base that is serviceable as a funnel and serviceable in vertically supporting the holder and that is unobtrusively attachable to the holder when the holder is to be held in the hand.

3,651,602
DRILL GRINDING MACHINE

Elmer W. Hillier, Swartz Creek, Mich., assignor to Hillier-Thomas Corporation, Swartz Creek, Mich.
Filed Oct. 19, 1970, Ser. No. 81,649
Int. Cl. B24b *9/00, 47/02*
U.S. Cl. 51—96 **8 Claims**

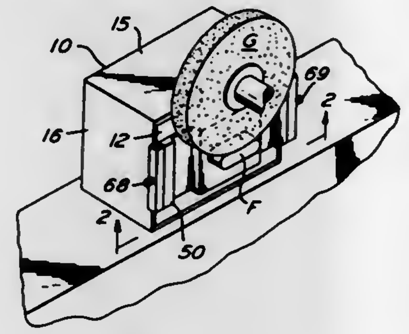
A simplified drill grinding machine capable of enabling unskilled persons to be quickly trained for high-production hand sharpening of drills, end mills, and the like, in which the

indexing of the drill and the rate and degree of grinding thereof is manually provided and controlled while, at the same time, mechanical positioning and "feel" is provided for carrying out the grinding operation.



3,651,603
WORK HOLDER

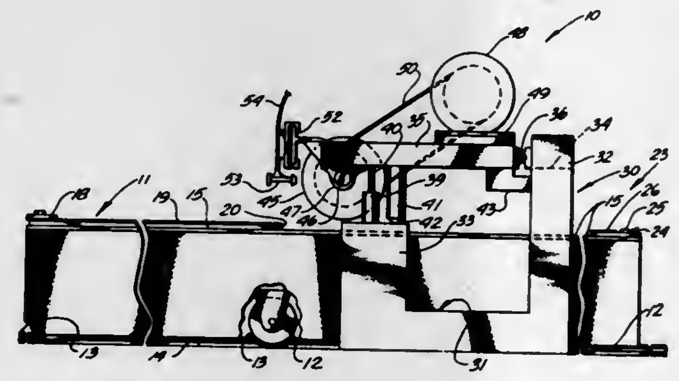
Richard D. Patch, Drexel Hill, Pa., assignor to Castle Tool Specialty Co. Inc., Lansdowne, Pa.
Filed Oct. 5, 1970, Ser. No. 78,060
Int. Cl. B24b *41/06*
U.S. Cl. 51—216 R **9 Claims**



A work holder or positioner for forms is provided which retains forms for continuous grinding of round or square end forms without the use of cams or templates, the forms being held in a turntable which indexes and also travels horizontally for engagement by a grinding wheel with the form to be ground.

3,651,604
PROCESS FOR IMPROVING SURFACE FINISH ON CLAD ALUMINUM SHEETS

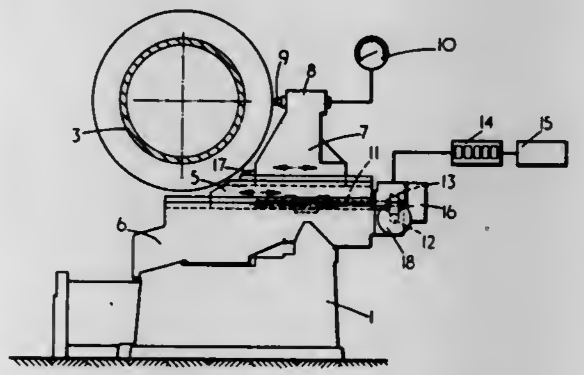
Paul J. Queyrel, Newport Beach, and Jerome O. Koenig, Culver City, both of Calif., assignors to Mill Polishing Corporation, Huntington Park, Calif.
Filed Nov. 25, 1970, Ser. No. 92,562
Int. Cl. B24b *1/00*
U.S. Cl. 51—317 **6 Claims**



A buffing process for improving the surface finish of clad aluminum-alloy sheets. Aluminum sheet stock is burnished according to a specific process program to provide uniform surface appearance and improved corrosion resistance, and the process provides controlled removal of a thin surface layer of cladding used in aircraft-skin aluminum sheets.

3,651,605
GRINDING MACHINES

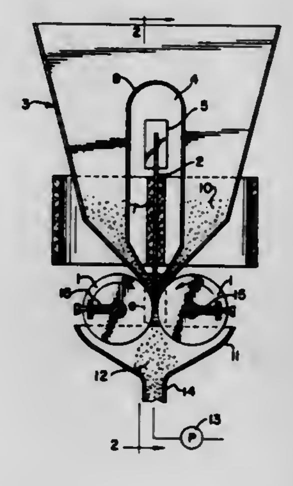
John Noel Tittle, Knutsford, England, assignor to The Churchill Machine Tool Company Limited, Broadheath, Altrincham, Cheshire, England
Filed Feb. 10, 1970, Ser. No. 10,136
Claims priority, application Great Britain, Feb. 11, 1969, 7,276/69
Int. Cl. B24b *5/04*
U.S. Cl. 51—49 **2 Claims**



An apparatus in which the diameters of two rolls are matched by grinding one roll, measuring the position of the surface of the ground roll relative to a datum position using a probe, and grinding the second roll until the surface thereof is in the same position relative to the datum position as was the surface of the first roll.

3,651,606
MARGIN PREPARATION MACHINE

Walter Sawert, La Grange, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Original application Feb. 26, 1968, Ser. No. 708,334, now Patent No. 3,540,168, dated Nov. 17, 1970. Divided and this application Apr. 17, 1970, Ser. No. 29,594
Int. Cl. B24b *7/00, 9/00*
U.S. Cl. 51—80 R **8 Claims**



This apparatus is a particle abrasion machine for can body blank margin preparation. Can body margins are abraded to fresh bare metal surface in preparation for welding by passing the can blank edges between elastomeric rolls which rotate as they pass both sides of the blank sheet. At the same time free flowing abrasive grit is fed into the space between the rotating roll and the sheet material and is thus carried by the rolls to the sheet margin. The grit acts as many cutting edges which cut dirt and other matter from the surface on each side of the sheet. The grit and waste material fall together from the rolls into a collector through which a current of air passes. Suitable means return the grit to the hopper. The separation of grit from waste material is accomplished by a magnet, air blast, or other means.

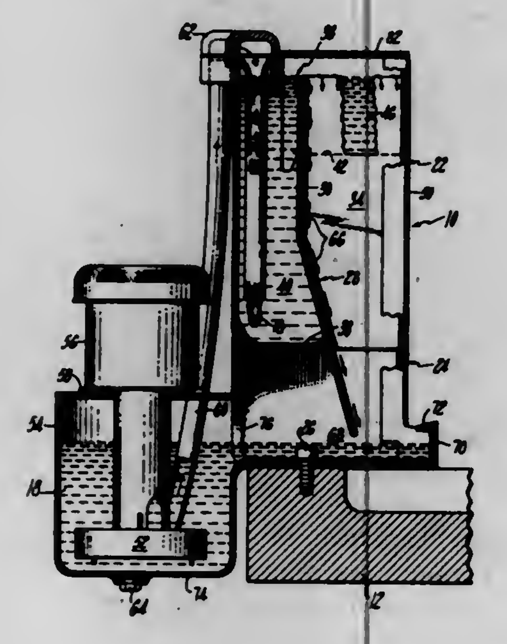
3,651,607
WASTE COLLECTOR

Leighton Lee, II, Guilford, Conn., assignor to The Lee Company, Westbrook, Conn.

Filed Oct. 29, 1969, Ser. No. 872,141

Int. Cl. B24b *55/06*

U.S. Cl. 51—270 **2 Claims**



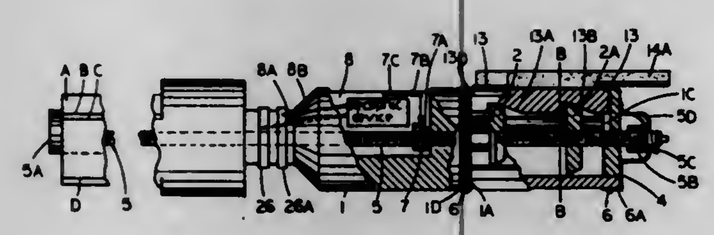
Self-contained waste collector usable in a manufacturing operation and having a spillway of U-shaped configuration in confronting downstream relation to a path of moving debris and directing a gravity waterfall of collection liquid to effect a continuously wetted exposed surface of increased collection area coextensive with the spillway for entrapping debris for disposal.

3,651,608
HONING MANDREL

Thomas M. Morgan, 2404 E. River Road, Tucson, Ariz. Continuation of application Ser. No. 631,115, Apr., 1967, now abandoned. This application June 2, 1969, Ser. No. 829,238

Int. Cl. B24b *9/02*

U.S. Cl. 51—338 **3 Claims**



This invention relates to simple type of honing tool for accurately finishing the interior surface of a cylindrical hole in a work piece. It has contained within its body portion and electronic device with means to measure and control the degree of a predetermined amount of finish to the workpiece and to shut off the power when the desired degree of finish is obtained. Another feature of this improved honing tool is that its construction is such that it may be used to finish the interior surface of blind holes in a workpiece.

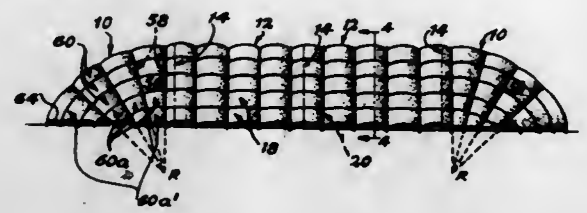
3,651,609
AIR INFLATED STRUCTURE

Walter W. Bird, Williamsville, N.Y., assignor to Birdair Structures, Inc., Buffalo, N.Y.

Filed Feb. 18, 1970, Ser. No. 12,177

Int. Cl. E04b *1/345*

U.S. Cl. 52—2 **12 Claims**



An air inflated structure including an air inflated envelope formed by a plurality of relatively narrow, horizontally elongated panels having horizontally extending adjacent edge portions joined together, and a cable system having a series of widely spaced parallel flexible tension devices anchored to their opposite ends to the ground or other suitable structure base. The tension devices extend transversely of and are fixed relative to the envelope panels. The arrangement reduces the maximum fabric stresses in the envelope material, and permits substantially all loads to be transferred from the envelope panels horizontally into the tension devices and be carried thereby to the ground, thereby limiting propagation of rips or tears occurring in the envelope panels.

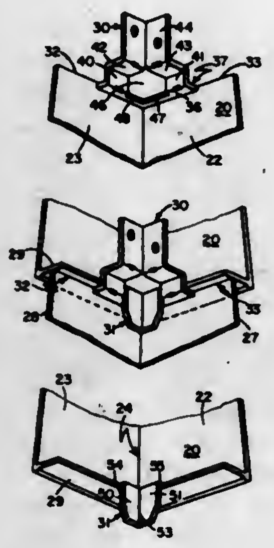
3,651,610
BUILDING CORNER UNIT

Patrick H. Donahue, Milton, Mass., assignor to Bird & Son, Inc., East Walpole, Mass.

Filed Apr. 23, 1970, Ser. No. 31,155

Int. Cl. E04f *19/02*

U.S. Cl. 52—278 **5 Claims**



A building corner unit (of plastic or metal) for overlappingly covering adjacent terminal exterior-corner ends of a course of rectangular siding elements (of plastic or metal), said corner unit providing an angularly formed member having a pair of sidewise extending wings with an inwardly offset portion at the bottom (butt) end of the unit, the top end thereof having an inwardly offset nailing bracket for nailing attachment to an exterior corner of opposing conventional wooden or wallboard house sheathing, with one end of the unit having vertical projecting means for telescopically connecting with an opposing end of an adjacent similar corner unit to hold the said units in vertical alignment with each other.

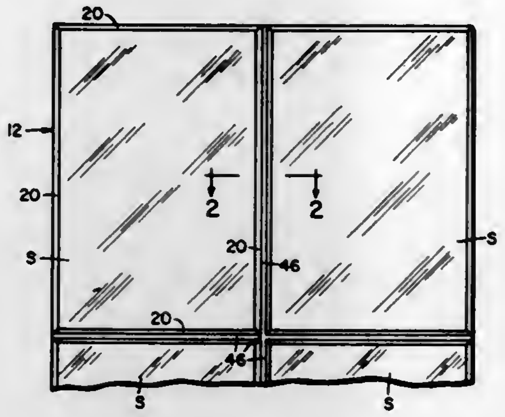
3,651,611
STRUCTURAL GRID FOR SLAB FACING MATERIALS

George J. Santry, New Canaan, Conn., assignor to Corning Glass Works, Corning, N.Y.

Filed May 11, 1970, Ser. No. 36,198

Int. Cl. E04b *1/16*

U.S. Cl. 52—379 **15 Claims**



A mounting system structural grid for slab facing materials including a basic building structure and a plurality of adjacent slabs, each slab having attachment means in the vicinity of at least one pair of opposite outside edges. This grid includes a plurality of spaced, parallel first support members, each having at least one leg portion with at least one pair of slots, and a plurality of spaced, parallel second support members, normal to and intersecting but planar with the first support members, and also having at least one leg portion with at least one pair of slots. The slab attachment means are operatively engageable in one of the slots of each of the leg portions of a pair of one of the first and second support members, thereby cooperatively mounting a slab of facing material therebetween. The support members are preferably angularly shaped to form mounting flanges or legs from an L-shape T-shape or U-shape.

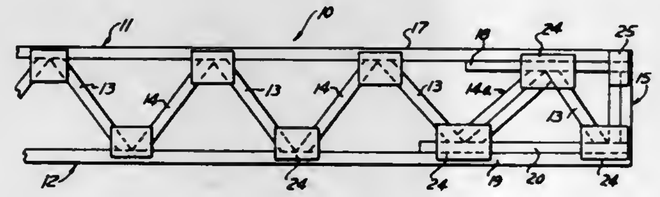
3,651,612
FLOOR JOIST

Jack N. Schmitt, Birmingham, Mich., assignor to Truswal Systems, Inc., Troy, Mich.

Filed Nov. 18, 1970, Ser. No. 90,579

Int. Cl. E04c *3/12*

U.S. Cl. 52—693 **2 Claims**



A truss-type floor joist formed of vertically aligned parallel chords connected together between their ends by alternating diagonal web members and at their ends by a pair of vertical end members arranged in face-to-face contact, with the chords, web members and end members all formed of 2×4 wood strips arranged with their narrow edges vertical. Each chord has an inner liner member in the form of a 2×4 wood strip member arranged in face-to-face contact therewith and extending from each end of the chord to a point just past its first, adjacent set of diagonal web members. Each of the joints formed by abutting web members and end members with the chords are overlapped on both vertical faces with metal connector plates having struck-out teeth embedded in the respective overlapped wood members.

3,651,613
METHODS AND MEANS FOR THE TRANSPORTATION OF GOODS

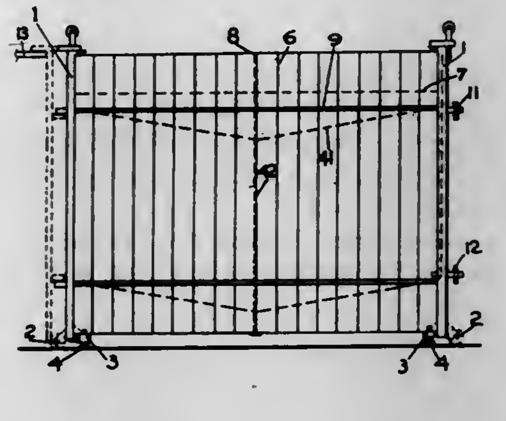
Eeme Sikkema, Auckland, New Zealand, assignor to New Zealand Inventions Development Authority, Wellington, New Zealand

Filed Oct. 10, 1969, Ser. No. 865,421

Claims priority, application New Zealand, Oct. 15, 1968, 154127

Int. Cl. B65b *13/20*

U.S. Cl. 53—24 **5 Claims**



Transportation units for goods are prepared by placing the goods between pressure distributing means in the form of end plates with lateral displacement resistance means, concentrated load or shear distributing resisting means, or shear resisting means positioned at suitable intervals along the length of the unit, and the unit is then made to act as a prestressed beam or prestressed structural unit by applying pressure to the pressure distributing means by the use of tendons maintained under tension in use.

3,651,614
PACKAGING OF BOTTLES, JARS AND OTHER ARTICLES

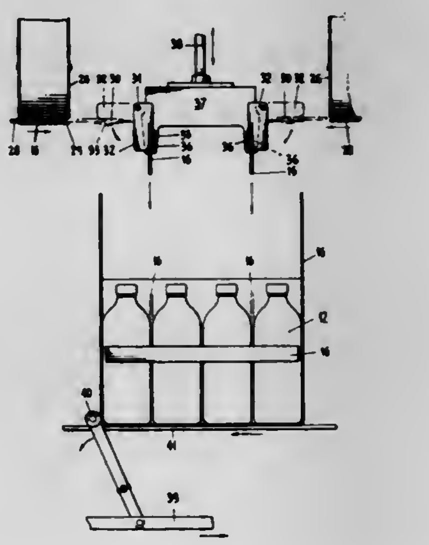
Henry Morgan Corderoy, Gladesville, New South Wales, Australia, assignor to A.C.I. Operations Pty. Limited, Melbourne, Victoria, Australia

Filed Oct. 30, 1969, Ser. No. 872,531

Claims priority, application Australia, Oct. 31, 1968, Jan. 13, 1969; 45656/68, 48994/69

Int. Cl. B65b *35/00, 61/00*

U.S. Cl. 53—26 **16 Claims**

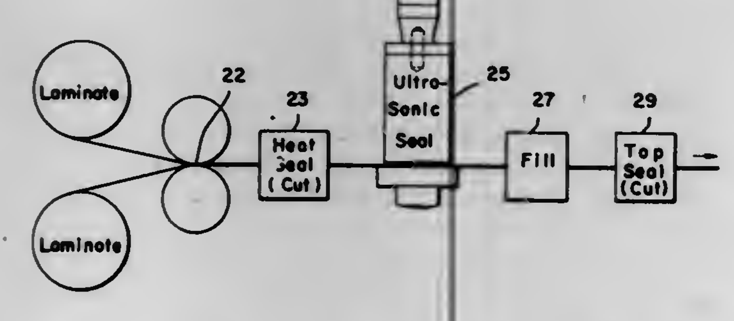


The present invention relates to an improved method and apparatus for packing bottles or the like in cartons. It provides a speedy and economical manner of packing and results in such saving of material compared to the hitherto used methods. Bottles or the like are arranged in columns and rows in open containers and partition strips are inserted therebetween. The strips are discharged from a magazine and are gathered by a finger which transfers the strip to a position horizontally above the container and disposed vertically above the space between adjacent rows of bottles. A plunger drops and collects the strip from the finger and presses it into the said space between adjacent rows of bottles. The container is then moved to a subsequent station for similar operation but wherein the partition strip is inserted at right angles to said firstmentioned strip. The action of inserting the secondmentioned strip forces said firstmentioned strip downwardly between the bottles.

3,651,615
METHOD OF PACKAGING BETWEEN LAMINATED WEBS WITH HEAT AND ULTRASONIC SEALS

Thomas H. Bohner, Berkeley Heights, and Vincent L. Vaillancourt, Livingston, both of N.J., assignors to C. L. Band, Inc., Murray Hill, N.J.

Filed June 25, 1969, Ser. No. 836,261
Int. Cl. B65b *9/02;* **B29c** *27/08;* **B65d** *77/08*
U.S. Cl. 53—28 **3 Claims**

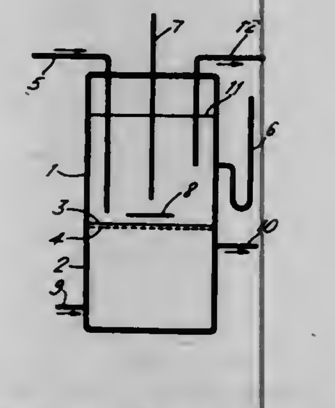


A sealed package of metal-foil-polyethylene laminates, at least one edge of which is sealed by ultrasonic means, to form a rupturable seal through which the contents of the package can be released by moderate pressure on the package walls; and the method of making and filling such a package singly or in groups and with or without integrally attached package portions for receiving articles to which the contents of the rupturable package may eventually be supplied.

3,651,616
PROCESS FOR EFFECTING ABSORPTION OR REMOVAL OF GAS FROM A LIQUID

Alain Blanchard, Lyon, and Alphonse Faure, Bron, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Feb. 13, 1969, Ser. No. 799,059
Claims priority, application France, Feb. 14, 1968, 139879
Int. Cl. B01d *53/22, 31/00, 12/00*
U.S. Cl. 55—16 **10 Claims**

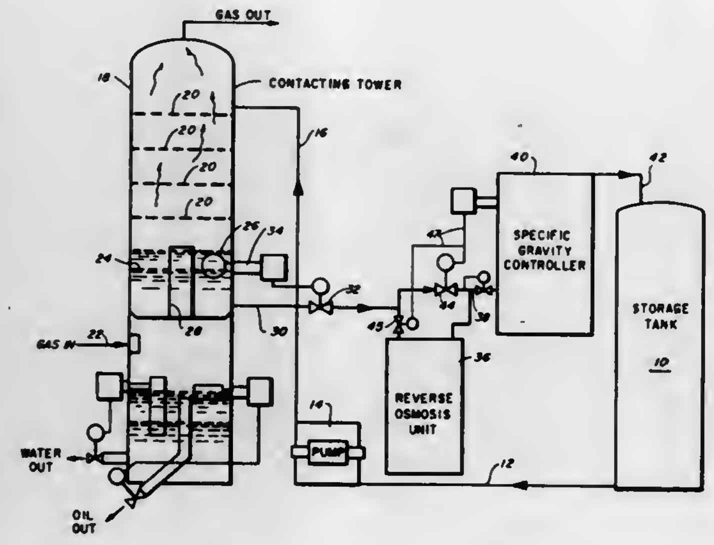


Gases, e.g., oxygen, are advantageously absorbed by or removed from aqueous liquids, especially blood, by passage along a partial pressure gradient through a waterproof, porous membrane having pores with an apparent diameter of 0.01 to 3μ and a critical surface tension of less than 40 dynes/cm. at 20° C.

3,651,617
RECONCENTRATING HYGROSCOPIC LIQUIDS USED IN GAS DEHYDRATION WITH REVERSE OSMOSIS

Robert A. Hodgson, Tulsa, Okla., assignor to Maloney-Crawford Tank Corporation, Tulsa, Okla.

Filed June 15, 1970, Ser. No. 46,257
Int. Cl. B01d *53/14*
U.S. Cl. 55—32 **7 Claims**

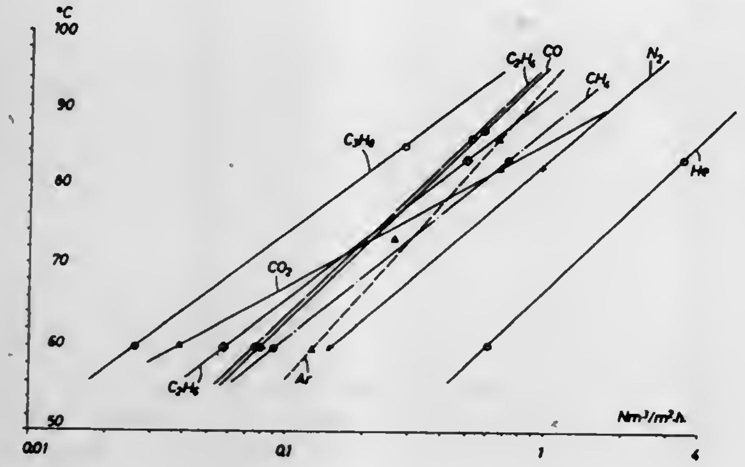


Hygroscopic liquid used to dehydrate wet gas streams is regenerated by causing the liquid to flow through a reverse osmosis system after which the liquid is stored and/or reused for dehydration.

3,651,618
SEPARATION OF FLUIDS BY DIFFUSION THROUGH SEMIPERMEABLE MEMBRANES

Gunter Klein, Neuried, and Johann Neumann, Oberhausen, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden and Kempchen & Co. GmbH, Oberhausen, Germany

Filed May 20, 1970, Ser. No. 39,124
Claims priority, application Germany, May 20, 1969, P 19 25 582.4
Int. Cl. B01d *59/12*
U.S. Cl. 55—16 **20 Claims**

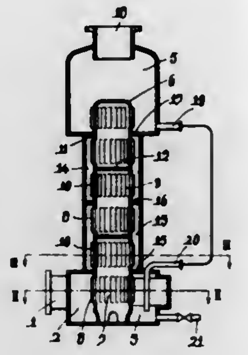


In a process comprising diffusing a fluid through the upstream side of a semipermeable membrane having upstream and downstream sides, to the downstream side, the improvement comprising exposing the downstream side during said diffusing to either a liquid which does not wet the downstream side, or to the vapor of said liquid, whereby the rate of diffusion of said fluid through said membrane is increased and wherein said semipermeable membrane is a microporous sintered material, e.g., polytetrafluoroethylene having a pore diameter of 1–1,000, preferably 5–200 microns.

3,651,619
APPARATUS FOR PURIFICATION OF GAS

Mitsugi Miura, 2-Chome Tezukayama, Sumuyoshi-ku, Osaka, Japan

Filed Mar. 30, 1970, Ser. No. 23,563
Int. Cl. B01d *47/10*
U.S. Cl. 55—237 **6 Claims**

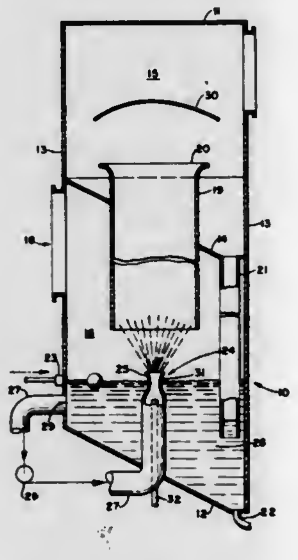


A perforated cylinder having a plurality of unit perforated cylinders arranged in series and having a pair of upper and lower slits formed in the tangential direction in the sidewall. The upper portion of the cylinder is sealed and the lower portion is opened. A gas charging chamber having a gas feed pipe and a liquid feed pipe is provided at the outside bottom of the first unit cylinder. A gas-liquid separation chamber having a cleaned gas discharge pipe and a separated liquid discharge pipe is located towards the top of the last unit cylinder. Gas-liquid separation chambers having separated liquid discharge pipes are provided at the top of the cylinder in the center and at the outside of the next stage cylinder and gas passages are provided at the outside of the perforated cylinders located between said two chambers and a liquid feed pipe is connected to the bottom of the unit perforated cylinder in the middle.

3,651,620
GAS SCRUBBER

Roland L. Lincoln, Macungie, Pa., assignor to Fuller Company, Catasaugua, Pa.

Filed Apr. 22, 1970, Ser. No. 30,670
Int. Cl. B01d *47/00*
U.S. Cl. 55—228 **12 Claims**

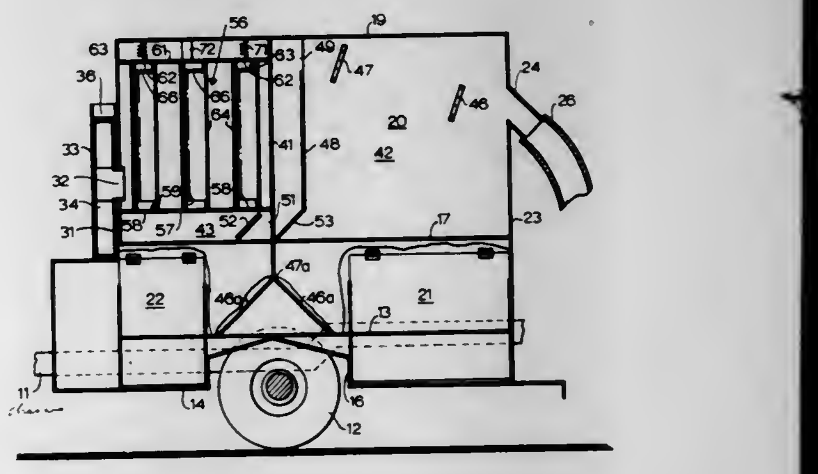


The instant invention relates to a gas scrubber for cleaning dirty gas comprising an enclosed vessel having bottom, top and side walls, means dividing said vessel into upper and lower compartments, the bottom portion of said lower compartment defining a settling basin, at least one substantially vertically disposed open-ended gas collecting tube extending through said dividing means into both said compartments, an atomizing nozzle in said lower compartment positioned below each said gas collecting tube so as to discharge a mixture of a scrubbing liquid and a compressed gas upwardly into each said gas collecting tube, and means for circulating scrubbing liquid from said settling basin to said atomizing nozzle.

3,651,621
MACHINE FOR EXTRACTING DIRT FROM HOLES

Henry J. Davis, c/o Automation International Inc. 350 N. Edison St., Stockton, Calif.

Filed Nov. 17, 1969, Ser. No. 877,292
Int. Cl. B01d *46/04*
U.S. Cl. 55—304 **2 Claims**

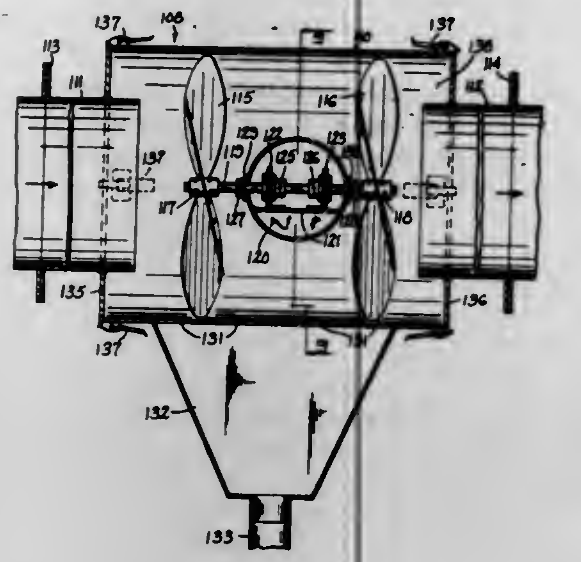


A portable machine used to raise dirt, rocks, and the like from holes, such as fence post and utility pole holes and similar purposes. Means is provided in a closed chamber to extract the heavy and the light dirt particles by gravity separation and then to extract the fine particles by cloth bag filtration. Means is provided to clean the fiber cloths by mechanical vibration. A blower draws a vacuum through the chamber and then through a hose which is lowered into the hole being cleaned.

3,651,622
MOISTURE ELIMINATING APPARATUS

Walter L. Wisting, Fairfield Pl., Madison, Conn.
Continuation-in-part of application Ser. No. 461,587, May 17, 1965, now Patent No. 3,406,492, which is a continuation-in-part of application Ser. No. 418,379, Dec. 4, 1964, now abandoned , which is a continuation-in-part of application Ser. No. 381,178, July 8, 1964, now abandoned. This application Feb. 15, 1968, Ser. No. 705,707
Int. Cl. B01d *45/08*
U.S. Cl. 55—404 **5 Claims**

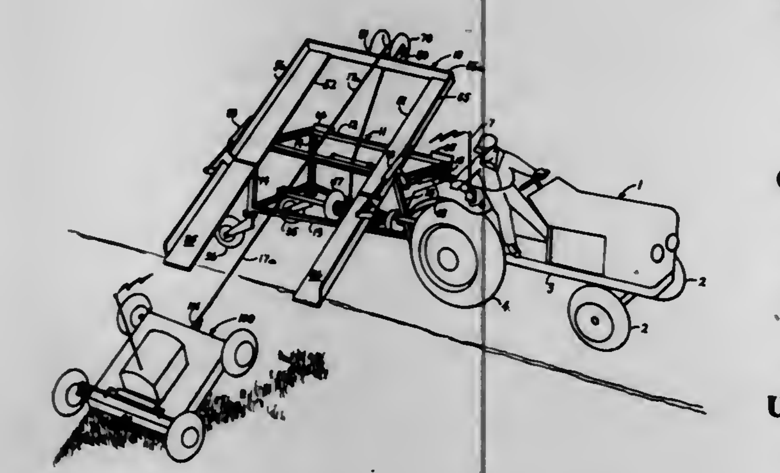
This disclosure relates to an apparatus for removing liquid from a gas stream. A fan is positioned within a casing before an outlet opening therein and arranged to be driven at very high speeds by the gas flow through the casing. Moisture particles in the gas stream strike the blades of the fan as it rotates and are centrifugally thrown directly to the walls of the casing. The blades of the fan are constructed with sub-



stantially planar surfaces which define direct paths for flow of gas therethrough.

3,651,623
APPARATUS FOR, AND METHOD OF MOWING STEEP EMBANKMENTS

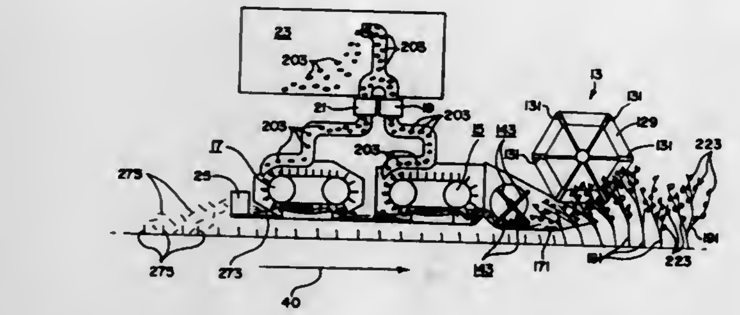
Rutherford B. Harley, 4300 Bishop Lake Road, Marietta, Ga.
Filed May 15, 1970, Ser. No. 37,537
Int. Cl. A01d *35/28*
U.S. Cl. 56—15.5 **2 Claims**



Apparatus for and a method of mowing vegetation on steep embankments including a tractor-drawn trailer, suitably equipped for (1) transporting a power mower, (2) offloading the mower, and (3) controlling by cable means the substantially vertical ascent and descent of the mower while in operation. The trailer derives its power to control the vertical movement of the mower from a tractor. The power mower contains a radio-controlled steering mechanism for providing lateral movement during the substantially vertical cable-controlled mowing operation, which is responsive to electrical signals from a multiple-channel transmitter, normally mounted on the tractor, but capable of being detached and operated away from the tractor. The combined power mowing apparatus, comprising a tractor, the powered transporting and control trailer, and a radio-controlled power mower, are utilized in a simplified method of mowing vegetation on steep embankments, where conventional power operated mowing equipments are unable to traverse steep grades. The combined apparatus is capable of being operated on service plateaus either above or below embankments, and is usually controlled by a single tractor driving operator; however, in cases where embankments are out of sight of the tractor operator, the transmitter for controlling the lateral displacement of the power mower may be demounted from the tractor and employed by a second operator who is within view of the tractor operator.

3,651,624
COTTON HARVESTER

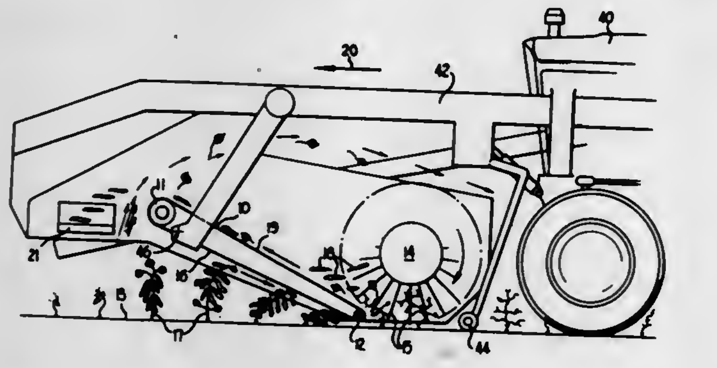
Martin E. Bandemer, Pine Bluff, Ark., assignor to Ben Pearson Manufacturing Company, Pine Bluff, Ark.
Filed May 12, 1970, Ser. No. 36,556
Int. Cl. A01d *45/18*
U.S. Cl. 56—28 **18 Claims**



A self-propelled machine used to harvest seed cotton. The machine includes a forward assembly comprising a modified crop pickup header having a reciprocating sickle knife, a rotating bat reel and an auger conveyor, a pair of modified conventional cotton picking head assemblies arranged in a tandem relationship, each having been turned 90° about their respective horizontal axis so as to assume a horizontal position as opposed to the usual vertical position, a conventional shreader, a pair of typical delivery fans, the usual receptacle basket, and a conventional prime mover.

3,651,625
HARVESTER

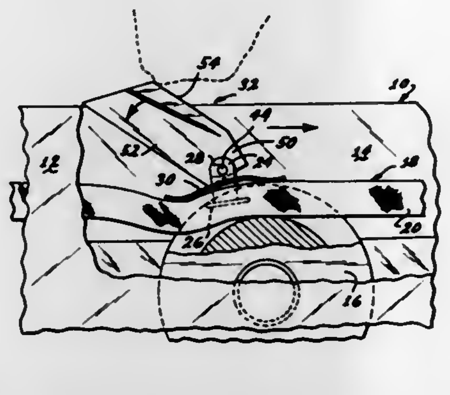
George Redford, 94 Church St. West, and Alan Redford, 102 Ringley Road, Outwood, both of Radcliffe, Lancashire, England
Filed May 11, 1970, Ser. No. 36,092
Claims priority, application Great Britain, May 10, 1969, 23,914/69
Int. Cl. A01d *45/22*
U.S. Cl. 56—128 **8 Claims**



A harvester for beans and like vegetables which grow on the stems of leguminous plants which comprises a frame fixable to the front of a tractor. An endless moving belt is pivotably mounted on the frame and inclined to the ground so that the lower run of the belt is directed downwardly and rearwardly. A drum having tines is mounted rearwardly of the belt about a horizontal axis transverse to the direction of movement of the belt. The belt deflects the plants rearwardly towards the drum which on rotation strips the beans from the plants and transfers them to the upper run of the belt for subsequent collection.

3,651,626
POWER TRANSMISSION BELTS

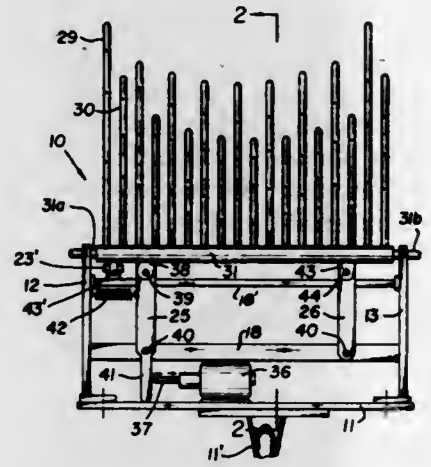
Norman Carl Locati, Lake Oswego, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.
Continuation-in-part of application Ser. No. 759,831, Sept. 16, 1968, now Patent No. 3,545,188, and a continuation-in-part of 033,449, Apr. 30, 1970. This application Nov. 20, 1970, Ser. No. 91,289
Int. Cl. A01d *55/24*
U.S. Cl. 56—290 **10 Claims**



A flexible reinforced power transmission belt having rigid connectors molded into the cutter belt at spaced intervals. A cutter element is pivotally connected to the protruding end of each connector. A compressed resilient pad between the belt and cutter element urges the cutter element in an extended position but is deformed in response to abnormal impact to permit pivoting of the cutter elements.

3,651,627
DOUBLE-COMBED MECHANISM WITH ALTERNATE PNEUMATIC OPERATION FOR THE SHAKING OF THE BRANCHES OF THE OLIVE TREES AND THE GATHERING OF ITS FRUITS

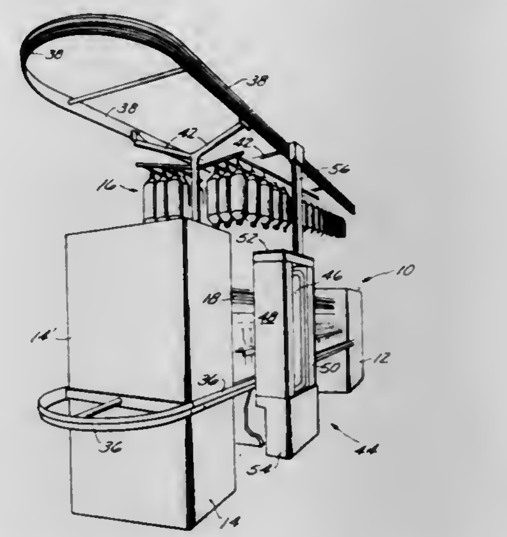
Corrado Pitti, 36 Sciaia El Mazuni, Tripoli, Libia, Italy
Filed Sept. 22, 1970, Ser. No. 74,410
Claims priority, application Italy, Oct. 11, 1969, 40712 A/69
Int. Cl. A01g *19/00*
U.S. Cl. 56—328 R **2 Claims**



A device for shaking the branches of a fruit-bearing tree and the like having a series of combs, each including a plurality of teeth, the teeth of each series of combs being spaced from the other with an operator for moving arms connected with the series of combs through longitudinally movable carriers for alternately moving each of the series of combs longitudinally in opposite directions to correspondingly articulate the respective teeth to shake the branches free of their fruit.

3,651,628
SUPPORTING MEANS FOR AUTOMATIC YARN PIECING APPARATUS

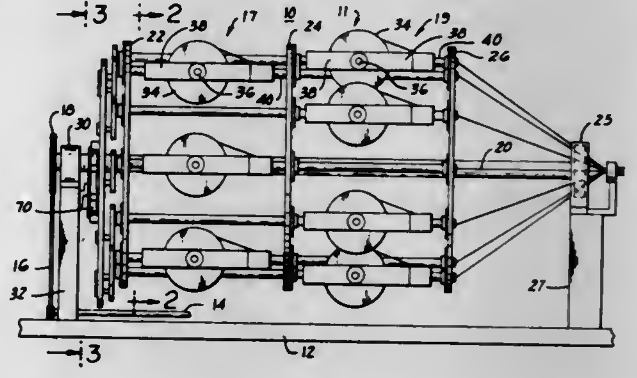
Albert D. Harmon; Gordon C. Anderson, and George S. Van Deusen, all of Clemson, S.C., assignors to Maremont Corporation, Chicago, Ill.
Filed Sept. 10, 1970, Ser. No. 70,963
Int. Cl. D01h *9/00, 9/10, 15/00*
U.S. Cl. 57—1 R **16 Claims**



The main carriage of the apparatus is resiliently track-mounted closely adjacent the spinning machine, at approximately the spindle-rail elevation, for stable bi-directional movement along opposite sides and about at least one end of the machine. The carriage includes an open center section which facilitates its movement about the end of the machine, and which partially encloses and protects various extendable and retractable servicing mechanisms while permitting unimpeded movement and convenient maintenance of such mechanisms. Housing-like sections of the carriage fully enclose various drive and control components, which are so located as to provide a desired distribution of weight relative to the carriage supporting track. A mast section extends upwardly to an overhead rail which supplies electric power to the carriage and laterally stabilizes it.

3,651,629
CABLE FORMING MACHINE

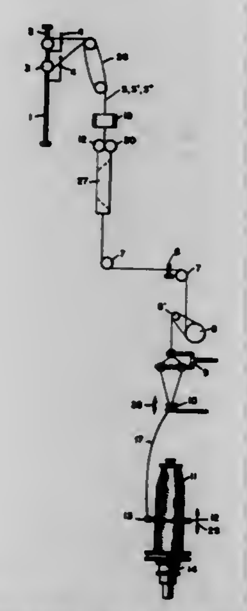
George R. Webster, 5014 Moss Hollow, Houston, Tex.
Filed Apr. 1, 1970, Ser. No. 24,530
Int. Cl. B65h *81/08;* **H01b** *13/00*
U.S. Cl. 57—13 **7 Claims**



A multi-conductor cable-forming machine is provided which includes a revolvable frame mounted on a rotatable center shaft having a longitudinal axis of symmetry for the revolvable frame. The frame includes two spaced-apart discs mounted on the center shaft. A plurality of longitudinally extending shafts parallel to each other and to the center shaft are rotatably supported by the discs. The free ends of the shafts are arranged about the periphery of a circle which is concentric with the center of the center shaft. A wire dispensing spool is rotatably mounted on each longitudinal shaft. Rotatable eccentric means are coupled to the free ends of the shafts to maintain the spools' orientation constant relative to the horizontal.

3,651,630
APPARATUS FOR PRODUCTION OF MOULINE YARNS

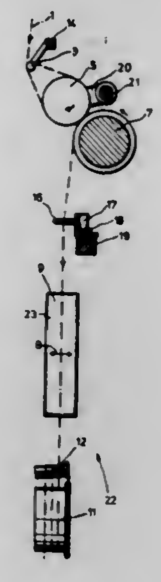
Hermann Gemeinhardt, Elsenfeld, Germany, assignor to Glanzstoff AG, Wuppertal, Germany
Filed May 23, 1969, Ser. No. 827,241
Claims priority, application Germany, May 29, 1968, P 17 60 511.7
Int. Cl. D02g *1/12*
U.S. Cl. 57—34 HS **10 Claims**



Process and apparatus for the production of repeatedly compressed mouline carpet yarns in which the yarn is guided through a compression crimping chamber and then corded with guiding each of the yarns under identical conditions through large angle which is the same for each of the yarns.

3,651,631
ARRANGEMENT FOR TRAVERSING A YARN IN TWO DIRECTIONS

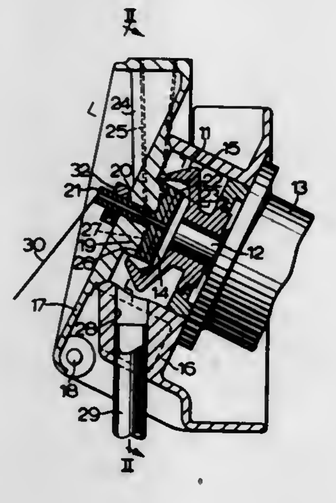
Rolf F. Regelmann, Buchenbronn, and Wolfgang Riek, Eislingen, Fils, both of Germany, assignors to Zinser-Textilmaschinen Gesellschaft mit Beschrankter Haftung, Ebersbach, Germany
Filed Sept. 11, 1970, Ser. No. 71,293
Claims priority, application Germany, Sept. 19, 1969, P 19 47 452.3
Int. Cl. D02j *1/22, 13/06*
U.S. Cl. 57—55.5 **7 Claims**



In a textile machine, two traverse (crosswise) movements of the yarn in mutually perpendicular planes are obtained by means of a single oscillating yarn guide and a deflector pin guiding the yarn from one plane to the other and forming an angle with both of the traverse directions.

3,651,632
OPEN-END SPINNING DEVICES

John M. Shepherd, Ramsbottom, England, assignor to T.M.M. (Research) Limited, Oldham, Lancashire, England
Filed Apr. 9, 1970, Ser. No. 26,876
Claims priority, application Great Britain, Apr. 9, 1969, 18,244/69
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.95 **20 Claims**

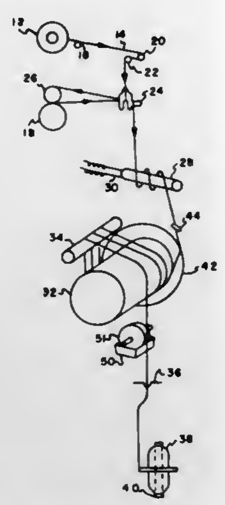


An open end spinning device comprising a spinning rotor having a spinning chamber provided with an internal fiber collecting surface to which fibers in discrete form are fed through a fiber feed passage and from which they are removed to form a twisted yarn which is continuously withdrawn from the spinning chamber through a yarn delivery passage. The rotor has at one end thereof closure means formed with a cylindrical or generally cylindrical penetrating portion which penetrates into the chamber of the spinning rotor in concentric relation to the spinning axis of the rotor and through which the fiber feed passage and the yarn delivery passage pass. The yarn delivery passage passes through the penetrating portion and opens into the end face of the penetrating portion, and the fiber feed passages passes through the penetrating portion and opens into a recess formed in the penetrating portion at such a position that fibers from the end of the fiber feed passage are directed to the fiber collecting surface of the spinning rotor, the recess being so formed as not to extend around the whole of the circumference of the penetrating portion.

3,651,633
FLANGE FALSE TWIST TEXTURED NYLON

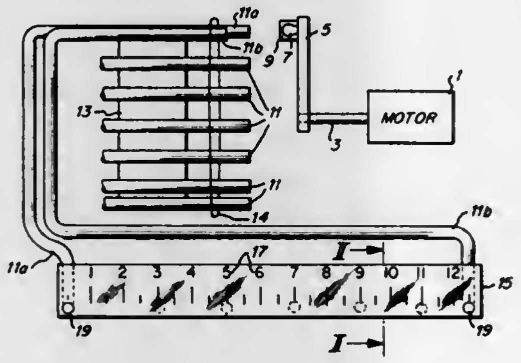
William George Steinmiller, Charlotte, N.C., assignor to Fiber Industries, Inc.
Filed Oct. 27, 1970, Ser. No. 84,387
Int. Cl. D02g *1/02, 3/36*
U.S. Cl. 57—140 C **14 Claims**

A novel monofilament nylon yarn suitable for use in knit constructions, particularly women's hosiery, characterized by boardability, twist liveliness and knitability values is disclosed. A combination false twist, topcoating finish application process is disclosed as exemplary of methods to produce the yarn. This process may be a simultaneous or sequential drawing, false twisting operation utilizing a twist insertion flange.



3,651,634
SYSTEMS FOR DISPLAYING VARIOUS PHENOMENA, SUCH AS TIME

Sidney Cooper, 49 Knollwood Drive, Cherry Hill, N.J.
Filed Jan. 7, 1970, Ser. No. 1,208
Int. Cl. G04b *19/34*
U.S. Cl. 58—50 **11 Claims**

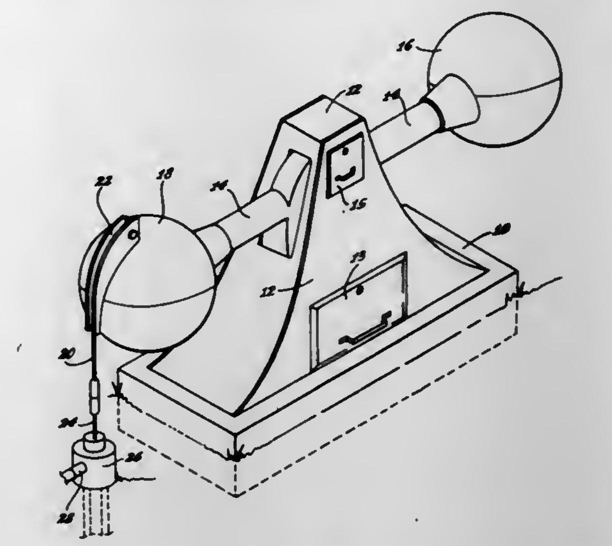


Many instruments have been employed for indicating different phenomena by mechanical means, as in a clock wherein time is conventionally designated by the movement of hands over time representing digits arranged circumferentially in an endless, circular array, or by means of a rotary drum bearing similar indicia in endless formation. Instruments of this sort are sometimes difficult to read, especially in the dark. The present invention involves a system for transforming the intelligence thus displayed into one wherein a moving spot of light is made to move linearly along a finite scale having a discrete beginning and a discrete end, thereby facilitating the recognition of the involved phenomena at a glance.

3,651,635
PUMPING JACK

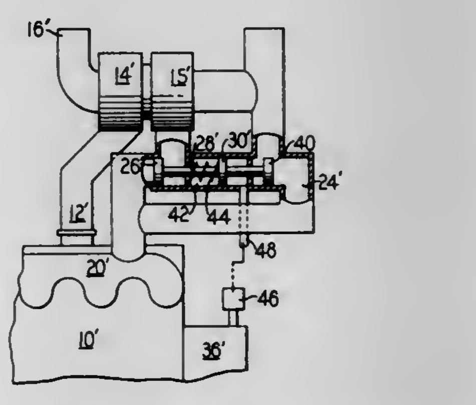
Robert A. Clay, Costa Mesa, Calif., assignor to Kinetic Power, Inc., Costa Mesa, Calif.
Filed June 29, 1970, Ser. No. 50,388
Int. Cl. F03g *3/00*
U.S. Cl. 60—9 **5 Claims**

An improved pumping jack is provided for particular use in oil fields for driving oil well pumps, but which has general utility. The pumping jack of the invention includes a member mounted for angular movement about a particular axis, and which defines first and second fluid chambers on either side of the said axis. A pump and valve combination selectively introduces and discharges fluid to and from the first and second fluid chambers to cause the aforesaid member to oscillate about the axis so as to achieve the desired reciprocal pump driving action.



3,651,636
TURBOCHARGER CONTROL

Stephen F. Glassey, East Peoria, and George E. Olson, Lacon, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Oct. 2, 1969, Ser. No. 863,123
Int. Cl. F02b *33/44, 37/08*
U.S. Cl. 60—13 **4 Claims**

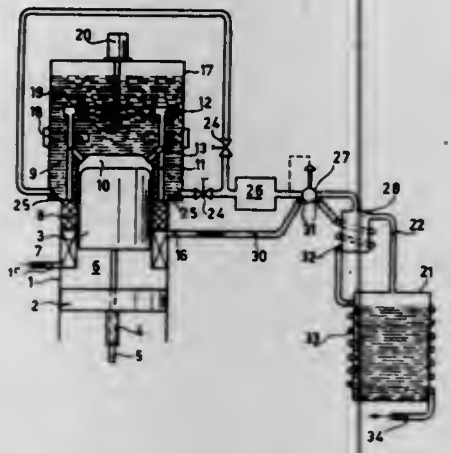


A control for the turbocharger of an internal combustion engine which includes means to stop the flow of air through the turbocharger compressor when the engine is operating at low speed to reduce resistance to rotation of the turbocharger. The air flow is reestablished automatically upon increase in speed or load of the engine and turbocharging is commenced without undue delay because the turbocharger compressor is already rotating at a relatively high rate of speed.

3,651,637
HOT GAS ENGINE

Johann Schroder, Aachen, Germany, and Roland Anton Johan Otto Van Witteveen, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 25, 1969, Ser. No. 860,992
Claims priority, application Netherlands, Sept. 30, 1968, 6813986
Int. Cl. F03g *7/06*
U.S. Cl. 60—24 **10 Claims**

Apparatus for converting heat energy into mechanical energy, particularly a hot-gas engine, in which a working medium performs a cycle between an expansion space of higher temperature and a compression space of lower temperature, there being provided a heating system for supplying heat to the expansion space and a cooler for conducting away heat form the compression space. The heating system includes a reaction vessel containing a metal mixture heatable to a liquid phase and an oxydizing agent reservoir containing the oxydizing agent in the liquid phase, the oxydizing agent being supplied in a dosed gaseous form to the reaction vessel for exothermic reaction with the metal. The cooling water is passed from the cooler to the reservoir to provide heat from partially evaporating the liquid oxydizing agent therein.



3,651,638

INTERNAL COMBUSTION ENGINE

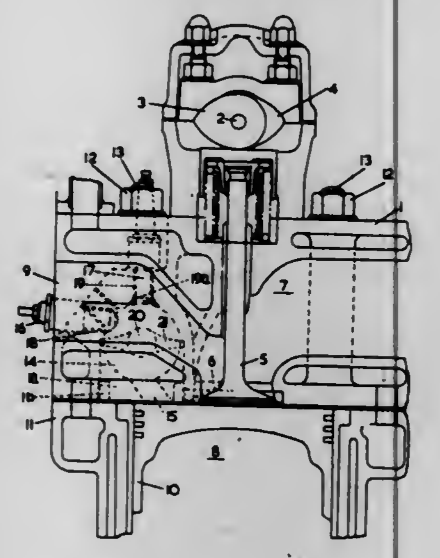
Charles Lindsay Goodacre, London, England, assignor to F.I.A.T. S.p.A., Turin, Italy

Filed July 8, 1970, Ser. No. 53,154

Claims priority, application Great Britain, July 8, 1969, 34,368/69

Int. Cl. F02g *1/00*

U.S. Cl. 60—39.6 **9 Claims**



An otto-cycle internal combustion engine having at least one cylinder, a piston reciprocable in the cylinder, an inlet valve for admitting air into the cylinder for compression by the piston, a combustion chamber externally of the cylinder, fuel injector means for injecting fuel into the combustion chamber, transfer passage means communicating the combustion chamber with the cylinder and ignition means for igniting a fuel/air mixture in the combustion chamber, the arrangement being such that combustion takes place substantially completely outside the cylinder within the combustion chamber.

3,651,639

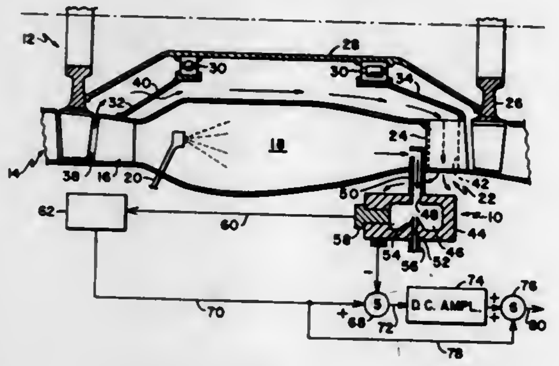
ERROR COMPENSATED FLUIDIC TEMPERATURE SENSOR

Jay I. Black, Orange, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Dec. 29, 1969, Ser. No. 888,220

Int. Cl. F02b *43/00*

U.S. Cl. 60—39.12 **10 Claims**



The disclosure illustrates a fluidic oscillator used to measure the temperature at the turbine inlet of a gas turbine engine. The oscillator has a housing with a resonant chamber connected to the hot gas stream and to a low pressure discharge so that pressure oscillations are set up in the resonant chamber. A transducer and an analog device convert the frequency of the pressure oscillations into a DC analog signal. The housing of the oscillator is cooled and a thermocouple and modifying circuitry are used to compensate the analog signal for the heat transfer from the oscillator housing to the cooling air. In another embodiment, a heat flow sensor is used to compensate the analog signal.

3,651,640

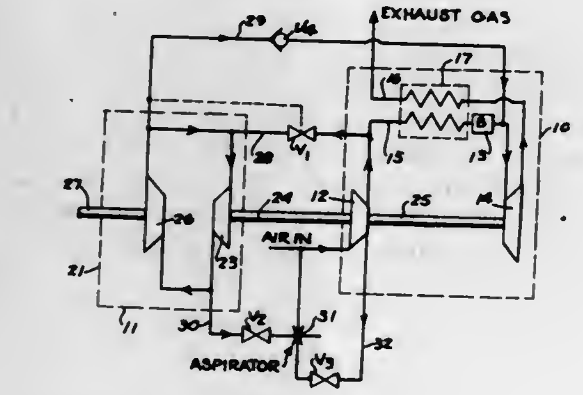
GAS TURBINE ENGINE WITH AERODYNAMIC TORQUE CONVERTER DRIVE

John Nicita, Ann Arbor, Mich., assignor to Power Technology Corporation, Ann Arbor, Mich.

Filed Sept. 25, 1970, Ser. No. 75,612

Int. Cl. F02c *9/02, 9/14*

U.S. Cl. 60—39.24 **14 Claims**



A gas turbine engine and an aerodynamic torque converter coupled through fluid lines such that the aerodynamic torque converter is filled with a compressible fluid and a hydraulic system for controlling the coupling between the gas turbine engine and aerodynamic torque converter to vary the density of the compressible fluid during starting, idle, and normal operation.

3,651,641

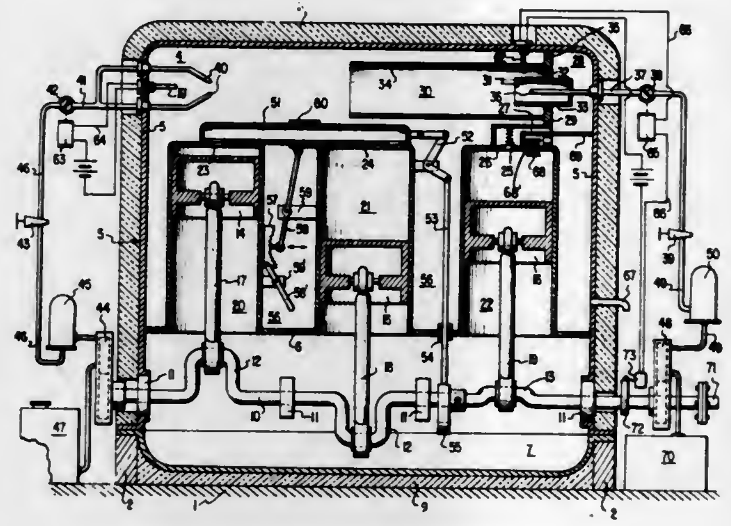
ENGINE SYSTEM AND THERMOGENERATOR THEREFOR

James Lyell Ginter, Bridal Veil, Oreg., assignor to Ginter Corporation, Portland, Oreg.

Filed Mar. 18, 1969, Ser. No. 808,073

Int. Cl. F02g *1/02;* **F02d** *1/06, 35/02*

U.S. Cl. 60—39.26 **32 Claims**



This invention combines ICE and ECE principles in a single engine which provides working fluid at pressures and temperatures which are nearly constant, after start-up, in which fuel is burned in response to a decrease in fluid pressure as fluid is withdrawn while at the same time resupplying air compressed adiabatically to provide ignition temperature. When products of combustion are above permissible operating temperature water is supplied to absorb the entire heat of combustion becoming superheated steam to double the working fluid, without external cooling.

3,651,642

HYDRAULIC CONTROL APPARATUS

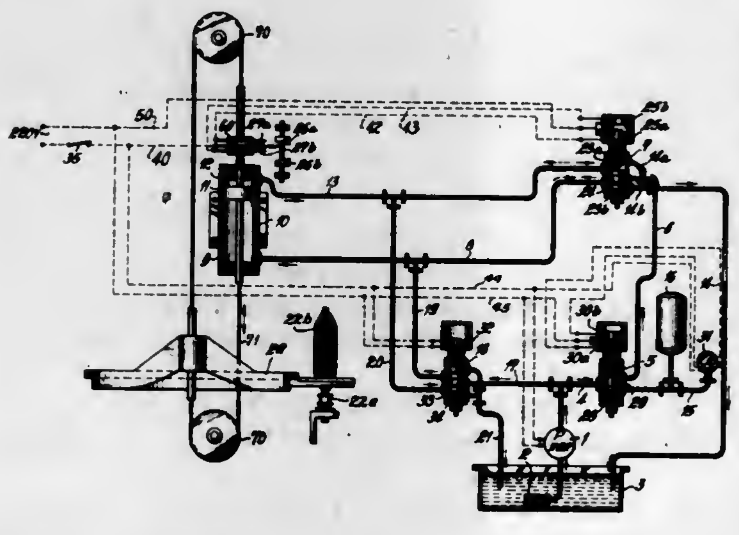
Ernst Bauch, Brodesholm, and Bruno Eigenwald, Neumuenster, both of Germany, assignors to Neumunstersche Maschinenen-und Apparatebav Gesellschaft m.b.H., Neumuenster, Germany

Filed May 11, 1970, Ser. No. 36,090

Claims priority, application Germany, May 12, 1969, P 19 24 177.1

Int. Cl. F15b *1/02*

U.S. Cl. 60—51 **8 Claims**



A control apparatus by which the ring rail of a twisting machine, and also the hydraulic, pump driven motor raising and lowering the same, are automatically moved to an end position if an interruption of the electric power supply to the pump occurs in an intermediate position of the ring rail. In this event, a spring biassed electromagnetic control valve, when deenergized, causes the flow of pressure fluid from a pressure accumulator to the hydraulic motor which is driven to complete the started reciprocating stroke.

3,651,643

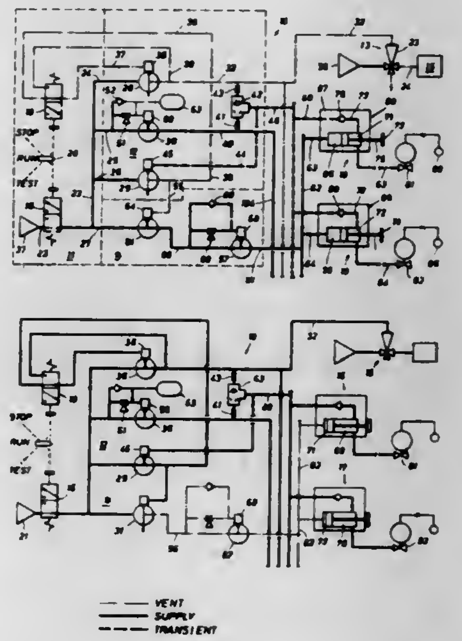
PNEUMATIC ANNUNCIATOR SYSTEM

Robert S. Hurrah, 4108 Dupont, Houston, Tex.

Filed July 21, 1970, Ser. No. 56,892

Int. Cl. F01k *13/02*

U.S. Cl. 60—105 **39 Claims**



As a representative embodiment of the present invention, pressure-responsive indicators are coupled to suitable transducers monitoring selected operating conditions of an industrial machine. Pneumatic controls are arranged for providing first pneumatic signals when these operating conditions reach a predetermined value and producing second pneumatic signals should any of the operating conditions vary from its selected range. Other pneumatic controls are uniquely arranged for responding to the second signals to produce a brief third pneumatic signal which is effective to operate only the associated indicator while the other unaffected indicators are positively retained in their safe indicating positions. The indicators of the present invention are adapted to be stacked together and respectively include a number of passages adapted to coincide with the matching passages in the other indicators. One set of these passages in each indicator can be isolated from the other set by orienting the indicator in one position in relation to the other indicators. A second set of these passages is coupled to an alternately-positionable spool in each indicator which is uniquely arranged to select which of the passages in this other set is to be coupled to the pressure-responsive element in that indicator.

3,651,644

APPARATUS FOR INITIATING DECOMPOSITION OF AN EXOTHERMIC PROPELLANT

Bernard P. Breen, South Pasadena; Bill R. Lawver, Glendora, and James R. Kliegel, Redondo Beach, all of Calif., assignors to Marshall Industries, San Marino, Calif.

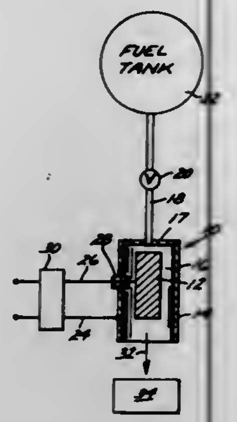
Original application Sept. 25, 1967, Ser. No. 670,242.

Divided and this application June 25, 1969, Ser. No. 836,504

Int. Cl. F02k *9/02;* **B01k** *3/00;* **B01j** *7/00*

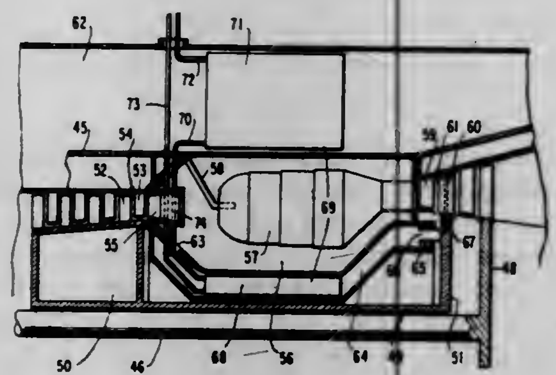
U.S. Cl. 60—203 **4 Claims**

An apparatus for initiating decomposition of exothermic propellants by developing an electric potential across spaced electrodes located in the propellant inlet stream, the electric potential being at a level high enough to effect decomposition and accompanying heat evolvement to facilitate starting of a rocket engine or the like.



3,651,645
GAS TURBINE FOR AIRCRAFTS

Hubert Josef Grieb, Stuttgart-Botnang, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Oct. 9, 1970, Ser. No. 79,508
Claims priority, application Germany, Oct. 11, 1969, P 19 51 356.5
Int. Cl. F02c *7/12, 7/14*
U.S. Cl. 60—262 **16 Claims**

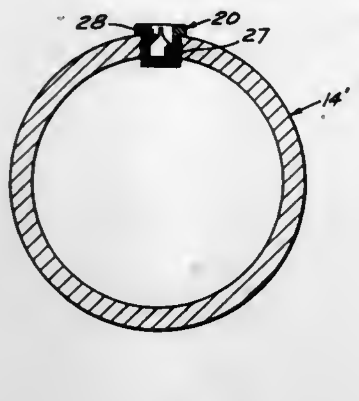


A gas turbine for aircrafts, particularly jet engines with air-cooled turbine blades whereby the cooling air is taken off either directly or indirectly from a compressor stage; a heat-exchanger with a closed circulation is provided in the cooling system whose heat-absorbing part is arranged in a cooling air channel disposed between the compressor and the turbine rotor.

3,651,646
PNEUMATIC BARRIER SYSTEM FOR WATER SURFACES

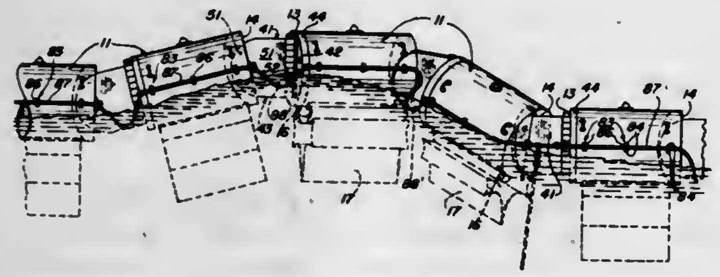
Heinz Grunau, Lubeck, Germany, assignor to Rudolf Harmstorf, Hamburg, Germany
Filed May 21, 1970, Ser. No. 39,262
Int. Cl. B01d *23/00*
U.S. Cl. 61—1 R **3 Claims**

A system for the confinement of pollutants on water surfaces until collected or chemically dispersed. The system effects its confining action by generating a curtain or barrier of air bubbles which at the surface of the water form a series of overlapping aerated water hills capable of blocking the passage of a pollutant, such as oil film, therethrough. The system is designed to enable it to provide a continuous barrier of aerated water hills over long period of use and even though it may be installed on harbor and waterway bottoms where silty conditions prevail. This is accomplished by a pipe for supplying compressed gas to an outlet comprising a nozzle plate having an orifice of a size to allow a metered amount of air to pass with a check valve located downstream of the nozzle plate.



3,651,647
OIL SLICK CONFINEMENT EQUIPMENT

Edmond Flaviani, 719 28th Avenue, San Francisco, Calif.
Filed Sept. 17, 1970, Ser. No. 73,001
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **5 Claims**



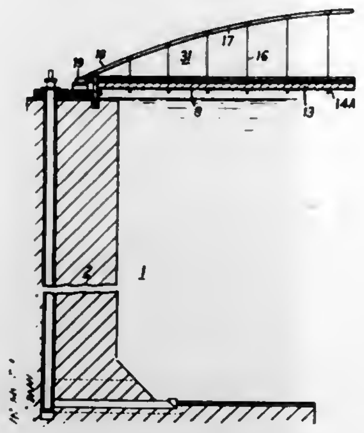
The disclosure relates to a device for confining pollution material floating on the surface of water to a given area for subsequent collection, storage or other disposition thereof. The device comprises a variable group of individual water-tight floatable barrels rising above the water and affording a barrier against the escape of the pollution material from the area, together with universal joints connecting adjacent barrels of the group to one another and serving to allow the individual barrels to pitch and roll in accordance with the pitch and roll of the water upon which the barrels are floated and thus to maintain the barrier operative despite undue water movement.

3,651,648
CONTAINER SEALING ROOF STRUCTURE

William Hamilton, Mill Brae, Old Guildford Road, Camberley, England
Filed Jan. 17, 1969, Ser. No. 791,989
Claims priority, application Great Britain, June 26, 1968, 4,299/68
Int. Cl. B65g *5/00;* **B65d** *25/00*
U.S. Cl. 61—.5 **10 Claims**

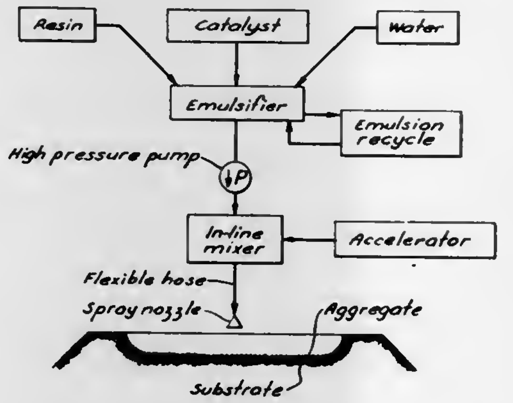
A container for liquefied gas has a domed cover sealed to the top edge of the sides of the container. The cover is supported on a lattice of beams. A horizontal tray covering the opening in the top of the container is suspended from the beam—lattice and is filled with water frozen to ice by the

liquefied gas. A band sealed to the top edge of the sides of the container around the tray has its upper edge turned over into the ice in the tray to form an inner seal between the inside of the container and the domed cover.



3,651,649
STABILIZATION OF SOIL WITH WATER-IN-VINYL ESTER RESIN EMULSIONS

Daniel J. Najvar, Lake Jackson, Tex.; Christ F. Parks; Garry A. Bennett, and Kenneth H. Nimerick, all of Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.
Filed Aug. 26, 1970, Ser. No. 66,923
Int. Cl. C08g *45/14;* **E02d** *3/14*
U.S. Cl. 61—36 R **11 Claims**

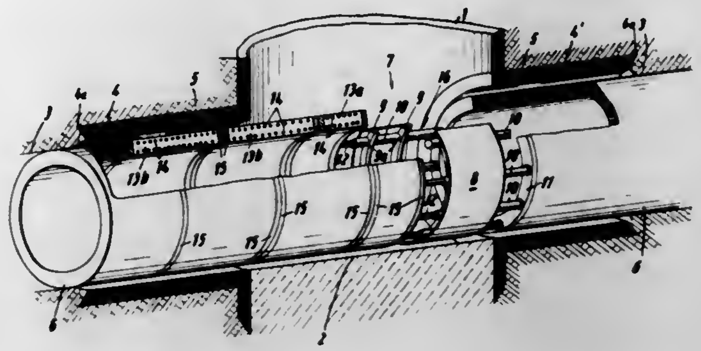


Catalyzed emulsions of a water phase dispersed in a continuous phase of a polymerizable vinyl ester resin containing a copolymerizable monomer are prepared and applied to a soil or aggregate surface. The emulsion is then allowed to cure to a hard cross-linked resin having entrapped therein dispersed droplets of the water phase. The emulsions cure readily at ambient temperatures and may be formulated to cure in as short a time as a few minutes. The resulting cured emulsion-soil (or aggregate) surface is impermeable to liquids, resistant to corrosion and weathering and provides a load bearing surface.

3,651,650
APPARATUS FOR MAKING UNDERGROUND PASSAGES

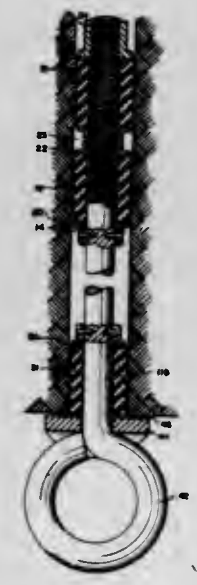
Bruno Weiss, Kolbergerstrasse 11, 4021 Metzkausen, and Richard Weiss, Spichernstrasse 52, 41 Duisburg, both of Germany
Filed June 29, 1970, Ser. No. 50,729
Claims priority, application Germany, June 30, 1969, P 19 33 066.6
Int. Cl. E01g *3/00*
U.S. Cl. 61—42 **11 Claims**

An apparatus for forcing tubular elements through soil so as to make underground passages. Hydraulic jacks are mounted in a cylindrical casing having open ends, for reciprocation axially of the casing. At least one elongated tubular element is provided which is to be axially forced into the soil by the jacks and which has a circumferentially complete annular cross section. A plurality of pressure-transmitting members are provided which are to be interposed between a trailing end of the tubular element and the hydraulic jacks. These pressure-transmitting members each have a circumferentially complete annular cross section corresponding to that of the tubular element and are composed essentially of high-strength reinforced centrifugal concrete provided with annular metallic reinforcing rings embedded at opposite axial ends of the respective pressure-transmitting member.



3,651,651
SHAFT SECUREMENT STRUCTURE

Lee Triplett, Magna, Utah, assignor to Expando Products Company, Magna, Utah
Continuation-in-part of application Ser. No. 748,065, July 26, 1968, now Patent No. 3,504,498. This application Apr. 3, 1970, Ser. No. 25,386
Int. Cl. E21d *21/00*
U.S. Cl. 61—45 B **2 Claims**



The present invention relates to shafts which are to be secured in a variety of structures, for example, mining formations, drill holes, casings, and the like, and is directed to a suitable, elongate shaft construction incorporating compression-lock friction sleeves at a remote end thereof which can be compressed and thereby expanded in a formation simply by rotating the shaft at a remote point relative to the compression sleeves. In a preferred embodiment of the invention, a stabilizing bushing is employed near the entrance to the formation or dill hole, this so that forces in shear against the shaft and proximate the exterior of the bore of which the shaft is mounted, cannot dislodge a compression-friction lock of the shaft within the bore.

3,651,652
SUPPORT ASSEMBLIES FOR MINERAL MINES

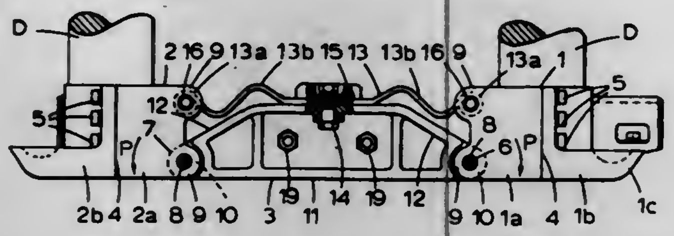
Franz Beulker, Langern, and Erich Hoffmann, Altlunen, both of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Wethmar near Lunen, Westfalia, Germany

Filed Mar. 24, 1970, Ser. No. 22,318

Claims priority, application Germany, Apr. 3, 1969, P 19 17 317.2

Int. Cl. E21d *15/44*

U.S. Cl. 61—45 D **11 Claims**



A support assembly with two frames each having telescopic props carried by base members pivotably interconnected to a rigid member disposed therebetween. The rigid members are connected through a shifting device usable to alternately advance the frames. Each frame has a leaf spring attached at its center to the rigid member and pivotably connected at its ends to the base members or props. Between the center and each end of the spring is a portion which follows a sinusoidal course. Upon pivotal movement of a base member and the rigid member in one direction the associated portion of the spring elongates and eventually limits the amount of pivotal movement. Pivotal movement in the opposite direction is limited when the portion of the spring engages an abutment surface of the rigid member.

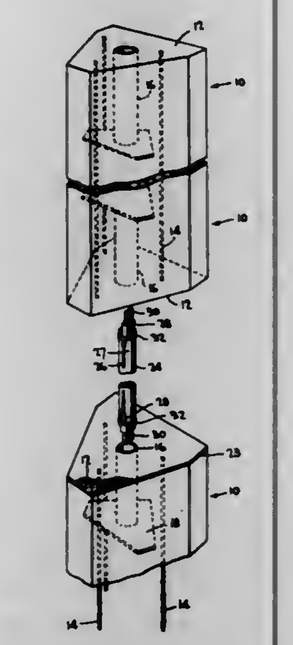
3,651,653
SECTIONAL PILE AND COUPLING MEANS

William J. Mouton, Jr., New Orleans, La., assignor to Charles A. Kronlage, Jr. and Gerard J. Gillen, Jr., New Orleans, La., part interest to each

Filed June 12, 1970, Ser. No. 45,644

Int. Cl. E02d *5/22;* **F16b** *7/00, 9/00*

U.S. Cl. 61—53 **12 Claims**



A coupling means for interconnecting the several sections of a sectional pile structure which includes tubes of deformable material embedded in and opening through the adjacent ends of the pile sections, and elongated connectors also of deformable material having bifurcated end portions for reception in the respective tubes. Wedges operatively associated with these end portions engage abutment within the tubes to separate the furcations, forcing them outwardly into expanding engagement with the tube to locally expand the latter and thereby to provide an interlock between each tube and the connector. Concurrently with the local expansion of each tube in a given direction transversely to its length, there occurs a compensating contraction thereof in a direction transverse to its expansion whereby to relieve stress and to minimize the likelihood of splitting the tube, while at the same time, interlocking the tube and connector against relative angular movement.

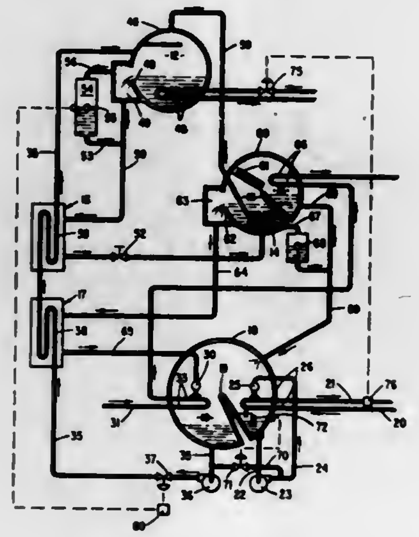
3,651,654
CONTROL SYSTEM FOR MULTIPLE STAGE ABSORPTION REFRIGERATION SYSTEM

Stanley J. Rachfal, Marcellus, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,466

Int. Cl. F25b *15/06*

U.S. Cl. 62—103 **4 Claims**



A multiple stage absorption refrigeration system is provided with a primary absorber, a primary evaporator, a high pressure generator, a low pressure generator having a high pressure condenser associated therewith and a low pressure condenser connected to provide refrigeration. A centrifugal pump forwards weak solution from the primary absorber to the high pressure generator. Intermediate strength absorbent solution passes through an intermediate solution passage extending between the high pressure generator and the low pressure generator. A steam valve controls heat input to the high pressure generator in response to the leaving chilled water temperature from the evaporator. Improved economy and stability is achieved by a solution valve, in the weak solution passage between the primary absorber and the high pressure generator, which is adjusted in accordance with a sensed level of solution in the intermediate solution passage, so that the quantity of weak solution supplied to the high pressure generator is a function of the difference in pressure between the generators.

3,651,655
CONTROL SYSTEM FOR MULTIPLE STAGE ABSORPTION REFRIGERATION SYSTEM

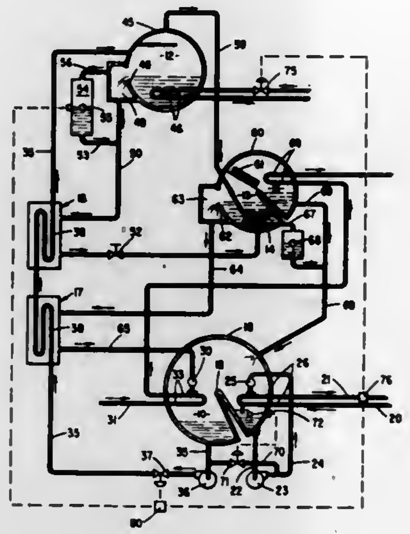
Eddie L. Dyre, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,467

Int. Cl. F25b *15/06*

U.S. Cl. 62—103 **4 Claims**

A multiple stage absorption refrigeration system is provided with a primary absorber, a primary evaporator, a high pressure generator, a low pressure generator having a high pressure condenser associated therewith and a low pressure condenser connected to provide refrigeration. A centrifugal pump forwards weak solution from the primary absorber to the high pressure generator. Intermediate strength absorbent solution passes through an intermediate solution passage extending between the high pressure generator and the low pressure generator. A steam valve controls heat input to the high pressure generator in response to the leaving chilled water temperature from the evaporator. A solution valve in the weak solution passage between the primary absorber and the high pressure generator is adjusted in accordance with a sensed level of solution in the intermediate solution passage, and the position of the stream valve so that the quantity of weak solution supplied to the high pressure generator is a direct function of both the difference in pressure between the generators and the refrigeration demand on the system.



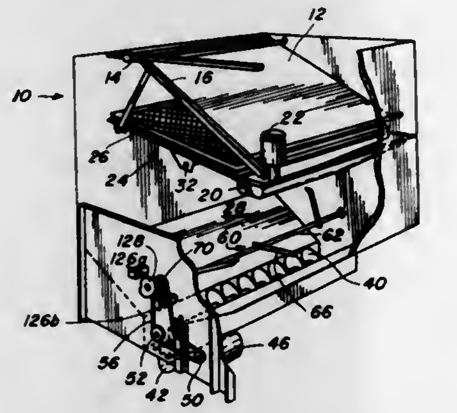
3,651,656
AGITATOR FOR STORAGE BIN OF ICE CUBE MAKER

Harold H. Esser, Chicago, and Ralph B. Olson, Lombard, both of Ill., assignors to Schneider Metal Manufacturing Co., Chicago, Ill.

Filed Dec. 31, 1969, Ser. No. 889,473

Int. Cl. F25c *1/00*

U.S. Cl. 62—137 **2 Claims**



An automatic apparatus for mechanically agitating ice cubes stored in the storage bin of an ice cube maker to obviate cube agglomerates resulting from fusion of stored cubes to each other. The agitator system of the invention includes means for ensuring that agitation takes place automatically at spaced time intervals for finite limited periods.

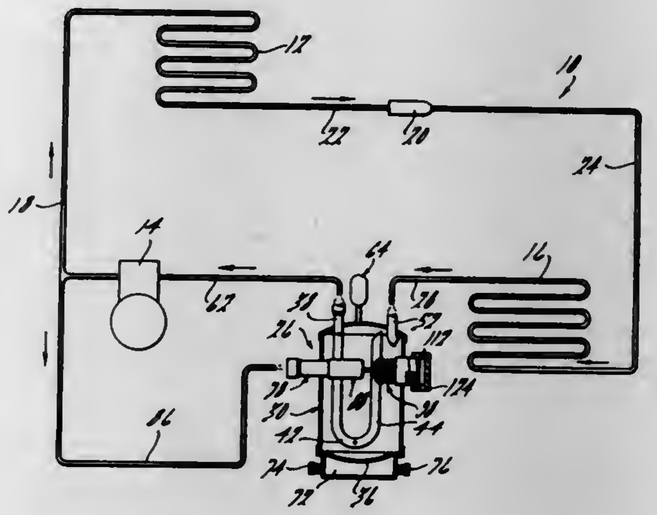
3,651,657
AIR CONDITIONING SYSTEM WITH SUCTION ACCUMULATOR

Edward W. Bottum, 9357 Spencer Road, Brighton, Mich.

Filed Jan. 26, 1970, Ser. No. 5,811. The portion of the term of the patent subsequent to Oct. 5, 1988, has been disclaimed.

Int. Cl. F25b *1/00*

U.S. Cl. 62—196 **8 Claims**



A vehicle air conditioning system is provided. The system comprises the usual compressor, evaporator and condenser connected together in operative relationship. Capillary tube refrigerant expansion means are provided between the condenser and evaporator. A suction accumulator is provided between the evaporator and compressor so that the system will be effective when the compressor operates at variable speeds, the condenser is subjected to variable ambient temperatures and the evaporator is subjected to a variable load. Bleedoff means from the output of the compressor are connected to the suction accumulator. Control means are provided for selectively injecting the relatively high pressure, high temperature gases of the compressor output into the accumulator to maintain the pressure within the accumulator at a substantially constant level.

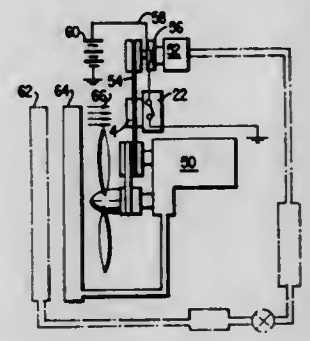
3,651,658
DEVICE FOR PREVENTING AN ENGINE FROM OVERHEATING

Keizo Kushida, Anjyo, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1970, Ser. No. 82,698

Int. Cl. B60h *3/04*

U.S. Cl. 62—228 **6 Claims**

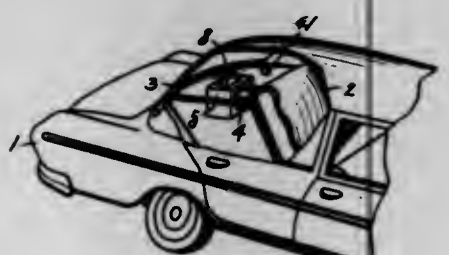


A device is provided for preventing overheating of an automotive vehicle engine also used for operating an air-conditioning system for the vehicle which features an engine-driven belt pulley having an electrically conducting plate attached to one side, a magnet in juxtaposed relation to the plate and rotatably disposed on the same axis as the plate, resilient means connecting the magnet and a fixed member for permitting angular displacement of the magnet corresponding to a torque acting thereon, and a cam connected to the magnet and operative to open and close a switch for shutting off or starting the compressor unit of the air conditioner, depending upon the torque being experienced, for thereby preventing the engine from becoming overheated when operated at speeds and under such loads which normally might cause overheating.

3,651,659
AIR-CONDITIONING APPARATUS IN VEHICLE

Minoru Nakao, and Syozo Yamamoto, both of Osaka, Japan, assignors to Shikishima Spinning Co. Ltd., Osaka-shi, Japan

Filed June 30, 1969, Ser. No. 837,430
Int. Cl. B60h *3/04*
U.S. Cl. 62—239 **3 Claims**

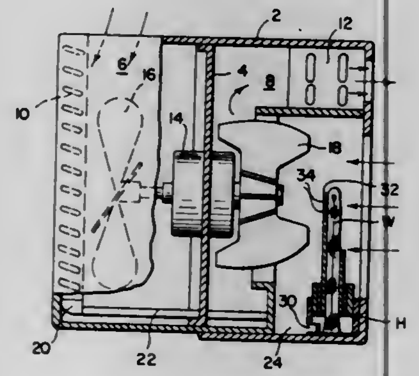


An apparatus wherein an automobile air conditioner is provided with air recirculating means, air cooling means, and an air filter of a texture capable of removing smoke from the air, and with means operated for effectively inserting the air filter in, and removing it from, the path of air circulating through the cooling means depending on whether the air in the passenger compartment is or is not so smoke laden as to require smoke removal therefrom.

3,651,660
CONDENSATE DISCARDING DEVICE FOR AIR CONDITIONER

Vincente Rodriguez Quiros, 113 First Street, Jardinez del Caribe, Ponce, P.R.

Filed May 6, 1970, Ser. No. 35,074
Int. Cl. F25d *47/00*
U.S. Cl. 62—279 **3 Claims**

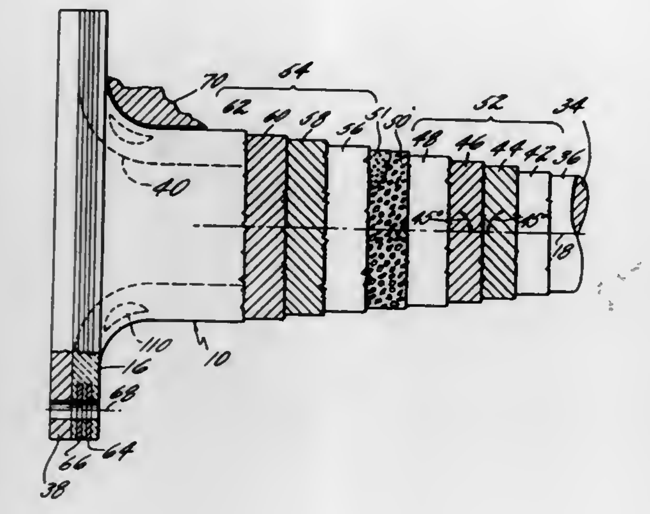


A condensate discarding device for a refrigerator apparatus. The condensate is collected in a sump and is raised by a capillary device fixed to the sump to interset the air stream which flows toward the condenser unit. The air stream picks up the moisture and carries it through the condenser where it is discarded.

3,651,661
COMPOSITE SHAFT WITH INTEGRAL END FLANGE

Donald C. Darrow, Fairfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 2, 1970, Ser. No. 7,722
Int. Cl. F16c *1/00*
U.S. Cl. 64—1 **53 Claims**

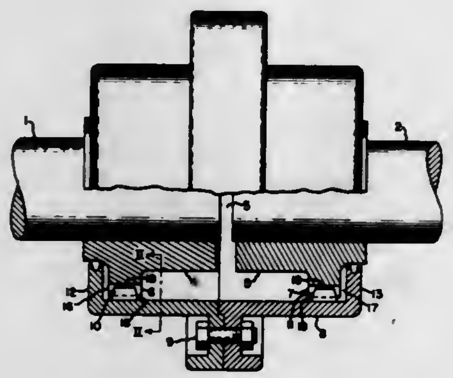


A composite shaft with an integral end flange fabricated of a plurality of layers of high modulus fibers of selected fiber orientation positioned between and bonded to protective outer and inner layers as required and to one another such that each layer extends the full length of the shaft and the flange. The shaft layers may be of sandwich construction and may be asymmetric and the flange periphery may include doublers of bearing material.

3,651,662
GEAR TYPE FLEXIBLE COUPLING

Herbert N. Hoffman, Lunenburg, Mass., assignor to General Electric Company

Filed Oct. 19, 1970, Ser. No. 81,850
Int. Cl. F16d *3/18*
U.S. Cl. 64—9 R **6 Claims**

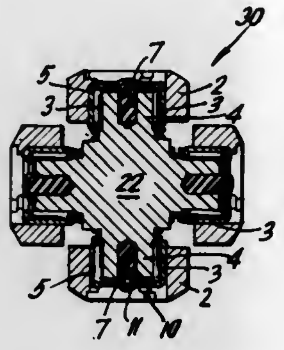


A flexible coupling of the gear type is provided with mating teeth that have a substantial radial clearance between the major diameters of the internal and external gear teeth. Provisions for centering the floating member are located at the minor diameters of the respective gear teeth. In this configuration of coupling gear teeth, the lubricating oil is allowed to flow freely through the aforesaid radial clearance, thereby tending to prevent solids, centrifuged out of the lubricant as a result of rotation, from impairing coupling operation.

3,651,663
UNIVERSAL JOINT CONSTRUCTION

Gunter Lange, Siedlung Gluckauf, and Jurgen Ulderup, Haldem, both of Germany, assignors to Lemforder Metallwaren AG, Lemforde, Hannover, Germany

Filed July 22, 1970, Ser. No. 57,117
Claims priority, application Germany, Aug. 18, 1969, P 19 41 975.1
Int. Cl. F16d *3/26*
U.S. Cl. 64—17 A **7 Claims**

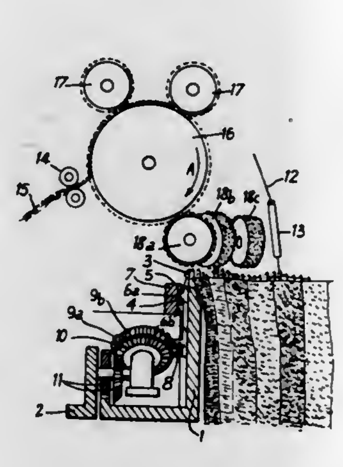


A universal joint particularly for steering devices of motor vehicles includes pins of its cross link assembly which are mounted by means of plain or ball bearings and which are supported elastically in an axial plane. The axial support is effected by a pinlike buffer which is mounted within a bore defined in an end face of each pin and which bears against a portion of the housing of the connecting fork member.

3,651,664
METHOD OF PRODUCING ARTIFICIAL FURS OF NONUNIFORM FIBER DENSITY

Louis Collez, deceased, late of Saint-Die, France (by Emilienne Marie Aussel and Marie Elisabeth Lucie Collez, representatives, both of 76 Avenue Carnot, Bordeaux, France)

Continuation-in-part of application Ser. No. 598,402, Dec. 1, 1966, now abandoned which is a Continuation-in-part of application Ser. No. 480,005, Aug. 16, 1965. This application May 18, 1970, Ser. No. 38,073
Int. Cl. D04b *9/14*
U.S. Cl. 66—9 B **1 Claim**

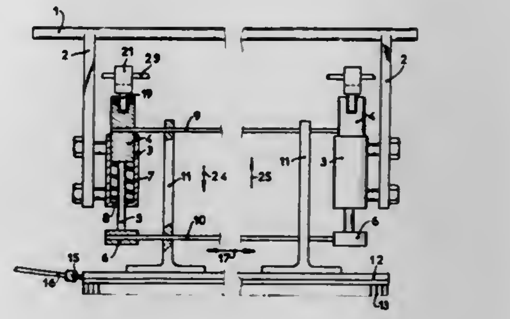


Artificial fur is produced having ridges or stripes of long fiber pile of varying density with short fiber pile of uniform density within the ridges. To achieve this, an ordinary Wildman Jacquard knitting machine is utilized having at least three doffer rolls for each yarn feed. Two of the doffer rolls are rotated several times during the passage before same of selected groups of needles and long fibers are fed to each of these doffer rolls at less than the capacity of the rolls to receive same. The other doffer roll is fed with short fibers in the conventional manner. The needles are selectively actuated to produce the stripes or ridges by removing fibers from the respective rolls.

3,651,665
GUIDE BAR CONTROL FOR KNITTING MACHINES

Augustin Perrier, Lyon, France, assignor to Manufactures Jean-Baptiste Martin, Andre Charbin & Cie, Lyon, France

Filed Mar. 5, 1970, Ser. No. 16,883
Claims priority, application France, Mar. 6, 1969, 6906176
Int. Cl. D04b *23/00*
U.S. Cl. 66—86 **3 Claims**

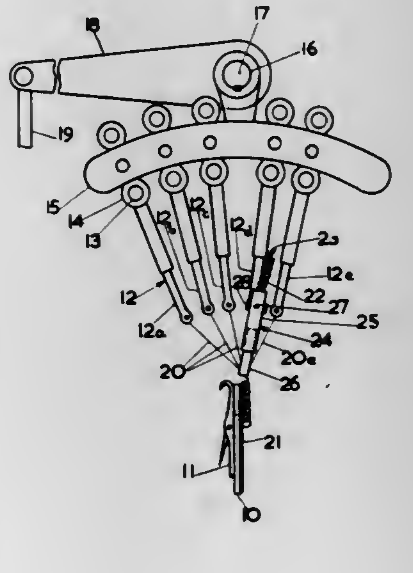


A control apparatus for use in a Raschel machine for effecting movements of the guide bar and comprising a pair of spaced bars which are bodily movable up and down by cam and spring means and on which the guide bar can slide with a reciprocating motion.

3,651,666
SLIDING CLASP FASTENER STRINGERS

Christopher Frederic Austin, Sutton Coldfield; Philip Simpson Crowther, Sutton Coldfield; David Warren, Sutton Coldfield, and David Howitt, Birmingham, all of England, assignors to Lightning Fasteners Limited, Birmingham, England

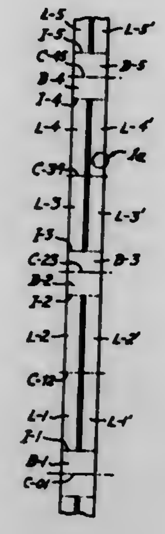
Filed June 29, 1970, Ser. No. 50,755
Int. Cl. D04b *23/00*
U.S. Cl. 66—86 **9 Claims**



A slide fastener stringer comprises a knitted tape and a series of coupling elements secured thereto during knitting.

3,651,667
MACHINE KNITTING

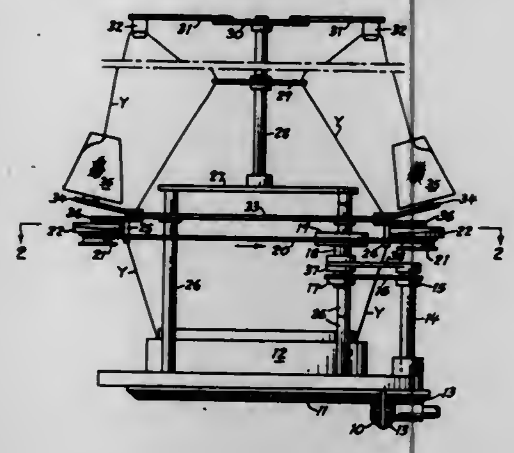
Seymour C. Titone, Birchrunville, Pa., assignor to Titone Research & Development Corporation, Burlington, N.J.
Filed July 18, 1969, Ser. No. 842,867
Int. Cl. D04b *23/02*
U.S. Cl. 66—87 **5 Claims**



Seamless bifurcated tubular fabric warp-knit with a filigree-like net structure is provided for panty hose and like uses.

3,651,668
YARN FEEDING MEANS FOR KNITTING MACHINES

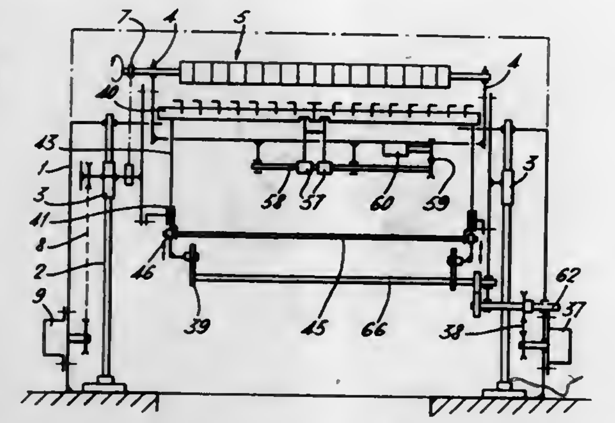
David Pernick, 1020 Shore Boulevard, Brooklyn, N.Y.
Filed Jan. 9, 1970, Ser. No. 878,443
Int. Cl. D04b *15/48*
U.S. Cl. 66—132 T **3 Claims**



Yarn feeding apparatus for drawing off a plurality of yarns from their cones and feeding the same to the needles of a multiple feed circular knitting machine at the feeds thereof comprising a plurality of circumferentially spaced first rollers rotated by an endless tape trained thereover with the latter driven by the knitting machine in adjustable timed relation therewith, second rollers of larger diameter than the first rollers and positioned atop thereof to rotate therewith, and means to guide the yarns around the second rollers for one or more turns, then (1) to guide the yarns to and between the tape and the first rollers and away therefrom to the needles, or then (2) to guide the yarns around the first rollers for one or more turns in spaced relation to the tape thereon, the first and second rollers acting as winches, under certain conditions, upon the one or more turns of the yarns thereon.

3,651,669
FABRIC TAKEUP FOR FLAT KNITTING MACHINES

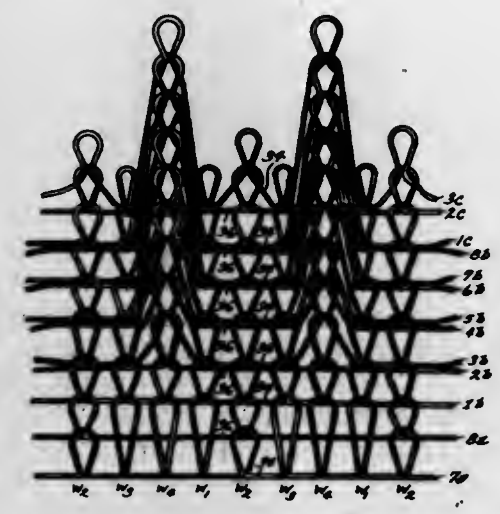
Wolfgang Findewirth; Helmut Irmscher; Gunther Kessler, and Gunther Leubner, all of Karl-Marx-Stadt, Germany, assignors to VEB Wirkmaschinenbau Karl-Marx-Stadt Kombinat fur Wirk-und Strickmaschinenbauerzeugnisse, Karl-Marx-Stadt, Germany
Filed Oct. 28, 1970, Ser. No. 84,694
Int. Cl. D04b *15/88*
U.S. Cl. 66—149 **7 Claims**



Fabric takeup mechanism for flat knitting machines for knitting fabrics of variable width, comprising a hook takeup including means carrying a row of hooks in a line parallel to the front edge of the fabric being knit, the hooks including a first set arranged on the left-hand side of the carrying means and a second set arranged on the right-hand side of the carrying means, the free end of each of the hooks of the first set pointing toward the left-hand edge of the fabric and the free end of each of the hooks of the second set pointing toward the right-hand edge of the fabric, means for bringing the row of hooks into engagement with the front edge of the fabric at the beginning of a knitting operation, a set of a plurality of coaxial takeup rolls and a set of a like plurality of coaxial pressure rolls each cooperating with a respective takeup roll to define a nip, the sets of rolls being positioned relative to the row of hooks to receive in the nips from the row of hooks the front edge of the fabric, and means for disengaging the row of hooks from the front edge of the fabric after the front edge of the fabric has been received in the nips.

3,651,670
HOSIERY-GIRDLE-TYPE PANTYHOSE

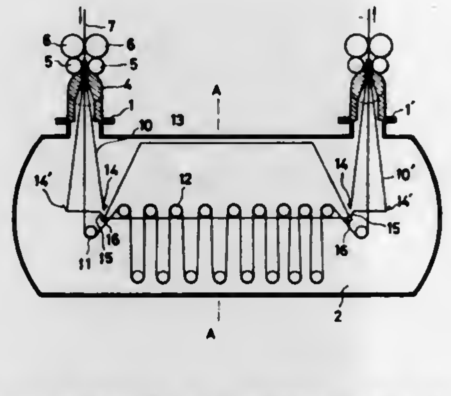
Aaron Burleson, Burlington, N.C., and Vaughn H. Butler, Harriman, Tenn., assignors to Burlington Industries, Inc., Greensboro, N.C.
Filed June 26, 1969, Ser. No. 836,997
Int. Cl. A41b *9/02*
U.S. Cl. 66—177 **3 Claims**



A hosiery-girdle-type pantyhose comprising two seamless hose sewn together wherein in place of a welt, there is a compressive, stretch fabric integrally knit with the hose to form a compressive girdle portion. The girdle portion of each hose has front and rear panels which are knit so as to provide more fabric in the rear panel than in the front panel with the front panel averaging less stitch loops per course than the rear panel for the same number of wales in the course. Fewer stitches per course in the front panel than the rear panel are provided by knitting stitch loops only in spaced-apart wales in the front panel for at least some of the courses and floating the yarn in these courses between the spaced-apart wales.

3,651,671
HIGH PRESSURE STEAMER

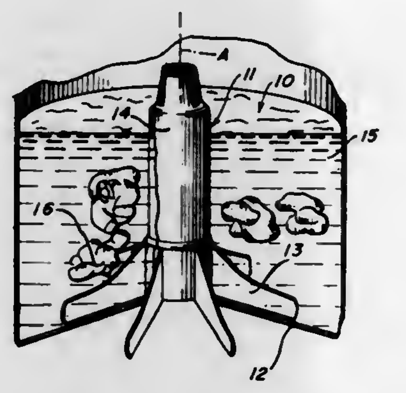
Yoshikazu Sando, and Masao Takau, both of Wakayama, Japan, assignors to Sando Iron Works Company Limited Wakayama-shi, Wakayama-ken, Japan
Filed Feb. 4, 1970, Ser. No. 8,596
Claims priority, application Japan, June 24, 1969, Sept. 20, 1969, Sept. 22, 1969, Nov. 1, 1969, Nov. 20, 1969; 44/59950, 44/74925, 44/75413, 44/103910, 44/93185
Int. Cl. D06c *1/00*
U.S. Cl. 68—5 E **3 Claims**



High pressure steamer for treating cloth and other textile goods with saturation steam of high temperature and high pressure provided with mechanisms to preserve security and safety operation for preventing dripping onto the cloth being treated, for providing safety guarding on the highly heated and pressurized drum body of the high pressure steamer, for preventing soiling as well as for washing of guide rolls which feed cloth within said drum body, and for regulating tension loaded on the textile goods being fed through guide rolls installed within said drum body.

3,651,672
LAUNDRY MACHINE AGITATOR

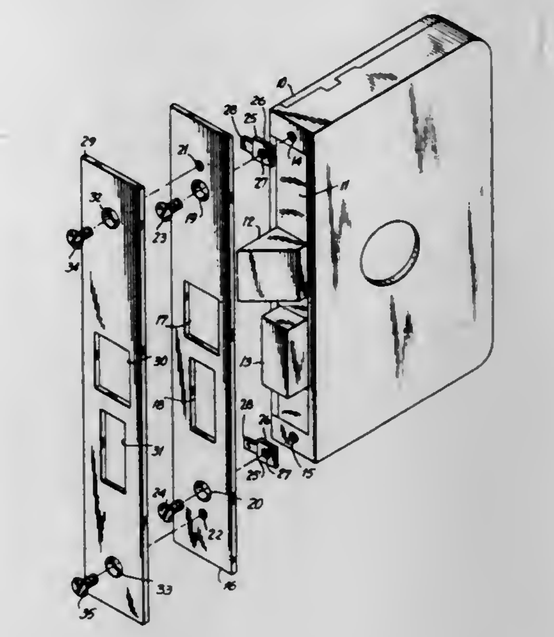
Keith D. Salisbury, St. Joseph, Mich., assignor to Richard R. Walton, Boston, Mass.
Continuation of application Ser. No. 464,706, June 17, 1965, now abandoned. This application Jan. 4, 1968, Ser. No. 695,805
Int. Cl. D06f *13/02*
U.S. Cl. 68—134 **1 Claim**



A washing machine agitator having a centerpost and a plurality of vanes molded integrally therewith and extending radially outwardly from a lower portion thereof. The vanes are deflectable to provide improved low wear, high efficiency washing action.

3,651,673
MORTISE LOCK HAVING ADJUSTABLE FACE PLATE

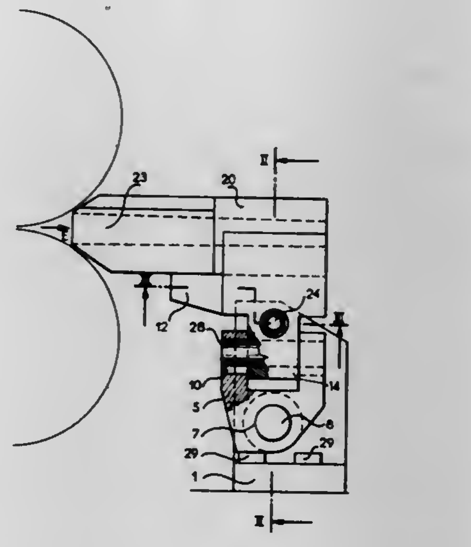
Edward J. Sendrowski, Fitchburg, Mass., and Jacob K. Maki, Westminster, N.Y., assignors to ILCO Corporation, Fitchburg, Mass.
Filed Dec. 28, 1970, Ser. No. 101,535
Int. Cl. E05b *9/06*
U.S. Cl. 70—450 **4 Claims**



A mortise lock including adjustment means permitting the face plate to be fixed in relation to the lock casing in three selected positions, notably, square, right hand bevel and left hand bevel.

3,651,674
APPARATUS FOR GUIDING A PRODUCT UNDERGOING TRANSFORMATION, AND THE USE THEREOF IN A WIRE MILL

Robert Petit, Rosny-Sous-Bois, France, assignor to Societe Nouvelle, Spidem, Paris, France
Filed Oct. 22, 1969, Ser. No. 868,311
Claims priority, application France, Oct. 24, 1968, 171285
Int. Cl. B21d *55/00;* **B21b** *39/20*
U.S. Cl. 72—5 **8 Claims**

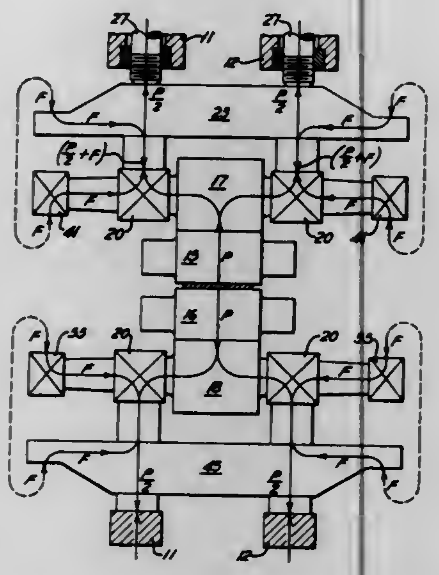


Device which, by means of an appropriately calibrated rupture pin, enables damage to a machine to be prevented during any clogging which might occur in the product being transformed.

3,651,675

AUTOMATIC GAUGE CONTROL OF STRIP IN ROLLING MILL EMPLOYING BACKUP ROLL BENDING

Morris Denor Stone, Pittsburgh, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed Oct. 10, 1969, Ser. No. 865,331
Claims priority, application Great Britain, Oct. 21, 1968, 49,805/68
Int. Cl. B21b *37/08*
U.S. Cl. 72—8 **2 Claims**

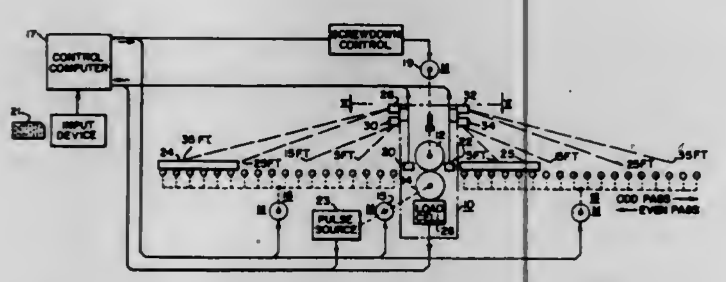


The disclosure of the present invention relates to the construction and operation of a rolling mill wherein automatic control of the gauge of the strip being rolled is achieved. More particularly, it relates to a rolling mill provided with mechanisms for bending either or both of the work rolls or backup rolls, including backup roll necks, and thereby control the longitudinal gauge of the material. It provides in the preferred form a four-high rolling mill including means for bending the backup rolls thereof so as to control the thickness of the material along its longitudinal axis. In combination with the backup roll bending mechanism and the usual screwdown mechanism, there is provided a beam so arranged with respect to these two elements that the force of the backup crown control system is self-contained and not imposed upon the mill housing. Use of the beam with respect to both backup rolls in this manner assures that the forces of the backup crown control mechanism, which would otherwise impose additional stretch on the housing, is nullified so that there is less need of continually adjusting the roll gap for automatic gauge control.

3,651,676

ROLLING MILL CONTROL SYSTEM

James D. Robertson, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 31, 1969, Ser. No. 889,665
Int. Cl. B21b *37/00*
U.S. Cl. 72—12 **6 Claims**

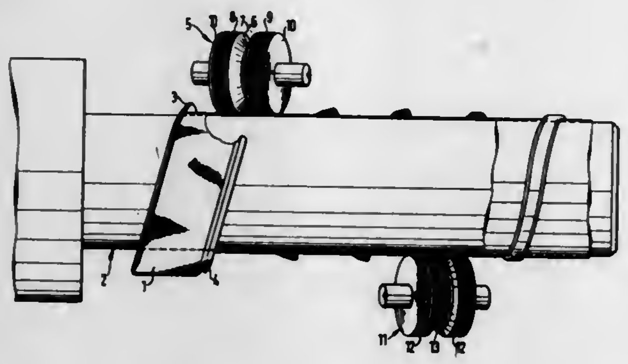


A rolling mill stand, under particularly tandem workpiece rolling conditions where more than one workpiece passes through the stand for a given setting of that stand, is provided with a control system including a plurality of workpiece position sensors operative such that after a given workpiece has passed through the rolls of the mill stand the presence of any additional workpiece also desired to be passed through the stand with the same roll opening setting is sensed before the roll opening of the stand is changed to the next desired setting for any scheduled next workpiece passage through the stand.

3,651,677

APPARATUS FOR HELICALLY WINDING STRIP INTO A LOCK-SEAMED PIPE OR TUBE

Emil Siegwart, Michael-Blatter-Strasse 6, 6603 Sulzbach (Saar). Germany
Filed Feb. 16, 1970, Ser. No. 11,376
Int. Cl. B21c *37/12;* **B23k** *31/02*
U.S. Cl. 72—50 **10 Claims**

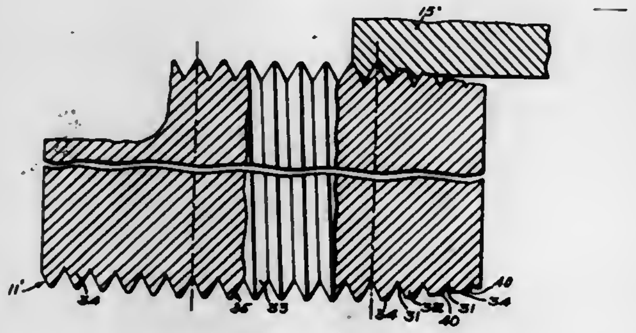


The apparatus for making helically wound, lock-seamed pipes of U.S. Pat. No. 3,122,115 is improved for use with heavier strip material by setting the axes of the pressure roller and flattening roller at an angle to the axis of the driven mandrel corresponding to the helix angle of the lock seam, by providing the strip engaging faces of the rollers with sharp edged ribs, and mounting the rollers so that the ribs bite into the strip, and by spacing the rollers apart along the seam by an angle of at least 360°.

3,651,678

TRUNCATED THROUGH FEEDING THREAD ROLLING DIE

Elmer S. Zook, Princeton, and Paul W. Ronn, Gardner, both of Mass., assignors to Reed Rolled Thread Die Co., Holden, Mass.
Filed Nov. 6, 1968, Ser. No. 773,851
Int. Cl. B21h *3/04, 3/02;* **B23g** *7/02*
U.S. Cl. 72—103 **2 Claims**

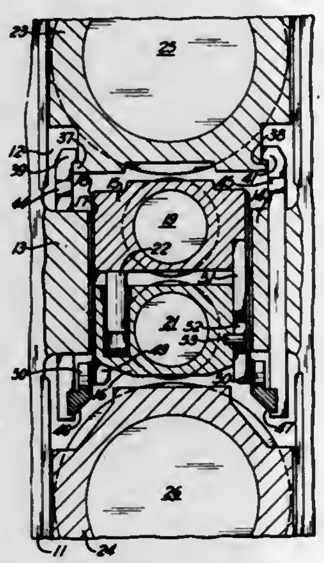


A through feed thread rolling die for rolling external threads on a cylindrical work piece has an external thread thereon with relieved starting and finishing sections, the starting relief providing flat crests which form a predetermined angle with the roll axis and taper to a diameter at the starting end less than the mean height of the fully formed threads. A modified version tapers the starting section at a larger angle than the predetermined angle of the crests thereby reducing the length of the starting section. The invention includes the method of metal movement caused by the die in the formation of the thread.

3,651,679

ROLLING MILL

Charles Storer Shumaker, Glenshaw, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed Dec. 9, 1969, Ser. No. 883,522
Claims priority, application Great Britain, Jan. 3, 1969, 585/69
Int. Cl. B21b *31/08*
U.S, Cl. 72—238 **6 Claims**

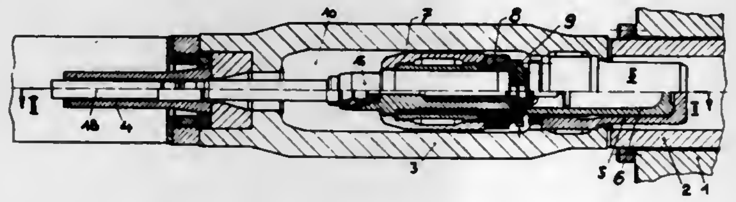


The disclosure of the present invention relates to a rolling mill having indented housing posts to allow minimum length work roll chocks to be employed. The work roll chocks and the backup roll chocks are constructed with a minimum of irregular and difficult-to-machine surfaces. In addition, the rails and wheels used to quickly remove and replace the work rolls are connected in a very simple and economical manner to the backup chocks and work roll chocks, respectively, by separate connected bars.

3,651,680

TUBE PRESS WITH MANDREL ADJUSTMENT

Horst Hans Groos, Metzkausen, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany
Filed Dec. 10, 1969, Ser. No. 883,901
Int. Cl. B21c *23/20, 25/00*
U.S. Cl. 72—265 **6 Claims**

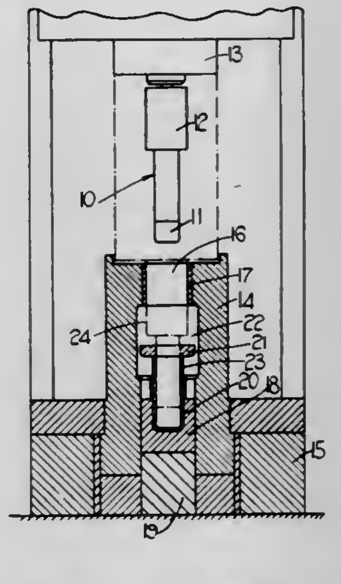


Some tube presses need a device for adjusting both the longitudinal position and the angular position of the mandrel. The longitudinal position of the mandrel is adjusted by rotating a nut on a spindle connected to the mandrel. Previously such devices have included separate coupling members for preventing rotation of the spindle with respect to the nut and rotation of the spindle with respect to the press. I now provide a single coupling member which is rotationally fixed with respect to the spindle and which can move between two positions, in one of which the spindle is rotationally fixed with respect to the nut and in the other of which the spindle is rotationally fixed with respect to the press.

3,651,681

APPARATUS FOR USE IN FORMING SHELLS FROM BILLETS

Ronald W. Eames, Wingerworth, Chesterfield, England, assignor to The Chesterfield Tube Company Limited, Chesterfield, England
Filed July 28, 1969, Ser. No. 845,253
Claims priority, application Great Britain, Aug. 1, 1968, 36,717/68
Int. Cl. B21c *23/18*
U.S. Cl. 72—267 **1 Claim**

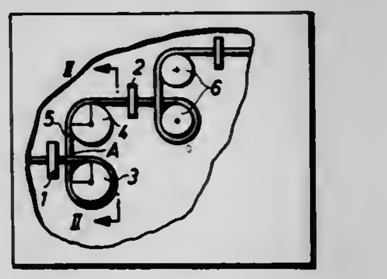


Apparatus for forming shells from billets comprising a punch having a billet-engaging nose portion at its leading end and a supporting portion which is of greater diameter than the nose portion, a billet supporting assembly which comprises a hollow housing having at its upper end an aperture through which the nose portion and the supporting portion of the punch can extend and a recessed billet block in the interior of the housing together with a nose portion supporting ring, said housing having a laterally directed aperture through which a billet can be inserted into the recess of the billet block and from which a shell extruded from a billet by said punch can be withdrawn.

3,651,682

WIRE DRAWING MACHINE

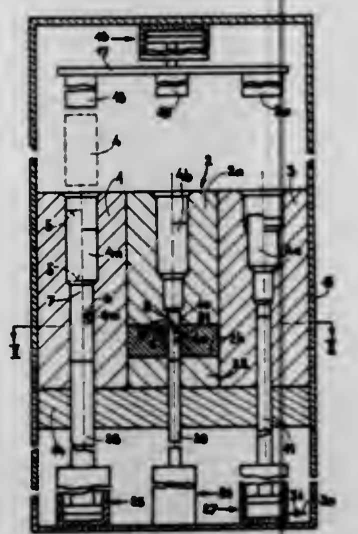
Werner Henrich, 6349 Horbach, Am Horbach, Germany
Filed June 5, 1969, Ser. No. 830,741
Claims priority, application Germany, Mar. 29, 1969, P 19 16 256.2
Int. Cl. B21c *1/04*
U.S. Cl. 72—281 **2 Claims**



Between two successive dies of a wire drawing machine there are positioned in the path of the wire two rollers which are independently driven and each of which contacts the wire through an angle of less than 360° with the sum of the angles of contact of the rollers being 360°. Each of the rollers has a conical taper in the axial direction from the advancing to the departing portions of the wire on a roller and the rollers are positioned with their adjacent peripheral surfaces moving in opposite directions.

3,651,683
COLD MOULDING PRESS

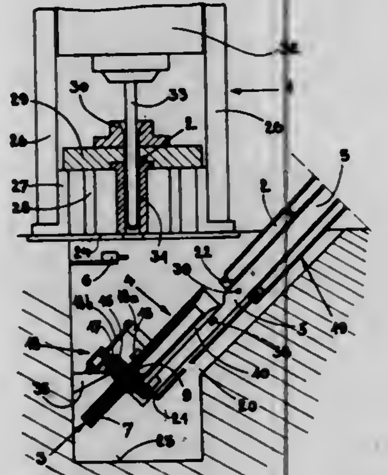
Rudolf Liebergeld, Gernotstrasse 51/55, 85 Nurnberg, Germany
Filed Sept. 3, 1969, Ser. No. 854,988
Claims priority, application Germany, Mar. 15, 1969, P 19 13 215.1
Int. Cl. B21j *13/02*, *13/14*
U.S. Cl. 72—341 **4 Claims**



In cold moulding or pressing of workpieces, in particular workpieces of elongated form having a longitudinally applied moulding pressure, rough workpieces or blanks vary in volume and there is provided means for shearing off an unwanted overlength portion of the workpiece before the final moulding to avoid faulty deformed mouldings. Preferably, the blank is formed into a roughly moulded workpiece in a first die, the workpiece is transferred to a second die and moulded to its final basic shape and then trimmed by a shearing device, formed by a movable portion of the die and containing the over-length portion of the workpiece, displacing with respect to the main portion of the die. The workpiece can then be transferred to a third die for final moulding to the finally required form, the correct volume of material for the finally required form being supplied by the workpiece leaving the second die.

3,651,684
WORKPIECE CONVEYER DEVICE FOR A PRESS

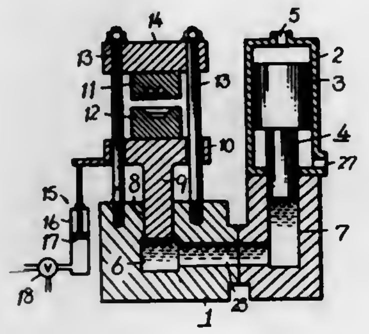
Rudolf Liebergeld, Gernotstrasse 51/55, Nurnberg, Germany
Filed Sept. 4, 1970, Ser. No. 69,606
Claims priority, application Germany, Sept. 5, 1969, P 19 45 009.0
Int. Cl. B21d *45/00*
U.S. Cl. 72—345 **12 Claims**



A conveyor device for long workpieces falling vertically from a press and comprising an open topped receiving device capable of receiving only one workpiece, a brake device adjacent to the receiving device for braking the fall of the workpiece into the receiving device, a track for the workpieces, means for moving the receiving device towards the track, a lifting device adjacent to the track whereby a workpiece can be displaced from the receiving device along the track, and a mechanism operatively associated with the working cycle of the press incorporating a first switch operated when the receiving device is located in the receiving position and a further switch which is operated when a workpiece is located in the receiving device.

3,651,685
HIGH HYDRAULIC PRESSURE FORGING DEVICE

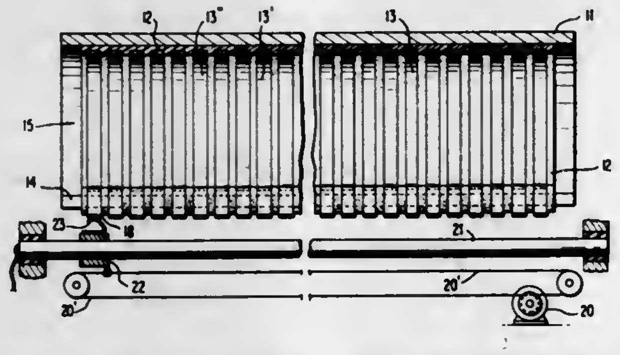
Hiroshi Tominaga, Kanagawa-ken, Japan, assignor to Tokyu Sharyo Seizo Kabushiki Kaisha, Kanagawa-ken, Japan
Filed Jan. 21, 1969, Ser. No. 794,473
Claims priority, application Japan, Jan. 30, 1968, Jan. 31, 1968, Mar. 15, 1968; 43/5543, 43/5597, 43/17020
Int. Cl. B21j *7/28*
U.S. Cl. 72—402 **6 Claims**



A high hydraulic pressure forging apparatus wherein the accelerative operation of a hammer means in a cylinder causes said hammer means to strike a liquid received within a liquid chamber, to in turn provide operating force to a plunger in operative engagement with the liquid for the displacement of a movable die mounted on the plunger in opposition to a fixed die.

3,651,686
PROGRAMABLE READOUT FOR DELTA T BAR SPECTROMETER

Steven F. Dizio, Troy, N.Y., assignor to Aero Vac
Filed Mar. 27, 1970, Ser. No. 23,277
Int. Cl. G01n *25/14*
U.S. Cl. 73—25 **13 Claims**



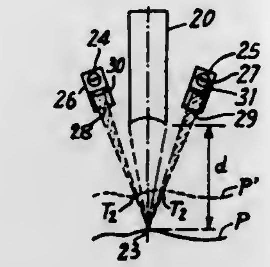
A delta T bar spectrometer, for concentration of trace quantities of a gas in a mixture as the mixture is transported along a thermal gradient tube from a warm end to a cold end, produces an enrichment sufficient for measurement by separately depositing condensed gas portions according to temperatures along the delta T bar. Removal of the concentrated gas portions according to temperature involves selectively warming portions of the delta T bar in succession beginning at the low temperature end. Zones of deposition are made sharp at the temperature at which the particular constituent first condenses, to thereby separate constituents from each other along the length of the bar. Evaporation of the condensates in succession occurs as the successive portions are warmed in an arrangement in which the delta T bar is not warmed but only segmented portions of the surface on which the condensate lies are warmed incrementally, in partial isolation from the temperature of the bar itself by the use of insulating material separating the bar from thermally conducting strips exposed to the gas mixture. A partially insulated ring so formed remains in conformity with the temperature of the bar itself during deposition. In the evaporation stage each segment or ring element is warmed through a range of only a few degrees. The quantity of heat required for this purpose is made very small. A very rapid readout of the quantities of gas constituents is achieved by sending an incremental temperature rise wave along the tube from the cold end to the hot end, without materially disturbing the overall temperature of the delta T bar and the elements return to their respective temperatures so that deposition is resumed after a brief evolution period for one or all of the deposited constituents.

ERRATUM

For Class 73—37 see:
Patent No. 3,651,743

3,651,687
ULTRASONIC MICROMETER

Jacques Dory, Meaux, France, assignor to Corporation "Realisations Ultrasoniques"
Continuation-in-part of application Ser. No. 495,463, Oct. 13, 1965, now Patent No. 3,431,774, Continuation-in-part of application Ser. No. 508,348, Nov. 17, 1965, now Patent No. 3,423,992, Continuation-in-part of application Ser. No. 678,929, Oct. 30, 1967, now Patent No. 3,454,922. This application July 9, 1968, Ser. No. 743,415
Claims priority, application France, July 10, 1967, 113738
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.8 R **3 Claims**



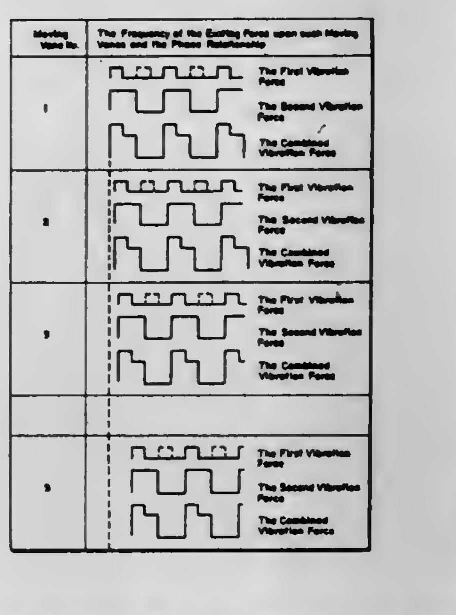
The invention generally relates to the method of measurement of distances through reflexion of ultrasonic pulses on a reflecting surface and determination of the time interval of propogation of the resulting echoes from the reflecting surface to the transducer.

The instant invention more particularly discloses a micro method based on said method and including means for focusing the ultrasonic pulsed ways at an accurately predetermined point on the reflecting surface.

3,651,688
VIBRATION FORCE EXCITING METHOD AND APPARATUS

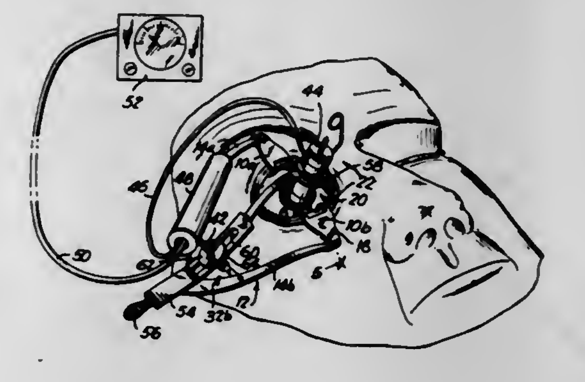
Akio Hizume; Shuji Ohyagi, and Shigeho Tanaka, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 22, 1970, Ser. No. 39,906
Claims priority, application Japan, May 24, 1969, 44/40333
Int. Cl. G01m *7/00*; **B06b** *1/06*
U.S. Cl. 73—71.5 **4 Claims**

A machine rotor, having projecting members extending radially from its periphery, such as the vaned rotor of a turbine, is subjected, while remaining stationary, to the vibration sources which would act upon the vanes during actual rotation of the rotor. In the testing, a first vibration force, having a number of vibrations equal to the product of the design r.p.m. of the rotor and the number of vibration exciting sources acting thereon during rotation, is produced. A second vibration force having a number of vibrations equal to the design r.p.m. of the rotor is also produced. The first vibration force is superposed on the second vibration source during only that period in which the second vibration is normally produced. The resultant of the superposed vibration forces is applied sequentially to successively adjacent projecting members of the stationary rotor at a phase difference equal to the reciprocal of the product of the r.p.m. and the number of projecting members or vanes. The apparatus includes successively triggered flip-flop circuits each effective to apply an exciting potential to a piezo-electric vibrating member mounted on a respective vane. Gating means are associated with the flip-flops in a manner such that the width of the pulses applied to the vibrating elements simulate the widths of the vibrating pulses actually present during operation of the rotor.



3,651,689
TONOMETER MOUNTING DEVICE

Heskel M. Haddad, 1200 Fifth Avenue, New York, N.Y.
Filed Apr. 29, 1970, Ser. No. 33,026
Int. Cl. A61b *3/16*
U.S. Cl. 73—80 **10 Claims**

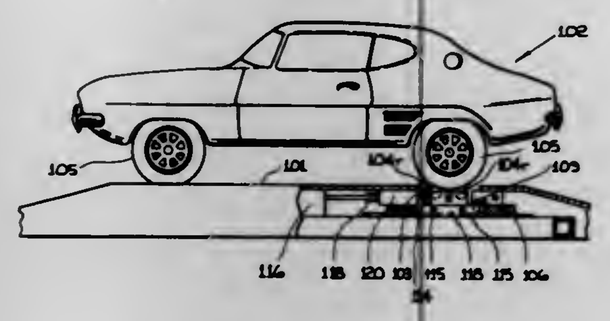


A device which is to be used with a tonometer for facilitating the operation thereof. The device includes a pair of retractors for respectively retracting the upper and lower eyelids of an eye which is to be examined. A holding unit holds and carries the pair of retractors in a position where they conveniently pull the eyelids apart from each other with a regulated force. A supporting device is provided for supporting a tonometer in a convenient position of operation while the eyelids are held back by the retractors.

3,651,690
APPARATUS FOR MEASURING OUTPUT CHARACTERISTICS OF A ROTARY MOVING PART

Brian Colin Pagdin, Sutton Coldfield, and Brian Michael Forster, Harthill, Near Sheffield, both of England, assignors to G.K.N. Birfield Transmissions Limited, Birmingham, England

Filed Aug. 4, 1969, Ser. No. 847,298
Claims priority, application Great Britain, Aug. 2, 1968, 36,905/68
Int. Cl. G01m *15/00*
U.S. Cl. 73—117 **13 Claims**

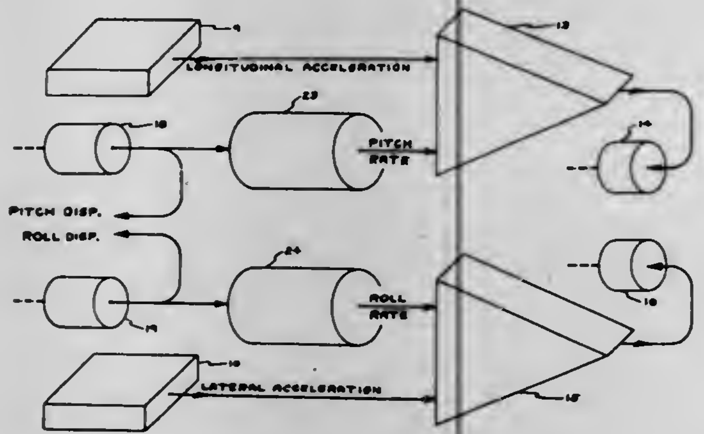


The invention provides a dynamometer for measuring velocity, acceleration, torque and other quantities relative to the performance of a road vehicle or machine and comprises a plurality of roller assemblies on which the road wheels of the vehicle rest and which themselves form an inertia load or are connected to a flywheel forming an inertia load, each roller assembly driving a pulse generator producing a train of primary pulses which are gated with longer master control pulses to provide successive groups of primary pulses of the order of 0.1 seconds duration. Successive groups are operated upon by arithmetical circuits of an electrical computer to derive output signals representing velocity, acceleration or such other quantity as may be required to be determined, this or these quantities being stored in storage circuits which are constantly updated but can be held or frozen at a particular value by a trigger signal generated in response to attainment of a predetermined value of one of said quantities such as maximum value. The quantities are displayed digitally or graphically on a cartesian plotter unit.

3,651,691
PENDULOUS TYPE INERTIAL REFERENCE DEVICES

Donald J. Pilha, 225 South Hamel Drive, Beverly Hills, Calif.

Filed Jan. 5, 1970, Ser. No. 675
Int. Cl. G01c *21/00*
U.S. Cl. 73—178 R **5 Claims**

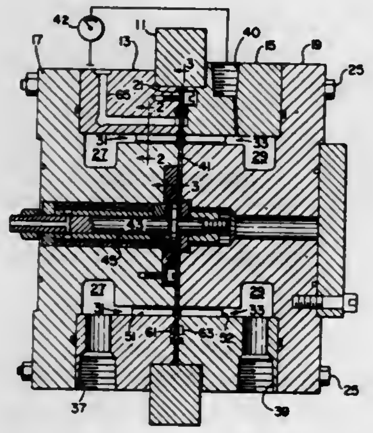


A non-gyroscopic inertial data reference device for aircraft capable of developing pitch angle, roll angle, lateral and longitudinal acceleration information and comprising a gravity-responsive pendulum device compensated for the effects of horizontal acceleration by the use of one or more accelerometers mounted on and free to move with the universally suspended pendulum, said accelerometers providing correction signals to suitable pendulum position torquers that assist in maintaining the pendulum in the true vertical position at all times.

3,651,692
LINEAR FLUID FLOW RESISTANCE ELEMENT

Philip F. Meyfarth, c/o Alar Products, Inc. 7016 Euclid Avenue, Arlington, Mass.

Filed Jan. 12, 1970, Ser. No. 2,320
Int. Cl. G01f *1/00*
U.S. Cl. 73—205 L **9 Claims**

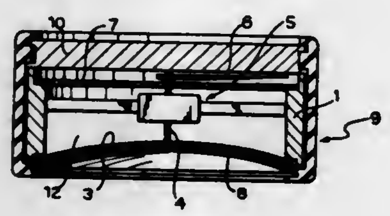


In the apparatus disclosed herein, a plurality of fluid flow channels are sequentially blocked and opened so that the fluid flowing through each channel is alternately accelerated and decelerated. As the acceleration is determined substantially by the pressure across each channel and the mass of the fluid within the respective channel, the mass flow rate and the pressure drop across the apparatus are substantially linearly related and are substantially independent of the density of the fluid.

3,651,693
DEPTH-MEASURING INSTRUMENT

Carlo Alinari, Corso Vittorio Emanuele 200, Turin, Italy

Filed Mar. 20, 1970, Ser. No. 21,329
Claims priority, application Italy, Mar. 22, 1969, 51062 A/69
Int. Cl. G01f *23/14*
U.S. Cl. 73—300 **3 Claims**

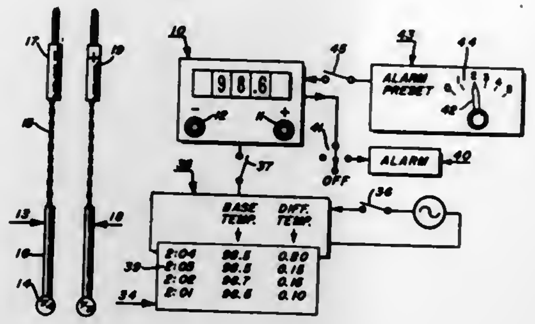


A depth-measuring instrument of the membrane type has a metallic disc membrane deformations of which are recorded by a pointer on a scale. The disc is flat and is freely supported at its edge on a seat on which it is movable when it flexes, and is covered by a flexible wall of an outer case so that ambient pressure is transmitted to the disc through this wall.

3,651,694
DIAGNOSTIC MEANS FOR DETECTION OF DISEASES EXHIBITING SKIN TEMPERATURE VARIATIONS

Anthony H. Lamb, 66 King Street, Hillside, N.J.

Filed Sept. 18, 1969, Ser. No. 859,126
Int. Cl. G01k *3/08;* **A61b** *5/00*
U.S. Cl. 73—342 **8 Claims**

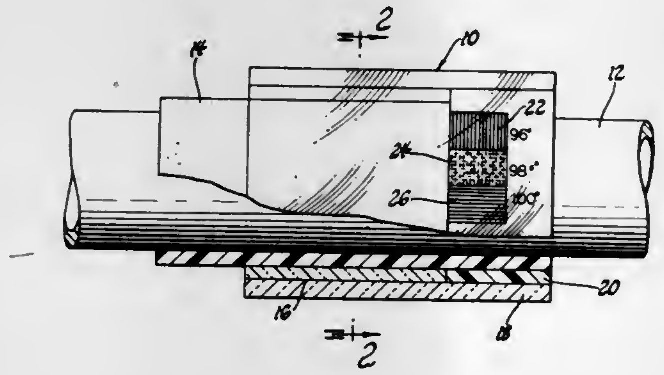


Temperature-sensitive probes, placed in contact with selected areas of the human body, actuate a digital temperature computer-indicator for the measurement of the base and differential temperatures of the contacted areas.

3,651,695
COLORIMETRIC TEMPERATURE SENSOR

Verne R. Brown, Ann Arbor, Mich., assignor to Environmental Metrology Corporation, Ann Arbor, Mich.

Filed Apr. 24, 1970, Ser. No. 31,483
Int. Cl. G01k *11/16*
U.S. Cl. 73—356 **4 Claims**



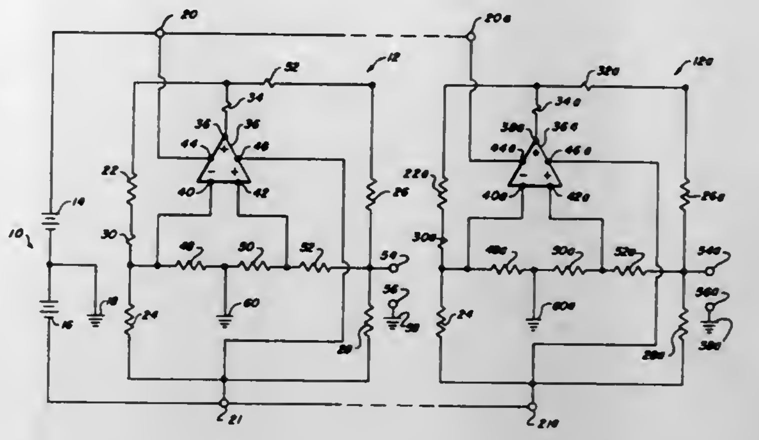
A chromatic temperature indicator for fluid conduits including a black background layer on the conduit, a colorimetric layer of cholesteric material on the background, a nonpermeable plastic tube heat shrunk over the cholesteric layer and a color reference chart adjacent the cholesteric layer for indicating the color variations thereof and the temperatures corresponding to such variations.

3,651,696
LINEARIZED RESISTANCE BRIDGE CIRCUIT OPERABLE IN PLURALITY FROM A COMMON POWER SUPPLY

Robert C. Rose, Minneapolis, Minn., assignor to Rosemount Engineering Company, Eden Prairie, Minn.

Filed July 15, 1969, Ser. No. 841,906
Int. Cl. G01k *7/20*
U.S. Cl. 73—362 AR **9 Claims**

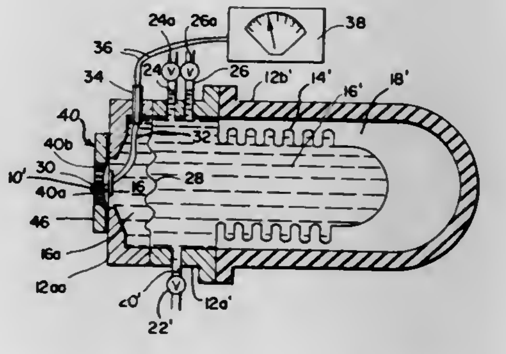
A bridge circuit suitable for platinum resistance thermometers having three lead wires. An operational amplifier varies the bridge excitation current in response to the bridge output to effect a desired degree of linearization or curve shaping between the sensing resistance and bridge output. The output is referenced to ground and a plurality of such bridges may be operated from a common power supply having a ground tap thus providing a flexible measuring system suitable for multipoint, continuous or scanning operations.



3,651,697
DEPTH VARIATION INDICATOR

Anthony Pete Ianuzzi, 1908 Old Frederick Road, Catonsville, Md.

Filed Feb. 20, 1970, Ser. No. 13,142
Int. Cl. G01l *7/02, 7/06*
U.S. Cl. 73—412 **11 Claims**



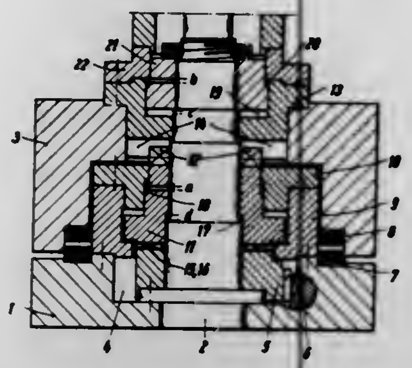
An instrument used, for example, in measuring variations in the depth of a submersible vehicle includes a chamber which is pressurized to a reference pressure by opening a valve at a reference depth to permit the chamber to fill with sea water. The chamber is bounded by a high volume expansion member in the form of a bellows and a high sensitivity pressure sensing element such as a diaphragm, the sensing element being exposed to the ambient surroundings, that is, the sea water and measuring the pressure differential between the ambient pressure and the chamber pressure. An indicator responsive to the differential provides an indication of the variation in depth from the reference depth.

3,651,698
INDEXIBLE TOOL TURRET

Alfred Riedrich, Bielefeld, and Werner Latten, Theesen Kreis, Bielefeld, both of Germany, assignors to Werkzeugmaschinenfabrik Gildemeister & Company AG, Bielefeld, Germany

Filed June 19, 1970, Ser. No. 47,804
Claims priority, application Germany, June 21, 1969, P 19 31 592.5
Int. Cl. B23b *29/32*
U.S. Cl. 74—818 **5 Claims**

A machine tool wherein the tool turret is indexible about a shaft and is shiftable axially to move the teeth of a ring gear thereon into and out of mesh with the teeth of a stationary ring gear. The indexing mechanism for the tool turret has a pinion which is coaxial with the turret and can be connected thereto by means of a disengageable clutch. The pinion is in permanent mesh with a reciprocable fluid-operated rack. When the clutch is engaged and the ring gears are disconnected, the rack can index the turret by way of the pinion and clutch. When the clutch is disengaged, the rack can return to its starting position without indexing of the turret because the pinion is free to rotate with reference to the turret.



3,651,699
VEHICLE WINDSCREEN WIPING MECHANISMS

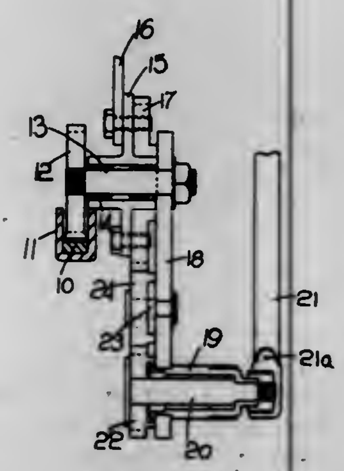
David Thomas, Solihull, and James Barry Seager, both of Birmingham, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Oct. 28, 1969, Ser. No. 871,878

Claims priority, application Great Britain, Dec. 13, 1968, 59,423/68

Int. Cl. F16h *21/44*

U.S. Cl. 74—109 **2 Claims**



A mechanism for controlling the operating cycle of a wiper blade for cleaning a vehicle window comprises an arm rotatably mounted on a drive member whereby it can be reciprocated, a wiper blade carrier pivotally mounted at the outer end of the arm and means for rotating the blade carrier relatively to the arm as the arm is rotated, so that a blade on the blade carrier follows an elliptical path to sweep a large area of glass.

3,651,700
PUSH BUTTON MEANS

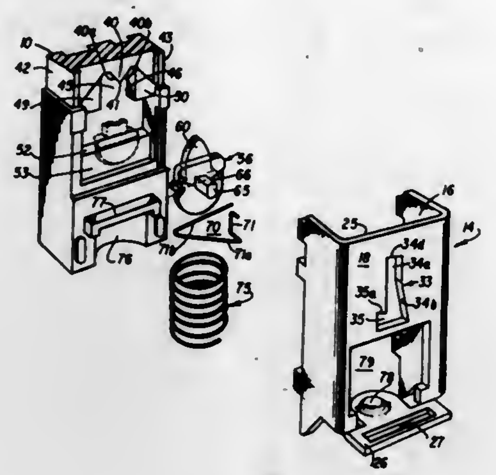
James R. Bailey, Chicago, Ill., assignor to Switchcraft, Inc., Chicago, Ill.

Filed June 22, 1970, Ser. No. 48,134

Int. Cl. F16h *21/44*

U.S. Cl. 74—107 **2 Claims**

A construction is provided wherein a push-push button unit useful for operating electric switches as an example is provided. This push-push means has the property of being able to be ganged with similar push-push units to provide a multi-push button construction wherein each push button may be independently pushed to lock and again pushed to release, and in addition, is provided with a separate release button for unlocking all pushbuttons in the ganged construction which have previously been locked.



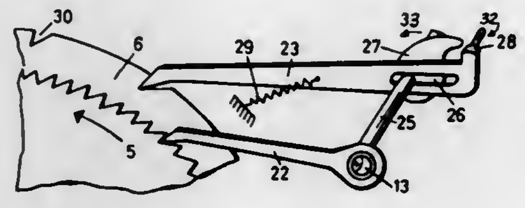
3,651,701
TIMING GEAR

Walter Holzer, and Konrad Laufer, both of Meersburg, Germany, assignors to Holzer-Patent AG, Zug, Switzerland

Filed Sept. 15, 1969, Ser. No. 857,702

Int. Cl. F16h *31/00*

U.S. Cl. 74—143 **3 Claims**



A timing gear for the production of timing and switch movements consisting of a control cam disc and ratchets or pawls which are driven by a motor through a reduction gear by means of eccentrics and act on two sets of teeth on the cam disc, the teeth being of even pitch wherein at least two pawls are provided which engage a set of teeth on the control cam disc and are given differing strokes.

3,651,702
DRIVE MECHANISM

Ralph W. Speiser, Minneapolis, Minn., assignor to Toro Manufacturing Corporation, Minneapolis, Minn.

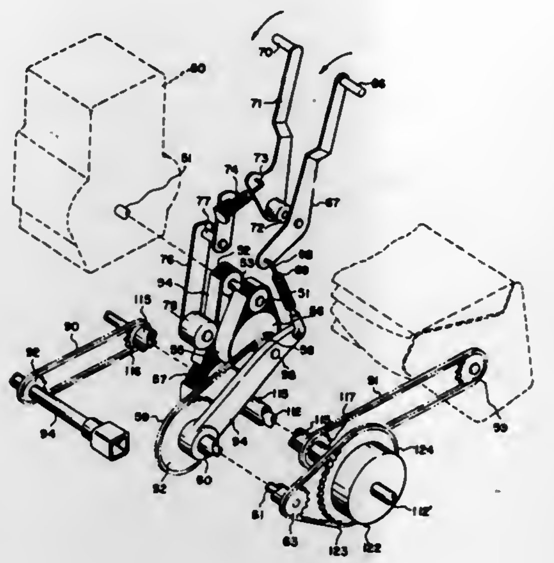
Original application Aug. 19, 1964, Ser. No. 390,704, now Patent No. 3,410,063. Divided and this application Oct. 17, 1968, Ser. No. 785,422

Int. Cl. F16h *15/00*

U.S. Cl. 74—203 **7 Claims**

Drive mechanism for a riding mower in which the power for driving the traction wheels of the vehicle and for driving the cutting units is transmitted from a common engine shaft. The power to the wheels is transmitted through a reversible transmission involving a coplanar driving and driven pulleys rotating on parallel axes and movable into and out of engagement with each other and drivingly interconnected by a belt wrapped around both pulleys. When the pulleys are engaged with each other, the belt is slack, and the driven pulley is driven in one direction. When the pulleys are disengaged, the belt is tightened and drives the driven pulley in the opposite direction. The power to the cutting units is transmitted from

the engine through an intermediate shaft which is rotatably mounted on the wheel axle. At least two of the cutting units are in alignment and driven by a common coaxial drive shaft driven from said intermediate shaft.



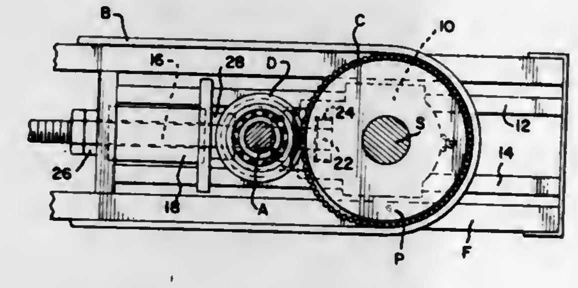
3,651,703
BELT AND PULLEY POWER TRANSMISSION

Andrew T. Kornylak, 400 Heaton Street, Hamilton, Ohio

Filed July 22, 1970, Ser. No. 57,062

Int. Cl. F16h *7/02*

U.S. Cl. 74—229 **14 Claims**



A belt and pulley power transmission for producing a more positive drive than that which can be obtained by smooth friction surfaces between belt and pulley. The pulley is roughened or provided with a coating or sleeve of flexible material and loops of beaded chains are positioned between the belt and pulley. The beads become indented in the flexible belt and embedded in the surface of the pulley to increase the tractive effort which can be transmitted over that of the customary smooth faces of pulley and belt. A guiding drum or bar guides the loops for travel in parallel planes and permits easy lateral adjustment of the belt.

3,651,704
MOLDED ARTICLE, MOLD AND METHOD OF MANUFACTURE

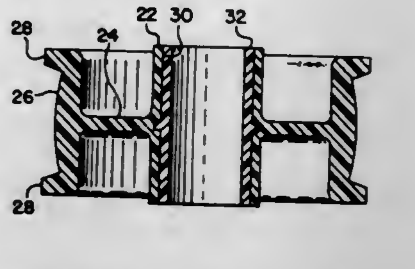
Robert Dean Chapman, Des Plaines, and Swick Edwin Grant, Bartlett, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Original application Mar. 4, 1968, Ser. No. 710,114, now abandoned. Divided and this application May 1, 1970, Ser. No. 43,658

Int. Cl. F16h *55/36, 55/12*

U.S. Cl. 74—230.01 **4 Claims**

An article of manufacture normally having a secondary member necessary for its function insert molded in place and having warning means which renders the article inoperative when said secondary member is absent. The invention also contemplates the mold and method for fabricating such an article.



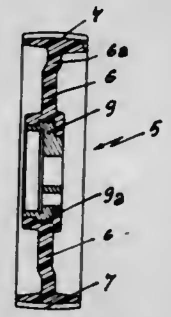
3,651,705
GEARS FOR TOOTHED BELT DRIVES, PARTICULARLY FOR MOTORS FOR AUTOMOTIVE VEHICLES, MADE OF SYNTHETIC MATERIAL

Emilio Alberto Bertinetti, and Aurelio Lampredi, both of Turin, Italy, assignors to Fiat S.p.A. and Cigala & Bertinetti S.a.S., Turin, Italy

Filed Oct. 14, 1970, Ser. No. 80,729

Int. Cl. F16h *55/30, 55/12*

U.S. Cl. 74—243 R **2 Claims**



A synthetic plastic gear adapted for use with a toothed belt drive such as found in the motor of an automotive vehicle is provided with a co-molded central bushing and a web connecting the bushing and the teeth of the gear. The web is formed in two different and parallel planes. A skirt, in the form of a radially extending circular flange, may be formed on one face of the gear.

3,651,706
LEAD SCREW DEVICE

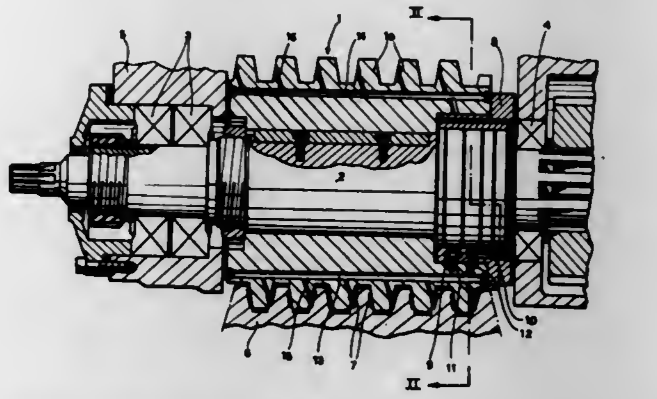
Maso Galbarini, Pavia, and Francesco Cotta Ramusino, Milan, both of Italy, assignors to Innocenti Societe Generale L'Industria Metallurgica E Meccanica, Milan, Italy

Filed Apr. 16, 1970, Ser. No. 29,205

Claims priority, application Italy, Apr. 17, 1969, 51468 A/69

Int. Cl. F16h *57/00, 1/18, 57/04*

U.S. Cl. 74—410 **1 Claim**



A device having a lead screw and a grooved block the grooves of which form a threaded portion for cooperation with the thread of the lead screw. The lead screw has internal passages with outlets at the thread faces for supplying a hydrostatic support fluid, such as a lubricating oil, to the interface between cooperating threads. The side walls of the grooves have recesses into which the hydrostatic support fluid can flow from the said passageways. A distributor valve is provided for supplying the hydrostatic fluid only to the passageways which at any time are communicating with the recesses in the grooved block.

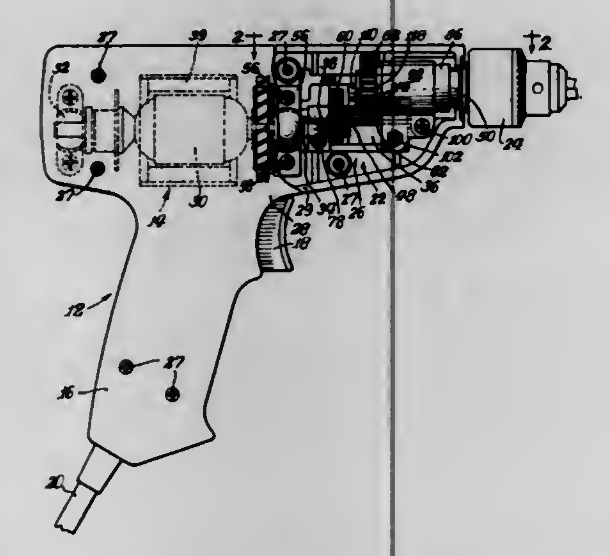
3,651,707
PORTABLE POWER TOOL CONSTRUCTION

Spencer C. Rees, Aurora, Ill., assignor to Thor Power Tool Company, Aurora, Ill.

Filed July 22, 1970, Ser. No. 57,275

Int. Cl. F16h *1/20;* **F16c** *35/00;* **H02k** *7/14*

U.S. Cl. 74—421 A **12 Claims**



A portable power tool including a motor, a drive train, and a bearing block for the drive train, all mounted in a split outer housing. The motor and drive train have bearings mounted in the bearing block which is made from a material which has high strength and which is a good heat sink. The outer housing is made from an electrical insulating material for double insulation. The outer housing is split and the axes of various shafts are offset.

3,651,708
GEAR HAVING A DETACHABLE PLASTIC RIM

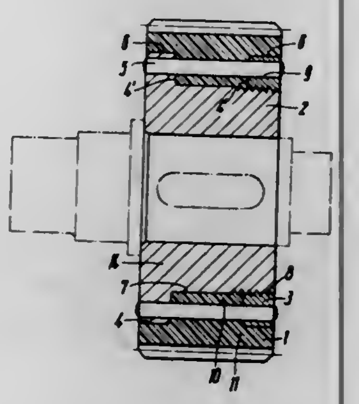
Friedrich Muller, Halstenbek, Germany, assignor to Aristo-Werke Dennert & Pape KG, Hamburg, Germany

Filed Sept. 14, 1970, Ser. No. 72,011

Claims priority, application Germany, May 2, 1970, P 20 21 685.7

Int. Cl. F16h *55/12*

U.S. Cl. 74—447 **7 Claims**



A gear with a metallic core and a peripheral member of synthetic material connected to said core, in which said metallic core has a substantially H-shaped diametric section the legs of which are engaging inwardly extending radial portions of said peripheral member, while axis-parallel pins extend through said core and said peripheral member, one of said legs being adjustable.

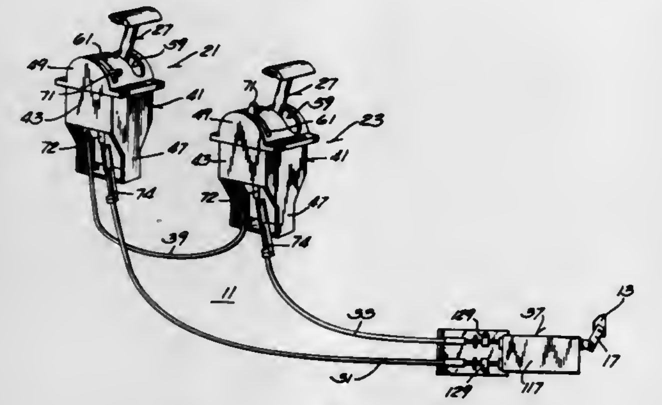
3,651,709
DUAL STATION BINNACLE CONTROL

Robert A. Booty, and Gaylord M. Borst, both of Galesburg, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed June 4, 1970, Ser. No. 43,355

Int. Cl. G05g *11/00*

U.S. Cl. 74—483 R **6 Claims**



The invention provides a dual station marine propulsion control system including means selectively operable to afford control of an engine throttle and/or clutch at one station while preventing the exercise of control from the other station and vice versa. Each throttle control station comprises a control lever movably mounted relative to a minimum throttle setting, a cam member movably mounted relative to a first position, and means movably mounted on the housing and coacting with said cam member and with cooperating means on the lever for preventing movement of the lever from the minimum throttle setting when the cam member is displaced from the first position and for preventing displacement of the cam member from the first position when the control lever is displaced from the minimum throttle position.

Also disclosed herein is a frame operably connected to an engine throttle for actuation of the engine throttle in response to frame movement. The frame includes guide paths for first and second throttle slides which are respectively connectable to throttle control links or cables connected respectively to remote control stations so as to effect throttle slide movement in response to throttle control link movement. Also included are means on the frame and on the throttle slides for alternatively and selectively connecting one of the throttle slides to the frame for common movement of the frame with the one throttle slide and for permitting relative movement between the other of the throttle slides and the frame.

3,651,710
VARIABLE RADIUS CRANK ARM FOR TYPEWRITER IMPRESSION CONTROL

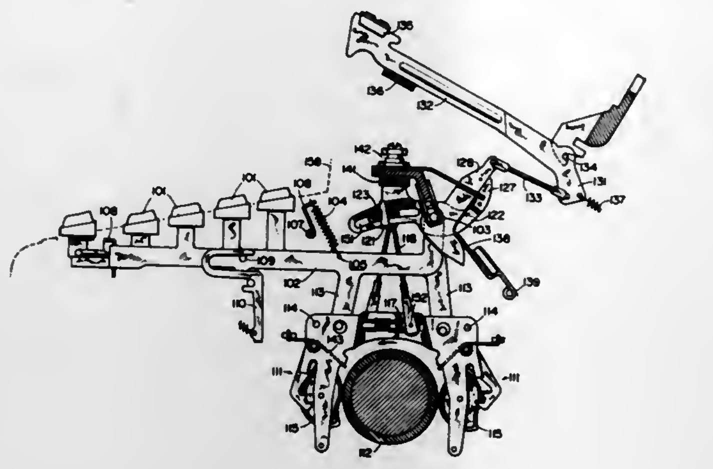
George Burkett, Monroe County, and Thurston H. Toeppen, Dutchess County, both of N.Y., assignors to The Singer Company

Filed Jan. 29, 1970, Ser. No. 6,875

Int. Cl. G05g *1/04;* **B41j** *23/08*

U.S. Cl. 74—522 **5 Claims**

A variable radius crank arm which is selectively adjustable is disclosed in a typewriter setting and used to exert an influence on the flight of the typebar towards the print impression position for the purpose of controlling the velocity of the typebar at impact and hence the quality of the printed impression. The crank arms is provided with a selectively positionable clip which is retained in the selected position by appropriate detenting. The compactness of the design combined with the ease of accessibility for the purpose of adjusting the clip to the selected position is a feature of the invention. Another feature resides in the fact that the clip on the variable radius crank arm may be selectively positioned to any desired position without introducing undesired or detrimental effects in the positioning or placement of any other parts. This last feature is achieved by positioning the clip in an arcuate slot.



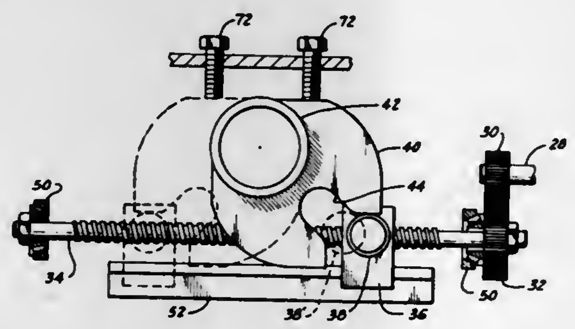
3,651,711
SHAFT ROTATING DEVICE

Marvin H. Greenwood; Lomis Slaughter, Jr., and George N. Polydoros, all of Houston, Tex., assignors to Anderson, Greenwood & Co., Bellaire, Tex.

Filed Apr. 16, 1970, Ser. No. 29,081

Int. Cl. F16h *35/00*

U.S. Cl. 74—625 **14 Claims**



A shaft rotating device suitable for rotating valve shafts which device includes an arm to be secured to the shaft, the arm defining a slot which diverges at its outer end, a screw driven nut having a projection engaging in the arm slot so that upon movement of the nut, the arm is rotated. The device includes a motor drive, a belt, a mechanical fuse clutch transmission, a tension adjustment for the belt, a clutching handwheel connected so that the handwheel may override the motor drive and stop switches in an explosion proof portion of the housing actuated from the oil bath portion of the housing in which the screw, nut and other elements are housed.

3,651,712
MOBILE DRIVE MECHANISM

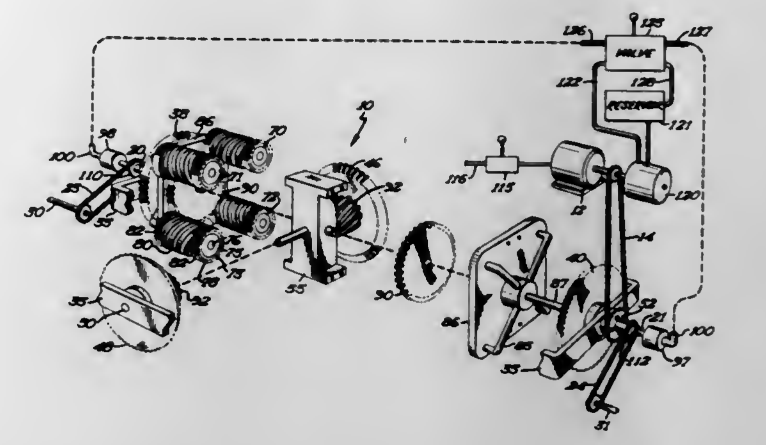
John L. Davis, 3228 Pillsbury Avenue South, Minneapolis, Minn.

Filed Sept. 11, 1970, Ser. No. 71,507

Int. Cl. F16h *47/04, 37/06, 1/38*

U.S. Cl. 74—687 **19 Claims**

A differential gearing mechanism providing an improved mobile drive and steering mechanism for vehicles which are steered by a difference in rotation imparted to drive shafts on each side of a vehicle. The differential gearing mechanism utilizes a standard differential gearing with a drive motor connected to the gear case. A control motor associated with the gear case or one of the output shafts and rotatable therewith drives through control gears to the idler gears of the differential gearing mechanism to impart rotation to the



driven gears of the differential with reversible rotation at variable speeds to vary the rotation of the output shafts connected thereto.

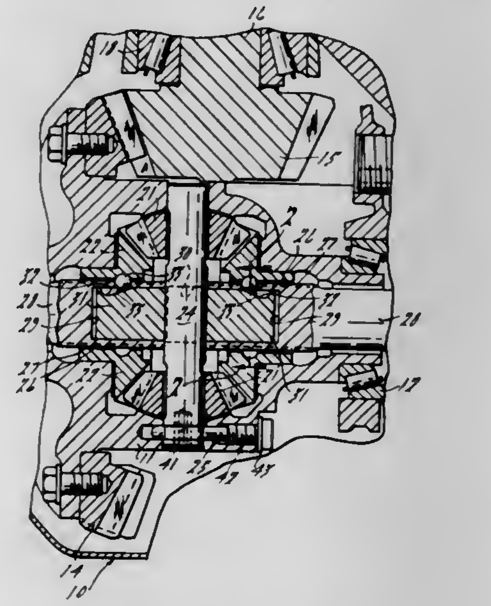
3,651,713
LOCKS FOR SECURING AXLES TO A DIFFERENTIAL

Otto Mueller, 13 Byfield Lane, Dearborn, Mich.

Filed May 1, 1970, Ser. No. 33,843

Int. Cl. F16h *1/40*

U.S. Cl. 74—713 **10 Claims**



The axle lock is formed by a cam plug and a set of balls mounted within an axially disposed recess at the inner end of the axles which are supported in driving relation within the side gears of the differential. The rotation of the pinion gear shaft moves the cam plugs further into the recesses and the balls outwardly into locking engagement within an annular recess within the side gears. The pinion gear shaft is then secured against rotation by a pin or screw which extends therethrough.

3,651,714
HYDRAULIC CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION

Minoru Ohya, and Keiji Kogaki, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

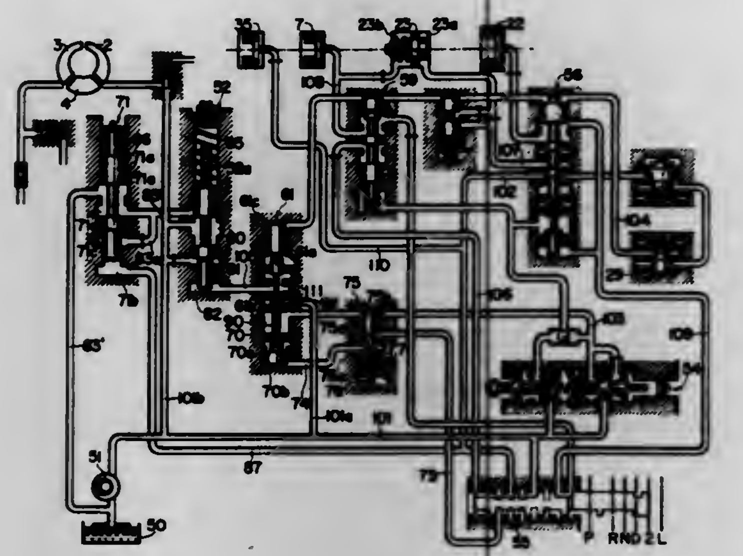
Filed May 18, 1970, Ser. No. 38,169

Claims priority, application Japan, May 21, 1969, 44/38792

Int. Cl. B60k *21/00, 29/00*

U.S. Cl. 74—867 **9 Claims**

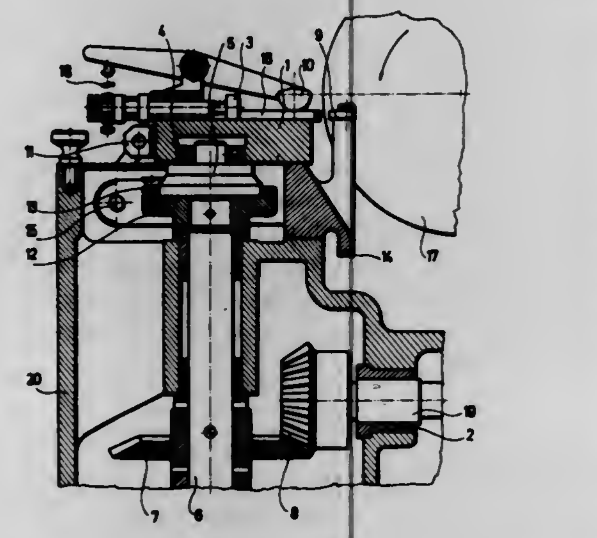
A hydraulic control system is provided for an automatic automotive vehicle transmission of the type including a gear changing unit, such as a planetary gear unit, having brakes and clutches controlled by hydraulically operated servo units, and including hydraulic torque transmitting means, such as a torque converter, coupling the gear changing unit to the vehicle engine. The hydraulic control system includes a cutoff valve hydraulically associated with a pressure regulator valve and other related control valves. The cutoff valve operates as a line pressure regulator when the pressure regulator valve is rendered ineffective in set positions of a manual speed selector valve. In particular, the cutoff valve becomes effective, with the pressure regulator valve becoming ineffective, when the speed selector valve is moved into the "reverse" position. The cutoff valve provides a higher control pressure for the servo units, during gear shifting in the reverse range, than the control pressure available for the servo units during gear shifting in the ordinary forward driving range.



3,651,715
SAW SHARPENER, PARTICULARLY TO SHARPEN JUMP SAWS

Andras Pecze; Laszlo Suto, and Zoltan Banoczi, all of Budapest, Hungary, assignors to Szerszamgepipari Muvek, Budapest, Hungary

Filed May 4, 1970, Ser. No. 34,355
Int. Cl. B23d *63/12*
U.S. Cl. 76—37 **3 Claims**

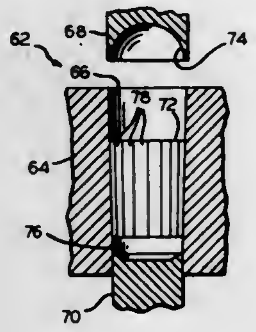


A work holder has intermittent work feed along a path which is a series of semicircles. A work table oscillates bodily continuously about a vertical axis but the work is restrained during half of each revolution, at which time the work table slides under the restrained workpiece. To sharpen saw blades, the blade is disposed parallel to the axis of a grinding wheel and the diameter of the circle of oscillation is equal to the pitch of the saw teeth.

3,651,716
MANUFACTURE OF INSERT FOR DRILL BIT

Frank E. Stebley, 3815 Nemesis Avenue, Gurnee, Ill.

Original application May 8, 1969, Ser. No. 822,883, now Patent No. 3,581,835, dated June 1, 1971. Divided and this application July 13, 1970, Ser. No. 61,042
Int. Cl. B21k *5/02*
U.S. Cl. 76—108 A **9 Claims**



A solid wear-resistant sintered metallic carbide insert adapted for forcible insertion into an opening in a working face of a drill bit includes a generally polygonal body portion having at least about 12 sides extending between opposite ends thereof, and a head portion on one end of the body portion, the corners formed by the said sides being abraded at the ends of the body portion and tapering inwardly towards the end of the body portion opposite to the said one end thereof, the body portion being insertable into the working face opening for mounting the body portion therein with the head portion exposed at the working face. A drill bit incorporating the insert includes a body having a working face provided with a plurality of generally circular insert openings extending inwardly therefrom, and a plurality of the inserts mounted in the openings, each insert engaging the wall of the opening in which mounted in an interference fit.

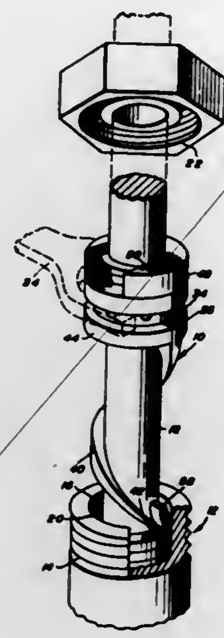
A method of making the insert includes the steps of molding metallic carbide powder under die pressure to form a molded article including a generally polygonal body portion having at least about 12 sides extending between opposite ends thereof and a head portion on one end of the body portion, the body portion tapering inwardly towards the end thereof opposite to the said one end, sintering the molded article to form a sintered article having concave sides, and abrading the sintered article whereby the corners formed by the sides are abraded at the ends of the body portion and are tapered inwardly towards said opposite end of the body portion, thereby producing an insert having the body portion insertable into the working face opening for mounting the body portion therein with the head portion exposed at the working face.

3,651,717
PACKING EXTRACTOR

William P. Johnston, Jr., El Dorado, Ark., assignor to David R. Rumsey, El Dorado, Ark., a part interest

Filed Sept. 23, 1970, Ser. No. 74,718
Int. Cl. B25b *27/00*
U.S. Cl. 81—8.1 **7 Claims**

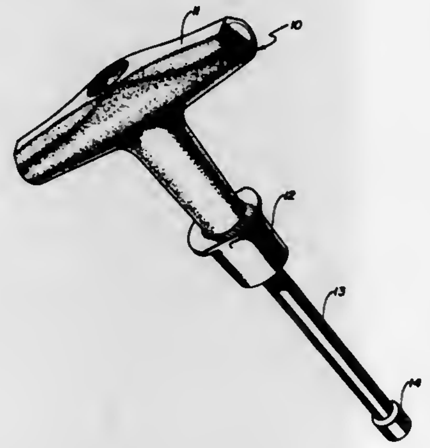
An opened helix is attached at a first end thereof to a coupling that is concentrically mounted on a shaft encircled at a point along its length with packing material. The opposite end of the helix is adapted to pry into a slit formed in the packing material. As the helix is rotated, the packing material is extracted. A wrench or similar tool is used to produce rotation of the helix.



3,651,718
WRENCH

Harvey A. Thomasian, Northboro, Mass., assignor to Lowell Corporation, Worcester, Mass.

Continuation of application Ser. No. 799,458, Feb. 14, 1969, now abandoned. This application Nov. 13, 1970, Ser. No. 89,503
Int. Cl. B25b *13/00,*
U.S. Cl. 81—52.4 **6 Claims**



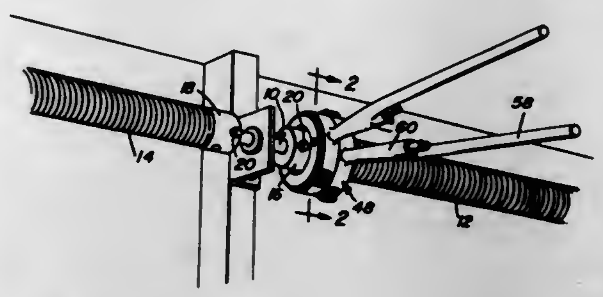
In general, this invention relates to a limited-torque ratchet wrench and, more particularly, to such a wrench having means for selectively nullifying the ratcheting effect.

3,651,719
OVERHEAD DOOR TORSION SPRING ADJUSTING TOOL

Alfred H. Wessel, 103 East Jefferson, El Paso, Ill.

Filed Dec. 31, 1969, Ser. No. 889,390
Int. Cl. B25b *13/46*
U.S. Cl. 81—63.2 **3 Claims**

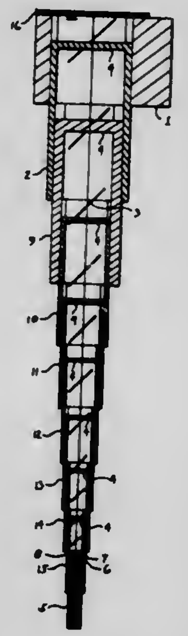
A split sleeve clamp member for removable securement about and keying to a rotatable sleeve anchor for a torsion spring. The clamp member includes outer ratchet teeth and a pair of lever members are removably journaled from the clamp member and include reversible spring-urged detent members engaged with the teeth on the clamp member for rotating the sleeve clamp member, and thus the sleeve anchor, in a preselected direction in response to oscillation of the lever members.



3,651,720
AUTOMATIC SOCKET SCREW WRENCH

Edward F. Indyk, 2707 Wareing Drive, Lake Orion, Mich.

Filed Oct. 1, 1969, Ser. No. 862,749
Int. Cl. B25b *13/06*
U.S. Cl. 81—121 R **1 Claim**

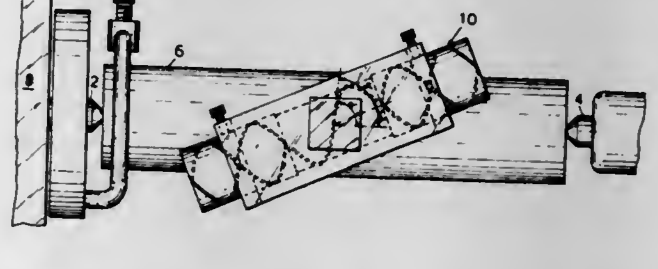


A wrench assembly including a series of axially overlapping telescoping wrench segments which are maintained axially relative to one another by an integral spiral spring interconnecting all of the segments. Each segment has a substantially constant wall thickness from one end to the other end with diametrically opposed tabs struck out of the side walls and extending toward one another, about which the spring is spiraled.

3,651,721
TURNING APPARATUS

Shaul Ladany, 71 Rechov Aluf David, Ramat Gan, Israel

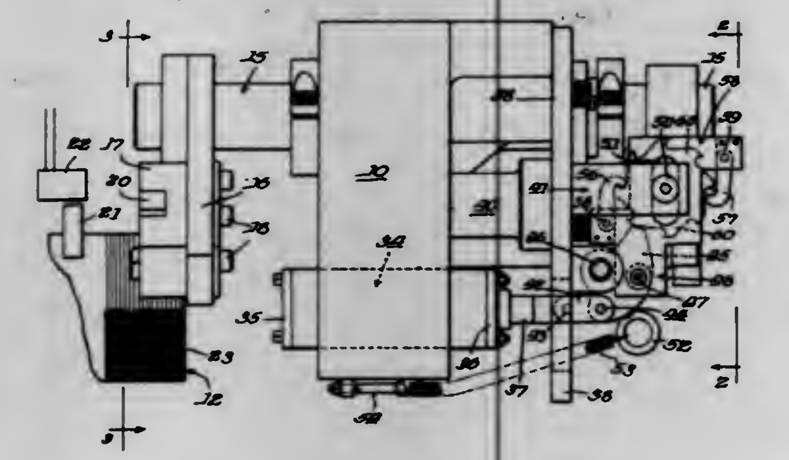
Filed May 15, 1970, Ser. No. 37,816
Int. Cl. B23b *1/00*
U.S. Cl. 82—1 C **6 Claims**



Turning apparatus comprises a turning tool having a helical cutting edge and a holder therefor to hold the tool fixed with a segment of its helical cutting edge in engagement with the workpiece as the latter is rotated, the tool holder enabling the tool to be rotated a predetermined amount, when the engaged segment of its helical cutting edge has been worn, to advance a fresh segment into engagement with the workpiece.

3,651,722
MECHANISM FOR CUTTING THREADS USING A TAPE CONTROLLED AUTOMATIC MACHINE

Maurice E. Beck, Fort Wayne, Ind., assignor to Kunkle Valve Company Inc., Fort Wayne, Ind.
Filed Mar. 4, 1970, Ser. No. 16,405
Int. Cl. B23b *5/46*
U.S. Cl. 82—5 **8 Claims**

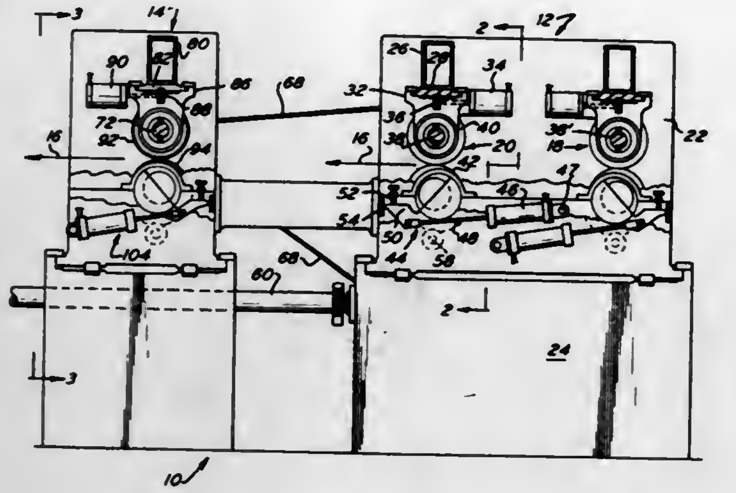


The invention contemplates an automatic machine of the tape controlled type for cutting threads on a rotating workpiece by a single pass of the cutting tool or by a multiple of passes. A combination ratchet and cam member is provided for projecting the tool for depth of cut and for withdrawing the tool at the completion of a thread cutting pass. The tape contains certain commands punched into the tape for controlling displacement, feed etc., and the invention provides a sensing part which rotates with the workpiece and a stationary part containing a proximity switch which is magnetically influenced by the sensing part on each revolution. When the cutting tool has been positioned close to the workpiece, the threading feed is picked up and the tool is fed forwardly for a relatively short distance and then dropped out accurately. This is a required preliminary step prior to actuation of the proximity switch the closing of which assures that the thread cutting operation will start at the same exact spot on the workpiece for all passes of the tool.

3,651,723
CORRUGATED PAPERBOARD SLITTER-SCORER

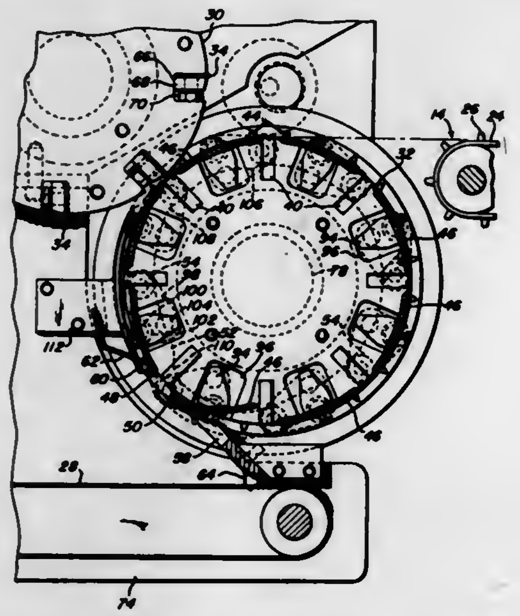
William Gallagher, Jr., Clementon, N.J.; Edwin R. Kolb, and James E. Murray, both of University Heights, Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio
Filed Dec. 4, 1969, Ser. No. 882,244
Int. Cl. B26d *9/00*
U.S. Cl. 83—7 **16 Claims**

A corrugated paperboard slitter-scorer has scorer collars and slitting blades which are automatically moved in a transverse direction to a pre-programmed position for a production run. Each blade is supported by a head which is driven by a reversible stepper motor. Each stepper motor moves its head and the blade or collar associated therewith in the desired transverse direction to a preselected position. The motors are controlled by programmed signals which drive the heads to the desired positions prior to each production run. Each of the scorer collars cooperates with an elongated roller and each of the slitter blades cooperates with an elongated brush roller. The rollers are longer than the distance between the blades.



3,651,724
METHOD AND APPARATUS FOR PRODUCING CARD SETS

Harold W. Huffman, Hamilton, Ohio, assignor to The Hamilton Tool Company, Hamilton, Ohio
Filed Feb. 9, 1970, Ser. No. 9,820
Int. Cl. B65h *29/26*
U.S. Cl. 83—24 **20 Claims**

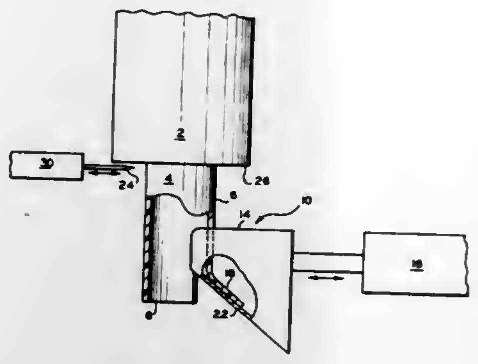


The machine accepts a multilayer perforated paper web of indeterminate length from a collating machine, and rapidly cuts off, without waste, individual parcels, packets or card sets so accurately dimensioned that cards included in the sets may be used as data cards in automatic high speed data card handling equipment without supplemental sizing or finishing treatment. The register perforations of the web are used as guides to ensure accuracy of the cutoff.

3,651,725
APPARATUS AND METHOD FOR FORMING A BLOWING PIN OPENING ON A PARISON

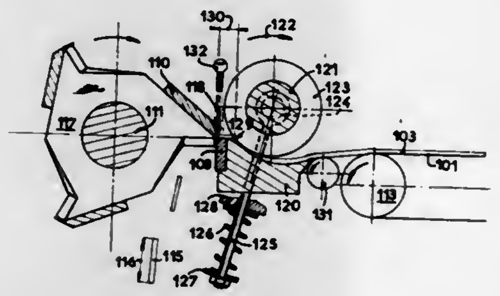
Kenneth U. Cook, Copan, Okla., assignor to Phillips Petroleum Company
Filed Apr. 27, 1970, Ser. No. 32,179
Int. Cl. B29d *23/04*
U.S. Cl. 83—165 **6 Claims**

Movable first and second cutting elements are removably positioned in the pathway of a wall of a parison discharging from a die of an extruder for removing a portion of the wall of the parison at selected locations and forming a parison having an opening through the wall thereof.



3,651,726
CUTTING DEVICE FOR FIBROUS MATERIALS

Robert Laroche, Rue de Thizy, Cours, France
Filed Jan. 5, 1970, Ser. No. 725
Claims priority, application France, Jan. 21, 1969, 6900928; Mar. 11, 1969, 6906628
Int. Cl. B26d *5/20*
U.S. Cl. 83—169 **10 Claims**

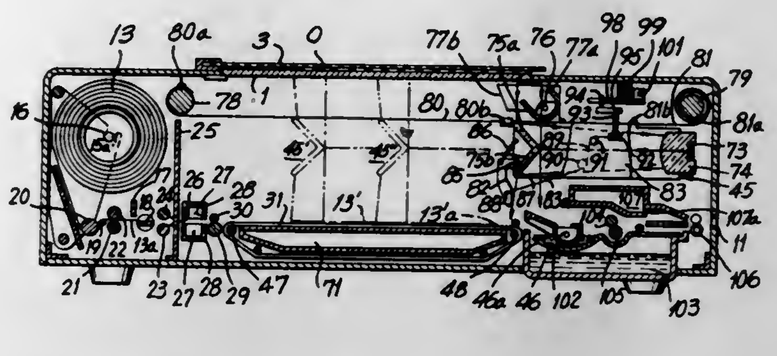


A cutting device for fibrous materials comprises a driving device and a cutting device, said driving device including a fixed member **17** and a rotary member, said rotary member having a series of rings **19** of resilient material, such as a rubber or plastics material, said rings **19** being carried by a common shaft **18**, and being resiliently loaded towards said fixed member **17**. The driving device may either comprise a lower fixed blade **7** and an upper blade **9** with a rising and falling movement, or a lower fixed blade **108** with which there cooperates several rotating blades **110** carried by a drum **111**.

3,651,727
ELECTROPHOTOGRAPHIC DUPLICATOR IN WHICH COPY PAPER IS CUT TO THE LENGTH OF THE ORIGINAL

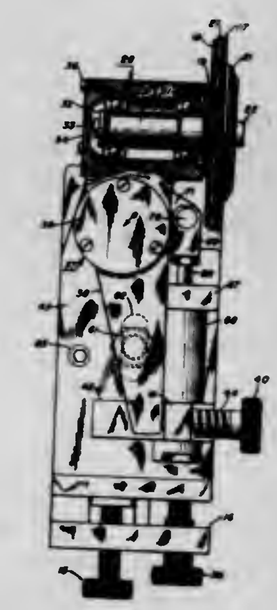
Shigeru Suzuki; Keiji Sugita, both of Yokohama; Yutaka Koizumi, and Tadaaki Kanno, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Original application Oct. 2, 1967, Ser. No. 672,252, now Patent No. 3,533,691. Divided and this application June 11, 1970, Ser. No. 45,347
Int. Cl. B26d *1/38*
U.S. Cl. 83—296 **9 Claims**

A cutting device is provided for use in an electrophotographic duplicator so that rolled printing paper can be cut in accordance with the length of an original placed on a mounting table. To determine the length to be cut an indicator is slidably mounted along a side edge of the table so that a pointer of the indicator can be moved into alignment with one edge of the original whose other edge rests against an index on the table. The movement of the indicator rotates a plate on which is mounted a microswitch and the microswitch controls the operation of the cutting device. A cam plate is rotatable about an axis coincidental with the rotation axis of the plate carrying the microswitch, and the cam plate is rotated upon initiation of the feed of the rolled printing paper. The distance between the operation portion of the cam plate and the microswitch is determined in accordance with the length of the original, whereby the cutting device will be operated to feed a length of printing paper equal to the length of the original.



3,651,728
CUTTING KNIFE FOR SLITTING METAL FOIL

Roger W. Young, Upper Montclair, N.J., assignor to John Dusenbery Company, Inc., Clifton, N.J.
Filed Apr. 28, 1970, Ser. No. 32,552
Int. Cl. B26d *1/28*
U.S. Cl. 83—474 **9 Claims**

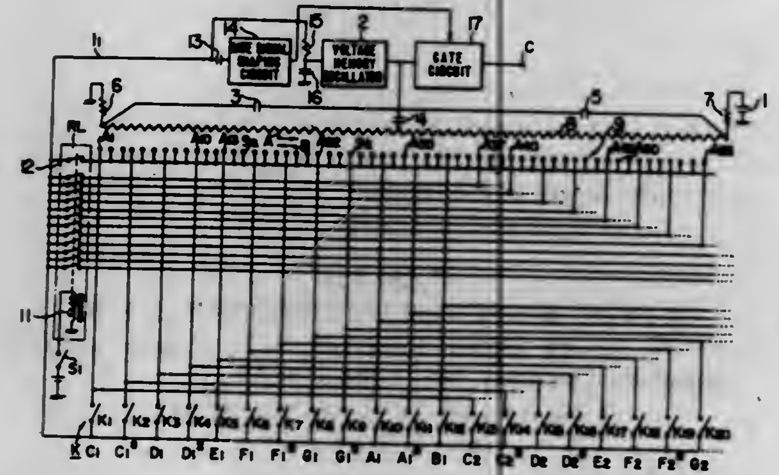


A rotatable cutting knife for use in a machine for slitting a moving web of metal foil, the cutting knife cooperating with a driven backup knife to slit the foil by a shearing action. The cutting knife has a concave configuration and is supported by a structure affording adjustments of the cutting knife with respect to the backup knife, thereby reducing the overlaping of the knives required to shear a particular foil and minimizing the possibility of the cutting knife overriding the backup knife.

3,651,729
CIRCUIT FOR RAPID NOTE PASSAGE IN ELECTRONIC MUSICAL INSTRUMENT

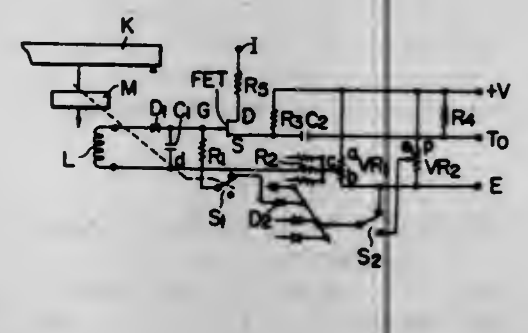
Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed Aug. 26, 1970, Ser. No. 67,000
Claims priority, application Japan, Aug. 29, 1969, 44/82057; 44/68430
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.17 **2 Claims**

An electronic musical instrument-circuit for a rapid note passage (portamento or arpeggio) comprises an operational device for leading out, when manipulated, a DC signal representing a manipulated position and an AC signal, a capacitor which is connected to be charged with the DC signal, a voltage memory oscillator capable of producing a musical scale tone signale having a frequency determined by the DC voltage at the capacitor, a gate signal shaping circuit which receives the AC signal and produces an envelope curve signal for the musical scale tone signal, and a gate circuit for gating the tone signal in accordance with the envelope signal. The operational device comprises an elongated resistance rod and a plurality of contacts which are spaced from each other and are oppositely spaced apart at a certain distance from the resistance rod but are brought into contact with the resistance rod when manipulated. There is further provided a switch arrangement to selectively connect the plurality of contacts with the capacitor. When all of the contacts are connected with the capacitor, a gliding manipulation of the operational device results in a portamento performance, and when only a few of the contacts are connected with the capacitor, a gliding manipulation of the operational device results in arpeggio performance.



3,651,730
SOUND LEVEL CONTROL DEVICE IN ELECTRONIC MUSICAL INSTRUMENT EMPLOYING TOUCH RESPONSIVE KEYING MEANS

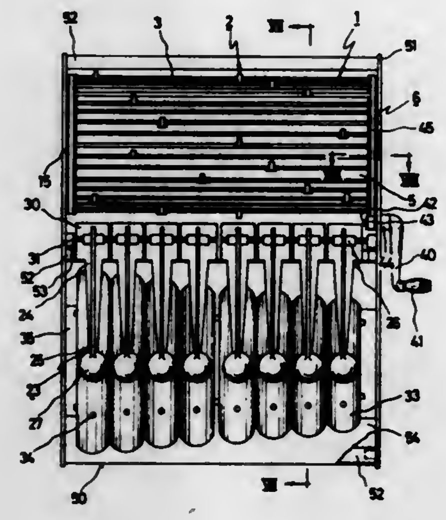
Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed Sept. 8, 1970, Ser. No. 70,056
Claims priority, application Japan, Sept. 10, 1969, 45/23715
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.24 **2 Claims**



In an electronic musical instrument of keyboard type, a sound level control device comprises a required number of coils and magnets respectively associated with the keys in the keyboard to induce a voltage in response to the key depression speed in one of the coils when a key in the keyboard is depressed, a capacitor connected across each of the coils to be charged by said induced voltage through a diode, a semiconductor switch element having a signal input electrode, a signal output electrode and a control electrode which is connected with one terminal of the capacitor, and a series-connected circuit which includes a first resistor and a normally closed switch interlinked with each key in the keyboard and is connected between said one terminal of the capacitor and the cutting-off potential point. An improvement resides in that the other terminal of the capacitor is connected through a second resistor to a variable voltage source for variably biasing the gate potential by superposing a variable voltage over the charged voltage in said capacitor, and the resistance value of said second resistor is selected to be substantially greater than the resistance value of the first resistor.

3,651,731
APPARATUS FOR THE OPERATION OF TOY MUSICAL INSTRUMENTS

Luis Congost Horta, Iradier 6 bis, Barcelona, Spain
Filed July 6, 1970, Ser. No. 52,194
Claims priority, application Spain, Dec. 22, 1969, 375.581
Int. Cl. G10f *1/06;* **G10d** *13/08*
U.S. Cl. 84—95 **10 Claims**

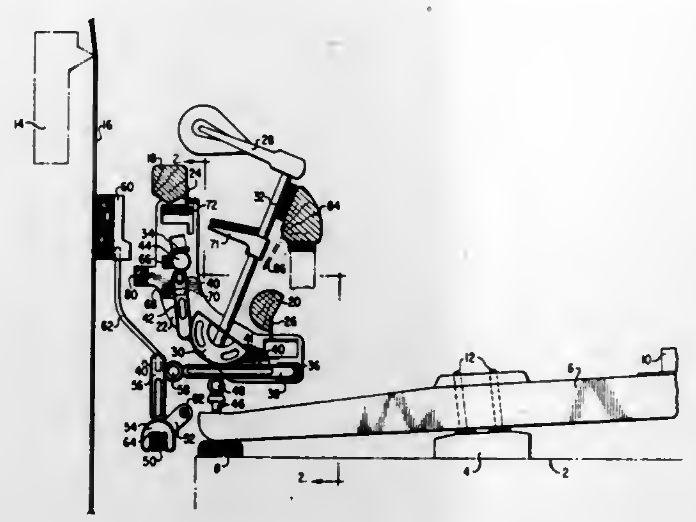


A toy for the reproduction of diverse musical fragments thanks to the suitable placement of striker tabs over a generally cylindrical surface, on which the striker tabs necessary for the reproduction of the chosen musical fragment acquire a fixed operation position on said cylindrical surface by placing them at the points of intersection of two line systems on said surface, while the rest of the striker tabs of the toy are in an operative position. The regular movement of the cylindrical surface by manual or electric means causes the operative striker tabs to operate some acoustical means simultaneously or in order, either directly or through percussion hammers with the result of said operation being the reproduction of the chosen musical fragment.

3,651,732
PIANO ACTIONS

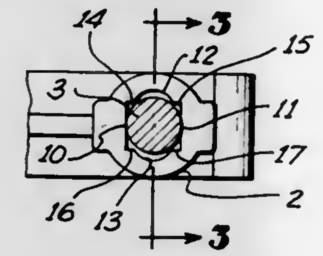
Virgil Erbert, and Donald F. Wilkes, both of Albuquerque, N. Mex., assignors to Rolamite, Incorporated, San Francisco, Calif.
Filed May 18, 1970, Ser. No. 38,003
Int. Cl. G10c *3/18*
U.S. Cl. 84—240 **25 Claims**

A piano action for transmitting motion individually from a piano key to a hammer which strikes the corresponding string. The hammer is supported on a roller for swinging toward and away from the piano string. A guide bar supports the roller and a thin flexible band extending around the bar and the roller transmits motion from the key to the roller. The hammer, roller and guide bar are mounted on an individual frame which allows the piano action foe each string position to be installed and removed separately. The piano action also includes a toggle device which controls the operation of a backcheck and includes a damper for the string that is operated in coordination with the motion of the hammer.



3,651,733
HAMMER BUTT WITH ADJUSTABLE HAMMER SHANK

Merton D. Corwin, and Walter E. Dietrich, both of Cincinnati, Ohio, assignors to D. H. Baldwin Company, Cincinnati, Ohio
Filed Aug. 31, 1970, Ser. No. 68,200
Int. Cl. G10c *3/18*
U.S. Cl. 84—243 **4 Claims**

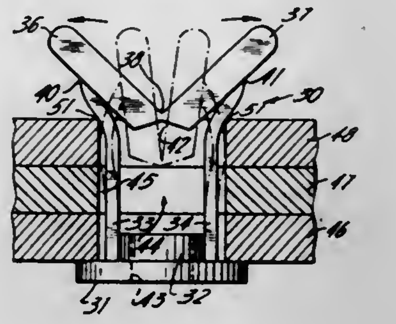


A hammer butt for use in a piano action, said hammer butt preferably being molded from plastic and having an integral socket for receiving the end of a hammer shank which is circular in cross section, the opening in said socket being of a width to engage opposite sides of the hammer shank and of a length greater than the diameter of said hammer shank so that the hammer shank may be tilted relative to the socket so as to bring the hammer shank and the hammer mounted thereon into accurate alignment with the string to be struck by the hammer.

3,651,734
EXPANSIBLE FASTENER

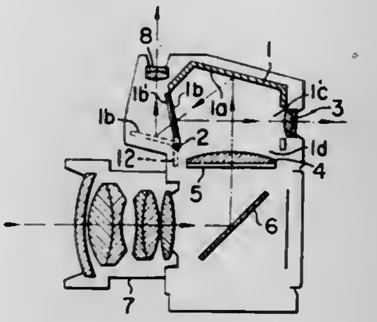
Thomas W. McSherry, Medford, N.Y., assignor to Mechanical Plastics Corp., New York, N.Y.
Continuation-in-part of application Ser. No. 844,690, Apr. 23, 1969, now abandoned. This application July 10, 1969, Ser. No. 845,655
Int. Cl. F16b *13/04*
U.S. Cl. 85—80 **28 Claims**

A fastener having a head engageable with one end of an opening, an expandable overcenter toggle lock on the other side of said opening expandable from a collapsed position in which the fastener is insertable within an opening to an overcenter stable expanded condition to lock the fastener within the opening, and a pair of spaced apart resilient members connecting the head and the expandable toggle lock to transmit forces to the toggle lock to maintain it in the stable overcenter position.



3,651,735
VIEW-FINDER FOR SINGLE LENS REFLEX CAMERAS

Kenji Hiruma, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed July 20, 1970, Ser. No. 56,511
Int. Cl. G03b *13/00, 19/12*
U.S. Cl. 88—1.5 R **3 Claims**

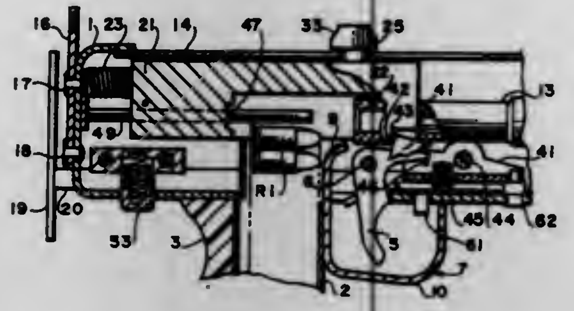


Viewfinder system, for single-lens reflex cameras, which permits viewing both at eye level, and waist or chest level, and comprises a pentagonal roof-type reflecting mirror assembly (similar in function to the conventional penta-prism), whose second reflecting mirror or surface is pivotally mounted, so that it may be switched between two positions. This second reflecting surface, which may be pivoted about its center or an edge, in one position redirects the beam of light from the camera lens system toward an eye-level finder lens while in the other position it redirects the beam toward a waist or chest-level finder lens.

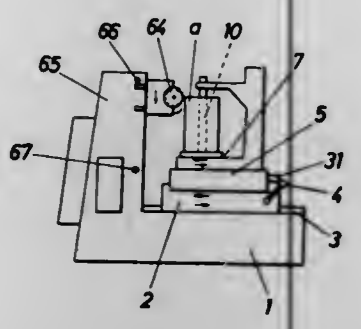
3,651,736
BOLT HANDLE AND PISTOL GRIP MAGAZINE FOR AN AUTOMATIC FIREARM

Gordon B. Ingram, Studio City, Calif., assignor to Michael H. Adair and Rosser S. Reeves, III, c/o Tiderock Corporation, New York, N.Y., attorneys-in-fact
Filed June 11, 1969, Ser. No. 832,083
Int. Cl. F41d *11/02*
U.S. Cl. 89—132 **7 Claims**

An automatic firearm comprises a frame, a receiver mounted on the frame, a barrel mounted on the receiver, a bolt disposed in the receiver and telescopically movable relative to the breech end of the barrel against the action of a recoil spring, the bolt being controlled by a sear which is movable in response to movement of the weapon trigger. A trigger guard is mounted on the frame and disposed in enveloping relationship to the trigger and arranged with one end protruding inwardly of the frame and adjacent the breech end of the barrel so as to aid in guiding rounds of ammunition into the breech end of the barrel. A bolt handle is movably mounted on the bolt and arranged to extend through a longitudinal slot formed in the receiver. The bolt handle is constructed so as to form a locking relationship with enlarged ends of the longitudinal slot when moved relative to the bolt and a sight passage is formed in the outwardly protruding portion of the bolt handle which allows sighting therethrough in line with the front and rear sights when the bolt handle is in an unlocked condition but precluding sighting when the bolt handle is in locked position.



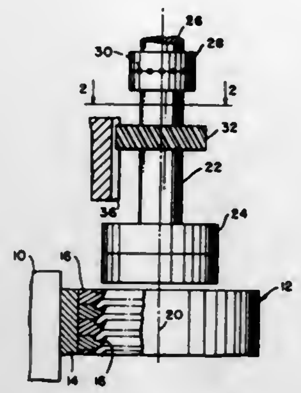
3,651,737
GEAR CUTTING APPARATUS
Shoichi Aoyama, and Shigeichi Nomoto, both of Tokyo, Japan, assignors to Oval Kiki Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 30, 1969, Ser. No. 862,191
Int. Cl. B23f *9/08*
U.S. Cl. 90—8 **7 Claims**



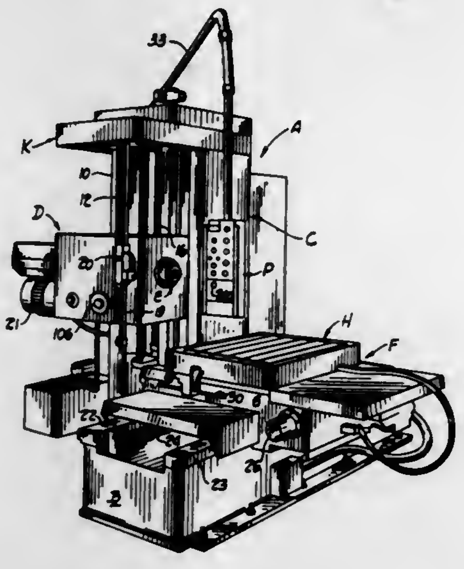
A gear cutting apparatus, especially for cutting gears on a gear blank of elliptical cross section, wherein a rotatable cutting tool reciprocable in a direction normal to its axis of rotation cuts helical teeth in the gear blank which is mounted for rotation about an axis parallel to the direction of reciprocation of the cutting tool.

3,651,738
POT BROACHING MACHINE
Benjamin F. Bregi, Grosse Pointe Shores, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Jan. 26, 1970, Ser. No. 5,723
Int. Cl. B23f *9/04*
U.S. Cl. 90—10 **5 Claims**

A pot broaching machine for broaching helical teeth on the periphery of a circular work piece in which helical guide means control rotation between the broach and work piece during the initial cutting action, after which the helical guide means becomes inoperative, and guiding action is provided by engagement between the broach teeth and the helical broached surfaces on the work piece.

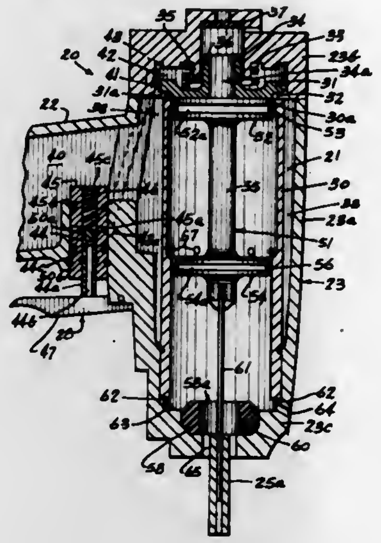


3,651,739
MACHINE TOOL
Heinz K. Wolf, Willoughby Hills, Ohio, assignor to The New Britain Machine Company, New Britain, Conn.
Filed Jan. 30, 1970, Ser. No. 7,194
Int. Cl. B23c *1/00*
U.S. Cl. 90—11 D **4 Claims**



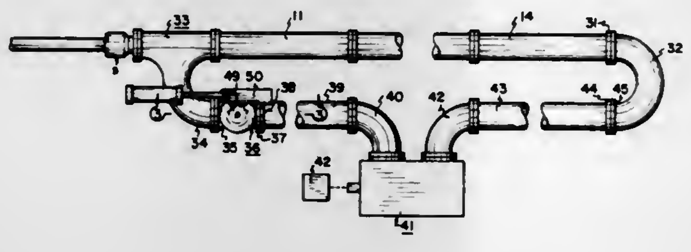
A machine tool including a movable spindlehead member having a rotatable tool spindle member reciprocable lengthwise parallel with its axis of rotation, and a work-supporting compound slide assembly having two slide members movable in directions at right angles to one another. All members can be selectively moved at feed and traverse rates in opposite directions by variable speed motors, one connectable to the spindlehead or the tool spindle and the other to either of the two slide members of the work-supporting compound slide. The motors are connected to their respective tool and work-moving members through discrete transmissions of the continuously meshed gear type under the control of hydraulically actuated clutches. Spindle feed is alternatively provided from a spindle drive motor to correlate feed with rotation. The tool spindle is provided with spring-biased mechanism for engaging a tool arbor having a tapered shank and retaining the same in a suitable tapered tool arbor socket provided in the front or tool end of the spindle and fluid pressure actuated compound motor means for releasing the tool arbor from the spindle arbor socket.

3,651,740
PNEUMATIC DRIVING TOOL WITH A FAIL-SAFE MECHANISM
Garry R. Perkins, Cary, Ill., assignor to Spotnails, Inc., Rolling Meadows, Ill.
Filed Nov. 24, 1969, Ser. No. 879,316
Int. Cl. F15b *15/17, 15/22;* **F01b** *11/02*
U.S. Cl. 91—417 A **9 Claims**



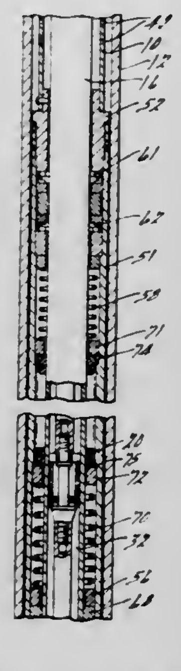
A pneumatic driving tool is provided which incorporates a fail-safe mechanism for preventing damage to the tool when an abnormal operating condition occurs. The mechanism includes an elongated cylinder and a piston mounted within said cylinder for normal reciprocatory movement between longitudinally spaced first and second positions. If the piston moves to a third position which is adjacent the second position but at a greater distance from said first position, due to an abnormal wear condition, the piston will automatically remain at said third position until the abnormal wear condition is corrected.

3,651,741
SAW MILL FEEDWORKS
James L. Sylvester, Salt Lake City, Utah, assignor to Gardner Machines, Inc., Salt Lake City, Utah
Filed May 11, 1970, Ser. No. 36,105
Int. Cl. F15b *11/04, 13/044*
U.S. Cl. 91—435 **8 Claims**



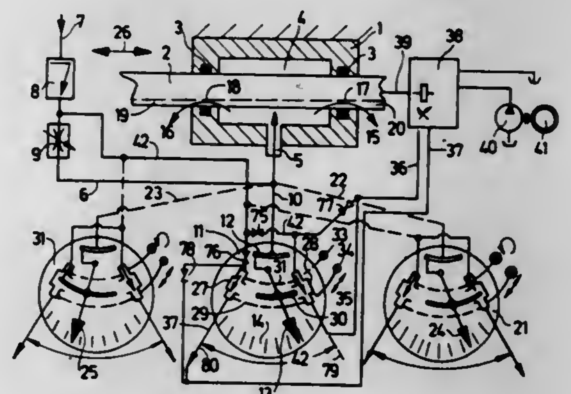
A feedworks for sawmills incorporating structure for converting steam systems to water-drive systems and, irrespective of the type of drive system employed, including means for interrupting or metering fluid-flow in the feedworks for stopping or at least slowing down the feedworks' carriage when traveling at an excessive speed proximate its extremity of travel, as a safety feature.

3,651,742
LINEAR DRIVE AND SUPPORT FOR VERTICALLY MOVABLE CONTROL RODS
Gordon R. Winders, Olney, Md., assignor to Diamond Power Specialty Corporation
Filed Aug. 21, 1970, Ser. No. 65,961
Int. Cl. F16j *1/00*
U.S. Cl. 92—30 **7 Claims**



A vertically disposed elongated cylinder includes a hydraulically actuated piston carried by a hollow piston rod which extends downwardly from the piston through friction-holding means consisting of a series of annular collet assemblies which are spring biased to holding engagement with the piston rod. A coupler for the load is operable from the upper end of the cylinder by a coupling rod extending upwardly through the piston and piston rod.

3,651,743
PNEUMATIC MEASURING DEVICE
Erich G. Henke, 7000 Stuttgart, Immenhofestr 19, Stuttgart; Helmut F. Braun, 7993 Kresbronn, Kirchstr 7; Karl L. Scholl, 7993 Kresbronn Argenstr 76, both of Kressbronn, and Rudolf Schubert, 899 Lindau Obenietnauerstr 24, Lindau, all of Germany
Filed June 3, 1970, Ser. No. 43,017
Claims priority, application Germany, June 6, 1969, P 19 28 854.1
Int. Cl. G01b *13/00*
U.S. Cl. 73—37 **11 Claims**

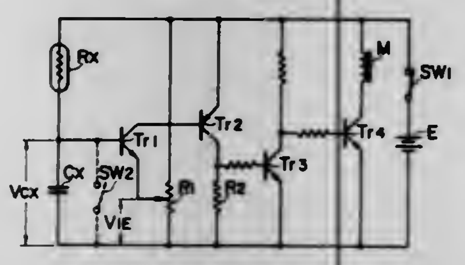


An apparatus which, at a remote position, will indicate the position of two parts which are shiftable relative to each other, such as parts located proximate to explosive means. This is accomplished by a device which is chargeable with compressed air, the relative movement of said parts reflecting itself in changes of the air pressure which changes, in turn, actuate an indicating means.

3,651,744
PHOTOGRAPHIC CAMERA

Takaaki Okada, Ageo-shi, Japan, assignor to Kabushiki Kaisha Koparu

Filed Dec. 29, 1969, Ser. No. 888,515
Claims priority, application Japan, Jan. 13, 1969, 44/2543
Int. Cl. G03b *7/08, 17/18;* G01j *1/46*
U.S. Cl. 95—10 CT **17 Claims**

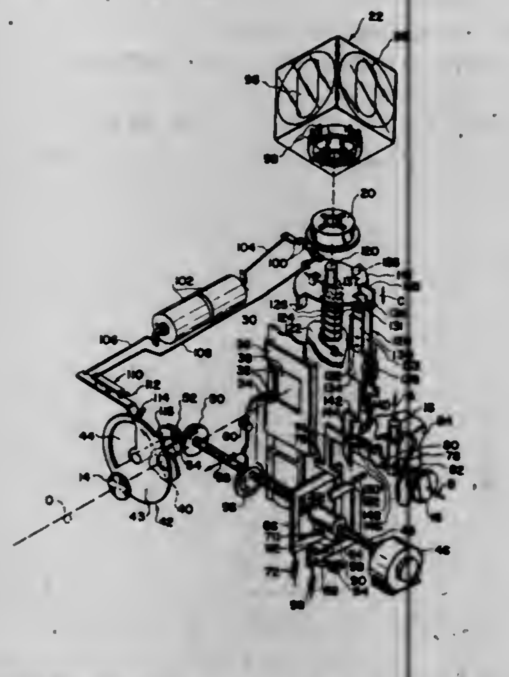


When indication of exposure time is required, an oscillation circuit means housed in the photographic camera is actuated. The signal waves generated consecutively from said circuit means are of the frequencies and waveforms corresponding to the different brightnesses of the object to be photographed. The values associated with said frequencies and waveforms are determined by a measuring means including an indicator. Then, this indicator permits the exposure time to be expressed.

3,651,745
FLASH DEVICE FOR CINEMATOGRAPHIC CAMERA

William P. Ewald, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 28, 1969, Ser. No. 819,721
Int. Cl. G03b *21/38*
U.S. Cl. 95—11.5 **2 Claims**



In a cinematographic camera having a manually movable shutter-release member for effecting an exposure of a single frame of cinematographic film to take a still picture, a device is provided for using a flash-lamp unit to augment scene illumination.

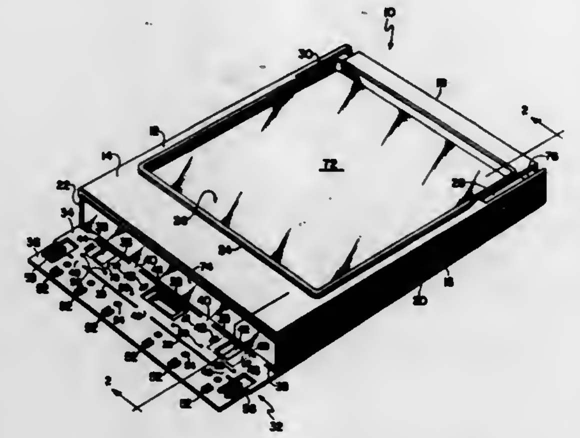
The device comprises a socket for receiving a flash-lamp unit and means operatively connected to the shutter-release member for energizing the flash-lamp unit in synchronization with the exposure of a single frame of film.

In the preferred embodiment, the socket of the device is adapted to receive a flash-lamp unit having a plurality of flash lamps and is rotatable between a corresponding plurality of lamp-firing positions; and the device further comprises means for rotating the socket from one lamp-firing position to another in response to movement of the shutter-release member.

3,651,746
FILM ASSEMBLAGE

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 15, 1970, Ser. No. 55,119
Int. Cl. G03b *17/52*
U.S. Cl. 95—19 **17 Claims**

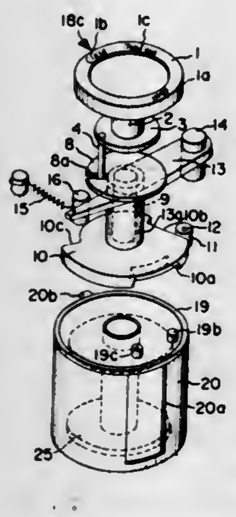


A film container for housing a plurality of film units and a battery for supplying energy for at least one component in photographic apparatus with which it is adapted to be used. One wall of the container includes two sections which are adapted to be moved into face-to-face relation with each other while the terminals of the battery are located therebetween to properly support the terminals for electrical engagement with contacts located within the photographic apparatus.

3,651,747
FILM MAGAZINE UNLOADING MECHANISM IN A CAMERA

Shuji Kimura, Setagaya, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 4, 1971, Ser. No. 121,003
Claims priority, application Japan, Mar. 10, 1970, 45/22605
Int. Cl. G03b *19/04, 17/26*
U.S. Cl. 95—31 R **1 Claim**

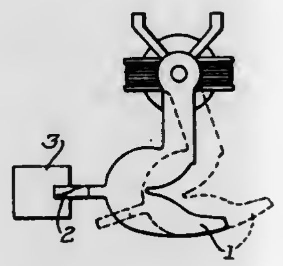


A camera using a film magazine and provided with a film magazine unloading mechanism which enables the film magazine to be readily taken out of a film magazine receiving chamber in the camera without the need to detach the camera from a tripod or other support means and without the danger of injuring the film magazine and/or the film magazine receiving chamber. After the film has been exposed, rotating an operating knob on the camera body rotates one of the two concentric cylinders forming the magazine. This creates a light seal for the enclosed film by moving the film exit slits of the cylinders out of alignment. Rotating the knob further then objects the magazine from the camera through the opened camera back.

3,651,748
CAMERA IRIS BLADE

Risaburo Yoshiada, Tokyo-to, Japan, assignor to Nikon Eigakikai Kabushiki Kaisha (Japan Cine Equipment Mfg. Co., Ltd.), Tokyo-to, Japan

Filed Dec. 11, 1969, Ser. No. 884,113
Claims priority, application Japan, Dec. 13, 1968, 43/91899
Int. Cl. G03b *9/02*
U.S. Cl. 95—64 R **1 Claim**

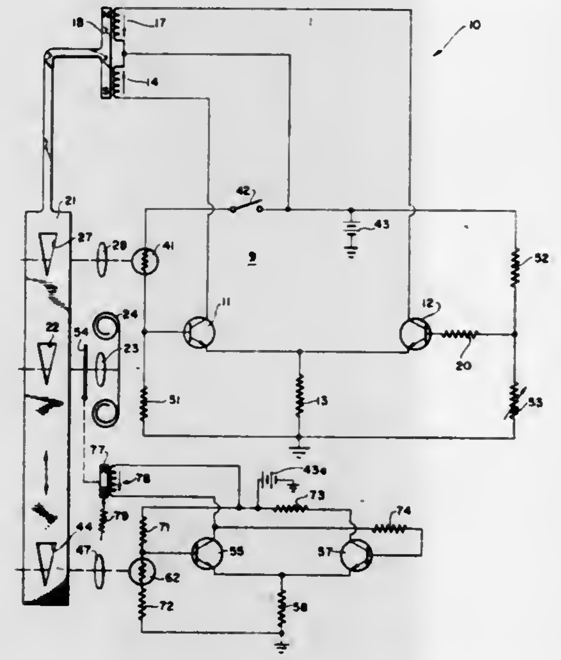


An iris blade with an integral exposure indicator formed from a sheet of synthetic resin having different colored areas, one color for the indicator and another color for the blade.

3,651,749
EXPOSURE CONTROL APPARATUS

Gerald H. De Groot, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1970, Ser. No. 77,077
Int. Cl. G03b *7/10, 19/18;* G01j *1/44*
U.S. Cl. 95—64 D **2 Claims**

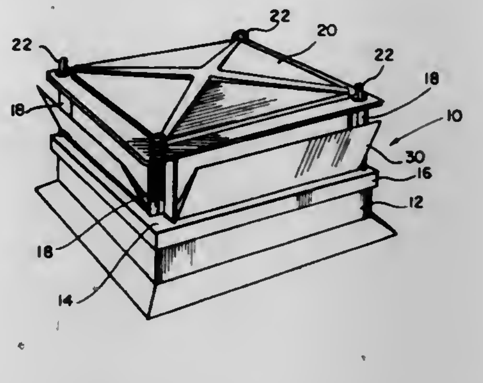


An automatic exposure control apparatus is disclosed which includes a compensating filter which is movable between a first position wherein it is disposed in optical alignment with the camera lens to adjust the color balance of incident ambient light available for exposure and a second position wherein it is withdrawn from alignment with the camera lens; a photocell which produces a discernable output signal in response to artificial lighting having substantial components in the infrared portion of the light spectrum; and an electrically actuable device coupled to the compensating filter and adapted to move the compensating filter to the second position out of alignment with the camera lens in response to the signal.

3,651,750
CLOSURE FOR A ROOF VENTILATOR

Thomas R. Field, Indianapolis, Ind., assignor to Jenn-Air Corporation, Indianapolis, Ind.

Filed Aug. 5, 1970, Ser. No. 61,251
Int. Cl. F24f *7/02*
U.S. Cl. 98—85 **4 Claims**

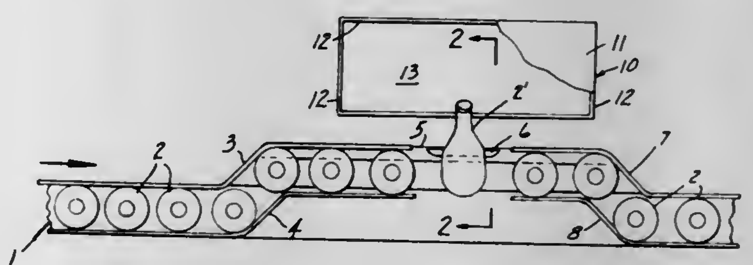


A pre-tensioned closure for a side exhaust opening through wall of a building roof ventilator wherein a damper is pivotally received within a frame opening and torsion bar biased to closed position and wherein the frame thereof is vertically received within the ventilator wall opening in a manner whereby higher than atmospheric pressure within the ventilator urges the damper against the torsion bar for at least partial opening for permitting outward passage of air, but the damper is normally biased to a vertically closed and weather sheltered position within the frame.

3,651,751
DISGORGER

Benjamin F. Randrup, 1488 High School Road, Sebastopol, Calif.

Filed Jan. 19, 1970, Ser. No. 3,784
Int. Cl. C12h *1/06*
U.S. Cl. 99—275 **7 Claims**

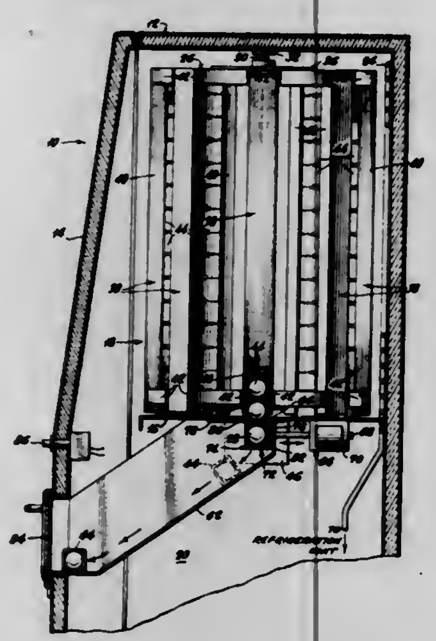


The contents of a bottle neck containing sediment are disgorged by tilting the upright bottle from the vertical and removing the crown cap to permit the internal pressure in the bottle to disgorge the contents of the neck. Means is provided for impacting the sidewall of the bottle to enhance the disgorging operation. The apparatus includes means for sensing the presence of the bottle on a conveyor and means for stopping the conveyor while the bottle is tilted and decrowned.

3,651,752
METHOD AND APPARATUS FOR HEATING AND DISPENSING INDIVIDUALLY PACKAGED FOOD PRODUCTS

Donald J. Roslonski, Pennsauken, N.J., assignor to National Electro-Cook Corporation, Mount Laurel, N.J.
Filed Jan. 26, 1970, Ser. No. 5,854
Int. Cl. H05b *3/00*

U.S. Cl. 99—357 **6 Claims**

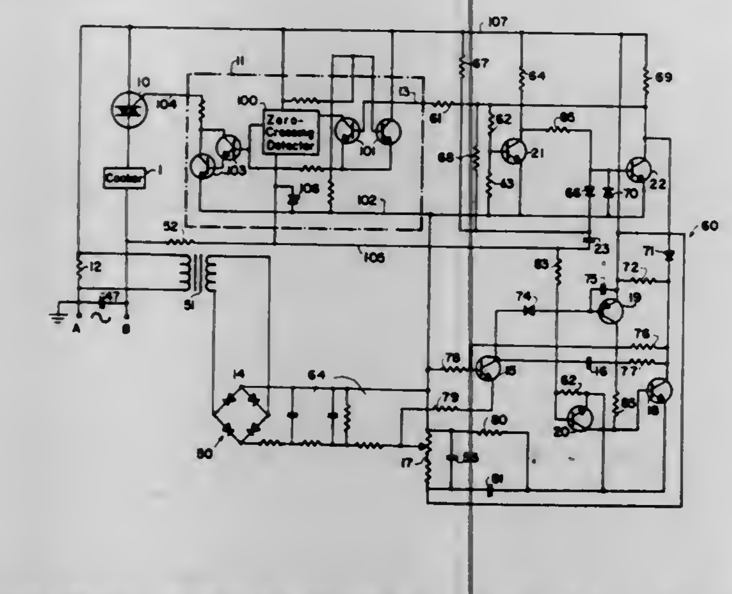


A method and apparatus for sequentially heating and dispensing a plurality of individually packaged good products, wherein the products are sequentially moved to, and supported at, a heating-dispensing station. While at such such station, each product is heated by passing an electrical current therethrough and then dispensed by removing the support therefor so that the product gravitates away from the station.

3,651,753
ELECTRIC COOKER WITH AUTOMATIC CURRENT CONTROL

Walter Schmidt, Lindau-Bodolz, Germany, assignor to Intertrade Warenverkehrsgesellschaft Hild & Co., Vienna, Austria
Filed Sept. 17, 1970, Ser. No. 73,030
Claims priority, application Austria, Sept. 17, 1969. A8824/69; June 15, 1970, A5394/70
Int. Cl. H05b *7/00*

U.S. Cl. 99—358 **8 Claims**

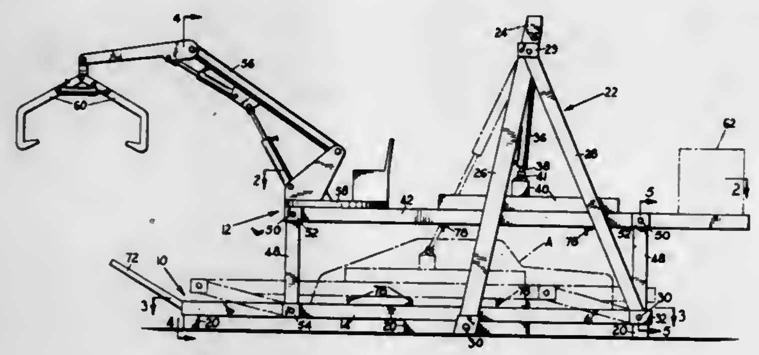


An electric cooker for the direct heating of food by the passage of alternating current therethrough has a two-way electronic valve, triggered at the beginning of each half-cycle of its power supply, connected in series therewith. A control voltage derived from a series resistor, varying with the magnitude of the load current, blocks the trigger circuit of the valve during half-cycles of a given polarity whenever the current exceeds a predetermined threshold, the trigger circuit being unswitchable during half-cycles of the opposite polarity so that only complete cycles are suppressed in the case of overload.

3,651,754
COMPACTING AND FORMING APPARATUS

Sheldon R. Forest, 566 Mill Road, Lewiston, Idaho
Filed Aug. 25, 1969, Ser. No. 852,588
Int. Cl. B30b *15/30*

U.S. Cl. 100—91 **5 Claims**

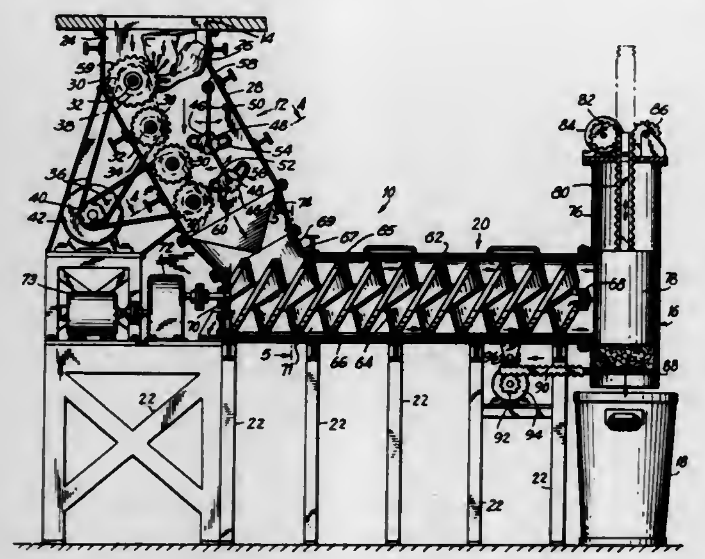


Apparatus is provided including a base to which is connected an upright A-frame. Pivotally connected to the base by four corner posts is a forming frame disposed generally parallel to the base frame and pivotal on its end posts between upright and collapsed positions by fluid operated cylinders connected between the A-frame and the forming frame. Articles to be compacted or formed are placed on the base, and pivoted movement of the forming frame on its posts provide the compacting or forming forces; such forces acting simultaneously in linear and compacting directions. A loading boom is supported on the forward end of the forming frame for moving articles to the apparatus. The front end of the base frame has anchor means which serve to support articles for pretreatment prior to placing them in the apparatus.

3,651,755
WASTE AND TRASH CRUSHING AND COMPACTING APPARATUS

Louis Gati, New York, N.Y., assignor to Pollution Techtronics, Inc.
Filed Oct. 21, 1969, Ser. No. 868,091
Int. Cl. B30b *1/24, 15/30*

U.S. Cl. 100—96 **21 Claims**

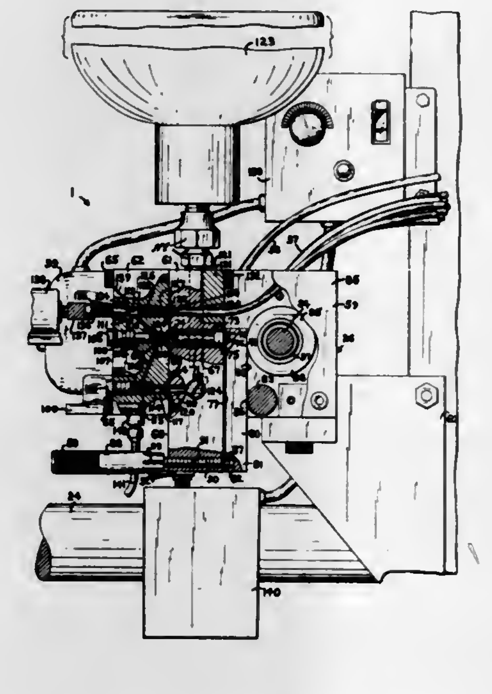


Crusher and compacter for waste material particularly trash and other residential type waste material particularly adapted for disposition as at the bottom of a chute to enable trash deposited therein to be compacted to facilitate removal thereof from the premises, as for incineration or burial at a remote location.

3,651,756
SPRAY DAMPENING SYSTEM WITH INDIVIDUAL METERING PUMPS FOR OFFSET PRESS

Roy R. Smith, Jr., 9714 Cherokee Lane, Leawood, Kans., assignor to Roy R. Smith, Jr., Leawood, Kans.
Filed Aug. 11, 1969, Ser. No. 849,050
Int. Cl. B41l *25/06*

U.S. Cl. 101—147 **9 Claims**

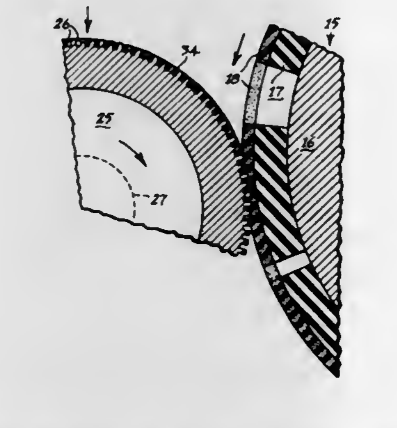


Individual, low volume metering pumps are provided for supplying moisture to each nozzle in a bank of adjacent nozzles directing moisture toward the inking train. The metering pumps are driven through commonly mounted eccentric cam rollers respectively engaging adjustable rocker arms for accurately varying the moisture output of each nozzle while variation of a master drive controls overall bank output. Selectively operable pistons are associated with individual output check valves for system priming or bubble clearance.

3,651,757
INK METEREING DEVICE FOR TEXTILE FABRIC ROTARY PRINTING APPARATUS

Grover Z. Gowin, Tunnel Hill, Ga., assignor to Gowin-Card, Inc., Dalton, Ga.
Filed May 12, 1970, Ser. No. 36,567
Int. Cl. B41f *31/06*

U.S. Cl. 101—350 **4 Claims**

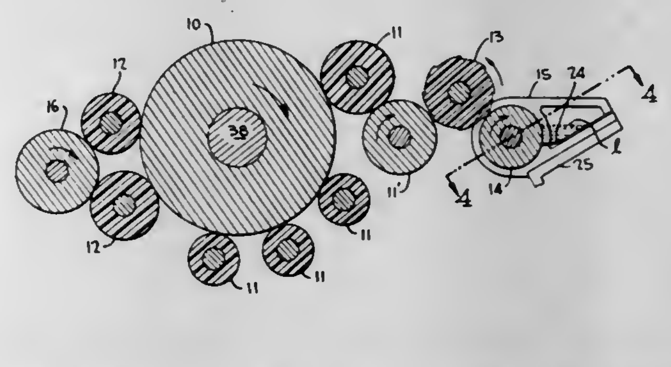


A printing apparatus for a web of pile fabric including a printing roll having a compressible absorbent cover material, a pressure roller adapted to force the fabric web into printing position against the cover material, and a meter roll having a hard surface, and uniformly spaced, uniform longitudinal grooves in the surface for receiving liquid dye, the hard grooved surface being adapted to squeeze the absorbent cover material on the printing roll to dispense metered amounts of dye into the printing roll cover material prior to printing the fabric.

3,651,758
INK TRANSFER SYSTEM

Jimmie A. Harrod, Middleport, N.Y., assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.
Filed Dec. 17, 1969, Ser. No. 885,748
Int. Cl. B41f *31/26;* **B21b** *27/02*

U.S. Cl. 101—350 **8 Claims**

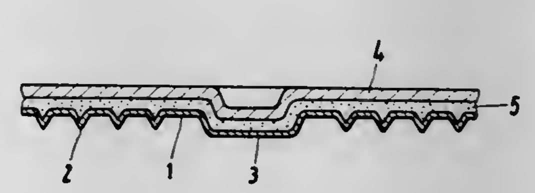


An ink transfer system for a rotary printing press wherein a helically grooved transfer roll is provided for effectively transferring toward a plate cylinder an ink volume consistent or equal to the usage requirements at any given point or area on the roll surface as determined by the printed image. The transfer roll has the ability to simultaneously transfer ink reversely back onto the fountain roll by reason of its helical grooves being in light contact with a relatively slowly rotating fountain roll. An offset groove and ball arrangement is provided for one of the distribution rolls in the printing press chain of rollers so as to smoothly oscillate the roll for a more even distribution of the ink transversely of each roll in the ink train. The inner face of each fountain roll mount is slightly relieved so as to direct ink away from the outermost ends of the fountain roll thereby substantially preventing fountain leakage.

3,651,759
PRINTING FORMS

Gerhard Ritzerfeld, Franzensbaderstra 21, Berlin, 33, Germany
Original application Mar. 23, 1967, Ser. No. 625,344, now Patent No. 3,536,008. Divided and this application Apr. 15, 1970, Ser. No. 28,707
Int. Cl. B41n *1/06*

U.S. Cl. 101—395 **8 Claims**

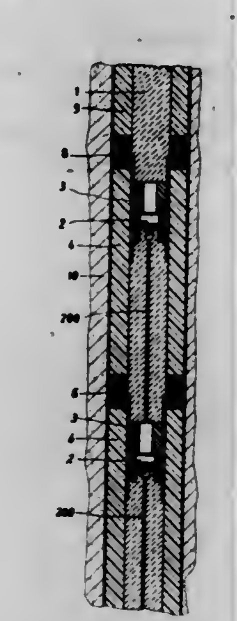


A composite printing foil produced by applying to one face of an aluminum foil formed with spaced projections extending outwardly at the other face of the foil, a supporting layer of synthetic resin or paper and the like which layer has a thickness between about one-half and one-and-a-half times the thickness of the aluminum foil.

3,651,760
IGNITION SYSTEM FOR WARHEAD

Manfred Held, Pottmes, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed Oct. 13, 1969, Ser. No. 865,888
Claims priority, application Germany, Oct. 16, 1968, P 18 05 467.6
Int. Cl. F42c *11/04, 15/40, 19/06*
U.S. Cl. 102—70.2 A **9 Claims**

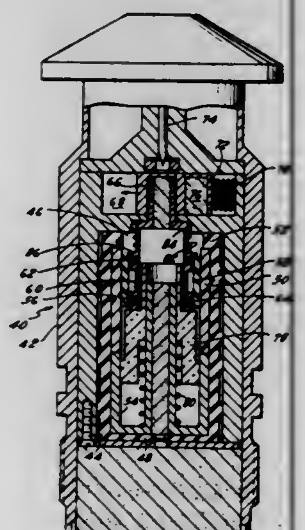


An ignition system, for the simultaneous ignition of several charges arranged in different cross-sectional planes of an elongated warhead and extending perpendicular to the longitudinal center line of the warhead, includes a rod displaceable along the longitudinal center line, relative to the cross-sectional planes, and having two possible positions spaced longitudinally from each other. The rod has, at locations therealong, and in cross-sectional planes corresponding to the cross-sectional planes of the warheads, devices operable to ignite the charges. The corresponding cross-sectional planes of the warhead and the rod coincide in one of the two possible positions of the head. These two positions can be termed, respectively, the "ignition locked" position and the "ignition released" position.

3,651,761
ROCKET FUSE WITH A COCKED PISTON

David S. Breed, P.O. Box 349, Lake Hopatcong, N.J.

Filed Apr. 1, 1969, Ser. No. 811,968
Int. Cl. F42c *5/00, 7/00, 15/20*
U.S. Cl. 102—80 **6 Claims**

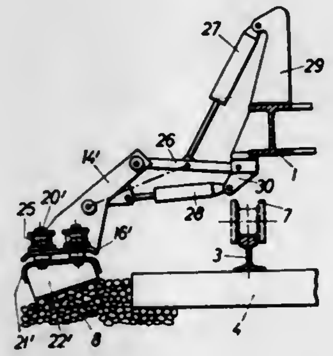


A rocket fuse including a dashpot timer in which a piston extension is adapted to hold a slider assembly in a retracted position. The slider assembly contains a detonator and also is under the influence of a spring which bears against the piston extension causing the piston to cock relative to the cylinder. A spring biased weight bears against the piston to hold it in a position at which the slider assembly is maintained in its retracted position by the piston extension. When the rocket is projected and experiences predetermined acceleration, the generated forces shift the weight away from the piston which is then adapted to travel in its cylinder. When the acceleration forces are present for a predetermined period of time and maintains the weight away from the piston, the movement of the piston in its cylinder will eventually cause the piston extension to clear the slider assembly. At this moment the slider assembly is shifted by means of its spring to a position at which the detonator is aligned with the detonator pin and the explosive train to thereby arm the fuse.

3,651,762
MOBILE TRACK SURFACING MACHINE

Franz Plasser, and Josef Theurer, both of Johannesgrasse 3, A-1010 Vienna, Austria

Filed Mar. 13, 1970, Ser. No. 19,339
Claims priority, application Austria, Apr. 4, 1969, A 3366/69
Int. Cl. E01b *27/16*
U.S. Cl. 104—12 **13 Claims**

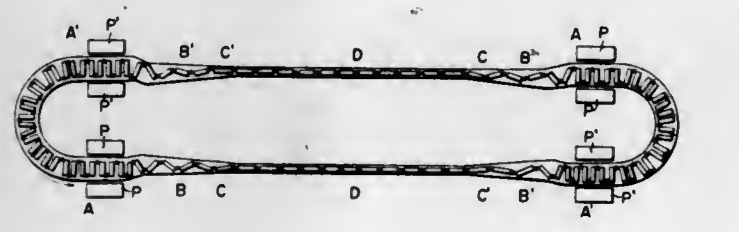


In a track surfacing machine, a vibratory surface tamper is mounted on a vertically adjustable carrier on the machine frame, and a generally planar resilient plate for damping the vibrations of the surface tamper is mounted between the tamper and the carrier.

3,651,763
CONVEYING APPARATUS

Saihei Iritani, Okazaki, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Toyoda-cho, Kariya, Aichi, Japan

Filed Mar. 19, 1970, Ser. No. 20,969
Claims priority, application Japan, Mar. 29, 1969, 44/24216
Int. Cl. A63g *1/00*
U.S. Cl. 104—25 **5 Claims**

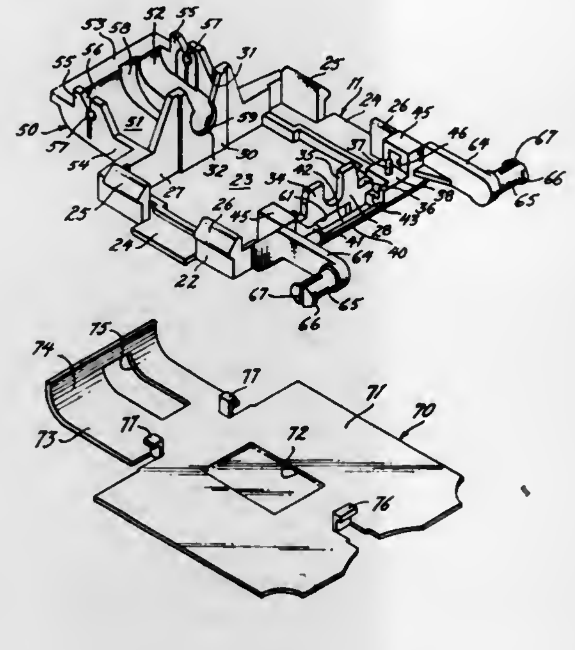


A conveying apparatus consisting of a group of transport member or vehicles, said vehicles being horizontally oscillatable relative to each other, and a pair of guide rails arranged in endless form or a closed loop circuit for guiding said vehicles, said vehicles being guided by said guide rails from parallel position into series position, and vice versa.

3,651,764
MODEL RACING CAR

Gene Patrick Dennis, Pitman, N.J., and Cheng Ying Lai, Hong Kong, assignors to Tyco Industries, Inc., Woodbury Heights, N.J.

Filed Oct. 29, 1969, Ser. No. 872,027
Int. Cl. A63h *29/22;* **B61b** *13/12*
U.S. Cl. 104—149 **7 Claims**

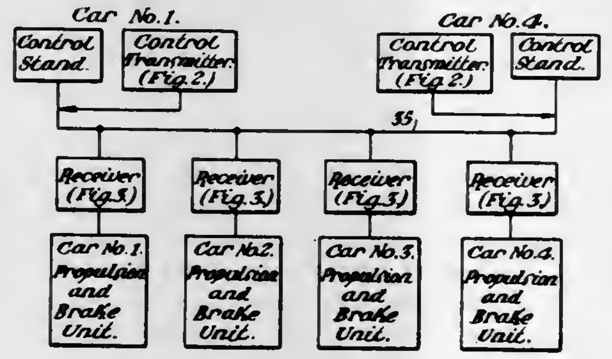


A model racing car frame having a motor mounted therein and provided with wheeled running gear, a depending guide shoe for guiding engagement in a roadway slot, the guide shoe being swingable about an upstanding axis, and resilient wipers carried for movement with the guide shoe and resilient engagement with the roadway.

3,651,765
TRAIN LINE COMMUNICATION AND CONTROL STEM

Reed H. Grundy, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Apr. 14, 1970, Ser. No. 28,378
Int. Cl. B60l *15/08*
U.S. Cl. 105—61 **4 Claims**

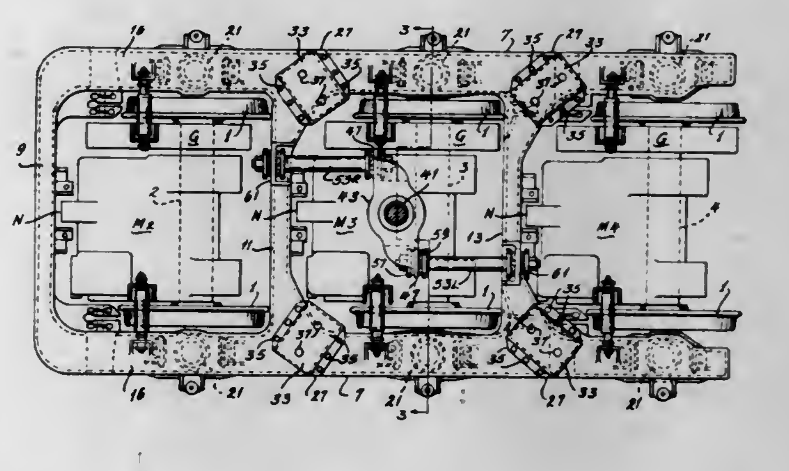

Car No.1.
Control Stand.
Control Transmitter. (Fig.2.)
Car No.4.
Control Transmitter. (Fig.2.)
Control Stand.
55
Receiver (Fig.3)
Receiver (Fig.3.)
Receiver (Fig.3)
Receiver (Fig.3.)
Car No.1. Propulsion and Brake Unit.
Car No.2. Propulsion and Brake Unit.
Car No.3. Propulsion and Brake Unit.
Car No.4. Propulsion and Brake Unit.

An asymetrical, astable multivibrator, at the control location for a multiple unit train, transmits a control signal having a selected duty cycle characteristic over a single train line channel. The duty cycle percentage is selectively varied by a transistorized switching bank which connects different resistors into the RC timing circuit for one-half of the multivibrator element, the other half having a fixed timing circuit. These switching transistors are selectively controlled by the train operator in accordance with the desired train operating mode. The transmitted control signal is received on each car and converted into an average voltage whose level varies with percent duty cycle. On each car, this average voltage is compared, in a transistorized comparator element, with a reference voltage preset in accordance with the desired operating mode of that car within the overall train operation. When the average voltage is less than the reference voltage, a controller on that car is actuated to control the car function. With different reference voltages preset on the several cars, sequential activation of the car control functions may be obtained.

3,651,766
LOCOMOTIVE TRUCK

Richard L. Lich, Town and Country, Mo., assignor to General Steel Industries, Inc., St. Louis, Mo.

Filed Jan. 30, 1970, Ser. No. 7,137
Int. Cl. B61c *9/48;* **B61f** *5/02, 5/14*
U.S. Cl. 105—136 **7 Claims**



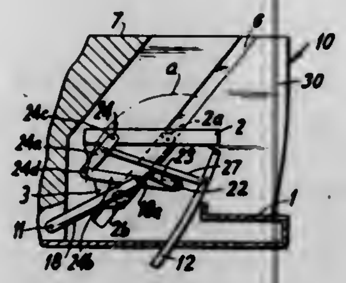
The invention provides a three axle motor truck for railway locomotives in which the body load is transmitted in equal shares to the truck frame at four points symmetrically spaced transversely and longitudinally of the truck with respect to the axles. Preferably the body load is transmitted to the truck frame by elastomeric sandwich devices which are yieldable in horizontal shear to permit relative lateral and swivel movements between the truck frame and body underframe. The truck frame includes a pair of transverse transoms positioned respectively between the middle and each of the end axles, and for transmitting draft and braking forces between the truck frame and the underframe and providing a swivel center for the truck, a transverse lever is fulcrumed at its midpoint on a vertical axis to the underframe at the center of the truck, and its ends are connected respectively to the opposite transoms by longitudinally extending links. This arrangement provides a swivel center nearly symmetrical with respect to the load-transmitting sandwich devices so that for swivel, none is required to deflect an excessive amount in shear. The longitudinal spacing of the elastomeric sandwiches provides a long arm opposing tendencies of the truck frame to tip during acceleration and thus transfer load from axle to axle. This effect is also enhanced by having all the motors extend in the same direction from the axles to their reaction connection to the truck frame.

3,651,767
MULTISTEP ENTRY PARTICULARLY FOR VEHICLES

Heinz Findeklee, Salzgitter-Lebenstedt, Germany, assignor to Linke-Hofmann-Busch Waggon-Fahrreug-Maschinen GmbH Postfach, Salzgitter-Watenstedt, Germany

Filed July 22, 1970, Ser. No. 57,118
Int. Cl. B61d *23/02*
U.S. Cl. 105—448 **5 Claims**

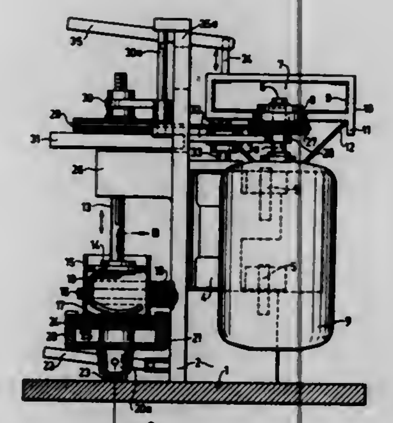
A multistep construction particularly for rail vehicles comprises a fixed lower step and a step which is movable for bridging the differing entering heights between the fixed lower step and the floor of the vehicle. The movable step is connected to a lever mechanism in the form of two pivotal lever elements connected at their upper end to the step and at their lower end to a shaft which is rotated by a moving member such as a piston and cylinder combination. The movable step itself is guided by rollers carried on an arm portion which engage in an inclined or oblique trackway defined in wall panels on each side of the entrance passageway. The



step carries an apron which is articulated to the front and depends downwardly therefrom. The lever mechanism includes a rod member which is pivoted to the mechanism and to the apron and which provides an inward and outward guidance of the apron during lowering and raising of the step.

3,651,768
METHOD FOR SEPARATING WET GLUTEN OR GLUTENIN FROM FLOUR

Kaiervo Onal Hyppola, Helsinki, Finland, assignor to Falling Number AB, Stockholm, Sweden
Filed Apr. 6, 1970, Ser. No. 25,880
Claims priority, application Finland, Apr. 8, 1969, 1008/69
Int. Cl. A21c *1/06*
U.S. Cl. 99—94 **5 Claims**

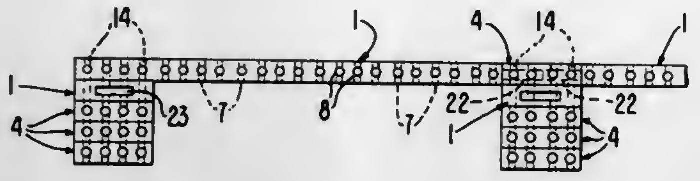


The invention relates to a method and an apparatus for separating wet gluten or glutenin from a dough of flour and water by kneading the dough and washing it by water so as to remove water-soluble constituents in the dough, the dough preparing step, the kneading and washing steps all being performed by means of agitating or stirring means in succession in one and the same vessel in such a manner that the speed of agitation or stirring is considerably higher during the dough preparing step than during the kneading and washing steps.

3,651,769
PALLET CONSTRUCTION

Laurance J. Foley, 63 Almond Avenue, Los Altos, Calif.
Filed Nov. 3, 1969, Ser. No. 873,178
Int. Cl. B65d *19/12, 19/00*
U.S. Cl. 108—56 **11 Claims**

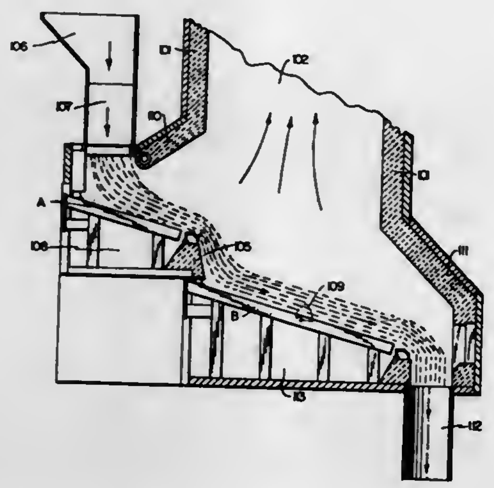
A set of pallet-forming members is provided to form a wide variety of pallet sizes and configurations. The set comprises an elongated main member, at least one extender member shorter than the main member and a still shorter cap member. Connecting means are provided for joining said members to other identical members or to one or more of the other types of members. In any case the joining can be end-to-end to form an elongated unit or in juxtaposed parallel or angular relation. The three members are so dimensioned that



when two or more members are joined end-to-end they form a unitary elongated unit of any length over 4 inches which is a multiple of 2 inches, since the main member, extender and cap member are 18, 4 and 2 inches long respectively. A wide variety of pallet sizes and configurations are formed with said pallet forming members.

3,651,770
MECHANICAL GRATE FOR INCINERATORS

George Hotti, Candiac, Quebec, Canada, assignor to Von Roll, A. G., Gerlafingen, Switzerland
Filed Apr. 23, 1970, Ser. No. 31,205
Int. Cl. F23g *3/00*
U.S. Cl. 110—8 R **5 Claims**



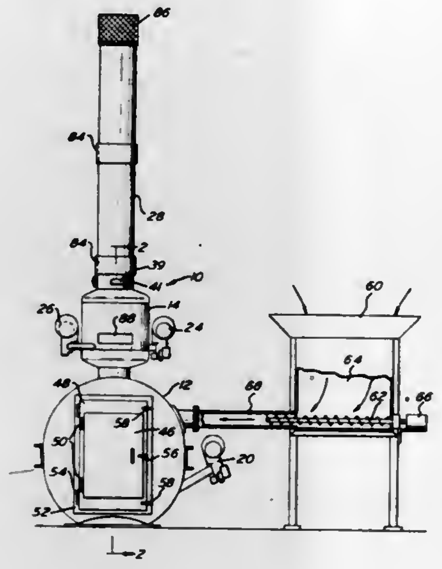
An improved mechanical grate means of novel design is disclosed, for use particularly in refuse incinerators for refuse of all kinds, said grate means comprising inclined grate sections disposed in stepped arrangement, means for supporting and transporting refuse thereon across the combustion chamber of such an incinerator and for supplying combustion supporting air and means for mechanically raking or agitating the fire bed to achieve complete incineration.

3,651,771
INCINERATOR

Richard J. Eberle, Gwynedd Valley, Pa., assignor to Stainless, Inc., North Wales, Pa.
Filed Aug. 26, 1969, Ser. No. 853,014
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 A **16 Claims**

An incinerator including primary and secondary combustion chambers and at least one transistion passageway interconnecting the same. At least one primary and at least one

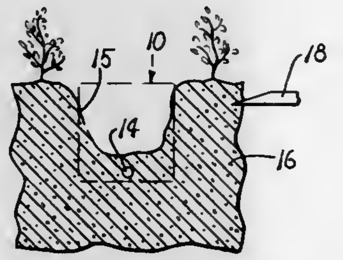
secondary burner are utilized in the respective chambers. The secondary burner is tangentially fired with an aspirating action. Exit air is admitted through ports provided at the base of the stack to facilitate turbulence in a direction opposite to the direction of the tangentially fired secondary burner. Primary and overfire air are provided in the main combustion



chamber. Secondary air is introduced in the transition passageway. The exit air is introduced immediately above the secondary chamber at the base of the stack. The temperature in the primary chamber is preferably at least 1,100° F. and the temperature in the secondary chamber is preferably at least 1,400° F.

3,651,772
METHOD AND SEED PELLET FOR USE IN PLANTING AGRICULTURAL CROPS

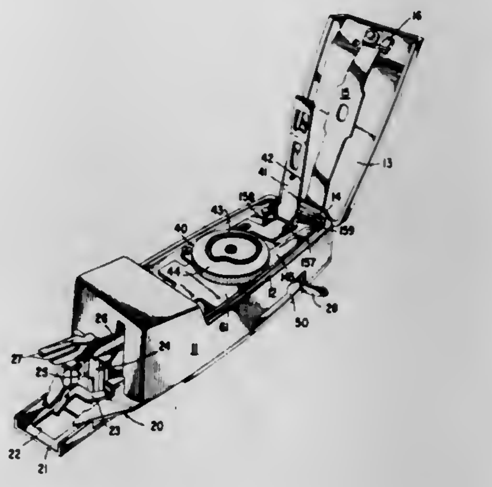
Ross V. Garabedian, 921 Van Ness Avenue, Fresno, Calif.
Filed Nov. 21, 1969, Ser. No. 878,781
Int. Cl. A01c *1/06*
U.S. Cl. 111—1 **6 Claims**



A method and seed pellet particularly suited for use in planting agricultural crops characterized by the provision of seed pellets including frozen bodies of selected fluids such as water or aqueous solutions of selected chemicals, such as fertilizers, herbicides, pesticides and the like, having discrete plant seeds embedded therein, and depositing the pellets in the soil, a feature of the invention being the adaptability thereof for use in planting relatively small seeds with a selected, uniform spacing and shallow covering in a moisturized environment.

3,651,773
MONOGRAMMING ATTACHMENT FOR SEWING MACHINES

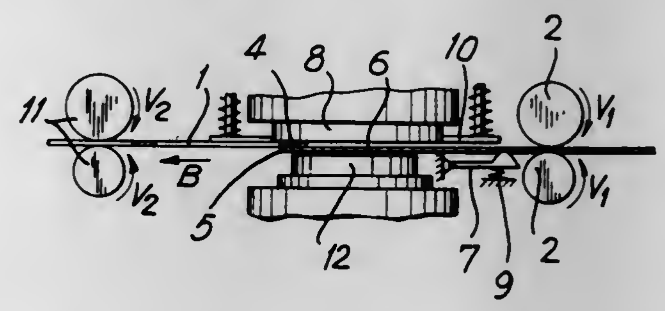
Joseph G. Rakacs, 33 Wood Haven Road, Green Island, Toms River, N.J.
Continuation-in-part of application Ser. No. 55,330, July 16, 1970, now abandoned. This application Sept. 11, 1970, Ser. No. 71,380
Int. Cl. D05b *3/24*
U.S. Cl. 112—77 **6 Claims**



A work shifting attachment for a zigzag sewing machine in which an exchangeable pattern cam disk with a cam track formed in each face may be inserted through a hatch in the attachment cover into engagement with a cam drive and into cooperative relation with a pair of cam followers connected to shift a work clamp in a path appropriate for monogramming.

3,651,774
METHOD OF CONTINUOUS FEED OF SEPARATE STRAPS IN PROCESS OF BLANKING

Vitaly Konstantinovich Gilev, 811 proezd, 65, kv. 16; Volf Nakhimovich Evzlin, ulitsa Chapaeva, 102, kv. 53; Tofik Kudrat Ogly Idayatov, ulitsa Aga-Neimatully, 22, kv. 21; Nea Eachievna Proshian, ulitsa 28 Aprelya, 19, kv. 16; Rafael Tevosovich Sarkisov, ulitsa Aga-Neimatully, 20a, blok 3, kv. 28, and Ernst Arakelovich Stepanian, ulitsa Druzhby Molodezhi, 2, kv. 36, all of Baku, U.S.S.R.
Filed Oct. 13, 1969, Ser. No. 872,890
Int. Cl. B21d *43/00*
U.S. Cl. 113—113 R **1 Claim**



The invention relates to a method of continuous feed of separate straps during the blanking, comprising the following operations: the strap of sheet material to be blanked is fed into a die, the end of the blanked strap during the movement for a feed pitch prior to the last blanking operation is deflected aside with simultaneous movement of the next strap so that the beginning of the latter overlaps the deflected end of the blanked strap, in which case the last blanking operation is effected on the blanked strap, thereafter, both straps are moved simultaneously and at the same speed for a feed pitch; at the end of this movement, prior to the first blanking operation on the next strap, the end of the blanked strap is withdrawn from the blanking zone at a speed exceeding the rate of feeding the strap into the blanking zone.

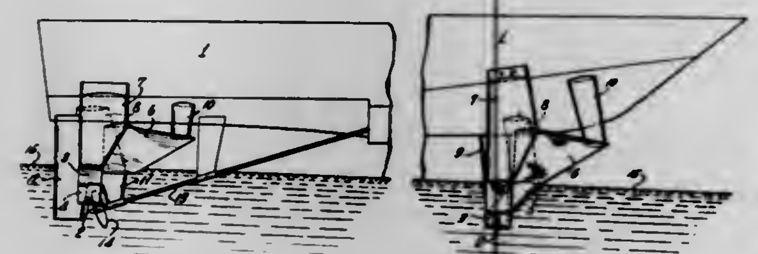
3,651,775
HYDROFOIL SYSTEM

Helmut Kock, Woodlyn Park Apt. C-242 1400 McDale Blvd., Woodlyn, Pa.

Filed Aug. 18, 1969, Ser. No. 850,743

Int. Cl. B63b *1/20*

U.S. Cl. 114—66.5 H **10 Claims**



The present invention relates to a hydrofoil system attached to a hull of a vessel.

The foil are attached to the hull of a vessel by means of non-lifting struts and each foil comprises a main lifting foil portion which consists of submerged middle section and two upwardly and outwardly inclined side sections which control the end position of the lift. In a spaced relation and parallel to the inclined sections, two auxiliary upper lifting foil portions are attached on each side of the hull for supporting the lifting action and stabilizing the vessel.

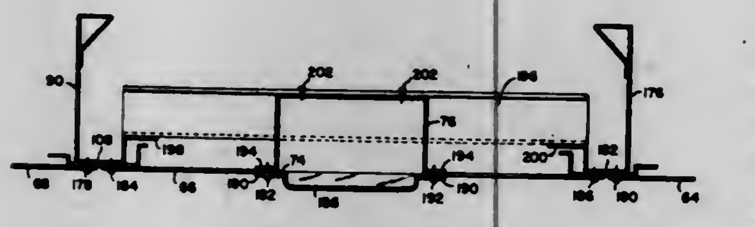
3,651,776
MODULAR ACCOMMODATIONS

Albert A. Hopeman, Jr., Bronxville, N.Y.; Frank L. Shiflet, and Howard G. Schultz, both of Waynesboro, Va., assignors to Hopeman Brothers, Inc., New York, N.Y.

Original application June 2, 1969, Ser. No. 829,347, now abandoned. Divided and this application Dec. 9, 1970, Ser. No. 96,356

Int. Cl. B63b *29/02*

U.S. Cl. 114—71 **3 Claims**



Ceiling panels for ships' accommodations are supported by troughlike assemblies, extending across the ceilings of cabins, the assemblies also containing lighting fixtures, air ducts and other utilities. Plumbing for a pair of adjoining cabins is preassembled into an enclosure, which extends between deck and ceiling, the bulkheads of the enclosure supporting wash basins, a toilet and associated fixtures. A prefabricated frame is provided including members for supporting ventilation ducts and lighting fixture in the bathroom ceiling and for receiving bulkhead panels and supporting bathroom ceiling panels.

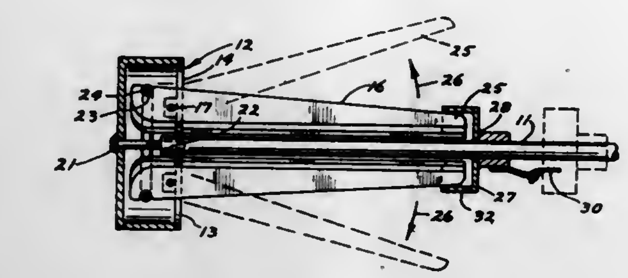
3,651,777
BOAT ANCHOR

Merlin W. Ehrlichmann, Minnetonka, Minn., assignor to West Creek Co., Inc., Minnetonka, Minn.

Filed Apr. 15, 1970, Ser. No. 28,569

Int. Cl. B63b *21/44*

U.S. Cl. 114—208 A **7 Claims**



A boat anchor having anchor type prongs which fold along a center member and upon a tug of a rope can be released and will spread out to form a hook type anchor that will hold onto the bottom of the lake, or other object.

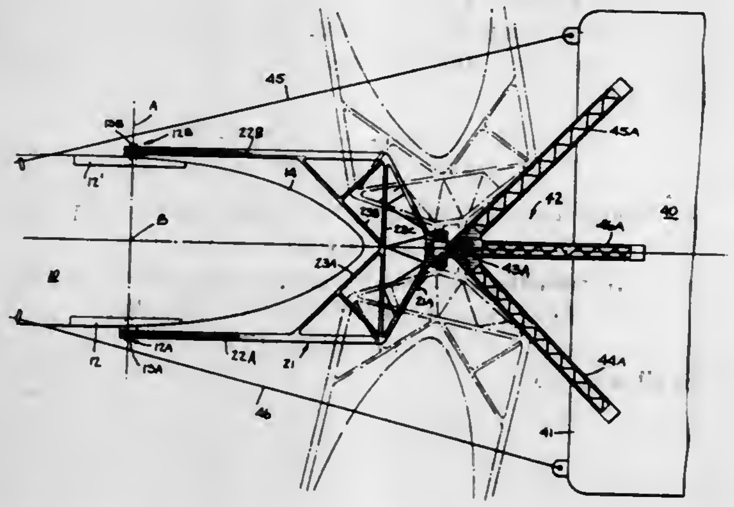
3,651,778
COUPLING APPARATUS FOR WATERCRAFT

Robert E. Derecktor, Parsonage Point, Rye, N.Y.

Filed Feb. 17, 1970, Ser. No. 11,978

Int. Cl. B63b *21/00*

U.S. Cl. 114—235 R **22 Claims**



An apparatus for coupling a pushed vessel with a pushing vessel by connecting to the stern of the pushed vessel a universal thrust coupling providing for three degrees of freedom of movement between the pushed vessel and an elongated compression connecting member connected at one end thereof to the thrust coupling and at the other end thereof to the mid-ship portion of the pushing vessel and being pivotably movable with respect to the pushing vessel about an athwartships axis of the latter, whereby said pushing and said pushed vessels are linked together for joint movement while being free to heave as well as roll, yaw and pitch relatively to one another.

3,651,779
ELECTRICAL STEERING SYSTEM FOR BOATS

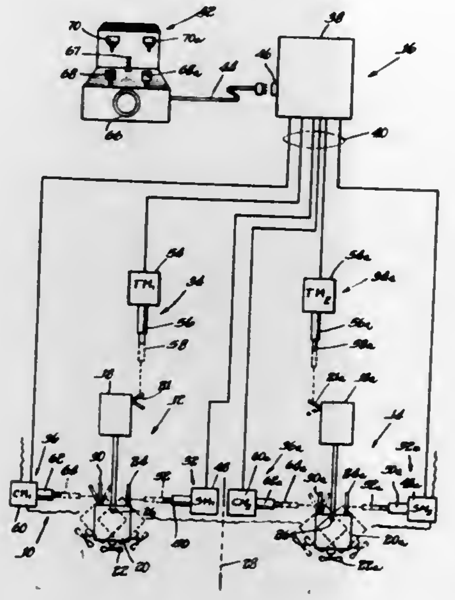
Calhoun Norton, Tequesta, Fla., assignor to Arens Controls, Inc., Evanston, Ill.

Filed Apr. 6, 1970, Ser. No. 25,874

Int. Cl. B63h *23/28*

U.S. Cl. 115—35 **7 Claims**

There is disclosed a control system for electronically controlling a boat powered by a conventional twin screw inboard--outboard drive system. The boat is maneuvered by a plurality of reversible direct current motors which are controlled through a complex electronic circuit system by a portable control box. The portable control box is disengageably connected to the electronic system so that the boat may be maneuvered from any position thereon.



3,651,780
ROTARY INSTRUMENTS FOR INDICATING LINEAR MEASUREMENTS

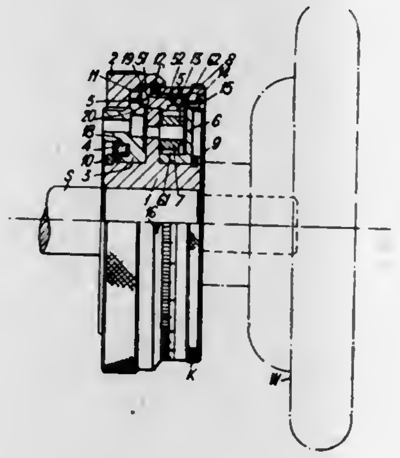
Cyril W. Medhurst, Woking, England, assignor to British Aircraft Corporation, London, England

Filed Oct. 8, 1969, Ser. No. 864,838

Claims priority, application Great Britain, Oct. 25, 1968, 50,852/68

Int. Cl. B23q *17/00*

U.S. Cl. 116—115.5 **12 Claims**



A compact rotary dial unit for accurately measuring small movements of a machine-tool lead-screw, the unit having one continuous decimally divided scale which indicates the measurement in either the metric or the inch system, as initially selected by the operator; the unit encloses an epicyclic gearing which when changed from a nonoperating to an operating condition causes a change (simply related to 2.54) in the rotation speed of the scale.

3,651,781
METALLIC VAPOR DEPOSITION ARRANGEMENT

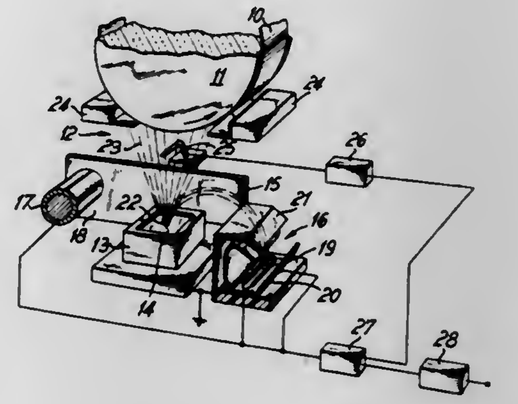
Klaus Brill, Stuttgart-W, and Wolfgang Grothe, Stuttgart-Vaihingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 27, 1970, Ser. No. 23,340

Claims priority, application Germany, Mar. 28, 1969, P 19 15 933.2

Int. Cl. H01j *37/26*

U.S. Cl. 118—7 **11 Claims**



An arrangement for the vapor deposition of metallic layers upon moving bands of insulating material. The metal is vaporized in a crucible through an electron beam generated by an electron gun. The electron beam serves to both vaporize the metal and ionize the vapor stream emerging from the crucible. The vapor stream is directed upon a predetermined surface of the moving band of insulating material. Within the vapor stream is located a probe which transmits current to a regulator for the purpose of monitoring and regulating the thickness of the deposited metallic layer.

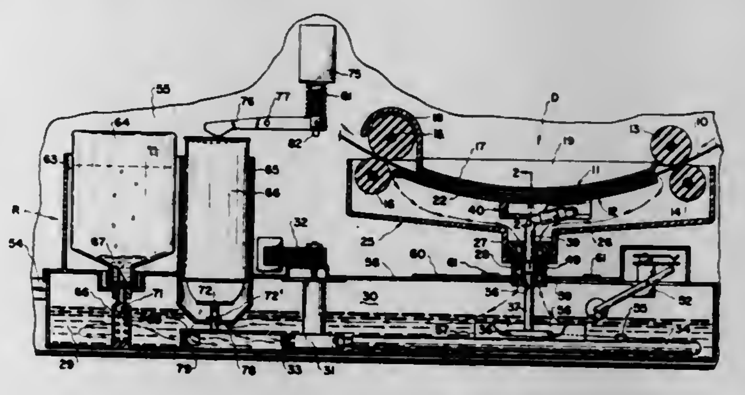
3,651,782
LIQUID DEVELOPMENT APPARATUS

William A. MacDonald, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 2, 1969, Ser. No. 854,600

Int. Cl. B05c *3/02;* **B05b** *5/02;* **G03g** *15/00*

U.S. Cl. 118—411 **1 Claim**



A liquid developing station is provided in a copying device for developing electrostatic images on receivers in a manner such that distribution of developing liquid across the receiver is very uniform. A liquid reservoir for the development liquid is provided which is adapted to receive separate containers for supplying additional carrier or developing liquid and toner particles. The liquid is dispensed directly into the reservoir by inserting a container thereof into a first receptacle in the top of the reservoir. Toner particles are supplied in an aerosol can which may be positioned in a second receptacle with the nozzle thereof adjacent an inlet to a liquid pump within the reservoir. To add toner, the operator may energize a circuit which upon the next operation of the copying device will cause the aerosol can to dispense a measured quantity of toner particles into the pump inlet so that it is immediately circulated and mixed in the developing liquid for the next print. After each print cycle, developing liquid quickly drains from the developing station into the reservoir.

3,651,783

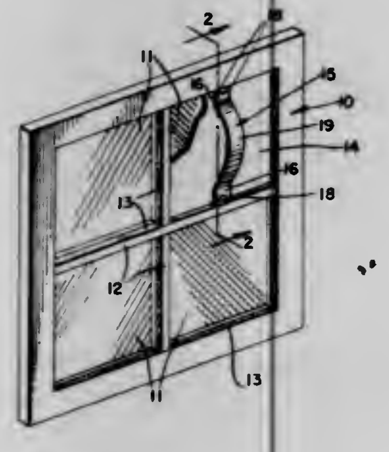
PAINT SHIELD FOR WINDOWS

Lawrence F. Ribbecke, Brooklyn, N.Y., assignor to Sapolin Paints, Inc., New York, N.Y.

Filed Nov. 19, 1970, Ser. No. 97,426

Int. Cl. B05b *15/04*

U.S. Cl. 118—505 **3 Claims**



A one-piece spring clamp has ends which engage opposed mullions or caulking frictionally. The clamp presses a cardboard paint shield firmly against the adjacent window pane.

3,651,784

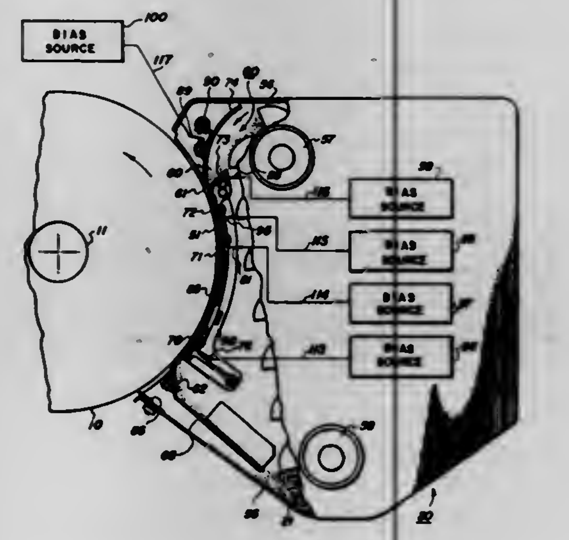
LOW POTENTIAL DEVELOPMENT ELECTRODE

Robert E. Hewitt, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed July 3, 1969, Ser. No. 838,779

Int. Cl. G03g *13/00*

U.S. Cl. 118—636 **6 Claims**



A low potential electrode for use in a xerographic development system. The electrode is positioned adjacent to the point of entry of a moving image bearing photoconductive surface into a development zone and has associated therewith means for redirecting the flow of developer material moving between the electrode and the photoconductive surface whereby the developer material impinges against the photoconductive surface.

3,651,785

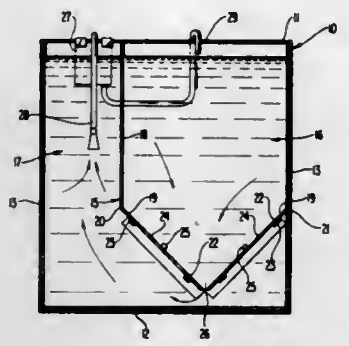
AQUARIUM HAVING BUILT-IN MEANS TO PREVENT CANNIBALISM

Clayton E. Quinn, Airport Lake, Roebuck, S.C.

Filed Mar. 20, 1970, Ser. No. 21,318

Int. Cl. A01k *63/00*

U.S. Cl. 119—5 **2 Claims**



A transparent aquarium tank has a permanently built-in divider wall forming compartments for mature fish and newborn fish. The breeding compartment containing the mature fish has a narrow passage at the bottom through which the new-born fish gravitate into the separate compartment where they are protected from cannibalism. The divider wall has removable panels to facilitate cleaning and decorating of the aquarium, and also allow opening up of the aquarium when not in use for breeding purposes.

3,651,786

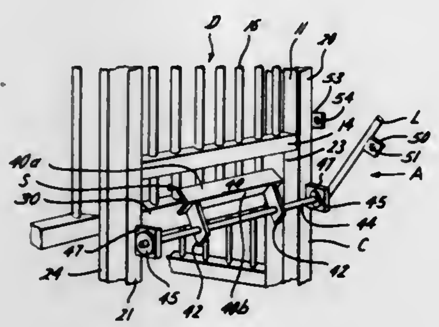
ANIMAL CAGE DOOR LOCKING DEVICE

Carol M. Patterson, and Thomas E. Lero, both of Bryan, Tex., assignors to Research Equipment Company, Bryan, Tex.

Filed Apr. 1, 1971, Ser. No. 130,406

Int. Cl. A01k *1/00*

U.S. Cl. 119—17 **2 Claims**



The specification discloses a door locking device for locking sliding cage doors for animal cages and particularly including means for simultaneously urging the sliding door laterally against the side of its track and longitudinally against a stop to prevent such door from being rattled by occupants of the cage.

3,651,787

ADJUSTABLE PET FEEDING STAND

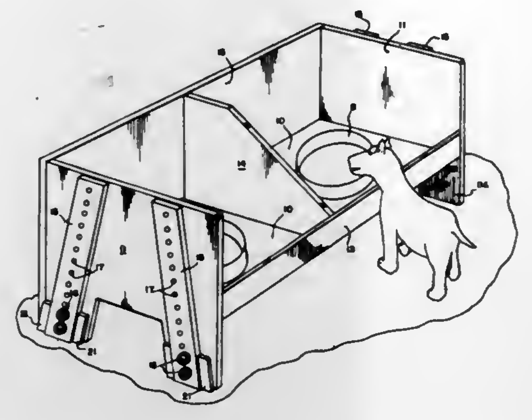
Pauline E. Cooper, Route 2, P.O. Box 65, Harrisburg, Oreg.

Filed Apr. 22, 1970, Ser. No. 30,786

Int. Cl. A01k *05/00*

U.S. Cl. 119—51 **2 Claims**

A feeding stand for household pets and having adjustable support members which upon downward extension raise the food supporting base to a desired height above the floor surface according to the size of the animal being fed. The support members may be fully retracted to locate the stand in a lowermost position whereat the side walls and back wall are in resting contact with the floor surface.



3,651,788

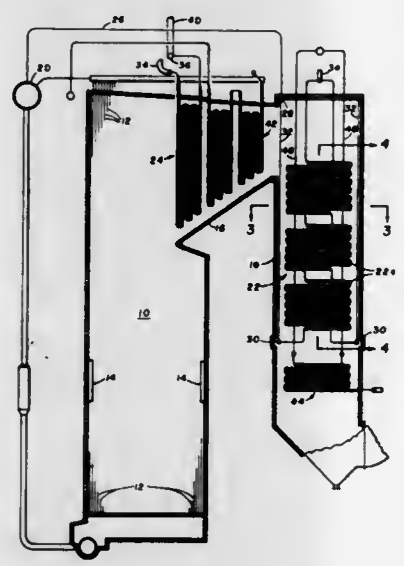
SONIC VIBRATION BAFFLES

Norman C. Chayes, Bloomfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 20, 1970, Ser. No. 91,503

Int. Cl. F22b *1/00*

U.S. Cl. 122—4 R **6 Claims**



The tubular elements which make-up the tube bundles in the gas duct of a furnace are arranged in a manner which prevents formation of destructive standing waves by the gas stream in the duct. The tubular elements are generally in side by side relationship across the gas duct and each comprise a number of tube runs which are spaced in the direction of gas flow and are transverse thereto. The majority of the tubular elements occupy one positioning in the direction of gas flow and a selected minority of tubular elements are offset in the direction of gas flow such that their tube runs impede or baffle the lateral motion of the gas stream which gives rise to standing waves. Those tubular elements which are offset are at or near locations across the duct at which baffle plates have formerly been used to prevent formation of standing waves.

3,651,789

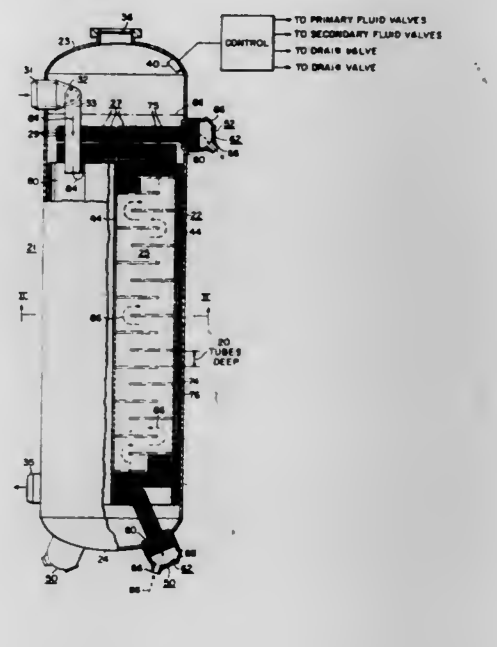
STEAM GENERATOR

Angelo Robert Giardina, Broomall, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 13, 1968, Ser. No. 736,777

Int. Cl. F22b *1/02*

U.S. Cl. 122—32 **13 Claims**



A compact liquid-metal heated vapor generator 21 whose liquid metal is typically sodium and whose secondary fluid is water. The water is conducted through tubes 29 of serpentine configuration with the serpentine turns nested in trombone-slide relationship. The tubes 29 are in separate modular bundles 27 and the modules extend throughout the interior of the pressure vessel 22. The modules 27 are separated into separate sections by support plates or baffles 44 and each module has a separate inlet 50 and outlet 52 for its tubes 29. The distribution of the sodium over the tubes 29 is effected by conducting the sodium from its inlet through a pool and introducing reverse flow (see arrows 84) of the sodium before it impinges on the modules 27. The tubes 29 of each module are sealed through separate tube sheets 54 (FIG. 3), at the feed-water inlet 50 and the vapor outlet 52 and feed water is admitted and the steam derived through separate nozzles 66, respectively, for each module.

3,651,790

INSTALLATION TO PRODUCE RAPIDLY A HEATED FLUID

Rene Louis Barrault, and Roland Edmond Weber, both of 39 avenue du petit Chambord, 92 Bourg la Reine, France

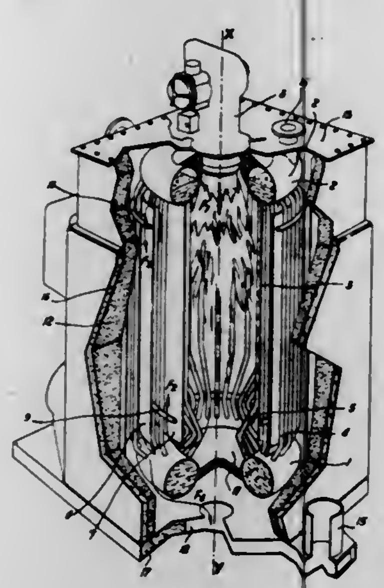
Filed Apr. 28, 1970, Ser. No. 32,652

Claims priority, application France, Apr. 28, 1969, 6913394

Int. Cl. F27b *21/04*

U.S. Cl. 122—182 R **4 Claims**

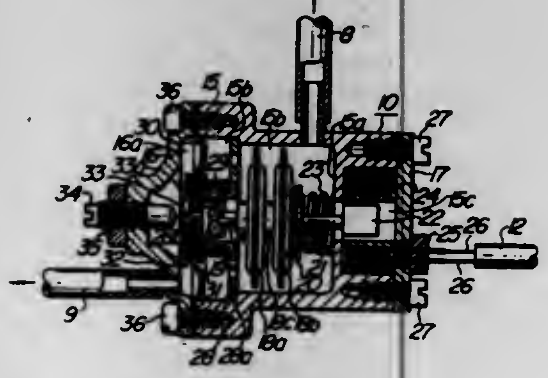
In a multi-water-tube boiler installation a pair of horizontally arranged vertically spaced toroidal water reservoirs extend concentrically about a vertical axis. The reservoirs are interconnected by a plurality of generally vertically extending concentrically arranged rows of tubes and baffles are connected between adjacent rows of tubes so that heating gases directed downwardly from a centrally arranged burner flow first over the innermost row of tubes and then are guided for flow in the axial direction serially over the remaining rows of tubes. Annular rings are provided at least about the outer rows of tubes for directing a fluid over the tubes to remove soot. The burner, reservoirs, and tubes form a unitary assembly suspended from the roof of the boiler housing. The boiler housing is insulated and a feed water tank for supplying water to the reservoirs extends around the housing for recovering heat passing through the insulating material.



3,651,791
SYSTEM FOR CONTROLLING FUEL SUPPLY TO AN INTERNAL COMBUSTION ENGINE

Hisanori Kobayashi, Kariya-shi, Japan, assignor to Nippondenso Kabushiki Kaisha, Showa-cho, Kariya-shi, Aichi-ken, Japan

Filed June 18, 1970, Ser. No. 47,530
Claims priority, application Japan, Aug. 7, 1969, 44/62466
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA **2 Claims**

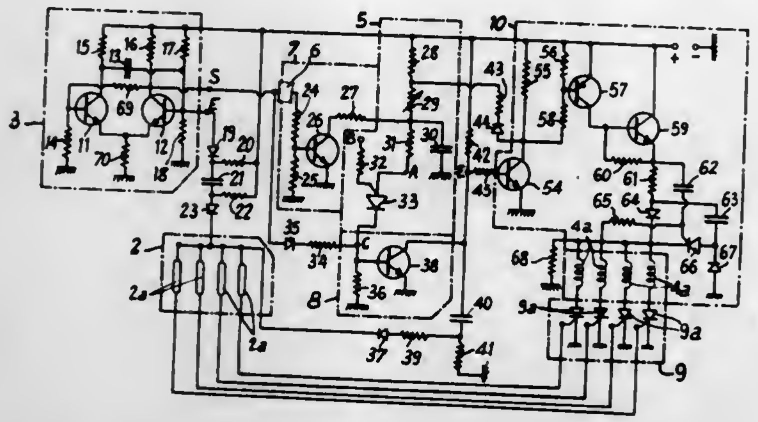


A system for controlling fuel supply to an internal combustion engine having a device for sensing pressure within an intake manifold of the engine. The device has bellows operable in response to variation in absolute pressure value within the intake manifold in normal operation of the engine to cause a core to move relative to an electrical coil so that electrical signals are emitted to cause the amount of fuel supply to be controlled in accordance with the state of engine operation represented by the pressure within the intake manifold. The device also has a diaphragm operable in response to variation in pressure differential of more than a predetermined value between the pressure within the intake manifold and the atmospheric pressure to displace normal operative position of the bellows relative to the coil in a direction in which the amount of fuel supply is increased, said predetermined value of the pressure differential being set to represent the state of engine operation which requires a greater output to be produced by the engine.

3,651,792
ELECTRONIC INJECTION CONTROL MEANS FOR INTERNAL COMBUSTION ENGINES

Louis A. Monpetit, Etang-La-Ville, France, assignor to Societe Des Procedes Modernes D'Injection Sopromi, Les Mureaux, France

Filed Aug. 27, 1970, Ser. No. 67,336
Claims priority, application France, Sept. 5, 1969, 6930283
Int. Cl. F02b *3/00, 33/00*
U.S. Cl. 123—32 EA **11 Claims**

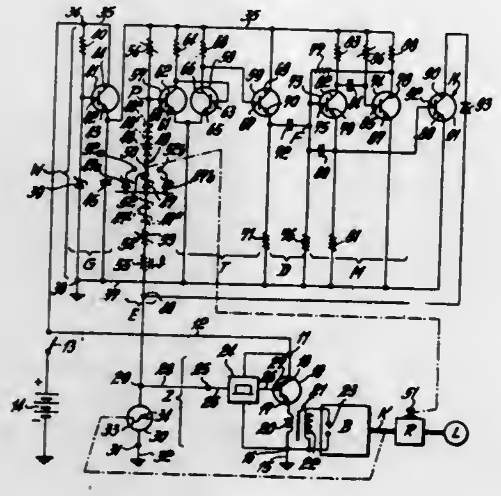


In fuel injection systems, a method and apparatus for preventing overlap of injections and thus increasing the efficiency of internal combustion engines and reducing the production of air-polluting combustion products. The system includes means for producing a series of delay pulses in response to engine rotation. Each delay pulse, which is of short duration in comparison to an injection pulse, disables the power control unit of the injectors for its duration. The termination of said delay pulse triggers the generation of the injection pulse as well as actuating the power control unit and producing a distributing pulse which activates distributing means for energizing the proper injector the desired energization sequence.

3,651,793
ARRANGEMENT FOR LIMITING THE SPEED OF INTERNAL COMBUSTION ENGINES

Helmut Roth, Stuttgart O; Gerhard Sohner, Geradstetten; Gerd Hohne, Ludwigsburg, and Jorg Issler, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 6, 1970, Ser. No. 9,282
Claims priority, application Germany, Feb. 12, 1969, P 19 06 883.8
Int. Cl. F02d *11/10*
U.S. Cl. 123—102 **20 Claims**

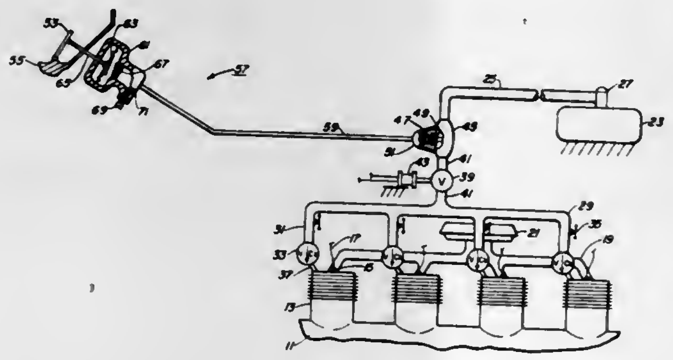


An arrangement through which the speed of an internal combustion engine is limited by inhibiting the generation of ignition or fuel injection pulses. An alternating current voltage generator is driven from the crank shaft of the engine and provides a voltage signal which is dependent upon the speed of the engine. A monitoring unit connected to the voltage generator provider pulses with amplitudes or pulse levels dependent upon the speed of the engine. When the amplitudes of the pulses exceed a predetermined magnitude corresponding to a predetermined engine speed, an electronic switch becomes actuated so that electrical pulses used for ignition and fuel injection are inhibited. Inhibition of the pulses takes place during a time interval determined by a monostable multivibrator, with the time interval being at least as long as necessary for suppressing the next oncoming pulse used for ignition or fuel injection purposes.

3,651,794
THROTTLE FOR GASEOUS FUELS

Lloyd A. Douglas, Fort Worth, Tex., assignor to Victor Equipment Company, Denton, Tex.

Filed June 15, 1970, Ser. No. 46,003
Int. Cl. F02m *21/02*
U.S. Cl. 123—120 **6 Claims**



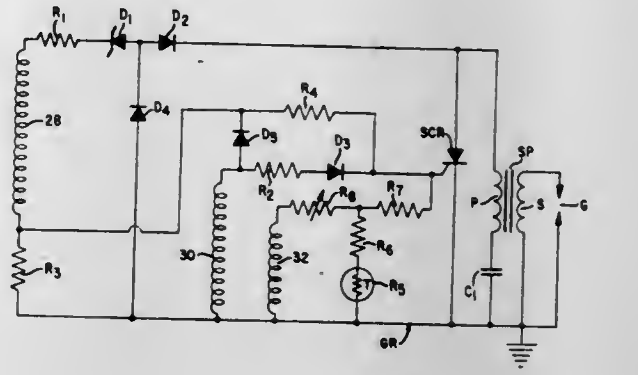
An accelerator control system for an automobile employing a gaseous fuel in an internal combustion engine, characterized by a dome loaded pressure regulator interposed between a fuel reservoir and an intake manifold; and a fluid sealed signal conveying unit connected with the dome of the pressure regulator and responsive to movement of an accelerator pedal to transmit rapidly acceleration and deceleration signals to the pressure regulator and correspondingly increase or decrease the intake manifold pressure. The engine has a separate air intake manifold but its power; and, hence, r.p.m. at a given load condition; are controlled by the pressure regulator. Also disclosed are preferred embodiments which employ a shut-off valve intermediate the manifold and the fuel source, adjustable flow restrictions in conduits leading to the individual cylinders to obtain even fuel distribution, and trim pressure adjustment on the signal conveying unit for controlling the idling manifold pressure.

3,651,795
MAGNETO EXCITED CONDENSER DISCHARGE IGNITION SYSTEM

Ray C. Noddin, Chicopee, Mass., assignor to Eltra Corporation, Toledo, Ohio

Filed July 6, 1970, Ser. No. 52,429
Int. Cl. F02p *1/00*
U.S. Cl. 123—149 A **2 Claims**

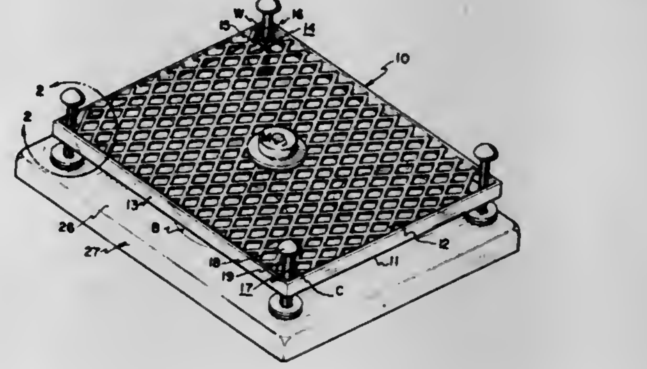
A dynamoelectric generating device for internal combustion engines combining a breakerless ignition system of a condenser discharge type with an alternator for generating electrical power wherein the energizing and timing coils for the ignition system are mounted on a stator with the power generating coils, both being excited by a rotating permanent magnet structure driven by the engine. An automatic spark advance is provided actuated at a predetermined engine speed.



3,651,796
GRILL

Walter A. Nelson, Salt Lake City, Utah, assignor to Rite Way, Inc., Salt Lake City, Utah

Filed May 11, 1970, Ser. No. 36,346
Int. Cl. F24c *15/10*
U.S. Cl. 126—215 **5 Claims**



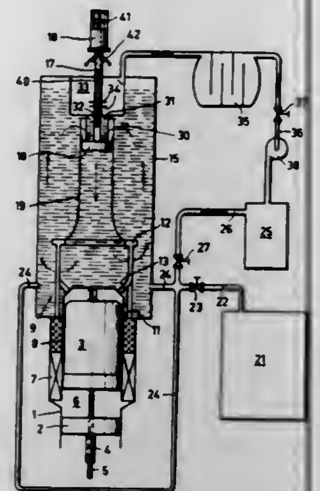
A cooking grill having independently extensible leg means such that the grill may be leveled even though the supporting surface is non-horizontal or even undulating. Bottoms of the leg supports for the grill are provided with or attached to magnetic means so that the grill may be supported in a stationary manner while the legs are being adjusted for height or the grill used. Clip means are provided with the grill for accommodating mounting to conventional camper-type stoves, for example. The magnetic means of the grill prevents the same from slipping sideways over the magnetically permeable surface to which the same is attached and upon which it rests.

3,651,797
HEATING SYSTEM

Johann Schroder, Aachen, Germany; Henricus Cornelis Johannes Van Beukering, and Roland Anton Johan Otto Van Witteveen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 24, 1969, Ser. No. 860,585
Claims priority, application Netherlands, Sept. 30, 1968, 6813989
Int. Cl. F24j *1/00*
U.S. Cl. 126—263 **8 Claims**

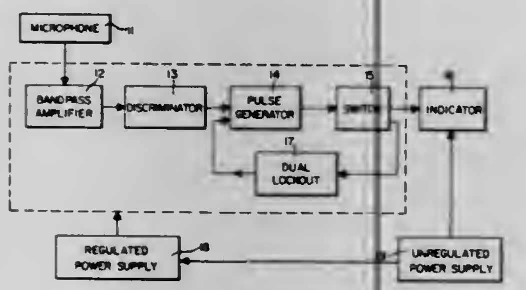
Heating system including a reaction vessel containing a liquid metal mixture and a reservoir containing an oxidizing agent, a supply duct including a control-cock for communicating the oxidizing agent to the vessel for an exothermic reaction with the metal, and an inert gas reservoir commu-



nicating through another duct into the supply duct. In the reaction vessel is a centrifuge, with an outlet for the inert gas in the vicinity of the rotary shaft of the centrifuge.

3,651,798
BLOOD PRESSURE INDICATOR AND NOISE

Paul H. Egli, Collingswood; Warren W. Brenner, Willingboro, both of N.J., and Martin H. Wilcox, Castle Rock, Colo., assignors to Parke, Davis & Company, Detroit, Mich.
Filed May 15, 1970, Ser. No. 37,543
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 S **9 Claims**

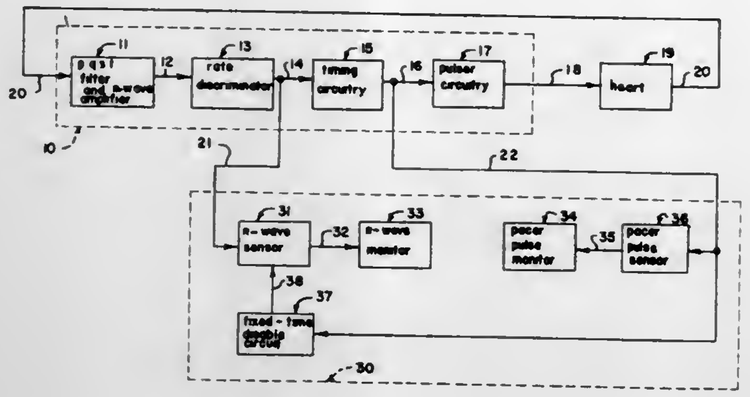


An electronic blood pressure indicator for use with conventional inflatable arm cuff apparatus and a mercury or aneroid manometer, comprising a microphone for translation of arterial blood flow sounds into electrical signals, a narrow bandpass amplifier circuit which filters extraneous frequencies and amplifies a narrow band of low frequencies containing essential arterial blood flow information, a discriminator which senses signal strength and passes only signals exceeding a predetermined value, a pulse generator which provides a pulse output corresponding to blood flow pulses passed by the discriminator, the pulse generator cooperating with switch means to drive an indicator to provide a visual indication of the arterial blood flow sounds, and a dual lockout circuit which blocks incoming signals and spurious pulses from the pulse generator.

3,651,799
SYSTEM FOR MUTUALLY EXCLUSIVE MONITORING OF NATURAL HEARTBEAT AND PACER-STIMULATED HEARTBEAT

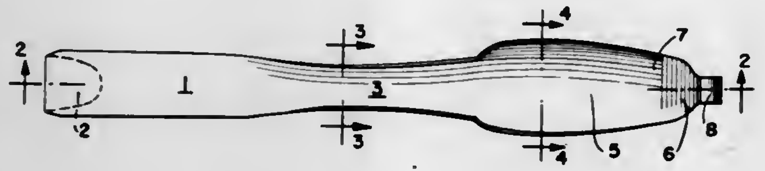
Richard F. Daynard, Chelmsford, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed May 11, 1970, Ser. No. 36,232
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R **10 Claims**

A pacer and R-wave monitor system. The system includes a heartbeat detector and circuitry that distinguishes natural heartbeats from pacer-stimulated heartbeats. The system also provides an indication of which type of heartbeat occurs. Meters can be used as the indicators or monitors.



3,651,800
SURGICAL INSTRUMENT

James L. Wilbanks, U.S. Army Dental Detachment, Fort Lee, Va.
Filed May 19, 1970, Ser. No. 25,927
Claims priority, application Japan, May 15, 1970, 45/15403
Int. Cl. A61b *1/06*
U.S. Cl. 128—12 **7 Claims**

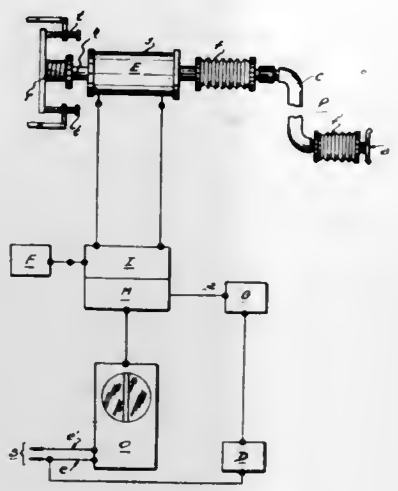


An elongated hand-held surgical instrument for use in intraoral lower jaw defect correcting surgery including an operative end portion for insertion within a surgical wound or incision and having an integral curved tab therein for engaging behind a ramus of a mandible and a retracting portion inwards of said end portion having opposite concave-convex surfaces for retracting the cheek and corner of the mouth during surgery with the concave surface engaging the corner of the mouth.

3,651,801
APPARATUS FOR EFFECTING MASSAGES SYNCHRONOUSLY WITH THE HEART ACTIVITY

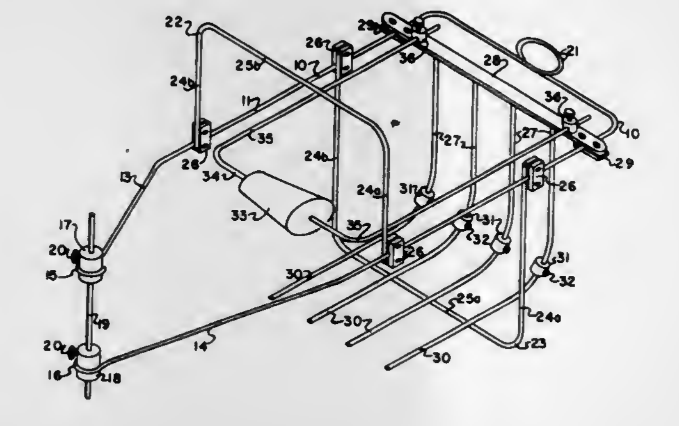
Samuel Kullok, Buenos Aires, Argentina, assignor to Saul Kullok, Buenos Aires, Argentina, a part interest
Filed Sept. 23, 1970, Ser. No. 74,798
Claims priority, application Argentina, Sept. 29, 1969, 224.374
Int. Cl. A61h *7/00*
U.S. Cl. 128—53 **10 Claims**

Apparatus for effecting massages synchronously with the heart activity, and particularly with the interphases of this activity, and comprising, in combination, a visual indicator of electrical pulses provided with two independent input channels, both connected to respective sensors applicable to the individual; a discriminator parallel-connected to one of said visual pulse-indicator units, while the output thereof is fed to a signal generator which, in turn, is connected to at least one time marker, preferably electronic, which is connected on the one part to a third input of said visual indicator and, on the other, to a relay device linked with a power source and with at least a massaging assembly applicable to the desired area of the body of the patient.



3,651,802
LIMB SUPPORTING DEVICE

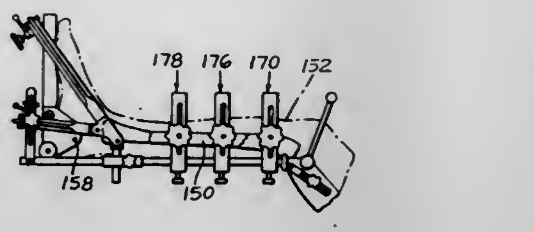
Troy R. Owens, P. O. Box 493, Hitchcock, Tex.
Filed Nov. 28, 1969, Ser. No. 880,637
Int. Cl. A61f *13/00*
U.S. Cl. 128—82 **10 Claims**



An apparatus for supporting the hand or foot during convalescence thereof including a frame comprising two substantially parallel rods, a frame supporting member comprising rods extending in angular relation from said frame for contact with a supporting surface to thereby maintain said frame in spaced relation from said supporting surface, a holding rod connected to one end of said frame for extension through the forelimb of the patient, a plurality of substantially parallel extending bars connected to said frame adjacent the end thereof opposite said holding rod and extending from said frame in substantial angular relationship thereto, and a supporting member attached to said frame intermediate the ends thereof, said supporting member having a generally rounded upper surface for fitting into the palm of and supporting a hand or foot.

3,651,803
DEVICE FOR THE TREATMENT OF FRACTURES, ESPECIALLY LEG FRACTURES

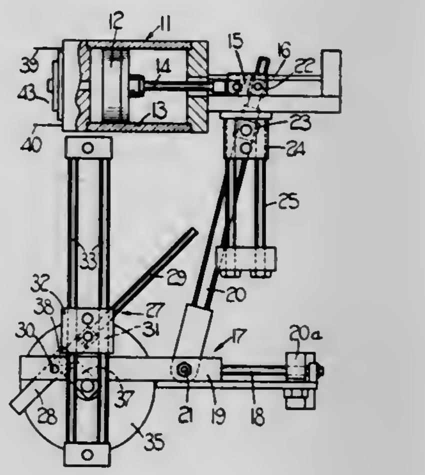
Rudolf Bimler, Deichstrasse 9, 279 Cuxhaven, Germany
Filed Nov. 4, 1969, Ser. No. 873,954
Claims priority, application France, Nov. 5, 1968, 172634
Int. Cl. A61f *5/04*
U.S. Cl. 128—88 **5 Claims**



A jointed splint structure in which upper and lower leg portions are hinged together at the knee and a foot portion is mounted on the foot end of the lower leg portion and is adjustable axially of the lower leg portion. The foot portion includes a sandal engageable with the sole of the foot and the sandal has substantially infinite adjustment in the foot portion within predetermined limits. The lower leg portion is adapted for adjustably receiving brackets engageable with the ends of pins inserted laterally through the bone being treated so the bone is clamped to the splint structure during healing.

3,651,804
PUMPING APPARATUS

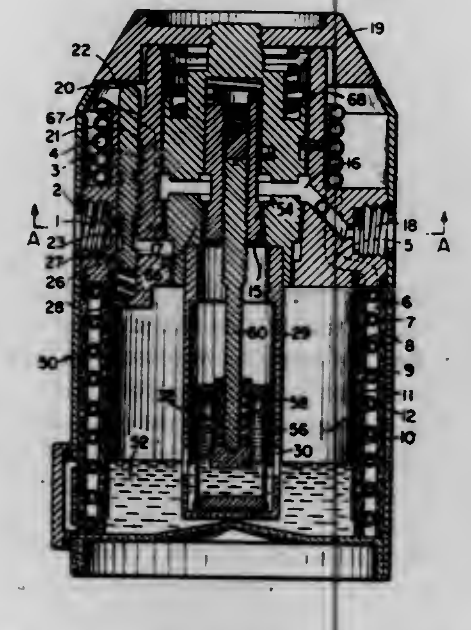
Adrian Leonard Spiller, Beamsley, Royston Grove, Hatch End, England
Filed Dec. 3, 1969, Ser. No. 881,762
Claims priority, application Great Britain, Dec. 13, 1968, 59,425/68
Int. Cl. A62b *7/02*; **F01b** *9/02*
U.S. Cl. 128—145.6 **11 Claims**



An artificial respirator including a pump assembly, a piston of which is connected to a first axially movable rod, a second axially movable rod, pivotal lever means interconnecting the rods, the pivot point of said lever means being adjustable to effect variation in the volume of gas pumped by the pump means, a second lever pivotally connected to the second rod, an adjustable fulcrum for the second lever and a rotary link operatively connected to the second lever whereby upon rotation of the link movement is imparted to the second rod, the fulcrum point of the second lever being adjustable to vary the timing of the forward and return motion of the pump means.

3,651,805
ANESTHETIC VAPORIZER

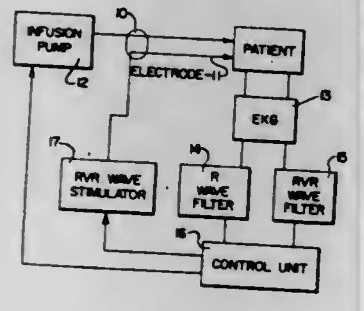
Hans Georg Breiling, Gross Gronau, Germany, assignor to Dragerwerk Aktiengesellschaft, Lubeck, Germany
Filed May 7, 1970, Ser. No. 35,534
Claims priority, application Germany, May 12, 1969, P 19 24 227.4
Int. Cl. A61m *17/00*
U.S. Cl. 128—188 **1 Claim**



An anesthetic vaporizer includes a housing for the anesthetic fluid which includes an inlet passage having a connection for a first bypass flow and a second pressure compensation flow within the housing. The pressure compensation flow is through a spiral tube which leads into a chamber for the anesthetic fluid and the bypass flow is directly to the discharge of the device. The control also includes a flow control valve from the fluid chamber which provides for a flow of the fluid from the chamber to the discharge in accordance with the temperature conditions of the fluid within the chamber.

3,651,806
METHOD AND APPARATUS FOR ADMINISTERING DIGITALIZING MEDICATIONS

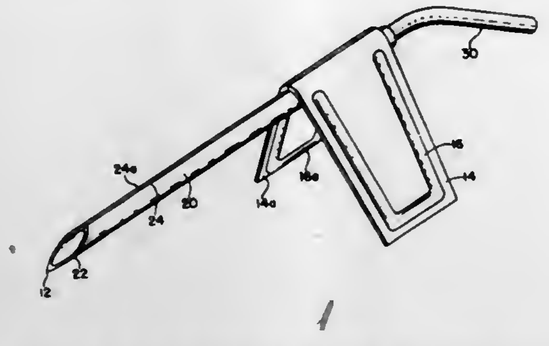
Philip I. Hirshberg, 43 Harris Avenue, Needham, Mass.
Filed Oct. 24, 1969, Ser. No. 869,136
Int. Cl. A61m *05/00*
U.S. Cl. 128—214 E **11 Claims**



A method and apparatus for infusing digitalizing medication to a patient at a controlled rate. The apparatus including first detection means for recognizing an electrical event originating in the muscle of the heart, electrical stimulation means responsive to the electrical event for stimulating the heart with an electrical stimulating signal, second detection means for detecting an electrical signal indicative of the response of the heart to the electrical stimulating signal, and infusion means including means responsive to said last mentioned electrical signal to control the amount of medication administered to the patient.

3,651,807
DETACHABLE, HOLLOW GUIDE NEEDLE

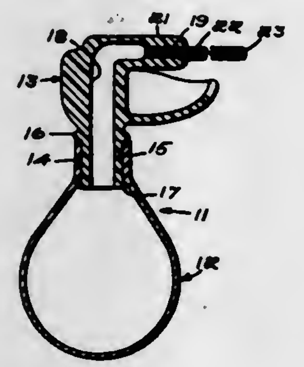
James A. Huggins, 8501 Harris Higgins Road, Racine, Wis.
Filed Feb. 19, 1970, Ser. No. 12,649
Int. Cl. A61m *5/00*
U.S. Cl. 128—214.4 **3 Claims**



A detachable hollow guide needle for piercing body portions, such as tissues, muscles, veins, to locate a flexible catheter tube in the selected body portion for withdrawing or introducing fluids relative thereto, and which includes a longitudinally split tube with the edges thereof normally adjacent one another to substantially enclose an included catheter tube, the tube having a sharpened end configuration for body insertion and wing members adjacent the opposite end diverging from adjacent edges of the split tube for pressure application to spread the tube edges a distance sufficient to remove the same from the body inserted catheter initially associated therewith.

3,651,808
EAR SYRINGE

Ira C. White, 67 Washington Street, Natick, Mass.
Filed Nov. 10, 1969, Ser. No. 875,144
Int. Cl. A61m *1/00, 3/00*
U.S. Cl. 128—232 **2 Claims**

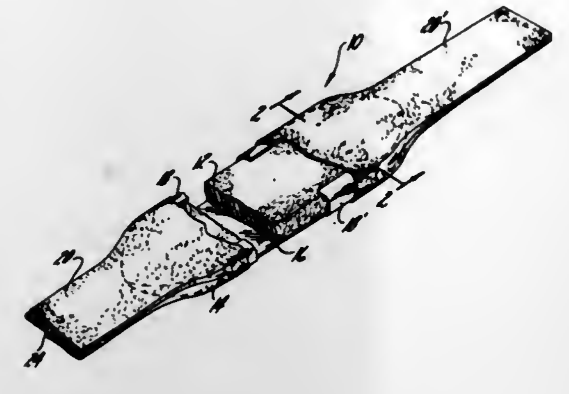


An ear syringe comprising an integrally formed flexible bulb for receiving an irrigation fluid, a tube for discharging irrigating fluid from the bulb into an ear canal, and a receptacle for accumulating fluid and dislodged cerumen emerging from the ear canal. To facilitate positioning of the receptacle directly below the lobe of an ear being irrigated, the discharge tube is disposed above and substantially parallel to a plane defined by an open top of the receptacle.

3,651,809
BAFFLE FOR SANITARY PROTECTION DEVICES

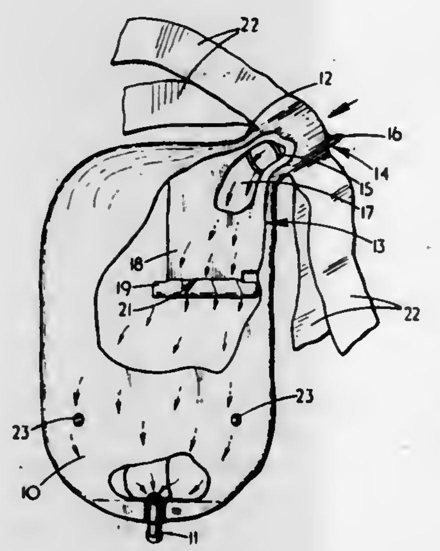
John F. Champaigne, Jr., Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Feb. 24, 1970, Ser. No. 13,458
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 **9 Claims**

An absorption device such as a sanitary napkin is provided with a fluid impervious baffle that may be disposed of in conventional sanitary systems. The baffle comprises a thin film of a water-sensitive material which includes a water-repellent coating on that surface of the film which comes in contact with absorbed fluid in the napkin during use.



3,651,810
INCONTINENCE DEVICE

George Eric Ormerod, Carnforth, England, assignor to Eric Ormerod Limited, Morecambe, Lancashire, England
Filed Nov. 7, 1969, Ser. No. 874,893
Claims priority, application Great Britain, Nov. 11, 1968, 53,233/68
Int. Cl. A61f *5/44*
U.S. Cl. 128—295 **7 Claims**

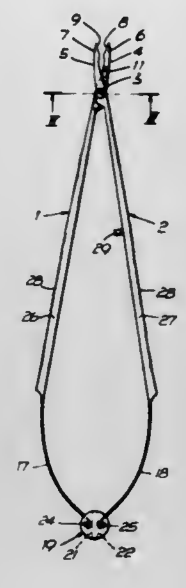


An incontinence device in which a urine collecting bag is provided with a closable outlet with the entry into the urine collecting bag being through a one-way valve and the inlet to the one-way valve having a urine receiving device which may be another bag or a plastic urethra tube adapted for insertion into the vaginal passage.

3,651,811
SURGICAL CUTTING INSTRUMENT

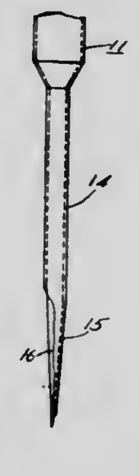
Hans G. Hildebrandt, Ludwigshafen, and Fritz Hilzinger, Tuttlingen, both of Germany, assignors to Aesculap-Werke Aktiengesellschaft vormals Jetter & Scheerer, Tuttlinger (Baden-Wuertemberg), Germany
Filed Oct. 10, 1969, Ser. No. 865,442
Int. Cl. A61b *17/36*
U.S. Cl. 128—303.17 **12 Claims**

A surgical cutting instrument that incorporates electrodes capable of coagulating or cauterizing a severed blood vessel at the same time that it is cut.



3,651,812
ELECTROLYSIS NEEDLE

Marvin S. Samuels, Philadelphia, Pa., assignor to Joseph S. Zuritsky; Herman Zuritsky and Lee Zuritsky, Philadelphia, Pa., part interest to each
Filed Mar. 12, 1970, Ser. No. 19,041
Int. Cl. A61b *17/40;* **A61n** *3/06*
U.S. Cl. 128—303.18 **2 Claims**

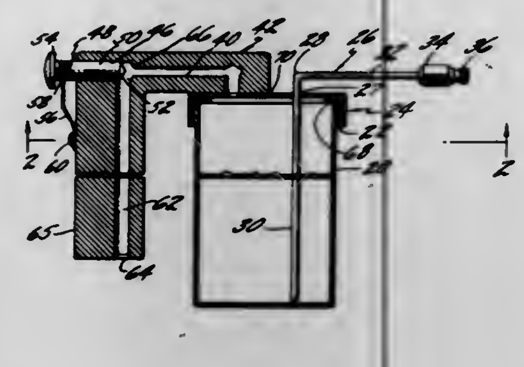


An electrolysis needle having a thin dielectric coating deposited over the entire penetrating tip portion and the lower portion of the shank of the needle and then partially removed adjacent the tip of the needle to prevent electric shock or burning of the epidermis with resultant elimination of pain to the patient.

3,651,813
CRYOSURGICAL DELIVERY AND APPLICATION OF LIQUEFIED GAS COOLANT

Michael D. Bryne, Vernon, Conn., assignor to Brymill Corp., Vernon, Conn.
Original application Nov. 15, 1967, Ser. No. 683,351, Pat. No. 3,534,739. Divided and this application Oct. 8, 1969, Ser. No. 870.399
Int. Cl. A61b *17/36;* **A61m** *11/04*
U.S. Cl. 128—303.1 **11 Claims**

A self-contained, mobile, compact, untethered cryosurgical instrument is provided in which liquefied gas coolant in a container with heat conducting walls is pressurized by ambient temperature for delivery to a lesion to be necrotized. The coolant is discharged in a controlled spray in one embodiment; the delivery tube includes a vent tube coaxially spaced therefrom in other embodiments. Freezing to tissue is overcome with "Teflon" coatings.



3,651,814

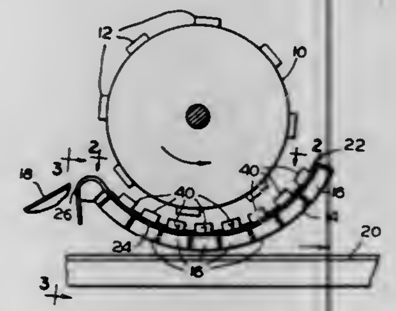
SMALL SEED ATTACHMENT FOR THRESHERS

Walter J. Vander Zanden, Route 1, P.O. Box 50, Hillsboro, Oreg.

Filed Dec. 3, 1970, Ser. No. 94,917

Int. Cl. A01f *12/28*

U.S. Cl. 130—27 K **11 Claims**



The attachment includes a curved plate adapted for insertion between the threshing cylinder and the concave of a thresher so as to nest within and cover the concave to prevent seeds from falling through the grate openings therein. Resilient bars bonded to the concave surface of the plate coact with the rasp bars on the cylinder to provide the threshing action.

3,651,815

SMOKABLE PRODUCTS AND A PROCESS FOR THEIR PRODUCTION

George Neurath, Hamburg; Jurgen Gewe, Hamburg-Niendorf, and Michael Dunger, Hamburg-Bramfeld, all of Germany, assignors to Haarmann & Reimer Gesellschaft mit beschrankter Haftung, Holzminden, Germany

Filed Sept. 23, 1969, Ser. No. 860,430

Claims priority, application Germany, Sept. 30, 1968, P 17 92 657.7

Int. Cl. A24b *03/00, 15/00;* A24d *01/18*

U.S. Cl. 131—2 **1 Claim**

The aroma of tobacco is improved and artificial tobacco and tobacco substitutes are given an improved tobacco aroma when smoked by treating such substances with aromatic materials extracted from vegetable chlorophyll-containing leaf material such as by use of solvents, steam distillation and the like.

3,651,816

TREATING TOBACCO

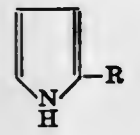
Georg Neurath, Eichtalstrasse 27; Michael Dunger, Kienbolt 6a, both of Hamburg, and Herbert Wichern, Hazenwisch 65, Halstenbek, all of Germany

Filed Feb. 20, 1969, Ser. No. 801,156

Int. Cl. A24b *03/12, 15/04*

U.S. Cl. 131—144 **6 Claims**

The flavor of tobacco smoke is influenced by the addition of a substance of the following formula



in which R represents $-CH_2-CHO$, $-(CH_2)_2-CHO$, $-CO-CHO$, $-CH_2-CO-CHO$, $-CH_2OH$, $-(CH_2)_2OH$, $-OHOH-CH_2-CH_3$, $-CO-(CH_2)_3OH$, $-CO-CHOH-CH_3$, or $-CO-COO-C_2H_5$. The added compound comprises approximately 0.001 percent to 1.0 percent by weight of the tobacco composition.

3,651,817

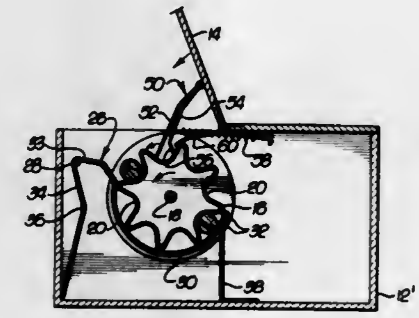
CIGARETTE EXTINGUISHER RECEPTACLE

William W. Baker, 1616 East St. Louis, Las Vegas, Nev.

Filed Jan. 9, 1970, Ser. No. 1,710

Int. Cl. A24f *19/14*

U.S. Cl. 131—237 **3 Claims**



A cigarette receptacle or container which has a revolving drum element having troughs therein to receive a typical cigarette and partially surrounded by a close fitting curved member made of resilient material to snuff out cigarettes quickly and easily upon rotation of the drum. Rotation of the drum occurs by successive depressions of a lever pivotally mounted on the container in conjunction with a cog wheel having inclined teeth and mounted on one side of the drum or by repeated opening and closing of a pivoted closure located above the drum, the closure having depending prongs arranged to engage the periphery of the drum in ratchet fashion when the closure is opened and closed the container having a spring plate attached to the upper portion thereof adjacent to said closure, the free edge of the spring plate extending into a trough in order to prevent uncontrolled rotation of the drum.

3,651,818

CIGARETTE HOLDER

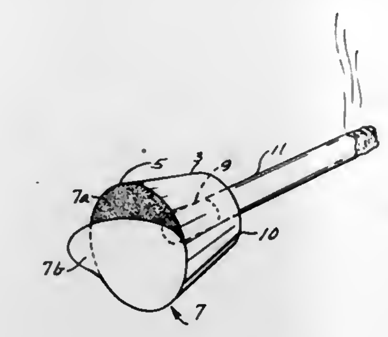
Louis M. Vargo, P.O. Box 629, Covington, La.

Filed Apr. 7, 1970, Ser. No. 26,249

Int. Cl. A24f *13/22*

U.S. Cl. 131—257 **4 Claims**

A cigarette holder for adhesive attachment to one's clothing comprising a body having an opening for holding a cigarette and a surface to which is applied an adhesive coating covered by a protective layer which protects the adhesive and is removed prior to attaching the holder to the clothing.



3,651,819

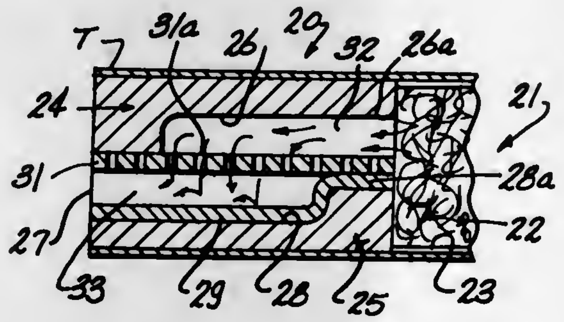
SMOKE FILTER

Hoyt S. Beard, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Mar. 9, 1970, Ser. No. 17,606

Int. Cl. A24d *01/04;* A24f *01/20, 13/06*

U.S. Cl. 131—261 B **10 Claims**



A smoke filter is provided which is adapted to be affixed to one end of a tobacco rod. The filter includes a first passageway through which smoke initially flows, a thin perforated membrane forming one wall of the first passageway and through which the smoke flows as a plurality of high velocity jets, and a second passageway separated from said first passageway by the perforated membrane. The second passageway has a surface against which the smoke jets impinge prior to flowing through the remainder of the second passageway. A predetermined area of a surface in the second passageway is formed of an absorptive material which is contacted by the smoke flowing through the second passageway.

3,651,820

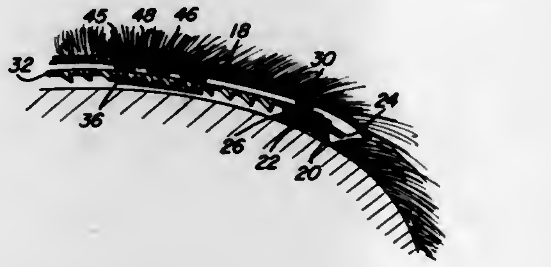
METHOD OF SECURING A HAIRPIECE

Ralph L. Johnson, 2400 N.W. 23rd Street, Oklahoma City, Okla., and Gary E. Clayton, Lot E6, 1100 South Rockwell, Oklahoma City, Okla.

Filed Mar. 12, 1971, Ser. No. 123,757

Int. Cl. A41g *3/00*

U.S. Cl. 132—5 **10 Claims**



A method is provided for holding a hairpiece firmly in place on a wearer's head by anchoring adjustable brackets to the wearer's existing hair. A firm anchor is formed from a bead of melted rubber which is fused into a thin strip of existing hair, and subsequently hardens therein. An anchor attachment and adjustable male bracket are fastened to the rubber anchor, the male bracket engaging a corresponding female bracket attached to the base of the hairpiece to firmly hold the hairpiece in place. The effective length of the male bracket may be adjusted to compensate for hair growth over a period of time.

3,651,821

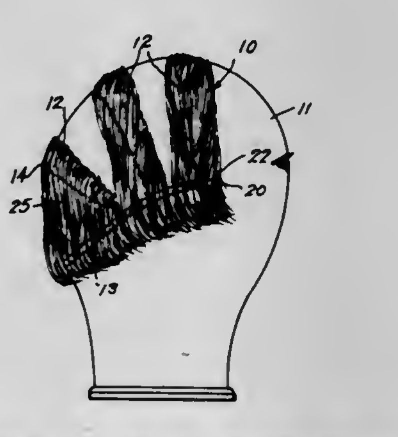
HAIRPIECE CONSTRUCTION

Dorothy M. Mielke, 3055 North Meridian Street, Indianapolis, Ind.

Filed Nov. 21, 1969, Ser. No. 878,862

Int. Cl. A41g *3/00*

U.S. Cl. 132—53 **1 Claim**



A partial hairpiece for use by people with thinning hair which consists of a plurality of hair-carrying webbed bands for placement across the top of the head in separated strips, the bands having their ends attached to an elastic band which is U-shaped and extends around the back of the head from the temples. The separation of the hair-carrying strips allows the wearer's own hair to extend through the area between the strips where it may intermingle with an overlie portions of the hairpiece hair.

3,651,822

COLLAPSIBLE AND AUTOMATICALLY OPENABLE UMBRELLA

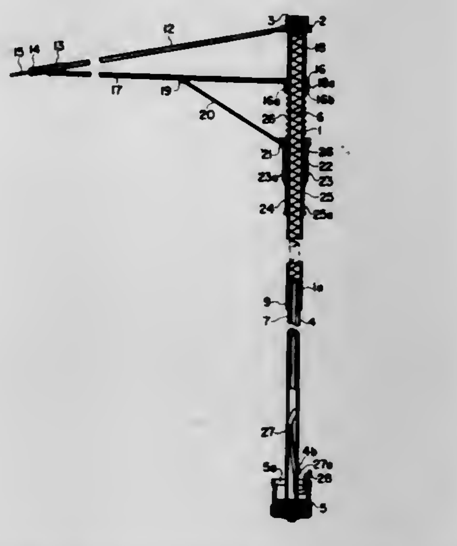
Hiroyuki Yasuda, Funabashi, and Choji Arai, Showa-Machi, Kitakatsushika-gun, both of Japan, assignors to Kabushiki Kaisha Ideal, Tokyo, Japan

Filed May 6, 1970, Ser. No. 35,127

Claims priority, application Japan, May 14, 1969, May 14, 1969; 44/44201, 44/44202

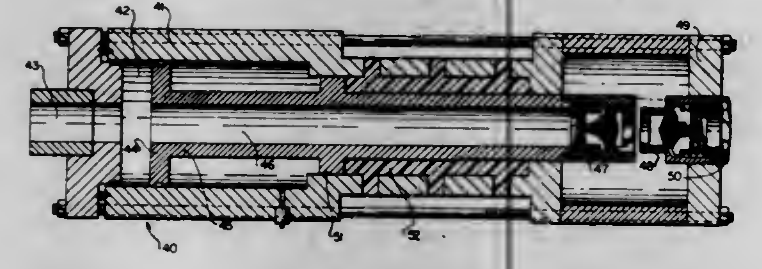
Int. Cl. A45b *25/14, 25/16*

U.S. Cl. 135—24 **2 Claims**



A collapsible umbrella automatically openable, without impact when opened, upon a mere depression of a buttoned latch means provided in the lower portion of the main shaft and requiring no overturn of rib joints when folded is obtained by the arrangement comprising, in combination: a main shaft formed with a tubular outer upper shaft member having a latch-engaging slit and slidably mounted on a tubular inner lower shaft member via a compressible spring means contained in said outer shaft member; an auxiliary tubular member mounted slidably on the main shaft and extending upwardly through a ringlike intermediate member mounted on said main shaft in detachable engagement with the lower end of said auxiliary tubular member, said intermediate member carrying a spoke for slidably and pivotably supporting the main rib member of a corresponding rib via an attachment member slidably mounted on the main rib member; a tubular lower member having latch-engaging holes and supporting rod members for pivotably supporting said spokes and being slidably mounted on said main shaft; a compressible spring means mounted on the main shaft between said ringlike intermediate member and said tubular lower member and being securely retained at its lower end in said tubular lower member for pushing said intermediate member upwardly while pulling the lower member upwardly on the main shaft while providing more distance therebetween, each main rib member having an auxiliary rib member secured to said attachment and capable of being received in said main rib member to reduce the length of the corresponding rib as the inner shaft is forced to be received in the outer shaft to collapse the umbrella.

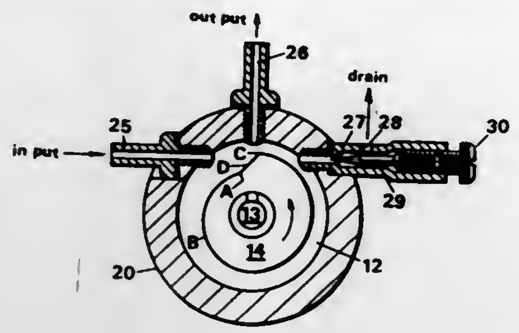
3,651,823
THERMAL SENSING BLOW OUT PREVENTER ACTUATING DEVICE
James Leland Milsted, Sr., 537 Olive Street, Harvey, La.
Filed Apr. 29, 1970, Ser. No. 32,845
Int. Cl. E21b *33/06*; **F16k** *17/38*
U.S. Cl. 137—72 **7 Claims**



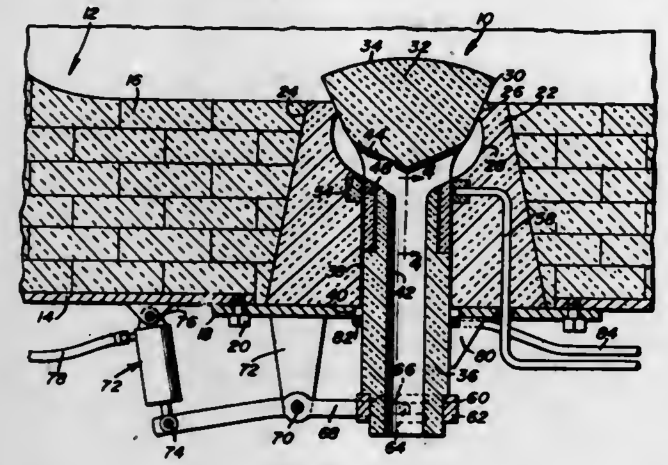
The present disclosure is directed to a fail safe device to close an oil or gas well that has ignited during drilling or workover operations working in conjunction with pressure accumulators and blow out preventers. The apparatus is installed in a line the upstream side of which is pressurized by the accumulators and the downstream side of which is connected to actuate the blow out preventer. The device has a pair of normally closed check valves which are spaced apart but which may be moved together to unseat the valves and permit the pressurized fluid from the accumulators to actuate the blow out preventer. The movement of the check valves by a fluid motor which while being under pressure is restrained from unseating the valves by a thermally fusible flowable barrier which when attaining flow temperature will permit the fluid motor to actuate and unseat the normally closed check valve and apply the accumulator pressure to actuate the blow out preventer to close the well.

3,651,824
APPROXIMATE IMPULSE SIGNALS PRODUCING DEVICE OF THE PNEUMATIC PRESSURE TYPE
Takashi Ishida, Ohi-Machi, Japan, assignor to Mikuni Kogyo Co., Ltd., Tokyo, Japan
Filed Nov. 23, 1970, Ser. No. 91,741
Claims priority, application Japan, Nov. 22, 1969, Oct. 23, 1970; 44/93815, 45/93372
Int. Cl. F15b *5/00*; **G01p** *3/26*; **G10k** *5/00*
U.S. Cl. 137—83 **3 Claims**

An approximate impulse signal producing device of the pneumatic pressure type comprising a casing, a rotor supported in said casing and formed on its outer peripheral surface with a surface inclined with respect to the direction of rotation of the rotor, a pressure supply duct provided in said casing for ejecting an air jet under pressure to said inclined surface of the rotor, a drain provided in said casing in a position substantially symmetrical to the position of said pressure supply duct, and an output duct provided in said casing and disposed substantially midway between said pressure supply duct and said drain.



3,651,825
STOPPER PLUG VALVE FOR HOT METAL LADLES
Francis P. Sury, P.O. Box 353, St. Clairsville, Ohio
Filed Oct. 24, 1969, Ser. No. 869,041
Int. Cl. F16c *27/00, 33/00*
U.S. Cl. 137—240 **5 Claims**

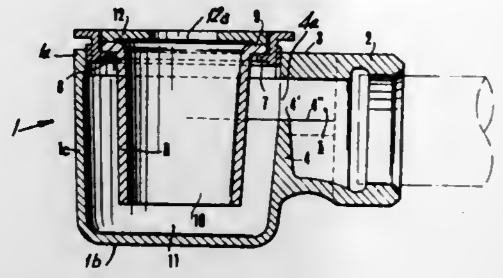


A valve for use in combination with the bottom of a hot metal ladle to enable molten metal to be discharged therefrom into a mold or the like with the valve being in the form of a stopper plug and including a longitudinal passage communicating with the discharge end of the valve and a transverse passage communicating with the longitudinal passage adjacent the upper end of the valve with the valve seat including a seat portion and a recessed portion communicating with the transverse passage to drain molten metal from around the valve when the valve is closed. The valve includes a sleeve of refractory material such as carbon or the like and an insert in the form of an annular band in the guide for the valve is associated with the carbon sleeve to provide for effective guiding of the valve. A supply of inert gas such as argon may be associated with the valve to prevent oxidation of the carbon sleeve and bearing ring and facilitate the sealing of the valve member.

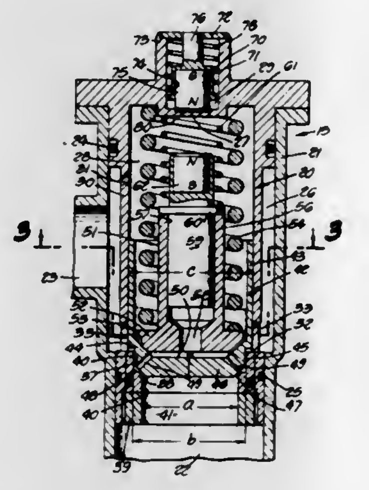
3,651,826
DRAIN TRAP FOR HORIZONTAL DRAIN PIPE
Noriatsu Kojima, Yanagishima-cho 5, chome 31, Nagoya, Japan
Filed Nov. 10, 1970, Ser. No. 88,442
Claims priority, application Japan, Nov. 19, 1969, 44/109187
Int. Cl. F16k *9/00*
U.S. Cl. 137—247.35 **10 Claims**

A floor drain trap for use with a horizontal drain pipe is formed of a housing with a laterally extending connection

having an outlet for attachment to the horizontal drain pipe. Extending downwardly into the housing from its upper end and spaced inwardly from its inner surface, is a frustoconically shaped inlet drain pipe section which has its lower end spaced above the bottom of the housing. The housing has an opening communicating with the drain pipe connection and the lower edge of the opening is spaced above both the lower end of the inlet drain pipe section and the invert of the outlet to which the horizontal drain pipe is connected. Flow passes downwardly into the trap through the drain pipe section then upwardly about the outer surface of the inlet drain pipe section and over the lower edge of the opening in the housing into the connection to the horizontal drain pipe.



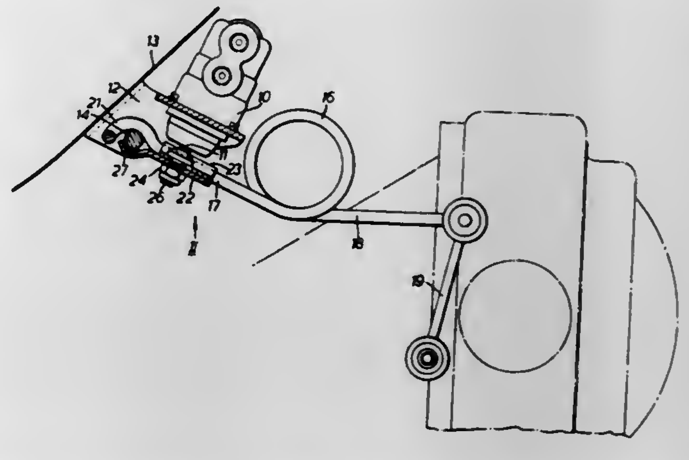
3,651,827
PRESSURE RELIEF AND INDICATOR DEVICE
Kurt F. Hammer, and Wilbur A. Meyer, both of Camarillo, Calif., assignors to Purolator, Inc., Rahway, N.J.
Filed Jan. 13, 1970, Ser. No. 2,493
Int. Cl. F16k *17/30*
U.S. Cl. 137—469 **4 Claims**



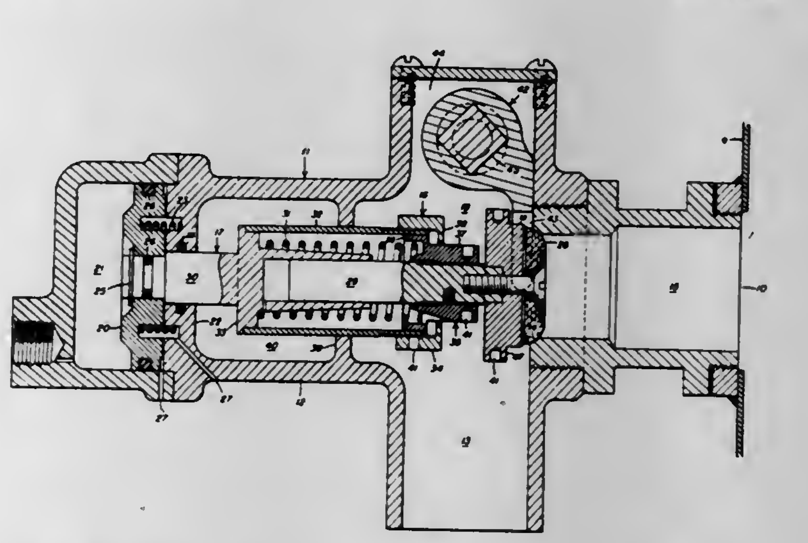
A device which senses a differential pressure across a system having a high pressure side and a low pressure side and which at a predetermined pressure of pressure difference functions to bypass the flow from the high pressure to the low pressure side. There is pressure responsive means and indicator means, the indicator means functioning upon the pressure sensitive means moving in response to an increase in differential pressure.

3,651,828
HYDRAULIC BRAKE CONTROL VALVES
Thomas G. Lawson, Kings Road Tyseley, Birmingham, England, assignors to Girling Limited
Filed Dec. 31, 1969, Ser. No. 889,763
Claims priority, application Great Britain, Jan. 2, 1969, 378/69
Int. Cl. B66f *9/06*
U.S. Cl. 137—351 **8 Claims**

The invention is an improvement in vehicle brake pressure control means of the type in which a brake pressure control valve is subject to the action of a spring load, varying with changing vehicle loading conditions, which modifies the operating characteristics (pressure reducing, pressure increasing or pressure limiting) of the valve. A coil torsion spring has opposed arms, one of which is connected to an unsprung vehicle part and the other to the sprung part. The latter arm is pivotally connected to a mounting bracket by means of a clamping member which holds the arm in rocking engagement with a fixed fulcrum.



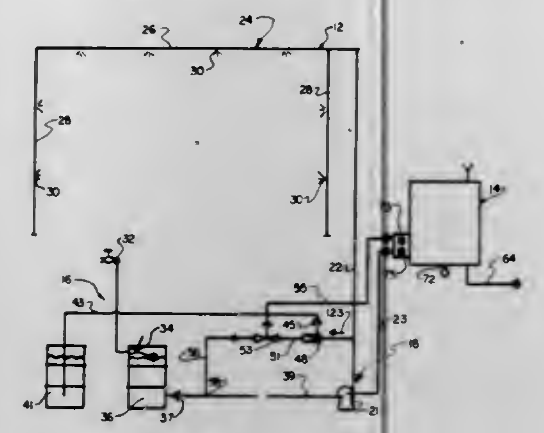
3,651,829
DIESEL ENGINE COOLING SYSTEM
Virgil L. Frantz, Salem, Va., assignor to Graham-White Sales Corporation, Salem, Va.
Filed Jan. 19, 1970, Ser. No. 3,786
Int. Cl. F16k *17/02*
U.S. Cl. 137—529 **8 Claims**



An automatic dump and pressure relief valve for a pressurized engine cooling system in which both automatic dumping and pressure relief are produced by a piston reciprocable in a valve body and having operating and actuating heads responsive to fluid pressure and connected for limited relative axial movement and springs acting on the heads and yieldable to predetermined pressures applied thereto. The valve also has a manual override for enabling it to be opened as needed while the system is pressurized.

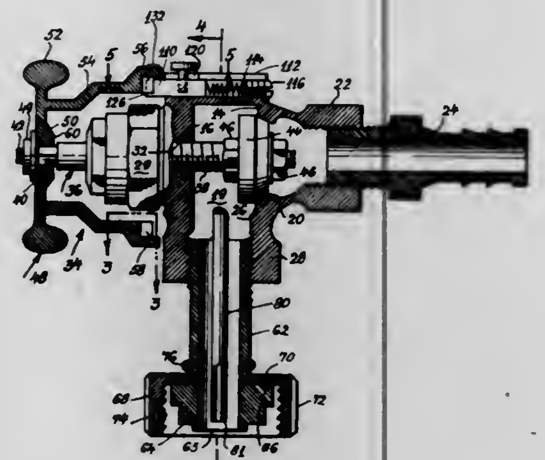
3,651,830
CAR WASH APPARATUS
Klaus E. Kollmai, 211 South Main Avenue, Haysville, Kans.
Filed May 22, 1970, Ser. No. 39,589
Int. Cl. B08b *3/00*
U.S. Cl. 137—565 **9 Claims**

This invention is a car wash apparatus having a control panel actuated through a transmitter structure in order to control liquid supply movement to a pump and motor assembly for successively dispensing rinse and detergent solutions onto a moving vehicle from a stationary U-shaped dispensing structure. More particularly, this invention is a car wash apparatus operable to dispense preselected liquids therefrom while being remotely controlled by a person operating a vehicle being cleansed.



3,651,831
SAFETY BLEEDER VALVE

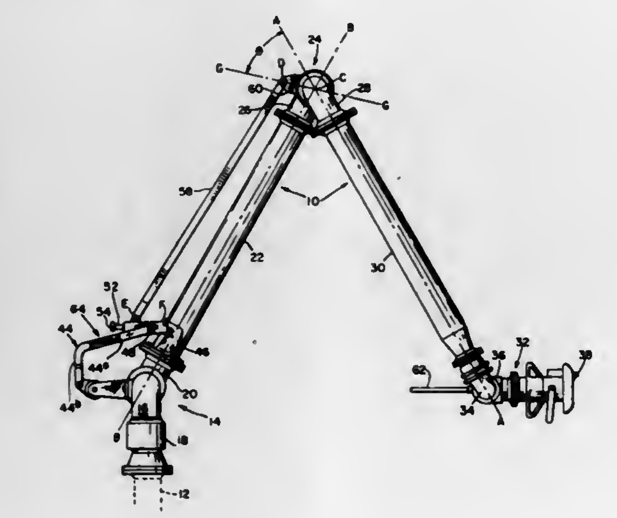
Irving Gardner, Hunter, N.Y.
Filed Apr. 29, 1970, Ser. No. 32,916
Int. Cl. F16k *35/04, 45/00*
U.S. Cl. 137—588 **9 Claims**



A safety bleeder valve of the globe type for propane gas delivery trucks for preventing the possibility of the accidental or unintentional opening of the valve and escape of gas from the valve when the delivery hose is off its support on the truck and detached from the tank or container being supplied with gas or opening of the valve due to vibration when the vehicle is in motion. The safety valve has end and side walls with an inlet in one end wall and an outlet in the side wall. A threaded stem slides through an opening in the other end wall. A valve head is carried on one end of the stem and adapted to seat on a seat formed in the one end wall. The other end of the stem has a hand wheel for turning the stem. Ratchet teeth on the hand wheel coact with a slidable spring pressed core mounted on the side wall for holding the wheel and stem from rotating. A rotatable ring is provided for connecting the valve body to the inlet of a tank being supplied with gas. Gas bleed means is formed on the valve body for releasing the gas pressure on the rotatable ring to facilitate breaking the connection with the inlet on the tank. Cooperating indicia on the valve body and a skirt of the hand wheel indicate relative wear of a valve head when the hand wheel is rotated to close the valve.

3,651,832
ARTICULATED COUNTERBALANCED PIPING APPARATUS

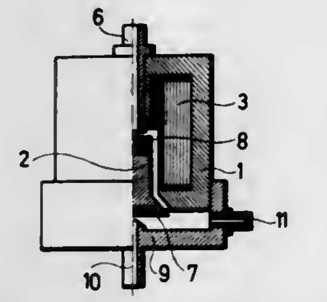
William Meyer, East Orange, N.J., assignor to Emco Wheaton Inc., Union, N.J.
Continuation-in-part of application Ser. No. 866,540, Oct. 15, 1969, now abandoned. This application Sept. 24, 1970, Ser. No. 75,085
Int. Cl. F17d *1/08;* **F16l** *27/00;* **B67d** *5/04*
U.S. Cl. 137—615 **17 Claims**



This application deals with a device for loading fluids such as oil into tank cars. It has an inboard and an outboard conduit pipe which are pivotally connected together. The inboard pipe connects with a supply strand pipe and the free end of the outboard conduit has a nozzle that connects with the tank car to be loaded. The invention is concerned with a balancing means for balancing the inboard and the outboard conduit members and includes a balancing spring in combination with an articulated linkage that splits the balancing force of the balancing spring between the inboard and the outboard conduits to balance both of them so that a user of the device can manipulate the nozzle on the free end of the outboard conduit member as if it is substantially weightless.

3,651,833
ELECTROMAGNETIC VALVE

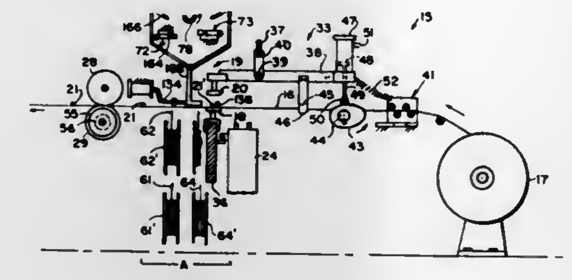
Zoltan Piko, Budapest, Hungary, assignor to Medicor Muvek, Budapest, Hungary
Filed May 8, 1970, Ser. No. 35,706
Claims priority, application Hungary, May 12, 1969, ME-1059
Int. Cl. F16k *11/06, 31/08*
U.S. Cl. 137—625.65 **4 Claims**



An electromagnetic valve has a valve member which is a core movable within a winding. The core remains deep in the winding and is spaced laterally from the interior of the winding and has a beveled seat where it emerges from the winding that engages with a beveled surface on the winding to locate the core in a closed position. The core has resilient valve seats at opposite ends to permit fluid switching, as in a logic circuit, with low amplitude of movement and with high sensitivity.

3,651,834
WIRE MESH MAKING

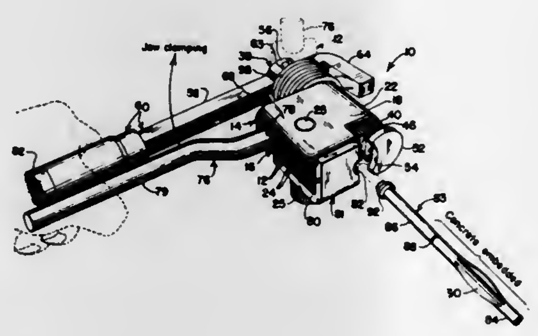
Sam Larkin, 254 Beach 140th Street, New York, N.Y.
Filed Oct. 27, 1969, Ser. No. 869,571
Int. Cl. B21f *27/00*
U.S. Cl. 140—3 R **14 Claims**



During each cycle of operation of an automatic wire mesh making machine, a transverse wire is welded to the wrap whereupon the fabric is shifted a predetermined relatively small amount to receive the next transverse wire at the welding station for repetition of the cycle. In the examples of machinery shown herein, the transverse wires are furnished by a mechanism, which, from separate supply reels during each cycle, simultaneously feeds four spaced wires across the warp, one-quarter their required length as measured from an entrance whereat, during each cycle, a different one of said four wires is severed in a predetermined sequence and let free of temporary holding means to be guided towards the welding station. In several apparatus embodiments, the cutoff means is a rotary blade cooperating in succession with the hardened steel bushings which lead the fed wires for temporary hold by clamp forms in which the wires lie loose, or along rows of magnets. In embodiments for working with wire stock heavier than three-sixteenths inch, the cutting is done by individual punches worked by a cam system, or by a traveling ram worked by a cam and an oscillating beam.

3,651,835
TORQUE-APPLYING TOOL FOR BUTTON-HEAD CONCRETE WALL FORM TIE RODS

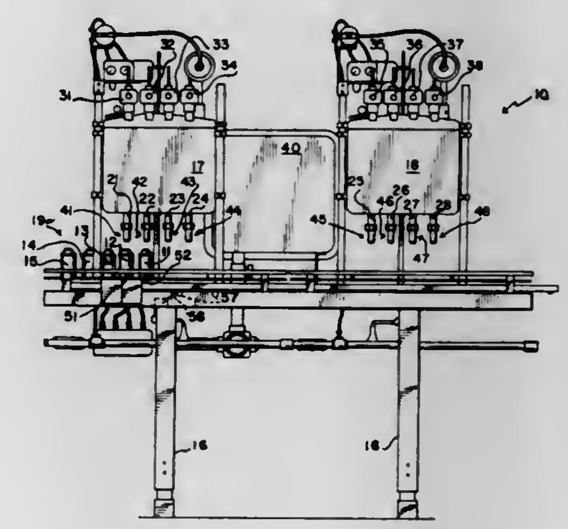
George J. Eriksson, Morton Grove, Ill., assignor to Superior Concrete Accessories, Inc., Franklin Park, Ill.
Filed Aug. 17, 1970, Ser. No. 64,212
Int. Cl. B21f *7/00*
U.S. Cl. 140—149 **12 Claims**



A torque-applying tool by means of which the frangible protruding ends of concrete wall form tie rods with conventional button-heads and breakbacks may be twisted from the embedded medial regions thereof. An eccentric jaw action is effective in the direction of torque-application to afford a high mechanical advantage for tie rod clamping, coupled with high torque leverage, while a spring-biasing action, coupled with an overlay flange on the clamping jaw permits one-hand manipulation of the tool.

3,651,836
ELECTRONIC CONTROL CIRCUIT FOR A CONTAINER FILLING MACHINE

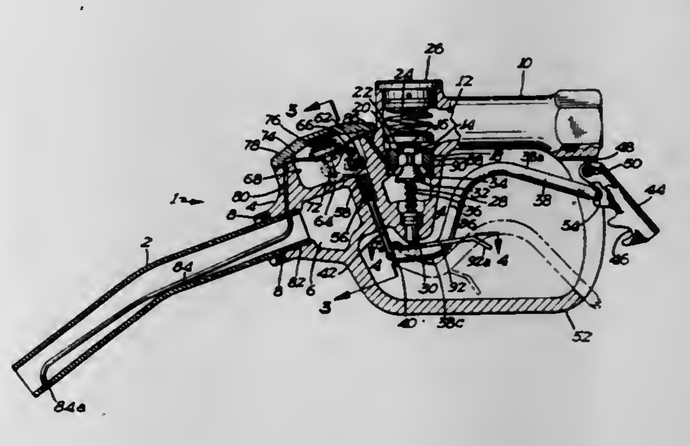
Lloyd D. Johnson, Davenport, Iowa, assignor to The Kartridge Pak Co., Davenport, Iowa
Filed Oct. 21, 1970, Ser. No. 82,623
Int. Cl. B65b *57/06*
U.S. Cl. 141—103 **16 Claims**



Two limit switches, one for sensing the presence of a container at a first filling station of a filling machine and one for sensing when the container has been advanced a predetermined distance through the filling machine, provide the only sensing means for controlling the filling of each container with equal amounts of fluid at four filling stations. The switches are connected to a shift register circuit which is actuated by the actuation of the switches to generate an output signal (or signals) on different leads to cause filling of the container at the first filling station and at subsequent stations each time the container is advanced a predetermined distance. A timer controls the filling at each station.

3,651,837
TANK FILLING NOZZLE WITH AUTOMATIC SHUTOFF

Robert W. Murray, 8000-29th Avenue North, Minneapolis, Minn.
Filed June 8, 1970, Ser. No. 44,101
Int. Cl. B67d *5/373*
U.S. Cl. 141—128 **11 Claims**



A fluid dispensing nozzle incorporating an automatic shutoff mechanism responsive to the filling of a receiving tank to a level near its top is provided with mechanical means operable independently of the automatic shutoff mechanism to open a flow passage through the nozzle to permit the complete filling of a receiving tank after the shutoff mechanism has been actuated. The shutoff mechanism includes a movable, pressure-sensitive member which is displaced by a pressure differential created thereon in response to the substantial filling of a receiving tank to pivot a latch out of restraining engagement with a roller on a slide rod normally serving to hold a valve in the nozzle open. The releasing of the latch from the roller causes the slide rod to be shifted by valve spring pressure to close the nozzle valve.

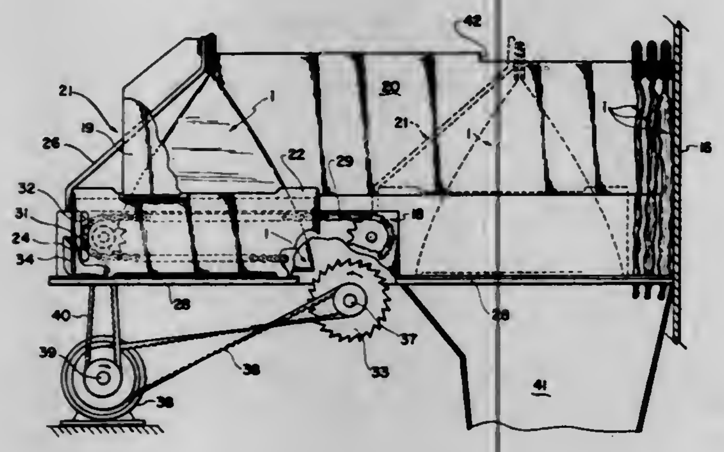
3,651,838
LOADING MECHANISM IMPROVEMENT

Donald J. Albert, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of application Ser. No. 756,517, Aug. 30, 1968, now abandoned. This application Dec. 15, 1970, Ser. No. 98,451

Int. Cl. B65b *3/06*

U.S. Cl. 141—284 **13 Claims**



A mechanism is disclosed for handling a bag for electrographic toner, which bag is shaped with closed elongated opposite ends running transverse to each other, one such end having secured thereto a rigid member having portions overlapping the bag. The bag is received by a loading mechanism having a pair of rails for supporting the overlapping portions of the rigid member and a saw for rupturing a lower portion of the bag as the bag is moved by a pusher along the rails. The pusher moves the bag from a receiving position to a position over a toner reservoir where the bag is emptied and stored with other used bags until removed fro disposal. The bag is inserted into the receiving position through an opening which is shaped to assure proper orientation of the bag in the mechanism.

3,651,839
PORTABLE MOTOR SAW

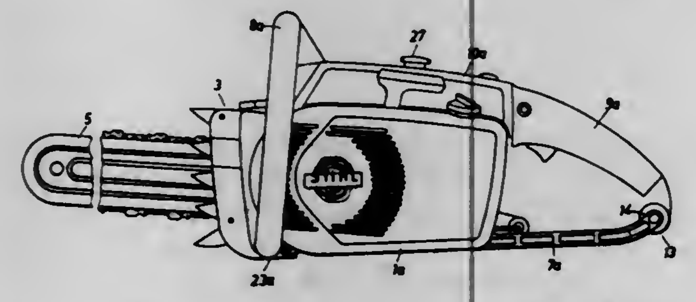
Andreas Stihl, Rohrbronn, Am Kirschberg; Ewald Abt, Stuttgart-Bad Gannstatt, and Albrecht Rauh, Kleinheppach, all of Germany, assignors to Andreas Stihl Muschinenfabrik, Neustadt, near Waiblingen, Germany

Continuation of application Ser. No. 687,703, Dec. 4, 1967, now abandoned. This application Apr. 27, 1970, Ser. No. 29,763

Claims priority, application Germany, Nov. 24, 1967, St #26197

Int. Cl. B27b *17/02*

U.S. Cl. 143—32 R **24 Claims**



A portable motor saw having a housing, front and rear handle means and frame means rigidly interconnecting said housing and rear handle means in spaced relationship, said frame means when seen in plan view having a contour substantially corresponding to the contour of said housing, while a plurality of elastic vibration damping means is interposed between said housing and said handle means.

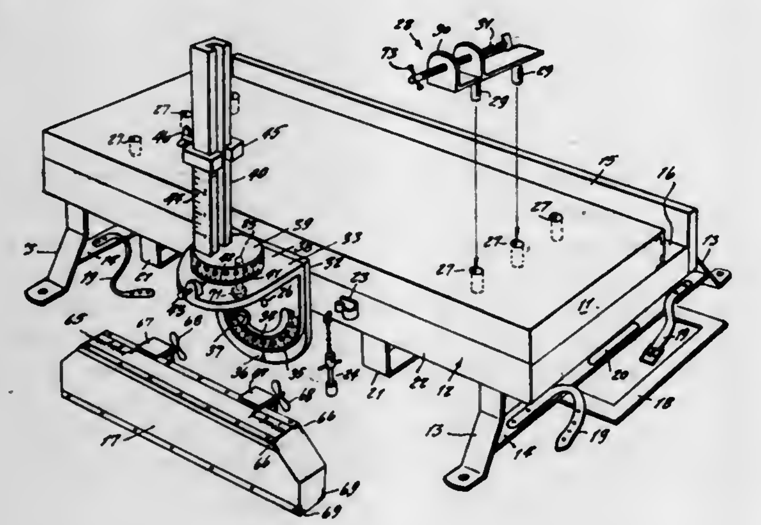
3,651,840
MULTI OR COMPOUND CUTTING MITER BOX

Charles A. Ridenour, 183 Pocatontos Street, Buchannon, W. Va.

Filed Sept. 1, 1970, Ser. No. 68,675

Int. Cl. B27b *27/06*

U.S. Cl. 143—88 **8 Claims**



A miter box for cutting multiple or compound angles, the device incorporating a construction whereby full angular adjustment is possible in all three planes, the device incorporating a table supporting a pivotable bracket about a first plane, the bracket supporting a tool post pivotable about a second plane, the tool post supporting a saw head holder pivotable about a third plane so to provide universal full adjustment.

3,651,841
SAW TOOTH

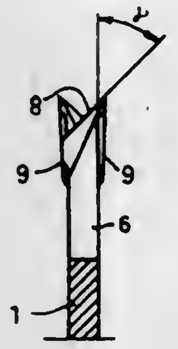
Olof Axel Ohlsson, Rindagatan 16, Stockholm, Sweden

Filed Sept. 9, 1968, Ser. No. 758,488

Claims priority, application Sweden, Sept. 22, 1967, 13,084/67

Int. Cl. B27b *33/02*

U.S. Cl. 143—133 R **2 Claims**



A saw tooth intended primarily for sawing wood, particularly in one direction of movement, and having a tip which is given an increased thickness in relation to the remainder of the tooth by upsetting or some other method, and bevelled surfaces so arranged that they form one or more oblique cutting edges presenting a clearance angle. The cutting edge or each of the cutting edges is formed by the intersecting line between a bevelled surface on an upper surface on the tooth and an under surface on said tooth. The bevel angle is at least 27° and at most 60°.

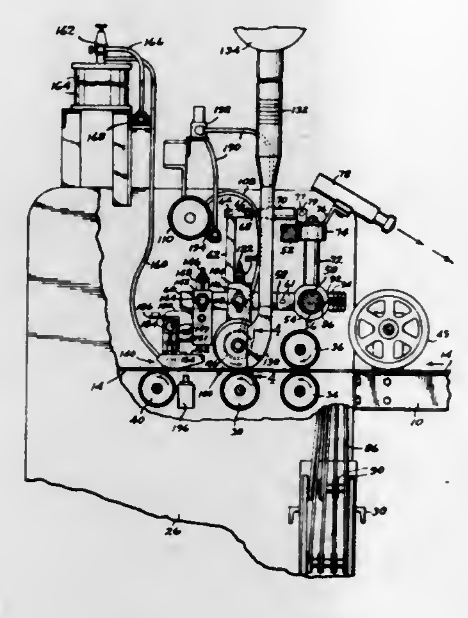
3,651,842
APPARATUS FOR GROOVING PANEL SURFACES

Daniel M. McLean, Independence, Oreg., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Jan. 28, 1970, Ser. No. 6,472

Int. Cl. B27f *1/02*

U.S. Cl. 144—136 R **6 Claims**



Apparatus for grooving panel surfaces along laterally spaced lines comprises a plurality of grooving cutters and mounting means mounting the cutters side by side for lateral adjustment. Adjusting means is connected to the cutters for adjusting their lateral position. An indicator is mounted on each cutter. It is operable to indicate on the surface of a panel in feed position, the position of the cutter with reference to the lines on the panel. The adjusting means thereupon adjusts the cutters to align them with the lines so that the grooves are cut along the lines as the panel is fed to the cutters. Paint applying or striping apparatus cooperates with the cutters in applying paint to the grooves as they are cut.

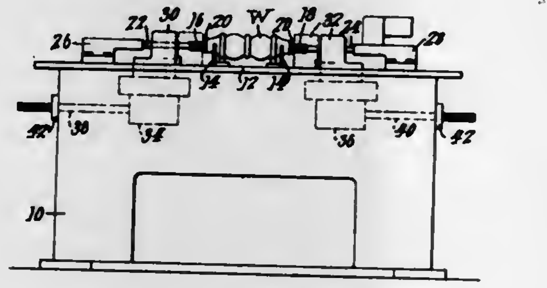
3,651,843
TENON FLUTING MACHINE

Dexter H. MacQueston, Winchendon, Mass., assignor to Goodspeed Machine Company, Winchendon, Mass.

Filed Oct. 8, 1970, Ser. No. 79,061

Int. Cl. B27f *1/10*

U.S. Cl. 144—198 R **15 Claims**



Fluting either single or double-end wooden tenons (and dowels) with small equal generally V-shaped parallel and contiguous longitudinally and circumferentially arranged flutes, by compressing the tenon with a longitudinal motion in a circular die, and including a retractable lead-in to center the work and to provide that the die travels the entire distance of the tenon or dowel.

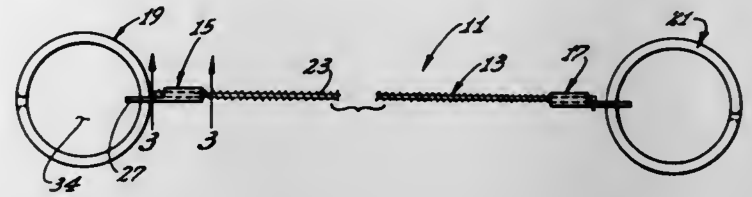
3,651,844
ALL PURPOSE SAW

Terry B. C. Barnes, 31063 2nd Avenue, So. Laguna, Calif.

Filed Feb. 24, 1970, Ser. No. 13,334

Int. Cl. B27b *21/00, 33/16*

U.S. Cl. 145—31 **8 Claims**



An all purpose saw comprising an elongated saw blade having a generally helical cutting tooth, first and second gripping elements, and first and second connector members for attaching the first and second gripping elements, respectively, to the blade. At least one of the connector members at least partially circumscribes the blade and coacts with the helical tooth to attach such connector member to the blade.

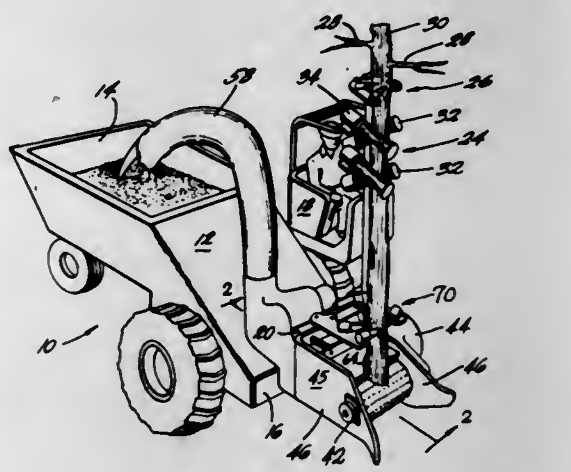
3,651,845
METHOD AND APPARATUS FOR CONVERTING TREES INTO WOOD CHIPS

Robert L. Propst, 2347 Londonderry Avenue, Ann Arbor, Mich.

Filed May 25, 1970, Ser. No. 40,998

Int. Cl. A01g *23/02*

U.S. Cl. 144—3 D **2 Claims**



The method and apparatus for converting small trees into wood chips suitable for use in the pulp wood industry comprising combining a tree felling mechanism and a chipper mechanism in a single vehicle. The chipper mechanism consists of a rotatable toothed member movable into engagement with a tree so as to sever the tree and a tree gripping and feeding mechanism disposed above the chipper mechanism operates to continuously feed the felled tree downwardly into the chipper mechanism where the tree is converted into wood chips. A conveyor assembly associated with the chipper mechanism moves the chips into a receptacle on the vehicle.

3,651,846
AUTOMATIC HEN'S EGG PROCESSING APPARATUS

Masao Mirara, Yokohama, Japan, assignor to Kabushiki Kaisha Sango, Yokohama, Kanagawa, Japan

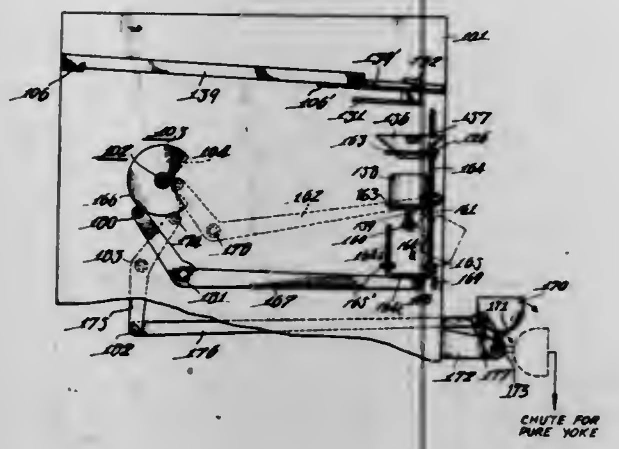
Filed Mar. 5, 1970, Ser. No. 16,893

Claims priority, application Japan, Oct. 31, 1969, 44/87420

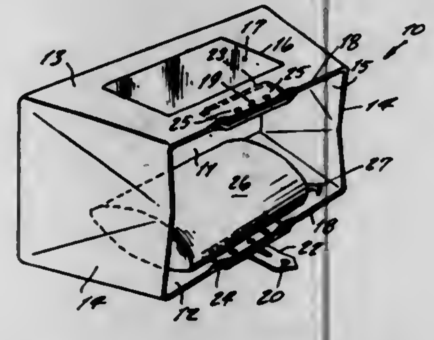
Int. Cl. A47j *43/13*

U.S. Cl. 146—2 C **2 Claims**

An automatic hen's egg processing apparatus which comprises a framework; a cam shaft journaled in said framework and having an egg feeder actuating cam, a hammer blade opening and closing cam and a hammer blade driving cam; an egg feeder having an actuating bar; an egg receiving section adapted to open sideways in opposite directions; an egg holding down member having an actuating bar; a hammer having blades adapted to move toward and away from each other and vertically in unison; and a link mechanism operably related to the various cams and their related operation bars for performing a processing operation on one egg at one time.



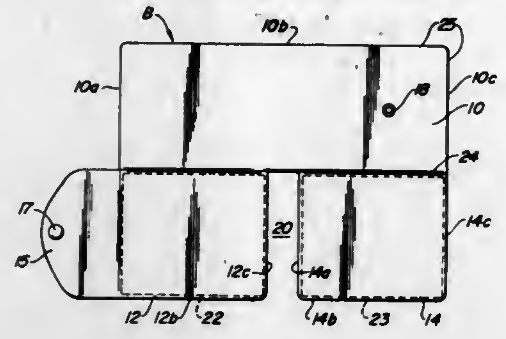
3,651,847
MINI-BRELLA
Carole C. Casamassima, 109 Haddon Avenue, Collingswood, N.J.
Filed June 9, 1970, Ser. No. 44,765
Int. Cl. A45c *3/00*
U.S. Cl. 150—28 R **2 Claims**



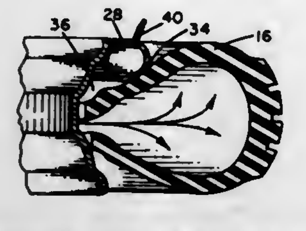
A device readily convertible between a beach bag and a sun-shading canopy for a bather, the device comprising a handgrip-type luggage which when opened assumes a boxlike configuration into which a person may insert his head while resting on a beach, the device including a window of sun ray filtering material and containing an inflatable pillow on which the person may rest his head.

3,651,848
BILLFOLD CONSTRUCTION
Jacob S. Tucker, 4421 Granada Boulevard Apt. 322, Warrensville Heights, Ohio
Filed June 1, 1970, Ser. No. 41,813
Int. Cl. A45c *1/00*
U.S. Cl. 150—38 **3 Claims**

A billfold having a bill compartment open at both ends. When the billfold is closed one open end of the bill compartment is closed by a flap without binding the edges tightly. The remaining end is left open. Extra clearance is provided in the bill compartment at the fold of the billfold. A single desired bill may be withdrawn without disturbing its fellows and while the billfold is closed so that the contents need not be exposed to anyone other than the user.

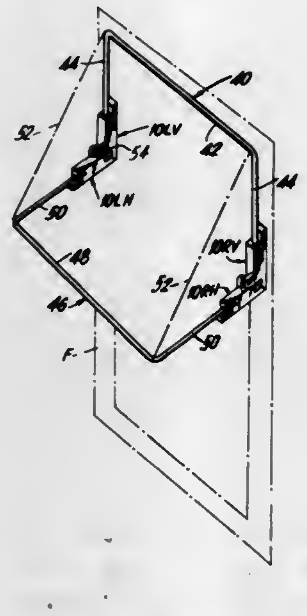


3,651,849
BEAD EXPANDER FOR MOUNTING AND INFLATING TUBELESS TIRES
Anthony F. Kaminskas, Lyndhurst, Ohio, assignor to Clevite Corporation
Filed Jan. 23, 1970, Ser. No. 5,298
Int. Cl. B60c *25/12*
U.S. Cl. 157—1.1 **3 Claims**



A device for mounting and inflating a tubeless tire on an automotive wheel rim. An inflatable annular member of tubular cross section is placed between the flanged rim of the wheel and the sidewall of the tire to establish a sealed air chamber after the annular member has been inflated. Upon initial inflating of the tire, the annular member rolls off from between the rim and the sidewall.

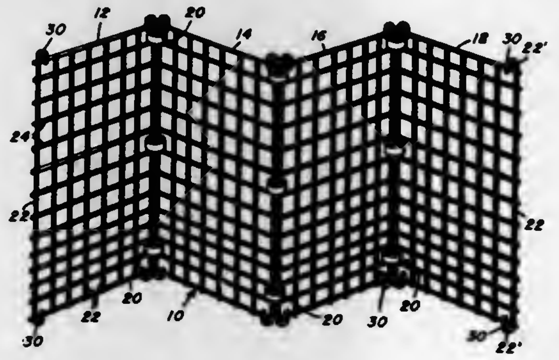
3,651,850
AWNING DEVICE
Richmond Raymond, 45-45 162nd Street, Flushing, N.Y.
Filed June 15, 1970, Ser. No. 46,083
Int. Cl. E04f *10/10*
U.S. Cl. 160—77 **8 Claims**



Two pairs of brackets are used to removably support an awning in sun shielding relationship with a window. The four brackets comprising the two pairs are identical. One bracket in each pair is secured to the window frame and the other of each pair of brackets is adjustably secured to the first of each pair of brackets. The awning itself includes a frame comprising two U-shaped rods. The ends of one of the U-shaped rods are received in suitably sized apertures in the brackets that are secured to the window frame. The ends of the second U-shaped rods are suitably secured in apertures in the other one of each pair of brackets.

The aforementioned abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

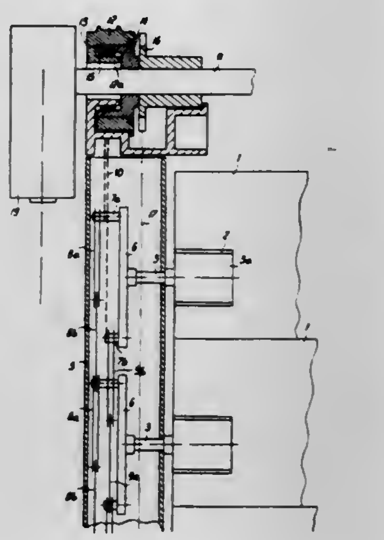
3,651,851
FOLDING PEN CONSTRUCTION
Charles E. Curtis, Cave Springs, Ark., assignor to Curtis Chick Service, Inc.
Filed July 21, 1970, Ser. No. 56,857
Int. Cl. A47g *5/00*
U.S. Cl. 160—135 **3 Claims**



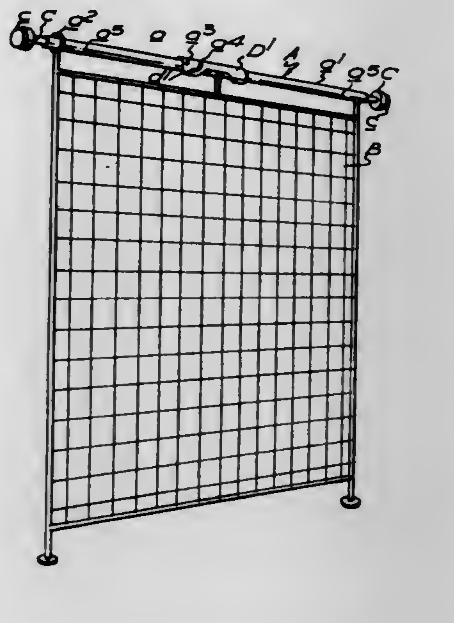
A folding wall assembly comprising a plurality of upright panel sections disposed in edge-to-edge relation and pivotally secured together along adjacent upstanding edge portions for relative horizontal swinging. The panel sections include upstanding rod portions defining the adjacent edge portions thereof and the latter are pivotally secured together by means of vertically spaced sleeve members through which both corresponding rod portions of the adjacent panels are loosely received. Each panel section is defined by a plurality of side-by-side upstanding rod members interconnected by a plurality of vertically spaced generally horizontal rod members crossing and secured to the vertical members and the corner portions of the panel sections are reinforced by vertical extensions of the vertical edge defining rod bent approximately 180° inwardly and back upon themselves and anchored to the adjacent horizontal rod member end portion.

3,651,852
RUFFLED BLIND CONSTRUCTION
Louis Neri, Aadorf, Switzerland, assignor to Griesser AG, Aadorf, Switzerland
Filed Aug. 10, 1970, Ser. No. 62,392
Claims priority, application Switzerland, Aug. 25, 1969, 12949/69
Int. Cl. E06b *9/30, 9/302*
U.S. Cl. 160—172 **5 Claims**

A blind includes panels or slats which are pivotally supported on cross levers which in turn are supported at their respective outer ends between sets of toggle levers with two pivotally connected toggle levers being located between each adjacent pair of cross levers on each end thereof. A pulling member comprises an endless band or chain which is directed over an upper driving wheel carried on the pullup shaft and may also advantageously be directed around the bottom guide wheel mounted in the blind housing. The pulling member is connected by a driver with the end journal of the lowermost blind panel so that when it is moved, it may raise or lower the complete set of blind panels. The toggle members which connect one end of the cross levers is connected through a chain which extends over the upper driving wheel and connects to the toggle levers on the opposite ends of the cross levers. The toggle levers form toggle joints which can be bent out in the same direction with parallel guidance of the cross levers and the pullup shaft is advantageously rotated by a driving mechanism to simultaneously shift the front and rear set of toggle levers for the purpose of orienting the cross levers and the associated blind panels between substantially horizontal open positions or substantially vertical close positions.



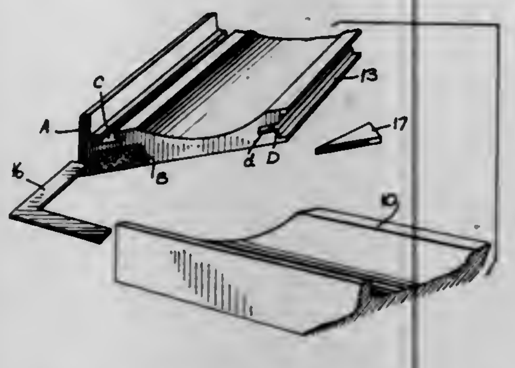
3,651,853
SAFETY RAILS AND THE LIKE
John David Pedley, Rochdale, England, assignor to Hopkins & Buckland Limited, Middleton, England
Filed Oct. 19, 1970, Ser. No. 81,954
Claims priority, application Great Britain, Oct. 28, 1969, 52,650/69
Int. Cl. E06b *9/02*
U.S. Cl. 160—216 **3 Claims**



A safety rail, guard or barrier held in position between two parallel supports by two in-line tubular members connected together by a tube affixed by a pin to the stationary member of the pair, the pin moving in an arcuate slot in a handle pivoted by a pin to the movable member and moving in a slot in the tube on operation of the handle to expand or retract the members.

3,651,854
CANVAS STRETCHER

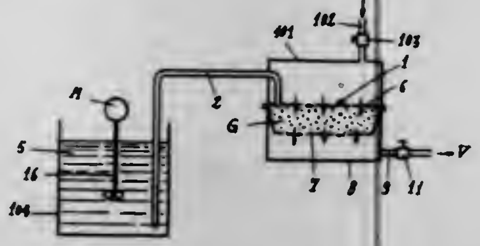
Frederick Terna, 444 East 89th Street, New York, N.Y.
Continuation of application Ser. No. 792,244, Jan. 21, 1969, now abandoned.
This application Apr. 13, 1970, Ser. No. 28,187
Int. Cl. B44d *3/18*
U.S. Cl. 160—374.1 **6 Claims**



A stretcher for canvas or other flexible material, the stretcher being made by miter-cutting a profiled strip into four pieces which, when assembled into a frame, have the desired stretcher dimensions. The strip, preferably fabricated of lightweight metal or plastic of high structural strength, has a uniform cross-sectional profile which defines a flat outer edge, a channel fillable with a compound for accepting and retaining tacks to secure the canvas thereto, a slot for accommodating right angle irons to interconnect the pieces and a key groove to receive wedges as well as reinforcing cross bars.

3,651,855
CONTINUOUS SLURRY SUPPLY METHOD FOR FABRICATION OF MOLD LININGS

Henri Jean Daussan, rue du Fort, Longeville-les-Metz, France
Filed Feb. 10, 1969, Ser. No. 798,035
Claims priority, application France, Feb. 23, 1968, 141036
Int. Cl. B22c *15/22;* **B28b** *1/26*
U.S. Cl. 164—7 **1 Claim**



A method for the fabrication of mold linings such as hot tops and hot top sections for ingot-molds and similar lining elements in the form of molded objects which are subsequently hardened by drying, characterized in that a slurry under pressure is conveyed into a closed mold having a cavity in which at least one wall is permeable to the dispersing phase of the slurry and in which the volume of said cavity is similar to that of the lining to be reproduced, that said slurry is continuously supplied so as to maintain the maximum level within said cavity until it is completely filled with the sediment formed by the material in suspension in the slurry and that the lining thus formed is dried-out then removed from the mold.

The invention includes also a device for carrying out the method above explained, said device being characterized in that it comprises a closed and demountable mold and a mold cavity having at least one wall which is permeable to the dispersing phase of the slurry and a system for supplying slurry under pressure to said mold. The mold comprises two superposable flask sections each fitted with a half-shell which is at least partially permeable to the dispersing phase of the slurry and a chamber which can be fixed on the large free face of one of the two flask sections and which is connected to a compressed air or vacuum source.

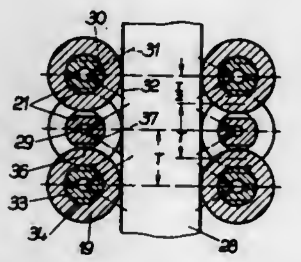
3,651,856
METHOD OF CONTINUOUSLY CASTING STEEL

Erik Allan Olsson, Rothfluhstr. 15, 8702 Zollikon, Switzerland
Continuation-in-part of application Ser. No. 630,141, Apr. 11, 1967, now abandoned, Continuation of application Ser. No. 370,067, May 25, 1964, now abandoned. This application May 1, 1970, Ser. No. 33,959
Claims priority, application Sweden, May 30, 1963, 6014/63
Int. Cl. B22d *11/10*
U.S. Cl. 164—82 **4 Claims**

The quantity of the continuous casting line equipment necessary to handle a large capacity furnace charge of steel is greatly reduced by dividing the furnace charge into a number of ladles which are successively poured through the casting line equipment while holding the ladles awaiting pouring for times greatly exceeding normal holding times. In this way, processing of the steel may be effected in the ladles, thus reducing the furnace charging time.

3,651,857
DEVICE FOR SUPPORTING AND COOLING CONTINUOUSLY CAST STRANDS OF METAL

Wilhelm Koch, Duisburg, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany
Filed June 29, 1970, Ser. No. 50,465
Claims priority, application Germany, Oct. 18, 1969, P 19 52 633.1
Int. Cl. B22d *11/12*
U.S. Cl. 164—283 **10 Claims**

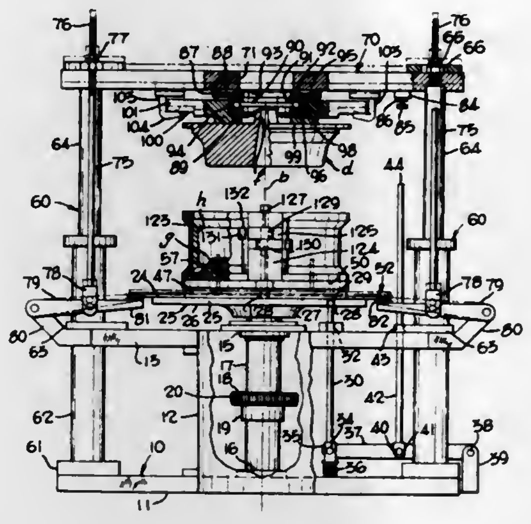


A supporting device for supporting cast strands of metal as they are fed from a casting mold, comprises a supporting frame which is adapted to be positioned adjacent the casting mold and which carries a plurality of longitudinally spaced rows of transversely extending cross members. Each cross member carries a plurality of supporting members in the form a rotatable rolls which are arranged in transversely spaced orientation with the supporting members of adjacent rows being laterally offset and extending between the adjacent support members of each next adjacent row. The supporting members are dimensioned as small as possible and the cross member advantageously includes means for directing a fluid spray outwardly in a pattern to provide adequate cooling for the casting which is supported on the device.

3,651,858
CENTRIFUGAL CASTING MACHINE

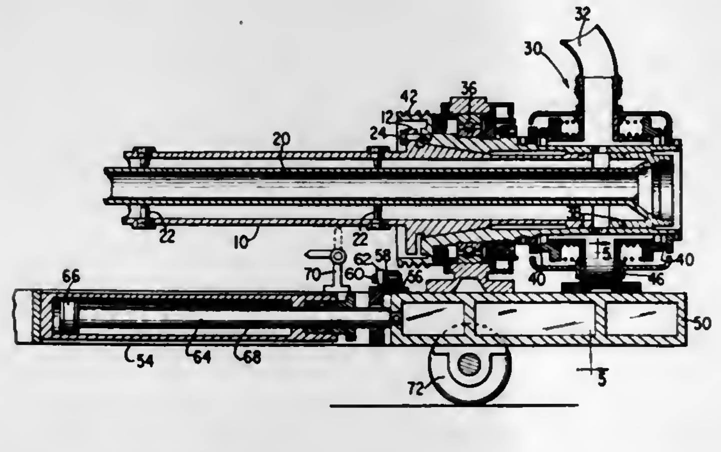
Charles A. Muench, Chesterfield, Mo., assignor to Forecast, Inc., St. Louis, Mo.
Filed Feb. 12, 1970, Ser. No. 10,809
Int. Cl. B22d *13/00*
U.S. Cl. 164—286 **15 Claims**

A centrifugal casting machine utilizes permanent molds. Lower mold parts are mounted on a powered turntable, and upper mold parts are mounted on a member rotatable about the retainer of a thrust bearing, beneath a beam spanning the turntable. The beam is drawn downward by a pair of actuators, to close the molds. Openings in the beam, bearing, and suspended member, all aligned with the turntable axis, permit pouring the molten metal while the turntable is rotating, to be forced outward by centrifugal pressure and fill the mold parts held sealed by thrust of the beam exerted through the bearing. To remove a casting, the turntable is latched in a predetermined angular position and the actuators raise the beam which hooks and lifts up on larger radius edge portions of the upper mold part mounting member, detaining it in angular alignment. When the beam reaches its uppermost position, an ejection plate, mounted on the turntable beneath the lower mold parts is lifted to eject a casting. The upper mold part mounting member may be removed downward from the bearing retainer to change such mold parts, by manually turning it until its larger radius edge portions clear the hooks beneath the beam.



3,651,859
APPARATUS FOR CENTRIFUGAL CASTING OF TUBULAR OBJECTS

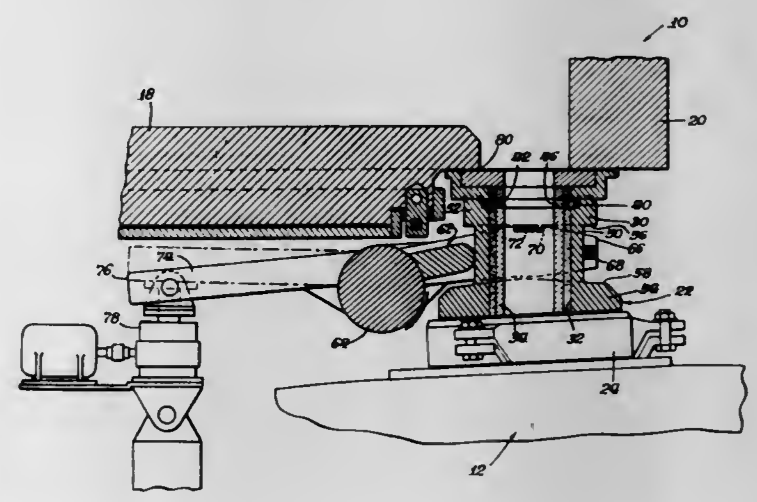
Hans Heinz Wahl; Alfons Guminski, both of Amberg, and Gunther Lohmann, Eglsee, all of Germany, assignors to Luitpoldhutte Aktiengesellschaft, Amberg, Germany
Filed Mar. 21, 1969, Ser. No. 826,039
Claims priority, application Germany, Mar. 22, 1968, P 17 58 026.6
Int. Cl. B22d *13/10*
U.S. Cl. 164—291 **4 Claims**



In a conventional de Levaud centrifugal pipe casting machine which includes a rotatable water casing, a mold within the casing and rotatable therewith, cooling water supply and discharge system, ball bearings rotatably supporting the water casing, sealing glands, and means through which rotation of the water casing is effected, the improvement comprising casing sleeves mounted exteriorly at each end of the water casing which support casting machine parts such as cooling water supply and discharge system, ball bearings, sealing glands, etc., and are detachably secured to the water casing for rotation. When it is desired to remove the water casing from the casting machine, the casing sleeves are detached and moved apart to present the water casing free of the auxiliary machine parts.

3,651,860
APPARATUS FOR CASTING METAL ARTICLES

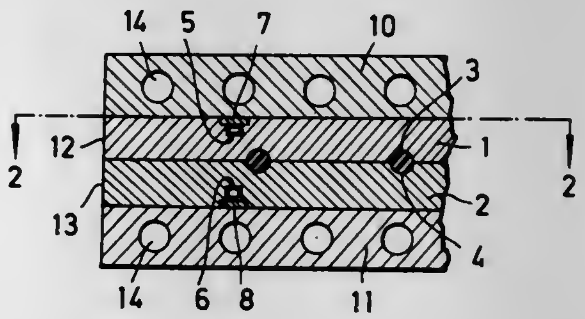
Arthur W. Ebeling, Elmhurst, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed July 18, 1966, Ser. No. 565,912
Int. Cl. B22d *37/00*
U.S. Cl. 164—339 **3 Claims**



A mold having a bottom opening is secured to a car that is movable to and from a pouring tube that is engaged with a ladle of molten metal. The bottom opening and pouring tube are fluidly communicable through an ingate assembly that may be pivoted into airtight engagement with the mold assembly and lowered onto the pouring tube. After molten metal is passed into the mold through the ingate assembly and solidifies, the ingate assembly may be pivoted away from the mold assembly thereby breaking the metal in the ingate assembly away from the metal in the bottom opening.

3,651,861
MOLD AND METHOD

Hans Deuring, Burscheid, Germany, assignor to Goetzewerke Friedrich Goetze Aktiengesellschaft, Burscheid, Germany
Filed Jan. 15, 1970, Ser. No. 3,093
Int. Cl. F28d *15/00*
U.S. Cl. 165—1 **15 Claims**



A compression mold having in its walls conduits containing sponge material and a substance wetting said sponge material. This equalizes the temperatures occurring in the mold and prevents the buildup of heat at internally situated parts of the mold.

A method of using conduits of the above-described type, which method involves placing such conduits in the walls of a mold, so that heat buildup and nonuniform temperatures in the mold are avoided.

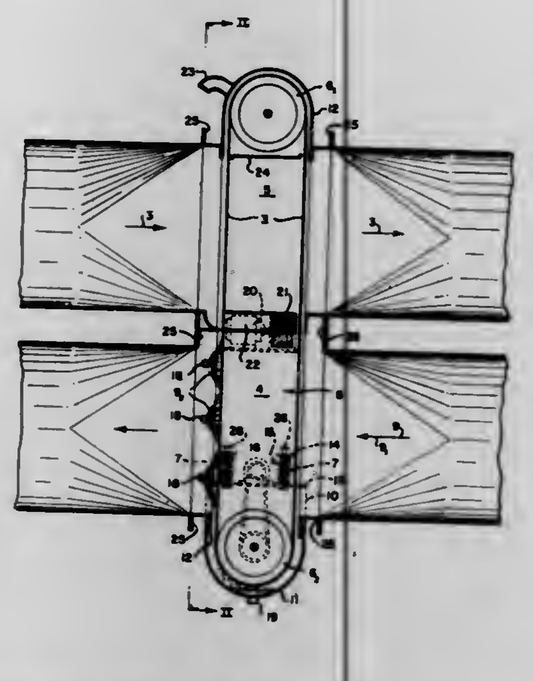
3,651,862
MECHANICAL HEAT EXCHANGING APPARATUS

Robert G. Ballinger, 604 Browns Lane, Ross Township, Allegheny County, Pa.

Continuation-in-part of application Ser. No. 782,130, Dec. 9, 1968. This application Apr. 11, 1969, Ser. No. 825,090

Int. Cl. F28d *19/00*

U.S. Cl. 165—5 **2 Claims**



Apparatus for cooling a stream of gas having a temperature of about 2,000° F. by mechanical means. An endless metal curtain of simple construction moves at relatively high speed over and between pulley means transverse of the gas stream, and extends into a cooling enclosure. Stretching means are provided to keep the metal curtain under substantially constant tension at any possible temperature encountered, and purging means are provided to insure that the metal curtain is cleaned without contaminating the coolant. I prefer that the pulley means be driven by a variable speed power means which is controlled by a temperature sensing device positioned in the gas downstream so that the gas stream from the apparatus is cooled to a substantially constant temperature.

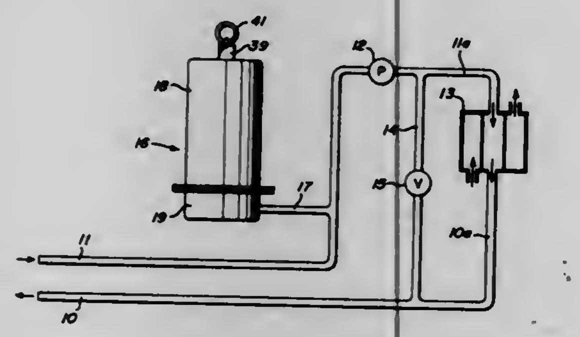
3,651,863
DIFFERENTIATOR IN A COOLING SYSTEM

Paul R. Hughes, Englewood, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio

Filed June 18, 1970, Ser. No. 47,268

Int. Cl. F25b *45/00*

U.S. Cl. 165—11 **3 Claims**



A differentiator device used in a system circulating a liquid coolant, in which a biased pressure applying member moves to reflect changing temperature induced density of the coolant. A temperature scale is attached to the piston and is in such relative projecting relation to the device that temperature graduations thereon may be read by reference to a portion of the device. The amount of expansion volume may be visually indicated and may be simultaneously compared with an amount proper for the existing ambient temperature. Further, the scale is constructed for manipulation by which the pressure applying member may be preset in charging or filling the system, whereby to insure a properly charged system operative over the complete temperature range.

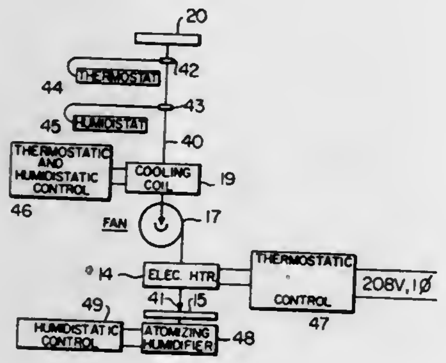
3,651,864
COMPACT ROOM SIZE ENVIRONMENTAL CONTROL UNIT

Carl I. Maddox, Jr., Chamblee, Ga., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare

Filed Apr. 10, 1970, Ser. No. 27,385

Int. Cl. F24f *3/14*

U.S. Cl. 165—20 **3 Claims**



A self contained compact room air conditioning unit has means for automatically controlling temperature and humidity for both heating and cooling cycles. The unit rapidly conforms to preset temperature and humidity by means of continuously operable control devices selectively actuating cooler, humidifier and heater means. Air is continually circulated through the unit between spaced heater and cooler grills. Such features are provided as variable capacity heater means and a dehumidification cycle by the cooler with provisions for increasing the heater capacity to compensate for cooling if dehumidification is called for when heating the room.

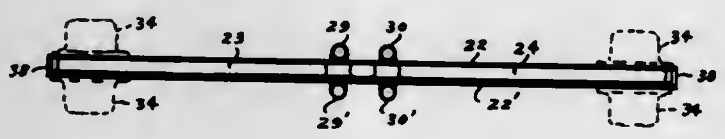
3,651,865
COOLED ELECTRONIC EQUIPMENT MOUNTING PLATE

Carl J. Feldmanis, New Carlisle, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed Aug. 21, 1970, Ser. No. 65,827

Int. Cl. H01l *1/12*

U.S. Cl. 165—80 **3 Claims**



An electronic equipment mounting plate has capillary type heat pipes secured thereto. A condenser section is provided near the center of the plate with a coolant being passed through cooling tubes positioned adjacent the central portion of the heat pipes to provide a heat sink. In one embodiment temperature control is provided by means of a noncondensable gas and a closed end tube within the heat pipe passages adjacent the heat sink.

3,651,866
LIQUID COOLANT INSTALLATION FOR A NUCLEAR REACTOR

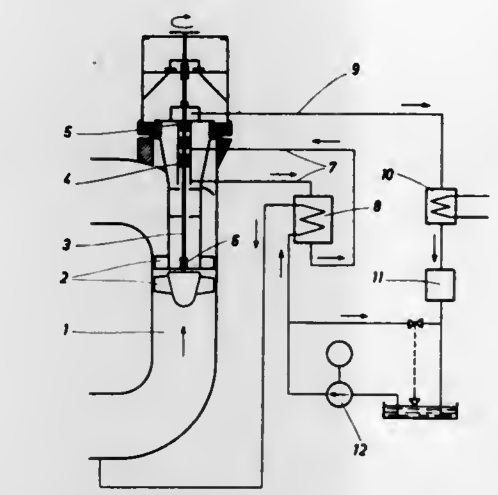
Johann Lileg, and Kurt Reif, both of Graz, Austria, assignors to Maschinenfabrik Aktiengesellschaft, Graz-Andritz, Austria

Filed July 18, 1969, Ser. No. 842,891

Claims priority, application Austria, July 30, 1968, A 7396/68

Int. Cl. F28f *19/00*

U.S. Cl. 165—107 **6 Claims**



A main pump is incorporated in a liquid coolant circulation system. A drive shaft extends from said main pump and is operable to cause said main pump to circulate liquid coolant in said system. A shaft seal surrounds said shaft and is arranged to permit liquid to leak from said system when said liquid coolant circulates therein. A purifier unit is adapted to receive said leakage liquid and to purify the same by removing solid particles therefrom and to discharge purified leakage liquid to said circulation system.

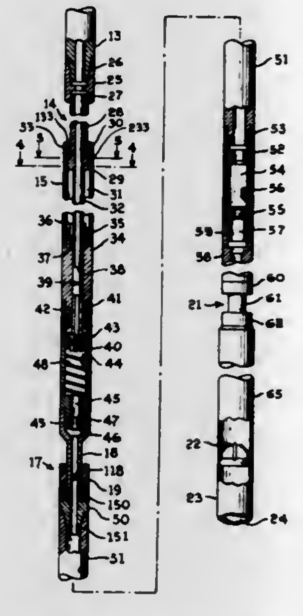
3,651,867
COMBINATION WELL CLEAN-OUT TOOL AND JAR

August B. Baumstimler, 2612 East 21st, Odessa, Tex.

Filed Oct. 5, 1970, Ser. No. 77,920

Int. Cl. E21b *31/08*

U.S. Cl. 166—99 **9 Claims**



A well cleanout tool for retrieving junk or debris from the bottom of a borehole. The tool may be run into an oil well on the end of a wire line or sand line. Included within the tool are various chambers for retrieving or holding junk which flows thereinto when a valve is actuated. A combination valve actuator and jar mechanism is manipulated by the wire line and facilitates removal of the tool from the borehole when it becomes stuck therein. An improved releaf valve in the form of a resilient one-way check valve progressively reduces the internal pressure of the tool after it has been actuated and is traveling uphole. A second jar mechanism is optionally provided at the lower extremity of the tool.

3,651,868
REMOVAL OF CALCIUM SULFATE DEPOSITS

Danny D. Caudle, and Bobbie L. Carlberg, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed July 29, 1970, Ser. No. 59,335

Int. Cl. B08b *3/08;* **E21b** *43/27, 43/28*

U.S. Cl. 166—307 **7 Claims**

A method of removing calcium sulfate deposits comprising contacting such deposits first with a pressurized solution of ammonia and carbon dioxide in water and next with water or an aqueous acid solution.

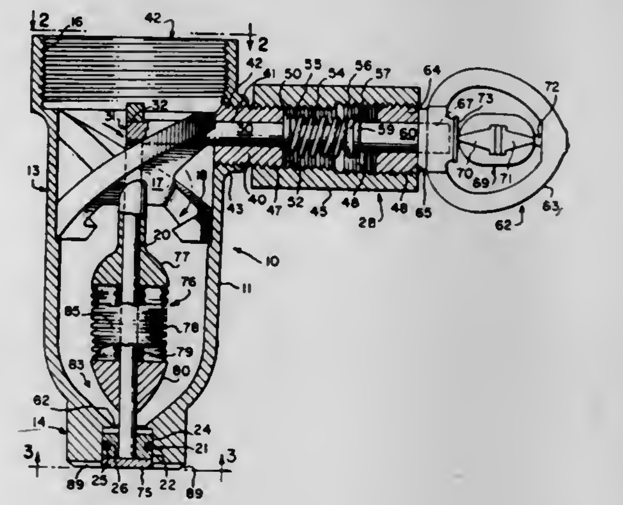
3,651,869
FIRE-RESPONSIVE SPRINKLER HEAD

William L. Livingston, Sharon, and Sebastian David Tine, St. Lawrence, both of Mass., assignors to Factory Mutual Research Corporation, Boston-Providence Turnpike, Mass.

Filed Oct. 8, 1969, Ser. No. 864,756

Int. Cl. A62c *37/08*

U.S. Cl. 169—38 **6 Claims**



A fire extinguishing sprinkler head for use with a wide range of extinguishants, such as water and hydrolized ablative gel, which has an expellable plug retained in a discharge opening in the sprinkler head by fire-responsive release means. Upon actuation of the release means, the plug is expelled from the sprinkler head by the pressure of the extinguishant to clear the discharge opening of obstacles which could affect the spray pattern of the extinguishant emitted from the sprinkler head. The plug is released at a predetermined inlet head pressure so that the sprinkler head will not provide the extinguishant to the fire at a pressure which will materially affect the spray pattern from the sprinkler head or adversely influence the spray pattern of other sprinkler heads in the system. The sprinkler head also includes means for modulating the flow of extinguishant in response to the inlet pressure of the extinguishant to retain a predetermined extinguishant spray pattern and to maintain the extinguishant supply pressure to the system at a higher level.

3,651,870
ROD WEEDER

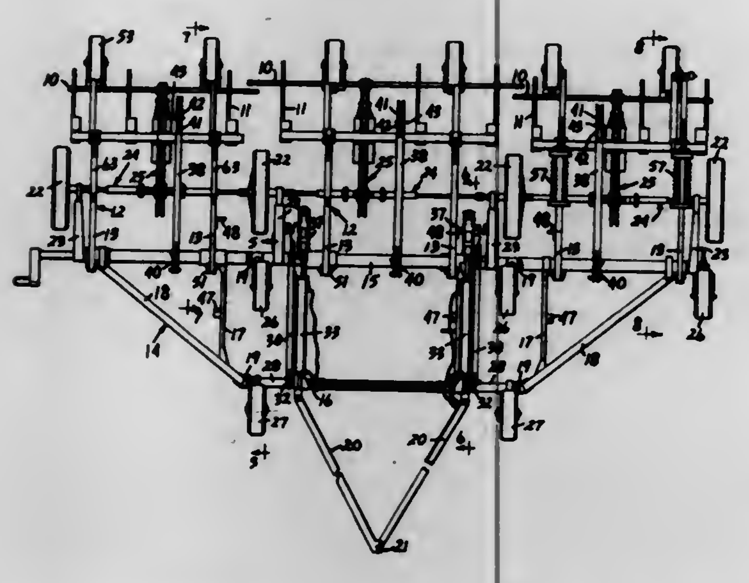
Oscar C. Calkins, Spokane, Wash., assignor to Calkins Manufacturing Company, Spokane, Wash.

Filed Apr. 18, 1969, Ser. No. 817,408

Int. Cl. A01b *39/19, 49/00, 63/00*

U.S. Cl. 172—44 **13 Claims**

A rod weeder utilizing a floating frame by which the weeder rod is permitted to freely move about a transverse pivot on a rigid framework or hitch. In one embodiment, elevational control is provided for raising or lowering the pivotal axis of the weeder rod frame relative to the ground to vary the inclination of the operative line of draft. In a second embodiment, provision is made for selective elevation of the towing framework relative to the ground with little or no modification of the line of draft for the weeder rod. Where desired, a yieldable connection is described for the rod supports to permit yielding of the subsoil rod when required by obstacles.



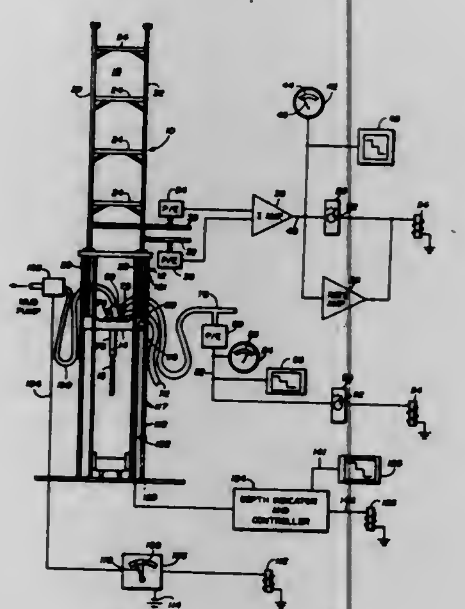
3,651,871
DRILLING RIG DEPTH CONTROL

Palmer G. Greene, Dallas, Tex., assignor to Automatic Drilling Machines, Inc., Dallas, Tex.

Filed Apr. 17, 1970, Ser. No. 29,469

Int. Cl. E21b *47/04*

U.S. Cl. 173—21 **6 Claims**



A system which monitors the depth at which a drilling rig is operating and indicates when a predetermined depth is reached by recording the length traveled by the drill pipe supporting member in a predetermined direction within the mast of the drilling rig, comparing the length traveled with a predetermined length, distance or measurement and producing a signal when the two are equal. This may be a prealarm signal or a final alarm signal. Preferably the signal sounds an alarm and automatically interrupts power to the drill pipe supporting member.

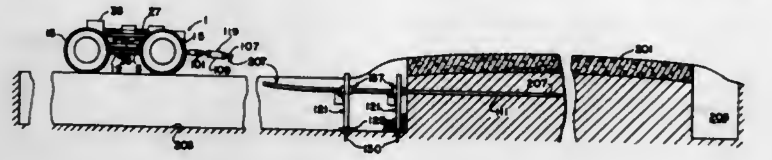
3,651,872
METHOD OF AND APPARATUS FOR BORING HOLES UNDER STREETS, HIGHWAYS OR THE LIKE

Joseph E. Smith, Jr., Sullivan, and A. D. Koen, Esther, both of Mo., assignors to said Smith, by said Koen

Filed July 13, 1970, Ser. No. 54,436

Int. Cl. E21c *11/02, 19/00*

U.S. Cl. 173—24 **8 Claims**



Apparatus for boring a hole generally horizontally through the ground underneath an existing structure such as a highway, street, railroad line, building, etc., operating from above ground level at one side of the structure, involving a vehicle having an engine for its propulsion and for rotating a string of boring rod.

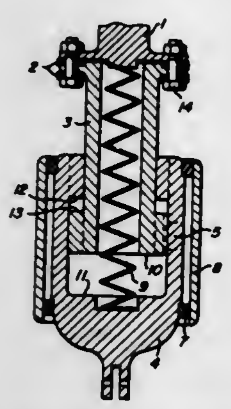
3,651,873
IMPACTING APPARATUS FOR DRIVING CONVERTIBLE TO PULLING

Philipp Uebel; Helmut Heckner, both of Munich, and Gotthilf Schulin, Fellbach, all of Germany, assignors to Wacker-Werke KG, Munich, Germany

Filed Jan. 26, 1970, Ser. No. 5,673

Int. Cl. E02d *7/06*

U.S. Cl. 173—29 **32 Claims**



An apparatus for driving and pulling objects such as poles, planks, boardings, and pipes, in which hammer means reciprocated by actuating means are slidably arranged in a holding body, said holding body being provided with a bottom surface and an axially spaced higher shoulder means while said hammer means has a head portion reciprocable between said bottom surface and said shoulder means, spring means selectively being insertable between said actuating means and said bottom surface for selectively converting the apparatus from a driving device to a pulling device.

3,651,874
PNEUMATICALLY OPERATED IMPACT-ACTION SELF-PROPELLED REVERSIBLE MECHANISM

Boris Vasilievich Sudnishnikov, Kransy prospekt, 54, kv. 59; Alexandr Dmitrievich Kostylev, ulitsa Derzhavina, 19, kv. 44; Konstantin Stepanovich Gurkov, ulitsa Derzhavina, 19, kv. 68; Konstantin Konstantinovich Typitsin, ulitsa Krylova, 3, kv. 37; Vladimir Vasilievich Klimashko, ulitsa Navogodnyaya, 44, kv. 23, and Vladimir Dmitrievich Plavskikh, ulitsa Kamenskaya, 83 "v," kv. 33, all of Novosibirsk, U.S.S.R.

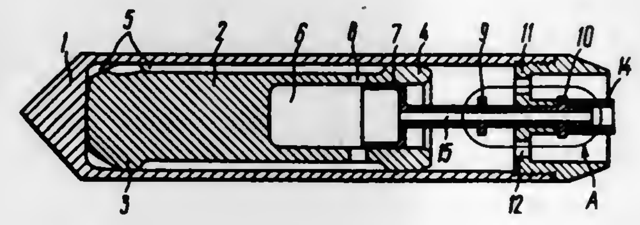
Filed July 8, 1970, Ser. No. 53,216

Claims priority, application U.S.S.R., Feb. 19, 1970, 1399051

Int. Cl. E21b *1/00*

U.S. Cl. 173—91 **3 Claims**

There is disclosed a pneumatically operated impact-action self-propelled reversible mechanism for driving holes in the earth by compacting the soil around the hole being made, comprising a housing having a pointed end and receiving thereinside an impact member delivering successive impacts upon the housing, as this impact member is reciprocated interiorly of this housing in operation of the mechanism under the action of compressed air, the mechanism further including a compressed air supply sleeve connected with an air conduit member and threadedly secured in a nut for axial displacement relative to this nut, when the air conduit member is rotated. According to the invention, the nut, associated with the compressed air supply sleeve, has a plurality of longitudinal oblique slits made therein, these slits defining therebetween a pair of resiliently deformable cantilever members projecting axially beyond the adjacent face end of the nut, the longitudinal axial lines of these cantilever members extending in opposition to the direction of the displacement of the compressed air supply sleeve, when the latter is screwed into the nut, these cantilever members being adapted to engage an abutment of the compressed air supply sleeve, as the latter is screwed into the nut.



3,651,875
ORIENTATION DEVICE

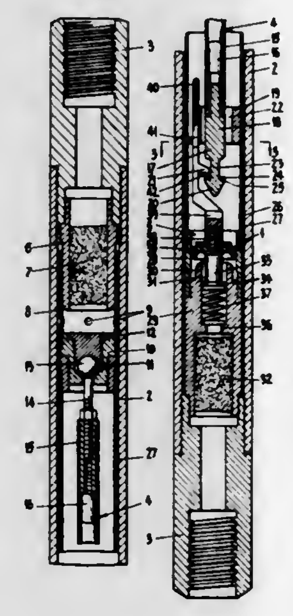
Edwin McInerney, Kalgoorlie, Australia, assignor to Western Mining Corporation Limited, Melbourne, Victoria, Australia

Filed Mar. 25, 1970, Ser. No. 22,603

Claims priority, application Australia, Mar. 28, 1969, 52697/69

Int. Cl. E21b *47/02*

U.S. Cl. 175—45 **5 Claims**



An orientation device to be fitted has part of the lower end of a drill train having a flow passage and a valve movable between two positions, one permitting an open passage and the other closing it. A direction sensitive member is pivotally mounted having an upwardly directed annular shoulder and the valve member has an upwardly directed arm with an extension which engages the valve annular shoulder to hold the valve from its seat.

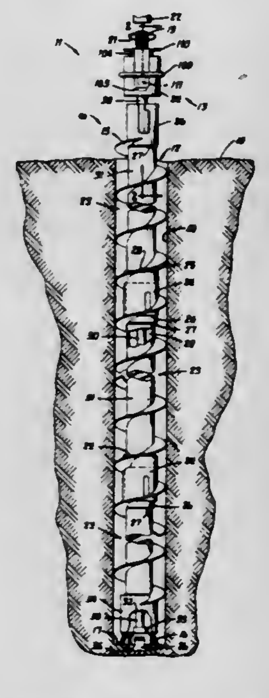
3,651,876
QUICK ACTING DRIVE CAP ASSEMBLY

William P. Henson, Indianapolis, Ind., assignor to Mobile Drilling Company, Inc., Indianapolis, Ind.

Filed June 19, 1970, Ser. No. 47,736

Int. Cl. F21b *17/00*

U.S. Cl. 175—323 **12 Claims**



A drive cap assembly for quick attachment and detachment from the top end of an earth boring hollow auger. The assembly has an outer casing with a hexagonally shaped rod mounted to one end for receiving the auger driver. The opposite casing end slips over the top end of the auger. A latch key is mountable to the hexagonal rod with a plug attached to one end for passing through a casing opening and into a slot on the outside surface of the auger thereby securing the drive cap assembly and auger together. A lock ring fits over the casing and latch key. A center rod driver fits within and is rotated by the casing and is threaded on one end to a shaft passing through the hollow auger.

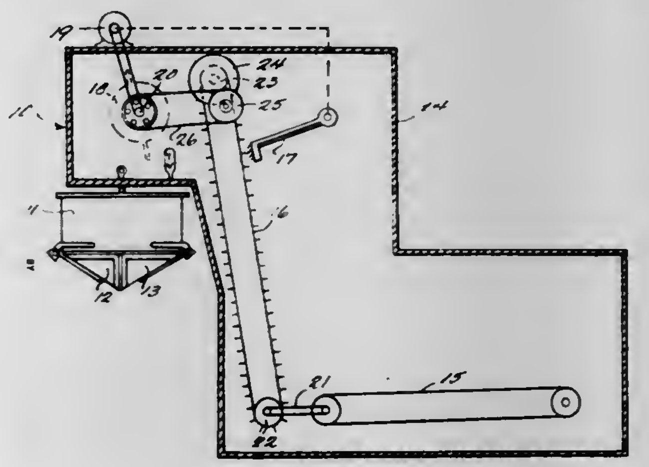
3,651,877
VOLUMETRIC FEEDER BLENDING LINE

Dan S. Wise, and James L. Sosebee, both of Gastonia, N.C., assignors to Fiber Controls Corporation, Gastonia, N.C.

Continuation-in-part of application Ser. No. 61,780, Aug. 6, 1970, now abandoned. This application Aug. 27, 1970, Ser. No. 71,633

Int. Cl. G01g *13/24*

U.S. Cl. 177—114 **9 Claims**



A feeder for a blending line of the type having a weigh pan, an inclined spiked apron conveyor for delivering fiber material to a location above the pan so that the material falls by gravity into the pan, a doffer and Sargent comb for opening the fibers as they move on the apron conveyor and fall off the conveyor respectively and a single electric motor for operating the doffer, comb and apron conveyor and control circuitry for operating a plurality of such feeders in a blending line. To minimize wear on the motor, the control circuitry operates a clutch mechanism for clutching the apron conveyor on and off, while the motor and the doffer and comb operated by it run continuously. The control circuitry is capable of being operated in a weigh mode and in a second volumetric mode in which the pans are kept continuously open and the feeders continually deliver fibers to a blending conveyor moving beneath the pan. When the conveyor is stopped by the opening of a switch operated by the equipment which receives the fibers on the conveyor beneath the weigh pans, the clutch mechanism which clutch on and off the apron conveyors are deactivated so that no further fibers are delivered but the feed motors continue to run. A manually operated switch is shifted when the circuitry is to operate in the volumetric mode so that the conveyor runs continuously and so that a continuous current path is created through the dump valve relays to keep the pans open, thus eliminating the necessity to manually cut off air to the dump valves.

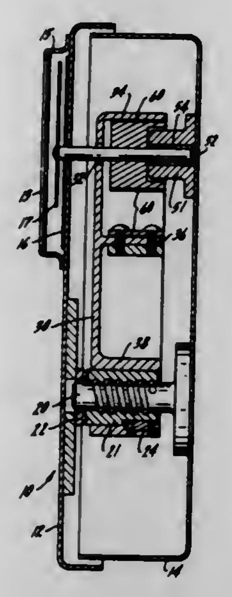
3,651,878
ROLAMITE SCALE CONSTRUCTION

Gordon A. Cooley, Chicago, Ill., assignor to The Borg-Erickson Corporation, Chicago, Ill.

Filed Jan. 8, 1970, Ser. No. 1,414

Int. Cl. G01g *3/08, 21/02, 23/26*

U.S. Cl. 177—230 **20 Claims**



There is disclosed a bathroom scale comprising a base member, a platform member mounted for free vertical movement relative to the base member, a flexible Rolamite band located between the platform member and the base member, transfer means connected to the base member and adapted to transfer a load imposed upon the platform to the roller band wherein the load on the platform causes a movement of the roller band indicative of the weight of the load, and an indicator operably connected to the Rolamite band indicating the weight of the load.

3,651,879
CONVERTIBLE VEHICLE

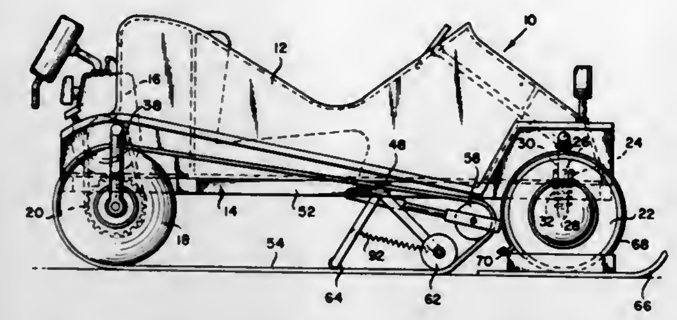
Leon Ray Wilson, Box 943, R.R. 1, South Great Falls, Mont.

Filed May 29, 1969, Ser. No. 828,948

Int. Cl. B62m *27/02;* **B62d** *55/04*

U.S. Cl. 180—5 R **13 Claims**

A motor vehicle designed for use in deep sand as a "dune buggy" but easily adaptable for use in snow by the application of traction belts to the driven rear wheels and skis to the front wheels. Tension wheels and pressure rollers insuring maximum traction surface contact with the snow are mounted on the frame of the vehicle by a single mounting rod or pin such that the entire tension wheel and pressure roller assembly can be removed in one step. The pressure rollers are journaled to independently pivotally mounted rods further insuring more complete traction surface contact.



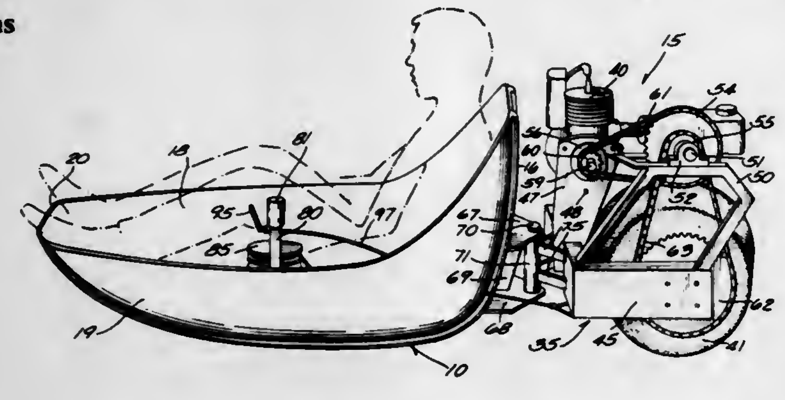
3,651,880
MOTOR DRIVEN PASSENGER VEHICLE

Edwin B. Hatch, Grafton, and Steven Schwengel, Milwaukee, both of Wis., assignors to Brookfield Industries, Inc., Brookfield, Wis.

Filed Nov. 24, 1969, Ser. No. 879,164

Int. Cl. B62m *27/02*

U.S. Cl. 180—6 R **5 Claims**



A passenger carrying vehicle having a passenger carrier that is propelled by a rear power unit. The passenger carrier is pivotally connected to a power unit which is behind the carrier to push it along the desired path of travel. A control linkage enables the passenger to pivot the power unit relative to the carrier for steering the vehicle. The power unit includes an engine connected to drive a single driving wheel which is in engagement with the ground.

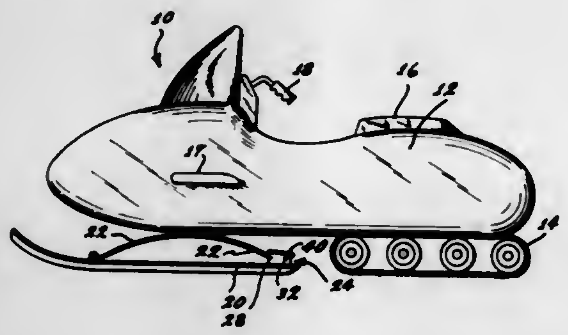
3,651,881
BUMPER GUARD FOR SNOWMOBILES

Leonard S. Dodgson, 220 First Avenue North, Jamestown, N. Dak.

Filed May 8, 1970, Ser. No. 35,791

Int. Cl. B62m *27/02*

U.S. Cl. 180—5 R **3 Claims**



A protective bumper mounted over the rearward end of the skis of a snowmobile to prevent the trailing end of the skis from hitting the bottom of the snowmobile body.

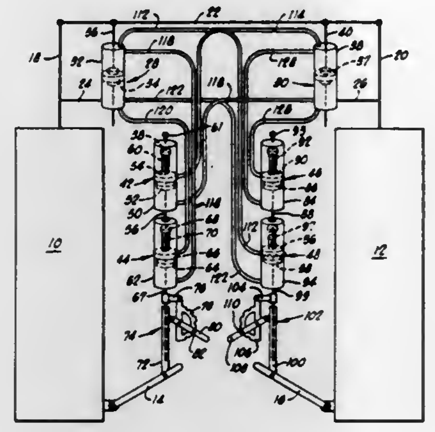
3,651,882
SYSTEM FOR MAINTAINING LATERALLY SPACED VEHICLES LONGITUDINALLY ABREAST

Raymond W. Loesch, 1601 East Oklahoma Street, Enid, Okla.

Filed May 7, 1970, Ser. No. 35,338

Int. Cl. B60d *7/00*

U.S. Cl. 180—14 R **16 Claims**



A system for simultaneously operating a plurality of vehicles from one of the vehicles to automatically maintain them in horizontal alignment abreast of each other, which system includes a linkage interconnecting the steering mechanisms of the vehicles to produce identical turning movement in the vehicles, and a closed hydraulic-mechanical system which is connected to speed control devices on the several vehicles so that any vehicle which advances beyond other vehicles in the array will actuate a hydraulic signal which is used to change the relative speeds of the vehicles to restore horizontal alignment of the several vehicles.

3,651,883
HOLDING CLAMP FOR BATTERY HOUSINGS

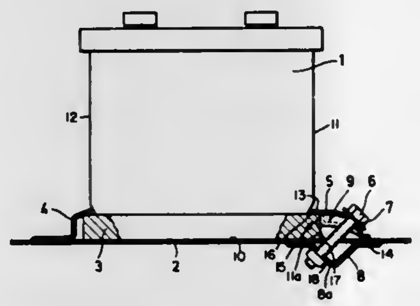
Walter Aldag, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Sept. 26, 1969, Ser. No. 861,411

Claims priority, application Germany, Sept. 27, 1968, P 17 80 551.5

Int. Cl. B60r *18/02*

U.S. Cl. 180—68.5 **6 Claims**



A device for clamping down a battery housing on a base plate having stop bracket and a clamp so that a screw bolt passing through the plate and bracket will secure the housing down on the base plate.

3,651,884
OIL DRIP GUARD

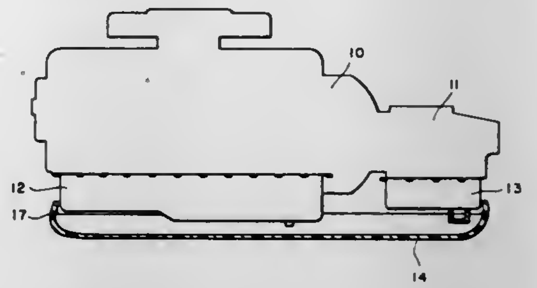
Carl W. Dorries, 1308 Springlake Drive, Dallas, Tex.

Filed Sept. 24, 1969, Ser. No. 860,608

Int. Cl. B62d *25/20*

U.S. Cl. 180—69.1 **5 Claims**

Disclosed is a pan for collecting oil drippage from motor vehicle engines and for protecting the underside of such engines from flying debris such as rocks and the like. The pan is adapted to be mounted under lateral stress and maintained in a state of compressional stress to prevent resonant vibrations.



3,651,885
HYDROSTATIC STEERING SYSTEM FOR VEHICLES

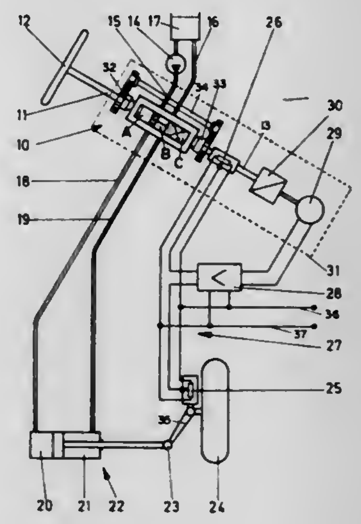
Armin Lang, Friedrichshafen, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed Sept. 15, 1970, Ser. No. 72,321

Claims priority, application Germany, Sept. 18, 1969, P 19 47 205.0

Int. Cl. B62d *5/06*

U.S. Cl. 180—79.2 R **7 Claims**



The wheels of a vehicle are turned by fluid power operating devices when pressurized in response to directionally controlled shift of a control valve from a neutral position. The valve is shifted in opposite directions by manual rotation of a hand wheel and in a followup direction by a reversible motor through a self-locking reduction gear drive. Position sensing devices monitor followup movement of the motor and turning movement of the vehicle wheels to control energization of the motor in response to unbalance of a bridge circuit.

3,651,886
PASSENGER MOTOR VEHICLE

Bela Barenyi, Maichingen, Wurttemberg, Germany, assignor to Daimler-Berg Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

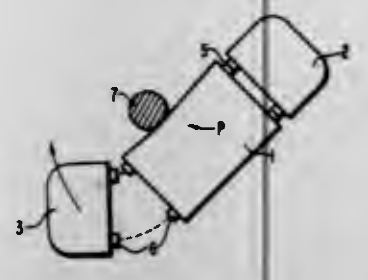
Filed Sept. 5, 1969, Ser. No. 855,508

Claims priority, application Germany, Sept. 7, 1968, P 17 80 375.7

Int. Cl. B60r *19/00*

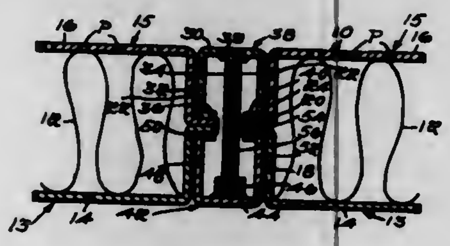
U.S. Cl. 180—91 **7 Claims**

A passenger motor vehicle, in particular of cellular-type construction, in which the junction or connecting places between the center section, itself constructed as rigid as possible, and its end section are so constructed and arranged that intentional, predetermined rupture lines or areas are formed thereby; connecting elements with intentional rupture places may be used for that purpose which become disengaged or disconnected in case of forces of predetermined magnitude acting against the center section of the vehicle in the vehicle transverse direction. The intentional disconnection may be aided or brought about by suitably placed explosive charges, detonated only by transversely directed forces of predetermined magnitude.



3,651,887
ACOUSTICAL ASSEMBLY WITH CONNECTORS HAVING LIPS

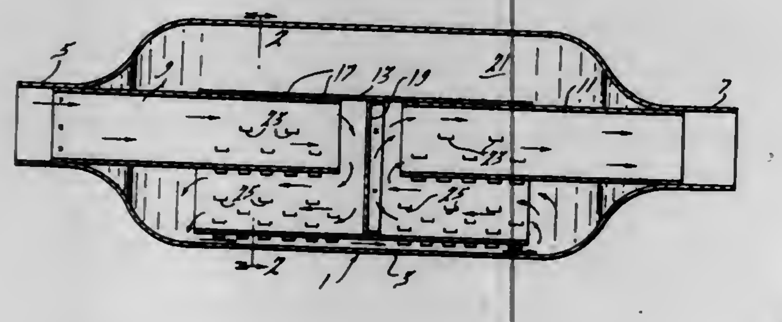
Oliver C. Eckel, P.O. Box 226, Weston, Mass.
Filed Oct. 19, 1970, Ser. No. 81,765
Int. Cl. E04b *1/84*
U.S. Cl. 181—33 G **8 Claims**



An acoustic assembly has sound absorbing panels held in place by U-shaped connectors having oppositely disposed lips that extend parallel with and bear against flanges on the panels. A bolt extends through one connector and into the next connector where it enters a socket. Tightening of the bolt draws the connector lips against the panel flanges thus tightening the assembly.

3,651,888
MULTI-PASS MUFFLER

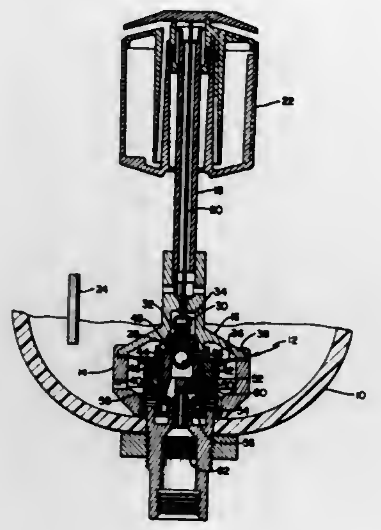
John P. Andres, Jackson, Mich., assignor to Tenneco Inc., Racine, Wis.
Filed July 24, 1970, Ser. No. 58,124
Int. Cl. F01n *1/08, 7/18*
U.S. Cl. 181—53 **5 Claims**



A muffler construction provides a flow path through a tubular shell which has four reversals in direction by means of a novel arrangement of tubular elements and only a single partition.

3,651,889
LIQUID SUPPLY APPARATUS FOR AIR LINES

John J. Humphrey, Denver, Colo., assignor to C. A. Norgren Co., Littleton, Colo.
Filed Feb. 16, 1970, Ser. No. 11,534
Int. Cl. F16n *29/02*
U.S. Cl. 184—55 A **10 Claims**

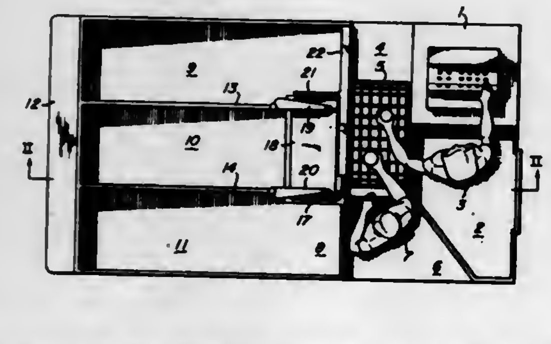


Liquid supply apparatus for air lines and the like, of the type employing float controlled reservoirs, each of which is maintained at a substantially constant level, and supplied from a central source, such as oil under pressure, characterized by a pair of bowl filling valves which operate in backup relationship such that a first valve normally closes flow to the bowl, while a second downstream valve remains open, but in the event the first valve fails to close as normally intended, the second valve becomes operative and closes, thereby preventing overfilling the bowl.

It has particular utility with a throwaway or non-repairable unit which may be economically manufactured and which is also tamper-proof. These features involve a construction in which certain parts are secured together by non-removable interference fits, in lieu of removable threaded fastenings and the like formerly employed. In lieu of a dynamic seal subject to wear, such as an O-ring, a static seal is provided having portions which are flexibly distortable.

3,651,890
DEVICE FOR SELF-SERVICE STORES

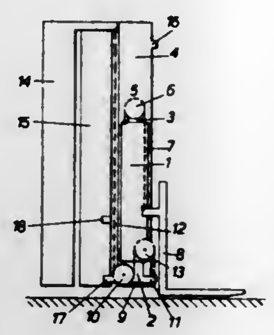
Werner Potrafke, Hufeisenstrasse 6, 432 Hattingen, Germany
Filed Dec. 21, 1970, Ser. No. 99,778
Claims priority, application Germany, Dec. 20, 1969, P 19 64 038.1
Int. Cl. E04h *3/04*
U.S. Cl. 186—1 A **21 Claims**



A device for self-service stores, in which in front of the withdrawal compartments from which the customer withdraws his purchased checked-out goods there is provided a conveyor belt while between the latter and said withdrawal compartments there are provided two pivotal confining plates movable selectively into an open or closed position depending on the respective withdrawal compartment to be charged.

3,651,891
HOIST FOR LIFT TRUCKS

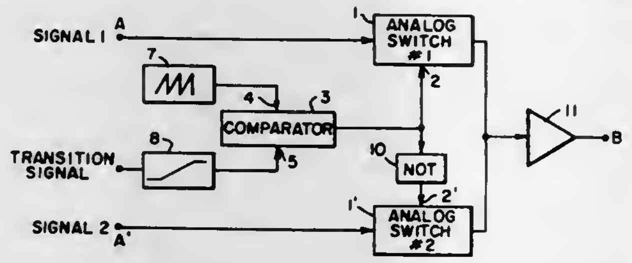
Gennaro Pittaluga, Milan, Italy, assignor to Fiat Soc. per Azioni Azienda OM Stabilimento di Milano, Milan, Italy
Filed Oct. 17, 1969, Ser. No. 867,332
Claims priority, application Italy, Aug. 8, 1969, 20724 A/69
Int. Cl. B66b *9/20*
U.S. Cl. 187—9 **1 Claim**



Hoist of the high free-lift type with three pairs of masts, for lift trucks, comprising a plate carrying forks slidable in the guides of the innermost pair of masts, the latter being slidable in the guides of the pair of movable intermediate masts sliding in turn in the grooves of the pair of fixed masts, a telescopic cylinder with two pistons, namely a smaller and a larger piston, mechanical transmission means adapted to transmit the movements from the cylinder to the plate and thereafter to the movable masts, and abutment means for carrying the pair of intermediate masts along, in which the smaller piston is connected to the plate to obtain, with respect to the cylinder, movements of the plate twice those of said smaller piston, and the larger piston is connected to the pair of fixed masts to obtain movements of the cylinder with respect to the fixed masts three times those of the larger piston with respect to the cylinder itself, the thrust area of the larger piston being practically one and a half times the thrust area of the smaller piston.

3,651,892
SWITCHING TECHNIQUES AND DEVICES

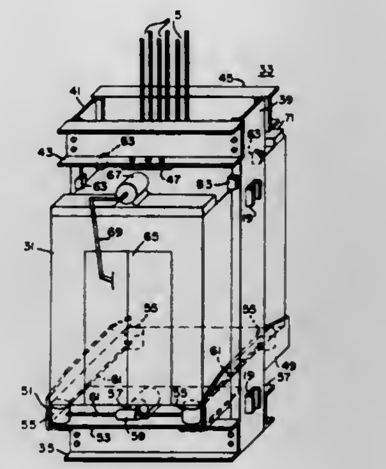
Andras I. Szabo, Export, and Charles L. Winkler, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 24, 1970, Ser. No. 13,660
Int. Cl. H03k *17/26*
U.S. Cl. 187—29 R **15 Claims**



A method and a device for introducing or removing an electrical signal through rapid switching of an analog switch between the on and off conditions with the switch remaining in one condition longer initially, and then progressively less in the one condition and longer in the other until the transfer has been completed. The magnitude of a repetitive waveform is compared with the magnitude of a ramp waveform to generate the control signal which determines the interval that the switch remains in a given condition. By controlling the on and off condition of a second switch in opposition to the first switch and by combining the outputs of the switches, a smooth transition between two control signals is achieved. The method and the device are applied to an elevator speed control system wherein transition is provided between several signal sources.

3,651,893
DUPLEX COUNTERWEIGHTLESS SHUTTLE ELEVATOR SYSTEM

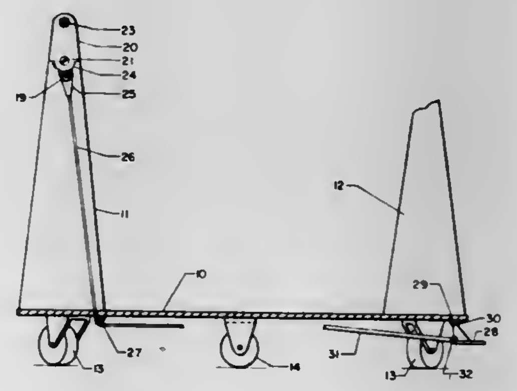
Harry Berkovitz, Glenrock, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 21, 1970, Ser. No. 30,375
Int. Cl. B66b *17/12*
U.S. Cl. 187—94 **7 Claims**



Elevator cars suspended from opposite ends of a traction driven hoist cable counterbalance each other and provide ideal spacing between cars serving two terminal floors such as a main floor and a sky lobby. A leveling device on one or both cars provides for adjustment of the position of the associated car relative to the hoist cable to accommodate for cable stretch and settling of the building so that each car can be brought into exact registry with the adjacent landing. The cars can be arranged to stop at pairs of intermediate floors located equal distances from the two terminal floors and can be further arranged to distribute load in opposite directions from a third terminal located halfway between the first and second terminals. The counterbalanced cars can be combined with a second elevator system, either a conventional system or a counterbalanced system, for sky lobby operation with the counterbalanced car system providing either the shuttle service, the local service or both.

3,651,894
SERVING CART

Nicholas Alfred Auriemma, Miami, Fla., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed June 4, 1970, Ser. No. 43,333
Int. Cl. B62b *5/04*
U.S. Cl. 188—19 **4 Claims**



An improved serving cart having a braking means which is biased to be in a braking position. The brake shoe is maintained in pressure contact with an adjacent wheel via a spring means. It is deactivated when the operator pushes or pulls the cart with one of the two handles provided on an upper portion of the cart. In an alternative arrangement, pedals are provided on a lower portion of the cart which provide a means by which the braking means is activated or deactivated.

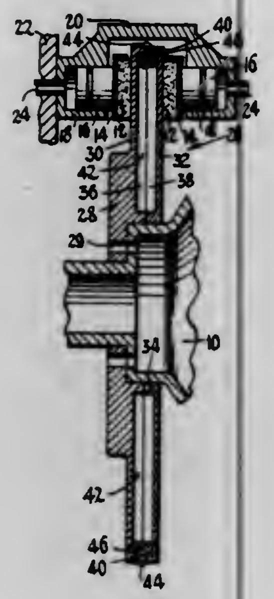
3,651,895
SUPER-COOLED DISK BRAKE

Marshall G. Whitfield, High Ridge Road, Brookfield Center, Conn.

Filed Jan. 5, 1970, Ser. No. 770

Int. Cl. F16d *65/84*

U.S. Cl. 188—71.6 **9 Claims**



A rotary brake comprising a disk adapted to have its opposite sides engaged by brake shoes which are in the form of pads arranged to grip the disk between them in the manner of a caliper. The brake disk has a plurality of closed, radially extending passages in which there are slugs of sodium or a similar metal which has a low melting and vaporization point. When the brake disk becomes heated due to the friction of the braking action, the sodium metal melts and vaporizes, thereby absorbing a great deal of heat. The vaporized metal condenses near or at the central portions of the disk, taking the form of small globules which are then thrown outward by centrifugal force toward the large-diameter peripheral portions so as to be ready again for subsequent vaporization. The vaporizing and condensing action of the sodium removes heat from the larger-diameter peripheral portions of the disk, transferring such heat to the inwardly disposed or small-diameter disk portions, thereby effecting a super cooling of the disk at the areas which are being contacted by the brake shoes.

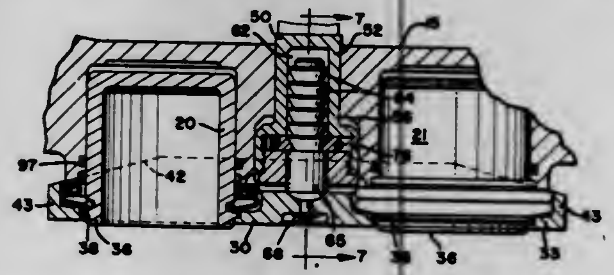
3,651,896
HYDRAULIC DISK BRAKE WITH MECHANICAL ACTUATOR

Chester N. Fannin, Troy, Ohio, assignor to The Dayton Steel Foundry Company, Dayton, Ohio

Filed June 19, 1970, Ser. No. 47,780

Int. Cl. F16d *65/52*

U.S. Cl. 188—71.8 **6 Claims**



A caliper type disk brake includes a mechanical actuator which operates independently of the hydraulic pistons and incorporates a pressure plate which is supported on the pistons and a centrally disposed actuator plunger. The actuator plunger incorporates a mechanical adjuster for taking up slack in the actuator.

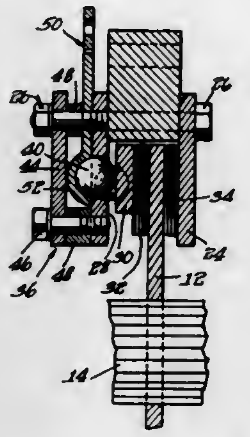
3,651,897
CALIPER TYPE BRAKE STRUCTURE

Emil H. Hahn, St. Joseph, Mich., assignor to Lambert Brake Corporation, St. Joseph, Mich.

Filed May 4, 1970, Ser. No. 34,393

Int. Cl. F16d *55/46*

U.S. Cl. 188—72.2 **7 Claims**



The brake unit as described herein is a caliper disc brake to be mounted in relationship to a driving disc which may be fixed or slideably mounted to a shaft or other driving means, which driving means is capable of imparting rotation to the disc. The caliper disc brake assembly is provided for stopping the rotation of the driving disc by utilizing externally applied actuating or energizing force and automatically applied internal actuating or energizing force.

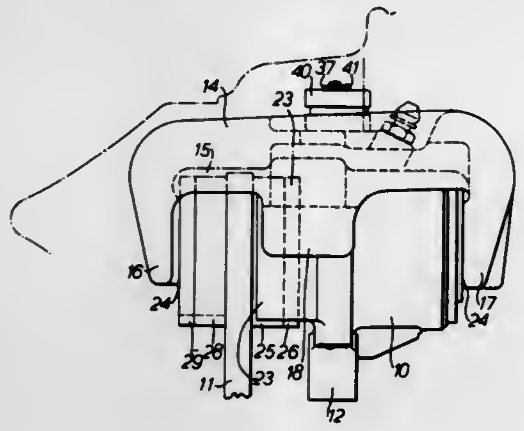
3,651,898
DISC BRAKE CALIPER STRUCTURE

Gordon A. Habgood, Shipston-on-Stour, England, assignor to Girling Limited, Tyseley, Birmingham, England

Filed Oct. 24, 1969, Ser. No. 868,991

Int. Cl. F16d *55/228*

U.S. Cl. 188—72.5 **22 Claims**



In a disc brake of the kind in which friction pad assemblies are urged into engagement with opposite faces of a rotatable disc by operation of an hydraulic actuator which applies one friction pad assembly directly to one face of the disc and other friction pad assembly to the opposite face of the disc through a yoke guided to slide relative to a stationary member mounted adjacent to the disc, the yoke comprises a one piece assembly adapted to fit over the stationary member and a portion of the periphery of the disc. The yoke is provided with a pair of spaced flat parallel guiding surfaces of substantial radial depth for direct operative engagement with complementary flat guiding surfaces on opposite sides of the stationary member, and the guiding surfaces on the yoke, at least at one pair of corresponding ends, lead into opposed bearing surfaces for engagement with complementary shoulders on the stationary member.

3,651,899
BRAKE DEVICE IN TAPE RECORDER

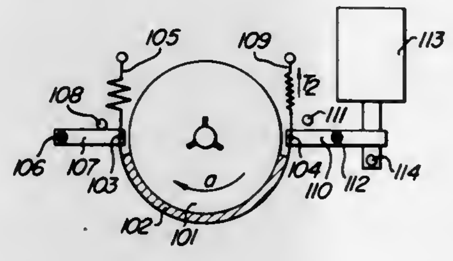
Tetsuji Yoshii, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 31, 1970, Ser. No. 24,219

Claims priority, application Japan, Oct. 7, 1969, 44/80056

Int. Cl. F16d *49/00;* **B60t** *13/04*

U.S. Cl. 188—77 R **2 Claims**



A brake device in a tape recorder which includes a brake band entrained on a braked drum for movement in the direction of the braked drum, whereby one end portion of the brake band engages stop means in accordance with the direction of rotation of the braked drum to thereby provide a slack end portion of the brake band, while the other end portion of the brake band provides a tight portion to which is imparted a spring force having a predetermined characteristic.

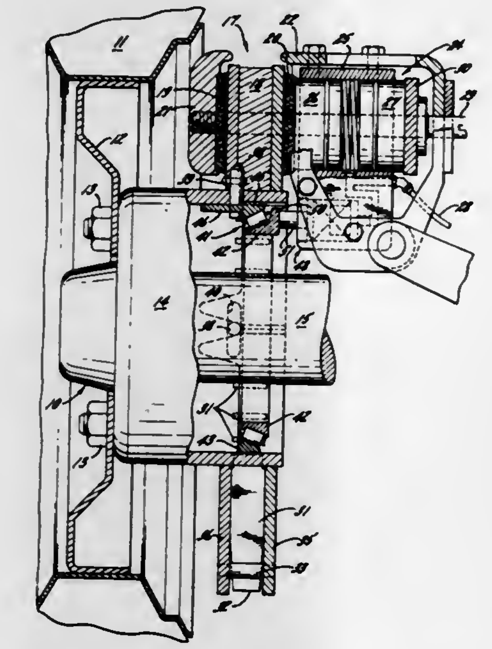
3,651,900
ANTI-SKID BRAKE

Orville A. Feikema, 18844 Wildwood Avenue, Lansing, Ill.

Filed Mar. 16, 1970, Ser. No. 19,770

Int. Cl. B60t *8/16*

U.S. Cl. 188—181 T **6 Claims**



An antiskid brake in which a brake disc is resiliently attached to a vehicle wheel. hen braking torque forces are applied to the disc brake, a deformation in the resilient member and consequent movement of associated parts occurs. This movement controls the amount of frictional braking torque force exerted upon the brake disc in a manner such that the frictional braking torque does not exceed that which may be transmitted by the vehicle wheel to the road surface without excessive wheel slip and the consequent lockup and skid.

3,651,901
INSTALLATION FOR THE BRAKE LOCKING PREVENTION

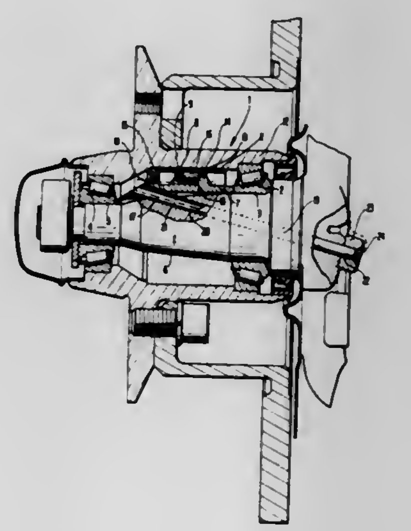
Manfred H. Burckhardt, Alte Winnender Steige, and Paul Schwerdt, Esslingen-Hebensberg, both of Germany, assignors to Daimler-Benz Aktiengesellschaft

Filed Mar. 13, 1970, Ser. No. 19,285

Claims priority, application Germany, Mar. 19, 1969, P 19 13 813.7

Int. Cl. B60t *8/08*

U.S. Cl. 188—181 A **42 Claims**



An installation for preventing the locking of brakes in vehicles, preferably in motor vehicles in which sensing members are provided at the wheels that supply to a common comparator an output signal corresponding to the wheel rotational speed; each sensing member is thereby arranged on the inside of the corresponding wheel mounting, preferably between the inner wheel bearing and outer wheel bearing.

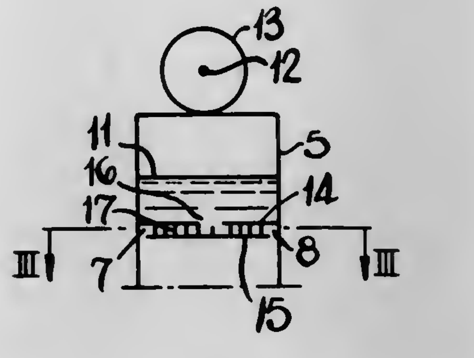
3,651,902
HYDROPNEUMATIC SHOCK ABSORBER

Carl Ullrich Peddinghaus, Obere Lichtenplatzer Str. 276, 56 Wuppertal-Barmen, Germany

Filed Dec. 15, 1969, Ser. No. 885,381

Int. Cl. F16f *9/40*

U.S. Cl. 188—269 **1 Claim**



A hydropneumatic shock absorber having a working cylinder, a piston and a compensating chamber at one end of the working cylinder. The working cylinder and the compensating chamber are interconnected by a pair of pipes arranged so that the two pipe ends forming one pair of pipe ends are disposed at diametrically opposite positions. The diametrically opposite pipe ends communicate with the working cylinder and there is also provided an attachment member for use in mounting the shock absorber in its operative position in such a way that when the shock absorber is installed in a non-vertical orientation the diametrically opposite pipe ends can be arranged so that one of them is at the highest part of the working cylinder.

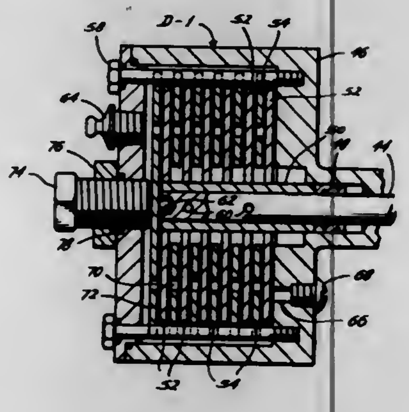
3,651,903
ADJUSTABLE ROTARY DAMPER

Henry G. Butler, Houston, and Irvin B. Weise, Bellaire, both of Tex., assignors to Anderson, Greenwood & Co., Houston, Tex.

Filed Aug. 21, 1969, Ser. No. 852,022

Int. Cl. F16d *57/02*

U.S. Cl. 188—290 **6 Claims**



A rotary damper having rotor and spacer plates with relatively close spacing therebetween and a viscous fluid to provide a fluid coupling between the rotor and stator plates and a combination with the damper connected to damp the movement of the valve member of a swing check valve.

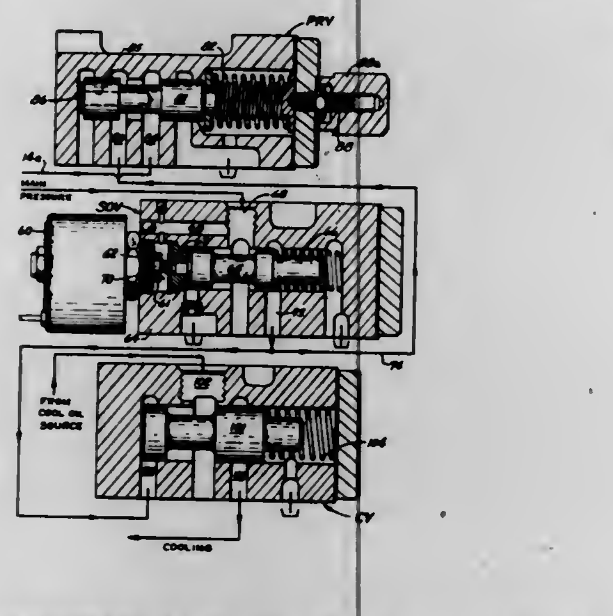
3,651,904
TRANSMISSION WITH SIMULTANEOUSLY ENGAGED CLUTCHES FOR BRAKING

Joseph B. Snoy, and Bradford K. Shull, both of Rockford, Ill., assignors to Twin Disc, Incorporated, Racine, Wis.

Filed June 16, 1970, Ser. No. 46,767

Int. Cl. B60k *29/02*

U.S. Cl. 192—4 A **1 Claim**



A power transmission of the type having interchangeable gear sets connected to hydraulically actuated friction clutches. The clutches are selectively engageable to establish various gear ratios for changing the speed and direction of the vehicle. A brake is provided for the transmission by engaging a pair of these hydraulically actuated clutches at the same time, the two clutches being connected to a common jack shaft through gears of different ratios. The jack shaft is geared directly to the wheels of the vehicle and by engaging both clutches at the same time, the gears have no synchronous ratio except zero r.p.m. Thus, one of the clutches has been engaged and the second clutch is then engaged to cause the braking action, the second clutch slipping until the vehicle stops.

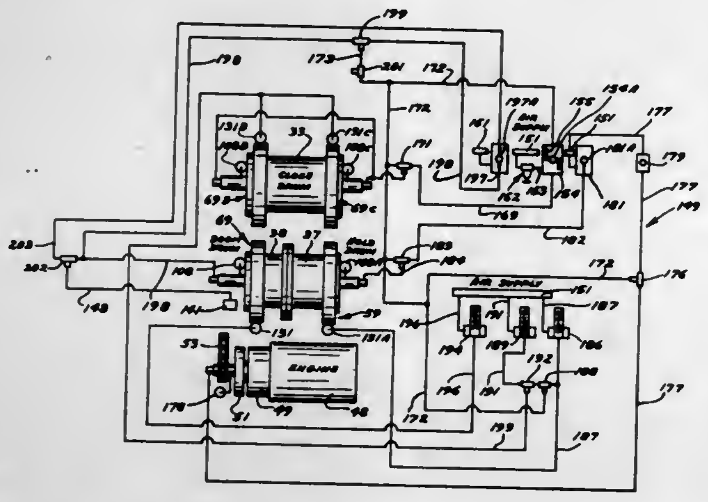
3,651,905
CLUTCH AND BRAKE CONTROLS FOR CLAMSHELL HOIST

Archer W. Brown, St. Paul, Minn., assignor to American Hoist & Derrick Company, St. Paul, Minn.

Filed Jan. 13, 1970, Ser. No. 2,567

Int. Cl. F16d *67/04*

U.S. Cl. 192—17 A **18 Claims**



A material handling machine having a clamshell bucket and a hoist assembly having a closing drum, a holding drum, and a boom drum all connected through a gear train to a power source. The holding drum and boom drum are rotatably mounted on a common shaft. Separate clutch and brake units associated with each of the drums have coordinated controls so that the holding line and closing line have substantially the same amount of movement during the lowering and the raising of the bucket.

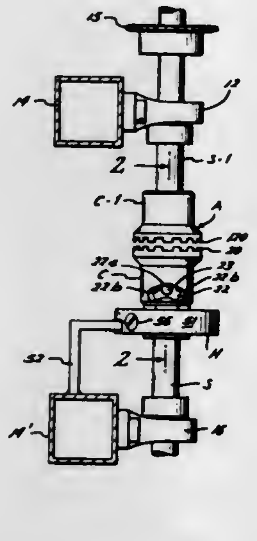
3,651,906
AUTOMATIC MECHANICAL CLUTCH

Damon T. Slator, and Archie R. Wilson, both of Houston, Tex., assignors to Bowen Tools, Inc.

Filed Apr. 2, 1970, Ser. No. 25,216

Int. Cl. F16d *43/00*

U.S. Cl. 192—35 **7 Claims**



A new and improved automatic mechanical clutch adapted to releasably interconnect two shafts upon a rotation of one of the shafts, and to disconnect such shafts when the rotation of such shaft is discontinued.

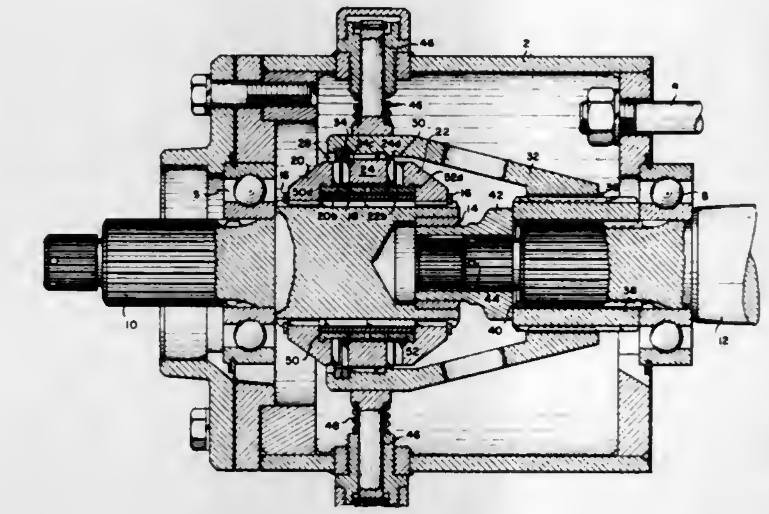
3,651,907
OVERRUNNING CLUTCH FOR TRANSFER CASE TRANSMISSION

Albert F. Myers, Sr., Warren, Mich., assignor to Boise Cascade Corporation, Boise, Idaho

Filed Aug. 3, 1970, Ser. No. 60,386

Int. Cl. F16d *41/00, 11/04, 23/08*

U.S. Cl. 192—43 **12 Claims**



A reversible overrunning clutch adapted for use in a transfer case transmission, characterized by the provision of holdout ring means for maintaining the clutch in a disengaged condition as long as a driven shaft has a speed of rotation greater than that of a driving shaft. A central drive member is axially shiftable between two alternate clutch-engaged positions as a function of the direction of rotation of the driving shaft. The holdout ring means include a pair of colinearly arranged rings rotatably mounted on opposite sides of the central drive member, respectively, said rings having lug portions that extend axially between radial projections on the inner periphery of the central drive member. Stepped portions on the lugs define lands that are adapted to engage the radial projections to retain the drive member in the disengaged condition.

3,651,908
SPRAG CLUTCHES

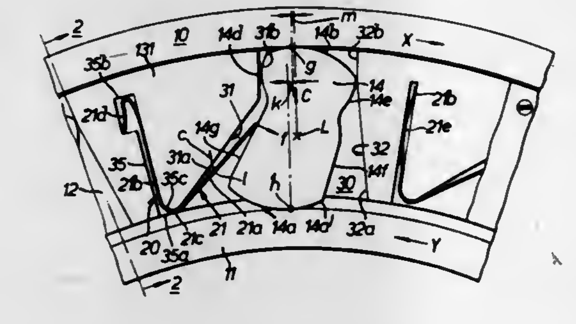
Benjamin D. Oldfield, Cheadle Hulme, England, assignor to Renold Limited, Wythenshawe, Manchester, England

Filed June 1, 1970, Ser. No. 42,433

Claims priority, application Great Britain, June 6, 1969, 28,832/69

Int. Cl. F16d *41/07*

U.S. Cl. 192—45.1 **27 Claims**



A sprag clutch in which the forces on the sprags during outer race over running give rise to only a small but positive rubbing load between the sprags and the inner race at all outer race over running speeds within a designed limit.

3,651,909
FRICTION DISC CLUTCH OR BRAKE

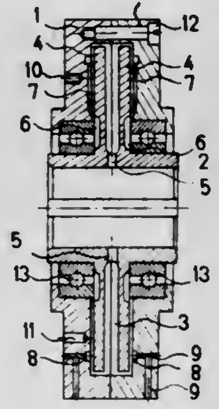
Irakli Zautaszwili, Poznan, Poland, assignor to Zaklady Przemyslu Metalowego H. Cegielski, Posnan, Poland

Filed Oct. 16, 1969, Ser. No. 867,039

Claims priority, application Poland, Oct. 19, 1968, P.129633

Int. Cl. F16d *25/04*

U.S. Cl. 192—88 A **2 Claims**



A friction disc clutch or brake has axially spaced friction discs within a hollow body, the space between the discs providing a pressure chamber to which are connected fluid inlet and outlet passages: the outlet passages have a greater resistance to flow than the inlet passages. Specifically, the outlet passage includes an annular space between the outer periphery of each of the discs and the adjacent interior wall of the hollow body. In a modification, there is not outflow, but only an inlet passage.

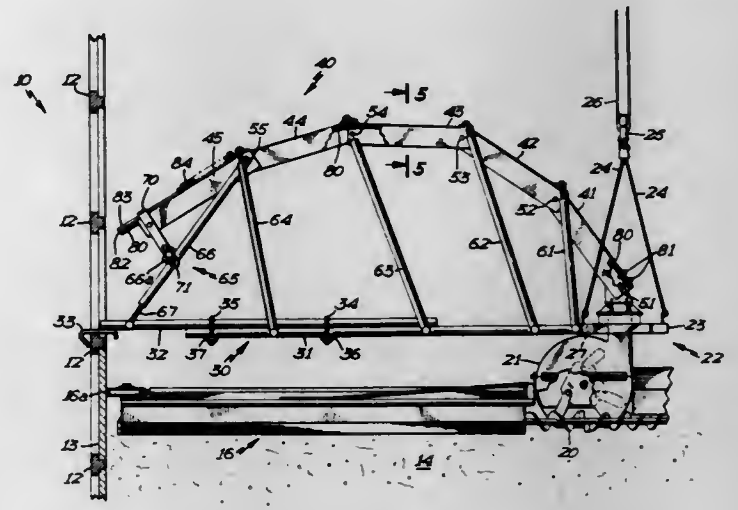
3,651,910
ADJUSTABLE DISCHARGE MEANS

Floyd E. Buschbom, Long Lake, Minn., assignor to Van Dale Corporation, Long Lake, Minn.

Original application Jan. 28, 1969, Ser. No. 794,607, now Patent No. 3,539,059. Divided and this application Apr. 3, 1970, Ser. No. 25,355

Int. Cl. B65g *11/12, 11/14, 11/16*

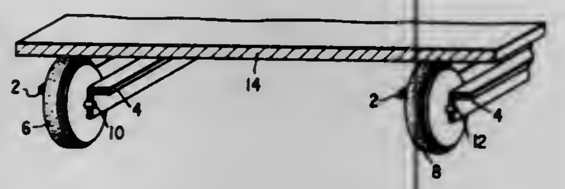
U.S. Cl. 193—17 **19 Claims**



A surface or top silo unloader of the type having a pair of augers for gathering material to the center of the silo and delivering it to an impeller which discharges the material from the silo. The discharge chute is curved in a vertical plane and has one end connected to the impeller for guiding the material discharged thereby and directing it out through an opening in the wall. A unique linkage means automatically adjusts the curvature of the discharge chute to maintain a substantially constant curvature therein as the unloader moves downwardly in the silo a substantial distance to substantially reduce the number of times that it is necessary to climb the silo and reposition the remote end of the discharge chute. An optional liner for the discharge chute is rigidly attached to the chute at the end adjacent the impeller and is resiliently connected to the chute at the remote end thereof whereby the liner will closely follow the contour of the chute without buckling, as the curvature of the chute is varied to protect the chute from wear and to provide a smooth continuous surface on the interior of the chute.

3,651,911
GRAVITY CONVEYOR WITH ROLLERS HAVING ELASTOMERIC TIRES OF HIGH HYSTERESIS MATERIALS

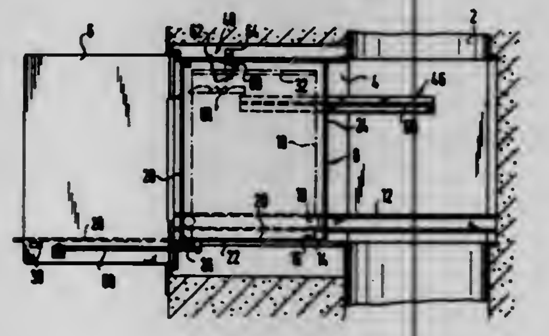
Andrew T. Kornylak, 400 Heaton Street, Hamilton, Ohio
Filed Feb. 16, 1970, Ser. No. 11,483
Int. Cl. B65g *13/00*
U.S. Cl. 193—35 **6 Claims**



A gravity conveyor comprising spaced parallel tracks mounting a series of rollers having tires of elastomeric material. The rollers comprise a rigid hub on which tires of polyurethane are mounted. The cross-sectional shape of the tires have annular zones of increasing area from the periphery toward the base to provide deformation of selected masses of elastomer under variable loaded conditions.

3,651,912
APPARATUS TO RELEASE GARBAGE-FILLED RECEPTACLES DOWN A SHAFT

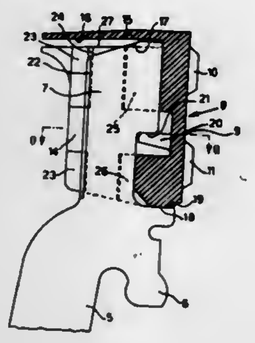
Otto Rohner, Vaduz, Liechtenstein, assignor to Mideco Mediterranean Industrial Development Establishment, Vaduz, Liechtenstein
Filed Mar. 23, 1970, Ser. No. 22,055
Claims priority, application Switzerland, Mar. 21, 1969, 4352/69
Int. Cl. G07f *1/06*
U.S. Cl. 194—4 R **7 Claims**



An apparatus to release garbage-filled receptacles down a garbage shaft provided with a door which includes an infeed opening within which are positioned screw devices to cooperate with a receptacle when the latter is placed in the opening. When the receptacle is correctly positioned for release down the shaft, the sensor devices are actuated and as a result the releasing procedure is free to occur.

3,651,913
TYPE BAR HEAD FOR TYPEWRITERS HAVING AN INTERCHANGEABLE TYPE BLOCK

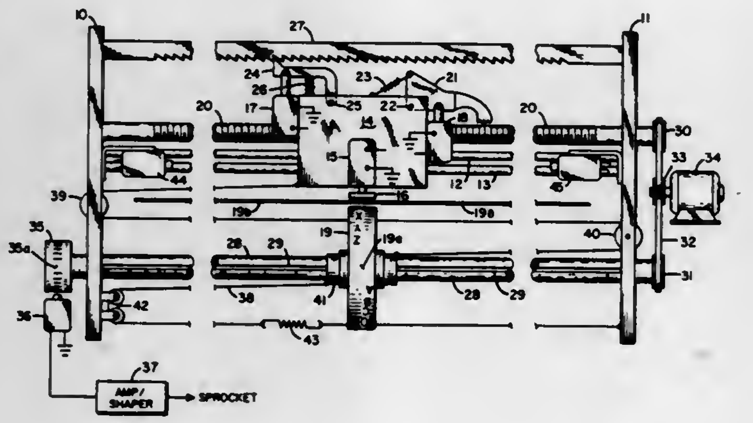
Walter Albrile, Torino, Italy, assignor to Ingo C. Olivetti & C., S.p.A., Torino, Italy
Filed July 22, 1969, Ser. No. 843,571
Claims priority, application Italy, July 22, 1968, 52544 A/68
Int. Cl. B41j *1/02*
U.S. Cl. 197—36 **3 Claims**



A type bar head for typewriters is provided with an interchangeable typeblock formed in a single piece of flexible plastic material covered with a deposit of metal. The type block is provided with a pair of flanges having a pair of wedge shaped projections engaging two chamfered edges of the type bar to block the type block in a direction perpendicular to the printing surface and with a resilient tongue between the flanges to lock the type block in a direction parallel to the printing surface.

3,651,914
ASYNCHRONOUS PRINTER

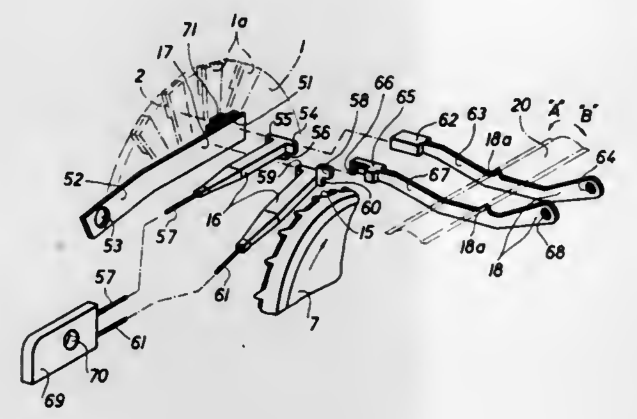
Robert A. Locke, Lansdale, Pa., assignor to Sperry Rand Corporation, New York, N.Y.
Continuation of application Ser. No. 782,319, Dec. 9, 1968, now abandoned. This application Jan. 22, 1971, Ser. No. 108,951
Int. Cl. B41j *1/22*
U.S. Cl. 197—49 **3 Claims**



An asynchronous printer mechanism is described. The printer mechanism includes a rotating type wheel which has its characters arranged to lie along a helical path. The wheel is rotated continuously about the axis of the helical path. A drive mechanism which is coupled to the wheel is operable upon receipt of a data character to be printed to step the wheel along a print line one column at a time. A rack and pawl mechanism is added to hold the print wheel at its last columnar printing position until the next character to be printed is received.

3,651,915
PRINTING MECHANISM FOR ELECTRICALLY OPERATED OFFICE MACHINES

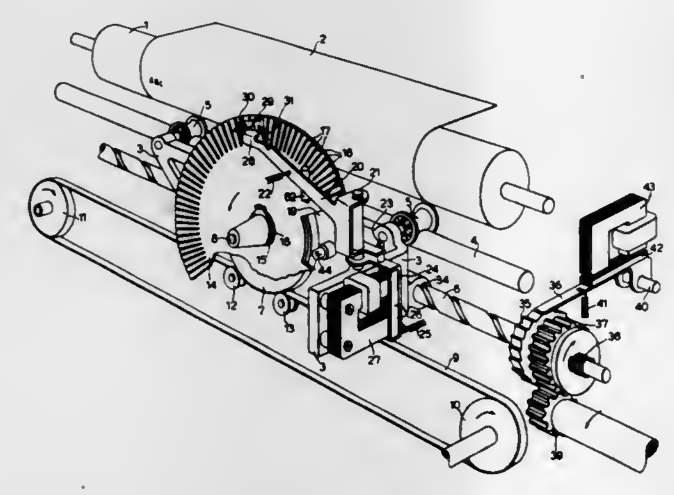
Dieter Folkens, Wilhelmshaven, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany
Filed Nov. 6, 1969, Ser. No. 874,602
Claims priority, application Germany, Nov. 7, 1968, P 18 07 387.5
Int. Cl. B41j *1/32*
U.S. Cl. 197—53 **10 Claims**



A printing arrangement for use with typewriters in which a continuously rotating type disc carries indicia on spring strip members radially arranged about the type disc. A driving shaft rotates the type disc continuously as well as a cam. Selecting hammers are provided in the proximity of the cam and strike the strip members selectively in accordance with the actuation of levers set into position with solenoids. The printing action takes place on the fly while the type disc is in continuous rotation.

3,651,916
PRINTING DEVICE WITH INTERCHANGEABLE PRINTING MEMBERS

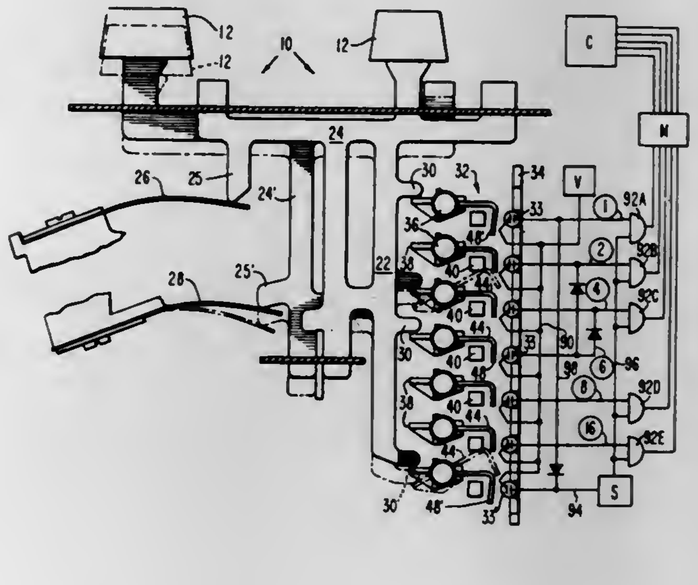
Raffaele Becchi, Ivrea, Italy, assignor to Ing C. Olivetti C & C., S.p.A., Torino, Italy
Filed Jan. 24, 1969, Ser. No. 793,810
Claims priority, application Italy, Feb. 29, 1968, 50314-A/68
Int. Cl. B41j *1/26, 1/34*
U.S. Cl. 197—54 **4 Claims**



A printing device comprising a continuously rotating disc having a plurality of flexible type carrying segments and a hammer for causing individual segments to move into contact with a paper on a platen. Control means are provided for actuating the hammer at the proper instant relative to the constantly rotating disc so that the preselected character is printed.

3,651,917
KEYBOARD MECHANISM AND ASSOCIATED CODE CONVERTING CIRCUITRY

Nicholas Kondur, Jr., Plymouth Township, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed May 12, 1969, Ser. No. 823,843
Int. Cl. B41j *5/08*
U.S. Cl. 197—98 **14 Claims**

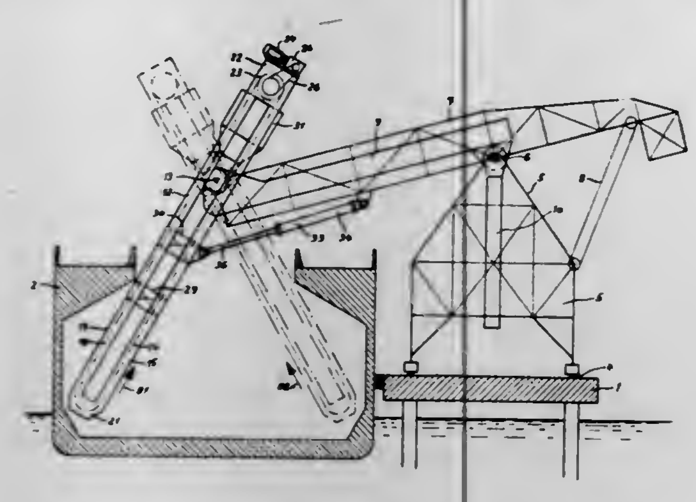


This invention relates generally to code conversion and more particularly to the production of electrical signals from a keyboard, the keys of which are operatively connected to one or more individual current control devices, such as reed switches, whose activation to conducting or nonconducting operating conditions is determined by the presence or absence of an influencing magnetic field. The disclosure illustrates a compact assembly of dry reed switches and associated magnets and magnetic shields or shunts, each shunt normally being interposed between its associated magnet and switch and movable to a withdrawn position by activating a key of the keyboard. Means is provided for electrically strobing the reed switches and for performing this operation only after assurance that all reed switches are stabilized in their prescribed code positions as the result of the actuation of a selected key. Means is also provided for substantially lessening the number of switch closures necessary for converting the keyboard operation to electrical signals in binary code form. As a result of the mounting arrangement of the magnetic transducing elements an efficient utilization of the field shunting operation is obtained and an improved key touch is achieved.

3,651,918
TROUGH CHAIN CONVEYOR

Rene Herzog, Niederuzwil, Switzerland, assignor to Gebrueder Buehler AG, Uzwil, Switzerland
Filed Apr. 14, 1970, Ser. No. 28,480
Claims priority, application Switzerland, Apr. 15, 1969, 5654/69
Int. Cl. B65g *21/12, 65/06*
U.S. Cl. 198—11 **6 Claims**

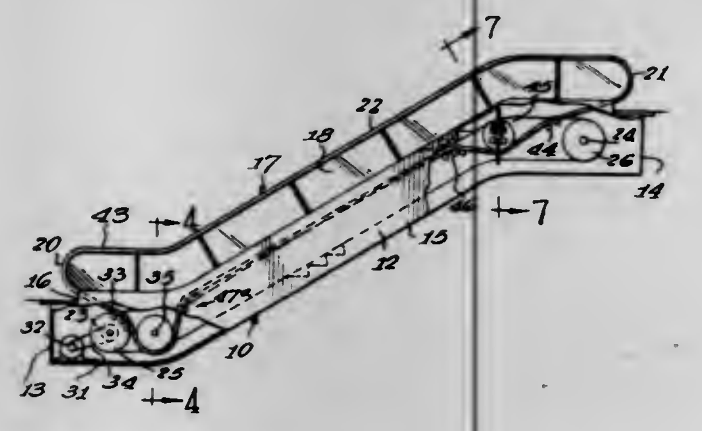
A trough chain conveyor for unloading, from the top, vessels such as ships, barges and the like is pivotally supported on a crane with means for arranging the conveyor at a plurality of angles to the vertical. The material is conveyed upwardly through troughs to the upper end of the conveyor and then is unloaded into a discharge container supported on the conveyor. Another conveyor is located on the crane for receiving the unloaded material and completing the unloading operation. The trough chain conveyor contains a pair of



laterally spaced endless chain strands reversibly movable through troughs for unloading the material.

3,651,919
DRIVEN HANDRAIL MEANS FOR ESCALATORS

Kurt Vollmer, Hamburg, Germany, assignor to Rheinstahl Eggers-Kehrhahn GmbH
Filed May 11, 1970, Ser. No. 36,230
Int. Cl. B66b *9/12*
U.S. Cl. 198—16 R **9 Claims**

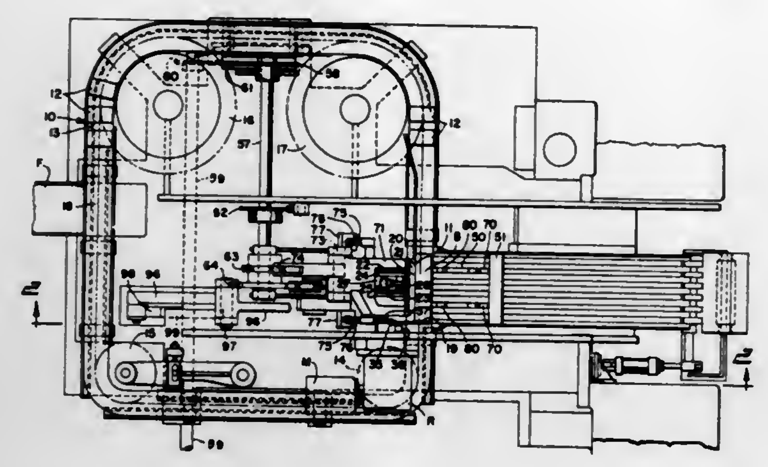


An escalator having transparent balustrades and driven handrail means in which a handrail shaft is immediately adjacent the shaft which carries the driven sprockets for the step chains and is provided with drive sprockets that are directly engaged by the step chains so as to be driven by the latter. Handrails are guided beneath sheaves that are fixedly mounted on the drive sprockets, and guide roller sets support the handrails and maintain them in driving engagement with the bottoms of the sheaves. In an area remote from the handrail shaft are handrail tensioning means including a self-adjusting tensioning sheave mounting.

3,651,920
PRESS FEED

Walter J. Grombka, and Lloyd B. Lyon, both of Tiffin, Ohio, assignors to The National Machinery Company, Tiffin, Ohio
Filed Oct. 20, 1969, Ser. No. 867,736
Int. Cl. B65g *47/00, 47/42*
U.S. Cl. 198—21 **9 Claims**

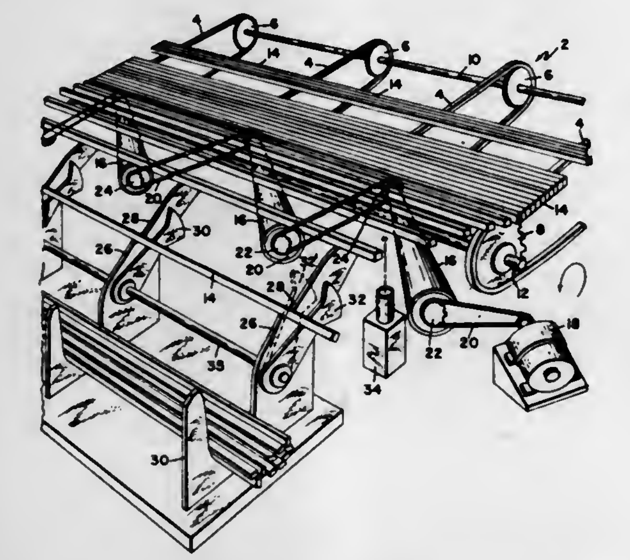
A feeder for delivering blanks from a heating station to a loading station of a transfer for a forging machine at a rate which corresponds to a desired feed rate for the machine. The feeder includes a loop conveyor to deliver heated blanks to a conveyor discharge station on the conveyor. A second conveyor extends from the conveyor discharge station to the loading station of the transfer. A push rod is provided at the conveyor discharge station to move the blank to a lifter mechanism which lifts the blank to a position on the second



conveyor. A pusher is movable along the second conveyor from a fully retracted position to push the lifted blank along the second conveyor to the transfer loading station.

3,651,921
BAR SEPARATOR

William J. Hill, Holden, Mass., assignor to Morgan Construction Company, Worcester, Mass.
Filed June 17, 1970, Ser. No. 46,969
Int. Cl. B65g *47/26*
U.S. Cl. 198—34 **11 Claims**



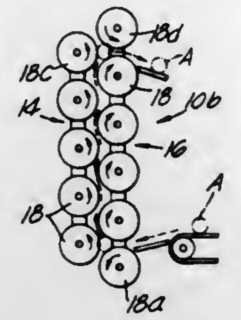
A conveyor for feeding a succession of side by side elongated elements laterally to a group of angularly disposed rotating tapered rollers which receive the elements and accelerate them to open gaps or spaces therebetween while maintaining the elements in parallelism.

3,651,922
LIVE ROLLER CONVEYOR FOR DISCRETE ARTICLES SUCH AS FRUIT

John M. Ross, Upland, and Warren V. White, Ontario, both of Calif., assignors to Sunkist Growers, Inc., Los Angeles, Calif.
Filed Oct. 10, 1969, Ser. No. 866,149
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 **18 Claims**

A live roller conveyor for discrete articles of varying size and shape, such as fruit, has two sets of laterally spaced resiliently compliant or spongy feed rollers which are arranged and staggered in uniform spaced relation to define an intervening essentially continuous article passage of generally serpentine configuration, the rollers being driven in rotary

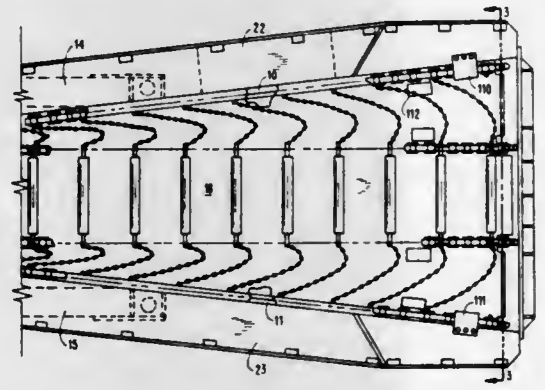
directions to feed the articles in one direction through the passage. The conveyor rollers may be used to lower articles from a high level to a low level or to raise the articles from a



low level. The conveyor rollers may also be combined with heating means and blower means to function as a dryer for washed articles.

3,651,923
DISCRETE MATERIAL HANDLING APPARATUS

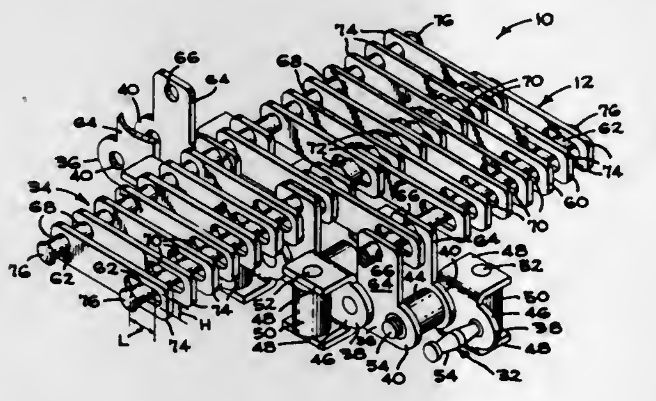
Charles M. Anderson, Paris, and Harry G. Boling, Millersburg, both of Ky., assignors to W. R. Corporation, Millersburg, Ky.
Filed Jan. 18, 1971, Ser. No. 107,314
Int. Cl. B65g *19/10*
U.S. Cl. 198—168 **8 Claims**



Apparatus for handling large batch loadings of discrete material and for conveying the same to a discharge station embodies a conveyor having cooperating rigid and flexible flights simultaneously moving the material to the discharge station and while agitating the same.

3,651,924
DUAL BEND CONVEYOR

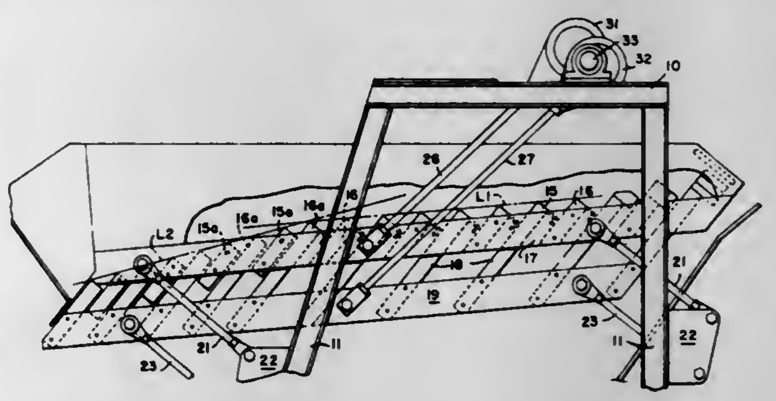
Ronald F. Homeier, Plainfield, and Larry E. Richardson, Indianapolis, both of Ind., assignors to FMC Corporation, San Jose, Calif.
Filed June 15, 1970, Ser. No. 46,368
Int. Cl. B65g *15/00, 17/00*
U.S. Cl. 198—189 **6 Claims**



A conveyor capable of bending in vertical and horizontal planes having a central guide and drive chain capable of being driven in two planes and a continuous horizontal carrying surface comprised of multiple load supporting leaves on transverse rods carried by links of the drive chain for relative telescoping motion when the conveyor is bent in horizontal or vertical planes.

3,651,925
DUAL SHUFFLE FEED

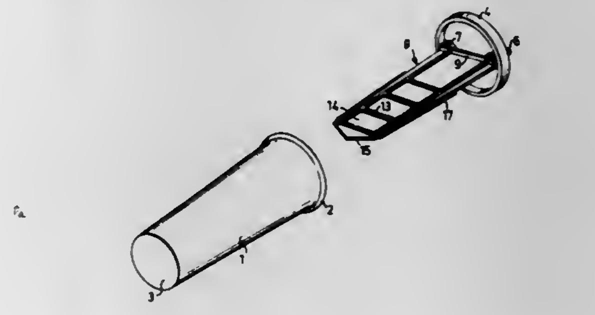
Chester Green, San Jose, Calif., assignor to Genevieve I. Hanscom, Saratoga, Calif. and Genevieve I. Hanscom, Robert Magnuson, Lois J. Thomson, as Trustees of the Estate of Roy M. Magnuson, part interest to each
Filed Oct. 30, 1969, Ser. No. 872,698
Int. Cl. B65g *25/04*
U.S. Cl. 198—218 **3 Claims**



This shuffle feed mechanism is a two-part shuffle feed mechanism wherein the portion of the shuffle feed bed adjacent to the feed end is disposed at a steeper working angle to the horizontal than the last portion of the shuffle feed at the discharge end. This allows a desirable angle for the processing of an article on the shuffle feed mechanism adjacent the discharge end, for example, sorting or splitting in half, and also provides a desirable angle of operation on the product to obtain a single line or row of the products in the valleys of the shuffle feed mechanism.

3,651,926
TRANSPORT PACKAGE FOR BACTERIOLOGICAL SPECIMENS

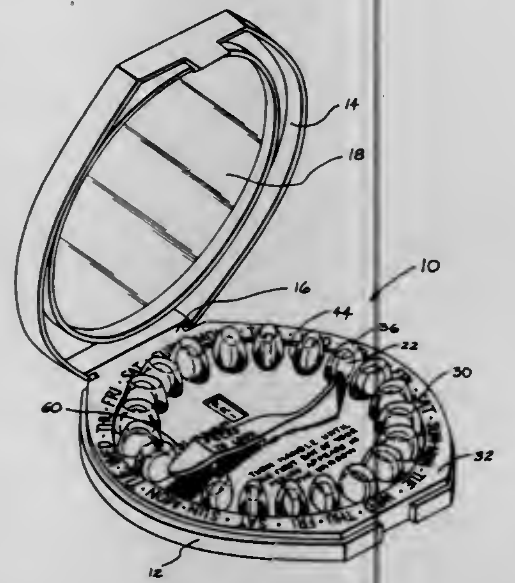
Royal Albert Elfast, Jr., Turkosgatan 16, Vastra Frolunda, Sweden
Filed Oct. 6, 1969, Ser. No. 863,789
Claims priority, application Sweden, Oct. 17, 1968, 14036/68
Int. Cl. A45c *11/00*
U.S. Cl. 206—1 R **4 Claims**



The invention relates to a transport package for bacteriological specimens comprising in combination a transparent vessel in the form of a truncated cone and a tight-fitting twistable lid, an elongated supporting means adapted for carrying substrate being attached to the lid and twistable therewith, the longitudinal edges of the supporting means being provided with wiping members for wiping the inner wall of the vessel when the lid is twisted.

3,651,927
TABLET DISPENSER

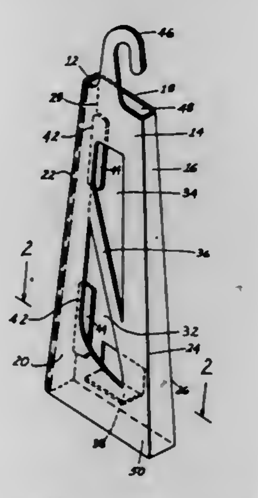
James E. Richardson, Weston, and Lawrence M. Sherman, Westport, both of Conn., assignors to Cambridge Research and Development Group, Westport, Conn.
Filed Oct. 21, 1969, Ser. No. 868,173
Int. Cl. B65d *83/04*
U.S. Cl. 206—42 **5 Claims**



A dispenser for solid dosage form pharmaceutical preparations which are administered on a regular chronologic schedule. Typically, the dispenser is used for the storage and dispensing of oral contraceptive drugs. The dispenser comprises a base disk having a plurality of circumferentially spaced tablet dispenser apertures, an intermediate table disk, having a corresponding plurality of frangible tablet receptacles, and an overlying locator disk. The locator disk also has a corresponding plurality of apertures and, when the three disks are assembled in superposed, operative relation, each tablet receptacle extends upwardly through one of the apertures in the locator disk. Each tablet is oriented in a vertical position within its own tablet receptacle. Appropriate chronologic indicia are positioned on the base disk to permit alignment of the tablet and locator disks to the particular menstrual cycle of the user. Locking means are provided to secure the tablet and locator disks in the desired orientation and superposed relation with respect to the base disk.

3,651,928
DISPLAY CONTAINER

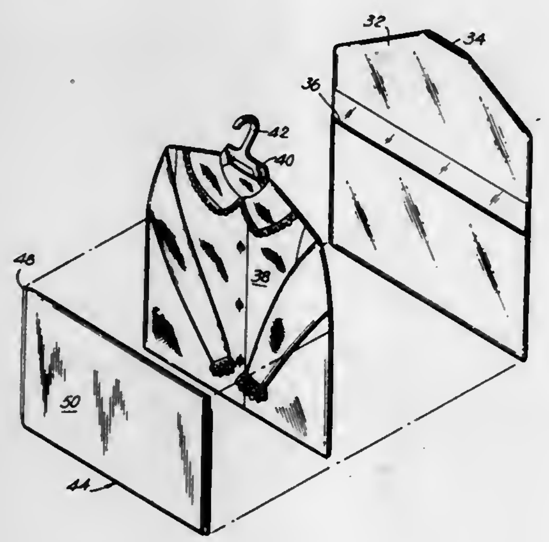
Irving Weisman, Marblehead, Mass., assignor to Interstate Container Corporation, New York, N.Y.
Filed Jan. 21, 1970, Ser. No. 3,532
Int. Cl. B65d *5/50, 25/54*
U.S. Cl. 206—45.14 **9 Claims**



The invention comprises a container for storing and displaying goods, such as a pleated skirt, comprising an open-ended, four walled container having a window area through which the goods may be seen, a hanger part extending beyond the top thereof, and a flap cut out from one of the walls and adapted to prevent the goods from falling through the open-ended bottom of the container.

3,651,929
ARTICLE AND CONTAINER ASSEMBLY

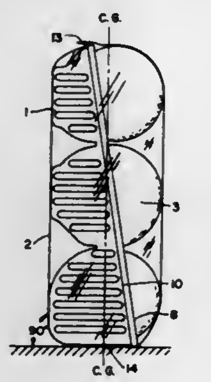
David Stoll, 1199 Park Avenue, New York, N.Y.
Filed Feb. 26, 1970, Ser. No. 14,600
Int. Cl. B65d *65/16*
U.S. Cl. 206—45.33 **8 Claims**



An article and container assembly designed as a retail sales item which, after purchase, enables the article to be situated within a container. The item which is designed for retail sales includes an outer enclosure within which is located any desired article and a container for receiving the article. After this item is purchased the article and the container can be removed from the outer enclosure so that the article can be placed within the container. The container may be gift wrapped so that in this way it is possible to purchase as one assembly both an article and a gift-wrapped container to receive the article.

3,651,930
STAND-UP DISPLAY TRAY AND PACKAGE USING SAME

Kenneth W. Artz, Mohnton, Pa., assignor to W. R. Grace & Co., Duncan, S.C.
Filed June 17, 1970, Ser. No. 46,955
Int. Cl. B65d *65/16*
U.S. Cl. 206—45.33 **4 Claims**



A package employing a stand-up tray provides a retail shelf display with the largest surface of the package facing the prospective buyer. In this upright position maximum label space or viewing of the package contents is available. The top edges of the sidewalls which define the tray cavity opening are inclined from a taller end wall to a shorter end wall rather than being perpendicular to the end walls. In its vertical position, the tray rests on the taller end wall which is perpendicular to all other walls and edges except the inclined sidewall edges. As a result, the tray cavity's opening is flared for compact nesting of trays before filling while giving a flat supporting surface for the upright tray.

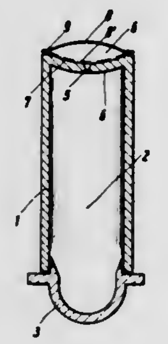
3,651,931
DISPENSING PACKAGE FOR TWO-PART HAIR-TREATING COMPOSITIONS

Du Yung Hsiung, Park Forest, Ill., assignor to The Gillette Company, Boston, Mass.
Filed Oct. 28, 1969, Ser. No. 871,941
Int. Cl. B65d *81/32*
U.S. Cl. 206—47 A **8 Claims**

A package containing a two-part hair or skin treating composition, the parts of which are intended to be mixed immediately before or during dispensing from the package, one part containing hydrogen peroxide and a buffer providing a pH from 2.5 to 6.5, the other part containing alkaline material, the relative amount of acid buffer and alkaline material being such that the pH of the final composition is from 7 to 12 immediately after mixing.

3,651,932
DUPLEX CAPSULE FOR DENTAL FILLING MATERIAL

Ernst A. Muhlbauer, Hamburg, Germany, assignor to Zahn-Porzellan KGE Muhbauer & Co., Hamburg, Germany
Filed Oct. 9, 1969, Ser. No. 865,124
Int. Cl. B65d *81/32*
U.S. Cl. 206—47 A **10 Claims**

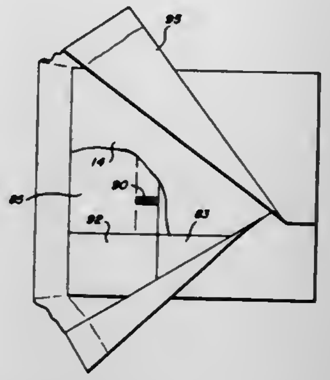


A capsular container of the duplex type for dental purposes having a substantially rigid container body containing a first component or ingredient and having a perforated wall in which at least one opening is formed to a bag of frangible foil material for receiving a liquid component which when pressed against the perforated wall discharges its contents into the container.

3,651,933
COPY SHEET PACKAGE

George E. Bell, Ontario, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed July 3, 1969, Ser. No. 839,017
Int. Cl. B65h *3/02;* **B65d** *85/16;* **B65h** *1/04*
U.S. Cl. 206—57 **1 Claim**

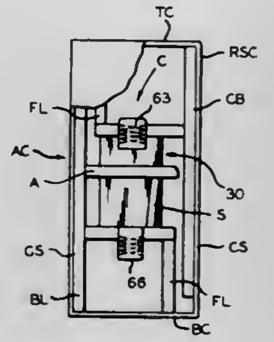
A unitary tray for storing and dispensing a stack of sheets comprising a blank having a base portion, a lateral side flap portion, and a lateral end flap portion, said side flap and end flap portion being scored to induce folding along parallel lines and having an adhesive thereon to form rectangular support elements on the end and one side of a stack of sheets to be fed, said side support element having secured thereto a plurality of friction pad elements to enable feeding sheets



one at a time without skewing. A wrapper enclosing the tray and stack of sheets to form a package.

3,651,934
STRUCTURE FOR NESTABLY PACKING CHAIRS FOR SHIPMENT

James E. Roberts; Roy L. Miller; Jay V. Welch, and Ralph E. Barrow, all of Winston-Salem, N.C., assignors to Container Corporation of America, Chicago, Ill.
Filed July 16, 1969, Ser. No. 842,297
Int. Cl. B65d *71/00*
U.S. Cl. 206—65 R **2 Claims**

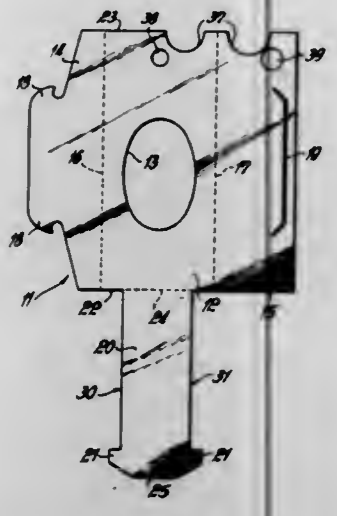


A pair of chairs are nestably packed for shipment with the seats thereof in confronting relationship and spaced by hollow spacing and positioning member having upper and lower panels with flaps extending therefrom in opposite directions and adapted to be folded about the sides of the seat frames and secured thereto. In a form of the invention, one of the chairs to be packed is provided with arms and in such form the positioning member has elements thereof lying between the chair arms and a seat of an armless chair superimposed thereon.

3,651,935
PACKAGE WITH SLIDEABLE DISPLAY BAND

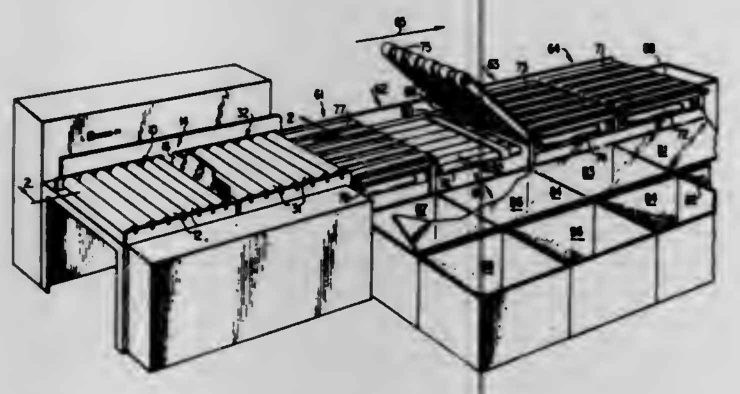
Bernhard P. Nysten, Aachen, Germany, assignor to William Prym-Werke KG, Stolberg/Rhineland, Germany
Filed Sept. 18, 1970, Ser. No. 73,354
Claims priority, application Germany, Sept. 22, 1969, G 69 37 066.7
Int. Cl. B65d *85/24*
U.S. Cl. 206—66 **15 Claims**

A package for needles and similar rod-shaped articles has an elongated sleeve of predetermined width and a pair of longitudinally spaced open ends. An elongated carrier member is received in the sleeve slidable into and out of one of the open ends by a predetermined maximum distance. An elongated guide flap is of one piece with the sleeve at the opposite end and extends through this opposite end into the interior of the sleeve either towards but short of, or outwardly beyond the one open end. The width of the guide flap is smaller than that of the carrier member and that of the sleeve itself. Portions of the carrier member are folded about the guide flap so that they embrace the longitudinal margins thereof and abutments are provided on the guide glap adjacent the open end through which the carrier member moves in and out so that the engagement portions of the carrier member abut against the abutment portions when the carrier member is withdrawn to the maximum extent to prevent it from becoming separated from the sleeve.



3,651,936
SORTER CONTROL CIRCUIT

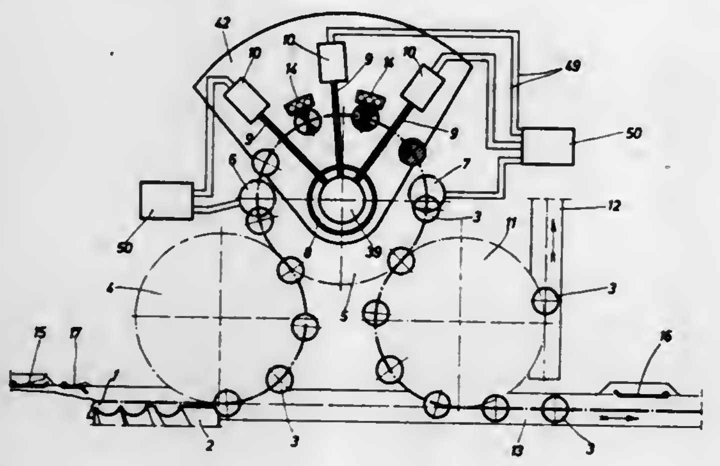
Merl Powell, Dayton, Ohio, assignor to Bell and Howell Company, Sidney, Ohio
Filed Feb. 27, 1970, Ser. No. 15,076
Int. Cl. B07c *5/00*
U.S. Cl. 209—74 M **16 Claims**



A mail weighing and sorting machine directs mail in seriatim from a weighing station along segmented track portions of a main feed track. As each piece of mail is weighed a weight signal is delivered to a control circuit which is operative to cause a selected track segment to intercept the corresponding piece of mail as it travels along the main feed track. The control circuit includes a comparator which produces weight category signals from various stages thereof depending upon the weight of each piece of mail. Each computer output stage is connected to an associated delivery circuit. Each delivery circuit includes means for gating its various weight category signals to a corresponding actuator control, but some of the gated signals are delayed in a primary delay device which provides outputs to both the corresponding actuator control and an AND gate for gating a second weight category signal to a secondary delay device in the event the first delay device is already delaying a first weight category signal.

3,651,937
AUTOMATIC INSPECTION MACHINE

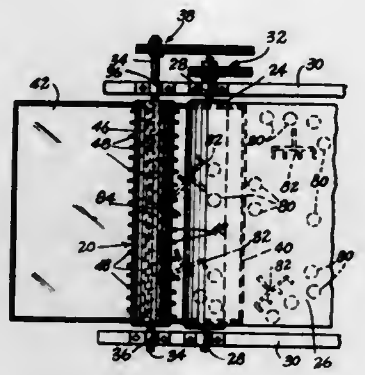
Hermann Kronseder, Berliner Strasse 10, 8402 Neutraubling, Germany
Filed May 4, 1970, Ser. No. 34,113
Claims priority, application Germany, May 21, 1969, P 19 22 490.9
Int. Cl. B07c *5/342*
U.S. Cl. 209—75 **13 Claims**



Apparatus for inspecting empty transparent containers for dirt. The containers are transferred from an inspection star wheel rotor to a separating star wheel rotor. There are separate inspection sensors associated with the inspection rotor for respectively inspecting the side wall, bottom and top lip of the containers. A common dirty bottle segregating mechanism is associated with the separating star wheel rotor and a common regulating unit which responds to the several inspection sensors for selectively actuating the segregating mechanism to segregate dirty from clean containers on the separating rotor. The clean containers leave the separating rotor via a discharge conveyor, and the dirty bottles leave the separating rotor via a reject conveyor.

3,651,938
AUTOMATIC ARTICLE SEGREGATION

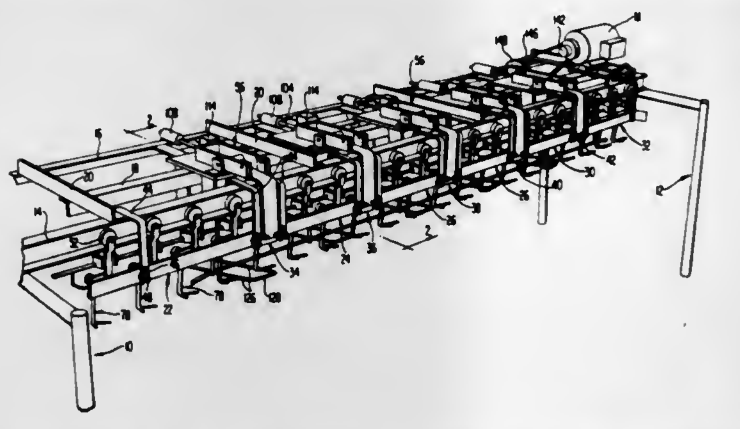
Fred F. Suellentrop, Jr., Imperial, and Alan A. Suellentrop, Mehlville, both of Mo., assignors to Lemay Machine Company, St. Louis, Mo.
Filed May 18, 1970, Ser. No. 38,127
Int. Cl. B07b *13/10*
U.S. Cl. 209—78 **1 Claim**



Means disposed adjacently to the delivery end of a conveyor for automatically segregating articles being delivered and directing them into separate containers. The primary component of the invention comprises a rotatably mounted cylinder spaced forwardly from the delivery end of the conveyor, and driven in the same direction. As will appear, more than one such cylinder may be employed when more than two different articles are being delivered by the conveyor. The external periphery of such cylinder or cylinders would be provided with a determined pattern of outwardly projecting elements, preferably pins pressfitted thereinto or otherwise appropriately mounted thereon, the diameter and length of said pins being variable in contemplation of the articles to be delivered by a conveyor. Likewise, the diameters of the cylinder or cylinders employed in accordance with the concepts of the present invention may be larger or smaller than that of the delivery end roller of the conveyor. Preferably although not necessarily, the cylinder or cylinders of this invention would revolve at approximately the same speed as that of the conveyor delivery end roller.

3,651,939
POULTRY SIZER

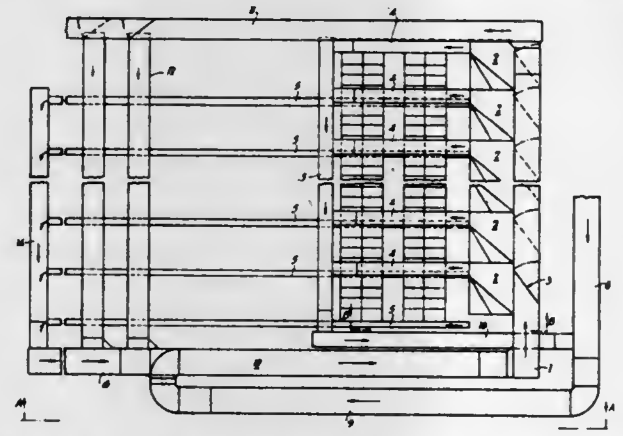
Grover S. Harben, Jr., Gainesville; Ernest E. Lewis, Flowery Branch, and Lloyd E. Sloan, Gainesville, all of Ga., assignors to Gainesville Machine Company, Inc., Gainesville, Ga.
Filed Aug. 31, 1970, Ser. No. 68,215
Int. Cl. B07c *5/16*
U.S. Cl. 209—121 **6 Claims**



Apparatus for sizing poultry by weight includes a plurality of spaced weighing stations each of which is responsive to a predetermined and different weight. A series of trolley devices moves the poultry successively through the weighing stations, and ejecting mechanism is associated with each station so that the poultry is ejected at the proper station be weight. In one form of the invention, the arrangement of the weighing beam and counterbalancing weight is such that poultry is ejected whenever its weight exceeds a predetermined limit. In another form of the invention, poultry is ejected only when it is at or about a predetermined weight.

3,651,940
SORTING CONVEYOR ARRANGEMENTS

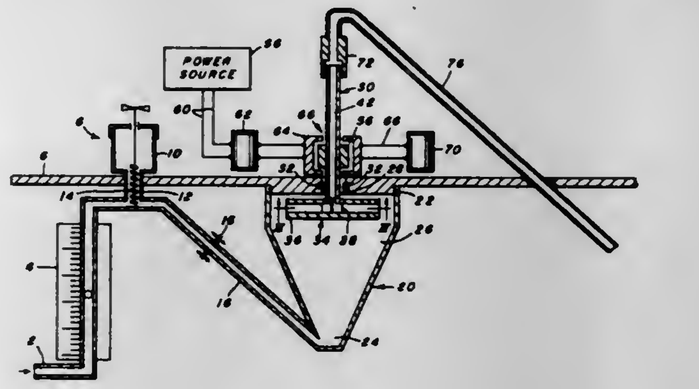
Sydney William Rooke, Erith, England, assignor to Sovex, Limited, Kent, England
Filed Dec. 19, 1969, Ser. No. 886,665
Claims priority, application Great Britain, Dec. 24, 1968, 61,404/68
Int. Cl. B07c *5/36*
U.S. Cl. 209—125 **14 Claims**



An article sorting arrangement in which articles are fed to one or more sorting stations and from the sorting stations to one or more sorting conveyors, each sorting station including a store in which articles are accumulated after sorting and then fed successively to the sorting conveyor. Each store consists of a number of compartments separated by controllable dividing means, these means being operated in such a way that the articles accumulating in the store travel progressively towards the sorting conveyor, the order of filling the compartments being arranged so that the compartment in each store nearest the sorting conveyor is filled first. The arrangement may include feeder conveyors for supplying the sorting station, and preferably includes means to ensure that articles which are not sorted are recycled until sorting can be effected.

3,651,941
DISC-CENTRIFUGE APPARATUS

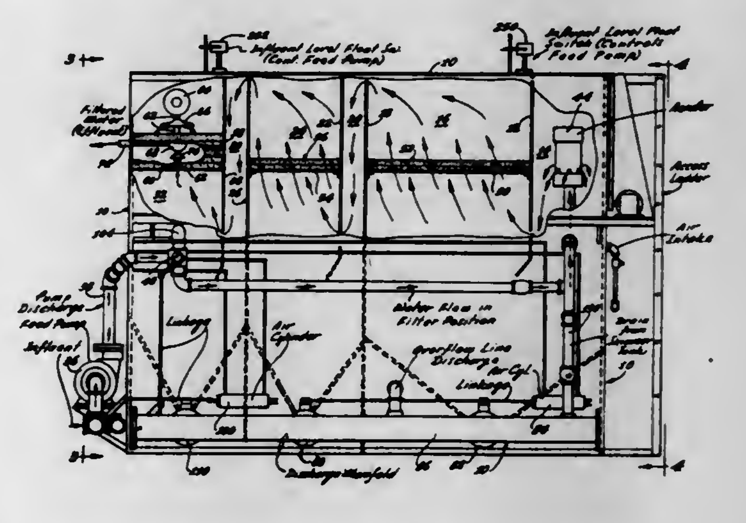
Paul Imris, Springdale, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 24, 1969, Ser. No. 809,780
Int. Cl. B07b *7/083*
U.S. Cl. 209—139 R **2 Claims**



Disclosed is a disc centrifuge having several straight radial passages leading to a central offtake. When the disc is rotated at high speed, and a gaseous stream is led to its periphery, particles therein are separated. The disc is preferably stationed near the top of an elutriation chamber; use of arrangements comprising a plurality of disc-containing chambers is taught. Separations occur with a minimum of line pressure drop. With means for changing the number of passages used and the disc rotational velocity, a "coarse tuning" versus "fine tuning" effect is conveniently obtained.

3,651,942
REACTOR FILTER ASSEMBLY

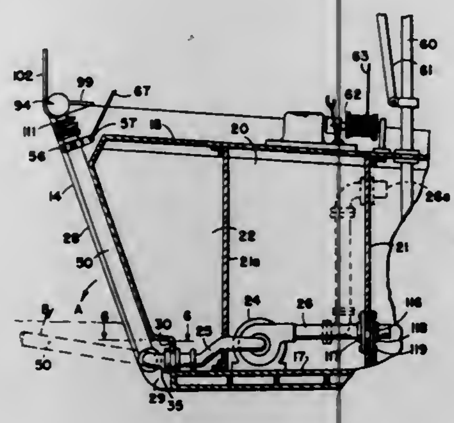
Martin J. Berardi, 149 N.E. 98th Street, Miami Shores, Fla.
Filed June 22, 1970, Ser. No. 47,961
Int. Cl. B01d *29/38, 29/08*
U.S. Cl. 210—140 **9 Claims**



A reactor filter assembly is provided for purifying water, or other liquids, in an effluent stream, and which is designed, for example, to have a multistate construction. A four-stage system will be described. The influent to the system is first treated with conditioning chemicals and aerated for oxidation and for the removal of undesired gases. The conditioned liquid is then upflowed to a velocity suspended floculation bed into a first solid retention stage, and the operation may be repeated in a second similar stage. A further stage is then provided for final polishing of the filtered water. Backwash and sludge drainage is provided in the system, and may be automatically controlled so that the entire assembly may be unattended.

3,651,943
POLLUTION SUCTION WATER SWEEPER

James Di Perna, 85 Foxhill Terrace, Staten Island, N.Y.
Filed Apr. 13, 1970, Ser. No. 27,653
Int. Cl. C02b *9/02*
U.S. Cl. 210—242 **1 Claim**



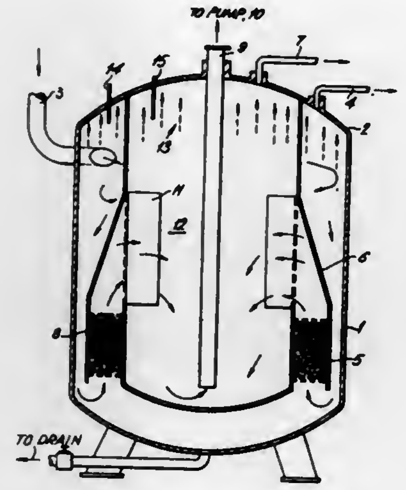
A floating power operated vessel designed to collect by suction from the surface of a body of water, as it moves thereover, floating pollutant matter. Adjacent the prow of the vessel is a suction pump compartment and inlet pipes below the water level connected to a suction pump in the compartment. Adjacent the stern of the vessel is a clean water collecting compartment having a discharge pipe adjacent the top thereof and above the water level for discharging the same downwardly onto the surface of the body of water. Between the forward pump compartment and the rear clear water collecting compartment there is provided a series of transversely disposed and longitudinally spaced partitions forming communicating chambers designed to separate by degrees the mass of pollutant matter from the water.

At least one suction swing pipe is pivotally jointed at the prow of the vessel. Formed in the prow is a recess in which the swing pipe is received when raised to its inoperative position. A winch and derrick on the top deck of the vessel is cable connected to the upper free end of the swing pipe. A scoop structure which may be one of a variety of forms and sizes is attached to the upper free end of the swing pipe. The scoop structures are each provided with a forwardly extending blade arranged to lie flat substantially at the surface level of the body of water. Optionally the free end of the swing pipe may be provided with a dredging nozzle and the swing pipe lowered such that the vessel may be converted into a hydraulic suction dredge.

3,651,944
SEPARATION OF LIQUIDS

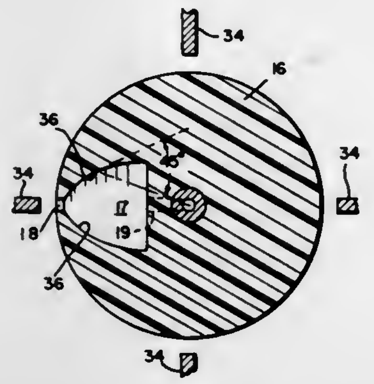
Frank Shuttleworth, Stevenage, England, assignor to National Research Development Corporation, London, England
Filed Feb. 19, 1970, Ser. No. 12,569
Claims priority, application Great Britain, Feb. 24, 1969, 9,850/69
Int. Cl. B01d *17/02*
U.S. Cl. 210—265 **7 Claims**

Apparatus for separating a liquid from a stream of another liquid which is immiscible therewith and has a different specific gravity, which apparatus comprises pump means, separator means, and means for feeding the mixture into the separator, the separator means being located on the suction side of the pump means whereby the mixture is drawn into the separator.



3,651,945
CONTINUOUS CULTURE SEPARATION APPARATUS

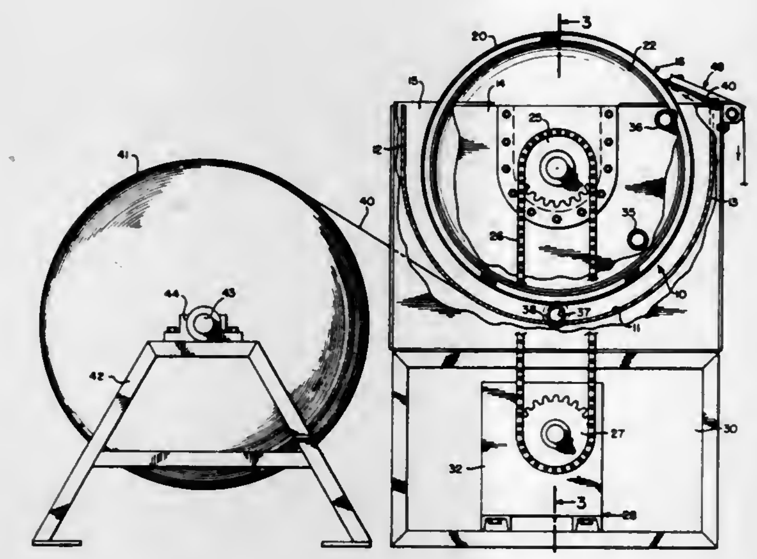
Conrad J. Feren, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Mar. 16, 1970, Ser. No. 19,932
Int. Cl. B01d *23/00, 21/02*
U.S. Cl. 210—324 **17 Claims**



Apparatus for use in a continuous antibiotic production process to continuously withdraw from the culture broth a liquid portion from which growth organisms and solids are separated and left behind in the broth for further production. A separator rotor in the broth has an eccentrically located separation chamber communicating with the broth by way of a single restricted inlet/outlet opening through a peripheral surface of revolution. Such chamber connects at its inner end to an axial discharge passage in the rotor shaft, and a pressure difference is maintained to induce flow inward through the separation chamber to such discharge passage. The flow rate is slow to provide a long retention time in the separation chamber, during which solids are centrifugally separated and discharged through the restricted opening back to the broth. The chamber walls are so shaped that at any point a particle striking such surface on a radial path will be deflected and slide along such surface toward such opening, the "deflection" angle between the surface and the radius being sufficiently small to ensure such sliding. An angle of 45° has been found satisfactory, and angles less than 60° are considered useful.

3,651,946
ROTARY FILTERS

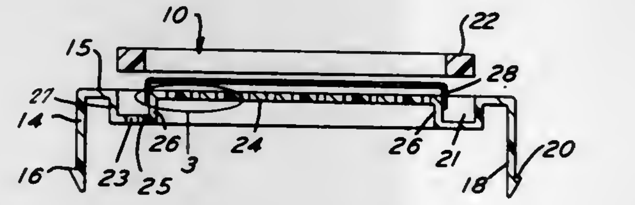
Harry Ball, Piscataway, and Henry A. Steward, Califon, both of N.J., assignors to Technical Fabricators, Inc., Nutley, N.J.
Filed Dec. 31, 1969, Ser. No. 889,580
Int. Cl. B01d *33/12*
U.S. Cl. 210—387 **5 Claims**



A rotary filter machine has a rotary drum with a perforated peripheral wall supported on a horizontal shaft and extending into a tank adapted to contain slurry to be filtered. A continuous flexible filter paper sheet is continuously led from a source of supply to the drum, wound around the drum so as to travel with the drum through the slurry to be filtered and then stripped from the drum. Suction in the drum draws the liquid from the slurry through the filter paper sheet, and through the perforated peripheral wall of the drum to the interior of the drum and is conducted away from the machine. The solids filtered out of the slurry are entrapped in and on the filter paper sheet and are carried away from the machine with the paper sheet for disposal after stripping from the drum.

3,651,947
FILTER

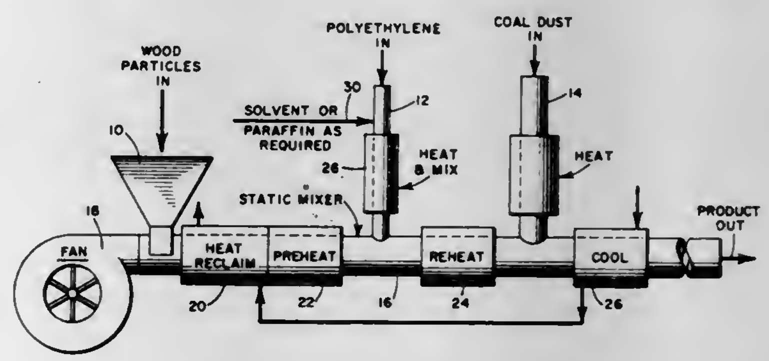
George R. Schollhamer, Philadelphia, Pa., assignor to Rudd-Melikian, Inc., Warminster, Bucks County, Pa.
Filed Mar. 11, 1970, Ser. No. 18,570
Int. Cl. B01d *25/04*
U.S. Cl. 210—474 **3 Claims**



A filter is provided for beverage machines such as coffee machines. The filter material is a layer of woven or molded polymeric plastic having a mesh size of between about 52 and 70 microns. Filter material is supported by a coarse support grid which in turn is supported by a carrier.

3,651,948
AGGLOMERATED POROUS MASS AND METHOD OF PREPARING SAME

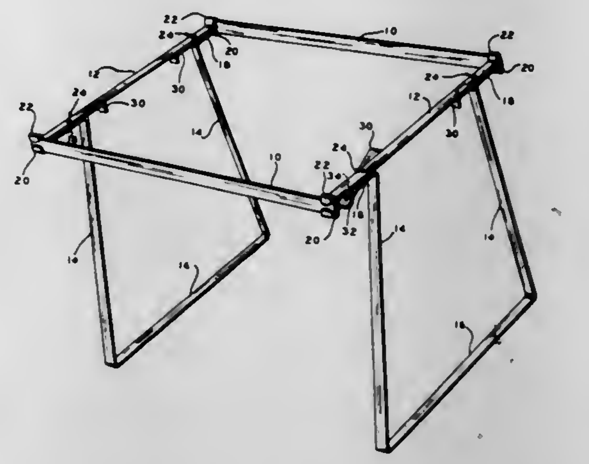
Clinton O. Bunn, Denver, Colo., assignor to Col-Mont Corporation, Butte, Mont.
Filed July 1, 1970, Ser. No. 51,541. The portion of the term of the patent subsequent to Oct. 27, 1987, has been disclaimed.
Int. Cl. B01d *39/04;* **C02b** *9/02*
U.S. Cl. 210—502 **10 Claims**



The method of recovering oil leakage from the surface of a body of water, comprising the steps of mixing discrete core particles of wood material, polyethylene and finely ground coal to form particles having a high affinity for oil. The particles have a high degree of integrity, thereby permitting storage of the same at points relatively remote from the point of leakage and airlifting of the same to the oil spot. The oil-saturated particles are processed after collection for further use as a fuel source, with the B.t.u. content being as great or greater than bituminous coal.

3,651,949
SUPPORT FOR SUSPENDED FILES

Rex D. Carter, Clovis, Calif., and Earl W. Hoffsis, Holland, Ohio, assignors to Sheller-Globe Corporation, Toledo, Ohio
Filed July 27, 1970, Ser. No. 58,331
Int. Cl. A47f *5/10*
U.S. Cl. 211—177 **6 Claims**

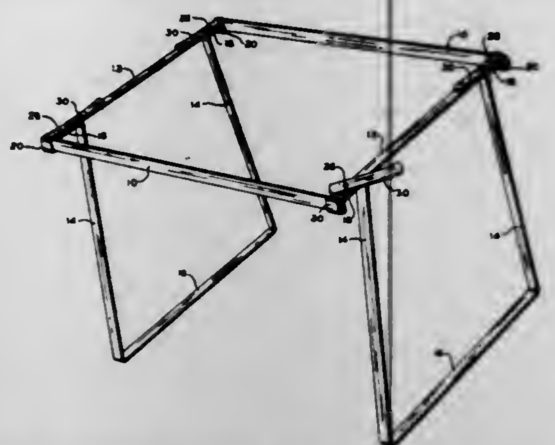


A support frame assembly for suspended files which is comprised of a minimal number of components and may be readily assembled by the user without the need of special tools.

3,651,950
SUPPORT FOR SUSPENDED FILES

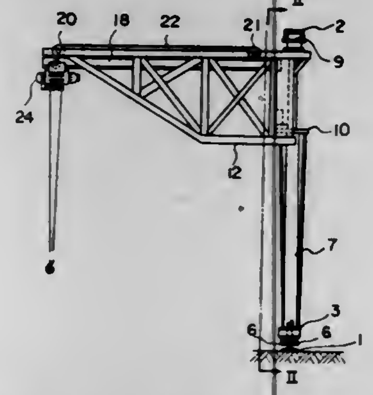
Rex D. Carter, Clovis, Calif., assignor to Sheller-Globe Corporation, Toledo, Ohio
Filed Aug. 11, 1970, Ser. No. 62,885
Int. Cl. A47f *5/10*
U.S. Cl. 211—177 **6 Claims**

A support frame assembly for suspended files which is comprised of a minimal number of components and may be readily assembled by the user without the need of special tools. The assembly includes a pair of vertical corner posts interconnected by a cross bar at each end of the support frame and rails extending between the ends of the frames.



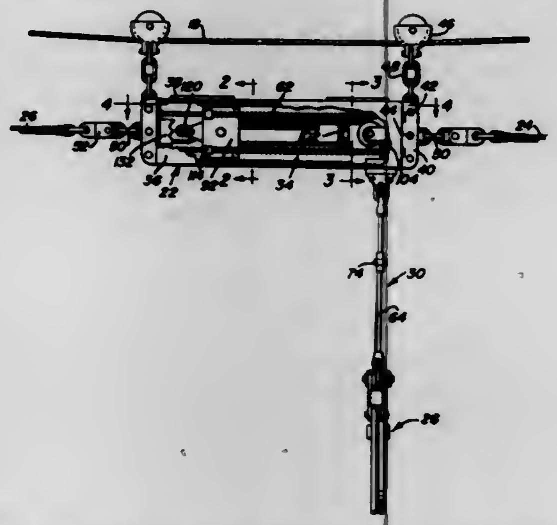
The upper terminal portion of each corner post includes a rail engaging portion and a movable locking arm adapted to retain a rail in engagement with the rail engaging portion.

3,651,951
JIB CRANE
Sakae Murakami, 382-2 Matsunaga-machi, Fukuyama, Japan
Filed Apr. 13, 1970, Ser. No. 27,520
Claims priority, application Japan, Feb. 13, 1970, 45/14196
Int. Cl. B66c *23/04*
U.S. Cl. 212—17 **2 Claims**



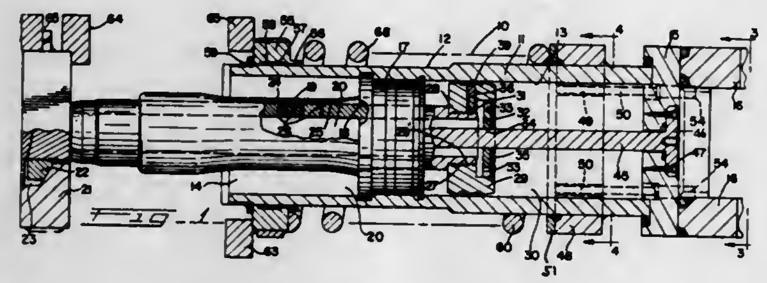
This invention relates to a jib crane characterized by the fact that the top of the jib is pivoted to the main post, which travels on a single rail and the wheels at the bottom of the jib travel on an annular flange fitted around the main post.

3,651,952
AUTOMATIC LOG GRAPPLING MECHANISM
John H. Mitchell, 400 West Curtis Street, Aberdeen, Wash.
Filed Nov. 13, 1969, Ser. No. 876,527
Int. Cl. B66c *21/00*
U.S. Cl. 212—84 **6 Claims**



A grapple assembly swivelly suspended from a skyline carriage is automatically opened and closed by mechanical means located within the carriage. The carriage is moved by in-haul and out-haul cables and through the skyline cable is lowered or raised for yarding logs. Sequential slackening and tensioning of the skyline cable controls the opening and closing of the grapple jaws.

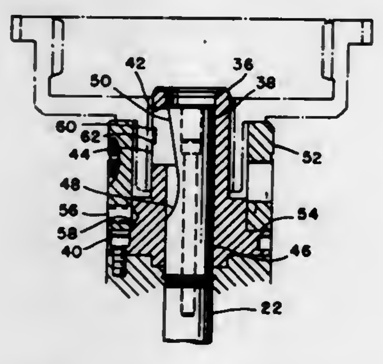
3,651,953
RAILWAY CAR CUSHIONING DEVICE
Willis H. Knippel, Palos Park, Ill., and William R. Shaver, Munster, Ind., assignors to Pullman Incorporated, Chicago, Ill.
Filed June 1, 1970, Ser. No. 42,109
Int. Cl. B61g *9/08, 9/12*
U.S. Cl. 213—43 **5 Claims**



A cushioning device includes a cylinder open at one end and closed at the other by means of a cylinder head to which a coupler yoke is connected. An intermediate head within the cylinder is provided with a bore through which a piston rod reciprocates. The piston rod is of hollow construction and with the intermediate cylinder head and a flexible boot provides a low pressure accumulator chamber. The piston rod is threaded into a bore provided in a piston. The piston includes a radial threaded bore which contains an expandable plug rigidly engaging the threads of the rod to lock the piston against rotation. A set screw applies pressure to the plug. The radial bore opens outwardly into an annular recess in the piston circumference which contains a nonmetallic piston ring.

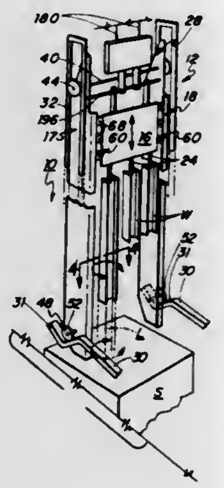
The cushioning cylinder also includes a coil return spring which is held captive at one end by a collar and actuating ring adjacent the cylinder head connected to the yoke. The other end of the spring is held captive by a sliding sleeve having an improved spring seat arrangement. The collar and the first cylinder head are provided with aligned bores which contain pins reciprocably positioned so as to compress the spring and secure cushioning in a draft stroke in which the pins are moved into engagement with stops provided on a center sill.

3,651,954
AUTOMATIC LOADING WITH EXPANDING ARBOR
Russell W. Anthony, Harper Woods, Mich., assignor to Lear Siegler Inc., Santa Monica, Calif.
Filed Apr. 6, 1970, Ser. No. 25,648
Int. Cl. B23b *31/26, 31/40*
U.S. Cl. 214—1 Q **6 Claims**



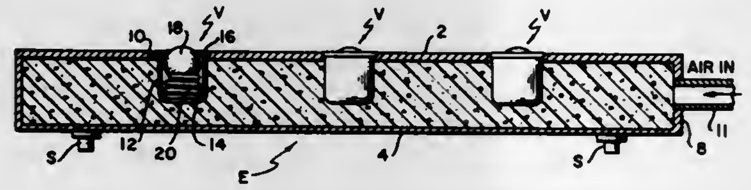
Automatic loading mechanism in which a rotary support includes an expanding arbor. The support is moved between a loading and a working station and while in the loading station the arbor is in unexpanded condition to permit unloading and loading of work pieces.

3,651,955
WORKPIECE HANDLING AND PRODUCTION APPARATUS
Jurek Shkredka, Oakland, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed June 29, 1970, Ser. No. 50,661
Int. Cl. B65g *7/00*
U.S. Cl. 214—1 P **23 Claims**



Improved workpiece handling and production apparatus provided with a superstructure and a rack and guide assembly operatively associated therewith for effecting compound movement in and out of a workpiece treating station and orientation of one or more elongated workpieces relative thereto in order to effect selective treatment of a workpiece such as, for example, metal cladding of an I-shaped apertured steel rail member.

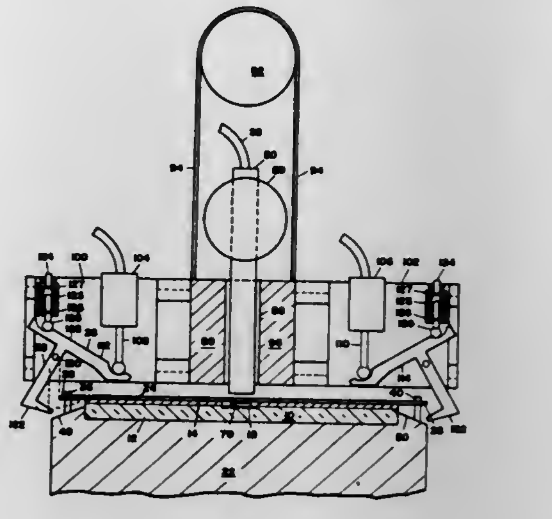
3,651,956
AIR FLOTATION TABLE CONVEYOR
Andrew T. Kornylak, 400 Heaton Street, Hamilton, Ohio
Filed July 16, 1970, Ser. No. 55,404
Int. Cl. B65g *7/06*
U.S. Cl. 214—1 BE **3 Claims**



A conveyor for floating an article by air under pressure to provide for ease of movement. An enclosure is provided with a plurality of valves in the upper surface for engagement by the article to release air under pressure from the enclosure to substantially float the article on a layer of air. The enclosure is filled with a rigid open cell porous material to provide structural strength and rigidity for the hollow structure.

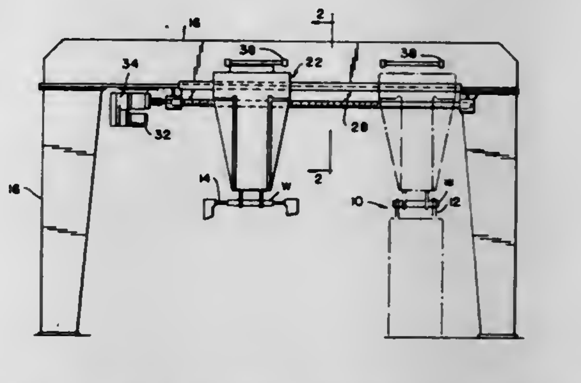
3,651,957
CHIP PACKAGING AND TRANSPORTING APPARATUS
John F. Ball, Scottsdale, and Rex R. Beatty, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Mar. 2, 1970, Ser. No. 15,401
Int. Cl. B66c *1/02*
U.S. Cl. 214—1 BC **8 Claims**

Means are provided to remove an assembly comprising a frame, a chip and a substrate from the support on which they are assembled. That means comprises moveable fingers which are rotated out of frame contacting position by power



means such as compressed air and which are rotated into the frame contacting position by springs.

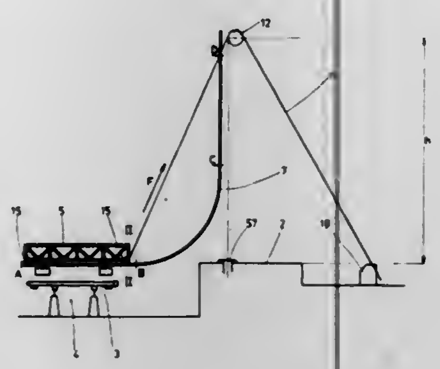
3,651,958
AUTOMATIC LOADING AND TRANSFER EQUIPMENT
Dewey M. Evans, Farmington, and Peter J. Manetta, Warren, both of Mich., assignors to Simplex Corporation, Detroit, Mich.
Filed Sept. 25, 1969, Ser. No. 861,057
Int. Cl. B23b *15/00*
U.S. Cl. 214—1 BB **2 Claims**

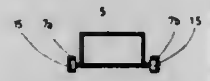


A transfer carriage movable between a station and a machine tool having a pair of work carriers movable independently along intersecting paths operable to pick up a work piece and to deposit in its place another work piece, both at the station and at the machine tool.

3,651,959
NEW DEVICE FOR HANDLING ELONGATED MEMBERS
Andre Castela, Mesnil Le Roi, and Philippe Joubert, Rungis, both of France, assignors to Institut Francais Du Petrole, Des Carburants Et Lubrifiants, Rueil Malmaison (Hauts De Seine), France.
Filed May 13, 1970, Ser. No. 36,774
Claims priority, application France, May 14, 1969, 6915821
Int. Cl. E21b *19/14*
U.S. Cl. 214—2.5 **11 Claims**

Device for handling rigid elongated members such as drill string elements by transferring the same from a horizontal storage location to a vertical position where they are assembled to the drill string or vice versa, comprising a carriage with gripping means for taking said elements from their storage position and holding them, rollers fastened to said carriage and cooperating with guiding paths, comprising upper rollers for driving the nearest end of said carriage with respect to said vertical position along a first inclined path terminating with a vertical portion in line with said vertical position, lower rollers for driving the farthest end of said carriage with respect to said vertical position along a generally horizontal path above the storage location and rollers at an intermediate level taking their bearing on a second inclined





path with a smaller inclination as the first one, for driving an intermediate point of said carriage between said nearest end and said farthest end, substantially to said vertical position when the upper roller reaches said position.

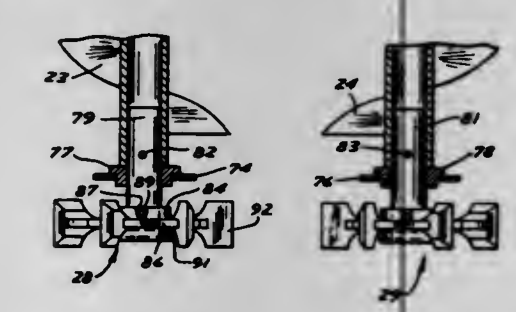
3,651,960
WALL CLEANER

Floyd E. Buschbom, Long Lake, Minn., assignor to Van Dale Corporation, Long Lake, Minn.

Original application Dec. 30, 1968, Ser. No. 787,774, now Patent No. 3,522,971, dated Aug. 4, 1970, Original application Nov. 25, 1967, Ser. No. 683,273, now Patent No. 3,460,688. Divided and this application Apr. 3, 1970, Ser. No. 25,524

Int. Cl. B65g *65/38*

U.S. Cl. 214—17 DB **11 Claims**



A top unloading silo unloader having a pair of drive hubs for moving a collector arm around the silo. A tie rod extended from the outer end of the collector arm is attached to the drive shaft between the drive hubs by a connector assembly having an arcuate arm cooperating with a guide having a pair of spaced grooves receiving the arm to hold the drive hubs in an adjusted angular position with reference to the collector arm. Each of the drive hubs has circumferentially spaced oppositely directed pairs of radial lugs. Removably and reversibly mounted on the outer ends of the collector arm augers are wall cleaners having forwardly projected teeth.

3,651,961
SHEET MATERIAL ACCUMULATOR

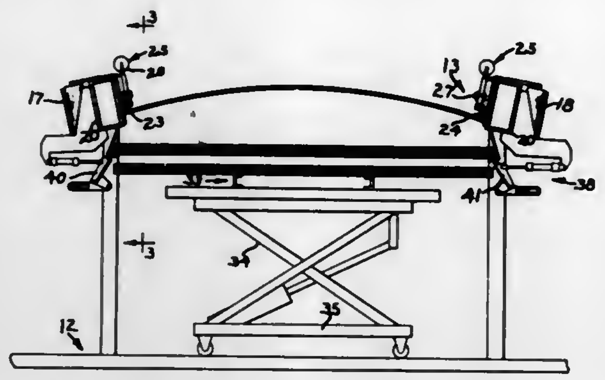
Leonard L. Hayes, Lewiston, Idaho, assignor to Potlatch Forests, Inc., San Francisco, Calif.

Filed Mar. 16, 1970, Ser. No. 19,608

Int. Cl. B65g *57/06*

U.S. Cl. 214—6 DK **1 Claim**

A veneer sheet stacking apparatus is described for moving sheets to a stacking station above a receiving platform and then discharging the sheets downward toward the receiving station. An accumulator is positioned on the apparatus for intercepting the descent of the discharged sheets and holding the sheets above the receiving platform until a desired number of sheets are accumulated to form a bundle. Then the entire bundle is released to drop the bundle onto the receiving station.



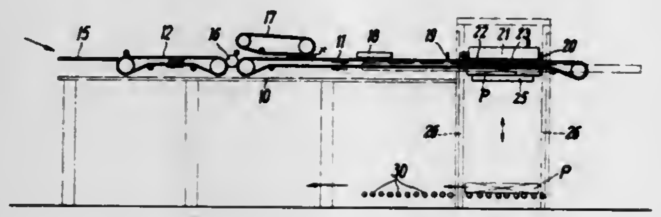
3,651,962
APPARATUS FOR LOADING SACKS ONTO PALLETS

Gerhard Arnemann, Pinneberg, Germany, assignor to Fordertechnik Hamburg Harry Lassig, Muhlendamm, Germany

Filed July 2, 1970, Ser. No. 51,975

Int. Cl. B65g *57/10*

U.S. Cl. 214—6 DK **5 Claims**



An apparatus for loading sacks onto pallets, comprising conveyor means, sack positioning and flattening devices, sack transfer devices, a retaining bar, a packing plate for forming sack layers, transferring the sack layers onto a pallet, applying an antiskid agent between the sack layers and shaping the sack layers deposited on the pallet, and a lifting platform for the pallets.

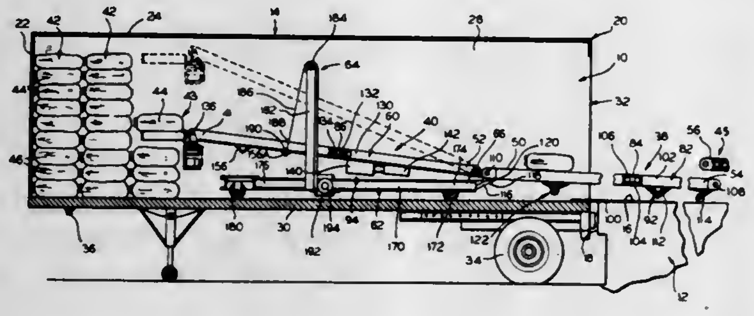
3,651,963
APPARATUS FOR LOADING BAGGED MAIL FROM A LOADING DOCK INTO A HIGHWAY VEHICLE

Joseph E. McWilliams, 1345 Canterbury Lane, Glenview, Ill.

Filed Sept. 15, 1970, Ser. No. 72,428

Int. Cl. B65g *67/08, 57/112*

U.S. Cl. 214—6 G **7 Claims**



The invention relates to the loading of mail bags from a loading dock into an end loading highway vehicle to fully load the vehicle with compactly formed tiers, in which a pair of tandem connected run back conveyors are mounted on the loading dock for running under existing mail bag handling conveyors, that are proportioned lengthwise, and are mounted to be moved into the vehicle for loading purposes, to extend between the existing conveyor and the desired unloading point of the bags within the vehicle. The bags are moved single file down the conveyors, with the leading conveyor end being tiltable upwardly about an axis between the conveyor ends and carrying a transversely movable reversibly driven load discharge conveyor apparatus, whereby the bags may be discharged to either side of the vehicle to form compact vertical mail bag stacks up to the full height of the vehicle.

3,651,964
DEVICE FOR DISTRIBUTING MATERIAL INTO A FURNACE

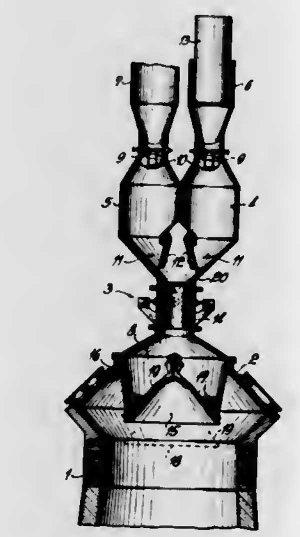
Pieter Hendrik Nieboer, Kapellen B. Moers, Germany, assignor to Demag AG, Duisburg, Germany

Filed June 16, 1969, Ser. No. 833,545

Claims priority, application Germany, Aug. 17, 1968, P 17 58 840.8

Int. Cl. F27b *11/12*

U.S. Cl. 214—36 **13 Claims**



A device for uniformly distributing material into a blast furnace and the like is formed by a hopper arranged to supply the material into a distributor pipe. The pipe is supported by pivot means at its upper end so that it can be displaced laterally below its upper end and swiveled about its normal vertical axis for selectively spreading the material into the furnace. The distributor pipe is moved laterally by means of rams actuated by hydraulic piston assemblies.

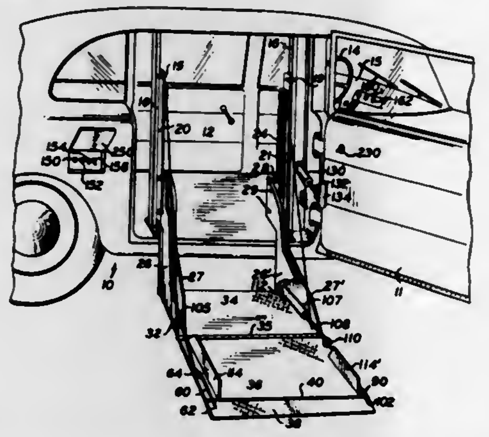
3,651,965
WHEEL CHAIR RAMP FOR AUTOMOTIVE VEHICLES

Le Roy S. Simonelli, East Rochester; Leonard N. Randolph, Rushford, and Sam Damico, Rochester, all of N.Y., assignors to Clover Industries, Inc., North Chili, N.Y.

Filed May 1, 1970, Ser. No. 33,632

Int. Cl. B60p *1/46*

U.S. Cl. 214—75 R **6 Claims**



This ramp is adapted to be permanently secured to a vehicle. Two stanchions are fixed at the two sides of a door of the vehicle. Two levers, which are pivoted at their lower ends to the stanchions carry a floor section of the ramp. To this section is hinged a second floor section; and to this second floor section is hinged the step plate or lip of the ramp. Fluid-pressure-operated pistons and cables through manually operated switches open the ramp to swing it down out of the door of the vehicle to a position where a wheel chair patient can roll his or her chain with himself or herself in it onto the ramp and into or out of the vehicle. When the patient is safely inside or outside the vehicle he can operate the switches to fold the ramp into the vehicle, and close the door.

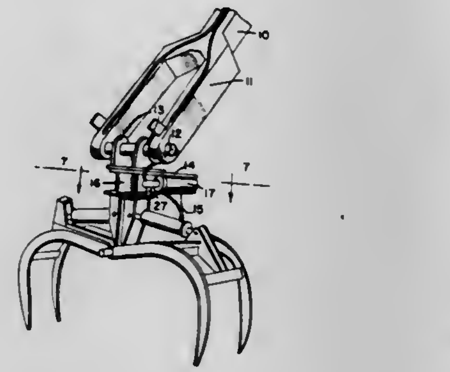
3,651,966
CANE GRAB FOR WINDROW LOADER

Harold A. Willett, Thibodaux, La., assignor to Cane Machinery & Engineering Company, Inc., Thibodaux, La.

Filed June 11, 1970, Ser. No. 45,380

Int. Cl. B66c *3/04*

U.S. Cl. 214—147 G **1 Claim**



For Windrow Cane in which the cut canes are haphazardly deposited on the flat field (there being no hills). The suspending mechanism for the grab is mounted to rotate on the upper boom about a substantially vertical axis whereby the grab jaws may be made to open lengthwise or crosswise of the vehicle on which the cut canes are deposited for transfer to the sugar house.

3,651,967
CONTAINER-UNLOADING APPARATUS

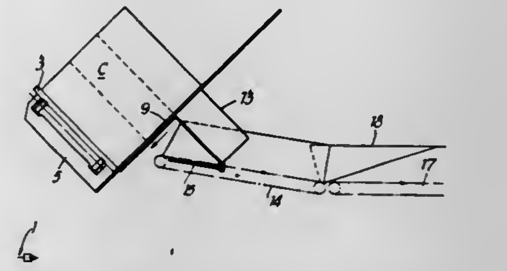
Sydney William Rooke, and Ronald Francis Coston, both of Kent, England, assignors to Sovex Limited, Erith, Kent, England

Filed Feb. 17, 1970, Ser. No. 11,956

Claims priority, application Great Britain, Mar. 7, 1969, 12,187/69

Int. Cl. B65b *21/02*

U.S. Cl. 214—307 **5 Claims**



According to the present invention, there is provided an apparatus for unloading the contents of containers, particularly but not exclusively luggage containers used in aircraft. The apparatus comprises a decanter apparatus for tilting each container towards an open side thereof at a discharge station and a fence arranged to hold back the contents of at least one region of said container until the contents of at least one other region have been discharged as a result of the tilting, the fence being arranged for relative vertical movement with respect to said open side to permit discharge of the regions of said container in a predetermined order. Advantageously, a conveyor onto which the said contents are thus discharged is arranged to be lowered in conjunction with the said fence and with a chute projecting from and aligned with the upper edge of the fence. The containers may be placed in turn on the decanter apparatus in the upright position and then tilted towards an open side of the container against a fence which is arranged initially to close the open side except for the upper part thereof, and is then moved downwardly towards the container base thus permitting progressive discharge of the container. Alternatively the fence and chute form a part of the decanter apparatus and are tilted into the discharge attitude with the container, which is then moved upwards past the fence.

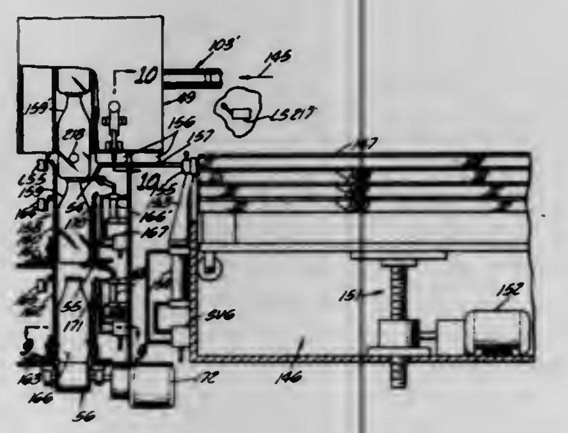
3,651,968
APPARATUS FOR UNLOADING TIERED ROWS OF ARTICLES FROM CELLULAR CONTAINERS

Keith B. Cleland, Azusa, Calif., assignor to Hunter Industries, Inc., Santa Fe Springs, Calif.

Original application Dec. 27, 1966, Ser. No. 604,849, now abandoned. Divided and this application Mar. 20, 1969, Ser. No. 823,230

Int. Cl. B65g *59/06*

U.S. Cl. 214—307 **2 Claims**



A method of and apparatus for positively holding, and loading and unloading articles such as large empty, light weight, square, slippery plastic milk bottles into and out of a magazine so that they do not jam the handling apparatus. Typically the bottles, after molding, may sometimes be made at the place of business of a plastic manufacturer and used at some other location. The light weight resilience, and slippery surface of empty plastic milk bottles make them extremely difficult to handle. This difficulty is overcome through the use of the present invention in that movement of each bottle is positively guided and handled throughout the entire handling apparatus.

3,651,969
COMBINATION HOUSE AND AUXILIARY TRAILER APPARATUS

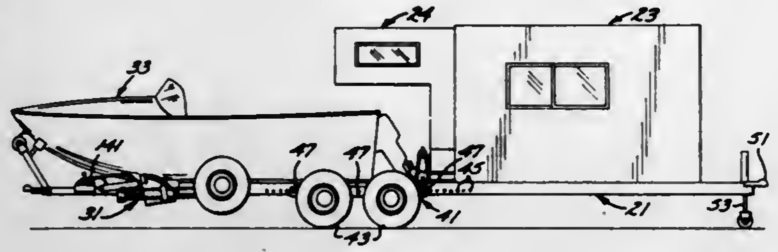
Sherman H. Bledsoe, P.O. Box 1144, Cottonwood, Ariz.

Filed Sept. 16, 1970, Ser. No. 72,583

Int. Cl. B60p *3/36*

U.S. Cl. 214—515 **13 Claims**

Combination house and auxiliary trailer apparatus including a frame carried on a pair of wheels and having a main closure mounted thereon. A pair of spaced apart tracks project rearwardly from the main closure and an extendible closure is carried thereon for telescopical receipt in such main closure. An auxiliary trailer is provided with a rear portion that is receivable between such tracks and includes a pair of support wheels and retraction means for retracting such support wheels to an elevated position. Coupling means is provided for coupling the auxiliary trailer to the rear portion of the house trailer whereby the extendible closure may be moved to its retracted position in the main closure and the auxiliary trailer moved into position with its rear portion extending between the tracks. The auxiliary trailer may then be coupled to the house trailer and its support wheels elevated to enable the combination to be towed as a unit from the tongue of the house trailer. When the destination is reached, the retractable wheels may be lowered and the auxiliary trailer uncoupled from the house trailer to thereby free such auxiliary trailer for use independent of the house trailer and enable the extendible closure to be moved rearwardly on the tracks to cooperate with the main closure in providing a composite closed area.



3,651,970
MOTOR DRIVEN VEHICULAR CHASSIS AND LOAD CARRYING PLATFORM OR CONTAINER FOR TRANSPORT THEREBY

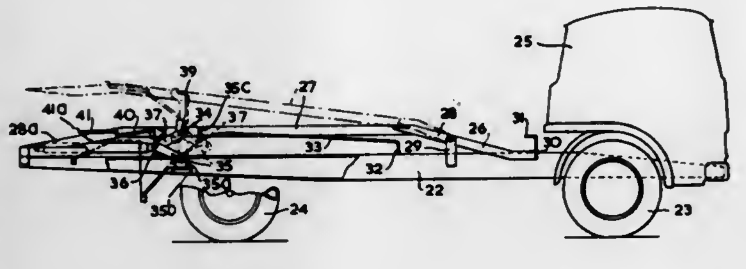
Drummond Steen Poyner Black, 25 Clark Avenue, Edinburgh, 5, Scotland

Filed Sept. 15, 1970, Ser. No. 72,787

Claims priority, application Great Britain, Sept. 22, 1969, 46,491/69

Int. Cl. B60p *1/64*

U.S. Cl. 214—515 **4 Claims**



The invention consists in the combination of a motor driven chassis and a platform having front and rear supporting legs with releasable struts. The legs are hingedly secured to the platform and the latter is provided with rollers at its forward end and towards its rear end is provided with a combination of fixed and movable pulleys together with cable trained over the pulleys and anchored to the rear legs and to a fixture.

The chassis is provided with rails extending along the chassis girders, the rails being pivoted to the girders towards their forward ends and forming downwardly inclined ramps at their rear ends. The chassis is further provided with a pair of toggles operated by a hydraulic piston and cylinder assembly and having hooklike members. When the chassis is backed below a free standing platform the rollers cooperate with the ramps and run on the rails, the front end of the platform is raised, the struts of the front legs are released and said legs are folded upwardly and rearwardly, the toggles are then operated to raise the rails, to cause the hooklike members to lock the platform to the chassis and to move the movable

pulleys so that the cables release the struts of the rear legs which are folded upwardly and inwardly, further movement of the toggles lowering the platform and the rails. By reversing the movement of the piston the cycle of operations is reversed to leave the platform free standing.

3,651,971
SIDE AND END TIPPING LOADING MACHINES

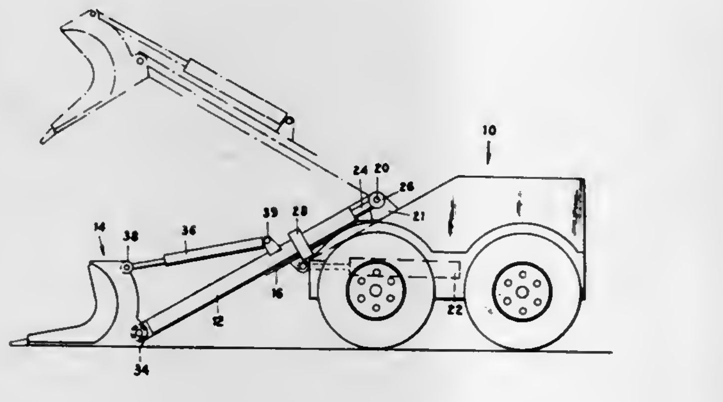
Allan S. McGuinness, Johannesburg, South Africa, assignor to Maconomy (Proprietary) Limited, Johannesburg, South Africa

Filed Sept. 30, 1969, Ser. No. 862,414

Claims priority, application South Africa, Sept. 30, 1968, Jan. 3, 1969; 68/6311, 69/0053

Int. Cl. E02f *3/84*

U.S. Cl. 214—768 **9 Claims**



A loading machine consisting of a wheeled chassis and two arms pivoted at their rear ends to the chassis. The arms are so connected to the chassis that they are independently capable of vertical and limited horizontal movement. A bucket is pivotally connected with limited universal movement to the front ends of the arms. The arms can be raised or lowered together hydraulically. Hydraulic jacks which extend between the arms and the bucket when operated separately or to different extents cause the forward end of the appropriate arm to sweep through a curve towards the vertical plane containing the other arm causing the bucket to pivot about the other arm.

3,651,972
CAP

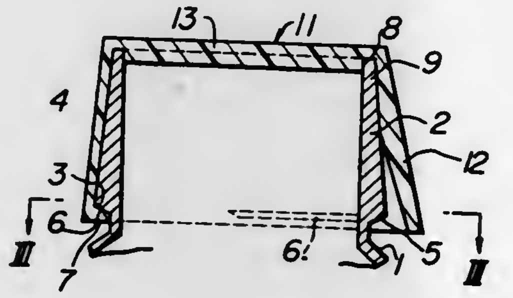
Mimpei Itoh, 8-10 Nishi-Tsuruma-2-chome, Yamato, Japan

Filed Dec. 8, 1970, Ser. No. 96,073

Claims priority, application Japan, Jan. 14, 1970, Sept. 5, 1970; 45/4672, 45/88593

Int. Cl. B65d *41/22*

U.S. Cl. 215—41 **8 Claims**



A cap of elastic material for use in combination with a neck portion of hard material having an annular projection or ridge formed in the lower portion thereof has the hollow lower portion or skirt whose cross section is elliptical or polygonal such as triangular, square and the like. A bow-shaped or crescent-like recess is formed in the inner surface of the hollow skirt portion for engagement with the annular projection or ridge when the cap is fitted over the neck portion. The cap may be readily released from the neck portion just by applying the pressure to the skirt portion without any rotation of the cap. The neck portion may have a top wall having an opening while the cap has an opening formed through its top wall so that upon rotation of a slight amount of the cap the container is ready to dispense the contents thereof without removing the cap.

3,651,973
NURSING BOTTLE

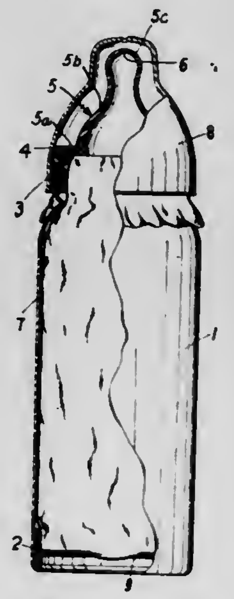
Akira Yamauchi, 121 Tatsumachi, Sasayama-cho, Taki-gun, Japan

Filed Mar. 30, 1970, Ser. No. 23,681

Claims priority, application Japan, Apr. 7, 1969, 44/31511

Int. Cl. A61j *9/00, 11/00*

U.S. Cl. 215—11 B **6 Claims**



A nursing bottle assembly including a composite bottle shell including an outer main body, a collapsible milk bag to be placed therein, a nipple provided with a special nonreturn outlet and an inner bottom member adapted to be moved slidably upward or downward by being telescopically guided by the main body. After the nipple and the milk bag containing milk are secured by a fastening ring to the mouth of the body with the opening end of the bag folded over the mouth, the bottom member is moved upward to force out the air in the bag and fill the interior of the specially constructed nipple with the milk. Due to the provision of the particular nonreturn structure of the milk outlet, inflow of air is prevented to keep the milk retained in the nipple all the time for smooth sucking action.

3,651,974
CONTAINER

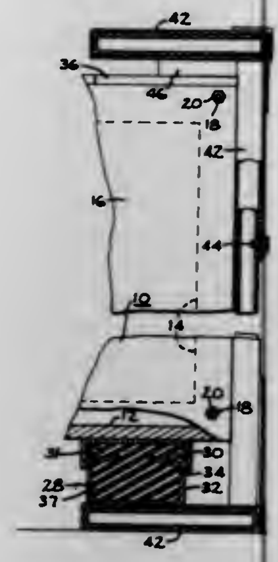
Daniel J. Barry, 3321 Mt. McKinley Drive, San Jose, Calif., and James J. McNeill, 2650 California Street, Mountain View, Calif.

Filed July 7, 1969, Ser. No. 839,559

Int. Cl. B65d *87/00*

U.S. Cl. 220—1.5 **1 Claim**

A shipping container in the form of one or more separate enclosures releasably supported in assembled relation by a unitizing frame adapted for containerized shipping techniques, each enclosure having an access opening closeable by a door in hermetically sealed relation, and incorporating shock absorbent legs and interior tiedown members for cargo protection.



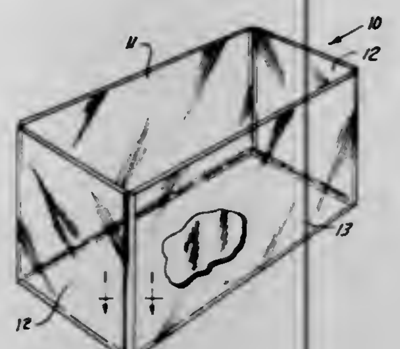
3,651,975
CONTAINER AND JOINT THEREFOR

Jerry C. Callan, 2406 N. Henderson, Dallas, Tex.

Filed Mar. 9, 1970, Ser. No. 17,766

Int. Cl. B65d *13/02, 6[illegible]/00*

U.S. Cl. 220—4 R **9 Claims**



A container, preferably formed of glass for uses such as aquariums and small animal housings, having panels interconnected along joints formed by securing adjacent panel surfaces together with a plastic adhesive fillet which forms securing corner structure permitting substantial relative movement between the panels while maintaining the fluid tight integrity of the joints.

3,651,976
MOLDED PACKAGING TRAY

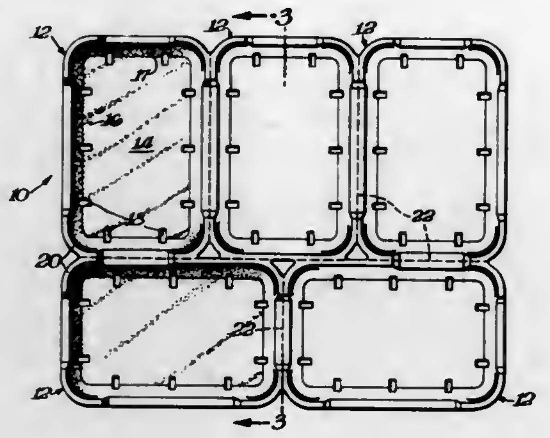
Gilbert R. Chadbourne, Oakland, Maine, assignor to Keyes Fibre Company, Waterville, Maine

Filed Apr. 1, 1970, Ser. No. 24,493

Int. Cl. B65d *21/04, 1/34*

U.S. Cl. 220—23.4 **2 Claims**

Molded packaging tray nestable with like tray comprises plurality of interconnected elongate container sections. Each container section has bottom wall with upwardly and outwardly flaring side and end walls connected thereto. Outwardly extending marginal rim is at top of side and end walls of each section. Weakened tear lines along selected portions of marginal rims in area where container sections are connected together enable individual container sections to be separated from one another. Trays are arranged for stacking one above the other with alternate trays oriented differently from adjacent ones. Marginal rims of each tray support bottom walls of container sections of tray directly thereabove in stack.



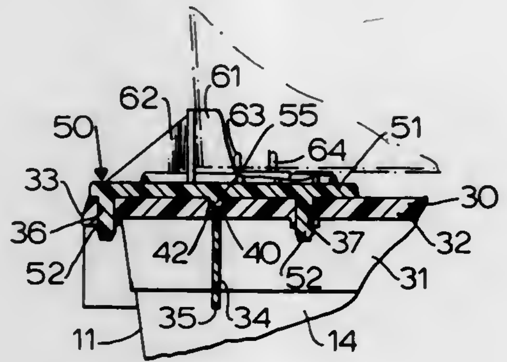
3,651,977
CONTAINERS THAT ARE COMPACTLY NESTABLE WHEN EMPTY AND STACKABLE IN SPACED RELATION WHEN FULL

Henry Z. Morgan, Mexico City, Mexico, assignor to Visual Container Corporation, Beverly Hills, Calif.

Filed Sept. 15, 1970, Ser. No. 72,283

Int. Cl. B65d *21/06, 1/24, 1/36*

U.S. Cl. 220—97 B **3 Claims**



A container that stacks compactly with like containers when empty and that stacks with them when filled in a way that protects the contents of each container. A facia rim continuous with and integrally formed to the side and end walls of the container at the top thereof is provided with a plurality of removable corner supports. Each corner supports comprises an adapter to engage with the bottom corners of a like container and comprises a horizontal member generally triangular in shape and having on its upper surface an inset generally vertical right angle wall, and having on its lower surface a series of tapered vertical projections, namely, a corner projection and two extreme projections of substantial length and two shorter intermediate projections, one between the corner projection and each extreme projection. Each facia rim has a corresponding series of receptacles, namely, a through opening at the corner to receive the corner projection, a through opening spaced from the corner to receive each extreme projections, and a dead end socket having an end bearing wall to receive the shorter projections so that they can rest in and upon it.

3,651,978
CONTAINER WITH PIVOTED CONTENTS-REMOVING COVER

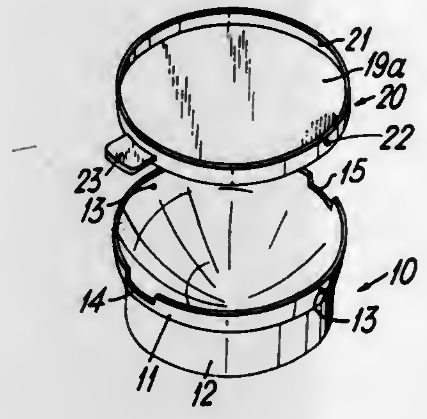
Irvine Everard White, Burton Joyce, England, assignor to Illingsworths (Plastics) Limited, Sutton-in-Ashfield, England

Filed Mar. 12, 1970, Ser. No. 18,901

Claims priority, application Great Britain, July 8, 1969, 34,254/69; Apr. 2, 1969, 17,268/69

Int. Cl. B65d *43/16*

U.S. Cl. 220—30 **15 Claims**



A lidded container comprising a segmental body portion and a lid pivoted thereto, the lid having an innermost planar surface and wherein when the lid is moved through 180° the innermost planar surface will sweep the inner surface of the body portion and remove the contents therefrom and present them for use upon the inverted lid of the container.

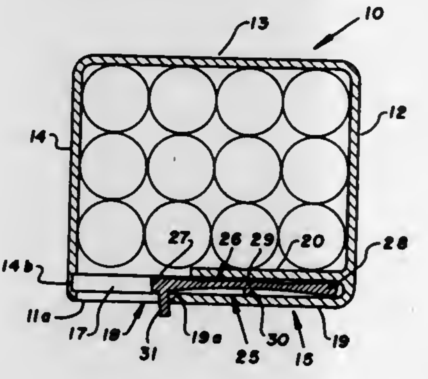
3,651,979
TABLET CONTAINER WITH CLOSURE ELEMENT

Kermit H. Severson, P.O. Box 306, Frazee, Minn.

Filed July 10, 1970, Ser. No. 53,802

Int. Cl. B65d *43/20, 83/04*

U.S. Cl. 220—41 **5 Claims**



A container for tablets and the like including a generally flat tablet retaining portion having one side thereof provided with a tablet dispensing opening with track means arranged adjacent thereto to slidably hold a cover element therein to permit shifting of the cover element into open and closed position across said tablet dispensing opening; said closure element having self-locking and spring loaded characteristics, including a shape to permit retraction of a locking portion thereof into the track area to provide a constant holding against portions of the track area, and when sifted into the closed position, to close the dispensing opening by forcing portions of the cover element into locking position to prevent accidental opening of the tablet dispensing area.

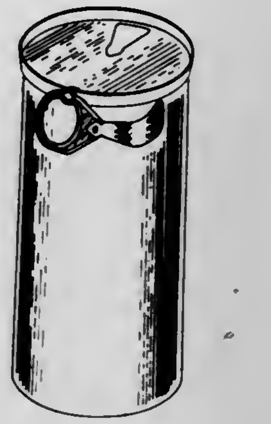
3,651,980
BEAD CLIP RETAINER FOR CAN CLOSURE

Herbert Arthur Bly, P.O. Box 57, South Plainfield, N.J.

Filed Aug. 19, 1970, Ser. No. 65,141

Int. Cl. B65d *17/24*

U.S. Cl. 220—54 **4 Claims**



A retainer clip of specified "C"-shape attached to or formed as an integral part of the ring portion of the ring-and-tear-strip opening device commonly used on beverage cans, for the purpose of affixing the ring-and-tear-strip closure to the outer portion of the can rim bead, after removal from the can, thereby conveniently disposing of said closure.

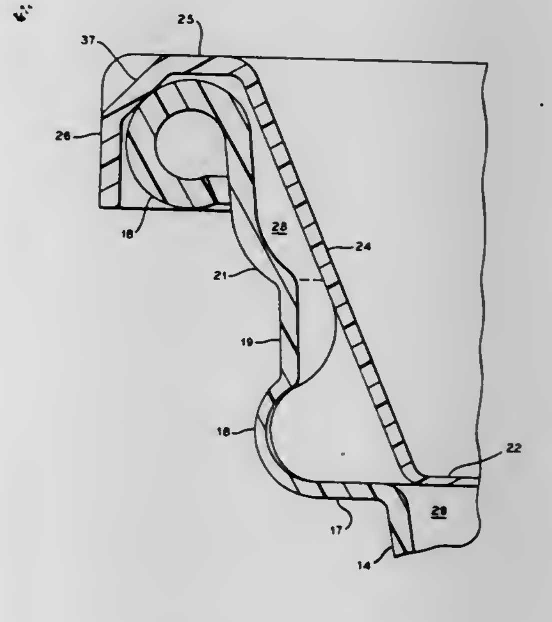
3,651,981
COMBINED CONTAINER AND CLOSURE

Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company

Filed Feb. 5, 1970, Ser. No. 8,959

Int. Cl. B65d *43/10, 51/16*

U.S. Cl. 220—60 R **9 Claims**



A container having a closure retention groove is combined with a closure having a retention bead. The closure is formed so that the portion of the closure between the closure rim and the retention bead grips the portion of the container between the retention groove and the container rim to secure the closure to the container and to form a sanitary seal along the container rim. The retention bead can be interrupted at spaced locations to provide continuous fluid access between the packaging space and the annular space between the closure side wall and the corresponding portion of the container. Indentations can be formed at the junction of the rim and outer skirt of the closure to act as camming surfaces against the curvature of the container rim to raise the closure rim up from the container rim whenever excessive pressure occurs in the container, to thereby vent the container.

3,651,982

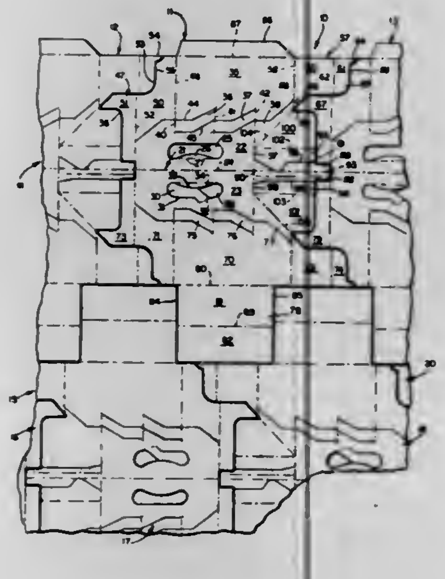
BOTTLE CARRIER

Julian B. Slevin, 300-14 East Baltimore Avenue, Lansdowne, Pa.

Filed Mar. 5, 1970, Ser. No. 16,731

Int. Cl. B65d *75/00*

U.S. Cl. 220—111 **13 Claims**



An article carrier of the type having a plurality of cells therein for receiving articles, such as bottles, is provided, with the carrier being of the folded blank type with the blank being constructed in such a way that a plurality of serially disposed blanks are struck from a sheet of material with ends of the blanks being nested and defined in part by cut lines, such that no material is wasted between adjacent serially disposed blanks, and with the blanks being struck from the sheet of material in a plurality of rows, with the blanks in adjacent rows being nested such that no material is wasted between blanks in adjacent rows. Opposite ends of the blanks are cut to define separators for a carrier in its folded condition, with those portions of the blanks which define separators being configured to define complementally shaped cutouts in adjacent blanks, which, in the folded condition of the carrier define cutouts or voids. A minimum amount of material is utilized for the carrier bottom wall to enable the nesting of adjacent blanks in the same row along the blank-forming material.

3,651,983

NEGATIVE CONTAINER

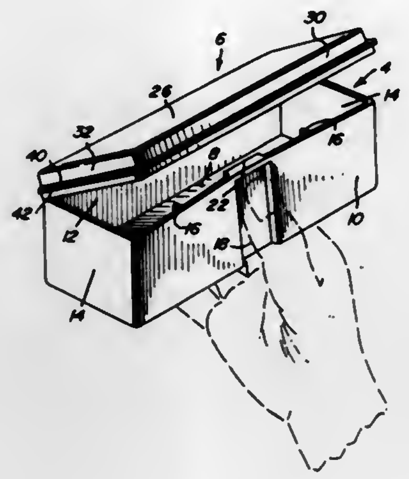
John M. Haugen, 2421 Hewitt Avenue, Everett, Wash.

Filed May 22, 1970, Ser. No. 39,651

Int. Cl. B65d *45/20, 43/16*

U.S. Cl. 220—315 **3 Claims**

A plastic container expressly designed and adapted for use by customers of a photo-developing and finishing establishment and which serves to protectively store negative. It is amply spacious and constitutes a compact and convenient filing case for the negatives and such other suitably marked and dated media as the user desires to protectively store therein.



Accordingly, the related contents can be orderly grouped for such purposes as are desired.

3,651,984

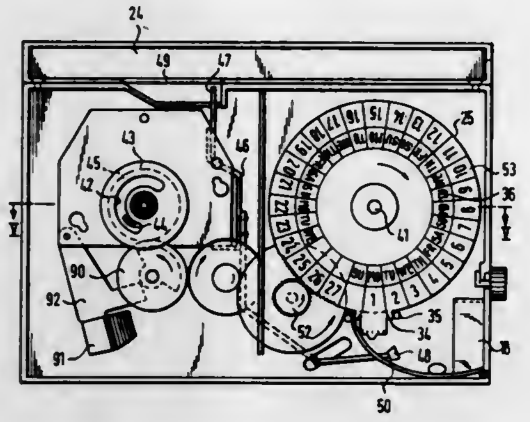
ALARM CLOCK CONTROLLED PILL DISPENSING DEVICE

Friedrich Redenbach, In den Moorackern 3, Ludwigshafen, Rhine, Germany

Continuation-in-part of application Ser. No. 851,178, Aug. 19, 1969, now abandoned. This application Nov. 5, 1969, Ser. No. 874,286

Int. Cl. B65g *29/00*

U.S. Cl. 221—3 **7 Claims**



An alarm clock controlled pill dispensing device comprises an alarm signal mechanism for producing a continuing alarm signal beginning every 24 hours from a settable time. Unless shut off manually, this signal continues constantly or intermittently for a set fraction of 24 hours. Manually operable signal shut-off means is so arranged that operating access thereto is blocked unless a pill is removed from a pill dispensing station.

3,651,985

FEEDER CONTROL AND METHOD

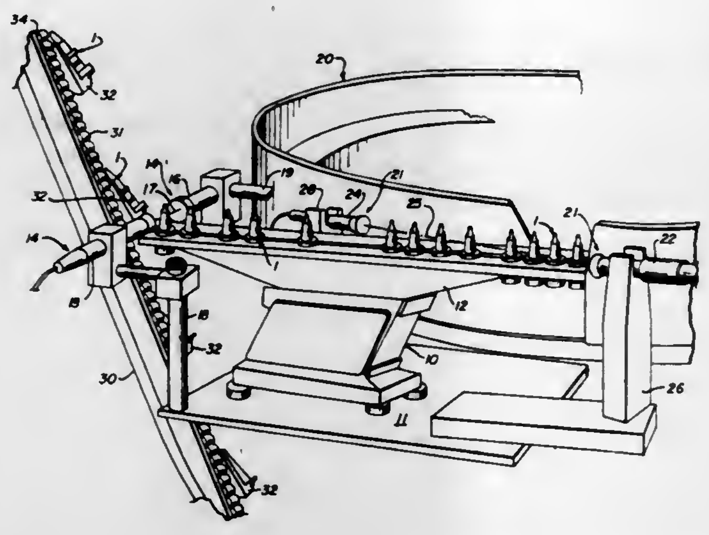
Floyd E. Smith, 5704 Brewster Lane, Erie, Pa.

Filed Dec. 7, 1970, Ser. No. 95,473

Int. Cl. G07f *11/00;* **B65g** *43/08*

U.S. Cl. 221—10 **10 Claims**

A feeder is disclosed in which a supply feeder delivers frangible parts to a linear feeder. The control is achieved by slaving the supply feeder to the linear feeder, and controlling the number of parts on the linear feeder as a master with the supply feeder as slave. An interrupted beam control is positioned to determine the infeed from the supply feeder to the linear feeder, the linear feeder being controlled by another beam interruption control at its delivering end. The parts are delivered to a finite position, illustrated for pick up by a conveyor having a plurality of buckets on a chain. The control shuts off the slave supply feeder upon a predetermined time delay after parts pass through the beam. The supply feeder is then activated again after the parts blockage is removed. For purposes of illustration, the supply feeder is a vibratory bowl feeder and the linear feeder is a vibratory linear feeder.



The method contemplates feeding the parts to the linear feeder from the slave supply feeder shutting the same off upon a predetermined time delay after a signal. The signal is a function of continuous parts blockage of a sensor, which is reactivated responsive to the absence of parts blockage, the method of controlling the linear feeder being solely the function of positioning of parts at its delivery end.

3,651,986

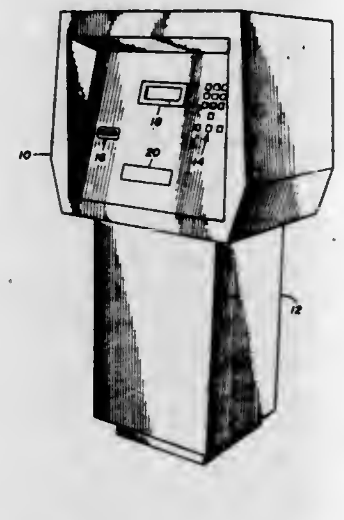
CREDIT CARD AUTOMATIC CURRENCY DISPENSER

Marion R. Karecki, and Thomas R. Barnes, both of Dallas, Tex., assignors to Docutel Corporation, Dallas, Tex.

Filed July 29, 1970, Ser. No. 59,156

Int. Cl. G07f *7/02*

U.S. Cl. 221—12 **21 Claims**



A currency dispenser automatically delivers a medium of exchange in packets in response to a coded credit card presented thereto. The coded credit card is presented to the currency dispenser and an initial check is made to determine if the card has the proper format. After checking the credit card format, coded information thereon is evaluated to check the user's identity prior to authorizing him to receive cash from the machine. When each of several additional checks of the credit card code have been completed, the old code is removed and substituted with a new code. The new code contains the same information as the old but updated to reflect an additional currency dispensing transaction. Both the original code and the updated code are scrambled in accordance with a changing key. Scrambling the credit card code after each use thereof minimizes the chance of unauthorized use of the currency dispenser. When the checks of the credit card code indicate the user is entitled to receive the amount of currency he has selected, a storage container for the packets of currency transports the required number of packets by a positive feed drive to a cash drawer. The cash drawer opens to a detent position which allows the customer to then move the drawer to a fully open position to remove his currency. Upon release of the cash drawer, it returns to a partially opened position from which it automatically closes after a preset time limit.

3,651,987

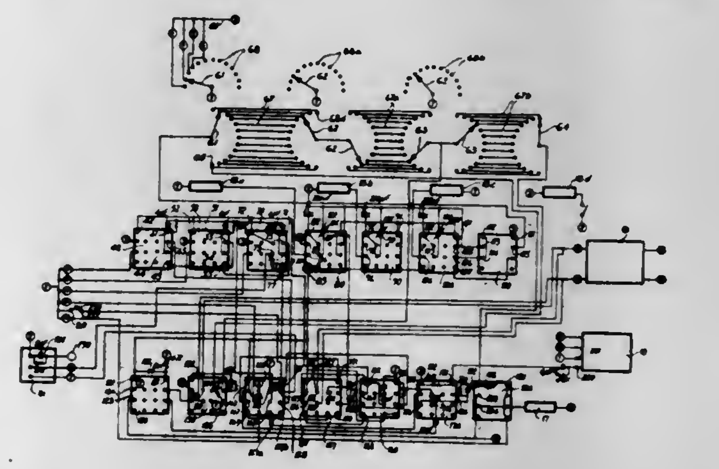
AUTOMATIC CONTROL FOR DISPENSING MACHINE

Cyril E. Powell, Rathfarnham, Ireland, assignor to Consolidated Coin Company (Ireland) Limited, Dublin, Ireland

Filed Jan. 2, 1969, Ser. No. 788,484

Int. Cl. G07f *11/00*

U.S. Cl. 221—13 **6 Claims**



A gaming and/or vending machine, which is actuated by the insertion of a coin or note, and comprising a plurality of switch elements and electrical conductors which are movable relative to the switch elements when the machine is in use, actuation of the machine dispensing unit being determined by the final relative position of the switch elements and electrical conductors.

3,651,988

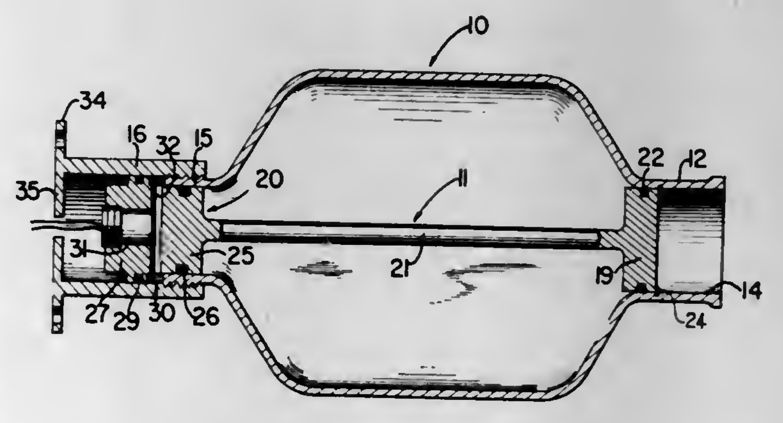
EXPLOSIVELY OPERATED GAS SUPPLYING APPARATUS

John Cirillo, Glen Ridge, N.J., assignor to Walter Kidde & Company, Inc., Belleville, N.J.

Filed Aug. 21, 1970, Ser. No. 66,014

Int. Cl. B67b *7/02*

U.S. Cl. 222—3 **10 Claims**

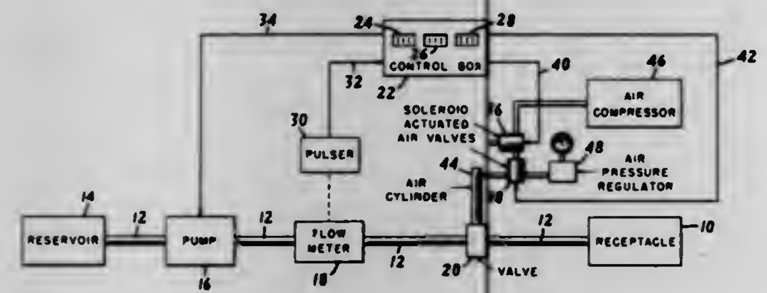


Apparatus for supplying pressurized gas including a container having an outlet opening and an open ended tubular section providing a second opening aligned with the outlet, and a valving device for sealing both openings. The valving device comprises a piston which is held in sealing relationship with the outlet by the pressure in the container and a second piston positioned in the tubular section for partially balancing the pressure acting on the first piston. The second piston carries an explosive charge and a piston surface to be acted upon by the gas generated by the explosive. Detonation of the explosive charge drives the valving device into an open position.

3,651,989
LIQUID METERING SYSTEM

Milton D. Westrich, 19 North Harrison Street, South Orange, N.J.

Filed Mar. 24, 1970, Ser. No. 22,228
Int. Cl. B67d *5/30*
U.S. Cl. 222—14 **6 Claims**

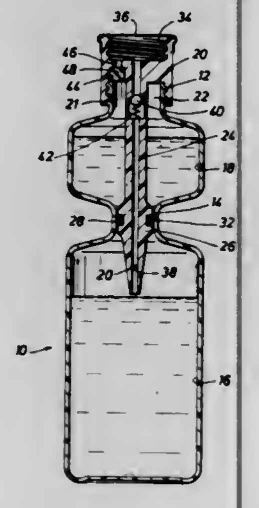


Disclosed herein is a system for supplying metered amounts of liquid to a receptacle through a two-stage valve controlled by an air cylinder, which in turn is controlled by a pair of solenoid operated air valves. An electrical control means is provided wherein a selector device permits the selection of the amount of liquid which is to be pumped through the two-stage valve. When the system is first turned-on, the control means provides an electrical signal to one of the solenoids to fully open the two-stage valve. Then, shortly before the completion of pumping of the predetermined amount of liquid, a second electrical signal is coupled from the control means to the second solenoid valve causing the two-stage valve to partially close. Finally, when the full metered amount of liquid has been pumped through the valve, both solenoids are deenergized thereby closing the two-stage valve.

3,651,990
CONTAINER FOR KEEPING LIQUIDS IN SEPARATE CONDITION AND COMMINGLING AND DISPENSING THE SAME

Edward J. Cernei, 2148 West Holcombe, Houston, Tex.

Filed Oct. 23, 1969, Ser. No. 868,812
Int. Cl. B65d *35/22*
U.S. Cl. 222—94 **7 Claims**

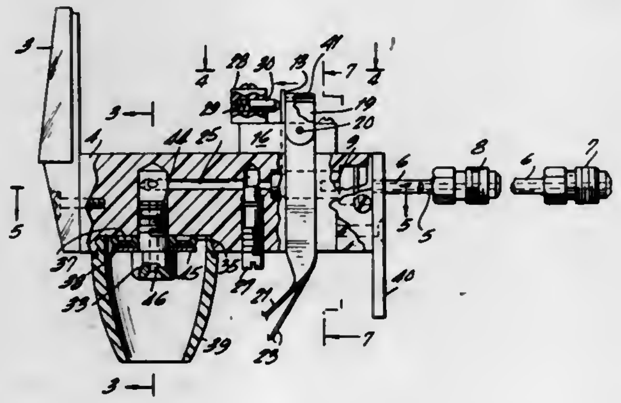


A container of the plastic "squeeze bottle" type having two compartments which are in communication through a reduced neck portion or restriction which is closed by a tubular stem on a screw cap when the bottle is closed thereby to keep two liquid components separated until they are to be commingled at the time of dispensing. When the liquids are to be dispensed, the cap is removed and reversed to open the reduced neck portion to allow the liquids to become commingled, whereupon the resultant mixture may be dispensed through the stem of the cap by squeezing the container.

3,651,991
DISPENSER HAVING VALVES ACTUATED BY YOKE SHAPED LEVER

Arvid T. Ohlson, Pequannock, N.J., and Kenneth I. Tall, New York, N.Y., assignors to Kenco Products Corporation

Filed Sept. 18, 1970, Ser. No. 73,455
Int. Cl. B67d *5/56*
U.S. Cl. 222—144.5 **32 Claims**



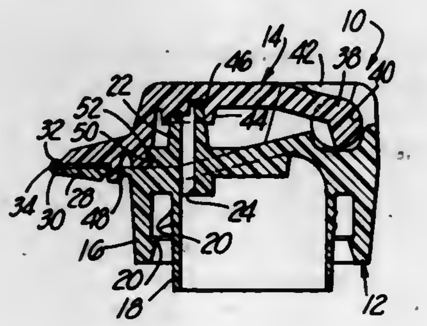
A dispensing device for beverages consisting of two fluids wherein both are to be dispensed substantially simultaneously, comprising a pair of fluid lines with a valve in each one, each valve having an actuating means, the actuating means consisting of a yoke mounted on the body of the device and adapted for pivoting motion with respect thereto. The yoke has an upper portion which bears against the actuating means when said yoke is pivoted to cause the valve to open. A second yoke is provided which bears against only one of the valve actuators so that one of the fluids can be dispensed without the other. Resilient return means is provided urging the actuators into the closed position and the seal is maintained by the pressure of the fluids in their respective fluid lines.

In addition, a mixing device is disclosed in order to provide the more viscous of the two fluids from adhering to the spout of the device.

3,651,992
TAMPER-PROOF CLOSURE

Robert E. Hazard, North Kingstown, R.I., assignor to Polytop Corporation, Slatersville, R.I.

Filed Mar. 23, 1970, Ser. No. 21,591
Int. Cl. B67b *5/00;* **B67d** *5/32*
U.S. Cl. 222—153 **7 Claims**

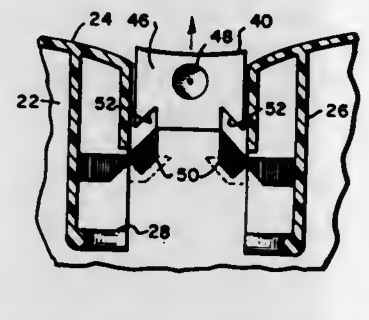


A tamper-proof closure is disclosed which includes an integrally formed top and lid. The top and the lid are initially connected together by a severable member and by cooperating bearing and trunnion means in such a manner that the lid closes off a dispensing opening in the top. The severable member is capable of being broken so that thereafter the lid may be rotated with respect to the top between open and closed positions.

3,651,993
AEROSOL DISPENSING CAP WITH TAMPER-RESISTANT ACTUATOR

Frank Venus, Jr., Watertown, Conn., assignor to The Risdon Manufacturing Company, Naugatuck, Conn.

Filed Apr. 13, 1970, Ser. No. 27,672
Int. Cl. B65d *83/14*
U.S. Cl. 222—153 **7 Claims**

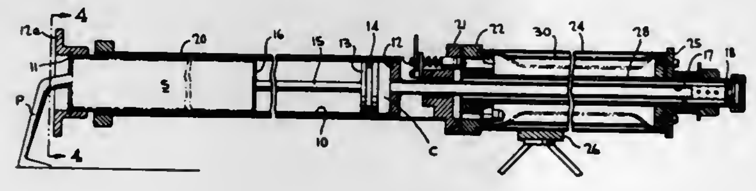


A one-piece molded plastic overcap and actuator assembly of inverted cuplike configuration is provided for a valved aerosol dispenser having an axially projecting valve stem at one end, wherein the actuator comprises an integrally hinged elongated tab partially cut from the bottom wall of the cup, the tab having a free-flexing end and a valve stem receiving socket adjacent that end at the underside, with an internal passage connecting the socket to a lateral discharge orifice in the tab. An integrally hinged pawl is formed on one of the overcap and actuator members, and a receiving notch for the pawl is let into the surface of the other to provide a ratchet which, when engaged, blocks movement of the actuator in the valve-operating direction. The pawl is normally biased by its hinge connection to nonengaging position relative to the notch and must be manually flexed into notch-engaging position.

3,651,994
CAULKING GUN

George F. Nordenholt, Dogwood Drive, MR 17 Morristown, N.J.

Filed Oct. 13, 1969, Ser. No. 865,897
Int. Cl. G01f *11/06*
U.S. Cl. 222—160 **9 Claims**

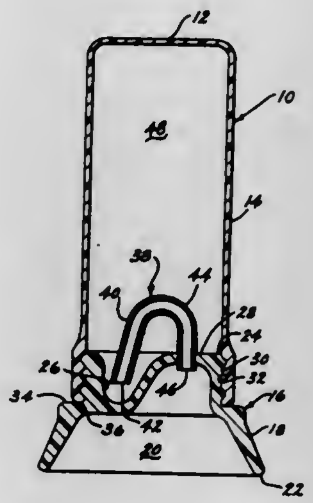


The sealant applicator hereinafter described in detail has been designed and constructed in such manner that, when operated to apply a ribbon or bead of sealant material to an article, piece of furniture or other work in which a sealed waterproof joint between or in structural members is required, the applied ribbon or bead is uniform in cross section throughout its entire length instead of varying in cross section as do the ribbons of sealant delivered by applicators of the types heretofore employed. To realize this objective a novel mechanism is employed, extrusion of sealant being effected at a rate which is strictly proportional to the linear progress of the spout which delivers the sealant carried in the sealant containing cartridge into the crack or joint to be sealed. Liquid under pressure, automatically metered, is utilized to effect the discharge of sealant.

3,651,995
SQUEEZE BOTTLE WITH HYDROSTATIC PASSAGE TO RESTRAIN LEAKAGE

Ray O. Chaney, R.R. #6, Wapakoneta, Ohio

Filed Aug. 25, 1969, Ser. No. 852,614
Int. Cl. B65d *37/00*
U.S. Cl. 222—211 **7 Claims**

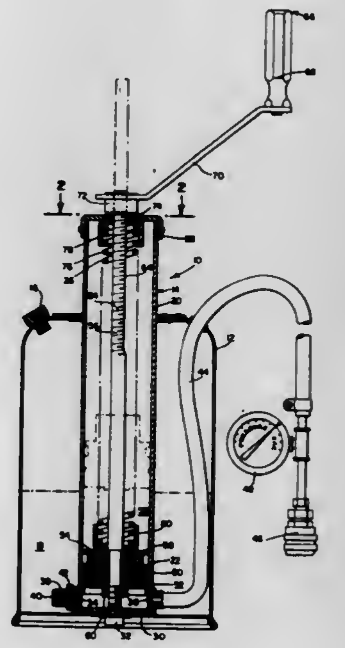


No-drip squeeze bottle for catsup, mustard, etc., having an inverted generally U-shaped outlet tube.

3,651,996
APPARATUS FOR PRESSURIZING A FLUID SYSTEM

Frederick R. McFarland, and Walter L. Diffenderfer, both of Lancaster, Pa., assignors to K-D Manufacturing Company, Lancaster, Pa.

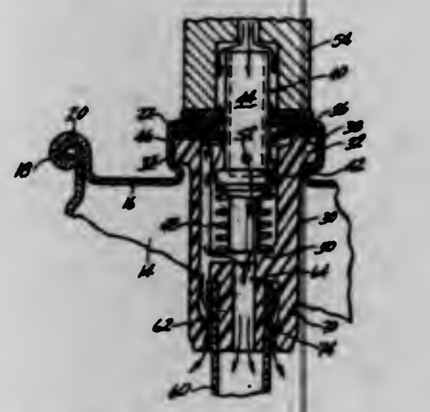
Filed Apr. 29, 1970, Ser. No. 32,865
Int. Cl. B67d *5/42, 5/50*
U.S. Cl. 222—385 **9 Claims**



An apparatus is provided for pressurizing a fluid system, for example, a hydraulic brake system of an automobile, which is comprised of a tank for holding a supply of fluid and a pump. The pump is connected to the tank through a pressure sensitive check valve. The pump has a piston which, when it is drawn upward, creates a vacuum inside the pump which causes the check valve to open and allows fluid from the tank to flow into the pump. When sufficient fluid is inside the pump, pressure is then applied to the piston which pressurizes the fluid inside the pump and closes the check valve. The fluid inside the pump is now under pressure and in this condition can be introduced into various fluid systems for the purpose of pressurizing the systems. This apparatus is especially useful for bleeding of hydraulic brake systems.

3,651,997
COMBINED PRESSURE FILLING AND DISPENSING CONTROL VALVE FOR AEROSOL CONTAINERS

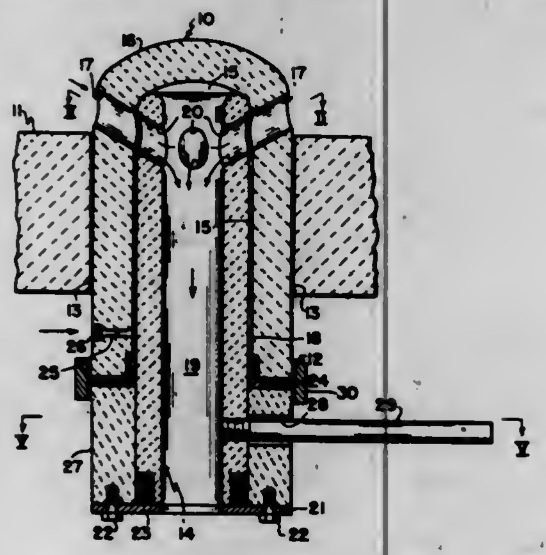
Frank Venus, Jr., Watertown, Conn., assignor to The Risdon Manufacturing Company, Naugatuck, Conn.
Filed Mar. 23, 1970, Ser. No. 21,963
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.16 **9 Claims**



A valve for an aerosol dispensing container which functions not only to control normal fluid dispensing from the container but also facilitates pressure filling where the valve is sealed in the mouth of the container prior to loading. The valve employs a tailpiece and plastic dip tubing mounted on the tailpiece, in conjunction with a coaxial integral sleeve on the valve housing, to form a resilient seal which is effective against fluid bypassing the dip tube at normal internal operating pressures of the aerosol dispenser, but which permits such bypassing to occur when filling pressures are introduced into the valve housing. Preferably the valve also incorporates special sealing grommets surrounding the neck of the valve stem which act as a one-way check valve providing increased flow rate of fluid product around the valve stem during pressure filling.

3,651,998
NOZZLE FOR A POURING LADLE

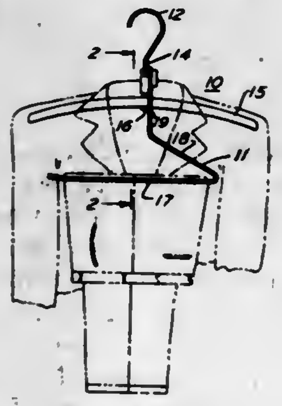
George Rocher, Pittsburgh, Pa., assignor to Metallurgical Exoproducts Corporation, McKees Rocks, Pa.
Filed Sept. 23, 1970, Ser. No. 74,733
Int. Cl. B67c *3/00*
U.S. Cl. 222—488 **10 Claims**



A nozzle for insertion into the central opening of a nozzle seat in a pouring ladle has a stationary member and a rotatable member. The stationary member is secured within the central opening of the nozzle seat and has a closed upper surface, a central passageway and a plurality of spaced openings communicating with the central passageway. The rotatable member is positioned within the central passageway of the stationary member to define an annular gap therebetween. The rotatable member also has a plurality of spaced channels leading to a central aperture so upon rotation of the rotatable member, the openings of the stationary nozzle and the channels of the rotatable member are aligned to provide a continuous exit for liquid from the ladle. An inert gas is directed into the gap to prevent liquid metals from entering therein and also to lubricate the system.

3,651,999
GARMENT HANGER FOR SUITS

Emanuel Richard Flocca, 745 Lancaster Avenue, Philadelphia, Pa.
Filed June 5, 1970, Ser. No. 43,749
Int. Cl. A47j *51/08*
U.S. Cl. 223—88 **3 Claims**



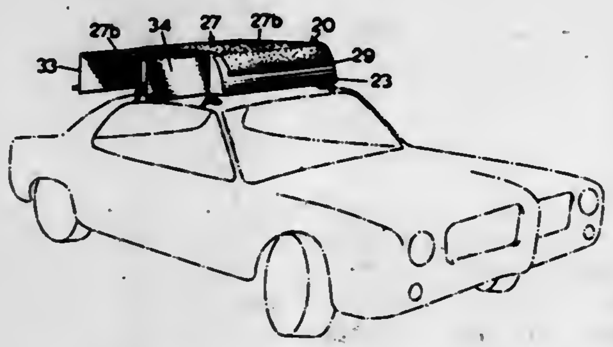
A garment hanger for suits which is of two piece construction with a main coat hanger and an auxiliary trousers hanger attachable and detachable to the hook of the coat hanger above the collar of the coat.

ERRATUM

For Class 224—42 see:
Patent No. 3,652,009

3,652,000
COMBINED CAR-TOP CARRIERS AND SHELTERS

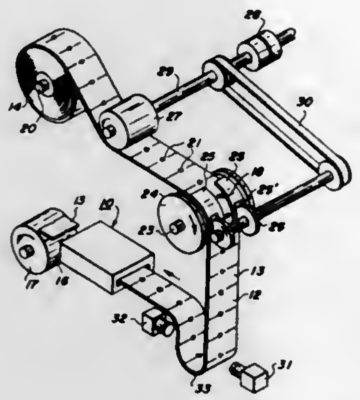
Neal K. Steinhoff, Pioneer Place, Route #1, Verona, Wis.
Filed Nov. 6, 1970, Ser. No. 87,488
Int. Cl. B60m *11/00*
U.S. Cl. 224—42.01 **4 Claims**



A car-top carrier having a housing of generally rectangular configuration providing a top-opening main storage compartment and a side-opening secondary compartment. A pair of opposing side doors, mounted on vertical hinges, close the second compartment and swing open to provide supports for a tarpaulin unrolled from a shelf in the secondary compartment to form a protective shelter at one side of the automobile.

3,652,001
LABEL STRIP FEEDER

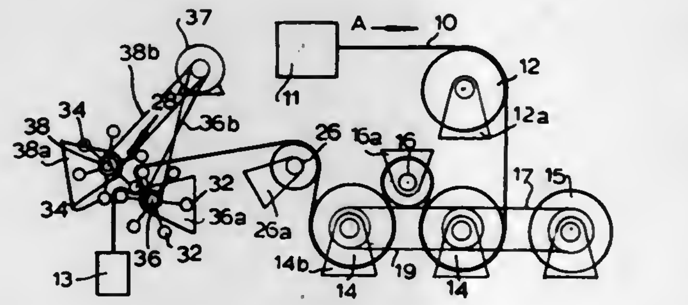
Herbert C. Artelt, Jr., Wildwood, Ill., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 12, 1970, Ser. No. 79,971
Int. Cl. B65h *17/36*
U.S. Cl. 226—65 **5 Claims**



A feeder for advancing a label strip in increments equal to one label width or multiple thereof to a knife mechanism where the strip is cut into individual labels. The feeder includes a reciprocal driver adapted on the forward stroke thereof to engage the label strip and advance the strip one increment, the strip having successive perforations for this purpose. A one-way brake to prevent movement of the strip on the return stroke of the drive is provided. The driver rides in a track which is both movable and tiltable to accommodate various strip materials and thicknesses. An adjustable cover spaced opposite the driver permits further adjustment for changed strip materials and thicknesses while enabling the driver during the feed stroke to arch the strip and discourage buckling of the strip.

3,652,002
TRACTION DEVICES

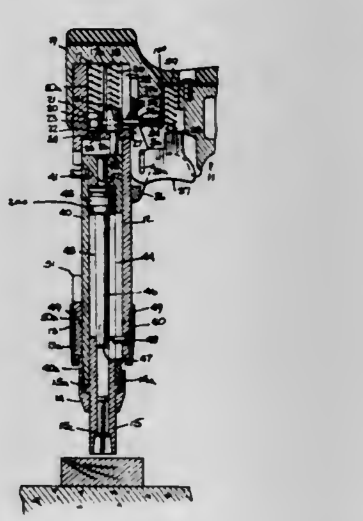
George Pollard Dennis, 6 Hilary Mansions, Malonie Road, Wallasey, England, assignor to Pen Croft Dyeing and Printing Co. Limited, Bury, Lancashire, England
Filed Oct. 15, 1970, Ser. No. 81,067
Claims priority, application Great Britain, Oct. 25, 1969, 52,380/69
Int. Cl. B65h *17/20*
U.S. Cl. 226—172 **9 Claims**



The present invention provides traction apparatus for wet cloth comprising at least one, horizontally mounted, cylindrical traction roller whose peripheral surface is roughened or knurled for penetrating surface liquor and contacting wet cloth when the latter is fed at least partially around the roller, the peripheral surface of the traction roller being further provided with left and right handed helical grooves for carrying liquor deposited by the cloth on the traction roller towards the ends thereof, and a tensioning device arranged downstream of the traction roller in the direction of movement of cloth driven by the traction roller and adapted to provide an oscillating tension in cloth engaging the traction roller so as to enhance driving contact of the cloth with the traction roller.

3,652,003
POWDER ACTUATED TOOL

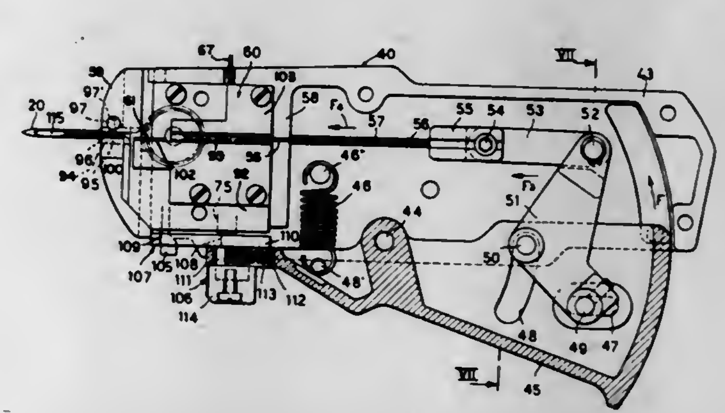
Ignazio Leonardo, Mountainside, and Harold C. Pfeiffer, Roselle Park, both of N.J., assignors to General Cable Corporation, New York, N.Y.
Filed Apr. 6, 1970, Ser. No. 26,022
Int. Cl. B25c *1/14*
U.S. Cl. 227—10 **5 Claims**



A powder actuated tool including a barrel with a muzzle affixed to one end is disclosed. A cylinder is movable within the barrel and a piston having a piston rod extending through the muzzle is movable within the cylinder. Stop means are located in the cylinder and the guidepin is located on the barrel. Adjustable means are provided for varying the stroke length of the piston within the cylinder and means are provided for increasing the service life of the piston rod.

3,652,004
DEVICE FOR FIXING LABELS TO A SUPPORTING BODY

Battista Lozio, Via Stefini 6, Milan, Italy
Filed May 5, 1970, Ser. No. 34,831
Claims priority, application Italy, Feb. 4, 1970, 20221 A/70
Int. Cl. B25c *1/00*
U.S. Cl. 227—67 **4 Claims**

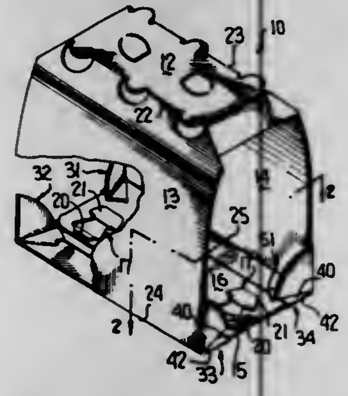


A device for fixing labels to a supporting body, such as for example a fabric, by means of connecting elements consisting of a button and an anchoring body connected by a thin filament. When the device comprises a hollow needle with a longitudinal slot, a piston which thrusts said anchoring body forward along said slot of said needle, a kinematic mechanism which feeds said connecting elements, assembled to form a unit, in continuous succession in such a manner that the anchoring body of each element is each time brought into alignment with said needle, and means for cutting each connecting element from said unit when the anchoring body of the element considered is thrust along the slot of said needle.

The kinematic mechanism which feeds the connecting elements in continuous succession is wholly contained in a piece house in a freely removable manner in the body of the device, and is not constrained with the other members of this latter.

3,652,005
CARTON WITH GUSSETTED ENDS

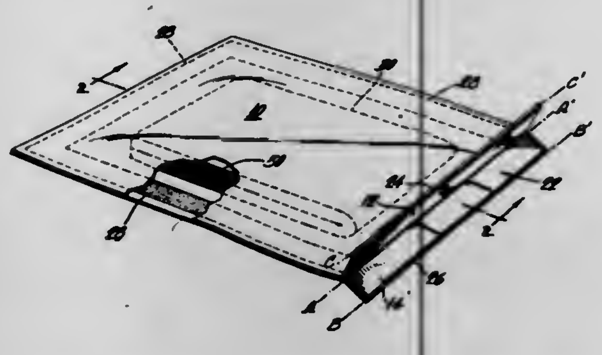
Nicholas V. Morgese, Garnerville, N.Y., assignor to Continental Can Company, Inc., New York, N.Y.
Filed May 15, 1970, Ser. No. 37,782
Int. Cl. B65d *5/02*
U.S. Cl. 229—40 **21 Claims**



This disclosure relates to a carton blank and a carton formed therefrom which includes top, side and bottom panels with the side panels each including an end panel joined thereto along a fold line whereupon being set up into a generally tubular configuration the end panels at least partially close axially opposite ends of the carton. The major feature of the invention is a locking panel associated with each bottom and end panel in the form of a pair of locking panel portions divided by a fold line which permits the locking panel to be folded or gussetted interiorly of the tubular body to maintain each end panel disposed less than 90° relative to its associated side panel whereby a projecting nose of one of the locking panel portions is deeply disposed within the carton at a position whereat the bottom wall of an associated container packaged within the carton may rest upon the nose to preclude inadvertent unfolding of the locking panel portions.

3,652,006
TEAR OPEN PACKAGE AND TEAR SEAM THEREFOR

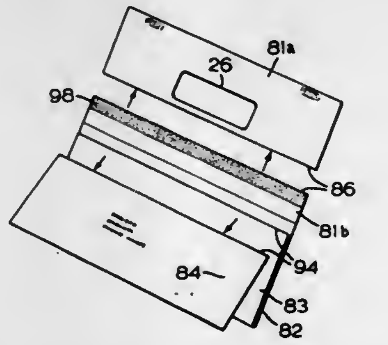
Robert J. Trewella, Reading, Pa., assignor to Wyomissing Corporation, Reading, Pa.
Filed Jan. 20, 1970, Ser. No. 4,330
Int. Cl. B65d *33/02*
U.S. Cl. 229—55 **2 Claims**



A tear-open package comprising a flexible packaging material, such as paper, sealed around its periphery but spaced apart near its center to provide a product-receiving cavity, the package having a pleat formed along one edge thereof to provide a pair of adjacent outwardly extending and readily graspable folds. The folds are reinforced by stiffening strips or by adhesive material, except along the fold line between folds, so that when the folds are grasped and pulled apart the package will tear open along the fold line between the reinforced folds.

3,652,007
TWO-WAY MAILING ENVELOPE

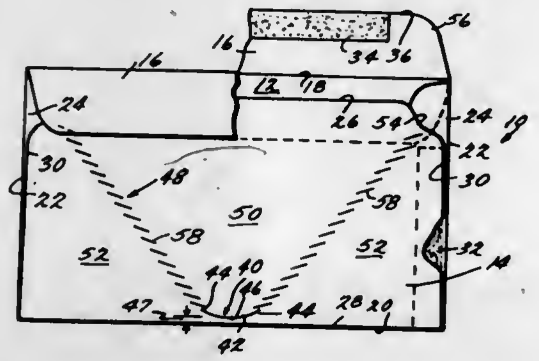
Bruce A. MacDougall, Clarkson, Ontario, Canada, assignor to Dominion Envelope Company Limited, Don Mills, Ontario, Canada
Filed Dec. 8, 1969, Ser. No. 882,889
Int. Cl. B65d *27/06, 27/10*
U.S. Cl. 229—73 **2 Claims**



A two-way mailing envelope and a continuous envelope assembly which consists of a plurality of collated two-way mailing envelopes. The two-way mailing envelope comprises a front wall panel and a back wall panel which are secured to one another to form a mailing pouch and a closure flap for closing the envelope. The front wall panel has a greater height than the back wall panel so as to provide a permanent record panel which projects beyond the upper edge of the back panel. The closure flap means includes flap means for closing the envelope for first mailing and flap means for closing the envelope for second mailing. The continuous assembly consists of a plurality of envelopes serially connected to one another with the permanent record panels thereof exposed in the same plane for printing purposes.

3,652,008
ENVELOPE

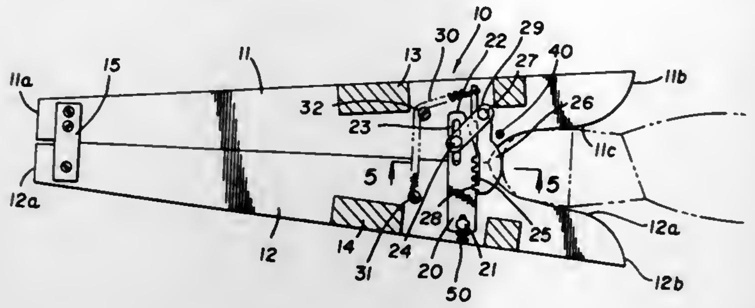
William H. Grotefend, Bowie, Md., assignor to Computing & Software, Inc., Century City, Los Angeles, Calif.
Filed Nov. 27, 1970, Ser. No. 93,012
Int. Cl. B43m *5/00, 7/00*
U.S. Cl. 229—85 **18 Claims**



A side-seam envelope having, on its back panel, a tab defined by a tab die cut spaced a sort distance from the bottom edge of the back panel and a pair of tear lines extending upwardly from the free ends of the die cut to at least the free bottom edge of the flap in its secured position.

3,652,009
ADJUSTABLE BOOT JACK

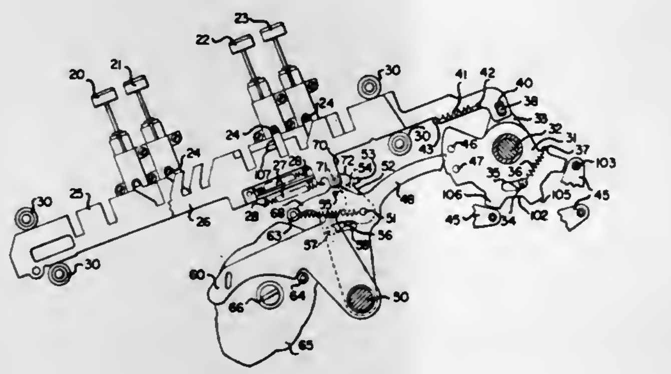
Ronald L. Foster, 3633 Hudson Drive, Stow, Ohio
Filed June 15, 1970, Ser. No. 46,015
Int. Cl. A47j *51/02*
U.S. Cl. 223—116 **7 Claims**



A boot jack to assist in the removal of tight-fitting boots which includes opposed gripping members which are connected at one end by a hinge and which have their remaining ends contoured to engage the heel of the boot. The two gripping members can be spread apart as the heel of the boot is inserted between the contoured ends, and a spring-loaded control member is provided which is engaged by the heel and which locks the opposed gripping members in a spaced-apart condition conforming to the size of the particular boot involved. A second control means is also provided for fine adjustment.

3,652,010
TOTALIZER CONTROL MECHANISM

Hans-Juergen Krause, and Johannes Rindsfuesser, both of Berlin, Germany, assignors to The National Cash Register Company, Dayton, Ohio
Filed Nov. 9, 1970, Ser. No. 87,767
Int. Cl. G06c *21/00*
U.S. Cl. 235—60 R **10 Claims**

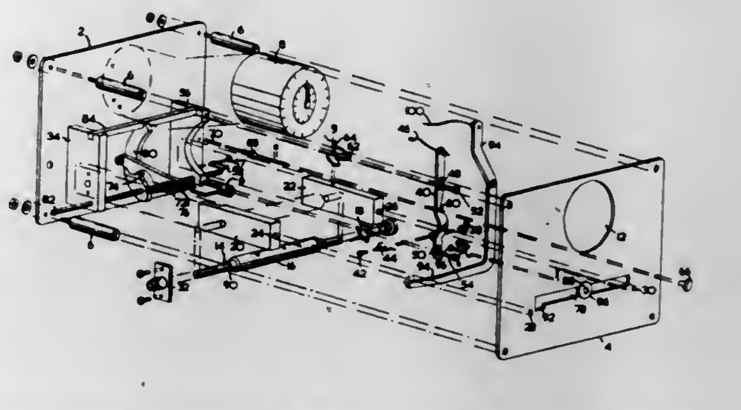


A device for controlling the totalizer mechanism of a cash register during a total-taking operation in which an amount set up in the keyboard of the machine is entered into the differential mechanism of the cash register during the second half of the total-taking machine cycle and is then transferred into the totalizer mechanism during the first half of the next succeeding machine operation. Mechanisms operated by various control keys control the timing of the movement of the totalizers into engagement with rack members in the amount banks of keys to allow a total-taking operation to occur within a single operation of the machine.

3,652,011
ELAPSED TIME RECORDER

Glyn West, 30 Leopold Drive, Sarnia, Ontario, Canada
Filed Feb. 19, 1969, Ser. No. 800,443
Claims priority, application Canada, Mar. 1, 1968, 013,730
Int. Cl. G07c *1/00*
U.S. Cl. 235—104 **7 Claims**

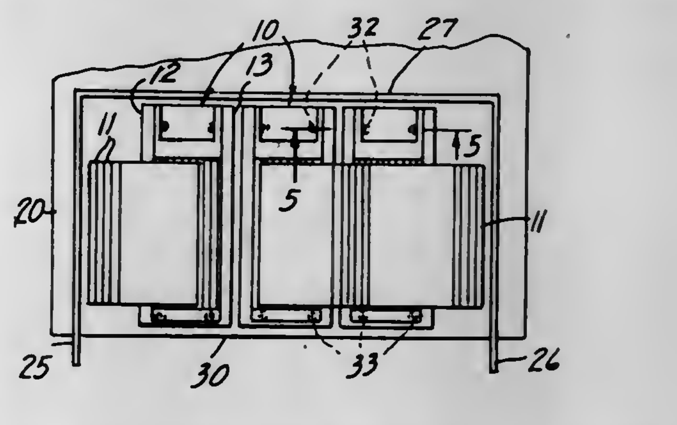
An instrument incorporates a stop clock which records the time that elapses between the start of turning of a shaft in a specified direction and the completion of a predetermined number of revolutions in that direction. The clock is started by a ratchet and pawl device so that movement in the reverse direction does not start the clock, and the predetermining counter which may be, for example, a friction member bearing on a screw thread has a starting point which can be locked, as desired to alter the predetermined number of revolutions. The stopping point is always the same so that the predetermining counter in effect counts down from an adjustable start.



The instrument is primarily intended for measuring the time for an automobile to cover a fixed distance from a standing start by a simple attachment to a road wheel. The ratchet and pawl feature allows the vehicle to be moved (e.g., for accurate positioning on a starting line) without resetting the timer by using the reverse gear.

3,652,012
VOTE RECORDING CONSTRUCTION

Joseph P. Harris, 1020 Lassen Street, Berkeley, Calif., and Leonard N. Albrecht, 1920 Paradise Drive, Tiburon, Calif.
Filed July 9, 1970, Ser. No. 53,506
Int. Cl. G07c *13/00*
U.S. Cl. 235—50 **4 Claims**



A voting booth construction which provides a simplified and efficient means of combining a voting booth and vote recorder to provide a facility used by voters to record votes manually on a machine processable card. A vote recorder and a support therefor are provided with interengaging elements to position and secure said recorder on said support in the desired voting position. The vote recorder is designed so that a plurality of said recorders may be installed in the limited space of a voting booth, the reference pages of each recorder being adapted to overlap the reference pages of an adjoining recorder. The interengaging elements on the vote recorder and its support are so arranged as to permit one or more recorders to be attached to the support in various predetermined positions to enhance the efficiency of the voting operation. The preferred form of the invention includes a plurality of projections on the vote recorder and a sufficient number of apertures on the support to permit installation of the vote recorder in different positions depending upon the requirements of the election and to provide for the convenience of voters.

3,652,013

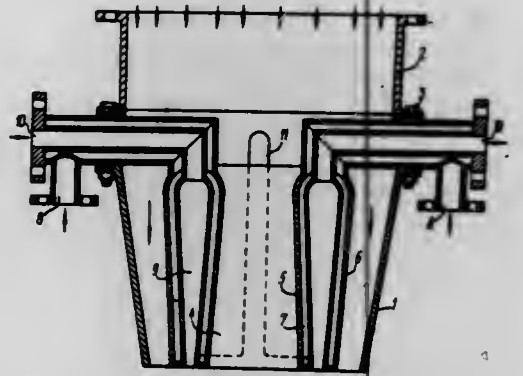
DEVICE FOR SPRAY DRYING OF LIQUIDS BY MEANS OF HOT GASEOUS MEDIUM

Mikhail Vasilievich Lykov, Simonousky val, 22 Korpus 2, kv. 53; Gleb Federovich Rybalchenko, ulitsa Gishina, 18, kv. 73, and Mikhail Alexeevich Korotkov, selo Semenoskoe, 139, all of Moscow, U.S.S.R.

Filed May 1, 1970, Ser. No. 33,736

Int. Cl. B05b *7/06*

U.S. Cl. 239—132.3 **3 Claims**



A device for spray drying of liquids by means of a hot gaseous medium fed to a convergent channel wherein there is a nozzle for a liquid being sprayed. Said nozzle is arranged in a channel formed by the double walls of a hollow body of rotation, said body being placed inside the convergent channel and coaxial with the latter.

3,652,014

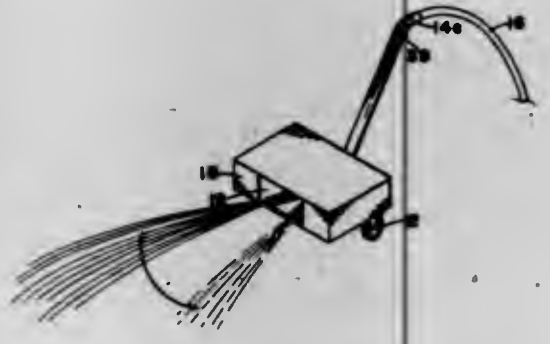
OSCILLATING SPRAY-CLEANING DEVICE

Thomas Leo Neville, 1590 Yates Street, Denver, Colo.

Filed Mar. 11, 1970, Ser. No. 18,537

Int. Cl. B05b *9/02*

U.S. Cl. 239—287 **9 Claims**



A spray-cleaning device includes a movable platform supporting a swiveled holder adapted for positioning a spray nozzle in a generally horizontal and forwardly directed position. A mechanism is arranged to manually oscillate the swiveled holder from side to side through a limited arc of travel to spray a relatively wide strip of surface area forwardly of the device. A hollow handle is secured to the platform and the platform is mounted on wheels to facilitate manual movement thereof and the hollow handle passes liquid via a hose coupled to the nozzle.

3,652,015

NEBULIZER

Glenn L. Beall, Gurnee, Ill., assignor to Respiratory Care, Inc., Northbrook, Ill.

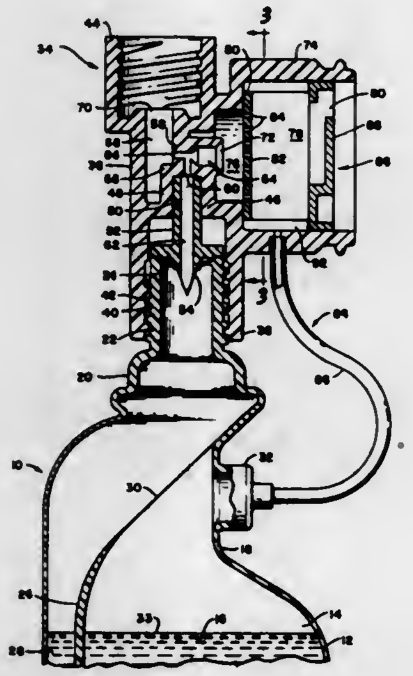
Filed May 11, 1970, Ser. No. 36,340

Int. Cl. B05b *7/30*

U.S. Cl. 239—338 **7 Claims**

A water supply is adapted as a source for nebulized liquid through the agency of an adapter which couples oxygen pressure to a container for the water. A venturi within the adapter draws from the water supply and directs atomized water and oxygen through an outlet pipe on the adapter.

A perforated plate is disposed in the path of flow downstream of the venturi and divides the outlet pipe into inner and outer chambers. It traps water particles which are too large to pass through the plate perforations and passes the remainder. Water which collects upstream of and against the perforated plate in the inner chamber drains into the outer chamber through lowermost perforations.



A baffle plate is disposed in the outlet end portion of the outlet pipe; and it intercepts water condensed in the outer chamber and has an arcuate upper opening for passage of nebulized water from the fitting. A duct which is fluidly connected to the outer chamber returns condensed water therefrom to the container and stabilizes pressure therein by providing gas replacement for water removed from the system.

3,652,016

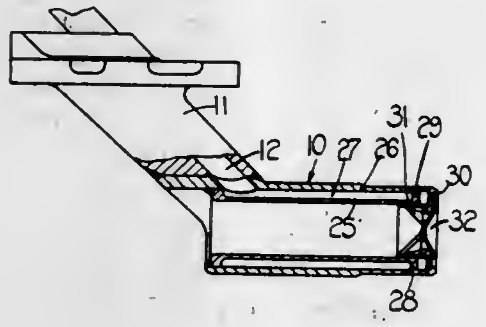
LIQUID ATOMIZING DEVICES

Alan G. Cheshire, Lane, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed May 12, 1970, Ser. No. 36,650

Int. Cl. B05b 7/06

U.S. Cl. 239—424.5 **2 Claims**



A liquid fuel atomizing device includes a tube through which air flows, a conical flow deflector at the downstream end of the tube, and nozzles for supplying fuel into the airstream adjacent the edge of the deflector.

3,652,017

OIL ATOMIZATION BURNER

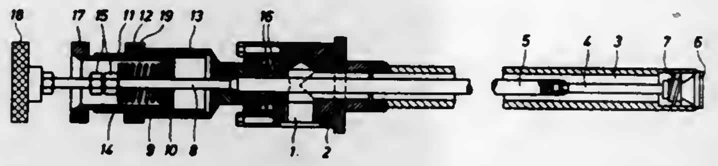
Aage Nielsen, Hellerup, Denmark, assignor to H. Nielsen & Sons Maskinfabrik A/S, Herlev, Denmark

Filed June 18, 1970, Ser. No. 47,534

Claims priority, application Denmark, June 24, 1969, 3386/69

Int. Cl. B05b *1/32*

U.S. Cl. 239—453 **5 Claims**



In certain oil burners the valve opens by an outward movement of the valve body against the action of an interior spring. This spring is now located outside the oil passage to facilitate adjustment when changing oil type.

3,652,018

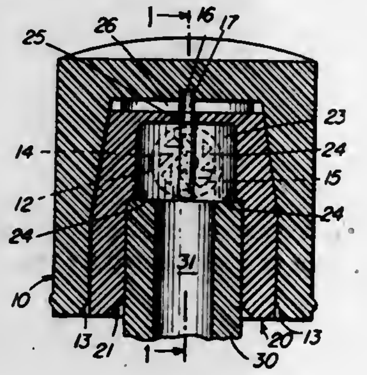
PLUG AND CAVITY MECHANICAL BREAK-UP BUTTON

John Richard Focht, Yonkers, N.Y., assignor to Precision Valve Corporation, Yonkers, N.Y.

Filed June 12, 1970, Ser. No. 45,720

Int. Cl. B05b *1/34*

U.S. Cl. 239—490 **7 Claims**



An aerosol valve actuator button having a swirl chamber for mechanical breakup of the product stream proximate the spray discharge orifice is constructed in two pieces, an exterior or body piece including a central cavity having wall portions including a depression forming the swirl chamber surrounding a discharge orifice, and an interior insert or plug adapted to be received in the cavity of the body piece, the insert piece including a valve stem receiving socket and product flow channels.

3,652,019

DEVICES FOR DISTRIBUTING MATERIAL

Cornelis van der Lely, 7 Bruschenrain, Zug, Switzerland

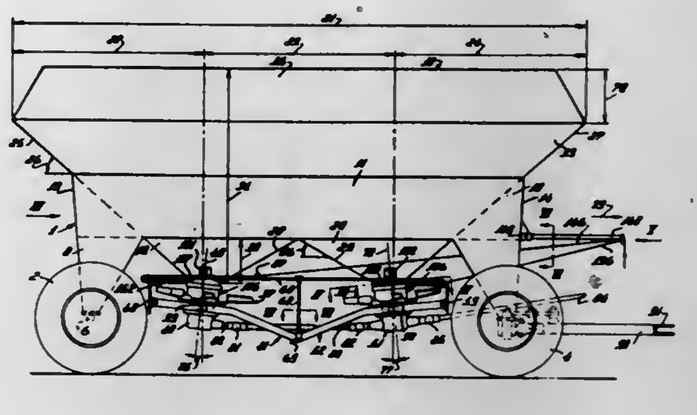
Filed Feb. 16, 1970, Ser. No. 11,601

Claims priority, application Netherlands, Feb. 21, 1969, 6902712

Int. Cl. A01c *17/00*

U.S. Cl. 239—682 **30 Claims**

A spreader device having a hopper on a frame supported on front and rear ground wheels. One or more rotatable spreaders are mounted beneath a nozzle at the lower side of the hopper and between the ground wheels, when viewed from aside. When a plurality of rotatable spreaders are included, they can be located side-by-side or in spaced relationship along the longitudinal center line of the device. The spreaders can be turned in the same or different directions. The device can be hitched to a prime mover and steered by an axle connecting its front ground wheels. Each rotary spreader can be controlled by its dosing mechanism having a control member extending to the front of the device. A guide hood can be positioned above the rotary spreader and the spreader supported on an adjustable portion of the frame. The hopper can be divided into several delivery funnels of different sizes.



3,652,020

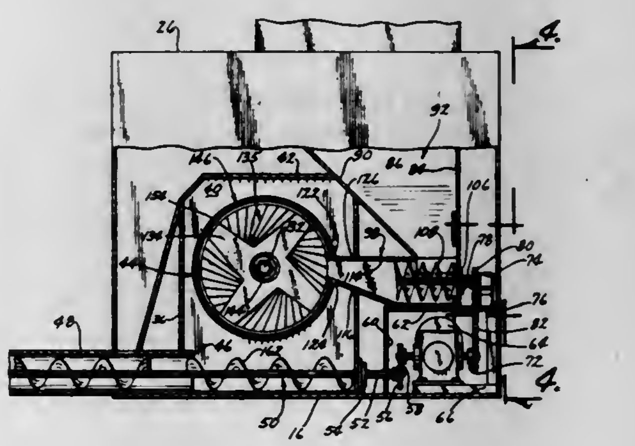
FEED MILL

Harry A. Kopps, 110 South Street, and Howard E. Hull, 316 North Oak Street, both of Griggsville, Ill.

Filed Dec. 4, 1969, Ser. No. 882,006

Int. Cl. B02c *13/06, 23/02;* **B65g** *47/16*

U.S. Cl. 241—74 **6 Claims**



A feed mill comprising a housing having a feed grinding compartment provided therein with a grinding rotor rotatably mounted in the grinding compartment. A perforated screen extends around the rotor and has an inlet opening formed therein which is in communication with the discharge end of a conduit means. The inlet end of the conduit means is in communication with a hopper means which is in communication with a source of the feed to be ground. An auger means is provided in the conduit means and is adapted to convey the feed into the interior of the perforated screen so that it can be ground by the rotatable rotor therein. The rotor is comprised of a plurality of spaced apart grinding hammers which are staggered with respect to each other so as to provide a spiral configuration to the rotor. The rotating rotor means grinds the material and forces the same outwardly through the perforated screen into the grinding compartment. The ground feed is discharged from the grinding compartment by means of a discharge auger means extending therefrom.

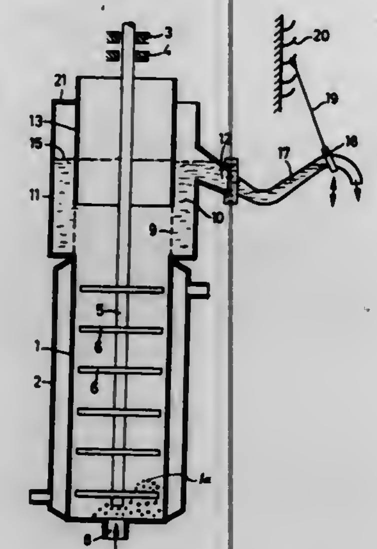
3,652,021
STIRRING MILL

Kaspar Engels, Mannheim, Germany, assignor to Firma Draiswerke GmbH, Mannheim-Waldhof, Germany

Filed Dec. 5, 1969, Ser. No. 882,430

Int. Cl. B02c *17/16*

U.S. Cl. 241—172 **3 Claims**



Stirring mill with a grinding container filled with milling pellets approximately 0.078 inch to 0.236 inch in size and equipped with a rapidly running stirring mechanism where a pump feeds in at one end the material to be ground and the ground material leaves the container at the other end by way of a separating arrangement that separates the grinding container from the discharge space and the milling pellets and the coarse components from the fine material, having a top portion connected with the grinding container that defines the discharge space and which has a material discharge duct the height and/or width of which is adjustable and a pressure head duct.

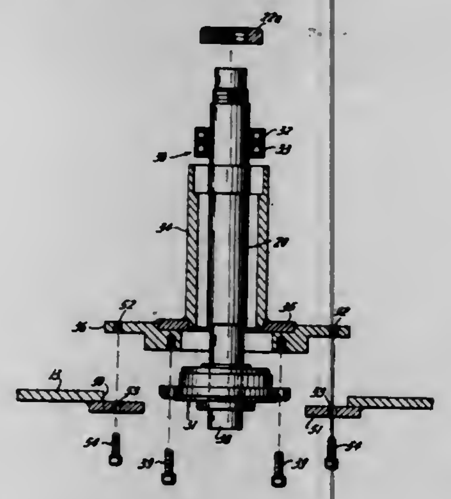
3,652,022
ROTOR AND ROTOR BEARING ASSEMBLY

William W. Miner, Hightstown, N.J., and Roland Owens, Verdon, Nebr., assignors to Mil-Pac Systems, Inc., Mountainside, N.J.

Filed Apr. 9, 1970, Ser. No. 27,029

Int. Cl. B02c *13/14, 13/26*

U.S. Cl. 241—185 **8 Claims**



A reduction mill is provided with a removably mounted rotor and rotor bearing assembly which may be readily removed from the reduction mill for repairs and servicing. The rotor has attached thereto a plurality of radially extending hammer blades operative during rotation of the rotor to pulverize and reduce in size materials flowing through the reduction mill. The rotor is rotatably mounted by means of a pair of rotor bearings and the rotor and rotor bearings are detachably mounted as an integral unit to a subfloor of the reduction mill.

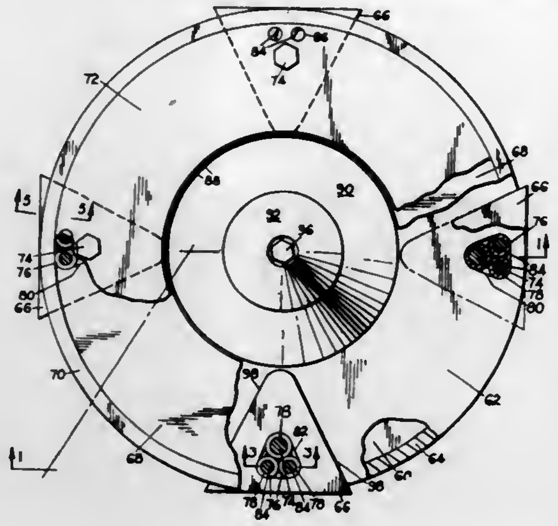
3,652,023
IMPACT CRUSHER

Bruce V. Wood, 1601 N. E. Columbia Road, Portland, Oreg.

Filed Mar. 17, 1970, Ser. No. 20,347

Int. Cl. B02c *13/09*

U.S. Cl. 241—275 **9 Claims**



An impact crusher having impeller shoes which are triangular in shape for operation in either forward or reverse directions of rotation without shifting their positions. The shoes are maintained in place by attaching structure which holds the impeller shoes without applying a compressive clamping force thereon. The impeller shoes have dished impelling surfaces for improved efficiency. The crusher includes a central feeding disc having a replaceable ring portion to renew the disc without replacing the entire feeding assembly.

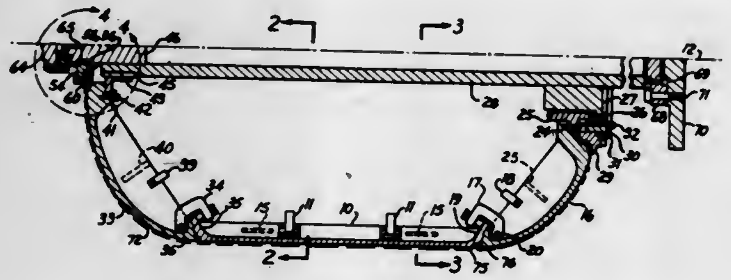
3,652,024
MANDRELS

Harry A. Setnik, Sacramento, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Nov. 26, 1969, Ser. No. 870,572

Int. Cl. B65h *54/64*

U.S. Cl. 242—1 **2 Claims**



A mandrel assembly according to the present disclosure comprises a plurality of first mandrel segments adapted to form a substantially cylindrical body, a plurality of second mandrel segments adapted to form a portion of a first hemisphere, and a plurality of third mandrel segments adapted to form a portion of second hemisphere. Clamp means are provided to clamp the mandrel segments together to form the completed mandrel. A shaft is disposed through a center aperture in each of the hemispherical portions in such a manner that the mandrel segments forming the hemispherical portions at each end of the mandrel may be attached to the shaft. Fittings, to be integral with the completed container, are attached to the shaft and are adapted to support filament windings. At one end, the fitting is attached to the mechanism utilized to attach the mandrel segments to the shaft. At the opposite end, the fitting is attached to a support means which in turn is locked against a shoulder of the shaft by means of a threaded fastener.

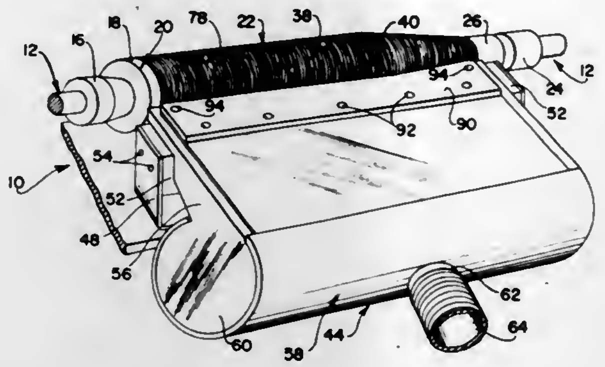
3,652,025
BOBBIN PROCESSING

Frank C. DiMauro, Providence, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Feb. 2, 1970, Ser. No. 7,760

Int. Cl. B65h *54/00*

U.S. Cl. 242—18 R **43 Claims**



An apparatus and a method for handling the unwinding end of a wound body of yarn by releasing the end from adjacent winds of the yarn and, with the bobbin rotating, picking up and carrying the released end in a stream of air flowing into a suction nozzle. Lips of the suction nozzle automatically conform to the configuration of the body of yarn. One of the lips may engage the body to aid in releasing the end from the body and providing an air seal, and the other lip may be spaced from the body, thus providing more effective flow of the stream across the body to pick up the unwinding end. If desired, both lips may be spaced from the body of yarn. The unwinding end from the body of yarn, and a nozzle, as described above, if desired, may be provided for withdrawing the unwinding end.

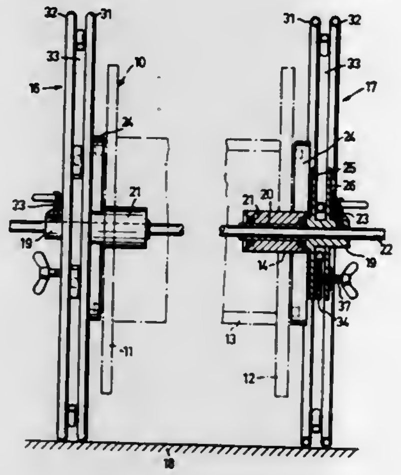
3,652,026
DEVICE FOR SUPPORTING AND TRANSPORTING A CABLE DRUM

Folke Hildemar Awebro, V:a Malmgatan 9, 95 100 Lulea, Sweden

Filed Nov. 4, 1969, Ser. No. 874,006

Int. Cl. B65h *75/40*

U.S. Cl. 242—86.5 R **8 Claims**



A cable drum is supported by bearing sleeves rotatably mounted on the hubs of two support wheels located at the ends of the drum and connected by a shaft. The drum is freely rotatable relative the ground and the support wheels. Each support wheel is composed of a first and a second substantially sector shaped section detachably secured to each other. When mounting the drum on the wheels, the two first sections are first mounted on the shaft through the drum when resting on the ground, whereafter the first sections are tilted together with the drum to a rolling position where the second sections may be mounted on the first sections.

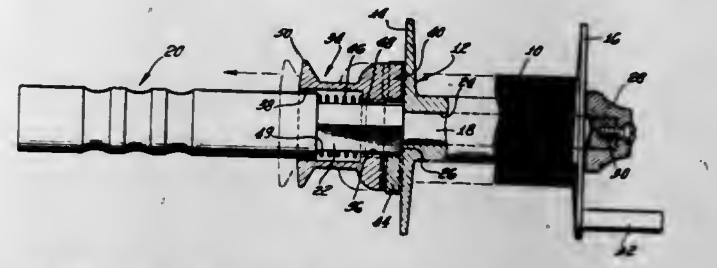
3,652,027
KITE REEL

Yit-Chen Wong, 11618 Harvard Drive, Norwalk, Calif.

Filed Oct. 8, 1970, Ser. No. 79,062

Int. Cl. B65h *75/30;* **A63h** *27/08*

U.S. Cl. 242—96 **3 Claims**



A kite reel has a spool provided with ratchet teeth cooperable with ratchet teeth of a collar nonrotatably mounted on a noncircular section located intermediate a handle portion of the reel and an axle extension of the handle.

3,652,028
WIRE REEL FOR WELDING

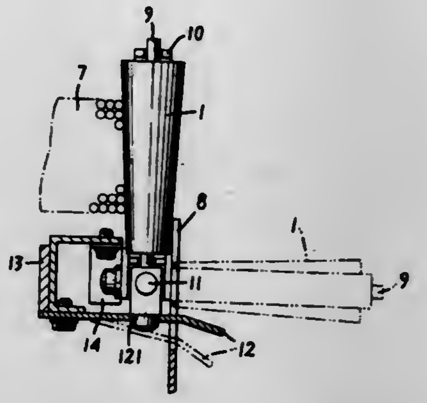
Jun Ukai, and Hisao Sugiyama, both of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed July 7, 1970, Ser. No. 52,922

Claims priority, application Japan, July 9, 1969, 44/54323

Int. Cl. B65h *49/00*

U.S. Cl. 242—129 **6 Claims**



The disclosed wire reel comprises side rollers on a supporting disc to be normally maintained in their operative position. Upon loading unloading a coil of welding wire on and from the reel, the rollers are turned through right angles to permit the coil to pass over the disc without any hindrance.

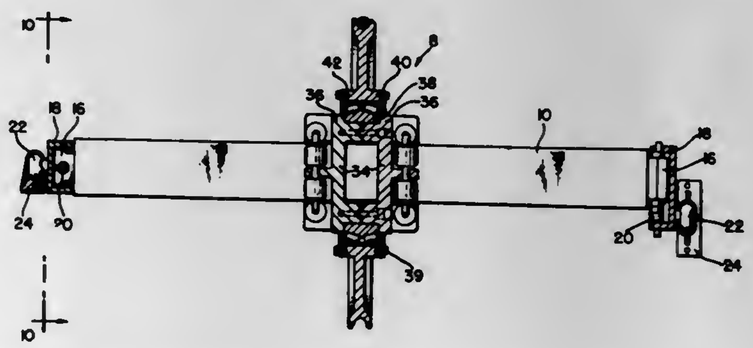
3,652,029
LEVEL WIND FOR SPOOLING DRUM

Faye H. Stewart, Eugene, Oreg., assignor to Bohemia Lumber Company, Incorporated, Eugene, Oreg.

Filed June 22, 1970, Ser. No. 48,263

Int. Cl. B65h *57/14, 57/28*

U.S. Cl. 242—157.1 **5 Claims**



A level wind apparatus for use in cooperation with a spooling drum to wind the cable evenly across the drum core. The level wind apparatus has a sheave mounted for axial movement along a bar of rectangular cross section while turning about its axis. The sheave has a plurality of supporting bearings in contact with the bar. The bar is eccentrically mounted in the manner standard for this type of apparatus.

3,652,030
TAPE REELING MECHANISM ON VIDEO TAPE RECORDER

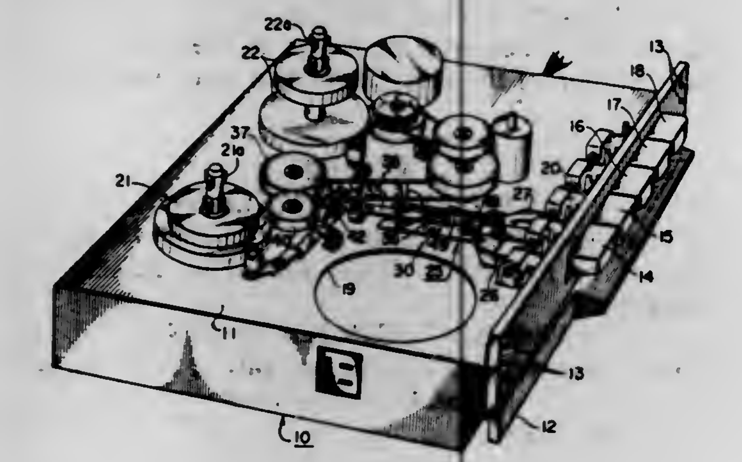
Tatsumi Nakano, Tokyo, Japan, assignor to Akai Electric Co., Ltd., Tokyo, Japan

Filed July 7, 1970, Ser. No. 52,906

Claims priority, application Japan, July 7, 1969, 44/64185

Int. Cl. B11b *15/32;* **G03b** *1/04*

U.S. Cl. 242—201 **4 Claims**



The invention relates to a tape reeling mechanism of a video tape recorder, having a rotatable, tape delivery reel support and a rotatable tape wind-up support. The improvements comprises a positioner slide having a substantially triangular opening and arranged between two operation control push buttons, on the one hand, and a drive wheel and idle roller assembly on the other hand, which is pivotably mounted on the panel of the recorder between the reel supports, and a lever pivotably mounted on the panel and having a pin engageable with the opening, the lever being positively held in its neutral position by engagement of the pin with the central apex of the triangular opening.

3,652,031
FISHING REEL

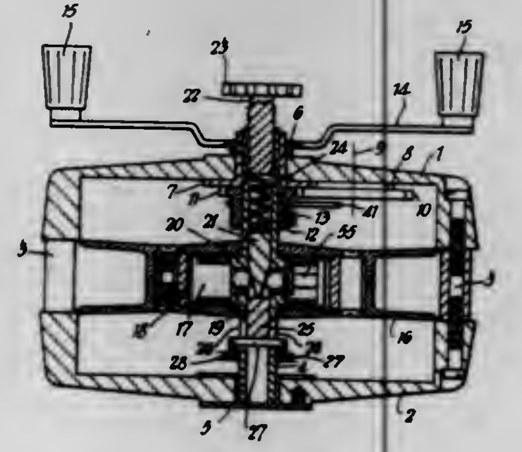
Joseph Kosek, 11, Elgin Crescent, Caterham, Surrey, England

Filed Oct. 20, 1967, Ser. No. 676,831

Claims priority, application Great Britain, Oct. 25, 1966, 47,772/66

Int. Cl. A01k *89/02*

U.S. Cl. 242—219 **15 Claims**



A fishing reel of the rotatable line-spool type having a resiliently engaged line brake clutch which is manually releasable to provide casting by overcoming the resilient engaging means and freeing the spool for rotation. The reel includes a silent one-way winding mechanism, a line over-run brake and an automatically releasable bite alarm mechanism.

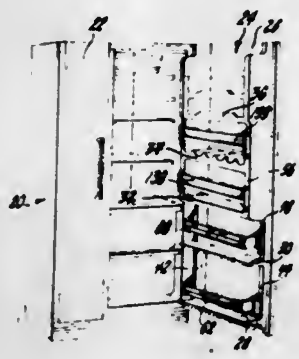
3,652,032
SHELF BRACKET

Peter S. Eros, Vandalia, and Jerry L, Neubauer, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 24, 1970, Ser. No. 22,332

Int. Cl. A45b *57/04*

U.S. Cl. 248—235 **1 Claim**



In the preferred form, a refrigerator is provided with a door having an inner door pan of sheet plastic provided with rectangular apertures and horizontal shelves. Each of the shelves is provided with a removable metal shelf front, the ends of which are fastened to brackets of resilient nylon having oppositely facing notches adapted to engage the opposite sides of the rectangular apertures in the inner door pan. Between the oppositely facing notches is provided a resilient U-shaped portion having an extension from one of the notches provided with a knurled surface which can be pressed to disengage the brackets from the door or to insert the inner portion of the bracket into the recess into engagement with the notches for attaching the brackets to the door.

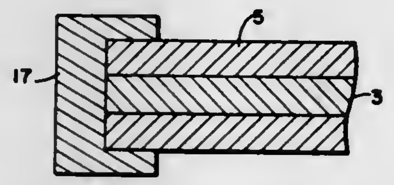
3,652,033
MAGNETIC HYSTERESIS-LOSS DAMPING RODS

Theodore Wyatt, Union Bridge, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Mar. 25, 1970, Ser. No. 22,471

Int. Cl. B64g *1/00*

U.S. Cl. 244—1 SA **4 Claims**



An improved damping rod structure, for dissipating undesired satellite motion by magnetic hysteresis and shorted coil damping, which provides increased damping capability for a given weight of magnetically permeable material. In one embodiment, a damping rod comprises an outer sleeve of electrically conductive material, an intermediate sleeve of magnetically permeable material, and an inner rod or sleeve of electrically conductive material, the structure acting both as a shorted coil and as a rigid support for the intermediate sleeve.

3,652,034
MISSLE CONSTRUCTION

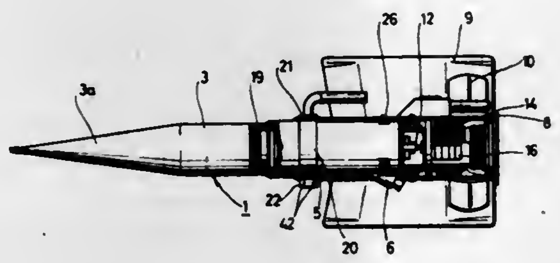
Werner Schindler, Ottobrunn; Karl Schaaff, Hohenschaftlarn, and Erich Planitzer, Neubiberg, all of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed Sept. 17, 1969, Ser. No. 858,602

Claims priority, application Germany, Oct. 3, 1968, P 18 00 766.6

Int. Cl. F41g *7/02*

U.S. Cl. 244—3.1 **2 Claims**



A missile or flying body construction includes a payload cone which is detachably connected to a fuselage portion by a coupling member. The payload cone forms the forward part of the missile and a rocket engine designed as an independent structural unit is made so that it can be inserted into the fuselage portion and secured thereto by means of an encircling clamping ring. The forward end of the rocket engine portion is provided with a threaded bore to permit interengagement thereof with a coupling member which is also threaded to the payload cone. The rocket engine carries a laterally or downwardly extending thrust nozzle projection which advantageously fits into a longitudinally elongated slot of the trailing fuselage portion. The fuselage portion in the form of a sleeve carries aerodynamic control surfaces and it forms a housing for controls such as a gyroscope, battery, and wire coil.

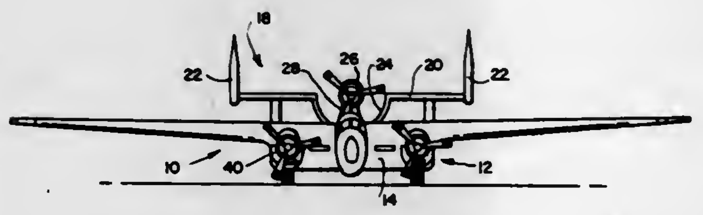
3,652,035
CHANNEL TAIL AIRCRAFT

Charles G. Fredericks, 1411 Pennsylvania Avenue, N.W., Silver Spring, Md.

Filed June 12, 1969, Ser. No. 832,768

Int. Cl. B64d *27/00*

U.S. Cl. 244—12 CW **6 Claims**



A twin boom lifting body fuselage aircraft has a twin tail assembly with a single horizontal stabilizer. A downward semicircular channel is formed in the center of the horizontal stabilizer, and an engine is mounted in the channel, with a propeller immediately adjacent a forward edge of the channel. The propeller draws air from the upper surface of the lifting fuselage and pushes the air rapidly through the channel, thereby increasing lift of the fuselage and of the horizontal stabilizer.

3,652,036
DYNAMIC FORCED AIR INTAKES FOR VEHICLES

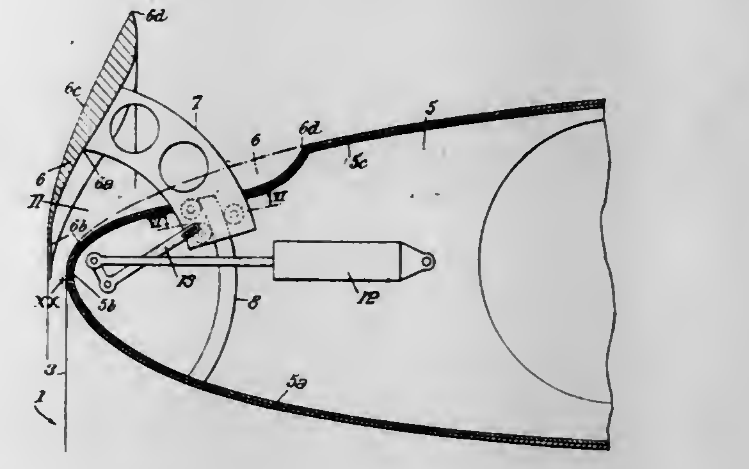
Claude M. Sans, Massy; Jacky R. Leynaert, Igny, and Georges D. Meauze, Paris, all of France, assignors to The Office Nationale d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.), Chatillon-Sous-Bagneux, France

Filed Oct. 21, 1969, Ser. No. 868,087

Claims priority, application France, Oct. 24, 1968, 171181

Int. Cl. B64d *33/02*

U.S. Cl. 244—53 B **11 Claims**



The forced air intake for vehicles and more particularly for high-speed subsonic aircraft comprises a frontal opening bounded by a profile the shape of which is determined as a function of the laws of aerodynamics brought into play when the vehicle is travelling at its nominal speed. This air intake usually cooperates with a turbojet for propelling the vehicle. The air intake comprises a plurality of movable flaps arranged over the outer surface of the profile, adjacent its leading edge. In their retracted position, the movable flaps restore the contour of the profile. In their extended position, the movable flaps define an intake horn for the air intake and a succession of convergent passages between their inner surfaces and the outer surface of the profile.

3,652,037
AIRCRAFT

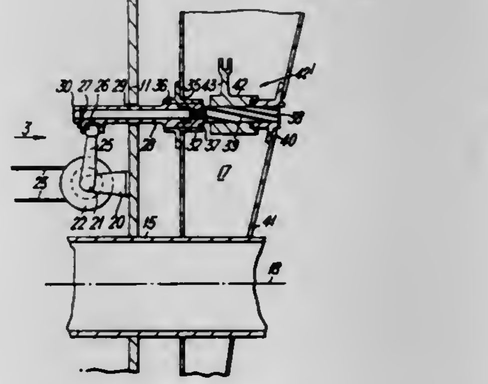
Geoffrey Dolby, Derby, England, assignor to Rolls-Royce Limited, Derby, England

Filed Nov. 10, 1970, Ser. No. 88,347

Claims priority, application Great Britain, Nov. 28, 1969, 58,394/69

Int. Cl. B64d *27/00*

U.S. Cl. 244—56 **4 Claims**



This invention concerns aircraft including a gas turbine engine mounted for pivotal movement with respect to aircraft fixed structure, a fuel control unit for said engine having a rotary portion rotation of which adjusts the fuel supply to said engine, a control mechanism for rotating said rotary member, said mechanism being spaced from the pivot axis of the said engine, the said mechanism comprising a manually adjustable member, a first member mounted within said fixed structure and displaceable in response to actuation of said manually adjustable member, a coupling device which is connected between said first member and said rotary member and which converts a relatively small linear movement into a relatively large rotational movement, and a second member secured to said device for interengagement with said first member, the first member when the said manually adjustable member is actuated, driving the second member and thus the said device to effect a relatively small linear movement and thus a relatively large rotational movement of said rotary member, pivotal movement of said engine being unaccompanied by any transmission of drive between the first and second members.

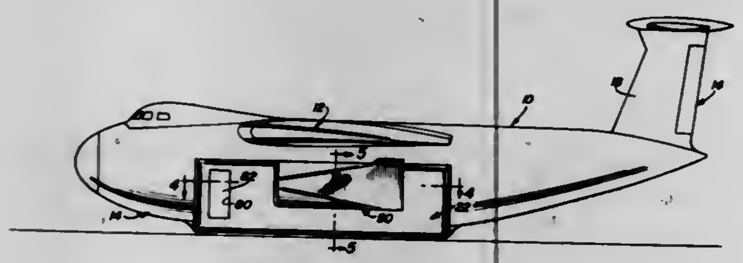
3,652,038
AIRPLANE WITH AIR CUSHION LANDING GEAR

John Van Veldhuizen, 31601 S.W. 197th Avenue, Homestead, Fla.

Filed Nov. 3, 1969, Ser. No. 873,436

Int. Cl. B60v *3/08*

U.S. Cl. 244—100 R **11 Claims**



An aircraft fuselage defining a downwardly opening centrally disposed air cushion containing chamber bound along its opposite sides by upstanding longitudinally extending plenum chambers. Opposite side high bypass turbo engine pods are supported outwardly of the plenum chambers and structure is provided for variably bleeding the bypass air from the engine pods directly into the plenum chambers which in turn include lower outlets spaced longitudinally therealong opening at least substantially directly into the air cushion containing chamber.

3,652,039
CONTROL DEVICES FOR LANDING GEAR AND HATCHDOORS WITH MECHANICAL-HYDRAULIC SEQUENCES

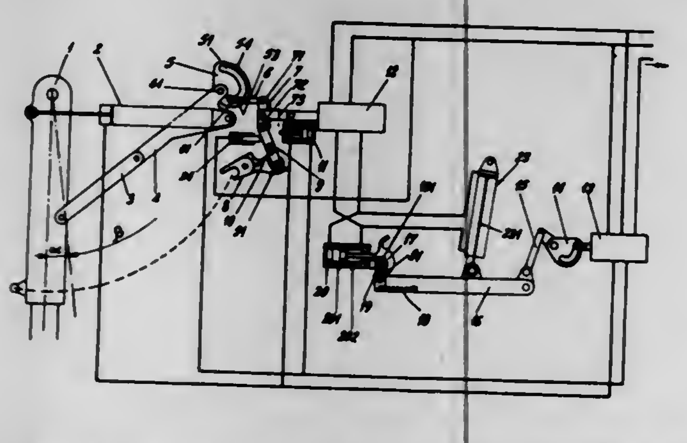
Rene Lucien, 56 Boulevard Maillot, Neuilly-sur-Seine, France

Filed Jan. 30, 1970, Ser. No. 12,526

Claims priority, application France, Jan. 31, 1969, 6902189

Int. Cl. B64c *25/16*

U.S. Cl. 244—102 A **3 Claims**



A control device for the retractable undercarriage of aircraft and for the hatchdoors of the housing of the retracted undercarriage with their actuating and locking members and control members for supplying them in mechano-hydraulic sequential stages from a general lifting conduit and a general lowering conduit for the undercarriage, comprising a jack actuating said hatchdoors, a slide valve distributor supplying said jack, and a kinematic coupling mechanically operated by the undercarriage and placing said slide valve in three characteristic positions:

—a first position operated by the undercarriage in its locked down position, in which said distributor connects the general lowering conduit to the chamber of said jack actuating the closure of said hatchdoors, and the general lifting conduit to the chamber of said jack actuating the opening of said hatchdoors;

—a second position operated by the undercarriage in the unlocked position, in which said distributor acts, through the intermediary of passages of reduced section and spring controlled valves, to connect that of the two general lowering and lifting conduits which is under pressure to the chamber of the jack actuating the opening of said hatchdoors, and the other of said two general conduits to the chamber of the jack actuating the closure of said hatchdoors;

—a third position operated by the undercarriage in its locked retracted position in which the distributor connects said general lifting conduit to the chambers of said jack actuating the closure of said hatchdoors, and said general lowering conduit to the chamber of said jack actuating the opening of said hatchdoors.

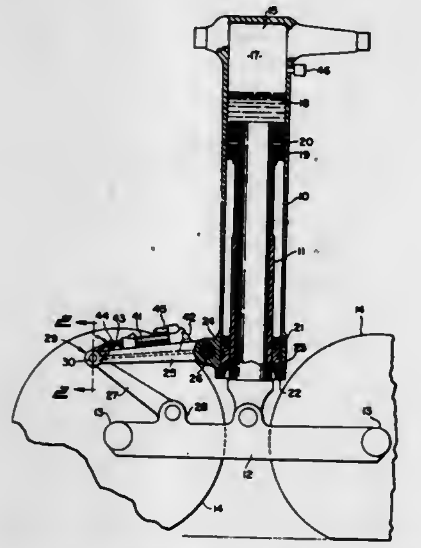
3,652,040
LANDING GEAR SHOCK STRUT

Erwin H. Hartel, Brunswick, Ohio, assignor to The Cleveland Pneumatic Tool Company, Cleveland, Ohio

Continuation of application Ser. No. 729,954, May 17, 1968, now abandoned. This application June 10, 1970, Ser. No. 48,833

Int. Cl. B64c *25/58*

U.S. Cl. 244—104 R **9 Claims**



The wheel-supporting piston of the strut is rotated relative to the cylinder by an adjustable torque arm interconnection of the two to eliminate vertical friction, the adjustment being made by a hydraulic actuator, and a pressure readout of the internal strut pressure provides indication of the vertical weight load on the gear after such friction elimination.

3,652,041
REEFING DEVICE

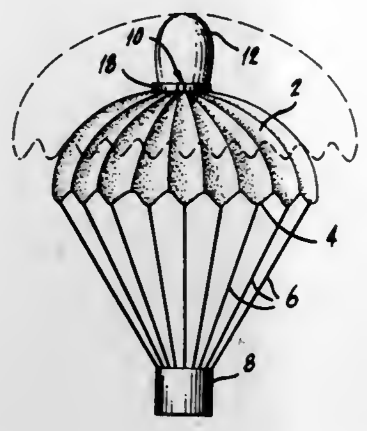
Edwin D. Vickery, Tolland, Conn., assignor to Pioneer Parachute Company, Inc., Manchester, Conn.

Filed Oct. 19, 1970, Ser. No. 81,938

Int. Cl. B64d *17/34, 17/36*

U.S. Cl. 244—152 **5 Claims**

A reefing device for parachutes is provided with means for confining a parachute, or a portion thereof, together with control means operable in response to a combination of factors, namely the amount and duration of the forces applied to the confining means, for effecting the release thereof. The reefing device is therefore operable under widely varying conditions of loading and speed of travel of the parachute.



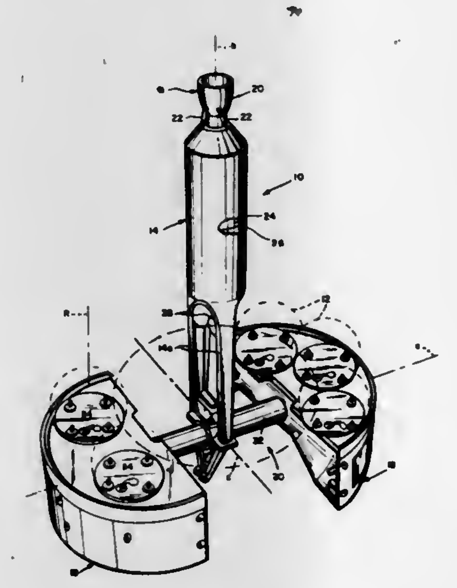
3,652,042
SPACECRAFT FOR DEPLOYING MULTIPLE OBJECTS

Robert S. Welther, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 28, 1970, Ser. No. 101,521

Int. Cl. B64g *1/10*

U.S. Cl. 244—1 SS **13 Claims**



A spacecraft for inserting multiple objects into selected space flight paths in selected attitudes relative to the flight paths by deploying the objects, either passively or actively, from extendable object mounting platforms gimballed on one end of the vehicle body. During launch the platforms are retracted to fit within the launch vehicle shroud. After separation of the spacecraft from the booster in space, the platforms are extended to object deployment positions and the spacecraft is oriented by thrusters in a flight attitude wherein the thrust vector of a main propulsion engine on the vehicle body is aligned with the local range insensitive axis. Object deployment is accomplished by utilizing the main engine to propel the spacecraft along the range insensitive axis across the selected flight paths and by tilting the mounting platforms at each deployment point to orient the object to be deployed in the proper deployment attitude relative to the selected flight path.

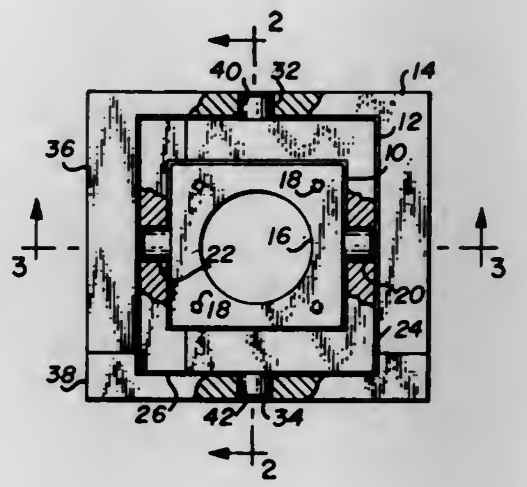
3,652,043
LEAD SCREW COUPLING

Derek Jones, Campbell, Calif., and Woodrow L. Hayes, Rye, N.H., assignors to Singer-General Precison, Inc., Binghampton, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,585

Int. Cl. A47g *29/00*

U.S. Cl. 248—1 **1 Claim**



The disclosed embodiment of the present invention is a coupling for a lead screw and the like having four degrees of freedom and two degrees of constraint. The coupling is generally formed of three rectangular member, two of which have a central rectangular aperture for receiving another one of the members therein. The innermost member is pivotally supported within the central aperture of the intermediate member on one axis, and the intermediate member is pivotally supported within the central aperture of the outermost member on a second axis perpendicular to the first axis. The inner and outer peripheral surfaces of the members in assembled form are slightly spaced from one another to permit limited pivotal movement of the inner and intermediate members about their respective axes and to permit limited axial movement of the inner and intermediate members along their respective axes with respect to the outer member.

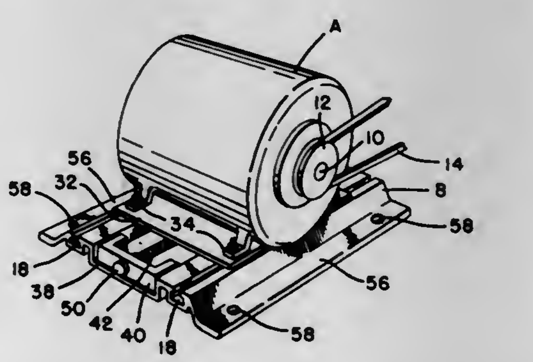
3,652,044
ADJUSTABLE MOTOR MOUNT

Delbert Manross, Willoughby, Ohio, assignor to The Lincoln Electric Company, Cleveland, Ohio

Filed Dec. 27, 1969, Ser. No. 869,775

Int. Cl. F16m *11/04*

U.S. Cl. 248—23 **8 Claims**



A mount for adjustably positioning an apparatus comprising a unitary, elongated base member having a supporting surface. The base member is a short section of an aluminum extrusion so that it has a generally uniform transverse cross-sectional shape throughout its longitudinal extent and has a pair of longitudinal slots in the supporting surface coextensive with the base member into which bolts extend for holding the apparatus in any adjusted position. A screw is provided for displacing the apparatus along the base member.

3,652,045

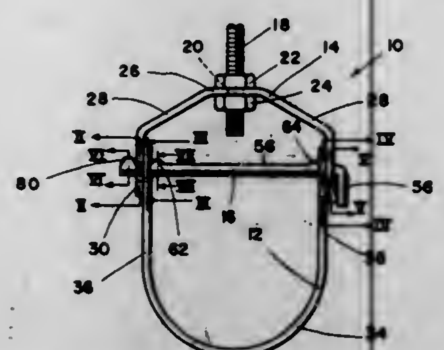
PIPE HANGER

Andrew J. Hirt, Youngstown, Ohio, assignor to Hanger Supply Company, Youngstown, Ohio

Filed Mar. 13, 1970, Ser. No. 19,415

Int. Cl. F16l *3/00*

U.S. Cl. 248—62 **13 Claims**



A pipe hanger having a U-shaped saddle member and a supporting yoke. The upper ends of the arms of the saddle member are received between the downwardly projecting end portions of the yoke and are retained in place by a rod passing through holes in the downwardly projecting yoke ends and in the upper ends of the arms of the saddle. One end of the rod is bent at right angles to provide a handle for turning the rod. The holes in the yoke and saddle are provided with notches and the rod has raised portions aligned on one side which pass through the notches when the rod is aligned in one direction and which are retained by the holes when the rod is rotated out of alignment. The raised portion of the rod furthest from the bent end is longer than the other raised portions and the notch of the hole in the saddle adjacent the bent end of the rod is smaller than the other notches so that the last mentioned raised portion does not pass therethrough. Raised portions are provided on the rod for keeping the upper ends of the saddle from moving inwardly under load.

3,652,046

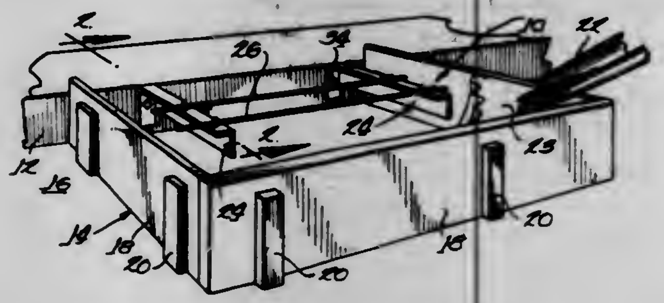
STEP BRACKET

William G. Hughes, 3200 West 185th Place, Homewood, Ill.

Filed Feb. 11, 1970, Ser. No. 10,362

Int. Cl. E04g *17/00*

U.S. Cl. 248—205 R **8 Claims**



Supporting brackets having means for attachment to upper portions of a building foundation wall are secured in position and interconnected with reinforcing rods after which a concrete stoop, slab or the like is poured thereover so as to be supported thereby in fixed relationship with respect to the foundation.

3,652,047

LUMINAIRE ATTACHING MEANS

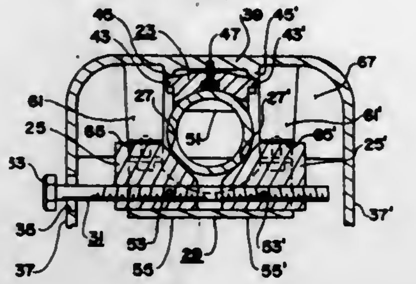
George N. Starr, Memphis, Tenn., assignor to American Electric Manufacturing Corporation, Southaven, Miss.

Filed Aug. 18, 1969, Ser. No. 850,853

Int. Cl. F21v *21/10*

U.S. Cl. 248—230 **1 Claim**

Luminaire mounting or attaching structure adapted for cantilever attaching a street lighting luminaire to the support arm structure of the luminaire supporting mast or pole structure. The luminaire attaching structure includes means for trilaterally clamping the distal end portion of the luminaire support arm including the anvil jaw and a pair of wedge jaws. A single bolt-like shaft having left-hand and right-hand thread portions is adapted to be turnably manipulated for causing converging or diverging movement of the pair of wedge jaw members respectively for causing trilateral clamping or loosening action of the anvil and wedge jaw members on the distal end of the luminaire support arm.



3,652,048

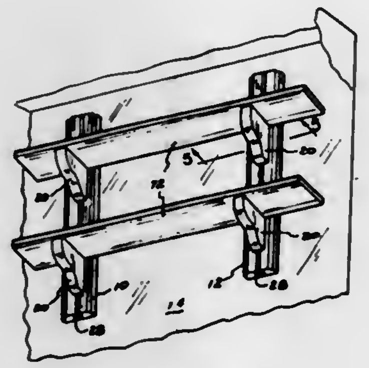
VERTICALLY ADJUSTABLE WALL BRACKET ASSEMBLY FOR MOUNTING A SHELF

Lawrence Hartman, Royal Oak, Mich., assignor to Hartman Wood Products Inc., Royal Oak, Mich.

Filed Aug. 6, 1970, Ser. No. 61,547

Int. Cl. A47g *29/02*

U.S. Cl. 248—243 **6 Claims**



A vertically adjustable wall bracket assembly for mounting a shelf having two or more elongated support members adapted to be mounted vertically on a wall, each support member having a vertically disposed T-shaped channel with an anchor plate slidably disposed therein, means on the anchor plate to secure the anchor plate inside the T-shaped channel at any vertical height, and means to attach the anchor plate to a shelf supporting bracket, the shelf supporting bracket being arranged for use as a support for a shelf.

3,652,049

LANTERN HOLDER

Claude A. McCown, 3619 Oakwood Drive, Grapevine, Tex.

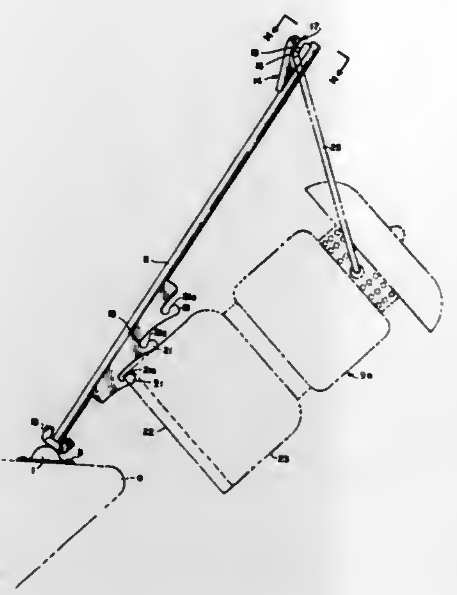
Filed Aug. 27, 1970, Ser. No. 67,495

Int. Cl. B63b *45/04*

U.S. Cl. 248—310 **10 Claims**

A lantern holder and mount which may be detachably mounted on a boat or other supporting surface wherein the upright hanger member on which the lantern is suspended may be disengaged from the base portion and stored when not in use. The suspending portion has an upper hanger

bracket engageable with the bail of the lantern and a lower engaging portion with a plurality of vertically spaced hangers thereon engageable with the lower rim of the lantern tank.



The lower end of the upright support has a head thereon engageable in a J-slot in the base member in angular non-rotative engagement with the base.

3,652,050

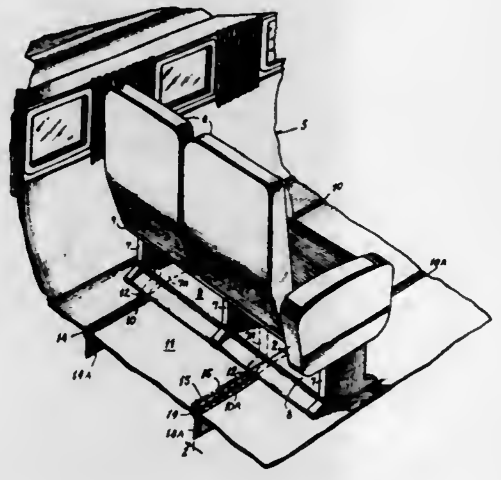
VEHICLE SEAT MOUNTING SYSTEM

Ralph G. Marrujo, Valencia, and Aki Tanaka, Northridge, both of Calif., assignors to Fairchild Industries, Inc., Bay Shore, Long Island, N.Y.

Filed Feb. 5, 1970, Ser. No. 8,852

Int. Cl. B60n *1/00*

U.S. Cl. 248—429 **9 Claims**



A vehicle seat mounting arrangement for mounting seat sets in vehicles equipped with fixed seat locking tracks. The seat legs are located without regard to the locations of the vehicle tracks and are fastened to a floor panel to provide equalized underseat storage room and unobstructed leg space. The floor panel is provided with movable locking mechanisms which can be aligned with the vehicle seat locking track and secure the seat assembly to the track.

3,652,051

FOLDABLE LAP DESK

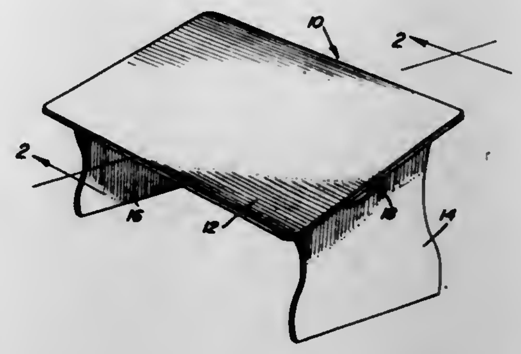
Earl J. McFarlane, P.O. Box 653, Wilson, N.C.

Filed Mar. 25, 1970, Ser. No. 22,449

Int. Cl. A47b *97/08*

U.S. Cl. 248—444 **3 Claims**

A horizontally elongated substantially planar top panel and a pair of upstanding support panels extending transversely of the opposite end portions of the top panel, dependingly supported therethrough and spaced inwardly from the opposite end edges of the top panel. The upper marginal edge portions of the support panels are hingedly supported from the top panel for swinging movement of the support panels between extended positions disposed generally normal to the top panel and collapsed positions with the support panels swung inwardly beneath and closely underlying the undersurface of the top panel.



3,652,052

DEVICE FOR MANUFACTURING A PREFABRICATED BUILDING SECTION

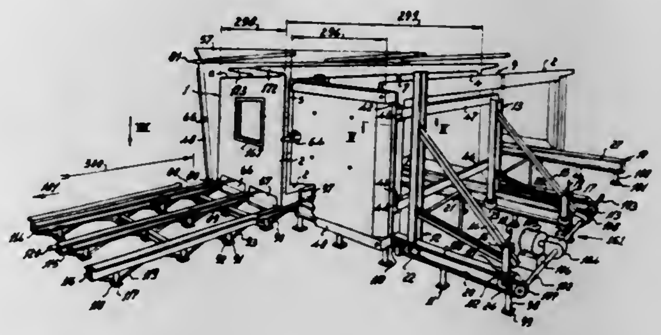
Cornelis Van Der Lely, 7 Bruschenrain, Zug, Switzerland

Filed Dec. 5, 1969, Ser. No. 882,647

Claims priority, application Netherlands, Dec. 10, 1968, 6817718/68

Int. Cl. E04g *11/02*

U.S. Cl. 249—27 **36 Claims**



A device for the manufacture of a prefabricated element intended to form at least part of a building. The device comprising at least two relatively movable jigs, which can be relatively fixed so that a mold can be formed in which a building element can be made to include at least two walls at an angle to each other, or a wall and a floor and/or an upper side of a section so that the element bounds at least part of the space of the building. At least one of the jigs is displaceable as a whole and coupled with driving members that displace the jig with respect to the other jig in two relatively opposite directions so that the parts can be moved away from each other or for moving the jigs in their relative manufacturing positions.

3,652,053

UNI-DIRECTIONALLY OPERATED VALVE APPARATUS

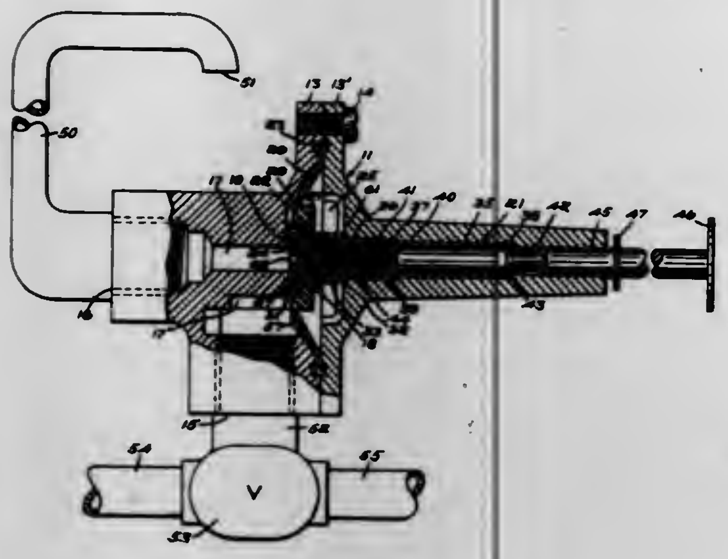
Edward J. Poitras, Holliston, and Edwin W. Wlodyka, Ashland, both of Mass., assignors to Highland Laboratories, Ashland, Mass.

Filed Feb. 9, 1970, Ser. No. 9,596

Int. Cl. F16k *31/385*

U.S. Cl. 251—38 **7 Claims**

Disclosed is a valve that alternately prevents and allows fluid flow in response to sequential uni-directional movements of a reciprocal valve operator. Alternate inward movements of the valve operator induce seating and unseating relative movements between a valve head and a valve seat to open and close a passage between inlet and outlet openings.



A spring member returns the operator to an outward neutral position after a pair of sequential inward control movements.

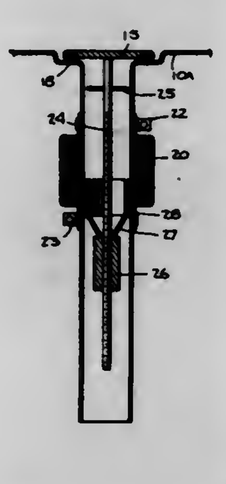
3,652,054
MAGNETIC DRAIN VALVES

Howard M. Layton, Ossining, N.Y., assignor to Interlab, Inc., Pleasantville, N.Y.

Filed June 19, 1970, Ser. No. 47,744

Int. Cl. F16k *31/06*

U.S. Cl. 251—65 **7 Claims**



A magnetic drain valve for use in conjunction with process vessels having a nonmagnetic drain line. The valve includes a tubular armature core coaxially disposed within the drain line and coupled by a stem to a drain closure cap which normally blocks the drain line. The cap is located at the bottom of the vessel, so that, when lifted, liquid from the vessel is admitted into the drain line. Surrounding the drain line is a solenoid which, when energized, produces an electromagnetic field causing the core to move upwardly, thereby raising the closure cap.

3,652,055
VALVE CONSTRUCTION

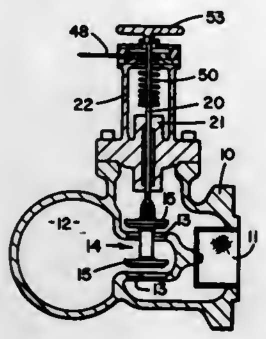
Paul W. Scholz, Jeannette, and Charles C. Czuszak, Greensburg, both of Pa., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 24, 1970, Ser. No. 92,393

Int. Cl. F16k *31/44*

U.S. Cl. 251—67 **5 Claims**

In a type of combined throttle and trip valve structure, the valve stem has threaded engagement with half nuts; the valve is opened by manual rotation of the stem. Operation of the trip mechanism effects lateral movement of the half nuts out of engagement with the stem and the valve is moved into closed position by spring means. The invention has to do with mechanism to automatically limit the extent of movement of the valve from the valve seat to prevent any jamming of the valve assembly, and to permit the valve to be closed by the spring when the trip mechanism is actuated.



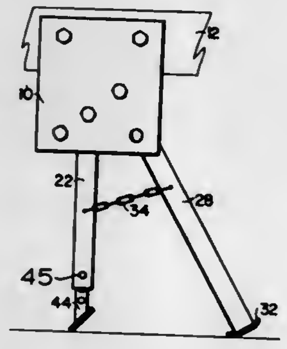
3,652,056
VEHICLE JACK

Hansford D. King, 5754 Via Margarita, Santa Maria, Calif.

Filed Nov. 27, 1970, Ser. No. 93,040

Int. Cl. B66f *7/22*

U.S. Cl. 254—94 **8 Claims**



A jack is provided which derives lifting power from vehicle motion. The lifting action of the main upright leg is regulated and made positive by the action of an auxiliary starting leg.

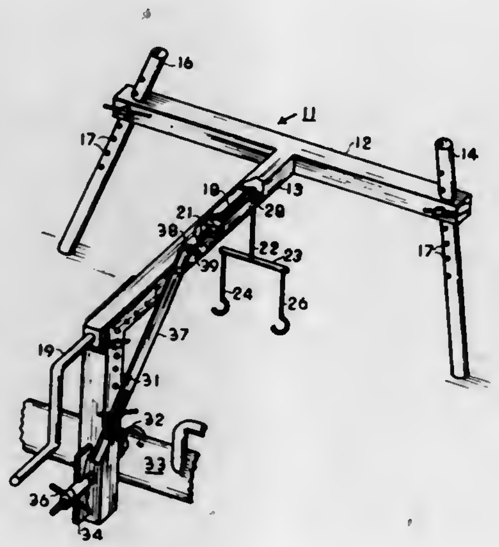
3,652,057
MOTOR VEHICLE ENGINE WINCH

Jack H. Brown, 904 Erica Street, Escondido, Calif.

Filed Mar. 23, 1970, Ser. No. 21,803

Int. Cl. B66c *23/60*

U.S. Cl. 254—139.1 **2 Claims**



A motor vehicle engine winch having a hollow T-shaped structural member being supported at each end at the top of the T-shaped structural member by a pair of adjustable legs and having a threaded shaft slidably received by another member's end carrying a captured nut therein; a tension cable attached to the captured nut passing downwardly through a bottom wall of the member of the T-shaped structural member in which the threaded shaft is received; the tension cable being attached to a bar suspending a pair of hooks therefrom for engagement with a vehicle motor; an L-shaped structural member attached at one end to the member in which the threaded shaft is passed carrying a hook member for engagement with a vehicle's rear bumper; the hook member being dimensioned for compressing and removing an engine compartment lid spring via a clamp member attached thereto.

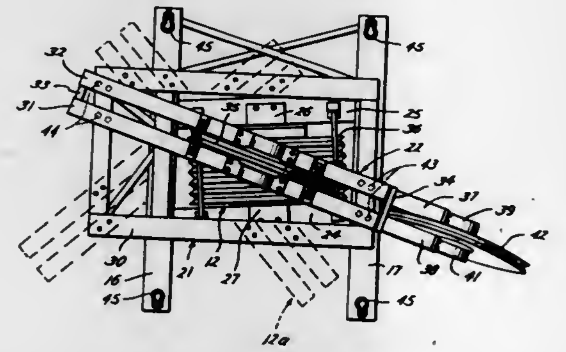
3,652,058
THREE-POSITION CROWN BLOCK

Albert A. Ashton, Dallas, Tex., assignor to Youngstown Sheet and Tube Company, Youngstown, Ohio

Filed June 2, 1970, Ser. No. 42,669

Int. Cl. B66d *1/36*

U.S. Cl. 254—190 **6 Claims**



A derrick crown assembly in which without rethreading the fast line, rotating crown blocks or the like, the crown block assembly may be shifted to a multiplicity of positions to drill multiple wells without moving the derrick.

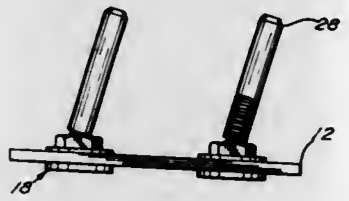
3,652,059
TIRE PUNCTURING DEVICE TO IMPEDE MOVEMENT OF A VEHICLE

Earl E. Groblebe, 1600 Sable Boulevard, #142, Aurora, Colo.

Filed July 17, 1970, Ser. No. 55,688

Int. Cl. E01f *13/00*

U.S. Cl. 256—1 **3 Claims**



A plurality of hollow, sharpened, nail-like members are releasably secured in spaced relation along the length and width of an elongated strip to be extended across a roadway to puncture one or more pneumatic tires of a vehicle to provide controlled deflation of the tires and to impede the movement of the vehicle to assist law enforcement officials in the capture of the vehicle and occupants with a minimum of personal risk.

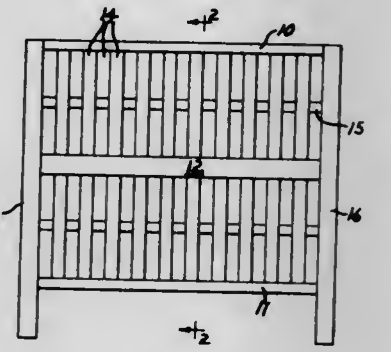
3,652,060
FENCE

Clinton G. Glover, Clarkston, Wash., assignor to Potlatch Forests, Inc., San Francisco, Calif.

Filed Aug. 3, 1970, Ser. No. 60,663

Int. Cl. E04h *17/14*

U.S. Cl. 256—19 **5 Claims**



A wood fence of "basket weave" design including parallel rails having oppositely facing grooves and perpendicular slats held in a weave pattern by an intermediate weaver board. The slats are fabricated from veneer stock and are permanently fixed with the rail grooves. The method of fence panel fabrication includes the step of bonding the slats in the grooved rails to form a permanent structural panel.

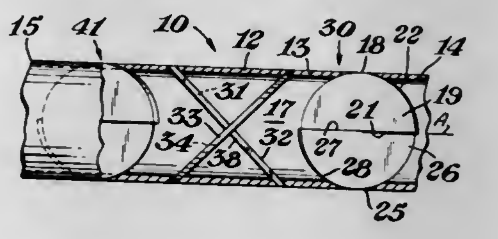
3,652,061
INTERFACIAL SURFACE GENERATOR AND METHOD OF PREPARATION THEREOF

Douglas S. Chisholm, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of application Ser. No. 583, Jan. 5, 1970, now abandoned. This application Mar. 4, 1971, Ser. No. 120,873

Int. Cl. B01f *15/02*

U.S. Cl. 259—4 **9 Claims**



A static element mixing tube is provided by employing opposed angularly disposed baffles of alternating hand which provides mixing action by re-positioning of the stream. Mixing action at flow rates below the turbulent level are generally independent of throughput.

3,652,062
MIXING APPARATUS

Donald E. Baker, Ruston Spencer, near Macclesfield, England, assignor to The E. T. Oakes Corporation, Islip, Long Island, N.Y.

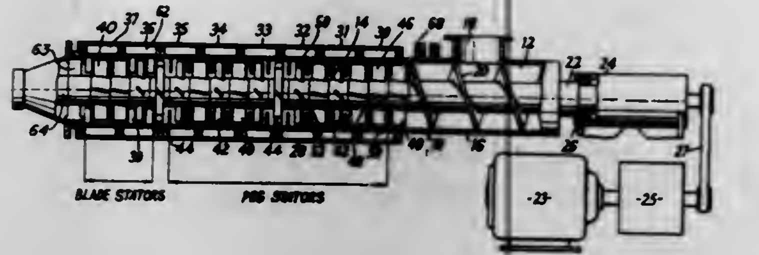
Continuation-in-part of application Ser. No. 570,605, Aug. 5, 1966, now Patent No. 3,456,599. This application Apr. 2, 1969, Ser. No. 812,706

Claims priority, application Great Britain, Apr. 8, 1968, 16,871/68

Int. Cl. B01f *7/04*

U.S. Cl. 259—9 **7 Claims**

A rotor for mounting on the shaft of an axial flow kneading machine between two series of kneading elements has radially inner and outer sets of blades which are inclined in opposing senses respectively, so that, in use, the radially inner layers of material kneaded by the first series of kneading elements will be decelerated by the inner set of rotor blades and displaced outwardly before being advanced through the second series of kneading blades, while the radially outer



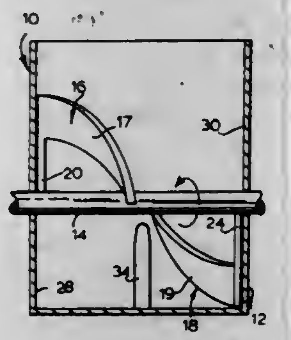
layers of such material will be correspondingly accelerated and displaced inwardly.

3,652,063

MIXER

Robert Lawson, Amersham, and Kenneth Oulton, Newton-le-Willows, both of England, assignors to T. & T. Vicars Limited, Earletown, Newton-le-Willows, England

Filed June 8, 1970, Ser. No. 44,438
Claims priority, application Great Britain, June 14, 1969, 30,273/69
Int. Cl. B01f *7/02*
U.S. Cl. 259—109 **11 Claims**



A mixer having a single shaft, a pair of oppositely mounted helical blades rigidly attached to the shaft and a projection located between the blades, whereby in operation the blades move material in the mixer towards the projection and one another thus effecting thorough mixing of the material which may be a dough such as bread dough or sweet biscuit dough.

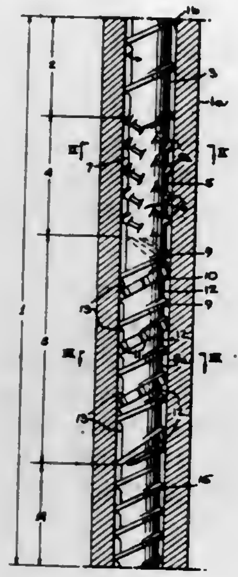
3,652,064

APPARATUS FOR CONVEYING PLASTIC MATERIAL

Josef Peter Lehnen, Verlautenheide by Aachen; Hans G. L. Menges, Laurensberg by Aachen, and Engelbert G. Harms, Vaalserquartier by Aachen, all of Germany, assignors to Uniroyal Engelbert Deutschland AG, Aachen, Germany

Continuation-in-part of application Ser. No. 808,543, Mar. 19, 1969, now abandoned. This application Mar. 5, 1970, Ser. No. 16,769
Claims priority, application Germany, Mar. 12, 1969, P 19 12 459.5: Austria, Mar. 22, 1968, A 2858/68
Int. Cl. B01f *7/02*
U.S. Cl. 259—109 **11 Claims**

A screw conveyor for an extruder comprises a single rotatable screw which has a countercurrent first portion having a countercurrent land with interruptions therein for partially backfeeding plastic material to provide a turbulent current of plastic material. The screw conveyor has a second portion with two threads, one of which has radial grooves therein, to divide the current into partial streams flowing backwards but having further travel under a substantially steady forward feed to compact and intensively mix the plastic material.

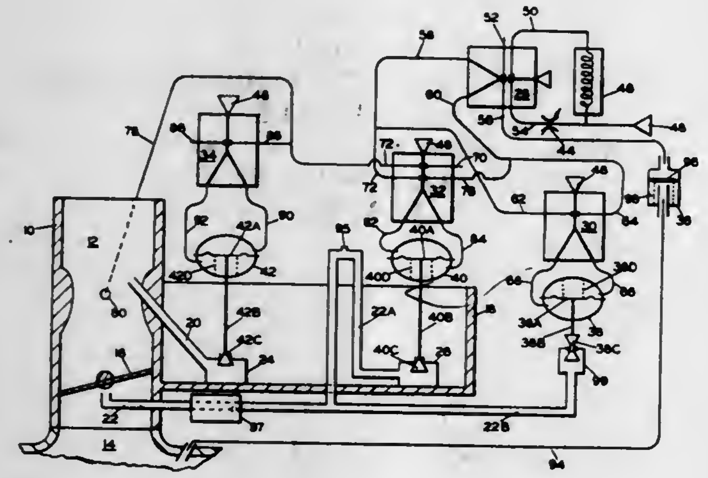


3,652,065

FLUIDIC CONTROLLED CARBURETOR

Edward H. Casey, and James T. Bickhaus, both of St. Louis, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Jan. 5, 1970, Ser. No. 742
Int. Cl. F02m *1/14*
U.S. Cl. 261—39 R **14 Claims**



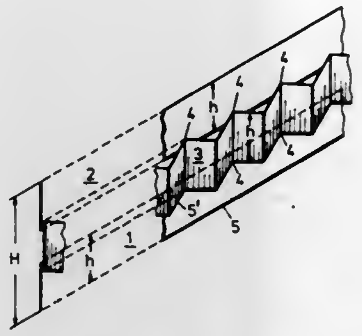
A carburetor having a mixing chamber, fuel bowl and fuel circuits is provided with fluidic control elements to control fuel flow for all normal driving conditions as well as for transient conditions such as cranking, warm-up, acceleration and deceleration. The fluidic elements control the fuel flow to compensate for altitude variations, and also control the air supply for cranking and warm-up. Pneumatically operated pure fluid amplifiers respond to vacuum signals from the engine manifold, and mixing chamber and produce output signals for controlling valves located in the fuel circuits.

3,652,066

PACKING FOR A COOLING TOWER

Heinz Faigle, Sagenkanal 15, 6971 Hard (Vorarlberg), Austria

Filed July 6, 1970, Ser. No. 52,468
Claims priority, application Austria, July 14, 1969, A-6722/69
Int. Cl. B01f *3/04*
U.S. Cl. 261—109 **10 Claims**



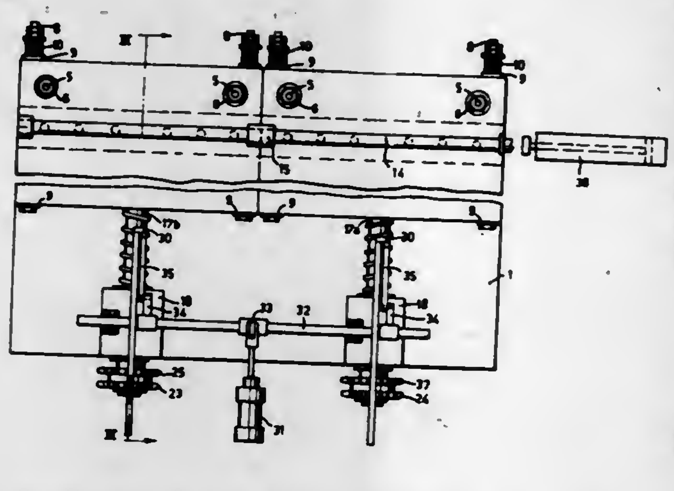
A packing for a cooling tower is assembled from elements of sheet material in which horizontally elongated flat strips and corrugated or accordion folded strips are combined. Water supplied to the top of the packing assembly flows in a film over the surfaces of the strips and drips from their edges to impinge on lower elements.

3,652,067

FURNACE FOR HEATING BARS, TUBES OR SIMILAR OBLONG ARTICLES

Henri Joseph Timmermans, Helmond, Netherlands, assignor to Nedschroef Octrool Maatschappij N.V., Helmond, Netherlands

Filed May 20, 1970, Ser. No. 39,036
Claims priority, application Netherlands, May 22, 1969, 69-07877
Int. Cl. F27d *3/00*
U.S. Cl. 263—7 **13 Claims**



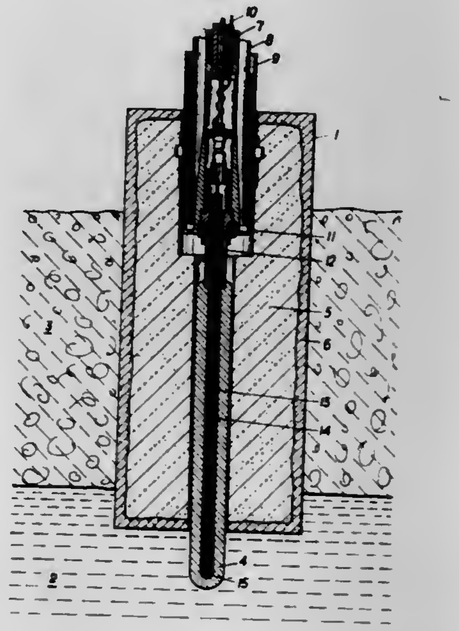
For preparing material that must be pressed or forged furnaces are used to heat said material. Said furnaces comprise a steel jacket in which a brickwork of refractory bricks is provided forming the so called furnace chamber. The articles to be heated are position in said furnace chamber into which burners for liquid or gaseous fuel discharge. An exhaust for combustion gases is provided and also supply means and discharge means for the articles to be heated. The furnace described comprises an elongated heating chamber, an exhaust passageway for combustion gases located alongside and extending lengthwise of the heating chamber and means for supplying elongated articles to be heated to the exhaust gas passageway to move transversely therethrough in contact with the hot gases and then into the heating chamber.

3,652,068

REFRACTORY HOLLOW BODY

Meinhard Truppe; Matthias Schernthaner, and Gunter Poferl, all of Linz, Austria, assignors to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Nov. 5, 1969, Ser. No. 874,258
Claims priority, application Austria, Nov. 18, 1968, A 11179/68
Int. Cl. F27d *21/00*
U.S. Cl. 263—50 **8 Claims**



The invention relates to a refractory hollow body serving especially as protection for probes or lances with which the progress of metallurgical processes is tested, to a method for producing such hollow body and to a device useful in carrying out such method. The high demands placed in such protection jacket are met by providing two layers for the refractory hollow body, i.e., an inner layer of unsintered refractory mass, containing 25 – 35 percent of fine particles and 30 – 40 percent of coarser particles, and a dense, sintered outer layer of the same material, the thickness of said outer layer amounting to preferably from one-sixth to one-tenth of the wall thickness of said body. Such jacket body, whose total porosity preferably amounts to 15 – 20 percent is produced by forming a hollow cylindrical body out of a granular, refractory mass under the addition of water and consolidation by shaking, drying said body and burning said outer layer to become dense at a temperature higher than the sintering temperature, while said inner layer is cooled by a coolant.

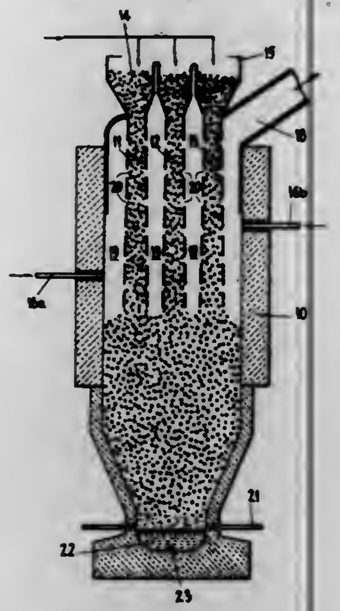
3,652,069

SHAFT FURNACE SMELTING OF OXIDIC ORES, CONCENTRATES OR CALCINES

Howard K. Worner, North Balwyn, Victoria, Australia, assignor to Conzinc Riotinto of Australia Limited, Melbourne, Victoria, Australia

Filed Oct. 6, 1969, Ser. No. 864,051
Claims priority, application Australia, Oct. 15, 1968, 44834/68
Int. Cl. C21b *7/02*
U.S. Cl. 266—25 **15 Claims**

Method and apparatus for direct shaft furnace smelting of oxidic ores, concentrates or calcines, the method comprising causing a pelletized or briquetted mixture of the ore or concentrate or calcines and coal to gravitate slowly downwards first through one or more carbonizing columns having holes or slots in the walls thereof and then through a main furnace shaft therebeneath, introducing oxygen-containing gas into a combustion chamber surrounding or partly surrounding the carbonizing column or columns to effect substantial combustion of tars and combustible gases emerging through the holes or slots from the descending material in the carbonizing column or columns, withdrawing the products of combustion



from the combustion chamber, and withdrawing the metal or alloy produced from the main furnace shaft; and apparatus adapted therefor.

3,652,070
COOLING ASSEMBLY FOR BLAST FURNACE SHELLS

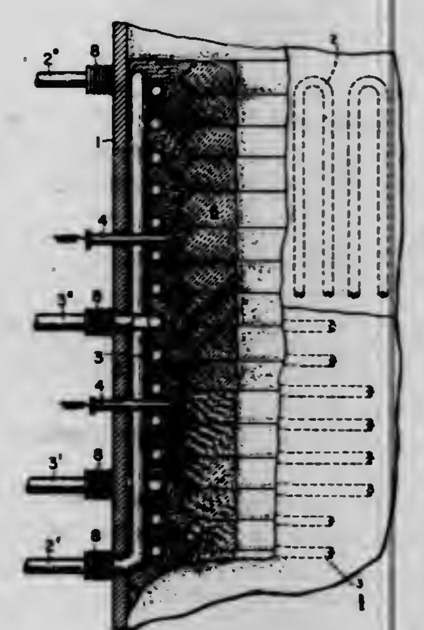
Hideo Sagara, Hiroshima-shi, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1969, Ser. No. 866,974

Claims priority, application Japan, Oct. 22, 1968, 43/76927

Int. Cl. F27b *1/24*

U.S. Cl. 266—32 **7 Claims**



On the inside of a steel shell of a blast furnace there is provided a wall made of a refractory material having a high heat transfer characteristic, such as silicon carbide. Steel pipe loops for circulating a cooling medium are embedded in the wall and temperature sensing means within the refractory material check the temperature adjacent the pipe loops.

3,652,071
TILTABLE CONVERTER SUPPORTING MECHANISM

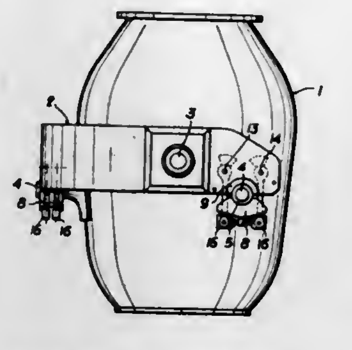
Heinz Gruber, Neuhofen, Krems, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Muldenstrasse Linz, Austria

Filed Oct. 15, 1970, Ser. No. 81,052

Claims priority, application Australia, Apr. 16, 1970, A 3456/70

Int. Cl. C21c *5/50*

U.S. Cl. 266—36 P **10 Claims**



The invention relates to a tiltable converter comprising supporting trunnions fixed to the converter shell and a bearing structure surrounding the converter shell for at least half of its circumference, the supporting trunnions being mounted in bearing bushings which are releasably connected with the bearing structure, in which the improvement resides in that the bearing bushings are attached to the bearing structure by means of drawing hooks which are slewable in and out of an engagement position. Suitably, at least two pairs of hinged drawing hooks are provided per supporting trunnion and are capable of being tightened together by a common turnbuckle under exertion of a clamping force urging said bushing and trunnion against said converter bearing structure.

3,652,072
SUPPORT ARRANGEMENT FOR METALLURGICAL VESSEL SUCH AS STEEL MILL CONVERTER

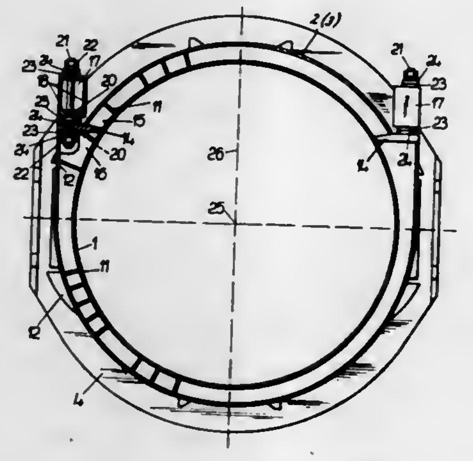
Siegfried Stresemann, Rheinhausen; Karl-Heinz Langlit, Mulheim/Ruhr, and Karl-Heinz Mahringer, Duisburg-Hamborn, all of Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Continuation of application Ser. No. 734,592, June 5, 1968, now abandoned. This application Dec. 14, 1970, Ser. No. 98,016

Claims priority, application Germany, July 1, 1967, D 53503

Int. Cl. C21c *5/50*

U.S. Cl. 266—36 P **8 Claims**



A supporting ring for metallurgical vessel, such as a tiltable or revolvable steel mill converter, includes straps secured around the periphery of the vessel and in heat exchange relation therewith. These straps are connected to a support ring for the vessel, which also surrounds the vessel but is not in heat exchange contact therewith. The supporting arrangement includes adjustable connecting screws which have a hinge-like connection at one end to the supporting ring, for displacement in at least a radial plane, and the other ends of which screws are hingedly connected to the projections of the vessel shell or wall, such as projections on the straps.

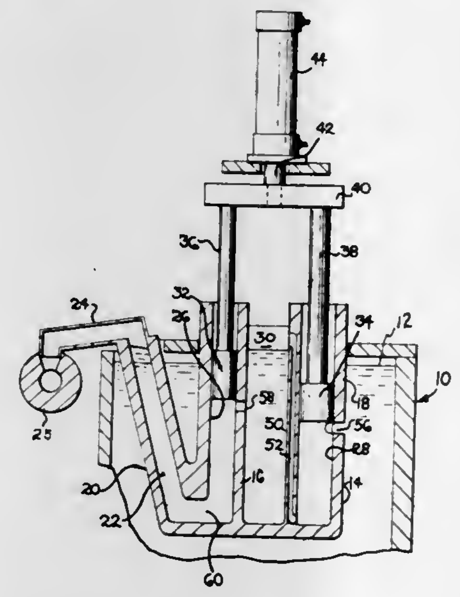
3,652,073
AUTOMATIC LADLING SYSTEM FOR DELIVERING MOLTEN METAL FROM FURNACE TO DIE CASTING MACHINE

Dong Sing Lewis, Toledo, Ohio, assignor to Gerity-Schultz Corporation, Toledo, Ohio

Filed Oct. 1, 1969, Ser. No. 862,794

Int. Cl. B22d *17/10*

U.S. Cl. 266—38 **4 Claims**



An automatic ladling system for a cold-chamber, low pressure type die casting machine and permanent molding machines including a housing which is adapted to be submerged in a reservoir of molten cast metal, and a dual piston pumping mechanism structured for synchronous actuation and located in the submerged housing, the first pumping device serving to pump a quantity of molten cast metal into the submerged housing, while the second pumping device is structured to pump molten cast metal from the housing through a gooseneck to the shot sleeve at the die cast injection chamber of a cold-chamber machine or directly into the casting mold in the case of low pressure or permanent molding.

3,652,074
MOUNTING MEANS FOR ISOLATING VIBRATIONAL ENERGY IN CHAIN SAW MACHINES

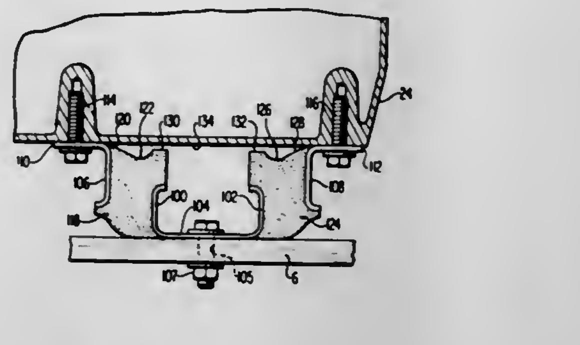
Robert Eugene Frederickson, South Gate; John Louis Zimmerer, Torrance, and Jay Richard Bailey, Woodland Hills, all of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Filed June 26, 1970, Ser. No. 50,164

Int. Cl. F16f *15/08*

U.S. Cl. 267—137 **6 Claims**

An improved resilient mounting means for connecting first and second assemblies of a chain saw machine. The first assembly generates mechanical vibrations and may include an internal combustion engine, a cutting chain with a guide bar and a drive system. The second assembly comprises an inertia mass and may include a fuel tank and a carburetor. The improved resilient mounting means is disposed between the two assemblies and a handle network may be provided to define a cagelike structure connected with the second assembly. The first assembly is resiliently supported within the cagelike network by the mounting means which integrally incorporates both vibrating absorbing and movement limiting features. The mounting means may be arranged to absorb vibration in shear during the normal running of the chain saw and to absorb shock energy generally in compression during brief periods of unusual loading. In one independent feature of the invention, an additional snubber unit may be used in combination with the unitized vibration absorbing and movement limiting mounting means.



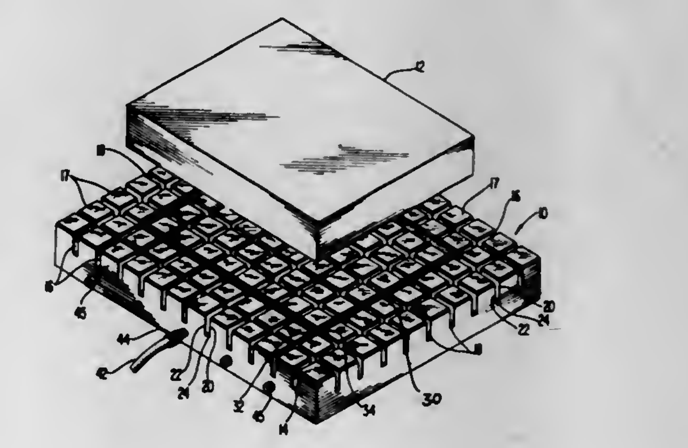
3,652,075
VACUUM CHUCK AND RELATED APPARATUS AND METHODS

Sheldon Thompson, 2187 12th St., Sarasota, Fla.

Filed Nov. 10, 1969, Ser. No. 875,103

Int. Cl. B25b *11/00*

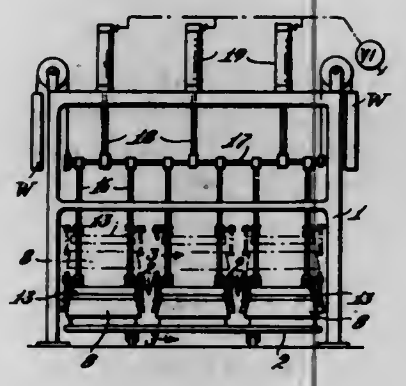
U.S. Cl. 269—21 **17 Claims**



A vacuum chuck having a work face including a plurality of linearly extending parallel passages or grooves intersecting each other at right angles to form a rectangular grid pattern. The grooves are dimensioned to receive an elongated rubber sealing member having a closed cell construction. The sealing member is discontinuous so that it may be placed in various different grooves to define a continuous seal in the work face of the chuck with the area enclosed by the sealing member being dependent on the size of the workpiece to be held by the chuck. Passages are provided in the chuck to communicate with the grooves inwardly of the sealing member for transmitting a vacuum in the area enclosed by the seal under the work piece. When handling very thin workpieces, a conversion plate is placed on the work face of the chuck in engagement with the sealing member. The thin workpiece is then placed on the conversion plate and held thereon by vacuum transmitted to the bottom of the work piece by apertures in the conversion plate which register with grooves in the chuck inwardly of the seal. When the work piece is very small in overall length and width, it is positioned by placing it in an aperture of similar shape formed in a "-block-in" plate which rests on a conversion plate. The bottom surface of the work piece rests on the conversion plate, and vacuum is applied to the bottom of the work piece through apertures in the conversion plate. The chuck may also be adapted for profiling work pieces by placing an apertured conversion plate on the chuck inwardly of the sealing member. The work piece extends beyond the edges of the conversion plate and in spaced relation to the work face of the chuck to provide sufficient space for profiling.

3,652,076
MOLDING APPARATUS

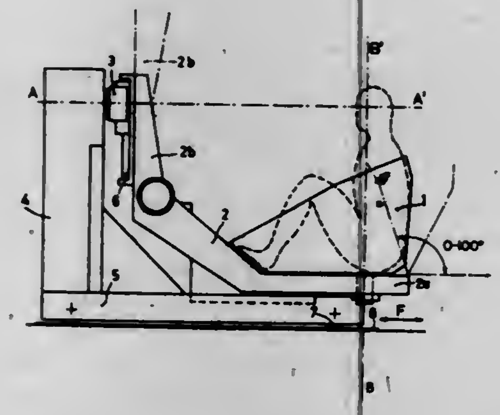
Edwin Ralph McIntier, Madison, Conn., assignor to Richard G. Sweitzer, Madison, Conn.
Filed Mar. 16, 1970, Ser. No. 19,881
Int. Cl. B23q *3/08*
U.S. Cl. 269—24 **6 Claims**



Molding apparatus comprising a mold support, a jacket for the mold, the jacket comprising separate plates for the sides of the mold, the plates having out-turned flanges at the corners of the mold, the flanges at each corner being spaced apart, a fluid-operated clamp at each corner of the jacket for drawing said flanges together. Suspension means movably suspends the jacket over a mold on said support so that the jacket may be lowered over the mold, and fluid is simultaneously admitted to the clamps at the corners of the mold.

3,652,077
DEVICE FOR POSITIONING A PATIENT

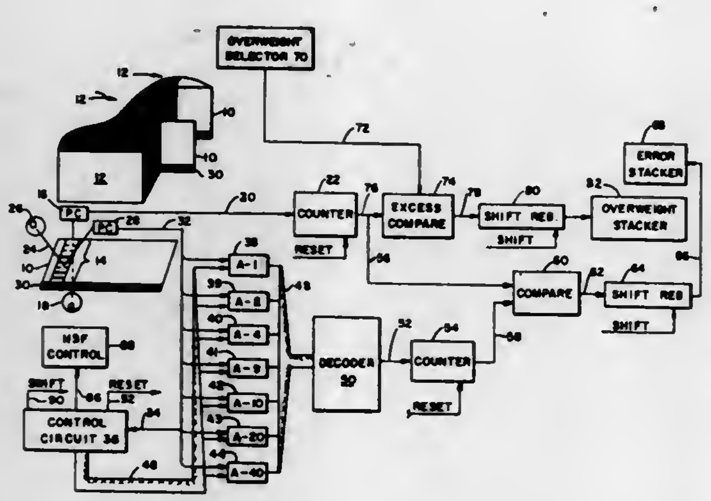
Pierre Lucien Jules James, Saint Gratien, France, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 20, 1970, Ser. No. 13,105
Claims priority, application France, Feb. 24, 1969, 6904704
Int. Cl. A61g *13/00*
U.S. Cl. 269—322 **8 Claims**



Apparatus for supporting and positioning a patient including a support on which the patient is seated that is rotatable about a horizontal axis and also movable vertically to vary the distance to said axis.

3,652,078
SELECTIVE INSERTION MACHINE HAVING VERIFICATION AND OVERWEIGHT DIVERSION

Eugene Sather, Washington; Lester H. Stocker, Phillipsburg, both of N.J., and Kenneth A. Hams, Easton, Pa., assignors to Bell and Howell Company, Phillipsburg, N.J.
Continuation-in-part of application Ser. No. 657,721, July 14, 1967, now Patent No. 3,484,100. This application Oct. 20, 1969, Ser. No. 867,702
Int. Cl. B65h *39/02*
U.S. Cl. 270—58 **17 Claims**



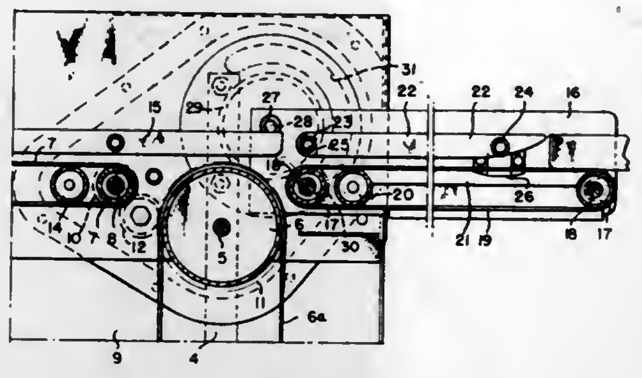
A high speed feeder delivers a main document and a plurality of related subordinate documents onto an insertion track which carries the documents past a plurality of insertion and diversion stations. Each main document includes a coded representation of the number of related subordinate documents that are to follow thereafter. The coded representation is sensed as the main document is fed from the high speed feeder and signals are generated and delivered to a counter for representing a count corresponding to the number represented by the code. A photocell senses each subsequent subordinate document as it passes thereover and delivers a pulse corresponding to each such subordinate document to a second counter. The outputs of the two counters are compared and an error signal is generated if the two counts are not in agreement.

In accordance with another aspect of the invention, an overweight selector produces signals representing a predetermined number of subordinate documents. These signals are delivered to a means for comparing the numeric value they represent with the count in the second counter and providing an "overweight" output signal to an overweight-stacker when the actual count exceeds the predetermined number. In this manner, when a packet of documents contains an excessive number of subordinate documents, the packet is removed from the insert track by the overweight-stacker.

3,652,079
MOVABLE INFEED CONVEYOR FOR SHEET COLLATOR DEVICE

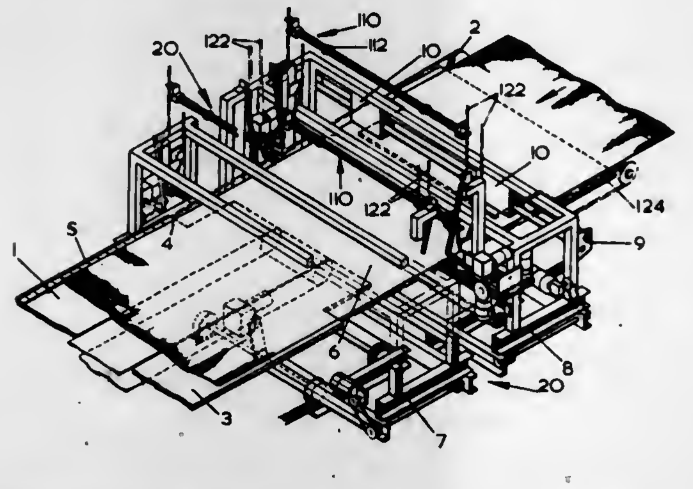
Donald L. Snellman, and Ronald W. Greene, both of Seattle, Wash., assignors to Norfin, Inc., Seattle, Wash.
Filed Aug. 1, 1969, Ser. No. 847,538
Int. Cl. B65h *39/02, 29/58*
U.S. Cl. 270—58 **5 Claims**

An infeed conveyor attached to the infeed end of a sheet collator device and interconnecting the outfeed station of a copy machine with the infeed station of the collator is made so that it can be moved from an operative position to an inoperative position for access to the copy machine without moving either the copy machine or the sheet collator device. The infeed conveyor is powered by the drive train of the sheet collator device and is either pivotally attached to the frame of the collator device or adapted to ride in vertical slots in the frame of the collator device from which position it can be raised and slid over the top of the sheet collator device.



3,652,080
APPARATUS FOR CUTTING AND FOLDING FLEXIBLE SHEET MATERIAL

Kenneth Thomas Jenkins, 14, Blackfield Lane, Salford, 7, England
Filed Dec. 18, 1969, Ser. No. 886,269
Claims priority, application Great Britain, Dec. 24, 1968, Dec. 24, 1969; 61,509/68, 61,510/68
Int. Cl. B65h *45/22*
U.S. Cl. 270—61 R **27 Claims**

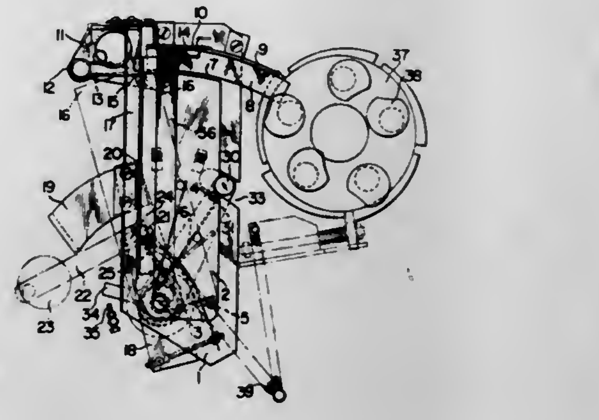


Apparatus and a method for continuously measuring and transversely cutting into separate units flexible sheet material and particularly textile material as manufactured, folding the material adjacent a cut edge into a hem and temporarily securing folded hems in readiness for permanent securing.

3,652,081
SHEET COUNTERS

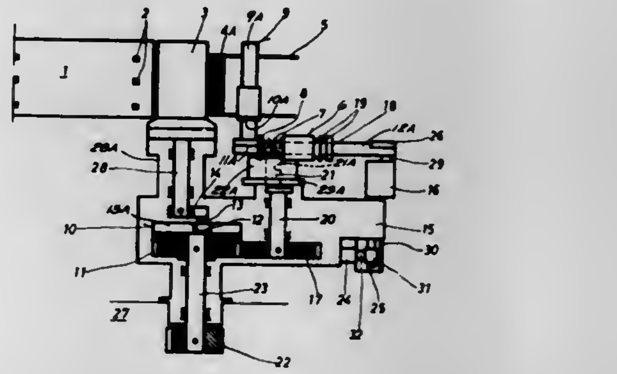
Yoshihiro Hatanaka, Himeji; Masahiro Abe, Tokyo-to; Takeo Oshima, Tokyo-to, and Yoshio Akioka, Tokyo-to, all of Japan, assignors to Kabushiki Kaisha Kokuei Kikai Seisakusho, Himeji-shi and Glory Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed June 23, 1970, Ser. No. 49,019
Claims priority, application Japan, June 24, 1969, 44/59821; 44/49357; 44/59824
Int. Cl. B65h *3/42*
U.S. Cl. 271—27 **3 Claims**

Improvements in a sheet counter for use in counting bank notes and so forth, comprising a sheet holding mechanism and a sheet counting mechanism which includes a counting rotor having a plurality of rotary suction drums for successively separating by suction the sheets held in a pack in the sheet holding mechanism. The two primary improvements concern the sheet holding and sheet counting mechanisms, respectively, one being a device for securely holding a pack of sheets between a sheet holder plate and a holder check bar. The other is a device for stopping the counting rotor at the end of each counting operation in such a manner that one of its rotary suction drums is directed squarely toward the next pack of sheets to be counted. Instead of piano wire, as in the prior art, a solid bar complete with exclusive shock absorber means is employed for this purpose and slides over the periphery of the counting rotor until it drops into one of its notches.



3,652,082
DEVICE FOR FEEDING LABELS INTO LABELING MACHINES

Erich Eder, Neutraubling, Germany, assignor to Hermann Kronseder, Neutraubling, Germany
Filed June 29, 1970, Ser. No. 50,440
Claims priority, application Germany, July 7, 1969, P 19 34 399.8
Int. Cl. B65h *3/06;* **B32b** *31/00*
U.S. Cl. 271—36 **11 Claims**

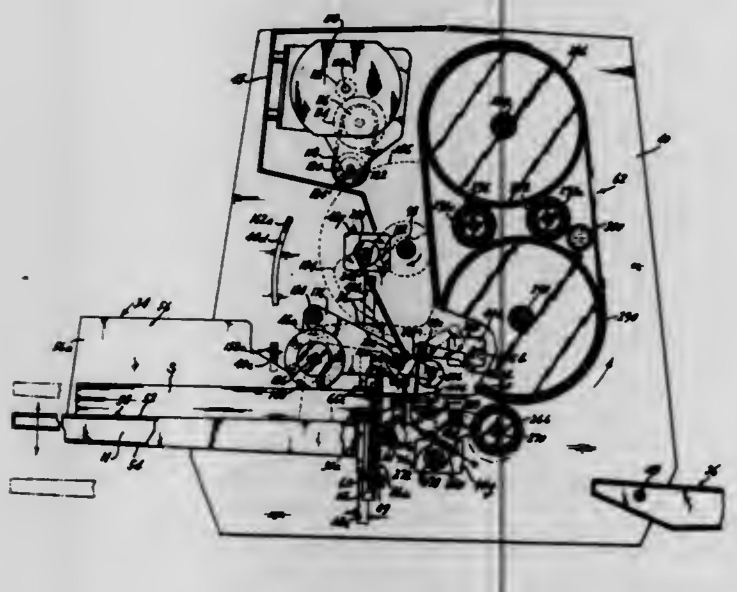


An integrated assembly of apparatus for feeding labels to a container labeling machine includes a variable speed label-transfer roller which rotates at a slow speed when picking up a label and a higher speed when transferring the label to a label turret, and a label magazine which is advanced in a tangential path toward the transfer roller and retracted clear of the path by a guide which is yieldably connected to the label magazine and rotated by a crank. When a container is not present in the feed path to the label turret, the movement of the label magazine toward the transfer roller is prevented by a blocking arm which is actuated by a rotary solenoid. The yieldable connection between the guide and the label magazine affords relative movement between the guide and the label magazine when the magazine is blocked and the guide continues to rotate.

3,652,083
PAPER FEED MECHANISM

William Bosshardt, Armonk, N.Y., assignor to John Benton Inc., Mineola, N.Y.

Filed Oct. 31, 1969, Ser. No. 873,042
Int. Cl. B65h *3/06*
U.S. Cl. 271—39 **26 Claims**

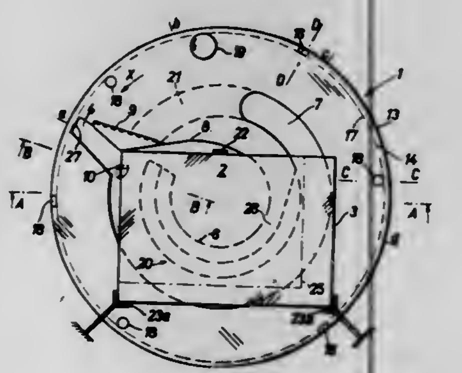


A twin cylinder stencil duplicating machine including a corner separator paper feed mechanism having a single knob adjustment for establishing different degrees of interference for various paper stocks and operating conditions such as machine speed.

3,652,084
APPARATUS FOR SEPARATING A STACK OF FLAT ARTICLES INTO SINGLE ARTICLES

Jurg Eberle, Zurich, Switzerland, assignor to Ferag, Fehr and Reist AG, Hinwil, Zurich, Switzerland

Filed Apr. 20, 1970, Ser. No. 29,913
Claims priority, application Switzerland, Apr. 29, 1969, 6523/69
Int. Cl. B65g *59/06*
U.S. Cl. 271—41 **8 Claims**

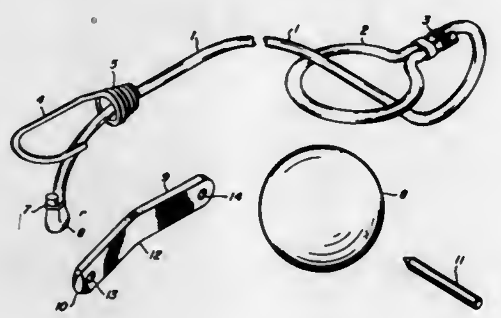


An apparatus for removing articles one-by-one from a stack comprises a rotating table on which the stack is placed, the stack being held still. The table is formed with an opening through which the lowermost article in the stack passes on each revolution of the stack. The stack covers the axis of rotation of the table and the opening is specially shaped with a central hole connected by a generally radial slit to a part annular slit, the radial slit extending outwardly of the part annular slit to pass the article through the opening.

3,652,085
ELASTIC TYPE ARM EXERCISING DEVICE

Jon F. Cole, Scottsdale, Ariz., assignor to Michel Civalier; Gerald T. Civalier and William T. Civallier, part interest to each

Filed Nov. 4, 1970, Ser. No. 86,681
Int. Cl. A63b *21/00*
U.S. Cl. 272—82 **3 Claims**

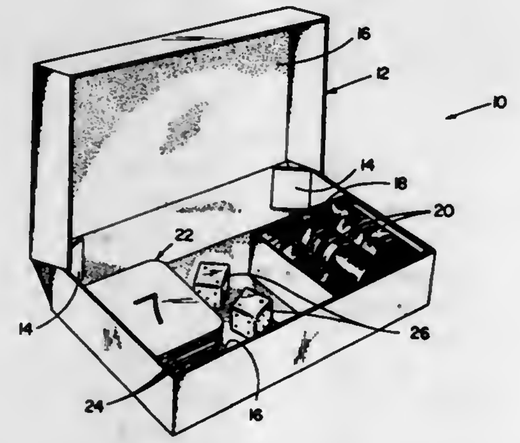


An exercise device is provided for developing and strengthening the arm muscles, particularly those muscles associated with the act of throwing. The apparatus includes sphericalhand grip spherical hand to one end of an elastic cord to which structure is provided at the other end for anchoring the apparatus to a relatively immobile object of restraint. An elongated, flattened member extends into the interior of the spherical hand grip and is secured by a pin passing transversely through an aperture near the end of the member within the hand grip. A second aperture near the protruding end of the elongated member receives a hook for coupling the hand grip to an elastic cord. The hook is mounted on an elastic cord and means includes a cuplike portion having a helix that decreases in radius from the hand grip one end is cupped and knotted and held in the helix. The knot is too large to pass through the small end the helix. At the other end of the cord is provided with a loop to permit the device can be anchored to any immobile object, for example, a door knob, which will receive a conventional loop-hitch.

3,652,086
DICE, CARD AND TOKEN BOX CONVERTIBLE TO A DICE THROWING AREA

Merrick C. Stecker, Route 1, Box 645, Baltimore, Md.

Filed Dec. 10, 1970, Ser. No. 96,756
Int. Cl. A63f *9/04*
U.S. Cl. 273—1 R **5 Claims**



A new and novel game is provided which consists of a box which subsequently assembles into a die throwing area. The box includes a token container having 120 tokens of various denominations, such as ten, five, and one. Two dies are also included in the box, together with a deck of cards numbered 1–12 of which there are four each making a total of 48 cards. The inner horizontal surface of the box is lined with a sound absorbent material such as felt. The bottom half of the box has two tabs attached to its opposed vertical sides. These tabs provide a lock for keeping the top half of the box in the same plane as the bottom half, once the box has been unfolded. The game is played after giving each player a predetermined number of tokens.

Each player, in starting the game, will roll the dice in the game box, with the player having the highest number starting the game. After he has finished his play, the next player to his left makes his play. The first player shuffles the numbered cards (face down), and then deals out six cards to each player. Each player will then place his six cards face up in numerical order, with the first player proceeding to cast the dice.

According to the rules of the game, only one number of each player's numbers, equalling the total of the throw, may be turned over. In the case of doubles showing on a throw of the dice, the total of the throw can be used or the number of one die shown can be played. Play of the game continues until a player succeeds in having all numbered cards face down across the board; that player is declared the winner of that round of play. The remaining players then total their remaining numbered cards and pay this amount in token to the winner. This constitutes one round of play. Next, the numbered cards and dice are then given to the second player and a new round of the game is started. The player ending up with all the tokens is the official winner, with any player running out of tokens during the course of play, being automatically eliminated.

3,652,087
GAME APPARATUS

William L. Carmen, 335 Alma, Palo Alto, Calif.

Filed Feb. 11, 1969, Ser. No. 798,287
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **3 Claims**

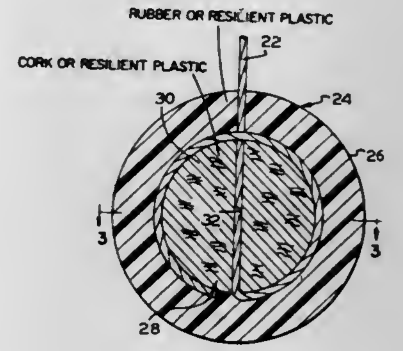
Apparatus for playing a game with a number of participants wherein the apparatus includes a number of flexible cord-like members, each member being of a different color for identifying it with a respective participant and loops at each end thereof for releasably connecting the same to a body part of a participant. Each member has beads bearing game instruction indicia thereon to indicate the play of the game wherein the participants successively make moves which cause them to become intertwined. In one form of the invention, the members are separate from each other and in a second form of the invention, the members are coupled together.

3,652,088
TETHERED BALL BASEBALL BATTING PRACTICE DEVICE

Loyal F. Marsh, 8535 S.W. Woodside Drive, Portland, Oreg.

Filed Oct. 21, 1969, Ser. No. 868,095
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 E **8 Claims**

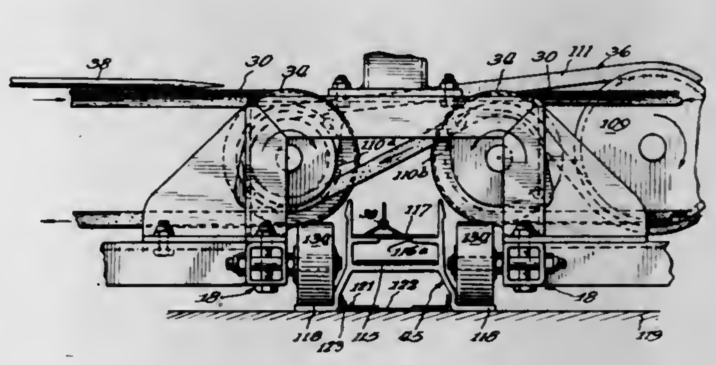
A baseball or softball batting practice device has a rope trackway along which a pulley carriage is adapted to travel freely. A simulated baseball or softball is suspended by a length of nylon cord from the carriage. A batter strikes the ball to cause the carriage to travel along the trackway and endeavors to hit the ball again as the carriage returns toward the batter along the trackway. In a preferred embodiment the ball has a solid cork center core and a molded urethane elastomer shell surrounding the cork core. One end of the nylon cord extends through and is wrapped once about the core and embedded in the urethane shell.



3,652,089
ARROW RETURN COVEYOR

Thomas W. O'Connor, Ravenna, Mich., assignor to Brunswick Corporation

Filed June 6, 1969, Ser. No. 831,081
Int. Cl. F41j *1/18*
U.S. Cl. 273—103 **4 Claims**



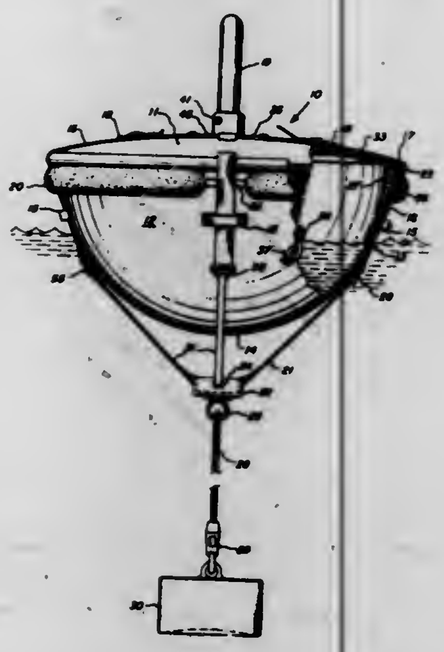
An automated archery range including a firing line from which arrows are shot toward a penetrable target, a backstop behind the target for stopping arrows, an arrow collector beneath the backstop, a disassemblable and removable arrow return conveyor for receiving arrows from the collector and returning them toward the firing line, and an arrow storage quiver adjacent the firing line for receiving arrows from the conveyor and storing the arrows in upright positions readily accessible to the archer. The conveyor includes a horizontal channel, an endless conveyor belt comprising a stretchable band guided in the channel, means for driving the belt, wherein the channel comprises a plurality of separable sections, arranged end to end for assembly and disassembly, and releasable means for holding the channel sections together.

3,652,090
FLOATING GAME TARGET

Richard W. Semmens, 10640 Wren St., Coon Rapids, Minn.

Filed Oct. 28, 1970, Ser. No. 84,563
Int. Cl. A63b *63/00*
U.S. Cl. 273—104 **10 Claims**

A recreational device comprising a generally bowl shaped base which has a density permitting the floatation of said base in a body of water, an upright elongated member projecting from the top of said base and above the surface of said water, and a plurality of elastic members connected at one end with said base and at the other end with an anchor means for maintaining the recreational device in a stable position when it is used as a game target in the water.



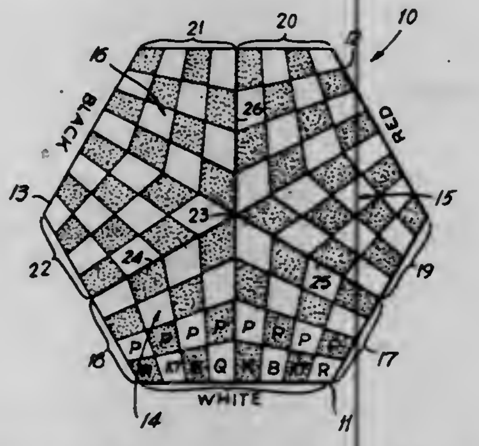
3,652,091
THREE PLAYER CHESS BOARD

Robert Zubrin, 3 Vista Drive, Great Neck, N.Y.

Filed Jan. 6, 1971, Ser. No. 104,439

Int. Cl. A63f *3/02*

U.S. Cl. 273—131 B **2 Claims**



A game board for simultaneous play of chess or the like by three players. The board is in the shape of a hexagon and is divided by transverse and longitudinal lines into three discrete territories, each of which territories includes 32 play spaces. Each territory includes a base defined by a side of said hexagon, side borders defined by half of each of the sides of the hexagon adjacent the base and frontier borders defined by lines extending from the terminal ends of the sides remote from the base to the geometric center of the hexagon. Each territory is defined into 32 play spaces by longitudinal lines extending from the base to the frontier borders and transverse lines extending from the sides to an apex line running from the center of the base.

3,652,092
ASTROLOGY BOARD GAME APPARATUS

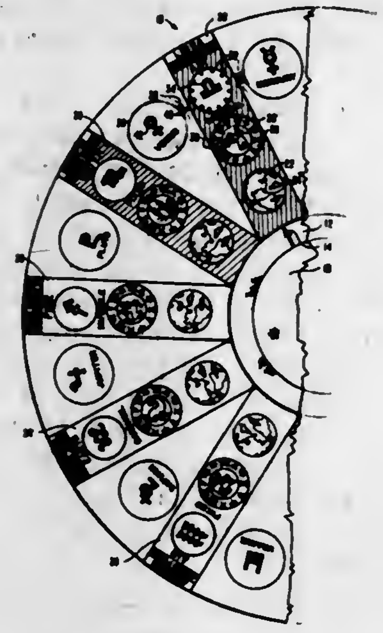
Richard G. Boyer, and Lola Elizabeth Boyer, both of 735 Hawthorne Ave., Hollywood, Calif.

Filed Oct. 24, 1969, Ser. No. 869,009

Int. Cl. A63f *3/00*

U.S. Cl. 273—134 C **8 Claims**

An astrology game board comprising a flat stationary board having positioned on a surface thereof a circular indicator means rotatable about a fixed axis, disposed around said indicator means twelve radially extending bands, each of said bands having within its field in radially disposed fashion; an image of the earth having therein a orbiting flag receiving aperture, a plurality of zodiac sign symbols in circularly disposed arrangement, in proximity to each of said symbols a peg receiving aperture, and a plurality of peg receiving apertures in circularly disposed arrangement; between said bands and each associated with one of said bands a circularly disposed degree scale, said scale having at regular increments a orbiting flag receiving aperture. Each of said bands is identified by a color associated with a particular zodiac sign. The bands are arranged in the cosmic order of the zodiac signs around the indicator means. The degree scale has at its center the planet symbol and name of the planet which cosmically rules the zodiac sign of the band associated with said scale. Alternatively, said indicator means may be deleted in favor of twelve suits of astrological playing cards.



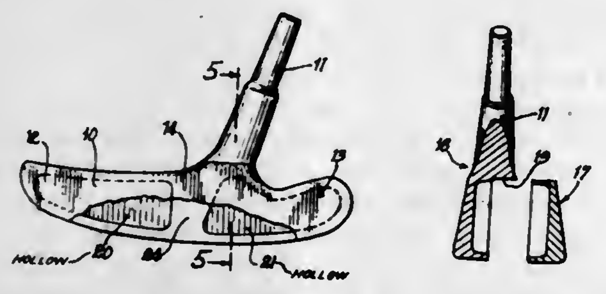
3,652,093
GOLF PUTTER HEAD WITH HOLLOW TOE AND HEEL PORTIONS

John Reuter, Jr., Phoenix, Ariz., assignor to John Reuter, Jr. Inc., Phoenix, Ariz.

Filed July 20, 1970, Ser. No. 56,274

Int. Cl. A63b *53/04*

U.S. Cl. 273—169 **3 Claims**



A golf putter head which is designed to make available to the player a relatively large mass at the ball-striking area of the putter face and the loft of a long iron club for putting a ball from just outside the green, while retaining the directional and power control for short putts. Undue increase in the weight of the putter which would result from the concentration of mass at the ball-striking area, and the unattractive bulge such concentration of mass would entail, are avoided by retaining the constant thickness of the usual putter over its entire length while making the heel and toe of the putter hollow.

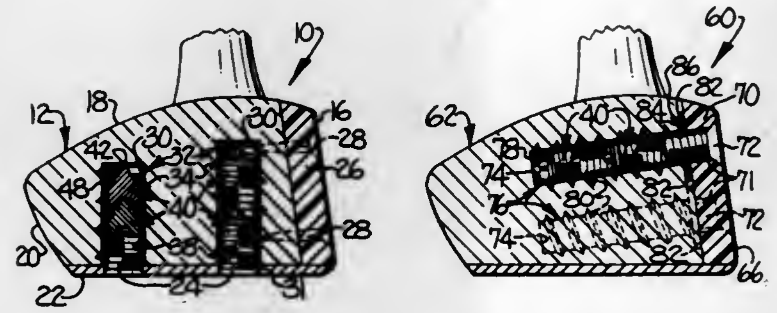
3,652,094
GOLF CLUB WITH ADJUSTABLE WEIGHTING PLUGS

Cecil C. Glover, P.O. Box 12705, Charlotte, N.C.

Filed Oct. 21, 1969, Ser. No. 868,000

Int. Cl. A63b *53/08*

U.S. Cl. 273—171 **8 Claims**



A golf club having provision for adjusting the swing weight and balance of the club. The club head includes a plurality of elongated cavities, each of which mounts an internally threaded sleeve. One or more externally threaded plugs are threadedly retained in each sleeve, the plugs being adapted to be rotatably translated along the length of the sleeve, or entirely removed therefrom, to change the balance and/or swing weight of the club.

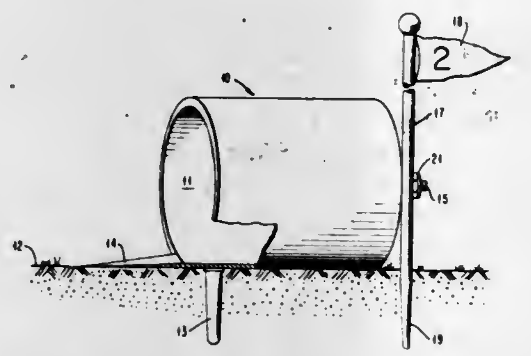
3,652,095
GOLF GAME APPARATUS

Peter C. Furnari, 9 Maple Ave., Wappingers Falls, N.Y., and Samuel F. Furnari, 183 Glascoe Ave., Staten Island, N.Y.

Filed Apr. 22, 1970, Ser. No. 30,825

Int. Cl. A63b *67/02*

U.S. Cl. 273—176 AA **5 Claims**



A lawn golf game playable with ordinary golf clubs and balls or wiffle balls on any reasonable size lawn area in leisure time by individuals or competitive teams which requires all the skill of conventional golf. Receptacles are located in a predetermined pattern or course above ground for receiving the golf ball. Each receptacle is cylindrically shaped and includes one closed end, one open end for receiving a ball, a lip extension for facilitating the entry of a ball into the receptacle, a conical projection adjacent the open end for anchoring the receptacle in place, and a post at the closed end for supporting an identifying flag and anchoring the receptacle in place.

3,652,096
CONTROL MEANS FOR MOVING DECK FOR TAPE CARTRIDGE PLAYING APPARATUS UTILIZING PLURALITY OF ENDLESS MAGNETIC TAPE CARTRIDGES

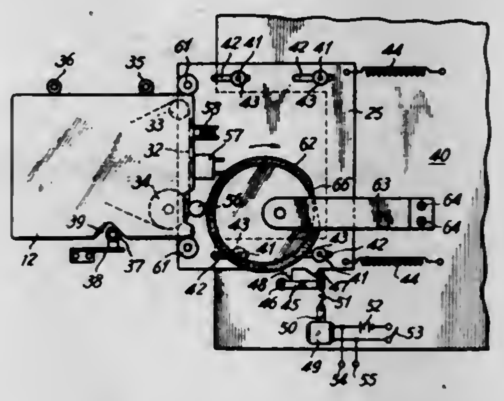
Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

Filed June 15, 1970, Ser. No. 45,961

Int. Cl. G11b *5/00*

U.S. Cl. 274—4 F **6 Claims**

Control means for moving a deck in a tape cartridge apparatus having a plurality of endless tape cartridges mounted on a movable container, the container being movable to bring the cartridges into the playing position in a predetermined sequence. Mounted on the deck are a rotary capstan for driving the tape in the cartridge in the playing position, and a magnetic head for transducing the tape. The deck is adapted to be reciprocated between a reproducing station where the capstan and the magnetic head play the cartridge in the playing position and a non-reproducing station where the play of the cartridge is ended. The deck may be retained by a first locking means in the reproducing station or by a second locking means in the non-reproducing station. The deck is moved into the non-reproducing station by the bias of a bias means when the first locking means releases retention of the deck. And, the deck is moved into the reproducing station against the bias of the bias means by a deck moving means having a frictional cam wheel rotatably driven abutting against the capstan when the second locking means releases retention of the deck.



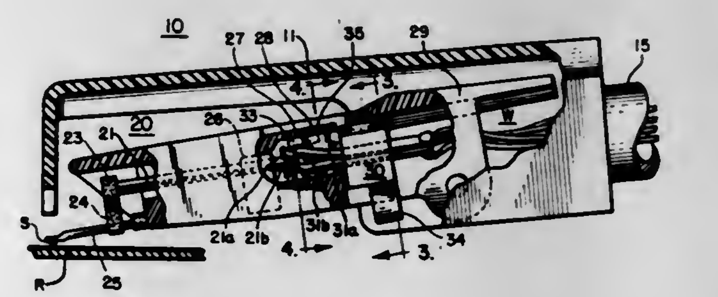
3,652,097
PHONOGRAPH CARTRIDGE CONNECTOR

David Bella, Northlake, and Seymour Kessler, Wilmette, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed June 19, 1969, Ser. No. 834,707

Int. Cl. G11b *3/02*

U.S. Cl. 274—37 **2 Claims**

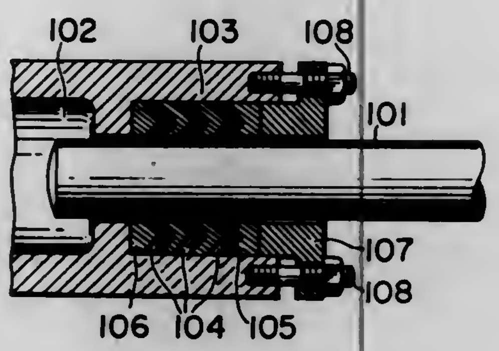


A simple and economical electrical connector plug for a phonograph pickup cartridge adapted to engage a rotating phonograph record and track the record grooves therein for translating the undulations of the grooves into corresponding electrical signals for application by wires to suitable electronic amplifying equipment. The detachable connector plug is provided with an indexing projection and electrical contacts connected to the wires and adapted to mate with the output signal contacts of the active element of the phonograph cartridge for coupling the electrical signals to the amplifying equipment.

3,652,098
SEALING DEVICE FOR RECIPROCATING PUMP

Yoshio Kawazu, and Tadashi Egami, both of Chikushino-machi, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1970, Ser. No. 29,440
Claims priority, application Japan, Apr. 30, 1969, 44/33391
Int. Cl. F16j *15/18*
U.S. Cl. 277—59 **8 Claims**

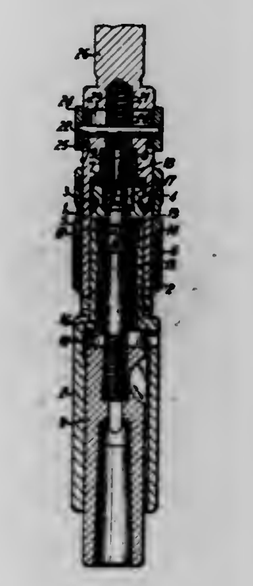


In a reciprocating pump, a stuffing box is providing through which a rod reciprocates. Adapter means and packing means are arranged in the stuffing box to effect a reduction in the pressure of the fluid flowing from the pump into the stuffing box. The packing means are arranged to form open spaces about the rod within which spaces pressure reduction takes place. Additional packing means are provided about the rod outwardly from the open spaces for providing the final sealing effect.

3,652,099
DRILL CHUCK

Otto Bilz, Waldackerweg 8, Esslingen/Neckar, West, Germany

Filed Feb. 19, 1970, Ser. No. 12,633
Int. Cl. B23b *31/08*
U.S. Cl. 279—1 B **11 Claims**

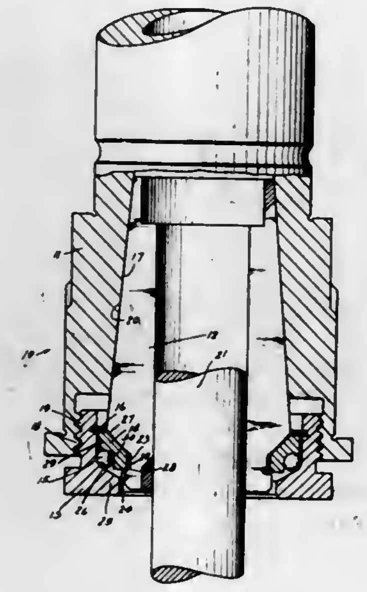


A drill chuck in which, when the pressure upon the drill exceeds an adjustable limit during a drilling operation, the drill holding means, for example, a tool socket, is released and moved axially in the direction toward the shank of the chuck so that the drill is relieved from pressure. Such a release of the tool socket or the like and its resulting movement is indicated on the outer slide of the chuck and may also actuate a switch to stop the machine tool.

3,652,100
COLLET CHUCK

Walter Baturka, Frankenmuth, Mich., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed July 2, 1970, Ser. No. 51,885
Int. Cl. B23b *31/20*
U.S. Cl. 279—51 **8 Claims**

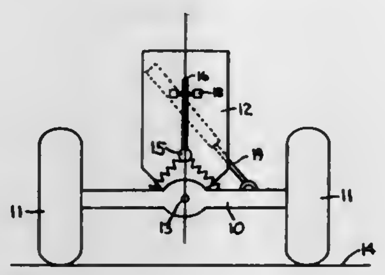


A collet chuck assembly includes a locknut and a nose ring that have confronting bearing races with a series of bearing elements therebetween, the nose piece and the collet having a line of engagement, and loose fitting threads enabling the line of engagement to find its own location.

3,652,101
VEHICLE STABILIZATION APPARATUS

William J. Pivonka, W. 334 Woodside, Spokane, Wash.

Filed Dec. 17, 1969, Ser. No. 885,862
Int. Cl. B60g *17/04*
U.S. Cl. 280—6.1 **12 Claims**

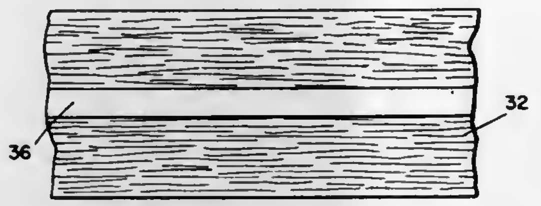


A controlled pendulum is utilized to automatically tilt a vehicle frame uphill to compensate for transverse inclination of the terrain on which the vehicle is riding. The normal gravitational forces exerted on the pendulum due to such transverse inclination are partially counteracted by tension forces proportional to the degree of inclination. The frame is thereby tilted uphill an angular amount in proportion to the amount of transverse inclination encountered. The vehicle frame is pivoted to a ground engaging structure about a longitudinal axis. The pendulum is pivoted about an elevated parallel axis. A pair of control devices are mounted to the frame to detect pendulum movement to either side of a plane containing said axes. Tension springs extend outwardly and downwardly from the pendulum to the vehicle's ground engaging structure. They serve to force the pendulum to an equilibrium condition at an angle relative to the vertical. The monitoring function of the control devices causes the frame to be aligned along this plane which is inclined uphill.

3,652,102
SKI BOTTOM FINISHING METHOD

Earl V. Eaton, Petaluma, Calif., assignor to George E. Garcia, Novato, Calif.

Filed Mar. 5, 1970, Ser. No. 16,694
Int. Cl. A63c *5/12*
U.S. Cl. 280—11.13 L **2 Claims**

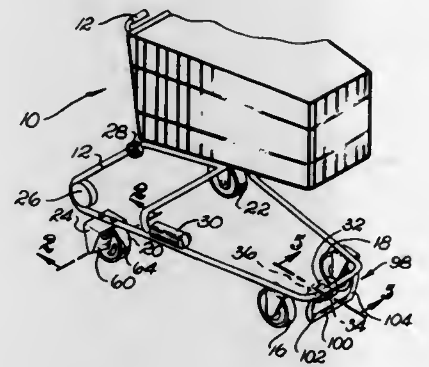


A method for making snow skis with a bottom surface that provides relatively low friction with snow. The method produces a multiplicity of small, elongated, irregular indentations or striations in the bottom ski surface without grinding or buffing the hard plastic material forming the surface. It can also be applied to produce grooves of a predetermined size. The method includes the steps of providing a sandwich of elements forming the ski structure including a bottom member of plastic material, providing a metal form or die having a multiplicity of elongated indentations or striations in an upper surface, placing the indented surface of the metal form against the surface of the bottom member, and applying heat and pressure of predetermined amounts for a period of time to press the form against the ski structure, and thereby imprint the surface pattern of the form on the surface of the bottom member.

3,652,103
AUTOMATIC BRAKE FOR A SHOPPING CART

Stuart P. Higgs, 12533 Emelita St., North Hollywood, Calif.

Filed Mar. 23, 1970, Ser. No. 21,776
Int. Cl. B62b *5/04*
U.S. Cl. 280—33.99 C **8 Claims**

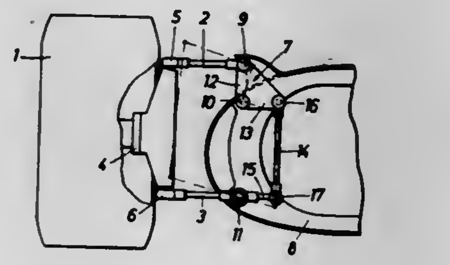


For a shopping cart having a frame mounted on roll-about wheels, an automatic lock which is released by a timing mechanism a predetermined period of time after actuation. A photoelectric cell is operatively associated with the timing mechanism so that a beam of light, e.g., at a store exit can actuate the mechanism. A rechargeable battery is included and male and female electrical connectors are disposed in opposite forward and rearward directions on the cart for mating engagement with counterpart connectors on other like-constructed carts stacked therewith, whereby recharging of the batteries of each stacked cart can be simultaneously accomplished from a single source of electrical power.

3,652,104
INDEPENDENT WHEEL SUSPENSION FOR VEHICLES

Kurt Herwig Chabek, Munchingen-Kallenberg, Germany, assignor to Firma Dr.-Ing. Porsche, h.c.F.K.G., Stuttgart-Zuffenhausen, Germany

Filed Jan. 20, 1970, Ser. No. 4,235
Claims priority, application Germany, Feb. 12, 1969, P 19 06 864.5
Int. Cl. B60g *3/26*
U.S. Cl. 280—96.2 R **31 Claims**

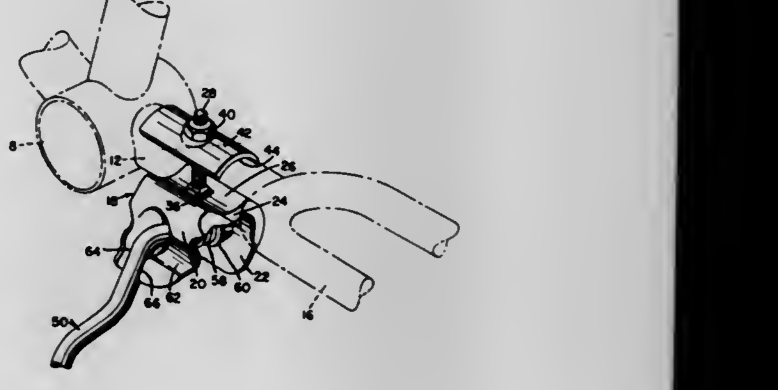


An independent wheel suspension for vehicles wherein the vehicle wheel is guided by means of upper and lower transverse wheel forks mounted at the vehicle frame so as to be pivotable about at least approximately horizontal axes. The lower transverse wheel fork is connected directly to the vehicle frame, while the upper transverse wheel fork is connected to the vehicle frame by means of a two-armed deflecting guide member. A torsion bar can be arranged in the longitudinal direction of the vehicle for wheel springing and can be disposed in the extension of the frame-side pivot axis of the lower transverse wheel fork.

3,652,105
BICYCLE KICKSTAND

Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Incorporated, Maysville, Ky.

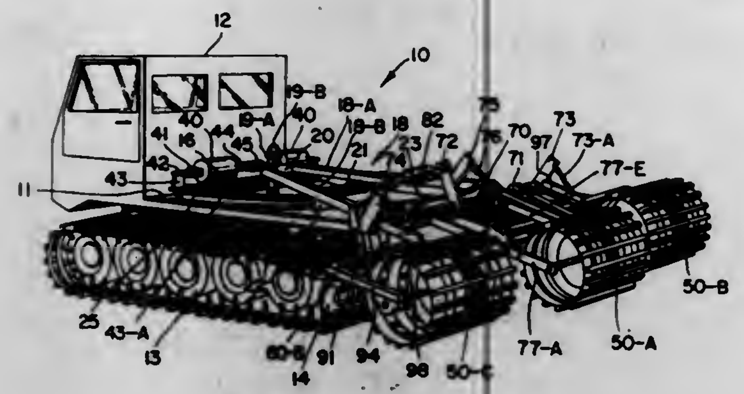
Filed May 8, 1970, Ser. No. 35,639
Int. Cl. B62h *1/02*
U.S. Cl. 280—301 **11 Claims**



The kickstand includes simple quick-attachable means for a safe and effective mounting thereof upon a bicycle frame characterized by a single tubular shank member that connects the crank housing with the lower rear wheel fork of the frame; the mounting including a single fastener, and means to preclude mutilation or collapse of the shank member incident to installation and use of the kickstand.

3,652,106
LOAD TRANSFERRING HITCH FOR A VEHICLE

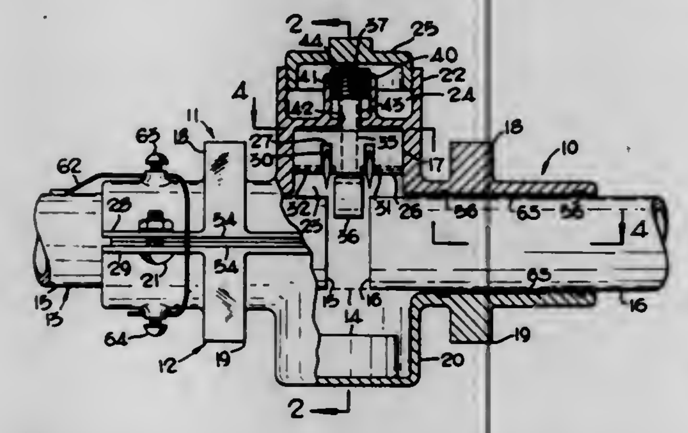
Donald H. Waterman, Poland, Maine, assignor to Valley Engineering, Inc., Auburn, Maine
Filed Sept. 22, 1969, Ser. No. 859,945
Int. Cl. B62d *55/00, 53/06*
U.S. Cl. 280—405 R **5 Claims**



A hitch for a vehicle such as a track tractor, wheeled tractor or the like for attachment to a device to be drawn by the vehicle such as a snow roller, harrow or other drawn implement or towed load which does not interfere with manual or power steering of the vehicle by the customary steering devices and which, at the option of the operator, may be used to assist him in steering and also to steer the vehicle without using the customary manual or power steering devices. The preferred embodiment of the hitch also includes means by which the pressure of the device which is being drawn upon the surface of the earth, a snow surface or the like, may be varied to increase or decrease the effectiveness of the device in assisting in steering the vehicle with the manual or power steering devices or in steering the vehicle without using the customary steering devices. The hitch is also designed to accommodate power driven shafts to transmit power from the vehicle transmission to drive the device which is being drawn, which are so positioned relative to the vehicle and to the elements of the hitch that the need for universal joints and the like are eliminated.

3,652,107
APPARATUS FOR SEVERING AND COUPLING A PIPE

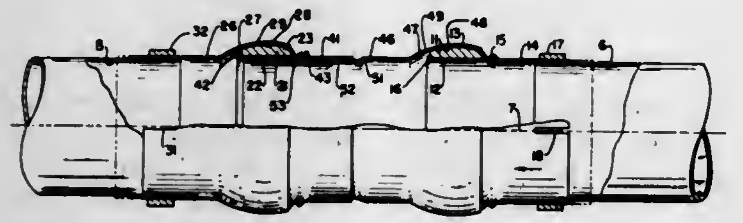
Edward F. Tickett, El Paso, Tex., assignor to Alex B. Reynolds, St. Louis, Mo., a part interest
Continuation-in-part of application Ser. No. 864,739, Oct. 8, 1969, now abandoned. This application July 13, 1970, Ser. No. 54,398
Int. Cl. F16l *21/02, 21/06*
U.S. Cl. 285—3 **21 Claims**



This apparatus provides a two-part rotatable housing which is mounted about a continuous gas or other pipeline for the purpose of cutting a section from the pipeline and coupling the separated parts together. The upper portion of the housing includes a built-in cutter assembly having a cutter advancing mechanism and the lower housing portion includes a cup for receiving the severed pipe section. The housing portions are separated by seals which facilitate rotation of the housing about the pipe during the cutting process. The seals prevent leakage from the pipeline and, in addition, electrically isolate the separated parts of the pipe.

3,652,108
EXHAUST PIPE BALL CONNECTOR

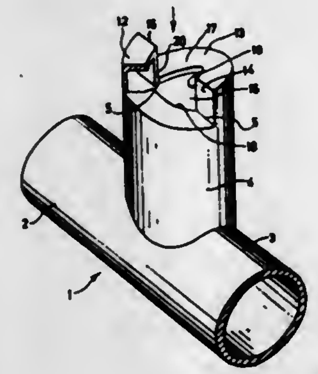
David E. Coats, San Francisco, Calif., assignor to Western Piping & Engineering Co., Inc.
Filed Sept. 24, 1970, Ser. No. 75,104
Int. Cl. F16l *27/02*
U.S. Cl. 285—165 **5 Claims**



An exhaust pipe ball connector has two iron rings with outer spherical surfaces. A sheet metal exit sleeve has a spherical end embracing one ring. A sheet metal downstream tube is beaded and flanged to engage the inside of that ring. A sheet metal upstream tube at one end telescopes into the downstream tube, with an annular seal between the telescoping portions, and at the other end is spherical and embraces the other ring. A sheet metal entrance sleeve is beaded and flanged to engage the inside of the other ring.

3,652,109
TUBULAR CONNECTING PIECE FOR HELICALLY GROOVED TUBES

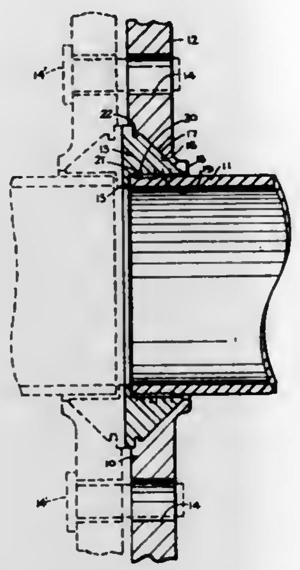
Cornelis Van Zon, Zwolle, Netherlands, assignor to Industriele Onderneming Wavin N.V., Zwolle, Netherlands
Filed Nov. 4, 1969, Ser. No. 873,816
Claims priority, application Netherlands, Nov. 8, 1968, 6815986
Int. Cl. F16l *55/00*
U.S. Cl. 285—176 **4 Claims**



The invention relates to a tubular connecting piece for grooved tubes whereby one or more ends of the piece are at least partially closed by two end planes making an angle with respect to one another. Each end plane covers at least a part of the half section of one end of the connecting piece. The end edges of the end planes are connected by planes extending parallel to the longitudinal direction of the part of the connecting piece comprising said end planes.

3,652,110
FORMATION OF JOINTS BETWEEN TUBULAR MEMBERS

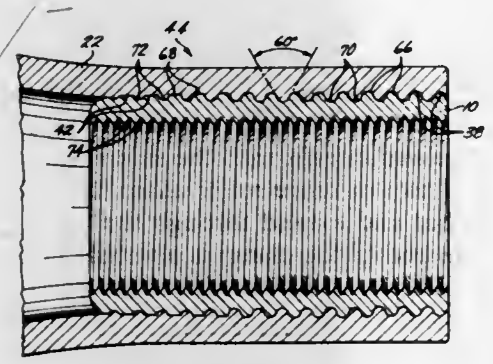
Douglas N. Manton, 235 Ulverley Green Road, Olton, Solihull, England
Filed Mar. 5, 1970, Ser. No. 16,817
Int. Cl. F16l *25/00*
U.S. Cl. 285—328 **9 Claims**



A fluidtight joint between a pair of aligned pipes is effected by the securing together of a pair of flanges mounted one on each of the pipes. Each flange is of composite form comprising a rigid outer part and a resiliently deformable inner part which fits around the surface of the end portion of the associated tubular member. In jointing of aligned pipes the flanges are juxtaposed with the resilient inner parts registering with each other. When the outer parts of the juxtaposed flanges are urged together each inner part is compressed to effect gripping engagement thereof with the associated pipe.

3,652,111
METHOD OF SWAGE JOINING A METALLIC TUBE TO AN INSERT AND THE PRODUCT THEREOF

Robert K. Dent, 17765 Beach Drive, N. E., Seattle, Wash.
Filed Dec. 10, 1969, Ser. No. 883,904
Int. Cl. F16l *13/14*
U.S. Cl. 285—382 **6 Claims**

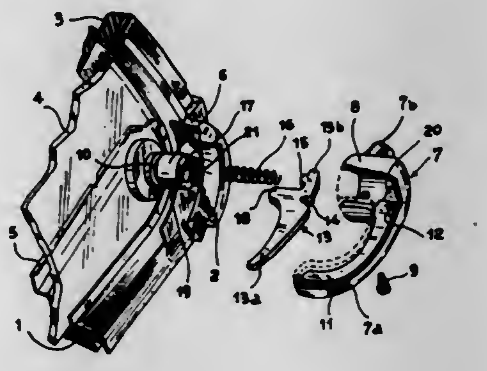


There is disclosed an insert of cylindrical shape and of substantially uniform predetermined diameter and length. This insert has a greater hardness than the tube to be employed. Thus, generally, the tube is an aluminum alloy tube and the insert is stainless steel to provide the desired comparative hardnesses. For convenience in handling of the insert during the process, a cylindrical, coaxial recess is drilled in the insert. A conventional thread-rolling device is provided with dies of a hardness greater than the insert and the pattern on the contacting surfaces of said dies is a plurality of annular, spaced, alternate crests and grooves. The crests and grooves are disposed in two longitudinally spaced sections and with the grooves and crests in the first section each having a common diameter and with the diameters of the crests and grooves in the second section each having gradually decreasing diameters. Such dies are used to form a pattern of annularly spaced grooves and crests on the surface of the insert. The crests in the first section of the dies imprint grooves in a first section on the insert and which grooves have a common diameter. The material displaced in the insert, in the imprinting and forming of such grooves, migrates laterally from the grooves or in a direction longitudinally of the insert and forms the crests of uniform diameter in the first section on said insert. The crests in the second section of the dies imprint grooves in a longitudinally spaced second section on the insert and which grooves have gradually increasing diameters. The material displaced in forming said grooves in said second section of said insert forms crests which are not fully formed and which gradually decrease in diameter. Next, and prior to swaging of a tube upon said insert, the insert is provided with a plurality of longitudinally extending grooves by imprinting the said insert with an appropriate tool thus causing said grooves and causing a raise of stock elsewhere of the insert by the same amount as the extent of the said grooves.

Thereafter, a tube end portion of less hardness than said insert is slidingly fitted over said insert and the tube is swaged to the insert. The crests of the insert imprint grooves in the tube and the material migrates to form crests in the tube. As the crests of the insert were formed by metal migrating from grooves to form the same, the said crests of said insert will cause grooves and concomitant migration of metal to form precisely the crests in the tube. In order to ensure against any possible slight voids, there is provided a slight migration over that necessary to form the crests in the tube mating with the grooves on the insert and the longitudinally extending ridges mating with the longitudinally extending grooves of the insert. This swaging provides for cold working of the aluminum of the tube and improves the strength qualities thereof.

3,652,112
LOCKING DEVICE FOR A HINGED WINDOW IN A MOTOR VEHICLE

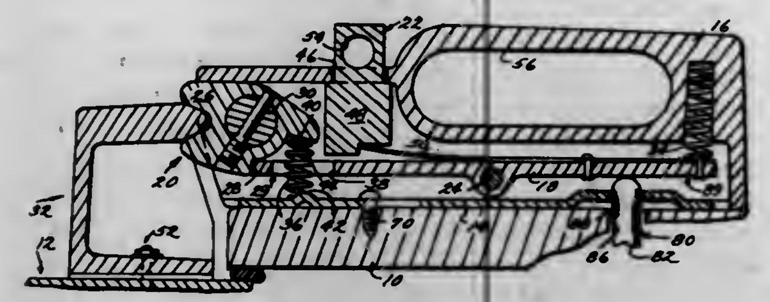
Pio Panelli, Pino Torinese, Italy, assignor to FIAT Societa per Axioni, Turin, Italy
Filed June 16, 1970, Ser. No. 46,668
Int. Cl. E05c *3/14*
U.S. Cl. 292—210 **2 Claims**



A hinged vehicle window has a rotatably mounted handle with an extension adapted to engage in a detent on the window frame. A locking device holds the handle in its closed position, and comprises a trigger lever mounted in the handle and having an arm that acts as a latch and engages in a groove in the pivot, and a spring biasing the trigger lever into the latching position. The trigger lever also has an actuating arm that is gripped by the operator when opening the window to release the latch arm from the pivot.

3,652,113
DOOR LATCH ASSEMBLY WITH PUSHBUTTON ACTUATION

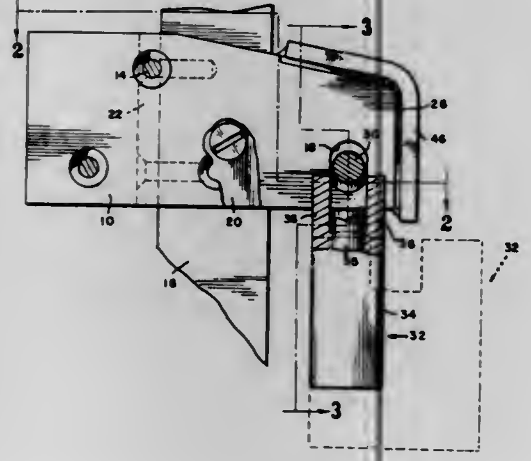
Fortune Odend'hal, and Harry A. Jordan, both of Hagerstown, Md., assignors to Jamison Door Company, Hagerstown, Md.
Filed Aug. 25, 1969, Ser. No. 852,678
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **9 Claims**



A door latch assembly is provided with a pushbutton actuation to release a lever plate from a pawl so that a door can be opened by free rotation of the pawl relative to a keeper. The lever plate is pivotally mounted within a housing which is secured with a base plate to the surface of the door, and the lever plate is normally urged into latching engagement with the pawl. The pushbutton contacts one end of the lever plate so as to move it out of engagement with the pawl. A separate releasing means, operable from an opposite side of the door from the position of the pushbutton means, contacts an opposite end of the lever plate so as to release the lever plate from the pawl without affecting the position of the pushbutton means. Thus, it is possible to release the door from the inside of a room even if the pushbutton means has been locked in a fixed position.

3,652,114
SECURITY HASP

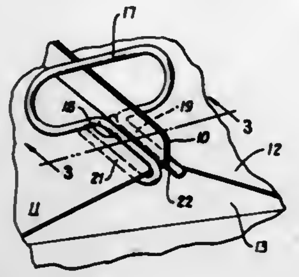
James C. Cady, Indianapolis, and William R. Foshee, Noblesville, both of Ind., assignors to Best Look Corporation, Indianapolis, Ind.
Filed Nov. 13, 1969, Ser. No. 876,521
Int. Cl. E05b *67/38;* **E05c** *19/08*
U.S. Cl. 292—281 **2 Claims**



A security hasp for a door which when the door is closed projects forward along side a fixed keeper in position to be locked thereto by a padlock. For security a shrouded padlock is used having a lock case which shrouds its shackle and form a yoke embracing the hasp and keeper from below, and the hasp carries a hood which projects across the keeper and across the yoke opening of the padlock and thereby cooperates with the shrouds to shield the lock shackle from access by a cutting tool.

3,652,115
DETACHABLE HANDLE FOR CONTAINERS

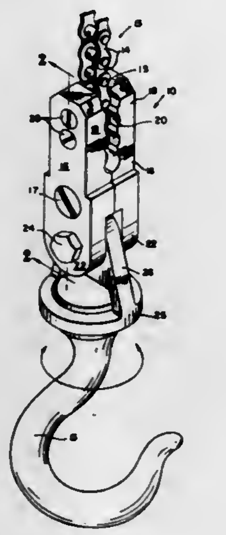
Paul E. Grow, 2128 South Walnut St., Muncie, Ind.
Filed Feb. 17, 1971, Ser. No. 116,111
Int. Cl. A41j *45/07*
U.S. Cl. 294—27 H **2 Claims**



Disclosed is a wire handle for milk cartons or the like which is shaped to form a finger loop the end portions of the wire extending out of the plane of the loop and given a return bend toward the loop, the parallel, return sections being spaced wider apart than the parallel, outwardly extending sections so that as the container load is applied to the handle it will increase the gripping force of the handle on the container.

3,652,116
LIFT CHAIN CONNECTOR

Dana L. Pruitt, 209 N. Park St., Martinsville, Ind.
Filed May 25, 1970, Ser. No. 40,256
Int. Cl. B66c *1/34*
U.S. Cl. 294—82 **6 Claims**

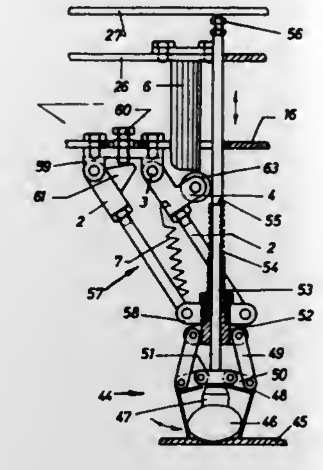


A clamp for securing a lift hook or the like to a roller chain. Two identical clamp members have grooved jaws which engage and interfit with the side edges of the 8-shaped side plates of two or more roller chain links. Screws hold the clamp together and extend through the chain link openings. The opposite end of the clamp is pivotally connected to a lift hook by a pivot pin at right angles to the chain pins.

3,652,117
EQUIPMENT FOR MANUFACTURING BAKERY PRODUCTS

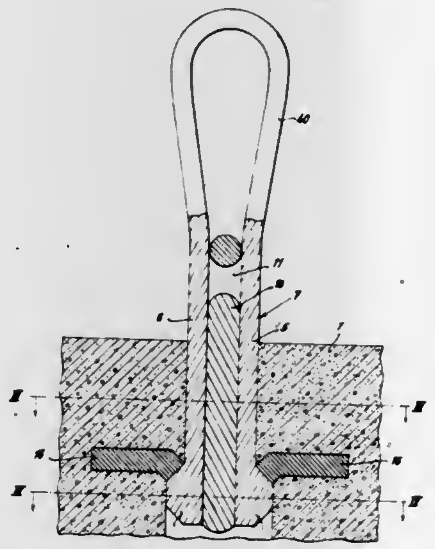
Herbert Schroder, Angerstrasse, Staffelstein Ofr, Germany
Continuation-in-part of application Ser. No. 609,628, Jan. 16, 1967, now Patent No. 3,448,865, dated June 10, 1969. This application Mar. 4, 1969, Ser. No. 804,084
Claims priority, application Germany, May 14, 1966, P 15 32 348.5. The portion of the term of this patent subsequent to June 10, 1986, has been disclaimed.
Int. Cl. B25j *3/00, 15/00;* **B66c** *1/44*
U.S. Cl. 294—87 R **4 Claims**

Grippers for picking up and depositing kneaded dough pieces comprise claws movable together and apart and operable by bell crank levers. The levers of the claws of a gripper are actuated by a claw rod, with a plurality of claw rods being actuated simultaneously by a common actuating plate.



3,652,118
LIFTING ANCHOR FOR PRECAST CONCRETE AND LIKE MOLDED PARTS

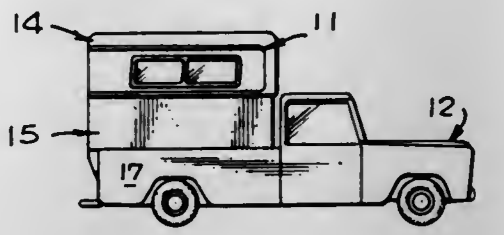
Jurgen Goldberg, No. 7, Neuenburger Strasse, 78 Freiburg, Germany
Filed Oct. 1, 1969, Ser. No. 862,902
Claims priority, application Germany, Oct. 5, 1968, P 18 01 457.8
Int. Cl. B66c *1/54, 1/66*
U.S. Cl. 294—89 **12 Claims**



A lifting anchor for precast concrete and like molded parts comprises a shaft removably insertable into a hole provided in a molded part so as to extend substantially perpendicularly to an external surface of said molded part. The shaft is provided at its bottom end with at least one projection and at its top with a head for attachment thereto of a lifting means. The projection on said shaft extends in the radial direction of said shaft and is displaceable into a cross sectional enlargement in the side wall of the hole in said molded part. The cross sectional enlargement corresponds in shape to said projection and forms an undercut face in said hole. A key is likewise insertable into said hole from the end of said hole remote from said cross sectional enlargement to force said projection into said cross sectional enlargement. The key together with the shaft completely fill said hole in the region of said cross sectional enlargement.

3,652,119
TELESCOPING CAMPER CABIN FOR TRUCKS

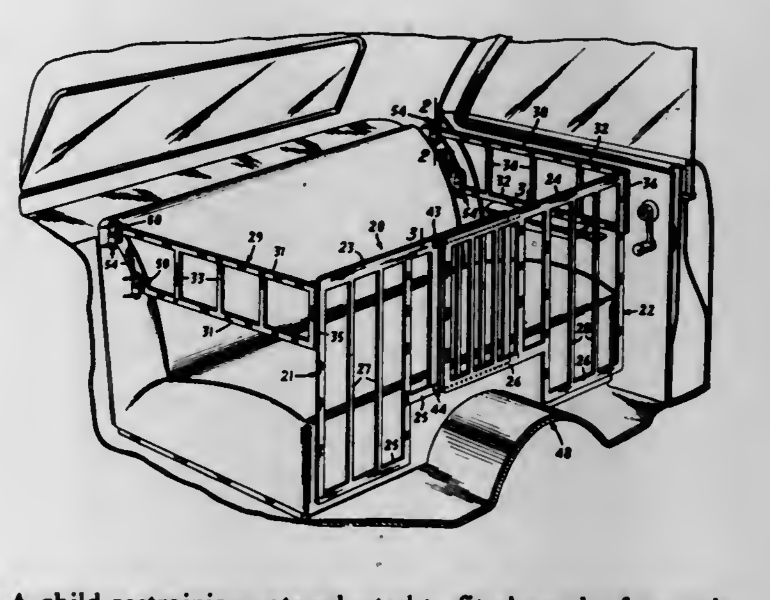
Robert D. Hall, 10320 Sunland Blvd., Sunland, Calif.
Filed May 26, 1970, Ser. No. 40,604
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 C **7 Claims**



A vertically telescoping glass fiber-reinforced plastic camper cabin embodying a one-piece lower body section with unitary plastic cabinet sections mounted therein, together with a double-shell upper body section of glass fiber-reinforced plastic and metal inner frame construction telescopically receiving the lower body section, and fluid rams for raising and lowering the upper section connected between brackets provided in the sections.

3,652,120
CHILD RESTRAINING GATE FOR AUTOMOBILES

Jeffrey M. Bernbach, 300 Central Ave., Hartsdale, N.Y.
Filed Mar. 23, 1970, Ser. No. 21,780
Int. Cl. B60r *21/02*
U.S. Cl. 296—24 **7 Claims**

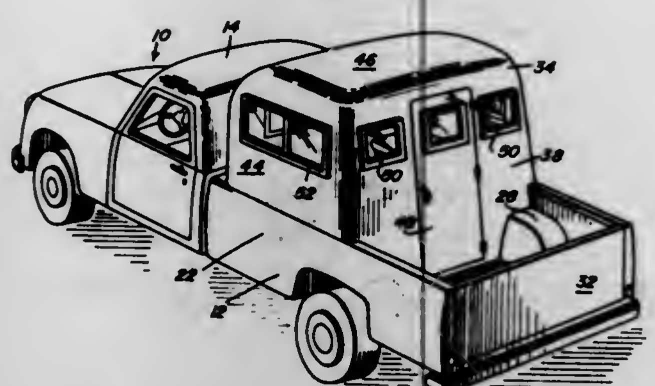


A child-restraining gate adapted to fit along the front edge of the rear seat of an automobile to form the front side of a crib-like enclosure, the gate being adjustable in size to accommodate automobiles having different interior widths.

3,652,121
PICKUP TRUCK BOX MOUNTED CAB

Erik V. Hjelm, Box 42, Westby, Mont.
Filed July 24, 1970, Ser. No. 58,084
Int. Cl. B62d *33/00*
U.S. Cl. 296—26 **8 Claims**

An enclosure for mounting in the forward end of the load bed of a pickup truck. The enclosures includes front, rear and opposite side walls and the rear corners of the enclosure include rearwardly, downwardly and outwardly opening opposite side recesses for receiving those portions of the rear wheel wells of the associated pickup truck which project inwardly of the side walls of the load bed. The front wall of the enclosure includes an openable window assembly for close registry with the rear window of the cab of the associated pickup truck and the length of the enclosure is such that it will, when disposed in a pickup truck load bed, occupy only the front half of the pickup truck load bed, thereby leaving the rear portion of the pickup truck load bed free to receive various loads therein.



3,652,122
COMPARTMENT FOR TRAILER

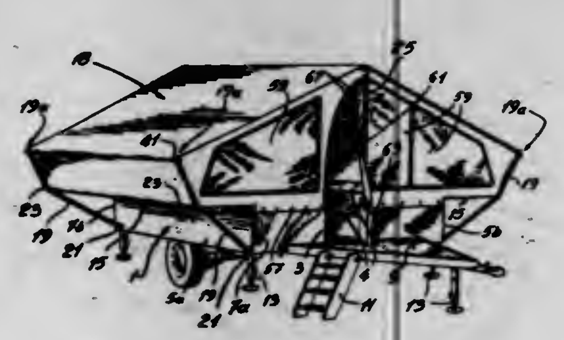
Paul E. Beauregard, 379 West, 9th St., Thetford Mines Co., Megantic, Quebec, Canada

Filed Dec. 3, 1969, Ser. No. 881,725

Claims priority, application France, Dec. 5, 1968, 036983

Int. Cl. B60p *3/34*

U.S. Cl. 296—23 17 Claims



An arrangement for supporting an outer compartment on the side of a trailer-house, a trailer-tent or the like having a box frame, the said arrangement comprising a lateral wing plate pivotally mounted on a side of the frame, a pair of lateral bars having two rigid portions fixed to each other at a predetermined angle, the first portion for holding the wing plate in a horizontal position is removably fixed to the outer edge of the wing plate and pivotally fixed through the frame, the second portion of the lateral bars extends from the first portion at the outer edge of the wing plate and above the latter, a crossbar removably connects the upper ends of the two lateral bars, a piece of flexible material extends over the crossbar and is held at one of its end to the said outer edge of the wing plate and the other end is held to a part of the frame above the wing plate. The space between the piece of flexible material and the wing plate constitute a side compartment for a tent or a trailer.

3,652,123
VEHICLE BED LINER

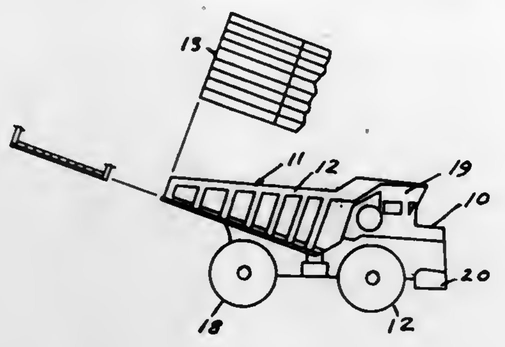
James R. Speers, Erie, Pa., assignor to Continental Rubber Works, Erie, Pa.

Filed Jan. 8, 1970, Ser. No. 1,363

Int. Cl. B62h *33/04*

U.S. Cl. 296—28 D 3 Claims

This specification discloses a truck bed liner made of planks of rubber bonded to metal plates. The planks may be, for example, 12 inches wide and two inches thick, and run the length of the bed. Threaded bolts extend through the metal plates by which the planks may be attached to the floor of the truck bed.



3,652,124
ACTUATING MECHANISM FOR A DOOR OF A VEHICLE, IN PARTICULAR A TAXI

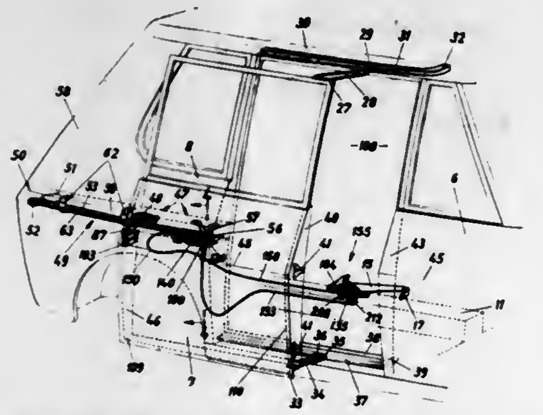
Pier Giorgio Tronville, Heilbronn, Germany, assignor to Deutsche Fiat Aktiengesellschaft, Heilbronn, Germany

Filed Oct. 3, 1969, Ser. No. 863,523

Claims priority, application Germany, Oct. 3, 1968, P 18 00 784.6

Int. Cl. B60j *5/06*

U.S. Cl. 296—146 32 Claims



In a small automobile, in particular a small taxi, a sliding door on the side opposite the driver is actuated by a hand lever and motor control convenient to the driver. A hand lever controls the latching and unlatching of the door and its movement into and out of the door opening. After the door has moved out of the opening it is moved rearwardly on tracks by a motor controlled by a control member near the hand lever.

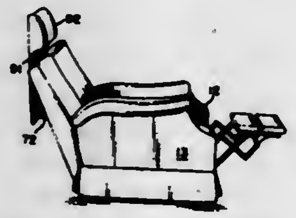
3,652,125
RECLINING CHAIR

Walter C. Rogers, Jr., High Point, N.C., assignor to Royal Development Company, Inc., High Point, N.C.

Filed Mar. 10, 1970, Ser. No. 18,151

Int. Cl. A47c *1/02*

U.S. Cl. 297—61 18 Claims



The invention discloses a low profile reclining chair having a primary and secondary backrests. The secondary backrest is positioned at the rear of the chair when the chair is in the upright position and is movable from such position to an operative position above the primary backrest upon reclining movement of the chair. Movement of the secondary backrest begins shortly after reclining movement of the chair begins, and is then continuous during substantially the entire reclining cycle of the chair.

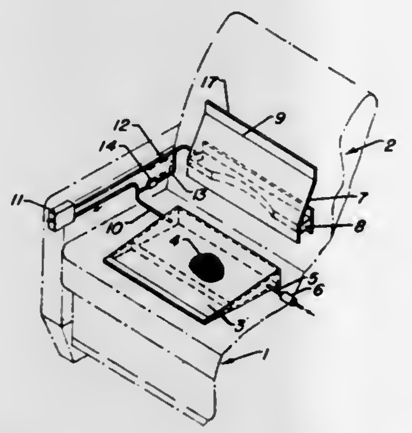
3,652,126
PNEUMATIC ADJUSTMENT SYSTEM FOR SEAT BACK PANEL

Norman D. Folling, Litchfield, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 31, 1970, Ser. No. 68,095

Int. Cl. A47c *7/14*

U.S. Cl. 297—284 7 Claims



A pneumatic system for adjusting the thickness or projection of a portion of a seat back, as for example the lumbar section of the back of a seating unit. A self-fillable air reservoir is provided by a foam-filled airtight envelope that will be positioned under the seat portion of the seating unit and this envelope is connected through conduit means and associated valving means to a small volume adjustable bladder portion in the seat back. A special conduit and valving arrangement may also be provided to have the air withdrawn from the seat back bladder portion into the air reservoir envelope so as to deflate the back support portion where there is no seat occupant.

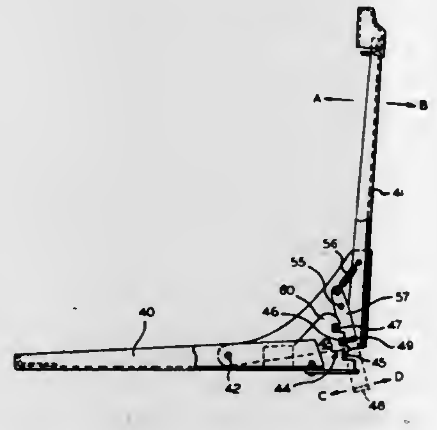
3,652,127
COUNTERBALANCED FOLDING SEATS WITH POSITION LOCK

Paul Freedman; Gerald Freedman; Robert A. Wahls, and Harvey R. Hornstein, all of Evanston, Ill., assignors to Freedman Seating Company, Evanston, Ill.

Filed May 18, 1970, Ser. No. 38,177

Int. Cl. A47c *1/026*

U.S. Cl. 297—372 4 Claims



The back frame of a folding auto seat has a generally "L-shaped" configuration in vertical cross section. The back frame is pivotally attached to the bottom frame at a pivot point in the toe of the "L-shape." A pair of stop plates on opposite sides of the bottom frame engage a bail-like latch member which is normally spring biased to engage any latch stop on the plate. When the bail-latch is pulled against the spring bias and out of the latch stop, the back may be moved to a desired position. Then, the bail is released, and the spring bias pulls the latch into a latch stop to fix the desired position.

3,652,128
HEAD AND NECK REST

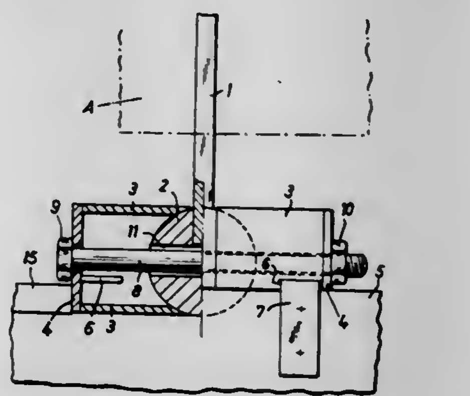
Bernhard Schwarz, Eichenstrasse 11, Muri, Berne, Switzerland

Filed Jan. 20, 1970, Ser. No. 4,346

Claims priority, application Switzerland, Jan. 23, 1969, 1155/69

Int. Cl. A47c *7/36*

U.S. Cl. 297—408 4 Claims



A head and neck rest for vehicle seats comprises a head piece secured to a supporting rod which is mounted by the intermediary of an articulated joint on a saddle or supporting frame on the back rest of a seat. The joint allows a pivoting or tilting movement of the head piece and its supporting rod. A clamping rod traverses the joint and is arranged for exerting a predetermined clamping force on the members of the joint for controlling the tilting movement of the head piece due to the action of a shock received by the head or neck of a passenger, for example when the vehicle is hit in the rear by another vehicle driving in the same direction.

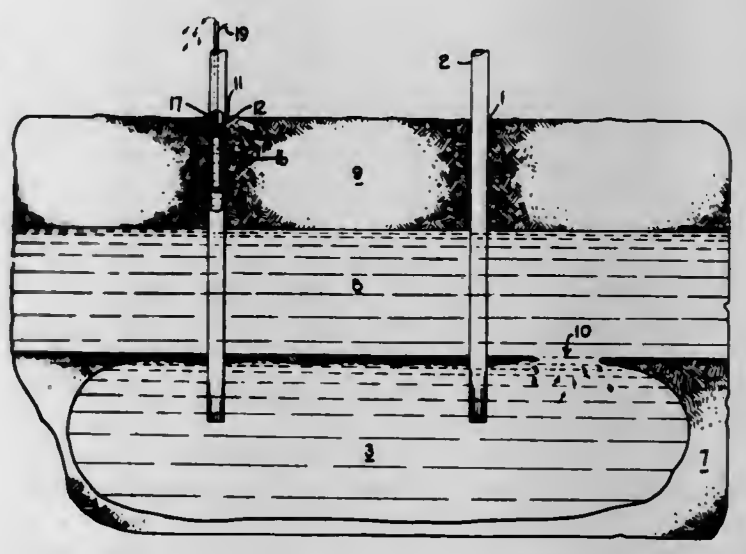
3,652,129
SOLUTION MINING METHOD

Byron P. Edmonds, Denver, Colo., assignor to Kalium Chemicals Limited, Regina, Saskatchewan, Canada

Filed Aug. 11, 1970, Ser. No. 62,849

Int. Cl. E21b *43/28*

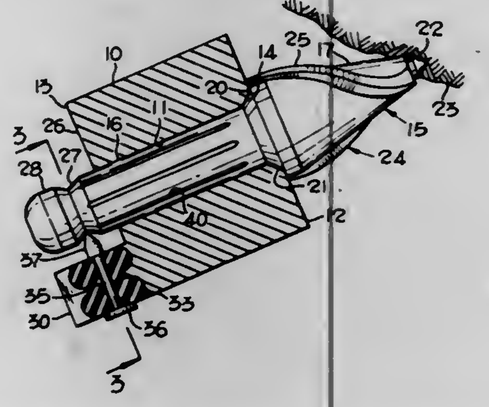
U.S. Cl. 299—4 16 Claims



A method of operating a solution mining cavity which has come into open contact or communication with an underground, watermbearing formation is described in which flow into and out of the cavity is controlled generally to provide a feed to the cavity slightly in excess of the fluid withdrawn from the cavity. Control is established by introducing solvent into and removing product solution from the cavity at a controlled rate to insure that the quantity of fluid fed into the cavity is in excess of the quantity of fluid removed from the cavity. The invention is described particularly with respect to the solution mining of KC1.

3,652,130
BIT AND BLOCK ASSEMBLY

Gerald W. Elders, 10 Hillcrest, Christopher, Ill.
Continuation-in-part of application Ser. No. 498,639, Oct. 20, 1965. This application Mar. 2, 1970, Ser. No. 15,768
Int. Cl. E21c *35/18*
U.S. Cl. 299—86 **11 Claims**



A bit and block assembly in which the bit includes an elongate shank that is rotatively mounted in a block bore extending through the block, the bit shank being provided with an end extending through and beyond the mounting bore and laterally clear of the block. A bit head includes means adapted to strike a wall to turn the bit upon picking of the wall by the head. A locking means is carried by a lateral block portion that is spaced from the shank end, the locking means engaging the shank end to preclude unintentional withdrawal of the shank from the bore, yet enable turning of the shank, the lateral block portion protecting the locking means while the lateral space peripherally about the shank end enables cuttings to move through the bore and out of the block and to fall free axially of the shank end.

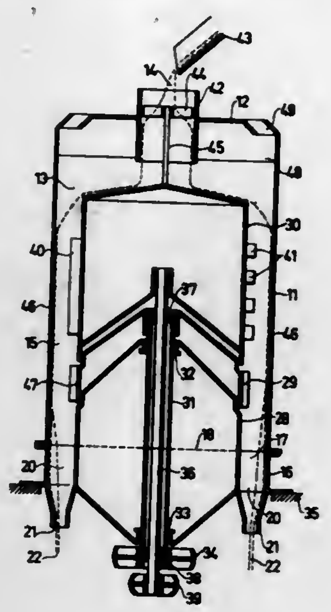
In one embodiment, the block is provided with an open end counterbore larger than and communicating with the said bore. The shank end, including a peripheral groove adapted to receive a locking element, extends into the counterbore, such counterbore providing the peripheral lateral space about the shank end and groove. The shank can be provided with a plurality of circumferentially spaced, longitudinal grooves extending from substantially the head to the shank end outside of the mounting bore for the passage of material axially along the shank out of the block.

In another embodiment, the bit shank includes a tapered end that is provided with the peripheral groove, the tapered shank end and groove being laterally spaced from the block defining the bore to provide for the free passage of material through the bore and out of the block.

3,652,131
.METHOD FOR DIVIDING A MAIN STREAM OF PARTICLES INTO PART STREAMS AND APPARATUS FOR CARRYING OUT THE METHOD

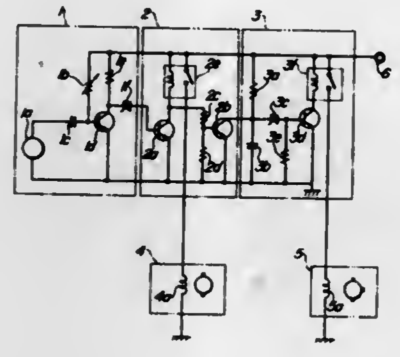
Bengt J. Carlsson, Motala, Sweden, assignor to Aktiebolaget Mantala Verkstad, Motala, Sweden
Filed Oct. 13, 1969, Ser. No. 865,759
Claims priority, application Sweden, Oct. 22, 1968, 14265/68
Int. Cl. B65g *53/04*
U.S. Cl. 302—28 **9 Claims**

A method and apparatus for transforming a constant main stream of particles into a particle web having a uniform mass particle distribution which varies in a desired manner transversely of the web by directing the main stream into an annular chamber against a rotating member concentric within the chamber. The rotating member distributes the main stream about the chamber and the particles pass out through a plurality of outlets opening along a plane in the chamber which is normal to the longitudinal axis of the chamber.



3,652,132
ANTISKID CONTROL SYSTEM

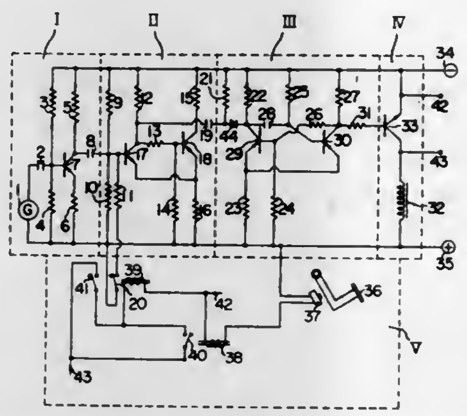
Noriyoshi Ando, Kariya-shi; Atutoshi Okamoto, Toyohashi-shi; Koichi Taniguchi, Kariya-shi; Yoshiaki Nakano, Gifu-shi, and Koichi Tokyama, Toyohashi-shi, all of Japan, assignors to Nippon Denso Kabushiki Kaisha, Kariya-shi, Japan
Filed Aug. 28, 1969, Ser. No. 853,745
Claims priority, application Japan, Sept. 6, 1968, 43/64540
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 CG **4 Claims**



An antiskid control system for a vehicle including apparatus for automatically changing a predetermined threshold detection value in a peripheral wheel deceleration detecting apparatus so that a predetermined value for detecting excessive wheel deceleration is changed in accordance with the vehicle deceleration. A brake constant pressure holding apparatus is actuated when the detected wheel deceleration exceeds the predetermined value and if the excessive deceleration signal persists for a given time span, a brake release apparatus is actuated thereby preventing unnecessary brake releases that could be caused by noise signals.

3,652,133
BRAKE CONTROL DEVICE

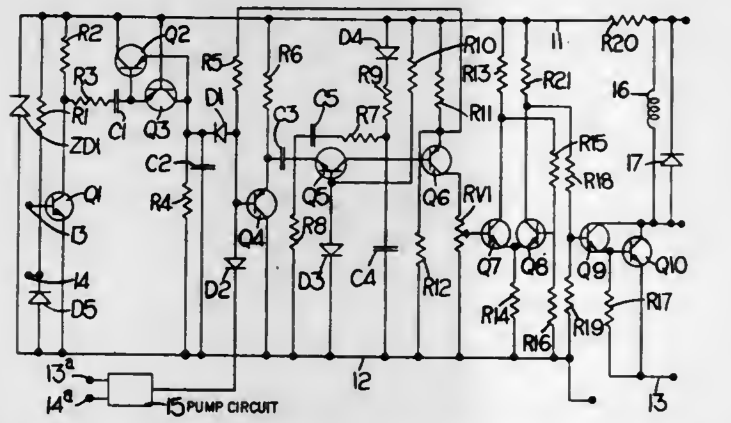
Toshio Yamazaki; Takao Abu; Takefumi Sato, all of Osaka-shi; Koji Nishida, and Tosiaki Okamoto, both of Kariya-shi, all of Japan, assignors to Hayakawa Denki Kogyo Kabushiki Kaisha, Osaka-shi and Aisin Seiki Kabushiki Kaisha, Kariya-shi, Japan
Filed June 3, 1969, Ser. No. 829,948
Claims priority, application Japan, June 5, 1968, Sept. 11, 1968; 43/38547, 43/65352
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 CG **7 Claims**



An improved brake control device in a brake system of the type in which decrease in the speed of wheels due to braking force applied to them is converted into an electrical signal which activates brake release means when its value exceeds a preset reference value and is detected thereby to remove the braking force for a suitable time, after which the braking force is again applied, the braking of the wheels being accomplished by a cyclic repetition of this braking and releasing action, the brake control device having means for lowering the reference value after receiving the electrical signal corresponding to the initial speed decrease of the wheels thereby to cause the system to operate thereafter on the basis of the reference value thus lowered.

3,652,134
ANTI-SKID CONTROL SYSTEM UTILIZING A PUMP CIRCUIT FOR PRODUCING A VOLTAGE DEPENDENT ON FREQUENCY

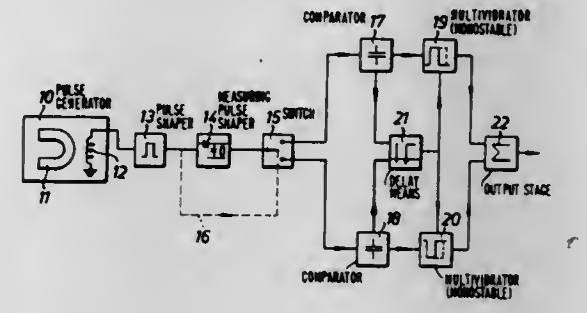
Leonard Remsay Hiscox, Birmingham, England, assignor to Girling Limited, Tyseley, Birmingham, England
Filed Mar. 18, 1970, Ser. No. 20,786
Claims priority, application Great Britain, Mar. 31, 1969, 16,673/69
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 CG **2 Claims**



An antiskid control system utilizing a pump circuit for producing a voltage dependent on the frequency of an AC input has a first capacitor across which the output voltage of the circuit is developed and a second capacitor connected to the input terminals of the circuit. Usually in arrangements of this kind the first capacitor receives one pulse for each cycle of the input, but in accordance with the invention two transistors are arranged coupling the capacitors so that the first capacitor receives two charging pulses per cycle.

3,652,135
METHOD AND ARRANGEMENT FOR PREVENTING THE LOCKING OF WHEELS OF A COMMERCIAL VEHICLE

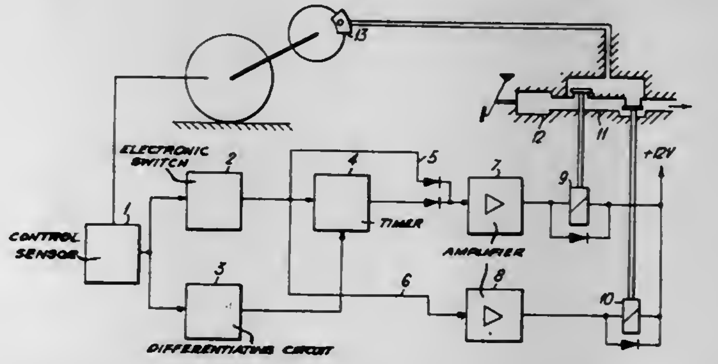
Gunther Baumann, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Nov. 21, 1969, Ser. No. 878,685
Claims priority, application Germany, Nov. 26, 1968, P 18 10 950.7
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 CF **16 Claims**



Pulses generated in synchronism with the rotation of the wheel are reshaped into measuring pulses having a steep leading edge and a slowly decreasing trailing edge. The pulses overlap. The instantaneous value of a measuring pulse at the beginning of a subsequent measuring pulse is compared with the corresponding value of a preceding measuring pulse, and a terminating signal terminating the application of the brakes, is furnished when the difference between two sequential so-determined instantaneous values exceed a predetermined difference.

3,652,136
ANTISKID BRAKE SYSTEM FOR VEHICLES

Erwin Schlitz, Heusenstamm; Werner Fink, Frankfurt am Main, and Gunther Werner, Oberstedten, all of Germany, assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,143
Claims priority, application Germany, Jan. 14, 1969; P 19 01 476.7
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 BE **6 Claims**



A vehicle antiskid brake system in which the brake pressure is reduced at one or more wheel deceleration thresholds and the brake pressure is increased when the maximum wheel acceleration is reached. Thus the brakes are reapplied before the wheel has reached the vehicle speed and at a time when the brake force coefficient is greatest. An electronic circuit closes an inlet valve and opens an outlet valve in the brake line to the wheel when the deceleration threshold is reached. Although the outlet valve is closed when the wheel deceleration is reduced to a point above the threshold, a timing circuit keeps the inlet valve closed until a differentiating circuit generates a signal indicating that the acceleration of the wheel has reached a maximum value, whereupon the inlet valve is opened to complete the cycle.

3,652,137

ANTISKID CONTROL CIRCUIT

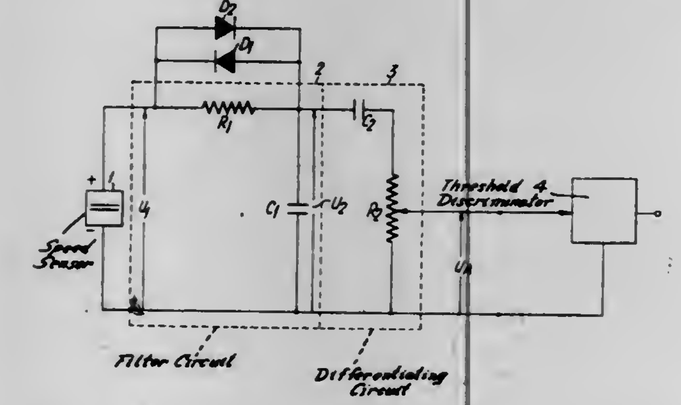
Werner Fink, Frankfurt am Main; Erwin Schlitz, Heusenstamm, and Gunther Werner, Oberstedten, all of Germany, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 25, 1970, Ser. No. 14,110

Claims priority, application Germany, Mar. 1, 1969, P 19 10 599.8

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 CG **7 Claims**



In this antiskid control of the type in which a DC signal proportional to wheel speed is filtered and differentiated in an RC-circuit to obtain an acceleration signal free of undesirable harmonics, diodes or other semi-conductors having a fixed forward voltage are connected in opposite forward direction in parallel to the resistance of the filter so that an acceleration signal bypasses the resistance and is conducted to the discriminator without significant time delay when the forward voltage of the diodes is exceeded.

3,652,138

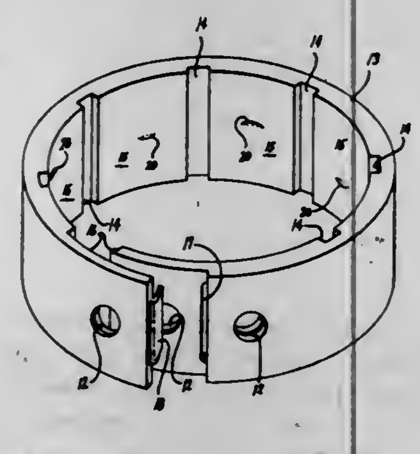
SELF-LOCKING SNAP-ON COLLAR FOR OIL WELL OPERATIONS

Charles H. Collett, P.O. Box 411, Menlo Park, Calif.

Continuation-in-part of application Ser. No. 872,229, Oct. 29, 1969, now abandoned. This application Apr. 23, 1970, Ser. No. 31,279

Int. Cl. F16c *17/00*

U.S. Cl. 308—4 A **7 Claims**



A thrust or stop-collar principally adapted for use on oil well drill pipes, sucker rods, guides, and similar equipment, combines a base of elastomeric or similar material with a novel spring insert. Configuration of the collar plus the effect of the specially constructed insert combine to give a very great bond between the shaft and the collar while permitting ready and economical installation and removal. An alternate embodiment provides a removable gripping ring inserted concentrically around the inner surface of the collar and disposed by geometry and construction to exert additional bond between the shaft and collar as further insurance against slipping while retaining the ease of installation and removal.

3,652,139

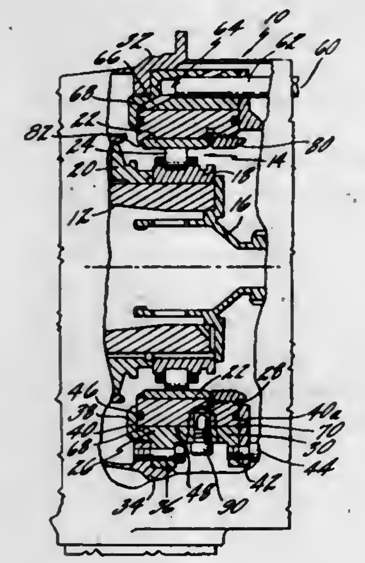
VIBRATION DAMPING APPARATUS

James P. Memery, Manchester, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Continuation-in-part of application Ser. No. 886,923, Dec. 22, 1969, now abandoned. This application May 27, 1970, Ser. No. 40,989

Int. Cl. F16c *39/04*

U.S. Cl. 308—187 **10 Claims**



A bearing and support assembly for a rotating shaft, such as a gas turbine engine rotor utilizes a damper construction employing a hydrodynamic film of oil in a relatively large clearance space, and the assembly includes means for controlling, metering and sealing the flow of oil through the damper construction and for preventing any rotation of the damper construction.

3,652,140

THRUST BEARINGS

Maris Bruno, and Maris Gianfranco, both of C. So Vittoria Emanuele 74 Michelangelo Bovi, Turin, Italy

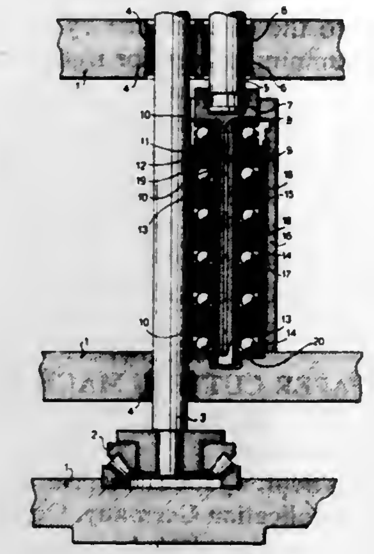
Filed Oct. 23, 1970, Ser. No. 83,471

Claims priority, application Italy, Oct. 30, 1969, 5389 A/69

Int. Cl. F16c *27/08*

U.S. Cl. 308—219 **3 Claims**

Device for supporting a shaft rotating with axial thrust jointly with another shaft alongside and parallel, the first shaft being longer than the second, characterized by the fact that the said second shaft is supported by two pluralities of thrust bearings inserted between the collars of two series of bushes, said bushes being supplied with radial collars, one inner series being mounted radially firm but axially solidable on said second shaft and the other series of external bushes being mounted radially firm and axially solidable mounted on a cylinder fixed to or removable from a body.



3,652,141

COMBINED THREE-SECTIONAL AXIAL-RADIAL ROLLER TURNING CONNECTION

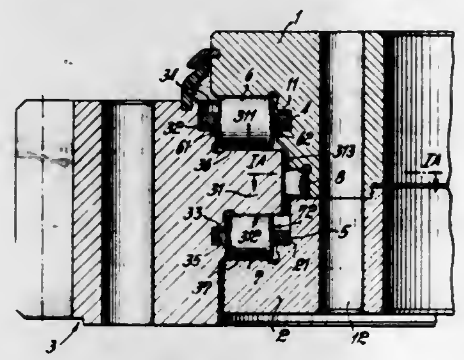
Werner Husten, Hellinghausen, and Heinrich Siemensmeyer, Dortmund-Brunninghausen, both of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Germany

Filed Nov. 27, 1970, Ser. No. 93,219

Claims priority, application Germany, Nov. 28, 1969, P 19 59 710.5

Int. Cl. F16c *19/14*

U.S. Cl. 308—174 **5 Claims**



A three-sectional combined axial-radial antifriction journaling system, in which an outer ring with an inwardly extending flange has by means of antifriction elements such as axial rollers journaled therein a two-sectional inner ring which is additionally journaled on said flange by means of radial antifriction elements such as rollers, the cage for said axial rollers being slidably supported by inner peripheral surfaces of said outer ring and by outer peripheral surfaces of said outer ring and by outer peripheral surfaces of said inner ring.

3,652,142

CONTAINER

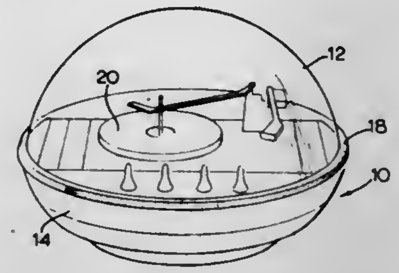
Charles E. Kreutzweiser, Waterloo, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada

Filed Sept. 22, 1970, Ser. No. 74,263

Int. Cl. A47b *81/06*

U.S. Cl. 312—8 **19 Claims**

A combination of a container and a lid in which the container and lid have no physical interconnection. The lid is movable between a closed position an open position in which the lid may be maintained.



3,652,143

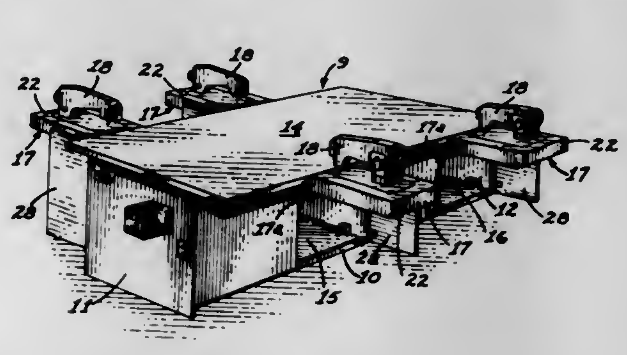
MULTIPLE SEWING MACHINE TABLE

Harry Wener, Phoenix, Ariz., assignor to International Education Sewing Manual, Inc., Phoenix, Ariz.

Filed July 27, 1970, Ser. No. 58,307

Int. Cl. A47b *81/00*

U.S. Cl. 312—27 **3 Claims**



A sewing machine table employing an overhanging top arranged to support a series of sewing machines outside the periphery of the top in easily accessible position while leaving the table top completely unobstructed for laying out work and providing drophead supports for the individual machines so that they may be lowered and laterally moved into the support to concealed positions under the table top when not in use.

3,652,144

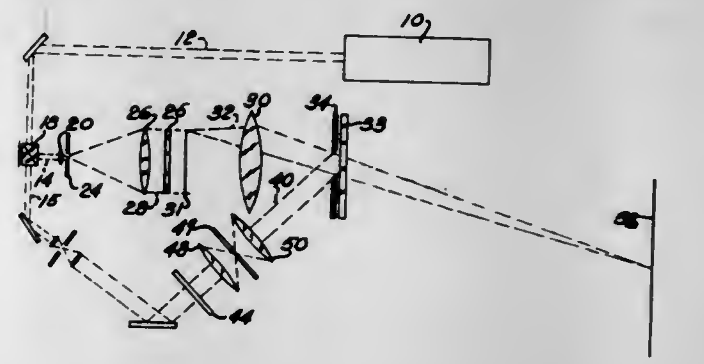
AMPLITUDE WEIGHTING IN HOLOGRAPHY

Anthony Vander Lugt, Saline, Mich., assignor to Radiation Incorporated, Palm Bay, Fla.

Filed Sept. 9, 1970, Ser. No. 70,856

Int. Cl. G02b *27/22*

U.S. Cl. 350—3.5 **12 Claims**

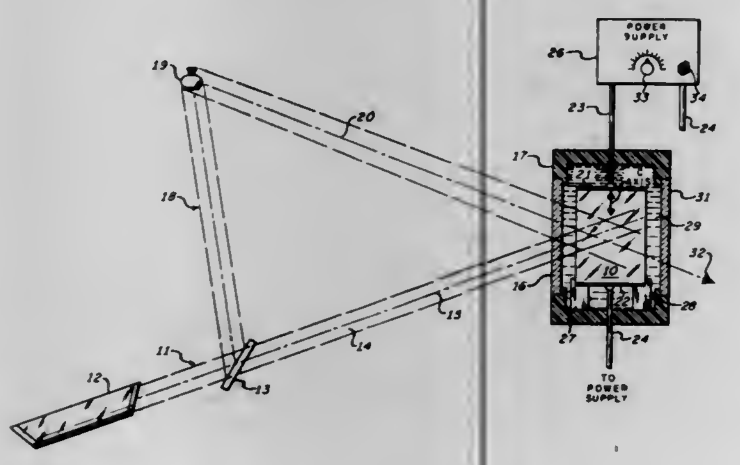


Holographic system in which the signal (object) beam, the reference beam, or the readout beam is weighted (i.e., shaped) in amplitude as a function of the spatial coordinates of the hologram plane. Either the reference beam or the signal beam may be weighted in accordance with the light distribution of the signal beam to provide smaller variation in modulation, or unity modulation, for the various spatial frequencies in the signal beam over the entire area of the hologram. The readout beam may be shaped or weighted to further compensate for the variation in diffraction efficiency caused by the interaction of the residual variations in the modulation level and the nonlinearities of the recording medium.

3,652,145
ELECTRICALLY CONTROLLABLE VOLUME HOLOGRAPHIC APPARATUS AND METHOD FOR OPERATING SAID APPARATUS

James B. Thaxter, Townsend, Mass., assignor to Sperry Rand Corporation

Filed June 30, 1969, Ser. No. 837,665
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **14 Claims**

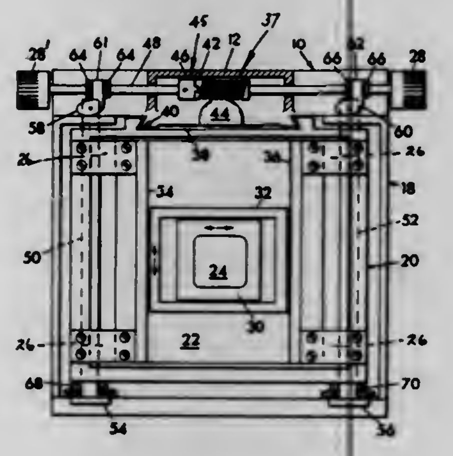


An electrically controllable volume holographic storage apparatus comprising a ferroelectric crystalline member having electrodes affixed thereto for establishing an electric field in the member, the electric field being operative in the process of constructing the hologram both to increase the sensitivity of the crystal to light beams incident thereon and to optimize the efficiency of the holographic grating, and further operative, in the process of reconstructing the image, for controllably adjusting the intensity of said image.

3,652,146
PRECISION MICROSCOPE STAGE

David Sydney George, Cambridge, England, assignor to Image Analysing Computers Limited, Melbourn, Royston, England

Filed Oct. 27, 1970, Ser. No. 84,366
Claims priority, application Great Britain, Oct. 31, 1969, 53,406/69
Int. Cl. G02b *21/26*
U.S. Cl. 350—86 **10 Claims**

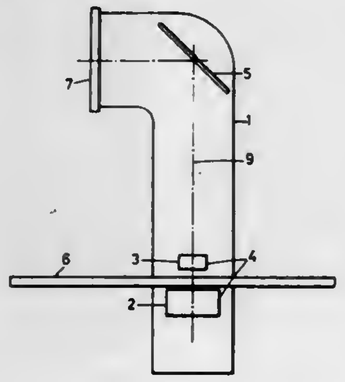


The present invention provides a precision stage assembly for an optical microscope which comprises an outer frame adapted to be rigidly mounted on the main structure of an optical microscope, an inner frame for carrying an X and Y traverse device on which a specimen may be carried, an intermediate frame between the inner and outer frames adjustable relative to the outer frame by a coarse focus drive, and releasable clamping means for rigidly clamping together the intermediate and outer frames, said inner frame being adjustable relative to the intermediate frame by a fine focus control mechanism and the inner frame being located with reference to the intermediate frame such that significant relative movement therebetween is restricted to movement in a vertical direction.

3,652,147
PAPER CUTTING MACHINES

Rudolf Mohr, Hattersheimerstrasse 117-118, 6238 Hofheim, Taunus, Germany

Filed Sept. 4, 1970, Ser. No. 69,618
Claims priority, application Germany, Oct. 31, 1969, P 19 54 816.4
Int. Cl. G02b *27/18, 27/32*
U.S. Cl. 350—113 **4 Claims**

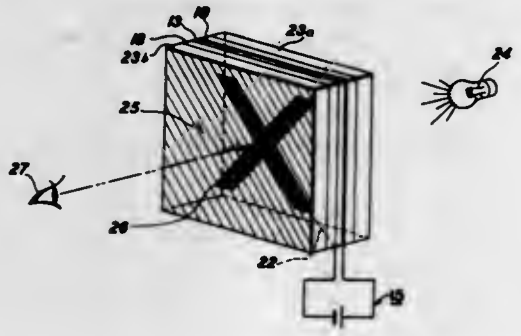


The guiltotine saddle of a paper cutting machine is equipped with an optical viewing system projecting an image of the relevant portion of the machine table fine scale and of a contrast wedge alongside the machine table scale and having a taper coextensive therewith, on to a ground glass screen having a datum mark for scanning the machine table scale and a transverse coarse scale scribed thereon. The arrangement is such that when the saddle travels over the table, the image projected on the screen of the sloping edge of the contrast wedge scans the transverse coarse scale pari passu with the scanning of the fine scale moving under the datum mark.

3,652,148
IMAGING SYSTEM

Joseph J. Wysocki; James E. Adams, both of Webster; James H. Becker, Pennfield; Robert W. Madrid, Macedon, and Werner E. L. Haas, Webster, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed May 5, 1969, Ser. No. 821,565
Int. Cl. G02f *1/26, 1/28*
U.S. Cl. 350—150 **29 Claims**

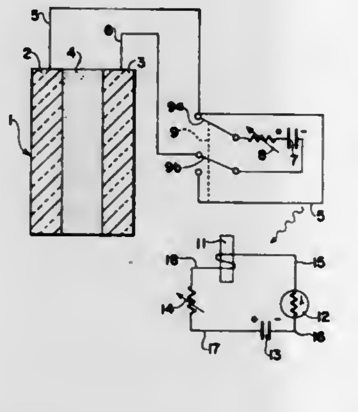


A system transforming an optically negative liquid crystalline substance to an optically positive liquid crystalline mesophase by an applied electrical field, and an imaging system wherein the electrical field-induced transition images a liquid crystalline member.

3,652,149
VARIABLE LIGHT-FILTERING DEVICE WITH A REDOX COMPOUND WHICH FUNCTIONS AS ITS OWN ELECTROLYTE

Howard G. Rogers, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sept. 2, 1969, Ser. No. 854,522
Int. Cl. G02f *1/28, 1/36;* **G02b** *5/30*
U.S. Cl. 350—160 R **23 Claims**

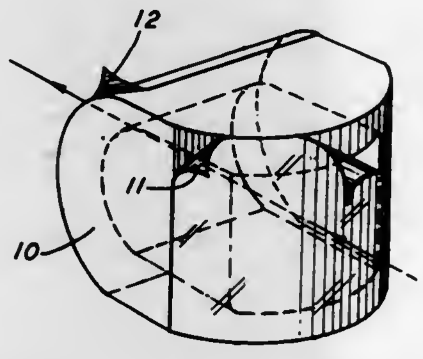


This invention relates to light filters employing redox compounds that are substantially light-transmitting in their oxidized state and capable of forming a stable colored free radical upon the addition of electrons. The colored free radical formed in response to the flow of electric current renders the device light-absorbing. To restore the original light-transmitting properties, the colored free radical may be readily reoxidized, for example, by reversing the direction of current flow.

3,652,150
TRANSPARENT MEMBRANES FOR GAS LENSES AND LIGHT GUIDANCE SYSTEM EMPLOYING SAME

Dwight W. Berreman, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 1, 1968, Ser. No. 741,449
Int. Cl. G02b *1/06*
U.S. Cl. 350—179 **18 Claims**

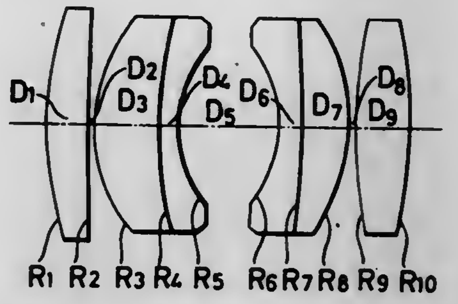


Optical elements are formed of static gases of various refractive indices separated by optically thin transparent membranes, such as collodion or aluminum oxide films. Lenses are described having flat, approximately cylindrical and approximately spherical surfaces, and formulas are provided which are useful for the designing of a light guidance system using these lenses.

3,652,151
PHOTOGRAPHIC LENSES PRIMARILY UTILIZING LIGHT OF SHORTER WAVELENGTHS

Tadasi Kawabe, Ako, and Akira Tajima, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1970, Ser. No. 40,619
Claims priority, application Japan, June 2, 1969, 44/42529
Int. Cl. G02b *9/42, 1/02*
U.S. Cl. 350—222 **2 Claims**

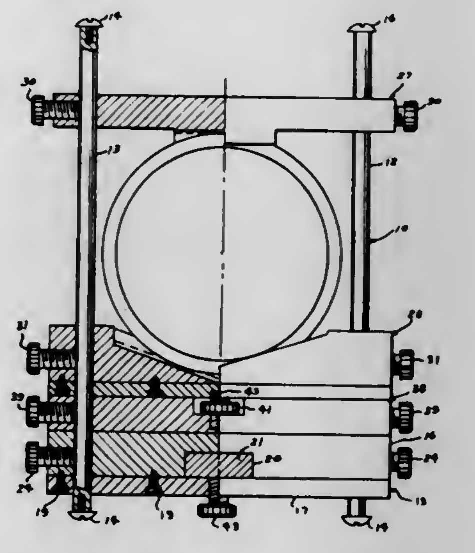


The disclosed photographic lens assembly passes light of shorter wavelengths, one lens made of magnesium oxide crystal which forms positive lens in the lens assembly. A first lens group in the assembly is composed of a positive meniscus lens which is convex on the side of the object. A second lens group is composed of a positive and a negative lens cemented together. A third lens group is composed of a negative lens cemented to a positive lens with the group overall being concave toward an object. A fourth lens group is composed of a double convex lens. The cemented surfaces of the second group and of the third group have curvatures whose algebraic sum is less than a given value.

3,652,152
ADJUSTABLE OPTICAL EQUIPMENT HOLDER

William R. Thursby, Jr., San Antonio, Tex., assignor to The United States of America as represented by the Secretary of the Air Force

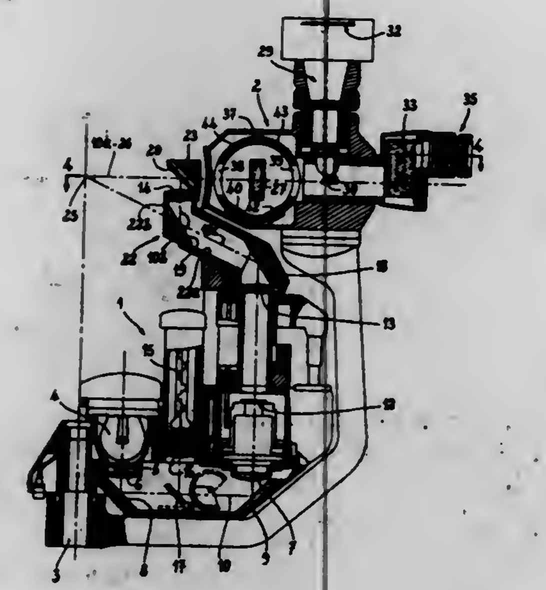
Filed July 10, 1970, Ser. No. 53,725
Int. Cl. G02b *7/02*
U.S. Cl. 350—252 **2 Claims**



An optical equipment holder having a base member, adapted to be supported on an optical bench carrier. The base member is secured to two support rods which hold an optical element holder and an apparatus for adjustably positioning the optical element in the vertical direction. The optical element holder is capable of holding various types of optical elements. The support rods are removable from the base member so that the optical elements can be moved out of the optical path.

3,652,153
SLIT OR SPOT LAMP STEREOMICROSCOPE

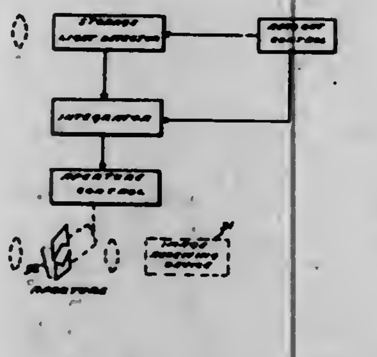
Paul Frederic Marie Gambs, Lyon, France, assignor to Societe Anonyme dite: Gambs S.A., Lyon, France
Filed Apr. 17, 1970, Ser. No. 29,608
Int. Cl. A61b *3/10*
U.S. Cl. 351—14 **4 Claims**



A slit or spot lamp microscope of the kind including a slit or spot lamp and a stereomicroscope, both pivotally mounted on a common vertical axis, characterized in that the end portion of the optical system of the lamp comprises essentially two reflectors, which impart a double-bent path to the optical beam casting the slit or spot image onto an object to be examined, so that the beam portion issuing from the reflector positioned last in the said path, that is, the last beam portion, cooperates with the beam portion entering the reflector positioned first in the said path, that is, the antepenultimate beam portion, to determine the point where the cast image of the slit or spot is formed, while a part of the optical system including at least said two reflectors is adapted to swivel about the axis of said antepenultimate beam portion.

3,652,154
LIGHT CONTROL SYSTEM FOR USE IN VERY LOW LIGHT INTENSITIES

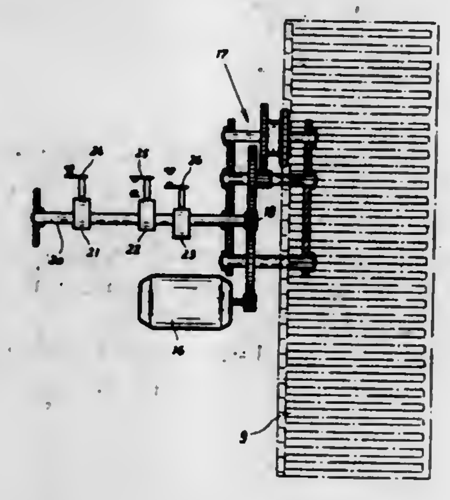
Radames K. H. Gebel, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force
Filed Aug. 7, 1970, Ser. No. 61,890
Int. Cl. G03b *7/08*
U.S. Cl. 352—141 **8 Claims**



A high sensitivity light control system for providing relatively constant effective values of light intensity to photographic devices operating in very low levels of light intensity is provided by using the signal derived by integrating, amplifying, and smoothing the output of a periodically readout storage light detector tube to control a mechanical aperture, scanning frame time, or light gain in a variable gain image intensifier stage. Light intensities from the scene photographically viewed are detected and integrated temporally in the storage light detector tube, integrating the output of the storage light detector provides spatial integration of the temporally integrated light intensity over the scene viewed.

3,652,155
SLIDE PROJECTOR WITH CONTROLLED SLIDE CHANGER AND SEPARATE HOLDER

Josef Scheibel, Ober-Morlen, Germany, assignor to Braun AG, Frankfurt (Main), Germany
Filed July 30, 1969, Ser. No. 846,127
Claims priority, application Germany, July 30, 1968, P 17 72 984.9
Int. Cl. G03b *23/02*
U.S. Cl. 353—25 **15 Claims**

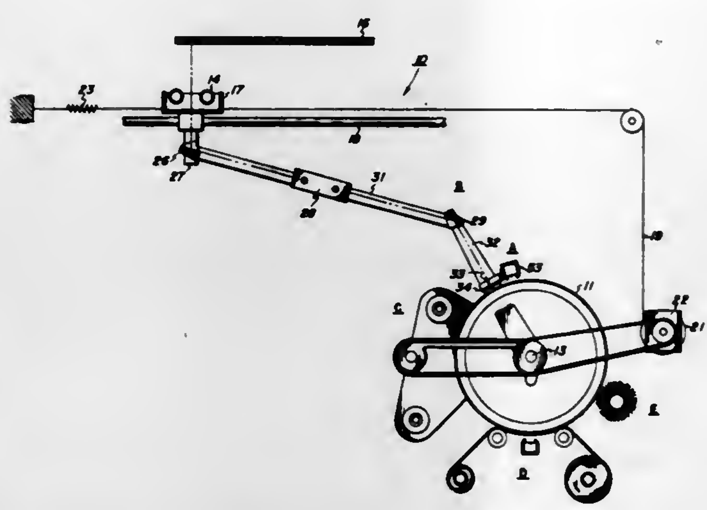


A system for projecting slides in which the slide to be projected is selected from an input such as depressed key switches. A slide holder subdivided into individual compartments each retaining a slide, is then moved into position so that the selected slide is accessible for projection. A followup switch coupled from the viewpoint of motion, to the slide holder, provides signals of the position of the holder and thereby the location of the individual slides with respect to the projector unit. Indicating circuitry is used to determine when the signals transmitted from the depressed key switches are equal to the signals provided by the followup switch, whereupon the slide holder becomes held in position. A slide changer then transfers the slide from the compartment selected, and into the projecting plane of the projector. The drive for the slide holder is reversible so that the holder takes the shortest path in reaching a selected slide.

3,652,156
LINEAR-TO-DRUM OPTICAL SCAN CONVERTER SYSTEM

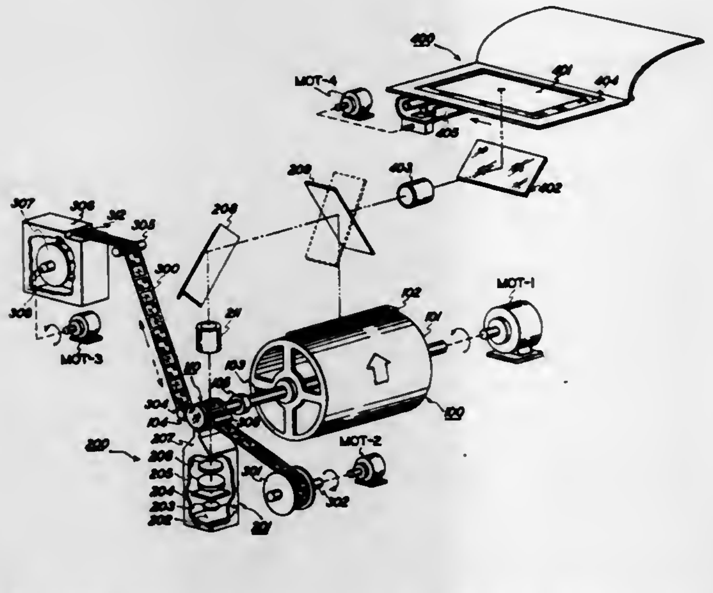
Roy J. Lahr, Westport, Conn., and James R. Cassano, Penfield, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Jan. 13, 1970, Ser. No. 2,600
Int. Cl. G03g *15/04*
U.S. Cl. 355—8 **3 Claims**

Optical imaging apparatus for scanning an object supported on a flat platen and projecting the scanned image onto a photosensitive structure in the form of a cylindrical drum. The apparatus is characterized by maintaining constant the conjugate length of the optical path, as well as maintaining the image path perpendicular to the flat platen and the cylindrical drum.



3,652,157
MICROFILM PROJECTION APPARATUS

John E. Blackert, and Harvey S. Towers, both of Webster, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Aug. 13, 1969, Ser. No. 849,674
Int. Cl. G03l *27/46*
U.S. Cl. 355—49 **1 Claim**

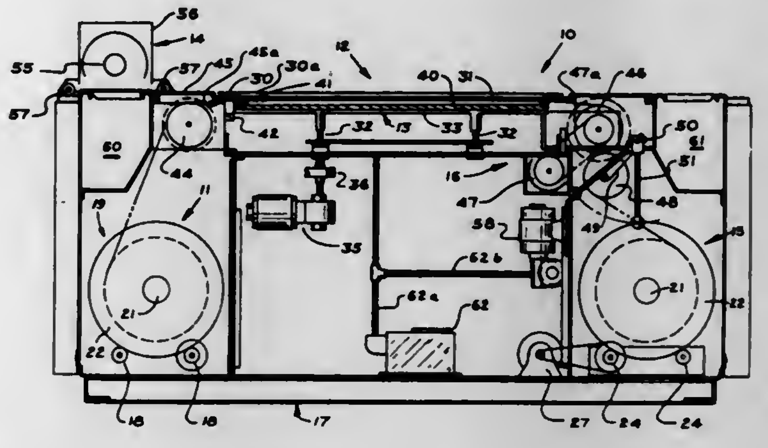


A transparent rotatable cylinder having spaced support flanges and seats therein for supporting a strip of microfilm and the like a small distance from the cylinder while the microfilm is being projected onto an image plane. A projector lamp is located adjacent the cylinder on the side of the cylinder opposite the image plane to illuminate the microfilm as it is fed in a path concentric with the surface of the cylinder between the cylinder and the image plane.

3,652,158
EXPOSURE DEVICE FOR FLEXIBLE MATERIALS

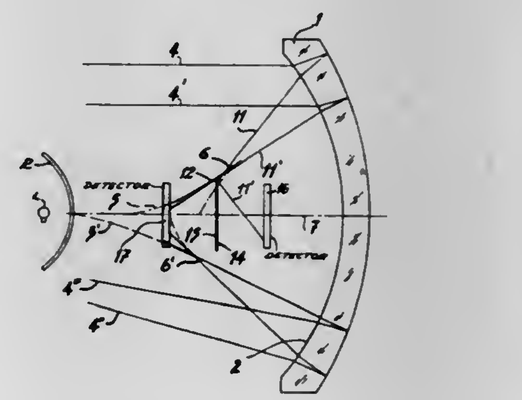
Dennis A. Burgess, Minneapolis, Minn., assignor to Colight Inc., Minneapolis, Minn.
Filed Apr. 9, 1970, Ser. No. 27,086
Int. Cl. G03b *27/20*
U.S. Cl. 355—91 **4 Claims**

A device for exposing flexible, continuous materials including a supply source, means for feeding the material across an exposure area, means for collecting the exposed material and means for exposing the material as the same is held in the exposure area. The exposure area includes means for automatically bringing the material into registration and contact with the negative or pattern member and thereafter actuating the exposure light to properly expose the material and thereafter releasing the material subject to advancement into a new exposure area. The unit further contemplates selective advancement over predetermined increments of length and predetermined selection of quantity of such exposures.



3,652,159
RANGEFINDER FOR MEASURING THE DISTANCE OF AN OBJECT HAVING A LUMINOUS SPOT

Christian Lietar, Yverdon Vaud, Switzerland, assignor to Paillard S.A., Sainte-Croix, Vaud, Switzerland
Filed Sept. 15, 1969, Ser. No. 857,813
Claims priority, application Switzerland, Sept. 27, 1968, 14586/68
Int. Cl. G01c *3/08*
U.S. Cl. 356—4 **8 Claims**

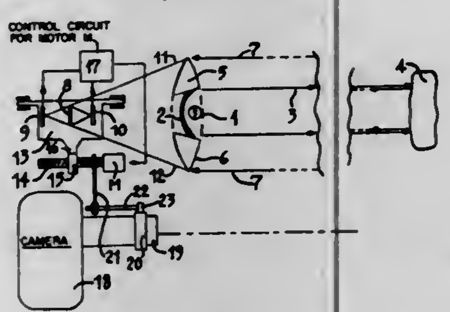


A rangefinder for measuring the distance of an object having a luminous spot has a convergent optical receiving system for picking up rays from the spot and converging them on to a sensing device. This device has a mirror wherein the edges of the reflective surface thereof comprises a separator element including a peripheral separating line sensitive to the convergence of the rays, and is arranged substantially on the caustic of the optical receiving system at a point remote from the optical axis of the system. The system may be at least one annular portion of a convergent system devoid of its central part. The caustic may have a cusp for greater concentration of light on said edges of the reflective surface of the mirror. The converging system may be formed by at least a part of a ring of a convergent system of lenses or of a concave Mangin mirror. The light projection device may be located on the axis of the optical system and in front of the photosensitive device, in the case where the central part of the optical system is not used.

3,652,160
LIGHT BEAM RANGEFINDER

Giovanni Odone, La Rosiaz, Lausanne; Heinrich Kunz, Yverdon, and Willy Buch, Valeyres, sur Montagny, all of Switzerland, assignors to Paillard S. A., Sainte-Croix(Vaud), Switzerland

Filed Sept. 15, 1969, Ser. No. 858,004
Claims priority, application Switzerland, Sept. 26, 1968, 14403/68
Int. Cl. G01c *3/08*
U.S. Cl. 356—4 **6 Claims**

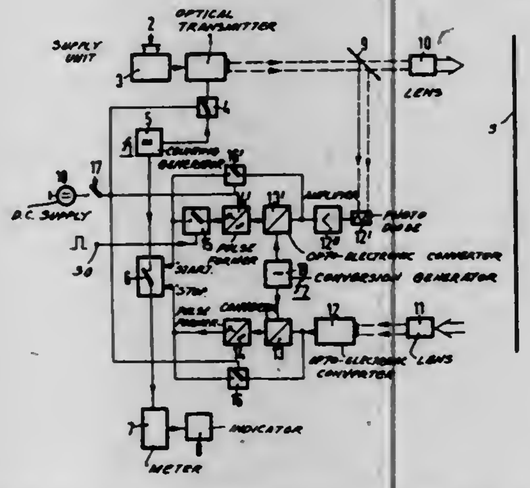


A rangefinder comprises a projector furnishing a modulated light beam directed on to the object to be ranged and a receiver to pick up the reflected rays. The rangefinder is designed to avoid disturbances of the readings by chance interference signals. The receiver has a photoelectric cell at the front and rear of a mirror on to which some of the reflected rays are converged by a lens. The photocells are mounted for axial displacement so as to adjust for equal light reception according to the convergence and hence the range of the rays reflected from the object. The signals from the photocells are cut off and connected by a device actuated in rhythm to conform to a constant phase relationship with the light beam modulation. The cut off device connects the receiver to a storage device for the measured signals in which the stored sums of the interfering signals give a substantially nil value. The storage device is an RC element whose time constant is several times that of the beam modulation. The circuit includes a differential amplifier. Output signals from "gate" circuits control the axial displacements of the photocells by supplying a motor driving a threaded shaft bearing a tapped nut supporting the photocells. A camera incorporating the rangefinder has an objective adjustment ring coupled to respond to rotation of the shaft.

3,652,161
METHOD AND ARRANGEMENT FOR MEASURING DISTANCES OPTICALLY WITH HIGH PRECISION

Dieter Ross, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 21, 1968, Ser. No. 777,676
Claims priority, application Germany, Dec. 1, 1967, P 16 23 564.6
Int. Cl. G01g *3/08*
U.S. Cl. 356—5 **17 Claims**

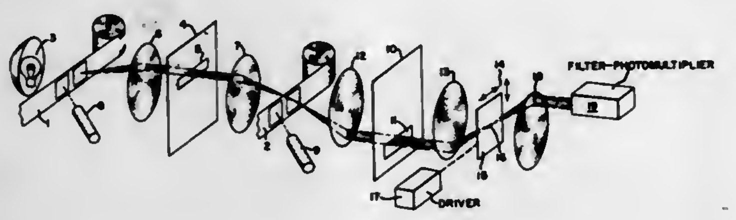


Apparatus and method for measuring distance in which a coarse measurement of the distance is made by detecting the time of travel of a pulse and a precise measurement is made by using a measuring signal which is relatively short relative to the distance being measured and in which the ambiguity of the number of wave lengths between the direct and reflected wave is resolved by the coarse measurement.

3,652,162
COMPLEX DATA PROCESSING SYSTEM EMPLOYING INCOHERENT OPTICS

Milton L. Noble, Liverpool, N.Y., assignor to General Electric Company

Filed Mar. 14, 1968, Ser. No. 712,991
Int. Cl. G06k *9/08;* **G02B** *5/18*
U.S. Cl. 356—71 **17 Claims**

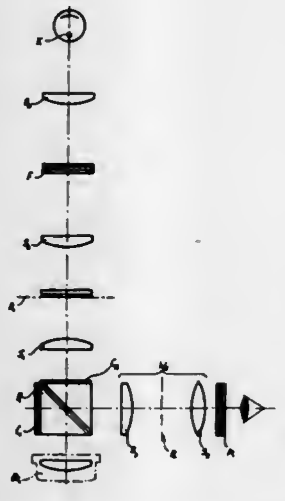


An optical system for processing analog information in the form of complex data without a requirement for coherent optics, wherein discrete pieces of data having magnitude and phase components are multiplied together in a parallel operation. Information to be processed is entered in the form of diffraction gratings upon a pair of spaced apart writing media, normally in a column-row arrangement of distinct resolution elements. Magnitude information is contained in the transmissivity of the resolution elements and phase information in the spatial frequency of the gratings. Processing of resolution element pairs is optically performed by imaging spatially filtered light from resolution elements of the first medium upon corresponding elements of the second medium by means of a telecentric lens arrangement, spatially filtered light from the second medium being detected to provide the processed information.

3,652,163
PHOTOMETER FOR OBSERVATION INSTRUMENTS MAINLY FOR MICROSCOPES

Wieslaw K. Borkowski; Maksymilian Pluta, and Maciej Popielas, all of Warszawa, Poland, assignors to Centralne Laboratorium Astyki, Warszawa, Poland

Filed Apr. 22, 1970, Ser. No. 30,798
Claims priority, application Poland, May 2, 1969, P 133336
Int. Cl. G01n *21/110;* **G02b** *27/14*
U.S. Cl. 356—115 **4 Claims**

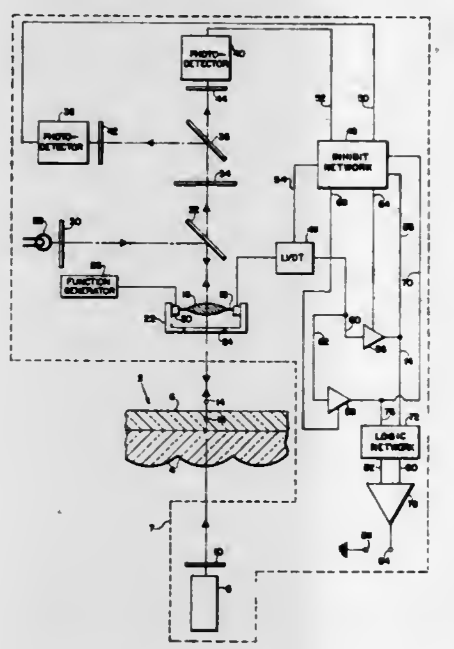


Photometer enabling simultaneous observation of an object being investigated and of a measuring diaphragm, provided with visual and measuring systems, wherein one or two polarizing been splitters divide the main light beam entering into the instrument into two beams which are linearly polarized. The image of the measuring diaphragm is projected on the background of the image of the object being investigated by means of special plates which turn the direction of the light vibrations and change the kind of light polarization from linear to circular. The images of the measuring diaphragm and of the investigated object are formed by two beams which are linearly polarized, whereby the directions of light vibrations are mutually perpendicular. The visual system of the photometer has a polarizing filter, enabling the controlling of the ratio of luminance of the measuring diaphragm image to that of the investigated object image.

3,652,164
RELATIVE BACK FOCUS MONITORING METHOD AND APPARATUS

Faramarz Faramarzpour, Jamaica Plain, and Ernest W. Long, West Concord, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 1, 1970, Ser. No. 33,612
Int. Cl. G01b *9/00*
U.S. Cl. 356—125 **22 Claims**



The subject invention generally provides a method and apparatus for determining the relative back focus of each of a plurality of lenticules or the like and, more particularly, provides for the determination of the relative back focus of each of a plurality of lenticules comprising a lenticular film which is disposed along one surface of a supporting web.

The relative back focus of each lenticule or the like may be generally defined as the distance from the focus of said lenticule or the like to a reference which, in the case of a web supported lenticular film, is the surface of the web opposite the lenticular film. Briefly, collimated light is passed through each of the lenticules and is focused by a moving microscopic objective which is positioned outward of the surface of the web opposite the lenticular film. The objective is moved toward and away from the web so as to vary the focal plane of the image received from one of the lenticules.

When the image of said one lenticule is focused at a predetermined point, it is detected by a photo-detector which provides an electrical output pulse indicative thereof. Means are provided for determining the position of the microscopic objective at the time of said pulse.

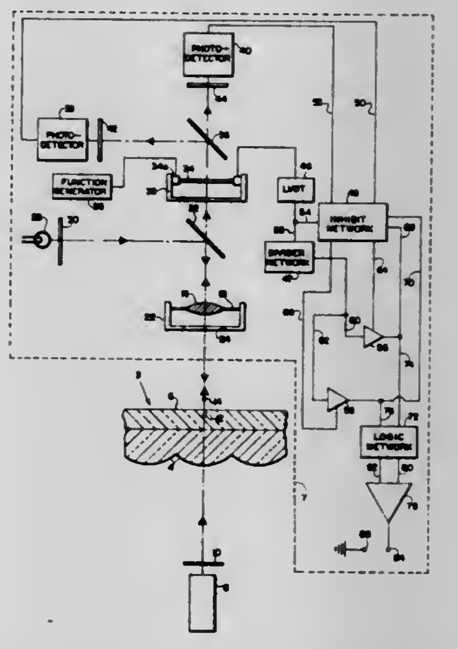
A source of light of a wavelength different from that of said collimated light is provided and transmits light, through said microscopic objective to the non-lenticulated side of said web such that it is reflected therefrom. This reflected light is brought to focus remote from said web by said microscopic objective. The microscopic objective is moved with respect to the web until said reflected light is brought to said same predetermined focus as said collimated light. When the reflected light is brought to said predetermined focus, it is detected by a second photo-detector which will provide an electrical output pulse in response thereto.

The position of the microscopic objective is determined at the time of the electrical output pulse responsive to said reflected light and the distance traversed by said microscopic objective and, hence, the relative back-focus of the particular lenticule being monitored, may be readily determined.

3,652,165
RELATIVE BACK FOCUS MONITORING METHOD AND APPARATUS

Edward S. Candidus, Jr., Boston; Thomas W. Snow, Melrose, and John F. Ullathorne, Duxbury, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 1, 1970, Ser. No. 33,660
Int. Cl. G01b *9/00*
U.S. Cl. 356—125 **18 Claims**



The subject invention provides an improved method and apparatus for determining the relative back-focus of each of a plurality of lenticules or the like and, more particularly, provides a method and a means for sequentially determining the relative back-focus of each of a plurality of lenticules, comprising a lenticular film which is disposed along one surface of a supporting web.

The relative back-focus of each lenticule or the like may be generally defined as the distance from the focus of said lenticule or the like to a reference which, in the case of a web supported lenticular film, is the surface of the web opposite the lenticular film. Briefly, collimated light is passed through each of the lenticules and is focused by a stationary microscopic objective which is positioned outward of the surface of the web opposite the lenticular film. A movable aperture plate is positioned outward of the microscopic objective and is moved toward and away from said microscopic objective so that the position of the image of the focused collimated light varies with respect to said aperture plate.

When the image of said lenticule is focused in the plane of said aperture plate, it is detected by a photo-detector which provides an electrical output pulse indicative thereof. Means are provided for determining the position of the aperture plate at the time of said pulse.

A source of light of a wavelength different from that of said collimated light is provided and transmits light through said microscopic objective to the non-lenticulated side of said web so as to be reflected therefrom. This reflected light is focused remote from said web by said microscopic objective and the aperture plate is moved with respect to the microscopic objective until said reflected light is focused in the plane of said aperture plate. When the reflected light is so focused, in the plane of the aperture plate, it is detected by a second photo-detector which will provide an electrical output pulse in response thereto.

The position of the microscopic objective is determined at the time of the electrical output pulse responsive to said reflected light, and the distance traversed by said aperture plate, between said output pulses, may be readily determined. For a given microscopic objective, the distance traversed by the aperture plate will be a multiple of the relative back-focus of the lenticule being monitored which is dependent on the focal length of the microscopic objective.

3,652,166
GEODETIC SIGHTING INSTRUMENT

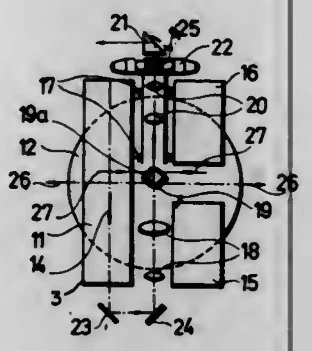
Dezso Bessko; Gyula Gallai; Pal Farnady; Geza Jozsa; Margit Kovy; Laszlo Teller; Andras Suba, and Sandor Tisza, all of Budapest, Hungary, assignors to Magyar Optikai Muvek, Budapest, Hungary

Filed May 4, 1970, Ser. No. 34,416

Claims priority, application Hungary, May 16, 1969, MA-1989

Int. Cl. G01b *11/27*

U.S. Cl. 356—138 **10 Claims**



Geodetic sighting instrument with a gas laser light source and beaming, sighting and observation systems; the optical axis of said gas laser is arranged in a way free to rotate about a vertical axis and perpendicular to the direction of sighting. The instrument has a light reflecting system consisting of directive mirrors to direct the beam used for the marking of direction, a sighting reflecting device being interposed between said gas laser and said observation system including at least one reflecting device free to rotate about an axis perpendicular to the direction to be marked out.

3,652,167
OPTICAL IMAGE SPLITTING SYSTEMS

Francis Hughes Smith, York, England, assignor to Vickers Limited, London, England

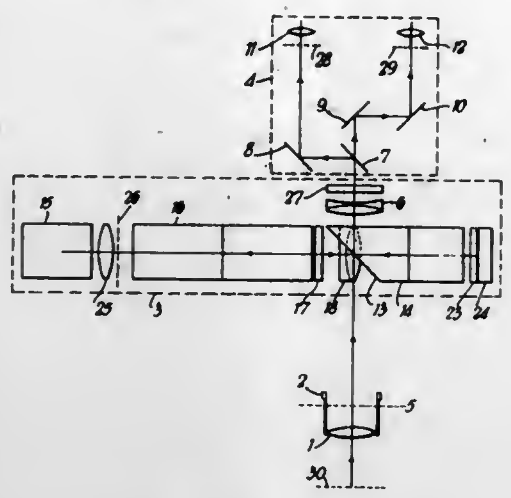
Filed Apr. 28, 1970, Ser. No. 32,543

Claims priority, application Great Britain, Apr. 30, 1969, 22,127/69

Int. Cl. G01b *11/02*

U.S. Cl. 356—163 **25 Claims**

In a binocular optical sizing instrument, an adjustable image-splitting device is arranged, between an objective and the binocular viewing head, for use in measuring the diameters of viewed objects by the image-splitting method. The objective is arranged to form a primary real image of the field of view upstream of the common focal plane of the eyepieces of the binocular viewing head, and optical imaging means are positioned downstream of the primary real image to focus the field of view onto the said common focal plane. The optical system of the instrument is also arranged to form a real image of the objective's exit pupil at a point optically equivalent to the apparent image-splitting point of the device.



Such an image-splitting device can also be used in a monocular sizing instrument.

3,652,168
ELECTRIC EXPOSURE METER

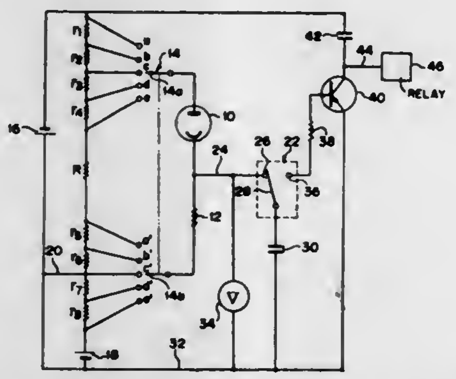
Akio Yanagi, and Shoichiro Kakuta, both of Tokyo, Japan, assignors to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka, Japan

Continuation of application Ser. No. 634,320, Apr. 27, 1967, now abandoned. This application June 16, 1970, Ser. No. 48,903

Claims priority, application Japan, Apr. 29, 1966, 41/27268

Int. Cl. G01j *1/46, 1/44*

U.S. Cl. 356—21 S **7 Claims**



An electric exposure meter for storing the brightness of a photographic object as an electric voltage of a magnitude corresponding thereto in order to control the exposure time by using the voltage thus stored.

3,652,169
VIEWER FOR TRANSPARENT SLIDES

Bernard R. Danti, Lexington; Paul E. Brefka, Southboro, and Wayne S. Merrill, Bedford, all of Mass., assignors to Millipore Corporation, Bedford, Mass.

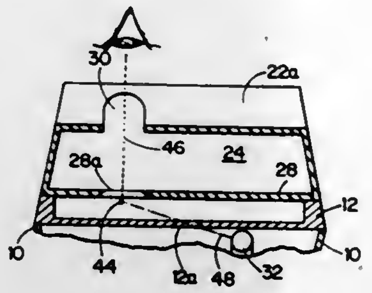
Filed Apr. 1, 1971, Ser. No. 130,262

Int. Cl. G01n *21/04*

U.S. Cl. 356—244 **8 Claims**

A viewer for slides useful in clinical testing. The viewer is particularly useful for viewing precipitates formed in optically transparent or translucent gels contained in transparent trays. It includes a base member having side walls, a cover plate and a mask spaced above the cover plate. The slide is placed between the mask and the upper surface of the cover plate. Means are provided defining an entrance pupil above the mask. The slide is illuminated from a light source within the base. Light passes through a slit in the cover plate from the source to the location in the gel where the precipitate is

most likely to be present. The slit is however masked from the view of the user by the mask and entrance pupil. Thus, the precipitate is readily seen if present, since it diffuses the light from source. If it is absent, only a black field of view is seen, since the upper surface of the cover plate is blackened in the viewing area.



3,652,170
PHOTOMETER CHAMBER

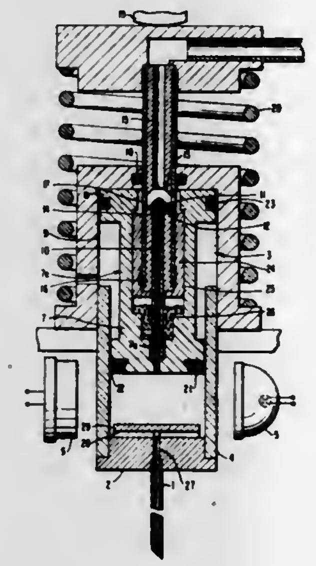
Palle-Finn Beer, and Kai Robert Smith, both of Lidingo, Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden

Filed Feb. 5, 1970, Ser. No. 8,933

Claims priority, application Sweden, Feb. 5, 1969, 1493/69

Int. Cl. G01n *1/10*

U.S. Cl. 356—246 **8 Claims**



An apparatus useful for measuring the optical properties of a liquid which comprises a cylinder having at least a portion thereof constructed of a transparent material, inlet means at one end of said cylinder for introducing liquid into the cylinder, outlet means at the other end of said cylinder, a piston slidably mounted in said cylinder to define a first portion and a second portion in said cylinder, said first portion being adjacent to said inlet means, a passageway through said piston communicating with said first and second portions and with said outlet means, a valve means positioned in said passageway and adapted to close said passageway when the volume of said first portion is increased by movement of the piston and to open said passageway when the volume of said first portion is decreased by movement of the piston.

The apparatus permits reliable measurement of the transparency to light of light samples in the chamber by keeping the walls clean so that the light for one sample does not contaminate or otherwise affect a sample likewise subsequently drawn in.

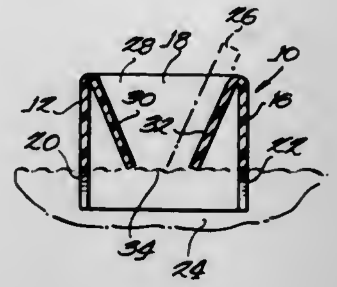
3,652,171
BUTTER APPLICATOR

John W. Carlson, 6678 S. Acoma, Littleton, Colo.

Filed May 6, 1970, Ser. No. 35,070

Int. Cl. A23p *1/00*

U.S. Cl. 401—12 **7 Claims**



Two of the four parallel side walls of the butter applicator have arcuate edges to receive the surface of an ear of corn and have ledges extending inwardly and downwardly from their top edges, which ledges extend across the space between the other two parallel side walls and stop short of each other to define a slot adjacent to the surface of the ear of corn. To butter the ear of corn, the butter applicator is placed upon it with the arcuate edges of the two parallel side walls straddling the ear of corn and a pat of butter is placed in its upper end so that it slides downward with its edge contacting the surface of the ear of corn along the slot whereby the surface of the corn may be buttered by moving the butter applicator back and forth in the direction of the longitudinal axis of the ear of corn.

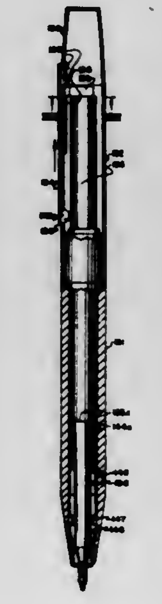
3,652,172
SLIDING CLIP ACTUATED PEN

Nathan A. Zepell, 1359 Santa Teresita Drive, Santa Barbara, Calif.

Continuation-in-part of application Ser. No. 808,743, Mar. 20, 1969, now abandoned. This application Mar. 4, 1970, Ser. No. 16,352

Int. Cl. B43k *5/16, 24/02*

U.S. Cl. 401—106 **28 Claims**



A writing instrument has a hollow barrel with a reciprocable writing cartridge that is normally retracted by a spring and that is extended to writing position by sliding the clip. The clip mechanically engages the cartridge to extend it, and the ball of the clip fits in a recess in the barrel surface to hold the cartridge extended. Opening the clip to clip the pen in a pocket releases this hold on the cartridge, and the spring retracts the cartridge sliding the clip with it. The clip is so attached that manual pressure on the clip end away from the ball rotates the clip to open it.

3,652,173

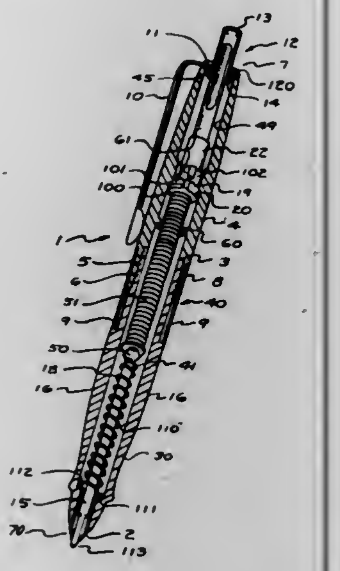
RETRACTABLE BALLPOINT PEN WITH VARIABLE ENCLOSURE

Louis W. Miller; Leonard G. Lipic; Louise E. Kestler, and William M. Martz, all of St. Louis, Mo., assignors to Joseph Lipic Pen Co., St. Louis, Mo.

Filed June 11, 1970, Ser. No. 45,491

Int. Cl. B43k *24/08*

U.S. Cl. 401—110 **13 Claims**



A retractable ballpoint pen has a standard size, replaceable ink cartridge. The retracting mechanism is designed to pass over the ink cartridge along the entire length of the mechanism, allowing the use of a pen enclosure whose only length limitation is the length of ink cartridge utilized.

3,652,174

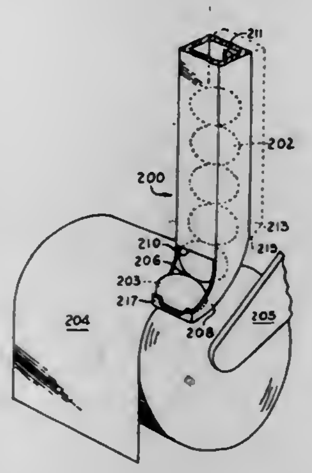
HERMETICALLY-SEALED PRODUCTS AND RELATED METHOD FOR CLEANSING AND OTHER USES

Philip Boone, 15 Fenwick Road, Winchester, Mass.

Continuation-in-part of application Ser. No. 678,600, Oct. 27, 1967, now abandoned. This application Mar. 25, 1968, Ser. No. 715,768

Int. Cl. B65d *5/72*

U.S. Cl. 401—143 **6 Claims**



Products including hermetically sealed, openable, containers enclosing liquid, liquid impregnated, dry and other materials for use alone or in combination with associated or integral components such as sheetlike materials for cleaning, medical or other purposes, together with dispensing components therefor and related method.

3,652,175

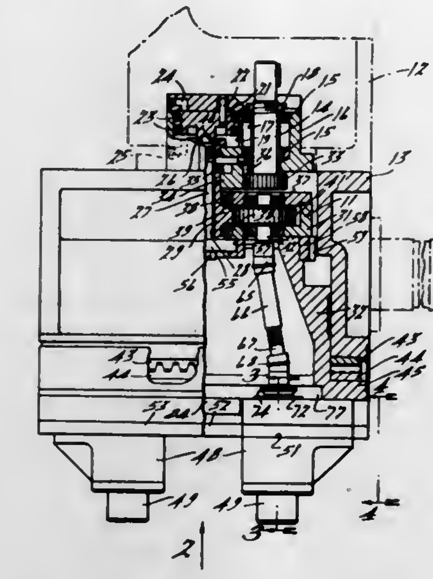
ADJUSTABLE MULTIPLE SPINDLER DRILL HEAD

William D. Walters, Ridgewood, and Robert J. Doocey, Upper Saddle River, both of N.J., assignors to Standard Tool & Manufacturing Co.

Filed July 13, 1970, Ser. No. 54,183

Int. Cl. B23b *39/16*

U.S. Cl. 408—46 **9 Claims**



The adjustable drill head of the multiple spindle type has particular use in transfer or like machine lines as it can produce different diametrically and angularly spaced drill holes which heretofore required a number of fixed multiple spindle drill heads although requiring an increase in time. The cost of each fixed multiple spindle drill head and the number required for different diameters and number of holes to be drilled results in a cost which is extremely high. When drilling a flange, such as on a pipe, pump casting and those of other devices, a pair of spindles are adjustably spaced to the diameter between the drilled holes and are indexed to different angular positions to produce a multiple of holes spaced equal distance apart within the time required to perform prior or subsequent machining operations at other stations in the line.

3,652,176

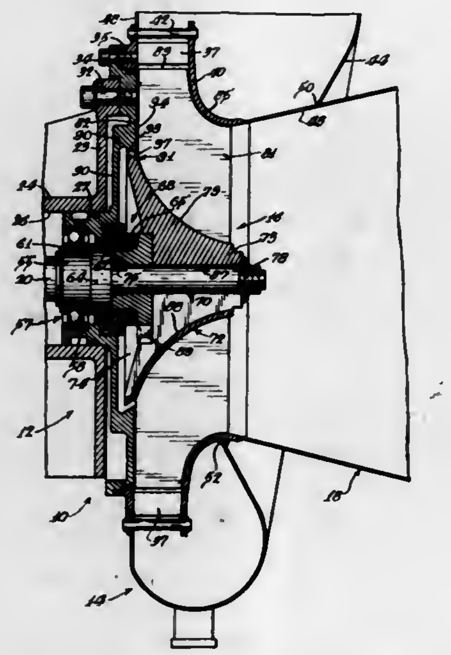
TURBINE WHEEL CONTAINMENT DEVICE

Richard E. Walsh, Rockford, Ill., assignor to Sundstrand Corporation

Filed Apr. 20, 1970, Ser. No. 29,875

Int. Cl. F01b *25/16;* **F01d** *1/00*

U.S. Cl. 415—9 **8 Claims**



A containment construction for a radial turbine having a generally radially disposed inlet and an axially disposed outlet with a stationary back-plate disposed opposite the outlet that has a conically diverging recess therein that receives a complementary rotating diverging conical shoulder on the turbine wheel hub so that upon overspeed bursting of the turbine wheel, the conical recess assists in containing the turbine wheel, there also being provided stationary stator blades completely surrounding the turbine wheel which assist in containing the turbine wheel upon exceeding the burst speed.

3,652,177

INSTALLATION FOR THE SUPPORT OF PIVOTAL GUIDE BLADES

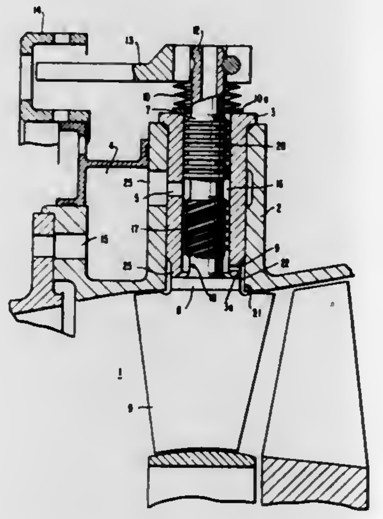
Wolf Loebel, Munich, Germany, assignor to Motoren-und Turbinen-Union Munich GmbH, Germany

Filed May 19, 1970, Ser. No. 38,679

Claims priority, application Germany, May 23, 1969, P 19 26 327.5

Int. Cl. F01d *11/00;* **F04d** *27/00*

U.S. Cl. 415—110 **18 Claims**



An installation for the pivotal support of guide blades of turbo machines particularly gas turbines in which chambers or passages are provided in the bearing support through which flows the cooling air; the blade shaft constructed as adjusting shaft is provided with an annular groove in its center bearing area and with another annular groove at the blade end whereby the two annular grooves are connected with each other by a thread; the central annular groove is in communication with the chambers or passages while the other annular groove is in communication with the guide blade space of the machine.

3,652,178

DEVICE FOR THE OUTPUT SHAFT OF A GAS TURBINE

Jack Guillot, Blanc-Mesnil, France, assignor to Bennes Marrel, Saint-Etienne (Loire), France

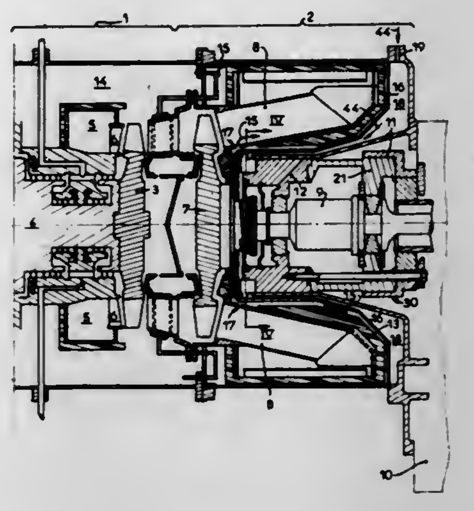
Filed Nov. 20, 1969, Ser. No. 878,472

Claims priority, application France, Nov. 28, 1968, 50.688

Int. Cl. F01d *11/00*

U.S. Cl. 415—110 **4 Claims**

The output shaft of a gas turbine is journaled by two spaced-apart bearings mounted in a support housing surrounding the shaft. The exhaust for the gas turbine is disposed radially outwardly of the support housing and an insulating sleeve is disposed intermediate the exhaust and the support housing. One of the bearings is fixed axially relative to the shaft and the support housing while the other bearing is mounted for limited axial play relative to the support housing and the shaft. Helical splines are formed on the shaft adjacent the rotor and cooperate with a circumferential sleeve to form a pump which will draw atmospheric air between the insulating sleeve and the support housing, through passages in the bearing body and direct the air against the axially movable bearing to cool the same.



3,652,179

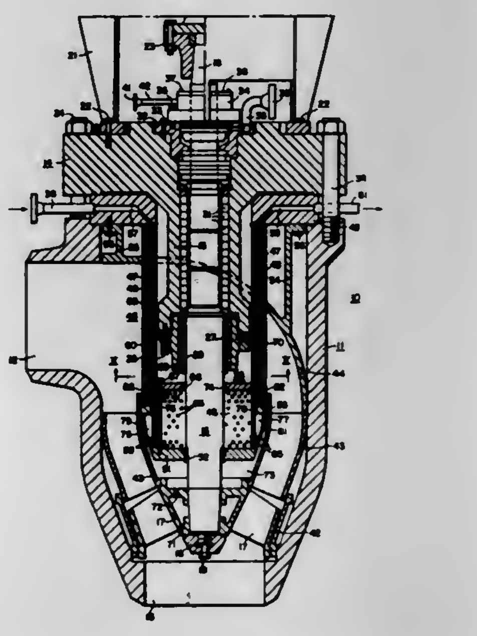
CONTROLLED LEAKAGE CENTRIFUGAL PUMP

Oskar Hagen, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of application Ser. No. 810,312, Mar. 25, 1969, now abandoned. This application Mar. 10, 1971, Ser. No. 123,039

Int. Cl. H02k *15/00;* **F04d** *29/00;* **F16c** *1/24*

U.S. Cl. 415—111 **23 Claims**

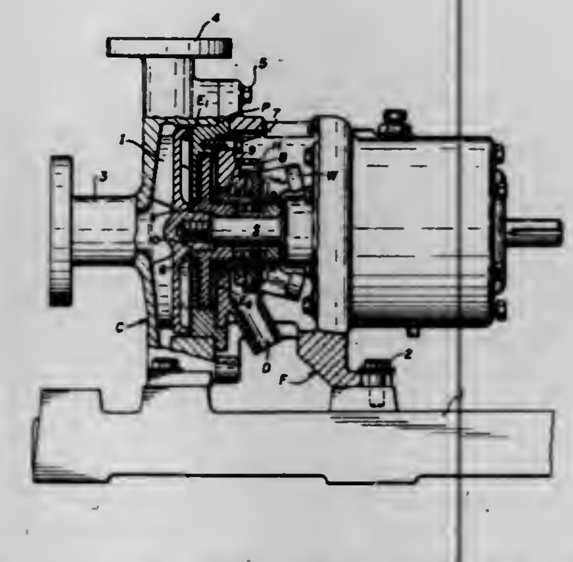


The cost of a centrifugal pump is reduced by providing it with a generally cylindrical casing having a radial discharge nozzle near the upper end of the casing and a suction nozzle at the lower end. The casing is bolted to a main flange having a cylindrical neck extending downwardly inside the casing. The pump shaft extends through the neck and the main flange. A radial bearing assembly is bolted to the lower end of the neck. In certain applications, breakdown bushings surround the shaft within the neck and controlled leakage shaft seals are disposed in the main flange, thereby confining the high pressure liquid within the casing and the main flange. A cooler surrounds the shaft between the pump impeller and the radial bearing assembly. A thermal barrier surrounds the bearing assembly.

3,652,180
CENTRIFUGAL PUMP AND SEAL MEANS THEREFORE

Henry T. Choquette; Lawrence T. Gobble, both of Denver, Colo.; James B. Studebaker, Mexico City, Mexico, and John D. Whittier, Lakewood, Colo., assignors to A. R. Wilfley and Sons, Inc., Denver, Colo.

Filed July 13, 1970, Ser. No. 54,458
Int. Cl. F01d *11/00*
U.S. Cl. 415—113 **12 Claims**

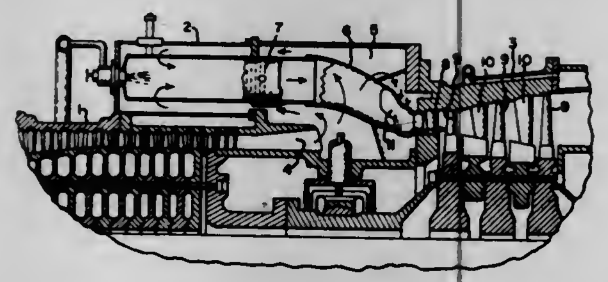


The centrifugal pump has a mechanical seal means disposed between its casing and the shaft of the pump. The seal means has a first position in sealing engagement with a stationary seal ring housing under the influence of a spring when the pump is at rest, and a second position in unsealed relation with respect to the stationary seal housing when the pump reaches a predetermined operating speed. Expeller means are provided for effecting a hydraulic seal during operation of the pump and labyrinth means are provided between a rotary seal housing and the stationary seal housing for effecting a fail safe seal in the event there is severe mechanical seal failure. The mechanical seal means seals with pressure and is thus aided by the static case pressure.

3,652,181
COOLING SLEEVE FOR GAS TURBINE COMBUSTOR TRANSITION MEMBER

Carl F. Wilhelm, Jr., 40 Jennifer Road, Scotia, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,659
Int. Cl. F01d *25/2;* **F02c** *7/12*
U.S. Cl. 415—117 **3 Claims**

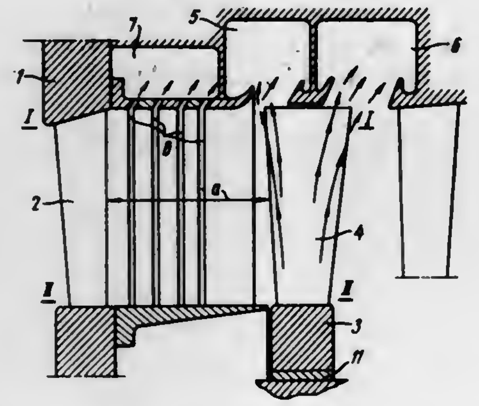


In a heavy duty gas turbine, the transition member leading from the combustion chamber outlet to the first turbine stage is cooled by means of a surrounding sleeve which admits compressor air on one side and which, after cooling the transition member, admits air into the hot combustion gas path to improve the radial temperature gradient at the turbine nozzle.

3,652,182
TURBOSEPARATOR FOR POLYPHASE FLUIDS AND TURBINE INCORPORATING SAID TURBOSEPARATOR

Mikhail Efimovich Deich, Energeticheskaya ulitsa, 8 Korpus 1, kv. 56; Gennady Alexeevich Filippov, Molodogvardeiskaya ulitsa, 24, Korpus 1, kv. 34, both of Moscow; Sergei Petrovich Sobolev, Kharkov, 6 Molchanovsky pereulak, 7, kv. 5, Kharkov, and Oleg Alexeevich Povarov, Tashkentskaya ulitsa, 16, Korpus 1, kv. 55, Moscow, all of U.S.S.R.

Filed Apr. 1, 1970, Ser. No. 24,769
Int. Cl. F01d *1/00*
U.S. Cl. 415—168 **3 Claims**

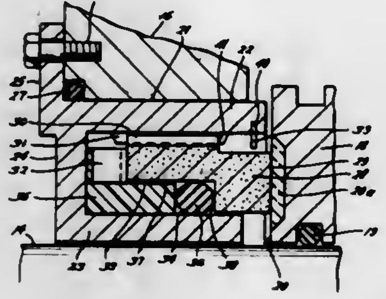


A turboseparator for polyphase media comprising: a guide assembly, a working wheel, and collecting chambers installed near the working wheel periphery. The working wheel blades have a varying profile from the root to the periphery, this profile being of the turbine type near the root. The entrance angle of the profile near the periphery is not over 90°. In a turbine operating with polyphase working fluid, at least one stage is substituted for by the turboseparator.

3,652,183
COMPRESSOR

John E. Pottharst, Jr., 861 Carondelet St., Parish, La.

Filed Oct. 15, 1970, Ser. No. 80,952
Int. Cl. F01d *11/00*
U.S. Cl. 415—170 **12 Claims**

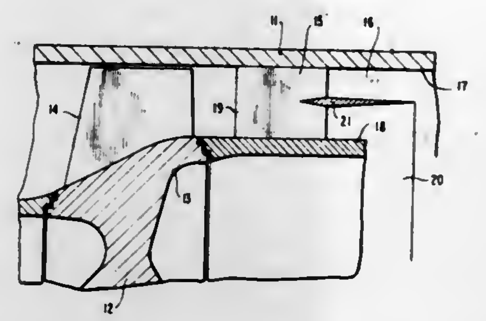


A compressor has an impeller shaft seal that includes a first ring mounted for rotation with the shaft and an annular cartridge fixed to an outer wall of the compressor housing through which the shaft extends. A second ring of carbon is mounted within the cartridge and has an end face urged into rotary sealing engagement with a mating end face of the first ring by a wavy spring in the cartridge. An O-ring is sealingly engaged between the inner wall of the cartridge and the inner face of the second ring to protect the spring against the corrosive fluid, and a sleeve about the inner wall limits movement of the O-ring toward the spring so that portions of the inner face of the second ring removed from such fluid will slide over the O-ring upon wear of the end face of the second ring.

3,652,184
AFTER-GUIDE-BLADING OF AN AXIAL COMPRESSOR

Oswald Conrad, Schmiden, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed May 13, 1970, Ser. No. 36,752
Claims priority, application Germany, May 17, 1969, P 19 25 172.0
Int. Cl. F01d *1/02;* **F04d** *29/02, 19/00*
U.S. Cl. 415—181 **19 Claims**

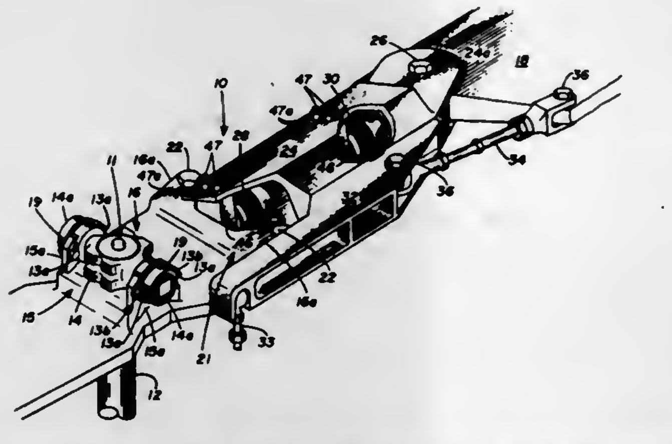


An after-guide blading of an axial compressor, particularly of a supersonic axial compressor, in which a profile ring is provided between the walls defining the after-guide blading which partially projects into the guide blades; the cross-sectional configuration of the profile ring in a plane parallel to and passing through the compressor axis is such that it increases in a first section and decreases again in a second section.

3,652,185
ELASTOMERIC ROTOR BLADE MOUNT

Wesley Louis Cresap, Fort Worth; Castle Hugh Fagan, Irving, and Martin Harrison Lufkin, Fort Worth, all of Tex., assignors to Textron Inc.

Filed Mar. 13, 1970, Ser. No. 19,320
Int. Cl. B64c *27/48*
U.S. Cl. 416—134 **8 Claims**



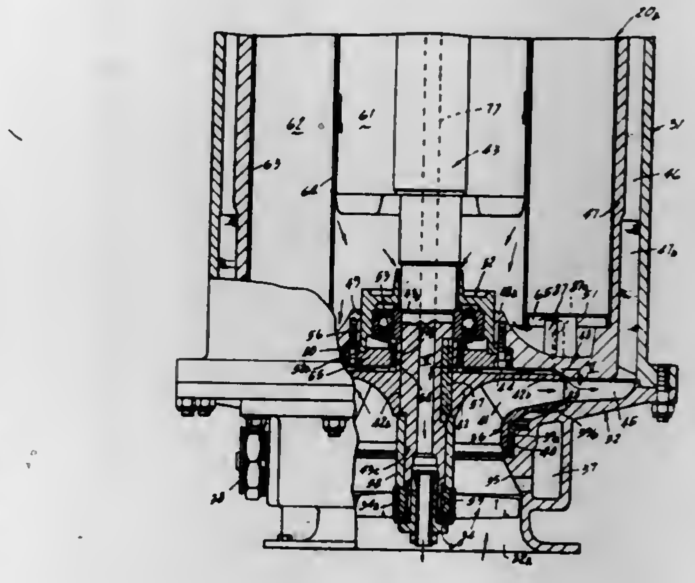
An elastomeric rotor mounting structure for a helicopter blade is provided. In the mounting, a blade grip is coupled to a yoke structure by means of radial-thrust elastomeric bearings and the yoke structure is connected to the rotor hub. The elastomeric bearings simplify the rotor design and eliminate the need for bearing lubrication.

3,652,186
PRESSURE LUBRICATED, COOLED AND THRUST BALANCED PUMP AND MOTOR UNIT

James C. Carter, Pasadena, Calif., assignor to The J. C. Carter Company, Costa Mesa, Calif.

Filed May 25, 1970, Ser. No. 40,077
Int. Cl. F04b *17/00, 35/00, 39/02, 35/04;* **G01f** *11/30*
U.S. Cl. 417—370 **20 Claims**

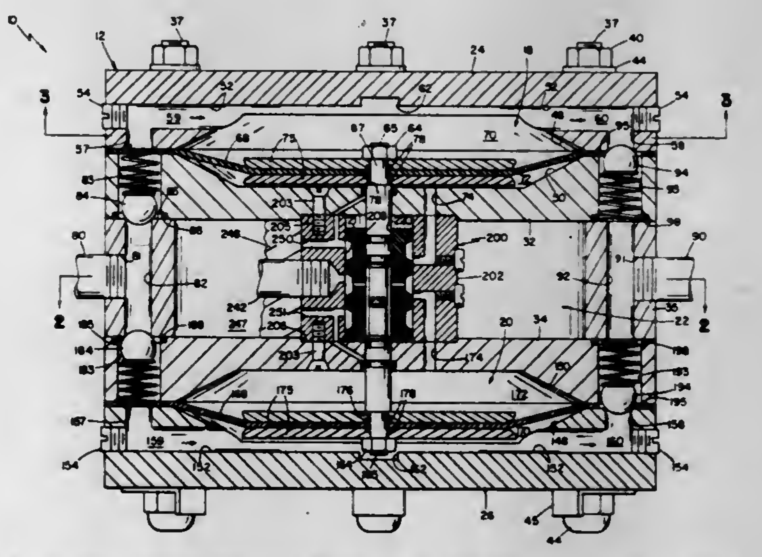
Electric motor driven pump units, especially suited for pumping liquefied gases, including cryogenic fluids, which are lubricated, cooled and balanced with small amounts of fluid pumped by the unit (pumpage), such as 1 to 3 percent of the designed flow capacity of the pump. These small amounts of pumpage are divided into a major flow path through the most heated portions of the units discharging on the pressure side of the pump and a minor flow path through a thrust bearing for the unit and then through the lesser heated portions to discharge on the intake side of the pump. The major flow path, receiving about 75 percent of the lubricating pumpage, is downwardly through the motor shaft radial bearings and rotor compartment to an impeller and a pumping or collection chamber. The minor flow path, receiving about 25 percent of the lubricating pumpage, is through variable thrust bearing orifices tending to raise the motor shaft and carry the axial load of the unit on a thin film discharging through the hollow interior of the shaft to the pump inlet. The pumpage in the major flow path is maintained under pressure and will not boil even when appreciably heated. The minor flow path picks up very little heat and is primarily for balancing the axial thrust load on the shaft.



3,652,187
PUMP

Herbert H. Loeffler, Arlington, and Sebastian B. Di Mauro, Malden, both of Mass., assignors to Amicon Corporation, Lexington, Mass.

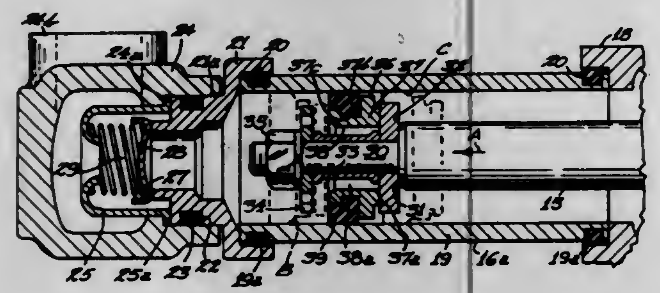
Filed Oct. 29, 1970, Ser. No. 85,077
Int. Cl. F04b *17/00, 35/00*
U.S. Cl. 417—393 **12 Claims**



A reciprocating fluid operated diaphragm-type pump has a control valve automatically movable at each end of the reciprocating stroke of the pump between two alternate positions to reverse fluid flow to the pump, and thereby cause the pump to reciprocate. A connecting member between the diaphragms of the pump passes through a passage in the control valve and has sealing members located to alternately seal and exhaust the opposite ends of the control valve to pressurized fluid flowing out of the valve passage to the ends of the valve, so that control valve movement at the ends of the pump stroke is positive and rapid.

3,652,188
HIGH PRESSURE PUMP

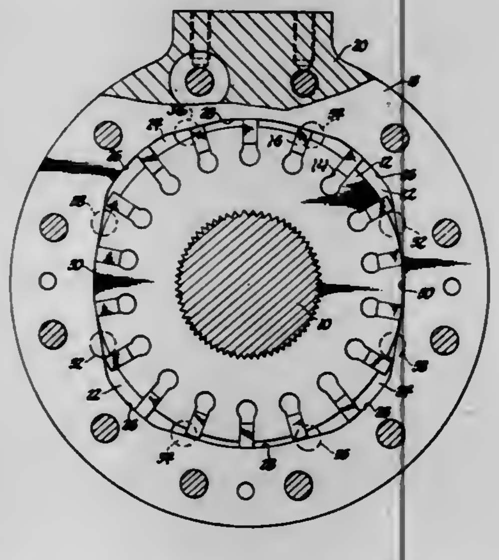
Ryoji Uchiyama, Yahata-Machi, Japan, assignor to Maruyama Mfg. Co., Ltd., Tokyo, Japan
Continuation-in-part of application Ser. No. 756,852, Sept. 3, 1968, now Patent No. 3,558,244. This application June 1, 1970, Ser. No. 41,932
Int. Cl. F04b *7/00*
U.S. Cl. 417—511 **3 Claims**



A high pressure pump with a self-centering piston loose on the piston rod carrying valve valving in cooperation with the piston.

3,652,189
POWER TRANSMISSION

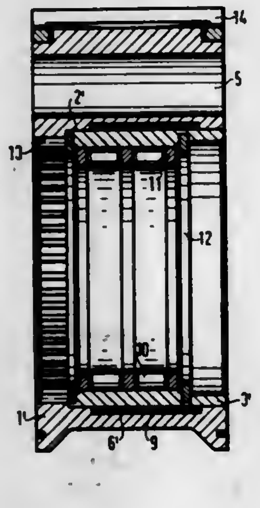
John D. Gowie, Warren, Mich., assignor to Sperry Rand Corporation, Troy, Mich.
Filed Oct. 29, 1970, Ser. No. 85,061
Int. Cl. F01c *1/00;* **F03c** *3/00;* **F04c** *1/00*
U.S. Cl. 418—15 **1 Claim**



A hydraulic motor of the rotary sliding vane type has two pairs of displacement chambers of different size, either one or both of which may be utilized for driving the motor by selective control of the inlet and outlet porting. The cam ring against which the vanes are projected has four dwells of the same major diameter which are connected by eight ramps with four dwells of minor diameter, one pair of the latter being more than 25 percent greater in diameter than the other. This avoids functional difficulties inherent in similar vane motors in which all of the four minor dwells are of the same diameter and the two pairs of major dwells are of different diameter.

3,652,190
ROTOR FOR A ROTARY INTERNAL COMBUSTION ENGINE

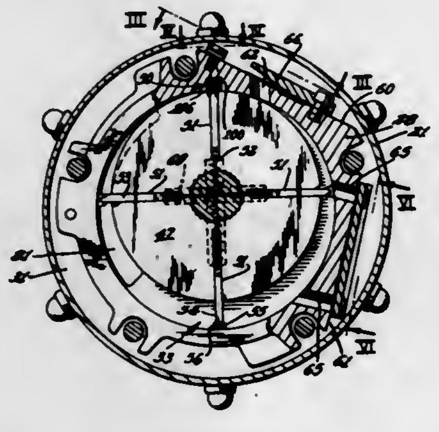
Helmut Keller, Garitz; Franz Rottmann, Schweinfurt am Main; Helmuth Zickler, Hambach, and Dieter Klauke, Schweinfurt am Main, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt am Main, Germany
Filed June 16, 1970, Ser. No. 46,640
Claims priority, application Germany, July 15, 1969, P 19 35 827.1
Int. Cl. F01c *1/02;* **F04c** *1/02;* **F16c** *33/30*
U.S. Cl. 418—54 **7 Claims**



The rotor of a rotary internal combustion engine has a lobed light metal body and a steel sleeve in a central axial bore of the body. The bearing which supports the rotor on an eccentric is mounted in the sleeve and protected against the heat absorbed from the burning fuel by the rotor body by a sealed annular chamber between radially opposite walls of the body and the sleeve.

3,652,191
COMPRESSOR

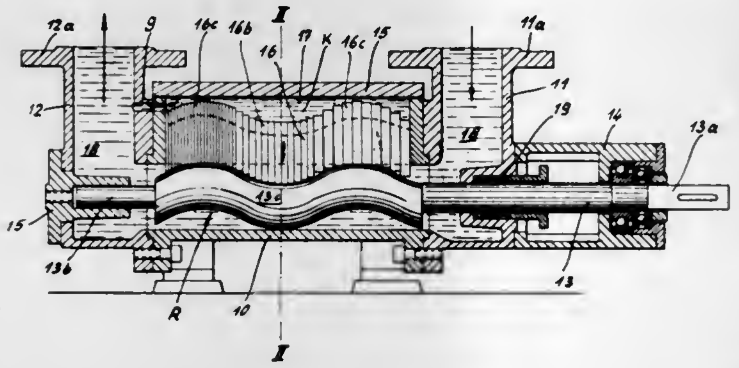
David G. King, Chesterland, and William P. Burke, Jr., Wickliffe, both of Ohio, assignors to TRW Inc., Cleveland, Ohio
Filed June 22, 1970, Ser. No. 47,993
Int. Cl. F01c *19/02;* **F03c** *3/00*
U.S. Cl. 418—125 **12 Claims**



A rotary vane compressor having a rotor eccentrically received in a cylindrical chamber. The rotor has radially movable vanes thereon, the outer peripheries of which carry shoes contacting the inner diameter of the cylinder wall. At the point of tangency between the rotor and inner diameter wall of the chamber, a groove is provided in the wall. A port extends from the bottom wall of the groove to the high-pressure exit and a rectilinear tangency seal is received in the groove.

3,652,192
SEALED CONVEYING APPARATUS

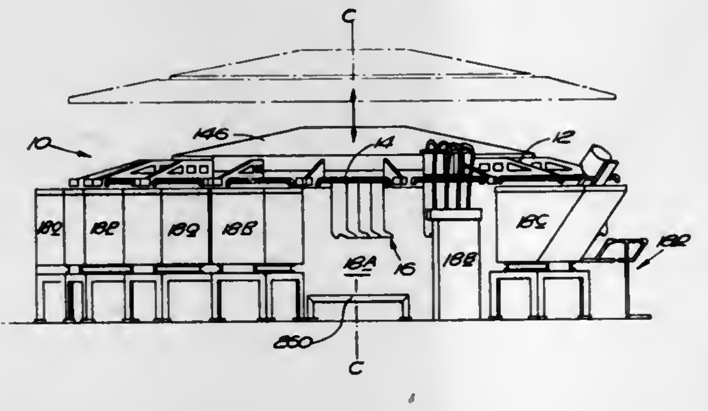
Hermann Kramer, and Karl-Heinz Hahn, both of Freiburg, Germany, assignors to Pumpen- Und Maschinenfabrik Lederle OHG, Freiburg, Germany
Filed Jan. 15, 1970, Ser. No. 3,173
Claims priority, application Germany, Jan. 16, 1969, P 19 02 065.6; Oct. 6, 1969, P 19 50 238.6
Int. Cl. F01c *19/02, 11/00;* **F04c** *27/00*
U.S. Cl. 418—125 **52 Claims**



A conveyor screw is mounted in a working chamber to convey a fluid material, and is sealed by a row or stack of sealing elements extending along a surface line of the conveyor screw perpendicular to the turns of the same.

3,652,193
SLUSH MOLDING MACHINE

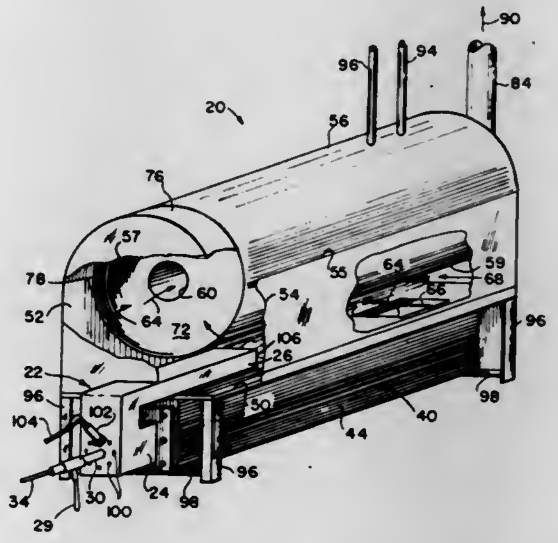
Jaroslav F. Adamik, 412 Barden Ln., Warren, R.I.
Continuation of application Ser. No. 625,678, Mar. 24, 1967, now abandoned. This application Nov. 6, 1969, Ser. No. 871,591
Int. Cl. B29c *5/00*
U.S. Cl. 425—214 **27 Claims**



Slush-molding apparatus embodying a support for repeatedly intermittently moving a plurality of hollow molds from one station to another along a predetermined path and apparatus at these stations for successively filling the hollow molds with liquid plastic, applying heat to form a gelled layer internally of each mold, discharging the excess liquid plastic, partially curing the residual layer in each mold, and, finally, curing the residual layer. Additionally, there is apparatus for increasing the thickness of the gelled layer in certain areas and for adding plastic to certain areas of the partially cured layer.

3,652,194
BLUE-FLAME LIQUID-FUEL BURNER PROCESS, APPARATUS AND UTILIZATION SYSTEMS

Frank W. Bailey, 663 Black Oak Ridge Road, Wayne, N.J.
Filed Sept. 24, 1969, Ser. No. 860,662
Int. Cl. F23m *9/06*
U.S. Cl. 431—9 **12 Claims**

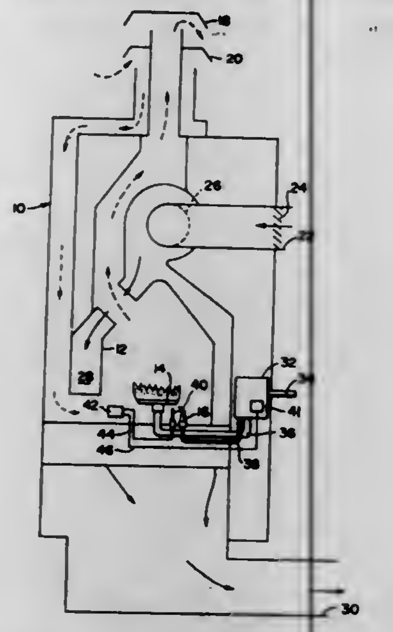


Blue-flame burner process, apparatus and utilization systems producing a quiet, stable, essentially sootless blue flame from liquid fuel, particularly hydrocarbon fuels, fuel oil and the like and producing substantially complete combustion of the fuel, being more efficient than conventional oil burners and eliminating particulate matter in the exhaust products, contributing to substantially reduced air pollution and additionally providing more efficient utilization of the heat generated. In the blue-flame process the kinetics of combustion are controlled by close and effective coupling to a heat sink, and novel close coupling systems with higher performance heat exchangers are provided. Compact, lightweight inexpensive burner units are provided which are adapted to be constructed with a generally rectangular J-shaped configuration adapted for close coupling to a planar area of a heat sink, if desired in certain embodiments; the rectangular configuration lends itself to convenient, inexpensive sheet metal construction suitable for large scale mass production techniques. The fuel nozzle, ignition device and damper controls are located at the base of the shorter leg of the J-shaped burner unit where they can be readily accessible for convenient adjustment to optimum settings during actual operation. The rectangular burner configuration is versatile for use in many different applications, environments and utilization systems as described, including applications similar to those which have heretofore been limited to gas burners and for modular arrangements of multiple burners stacked side-by-side for great heat release in a relatively compact volume. Multifuel burning capability is provided for interchangeably using fuel oil, kerosene or gasoline while achieving substantially the same desirable blue-flame characteristics in each case, suitable for mobile home applications, emergency heating, garages, use in remote locations, etc. A relatively cool fluepipe is achieved such that the conventional expensive brick or tile chimney can be eliminated.

3,652,195
THERMOCOUPLE CONTROL SYSTEM

Harold A. McIntosh, South Pasadena; Gordon K. Slocum, Downey, both of Calif., and Nick J. Koskolos, St. Louis, Mo., assignors to Robertshaw Controls Company, Richmond, Va. and Intertherm, Inc., St. Louis, Mo.
Filed Dec. 11, 1969, Ser. No. 884,063
Int. Cl. F23n *5/02*
U.S. Cl. 431—21 **12 Claims**

A thermocouple control system including a thermocouple, an operator for a control device and a fusible link assembly connected in series with the thermocouple and the operator, the fusible link assembly assuming an open state upon



sensing a predetermined temperature to deenergize the operator by creating an open circuit.

3,652,196

FLOATING TORCHER WITH PERMEABLE GAS CONDUIT FOR UNDERWATER OIL FIELDS

Henri A. Marion; Pierre P. Orieux, and Francisco M. Serrano, all of Paris, France, assignors to Compagnie Francaise Des Petroles, Societe Anonyme, Paris, France

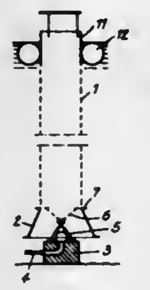
Filed Oct. 12, 1970, Ser. No. 79,788

Claims priority, application France, Oct. 10, 1969, 6934682

Int. Cl. F23d *13/20*

U.S. Cl. 431—202 **14 Claims**

A torch assembly for burning gases collected at the head of an underwater well which incorporates a thin permeable conduit made from lightweight, inexpensive material for conducting the gases to the water surface. One end of the conduit is secured to a hood placed above the gas outlet and anchored to the ocean bottom and the other end is attached to a chimney structure mounted on a float. The float structure includes regulating means for separating the gas from the water and for assuring a continuous flow and combustion of the gas.



3,652,197

NONCONSUMABLE WICK

Richard D. Tokarz, 1103 Sunset, Richland, Wash.

Filed May 12, 1970, Ser. No. 36,642

U.S. Cl. 431—326 **8 Claims**

A wick is formed by a plurality of hollow ceramic microspheres adhered together with epoxy resin which is capable of absorbing flammable liquids and transporting the liquid by capillary action above the reservoir of the flammable liquid.

CHEMICAL

3,652,198

MIXTURE OF FILAMENTS CAPABLE OF BEING DYED TO A MULTICOLOR PATTERN WITH ANIONIC DISPERSE DYES

Milton Farber, Verona, N.J.; Robert Miller, and Charles N. Brown, both of Columbia, S.C., assignors to Uniroyal, Inc., New York, N.Y.

Filed Sept. 13, 1968, Ser. No. 759,776. The portion of the term of the patent subsequent to Jan. 2, 1985, has been disclaimed.

Int. Cl. D06p *5/02, 1/16*

U.S. Cl. 8—15 **50 Claims**

The present invention relates to a process for dyeing fibers, fabrics or other shaped articles made from blends of either poly(alpha-olefins) or polyesters and various thermoplastic nitrogen-containing basic polymers to a multicolor pattern.

3,652,199

PROCESS FOR DRYING POLYAMIDE FIBERS CATONIC DYES AND ZINC THIOCYANATE

Peter S. K. Leung, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 28, 1969, Ser. No. 853,924

Int. Cl. D06p *3/24*

U.S. Cl. 8—30 **5 Claims**

Process for dyeing polyamide fibers with a cationic dye comprising treating said fibers with an aqueous bath containing a cationic dye and zinc thiocyanate at a temperature of at least 90° C.

3,652,200

CONCENTRATED SULFURIC ACID-DYE SOLUTION DYEING

Kazuo Miyasaka, 1-33 Tokiwadia, Itabashi-ku, Tokyo, Japan

Filed Sept. 23, 1969, Ser. No. 860,436

Int. Cl. D06p *3/14*

U.S. Cl. 8—54 **5 Claims**

Various types of fibers, especially fibers which can ordinarily only be dyed with some difficulty, are dyed in a relatively short period of time at a relatively low temperature by using a dye bath in which the dye is dissolved in concentrated sulfuric acid, and in which a buffering compound, such as an alkali salt of a weak acid, is preferably added.

ERRATUM

For Class 8—115 see:
Patent No. 3,652,212

3,652,201

PROCESS FOR THE PRODUCTION OF DYEINGS ON FIBER MATERIAL CONSISTING OF POLYMERIC OR COPOLYMERIC ACRYLONITRILE

Jakob Bindler, Riehen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

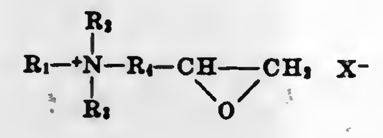
Filed Apr. 28, 1969, Ser. No. 819,976

Claims priority, application Switzerland, Apr. 30, 1968, 6438/68

Int. Cl. D06p *5/06*

U.S. Cl. 8—172 **9 Claims**

A process for the production of level dyeings on polymeric or copolymeric acrylonitrile fibers by dyeing said fibers with a dye liquor containing a basic dyestuff and as dye assistant a quaternary ammonium compound of the formula



wherein R_1 represents an aliphatic hydrocarbon radical with at least eight carbon atoms, R_2 represents a lower alkyl radical, R_3 represents a lower alkyl radical optionally substituted by hydroxyl and/or phenyl groups, R_4 represents a lower alkylene bridge and X^- represents the anion equivalent of an acid such as, e.g., Cl^- or Br^-, is described.

The dyeing process is distinguished from those using known strong cationic retarders by its adequate retarding action without any undue blocking effect.

3,652,202

PRODUCTION OF SODIUM CARBONATE

Dorothy Ann Stewart, and Bernard Allen Maloney, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 12, 1969, Ser. No. 806,690

Int. Cl. C01d *7/00;* **C01b** *31/24*

U.S. Cl. 23—63 **6 Claims**

Electrolytic cell liquor (aqueous sodium hydroxide) is carbonated to produce sodium carbonate. Sodium carbonate is then separated as sodium carbonate monohydrate crystals of desirable physical properties, notably low friability and high bulk density by overcoming the adverse effect of organic impurities which are present during crystallization.

3,652,203

SIMULTANEOUS PREPARATION OF CARBONYL SULFIDE AND AMMONIUM THIOCYANATE

Shizuo Nakamura, Tokyo, and Masanobu Ito, Sagamihara, both of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Sept. 29, 1970, Ser. No. 76,640

Int. Cl. C01c *3/20;* **C01b** *31/26*

U.S. Cl. 23—75 **6 Claims**

A process for the simultaneous preparation of carbonyl sulfide and ammonium thiocyanate, which comprises heating and reacting urea with carbon disulfide at liquid phase, in aliphatic monohydric alcohol of one to four carbon atoms serving as the reaction medium.

3,652,204

PRODUCTION OF CHROMIUM-CONTAINING PHOSPHORIC ACID OR PHOSPHATE SOLUTION

Hakuichi Akazawa, and Shigeaki Washio, both of Kokogawa, Japan, assignors to Taki Fertilizer Manufacturing Co., Ltd., Kokogawa, Japan

Filed Sept. 30, 1969, Ser. No. 862,508

Claims priority, application Japan, Oct. 12, 1968, 43/74456

Int. Cl. C01b *25/26*

U.S. Cl. 23—105 **6 Claims**

Process for economically producing chromium-containing phosphoric acid solution by reacting phosphoric acid produced by the wet process, containing hydrofluosilicic acid, with a chromate and removing the precipitated silicofluoride.

3,652,205

PROCESS FOR THE MANUFACTURE OF MADRELL'S SALT

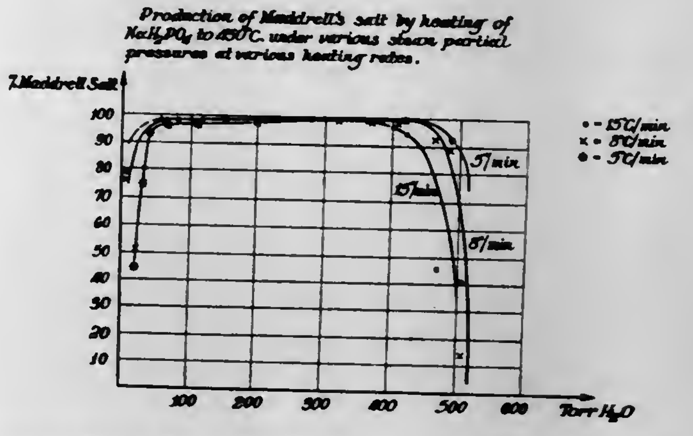
Winfried Kern, Hurth near Cologne; Gero Heymer, Knapsack near Cologne, and Heinz Harnisch, Lovenich near Cologne, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed June 6, 1968, Ser. No. 734,941

Claims priority, application Germany, June 27, 1967, K 62653

Int. Cl. C01b *25/30*

U.S. Cl. 23—106 **10 Claims**



Production of Maddrell's salt by heating feed material consisting of monobasic sodium phosphate to a temperature substantially of 450° C., comprising carrying out the heating step in the temperature range between 200° and 450° C. while maintaining in the feed material a steam partial pressure between 50 and 450 mm. mercury.

3,652,206

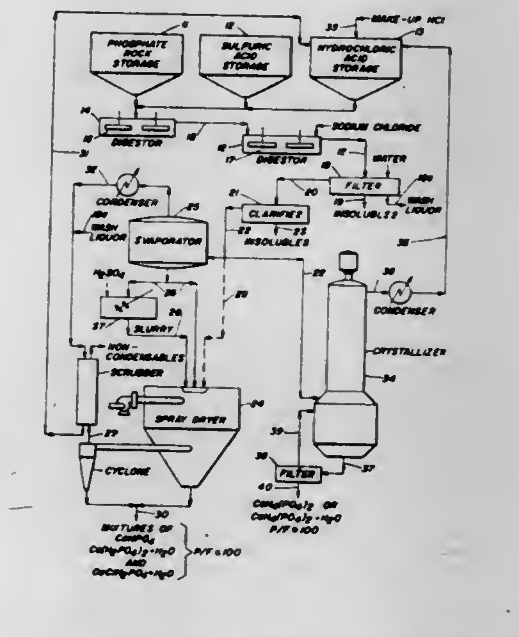
DEFLUORINATED CALCIUM PHOSPHATE COMPOSITIONS, AND METHOD OF PREPARING AND USING SAME

Ashok Babubhai Amin, Princeton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 17, 1969, Ser. No. 791,944

Int. Cl. C01b *25/32*

U.S. Cl. 23—109 **6 Claims**



Novel feed grade calcium phosphate compositions are provided which contain calcium chlorophosphate in varying amounts. This novel composition and other heretofore known varieties of feed grade calcium phosphates are prepared by low temperature drying steps (spray drying or crystallization-evaporation) of solutions or slurries which have been partially defluorinated to the extent that the solution P/F ratio is at least 30–35 but less than 100. The novel compositions described above have adequate levels of phosphorus availability to animals thereby permitting their usage as an animal feed supplement.

3,652,207
PROCESS FOR THE PRODUCTION OF SYNTHETIC DIOPSIDE

Josef Wuhrer, Wulfrath; Heinz-Georg Kurczyk, Monchengladbach, and Adrian Ottenheym, Wulfrath, all of Germany, assignors to Rheinische Kalksteinwerke GmbH, Wulfrath, Germany

Filed Apr. 10, 1970, Ser. No. 27,434
Claims priority, application Germany, Apr. 11, 1969, P 19 18 459.9
Int. Cl. C01b *33/22, 33/24*
U.S. Cl. 23—110 R **5 Claims**

A process for the production of synthetic diopside wherein dolomite and silicic acid are hydrothermally converted into calcium and magnesium hydrosilicates which are in turn converted by dehydration into diopside. In the hydrothermal conversion from 10 to 40 percent by weight of water is added to the dolomite and silicic acid in a closed reaction vessel, and the reaction mixture is preferably simultaneously mixed and comminuted. The resulting calcium and magnesium hydrosilicates are preferably heated to a temperature of 1,200° to 1,250° C. and are converted into diopside.

3,652,208
ALUMINA EXTRACTION FROM ALUMINO-SILICATE ORES AND POTASSIUM SULFATE ORES

Maksymilian Burk, Los Angeles; William M. Bowes, Palos Verdes Estates, and Herman C. Krieg, Jr., Palos Verdes Peninsula, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed May 4, 1970, Ser. No. 34,478
Int. Cl. C01f *7/12*
U.S. Cl. 23—143 **9 Claims**

Alumino-silicate ore and a potassium sulfate bearing ore such as polyhalite or langbeinite are reacted by reducing and then calcining. Reduction decomposes the reactants and produces H_2S. Calcining produces a sinter containing potassium aluminate and silicates. The aluminate is leached from the sinter with KOH and/or K_2CO_3 solution and then precipitated to $Al(OH)_3$ with SO_2 or CO_2. Subsequent calcining yields alumina; some of the potassium carbonate or sulfite is recycled back into the system and the balance is converted to potassium salts such as potassium sulfate or potash.

3,652,209
PROCESS FOR THE PRODUCTION OF A CYANIC ACID-AMMONIA GAS MIXTURE

Alfred Schmidt; Ferdinand Weinrotter, and Walter Muller, all of Linz Donau, Austria, assignors to Osteneichische Stickstoffwerke Aktiengesellschaft, Linz Donau, Austria

Filed Feb. 26, 1969, Ser. No. 802,685
Claims priority, application Austria, Mar. 1, 1968, 1988/68
Int. Cl. C01c *3/00, 1/00*
U.S. Cl. 23—151 **4 Claims**

The present invention is directed to a method of producing a gaseous mixture of cyanic acid and ammonia of low cyanuric acid content by introducing molten urea in a fluidized bed of at least 330° C. wherein it is heated to 300° to 480° C. within less than 1 second, the urea being introduced through the injection point with the latter being surrounded concentrically by a blowing gas issuing around the molten urea at a speed between 20 m./sec. to 100 m./sec.

3,652,210
DEARSENICATION OF PHOSPHATE ROCK

Raymond Anthony Smith, Walsall, and John Norman Sansom, Birmingham, both of England, assignors to Electric Reduction Company of Canada Limited, Islington, Ontario, Canada

Filed July 3, 1969, Ser. No. 839,043
Claims priority, application Great Britain, July 11, 1968, 33,065/68
Int. Cl. C01b *25/00, 25/02, 25/12*
U.S. Cl. 23—165 **12 Claims**

Elemental phosphorus suitable for conversion in P_2O_5 for use in foodstuffs as a result of its low arsenic content, is obtained via the electrothermal route from phosphate rock which has previously been mixed with sufficient phosphoric acid to reduce the CaO to P_2O_5 ratio to below 3 : 1 and then calcined at at least 1,000° C.

3,652,211
PROCESS FOR THE PREPARATION OF AN ANHYDRIDE OF TRIVALENT PHOSPHORUS USING EXCITED CARBON DIOXIDE OR NITRIC OXIDE

Eugene J. Mezey, Upper Arlington, and Robert E. Hall, Wyoming, both of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Sept. 25, 1969, Ser. No. 861,159
Int. Cl. C01b *25/00, 25/12, 25/16*
U.S. Cl. 23—165 **13 Claims**

A process for preparing an anhydride of trivalent phosphorus from elemental phosphorus using an electronically-excited carbon dioxide plasma stream or an electronically-excited nitric oxide plasma stream is disclosed. The anhydride of trivalent phosphorus is useful as an intermediate in the preparation of detergency builders for use in detergent compositions.

3,652,212
MULTI-STEP IN SITU POLYMER FORMATION TO PRODUCE FABRIC HAVING IMPROVED SOILING CHARACTERISTICS

Greville Machell, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 17, 1967, Ser. No. 631,165. **The portion of the term of the patent subsequent to Apr. 9, 1985, has been disclaimed.**
Int. Cl. D06m *15/36, 15/58, 15/72*
U.S. Cl. 8—115.5 **17 Claims**

A process for improving soil release characteristics of textile material which comprises applying thereto a polymerizable compound and forming in situ a synthetic acid polymer comprising at least 10 weight percent acid calculated as acrylic acid, and the product produced by this process. Preferably, a textile resin and a textile resin catalyst also are applied to the textile material and the treated textile material is subjected to resin curing conditions.

3,652,213
PROCESS FOR THE PREPARATION OF AN ANHYDRIDE OF TRIVALENT PHOSPHORUS

Horatio H. Krause; Justin S. McNulty, both of Columbus, and Robert E. Hall, Wyoming, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

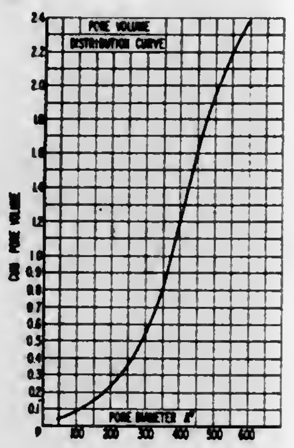
Filed Sept. 25, 1969, Ser. No. 861,164
Int. Cl. C01b *25/12, 25/00*
U.S. Cl. 23—165 **8 Claims**

A process for the preparation of an anhydride of trivalent phosphorus comprising subjecting elemental phosphorus to a plasma stream of thermally- and electronically-excited carbon dioxide is disclosed. The anhydride of trivalent phosphorus is useful as an intermediate in the preparation of detergency builders for use in detergent compositions.

3,652,214
PREPARATION OF SILICA GELS

Henri A. Aboutboul; Jerome H. Krekeler, both of Cincinnati, Ohio, and William Kirch, Clinton, Iowa, assignors to National Petro Chemicals Company, Inc., New York, N.Y.

Filed Aug. 6, 1968, Ser. No. 750,733
Int. Cl. C01b *33/16*
U.S. Cl. 23—182 **16 Claims**

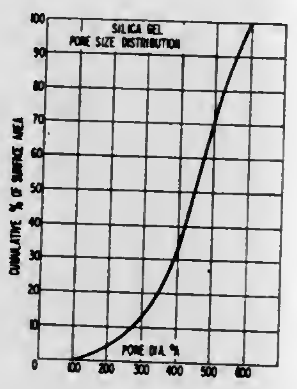


Silica gels having narrow pore diameter distribution in the range of 300–600 A and surface areas in the range from 200–500 m.²/g., and the process of preparing such silica gels directly from water, comprising critically controlled steps of precipitation of the silica gel, heat aging the precipitated silica hydrogel slurry, washing the aged product with solutions of salts having a displacing effect on sodium, disintegrating the gel and freeze drying the hydrogel so as to remove substantially all of the water i.e., vacuum subliming the water from the gel after freezing said hydrogel particles at a temperature sufficient to maintain the water in the pores in the frozen state.

3,652,215
PREPARATION OF SILICA GELS

Henri A. Aboutboul, Cincinnati, Ohio; William Kirch, Clinton, Iowa, and Jerome H. Krekeler, Cincinnati, Ohio, assignors to National Petro Chemicals Company, Inc., New York, N.Y.

Filed Aug. 6, 1968, Ser. No. 750,734
Int. Cl. C01b *32/16*
U.S. Cl. 23—182 R **19 Claims**

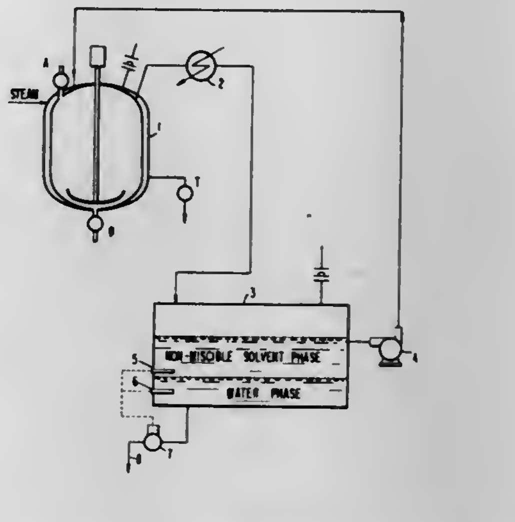


Silica xerogels having narrow pore diameter distribution in the range of 300–600 A. and surface areas in the range of from 200–500 m.²/g., and process for preparing such silica xerogels comprising critically controlled steps of precipitation of the silica gel, heat aging the precipitated silica hydrogel slurry, washing the aged product with solutions of salts having a displacing effect on sodium, disintegrating the gel, displacing the water, drying the gel and calcining.

3,652,216
PREPARATION OF SILICA GELS

Jerome H. Krekeler; Henri A. Aboutboul, both of Cincinnati, Ohio, and William Kirch, Clinton, Iowa, assignors to National Petro Chemicals Company, Inc., New York, N.Y.

Filed Oct. 11, 1968, Ser. No. 766,693
Int. Cl. C01b *33/16*
U.S. Cl. 23—182 **18 Claims**

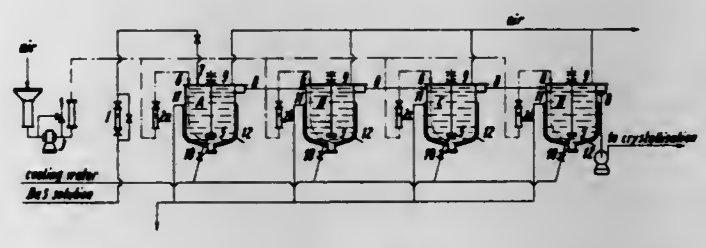


Silica xerogels having a narrow pore diameter distribution in the range of 300–600 A. and surface areas in the range from 200–500 m.²/g. and the process of preparing such xerogels comprising critically controlled steps of precipitation of the silica gel, heat aging the precipitated silica hydrogel slurry, washing the aged product with solutions of salts having displacing effect on sodium, disintegrating the gel, drying the gel by azeotropic distillation with a solvent which is nonmiscible with water, and calcining. Also, a process for preparing such xerogels wherein the non-water miscible solvent is continuously recycled so that a minimum amount of solvent need be used.

3,652,217
METHOD FOR THE PRODUCTION OF BARIUM HYDROXIDE

Giulio Kemeny, Massa; Mario Gaboardi, Verona; Aldo Santini; Mario Testori, both of Massa; Paul-Dietrich Reinhardt, Marina Di Massa, all of Italy; Hartmut Simoleit, and Ludwig Walter, both of Hanover, Germany, assignors to Kali-Chemical Aktiengesellschaft, Hanover, Germany

Filed Sept. 11, 1969, Ser. No. 857,049
Claims priority, application Germany, Sept. 11, 1968, P 17 92 505.2; Sept. 12, 1968, P 17 92 515.4
Int. Cl. C01f *11/10;* **C01b** *17/64*
U.S. Cl. 23—186 **17 Claims**



The continuous production of barium hydroxide by the oxidation of a barium polysulfide-containing-barium sulfide solution using oxygen-containing gases is carried out between 45° and 80° C. in several stages placed in series. The oxidation is stopped at a point within specified values. Also, certain molar ratios of total sulfur to monosulfide sulfur in the barium sulfide-starting solution are maintained. Liquors obtained during recrystallization can be purified by a stagewise oxidation.

3,652,218
LOW IMPURITY HYDRAZINE

James G. Rigsby, Lake Charles, La., assignor to Olin Corporation, New Haven, Conn.

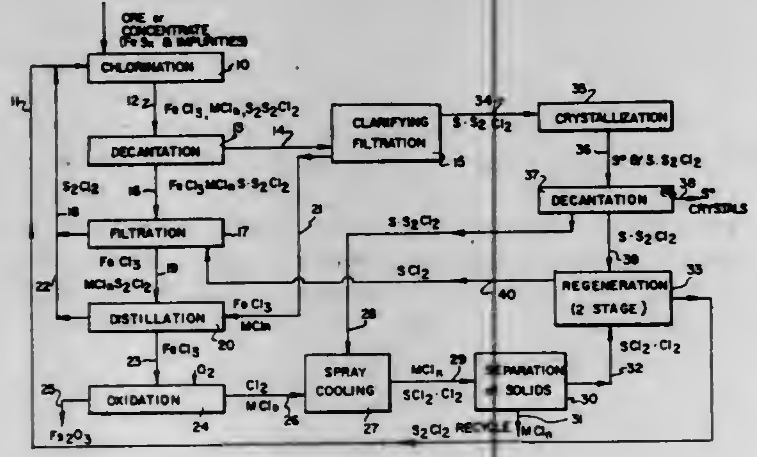
Filed Dec. 2, 1969, Ser. No. 881,589
Int. Cl. C01c *1/00*
U.S. Cl. 23—190 R **6 Claims**

This invention relates to the purification of aqueous solutions of hydrazine and lower alkyl hydrazines to remove impurities. More particularly, it relates to the removal of sodium and other cations, chloride, carbonate and other anions from aqueous solutions of such hydrazines. The product solutions have, at most, extremely low limits of ionic impurities.

3,652,219
CHLORINATION OF IRON SULFIDES TO PRODUCE FERRIC CHLORIDE AND SUBSEQUENT OXIDATION TO PRODUCE IRON OXIDE AND CHLORINE

Ernest Peters, and Roderick McElroy, both of Vancouver, British Columbia, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Sept. 2, 1969, Ser. No. 854,444
Int. Cl. C01g *49/06, 49/10;* **C01b** *7/02*
U.S. Cl. 23—200 **15 Claims**



A process for decomposing iron sulfides in which finely ground iron sulfide is chlorinated with five to eight times the stoichiometrically required amount of liquid S_2Cl_2 containing dissolved elemental sulfur. After the chlorination, the solid material rich in ferric chloride is removed by decantation, filtration, etc., and the liquid consisting of excess S_2Cl_2 with elemental sulfur dissolved therein is cooled to crystallize out some of the elemental sulfur.

The ferric chloride is oxidized with oxygen to form iron oxide and chlorine. The iron oxide is recovered while the chlorine is used to regenerate the liquid S_2Cl_2 still containing some dissolved sulfur and the regenerated S_2Cl_2 is returned to the chlorination stage.

3,652,220
METHOD OF MANUFACTURING SYNTHETIC DIAMONDS

Cedric E. Lindstrom, Robertsfors, Sweden, assignor to Scandimant Aktiebolag, Robertsfors, Sweden

Continuation of application Ser. No. 612,483, Jan. 30, 1967, now abandoned. This application May 13, 1970, Ser. No. 37,425
Claims priority, application Sweden, Feb. 11, 1966, 1754/66: June 23. 1966, 8611/69
Int. Cl. C01b *31/06*
U.S. Cl. 23—209.1 **3 Claims**

Synthetic diamonds are produced by subjecting carbonaceous material to heat and pressure in the presence of a metallic solvent having projecting portions.

3,652,221
PROCESS FOR PRODUCING CARBON FIBERS

William Edward Sloka, Fostoria, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 7, 1969, Ser. No. 814,161
Int. Cl. C01b *31/07*
U.S. Cl. 23—209.4 **12 Claims**

Carbon fibers are produced by carbonizing a partially carbonized cellulosic base fiber by subjecting it to a temperature within the range of from 1,900° to 2,100° C. while under an applied tensional force. The carbon fibers produced in this manner are capable of withstanding the application of high stress during subsequent graphitization without breaking and can be stretched to a high degree.

3,652,222
BILIRUBIN ASSAY

Jerry W. Denney, and Larry W. Denney, both of Indianapolis, Ind., assignors to American Monitor Corporation, Indianapolis, Ind.

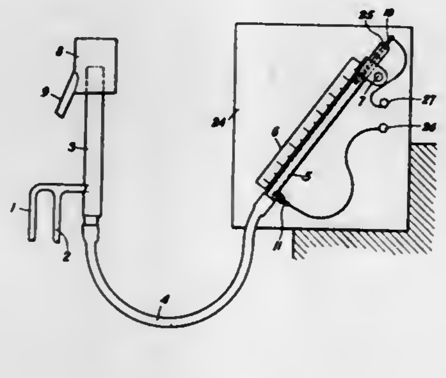
Filed Apr. 7, 1969, Ser. No. 814,161
Int. Cl. G01n *21/24, 31/22, 33/16*
U.S. Cl. 23—230 B **9 Claims**

The use of an acid solution of hydroxylamine in the analytical determination of the quantity of direct-reacting and indirect-reacting bilirubin present in blood serum or body fluids, to block reaction of bilirubin after a certain stage of the assay and to prevent interference of substances contained in erythrocytes in the assay and to stabilize the azobilirubin color formed in the reaction, and also the use of a form of hydroxylamine in place of the unstable ascorbic acids used in certain assay procedures.

3,652,223
METHOD AND APPARATUS FOR CONTINUOUSLY MEASURING THE CONCENTRATION OF A REACTANT IN A LIQUID CARRIER

Borivoj Ludvik, Jaromer, Czechoslovakia, assignor to Vyzkumny ustav zuslechtovaci, Dvur Kralove nad Labem, Czechoslovakia

Filed Aug. 5, 1969, Ser. No. 847,546
Int. Cl. G01l *7/18;* **G01n** *9/26, 27/10*
U.S. Cl. 23—230 R **12 Claims**



The concentration of a reactant in a liquid carrier is continuously determined by continuously mixing the carrier with another one containing a reactant capable to react with the tested reactant under gas generation, and by continuously measuring changes in either the overall specific gravity of the resulting gas/liquid mixture, or the overall electrical conductivity of the mixture. Suitable simple apparatus is shown.

3,652,224
METHOD FOR DETECTING CRACKS IN METAL BODIES

Lyman A. Johnson, and Michael F. Henry, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,695
Int. Cl. G01n *21/16, 21/38;* **C23f** *7/26*
U.S. Cl. 23—230 R **9 Claims**

A nondestructive method for detecting cracks in a metal body by selective corrosion of the surface portion within the cracks to enlarge them sufficiently so that they can then be detected by conventional techniques. Specifically, a crack enlarging solution which is an electrolyte containing halide ions is applied to the surface of the body to be tested. The solution is formulated so that it does not corrode the open surface portion of the body but is sufficiently reactive to corrode the surface portion within cracks. A conventional penetrating dye liquid is then applied to the same surface of the metal body and the cracks are detected in a conventional manner.

3,652,225
COLOR METHOD FOR DETECTING CRACKS IN METAL BODIES

Louis F. Coffin, Jr., and Lyman A. Johnson, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,696
Int. Cl. G01n *21/16, 21/38;* **C23f** *7/26*
U.S. Cl. 23—230 R **7 Claims**

A nondestructive color method for detecting cracks in a metal body by selective corrosion of the surface portion within the cracks. Specifically, a color-forming aqueous acid indicating solution containing halide ions and a color-forming indicator is applied to the surface of the body to be tested. The solution is formulated so that it does not corrode to any significant extent the open surface portion of the body but is sufficiently reactive to corrode the surface portion within cracks resulting in the formation of metallic ions. The color-forming indicator is of the type which reacts with the thus formed metal ions to form a distinctive colored compound at the crack locations.

3,652,226
ANODIC INHIBITOR-COLOR METHOD FOR DETECTING CRACKS IN METAL BODIES

Louis F. Coffin, Jr., and Lyman A. Johnson, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

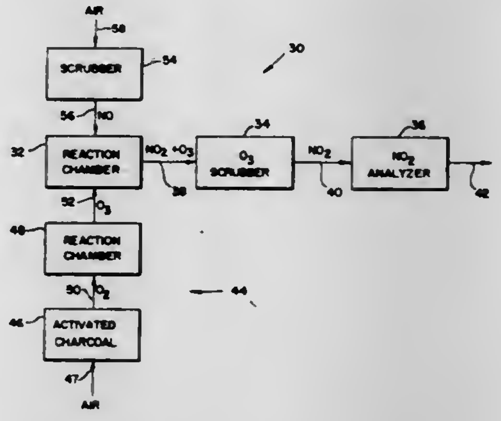
Filed Dec. 31, 1969, Ser. No. 889,699
Int. Cl. G01n *21/16, 21/38;* **C23f** *7/26*
U.S. Cl. 23—230 R **10 Claims**

A nondestructive color method for detecting cracks in a metal body by selective corrosion of the surface portion within the cracks. Specifically, a color-forming electrolyte containing halide ions, a color-forming indicator and an anodic inhibitor is applied to the surface of the body to be tested. The electrolyte solution is formulated so that it does not corrode to any significant extent the open surface portion of the body but is sufficiently reactive to corrode the surface portion within cracks, resulting in the formation of metallic ions. The color-forming indicator is of the type which reacts with the thus formed metal ions to form a distinctive colored compound at the crack locations.

3,652,227
NITRIC OXIDE ANALYSIS

John N. Harman, III, Placentia, and Radhakrishna M. Neti, Brea, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 15, 1969, Ser. No. 885,007
Int. Cl. B01d *53/34;* **C01b** *21/46;* **G01n** *31/10*
U.S. Cl. 23—232 R **24 Claims**

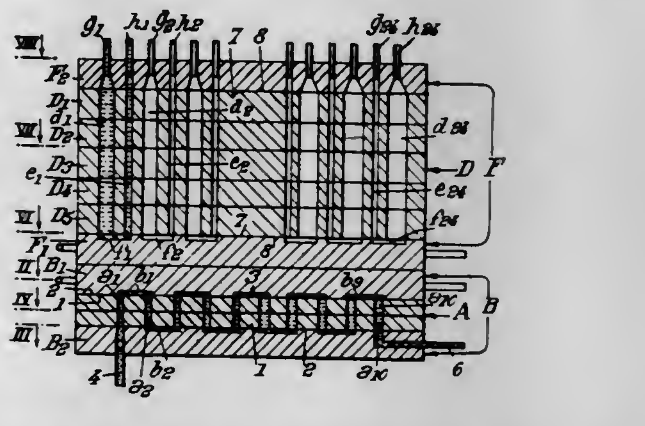


Method and apparatus for determining the nitric oxide content of a sample gas stream. The nitric oxide in the gas stream is reacted with an excess amount of ozone so as to completely convert the nitric oxide into nitrogen dioxide. The resulting gas containing nitrogen dioxide and residual ozone is passed through a scrubber which removes the ozone and does not affect the nitrogen dioxide content of the gas. The resulting gas is then analyzed for its NO_2 content, which is a function of the nitric oxide content of the sample gas. The method and apparatus may also be utilized for determining the total amount of nitrogen dioxide and nitric oxide in a sample gas. The invention is particularly applicable to the monitoring of air for air pollution control.

3,652,228
DEVICE FOR PORTIONING AND TITRATING LIQUID SAMPLES

Claude Bernard, 4, rue Saint Georges, 35, Rennes, France

Filed July 24, 1969, Ser. No. 844,502
Claims priority, application France, July 26, 1968, 160889
Int. Cl. B01l *11/00;* **G01n** *31/16*
U.S. Cl. 23—253 R **14 Claims**

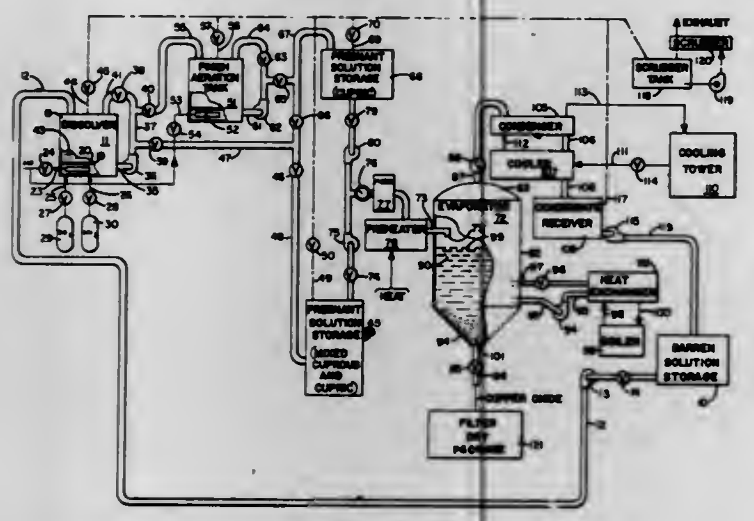


The device is intended to portion a liquid sample into several portions of determined volume. It comprises members that are relatively displaceable from a first relative position to a second relative position. One of these members comprises a series of portion-receiving channels defining the above-mentioned volumes. The other member comprises a first series of channels which put the portion-receiving channels in communication with one another and with the exterior so that they can be filled with the liquid, in the first relative position, and a second series of channels communicating with the portion-receiving channels for collecting the portions retained in these latter channels, in the second relative position.

3,652,229

APPARATUS FOR PRODUCTION OF METAL OXIDES

Zane L. Burke, 14465 Oak Street, Whittier, Calif.
Filed Mar. 12, 1969, Ser. No. 806,386
Int. Cl. B01j *1/00;* **C01g** *3/02;* **C22b** *3/02*
U.S. Cl. 23—260 **13 Claims**

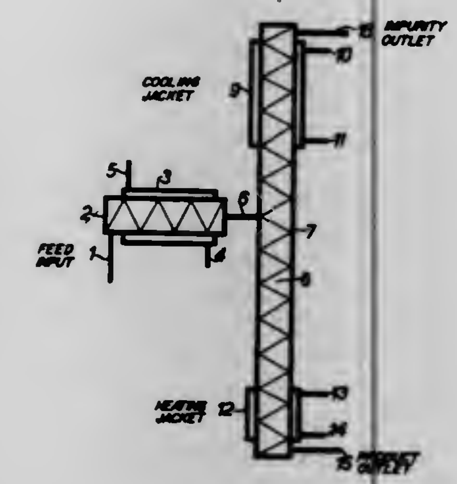


Apparatus for use in a hydrometallurgical system for producing copper or zinc oxide. A closed evaporator tank partially is filled with mild ammonia hydroxide maintained between 214° and 218° F. by recirculation through a heat exchanger external to the evaporator. A pressure of between 5 and 10 p.s.i. is maintained in the evaporator. When a metal-rich ammonia carbonate solution formed by leaching copper or zinc in an oxygenated dissolver tank is injected onto the surface of the ammonia hydroxide, a rapid reaction takes place, causing precipitation of the desired oxide and evaporation of NH_3, CO_2 and water. The precipitated oxides may be removed either continuously or in batches from the evaporator. The evaporated gases are condensed and reused in the leach solution. Efficient oxygenation in the dissolver is achieved using a novel aerator comprising a hollow carbon rod.

3,652,230

CRYSTALLIZATION APPARATUS WITH VERTICAL HELICAL CONVEYOR

Geoffrey William Girling, Hempstead, England, assignor to Benzole Producers Limited, London, England
Filed Dec. 24, 1968, Ser. No. 786,582
Claims priority, application Great Britain, Dec. 29, 1967, 59,008/67; Feb. 8, 1968, 6,208/68
Int. Cl. B01d *9/04*
U.S. Cl. 23—273 F **2 Claims**

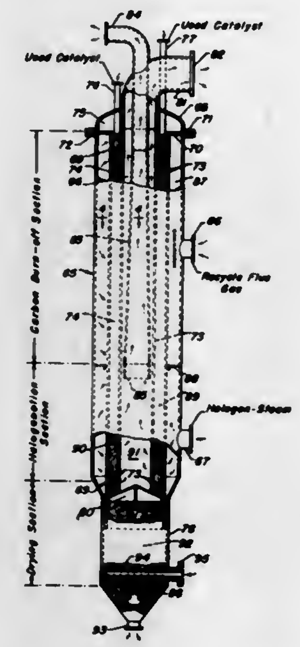


Organic and inorganic substances are purified by a crystallization technique in which the initial material is first converted into a crystal-liquid slurry (by pre-melting and then cooling solid charging stock and pre-cooling liquid charging stock) and then feeding the slurry into a vertical crystallizing column wherein a temperature gradient is set up between the cooled upper end and the lower end thereof. A helical conveyor causes the crystals to descend in a spiral path to the bottom of the column in countercurrent to an upward flow of displaced liquid, where they are melted and drawn off as purified material. The technique results in an increased throughput through the column without affecting the purity of the product.

3,652,231

RECONDITIONING SYSTEM FOR MOVING COLUMN OF REFORMING CATALYST

Arthur R. Greenwood, Niles, and Kenneth D. Vesely, Arlington Heights, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Sept. 25, 1969, Ser. No. 860,904
Int. Cl. B01j *9/08, 11/18, 11/80*
U.S. Cl. 23—288 G **10 Claims**



A system for effecting the reconditioning of catalyst particles used in the reforming of a hydrocarbon stream which provides a vertically elongated confined chamber that will have the particles flow down between screens of perforated plates in a descending column through a carbon burn-off section and a halogenation section. A preferred design provides for an annular-form column of particles with gas flows being out-to-in laterally through the column and, in addition, incorporates a drying section in the lower portion of the chamber. An overall system with a preferred design also combines means for scrubbing the flue gas stream from the burn-off section and returning it to the chamber and, in addition, combines means for continuously recycling a steam-halogen-air stream through the halogenation section.

3,652,232

METHOD FOR THE PURIFICATION OF HYDROUS ALUMINUM CHLORIDE

Richard W. Voight, Franklin, N.J., and David S. Hoffenberg, Bethlehem, Pa., assignors to Pearsall Corporation, Phillipsburg, N.J.
Continuation of application Ser. No. 717,021, Mar. 28, 1968, now abandoned. This application June 25, 1970, Ser. No. 56,059
Int. Cl. C01f *7/62;* **B01d** *9/02*
U.S. Cl. 23—300 **1 Claim**

In a method for the purification of hydrous aluminum chloride to remove iron, copper and other undesirable trace metals, and any organic contaminants present, hydrous aluminum chloride is precipitated from its aqueous solution by passing hydrogen chloride or a gas containing hydrogen chloride into the solution. The precipitate of hydrous aluminum chloride, which is separated from the aqueous solution by filtration is then washed, and either dried to produce pure aluminum chloride hexahydrate crystals, or redissolved to produce aqueous solutions of purified hydrous aluminum chloride of any desired strength. The iron, copper, and other undesirable trace metals and organic contaminants remain in the mother liquor.

3,652,233

METHOD OF IMPROVING RECOVERY OF NEPTUNIUM IN THE PUREX PROCESS

John L. Swanson, Richland, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Dec. 29, 1969, Ser. No. 888,831
Int. Cl. B01d *11/00*
U.S. Cl. 23—341 **6 Claims**

The recovery of neptunium values from the Purex Process for reprocessing irradiated nuclear reactor fuel is improved by adding a rate-accelerating material to increase the rate of oxidation of the neptunium in the nitric acid solution in the first extraction column. The rate-accelerating material is formed by adding 1-nitropropane to a sodium hydroxide solution to form the aci-form of nitropropane, then adding sodium nitrite and acidifying the solution by the addition of nitric acid.

3,652,234

SILVERY-TONE MATTE-FINISH FLASH COAT ALLOY PRODUCT

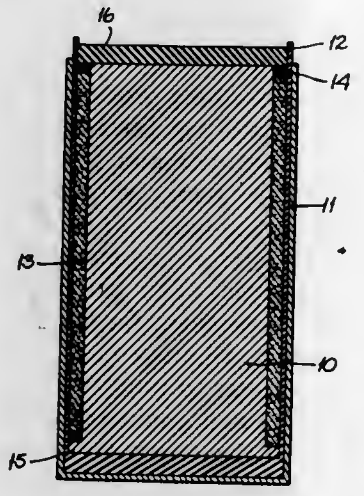
Anthony J. Lamantia, Toronto, Ohio, assignor to National Steel Corporation
Original application Mar. 21, 1967, Ser. No. 624,699, now abandoned. Divided and this application May 20, 1969, Ser. No. 842,059
Int. Cl. B21c *27/00*
U.S. Cl. 29—183.5 **3 Claims**

Matte-finish tinplated flat rolled steel product having about 0.01 to 0.03 pound per base box inner coating of tin-iron alloy and an outer coating of matte-finish tin sufficient to bring the total coating weight to about 0.1 pound per base box, produced by applying a flash coating of tin to the steel product, alloying the flash coating of tin with the base metal, and electroplating a matte-finish layer of free tin to the alloy coated product.

3,652,235

COMPOSITE METAL ARTICLES

Charles E. Manilla; Harold H. Honaker, both of Huntington, and David O. Gothard, Ona, all of W. Va., assignors to The International Nickel Company, Inc., New York, N.Y.
Filed Apr. 14, 1967, Ser. No. 630,987
Int. Cl. B32b *15/00*
U.S. Cl. 29—194 **6 Claims**

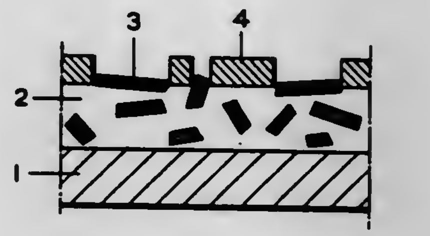


Production of clad stock, e.g., bar, tubing, pipe, etc., wherein the cladding is prepared by pressing metal powders to desired form, the green form is sintered and coextruded hot with the core or basis material. Highly corrosion resistant cladding metals can be applied to core or basis materials of iron-group metals including common structural materials and high recovery of the cladding material is obtained. Clad tubes having a cladding of 50 percent nickel-50 percent chromium alloy on substrates of steels, nickel alloys, including nickel-chronium alloys, etc., can readily be produced for use in applications requiring resistance to severe corrosive conditions at various temperatures.

3,652,236

AN ARTICLE HAVING A LAYER CONTAINING NONCONDUCTIVE ORGANIC FIBERS AND METHOD OF PRODUCING

Jules Marie Odekerken, Vught, Netherlands, assignor to N. V. Research Holland, Engelsweg, Hertogenbosch, Netherlands
Filed Oct. 23, 1965, Ser. No. 503,659
Int. Cl. B32b *15/00*
U.S. Cl. 29—195 P **18 Claims**

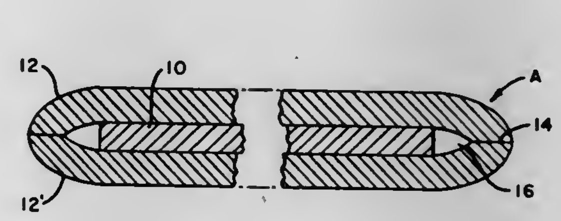


This invention pertains to a composite layered article and to a method for producing the article. The article consists of a body having an electrically conductive layer containing nonconductive organic fibers and a layer of chromium exterior to the fiber containing layer. There may be a metal layer intermediate the body and the organic fiber containing layer. The layers may be deposited electrolytically.

3,652,237

COMPOSITE BRAZING ALLOY OF TITANIUM, COPPER AND NICKEL

Howard Mizuhara, San Mateo, Calif., assignor to Western Gold & Platinum Company
Original application Mar. 27, 1968, Ser. No. 716,455, now Patent No. 3,561,099. Divided and this application July 28, 1970, Ser. No. 58,918
Int. Cl. B23p *3/06*
U.S. Cl. 29—198 **2 Claims**



A malleable composite product comprising at least two malleable metals in proportions that form brittle alloys with the metals arranged in a pair of overlapping outer layers and at least one inner layer. The outer layers are hermetically sealed to each other around the inner layer(s) and the cross-sectional weight ratio of metals is constant across the entire product.

3,652,238
ANTI-STATIC FUEL COMPOSITION

Jerzy J. Bialy, Lagrangeville; William R. Siegart, Poughkeepsie, both of N.Y.; William D. Blackley, Lake Elmo, Minn., and Harry Chafetz, Poughkeepsie, N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 873,706, Nov. 3, 1969, now abandoned. This application Aug. 6, 1970, Ser. No. 61,796

Int. Cl. C10l *1/20, 1/22*

U.S. Cl. 44—62 **11 Claims**

Antistatic fuel composition comprising a mixture of hydrocarbons in the gasoline, kerosene and/or furnace oil boiling ranges and a minor amount of a reaction product of an aliphatic monoamine having the formula RNH_2 in which R is an aliphatic radical having from eight to 20 carbon atoms and either a fluorinated polystyrene having the empirical formula:

$(C_{16}H_3F_{23})_x$ in which x is an average integer between 3 to 5, or a fluorinated polypropylene having the empirical formula:

$(C_3HF_5)_x$ in which x has a value from 20 to 40, and a method for preparing the above-noted aliphatic monoamine derivatives.

3,652,239
THERMALLY STABLE JET FUEL COMPOSITION

William M. Sweeney, Wappingers Falls; Jerzy J. Bialy, Lagrangeville, and Kenneth L. Dille, Wappingers Falls, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 17, 1969, Ser. No. 877,487

Int. Cl. C10l *1/18, 1/22*

U.S. Cl. 44—63 **9 Claims**

Thermally stable turbine or jet fuel composition containing in combination an ethylene C_3 to C_4 olefin-diene terpolymer/maleic anhydride-alkylamine reaction product and an aldehyde-amine condensation product and a method of operating a turbine engine on said fuel composition.

3,652,240
DETERGENT MOTOR FUEL COMPOSITION

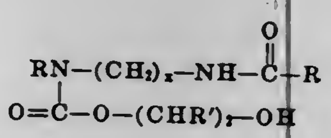
Peter Dorn, Lagrangeville, and Kenneth L. Dille, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 26, 1970, Ser. No. 23,026

Int. Cl. C10l *1/18, 1/22*

U.S. Cl. 44—66 **3 Claims**

Detergent motor fuel composition containing a carbamate represented by the formula:



$$\begin{array}{l} \mathrm{RN}-(\mathrm{CH_2})_x-\mathrm{NH}-\overset{\overset{\mathrm{O}}{\|}}{\mathrm{C}}-\mathrm{R} \\ \quad | \\ \mathrm{O}=\mathrm{C}-\mathrm{O}-(\mathrm{CHR'})_2-\mathrm{OH} \end{array}$$

in which R is a hydrocarbyl radical having from about 12 to 20 carbon atoms and R′ is hydrogen or an alkyl radical having from one to two carbon atoms and x has a value from 2 to 4.

3,652,241
THERMALLY STABLE FUEL COMPOSITION

Jerzy J. Bialy, and Peter Dorn, both of Lagrangeville, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed May 15, 1970, Ser. No. 37,914

Int. Cl. C10l *1/18, 1/22*

U.S. Cl. 44—71 **4 Claims**

Thermally stable light distillate turbine fuel composition containing 1) a substituted carbamate and 2) an aldehyde-amine condensation product, and a method for operating a turbine engine.

3,652,242
LIQUID HYDROCARBON FUELS CONTAINING ALKYLAMINE SALTS

Harry J. Andress, Jr., and Julius Capowski, both of Pitman, N.J., assignors to Mobil Oil Corporation

Original application Sept. 11, 1964, Ser. No. 395,933, now abandoned. Divided and this application Feb. 2, 1970, Ser. No. 12,502

Int. Cl. C10l *1/26*

U.S. Cl. 44—71 **7 Claims**

Liquid hydrocarbon fuels are provided which contain, as stabilizing agents, neutral primary alkylamine salts of an alkyl phosphoric acid ester having from two to eight phosphorous atoms, an acid number from about 200 to about 750 and from one to 12 carbon atoms per alkyl group, wherein the primary alkylamine comprises a mixture of branched chain amines having from about eight to about 18 carbon atoms and having the primary amine groups attached to a tertiary carbon atom.

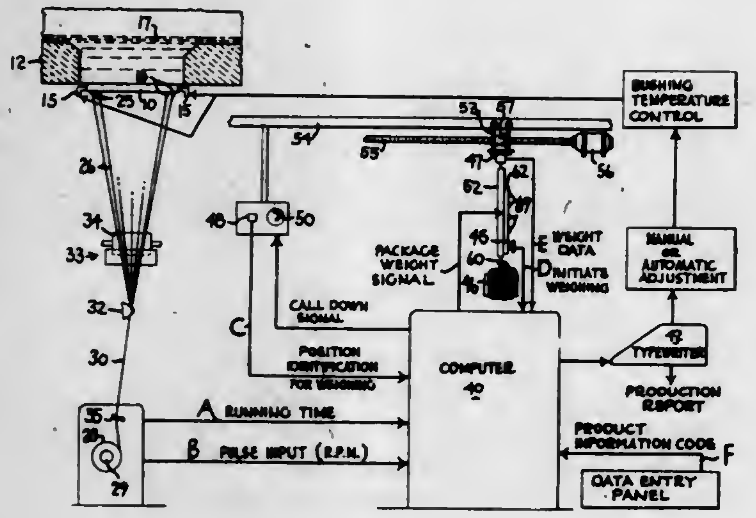
3,652,243
METHOD AND APPARATUS FOR CONTROLLING THE DIAMETER OF GLASS FIBERS

Thomas H. Jensen, Murrysville, Pa., and Howard M. Bennett, Lexington, N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of application Ser. No. 702,331, Feb. 1, 1968, now abandoned. This application Aug. 26, 1970, Ser. No. 67,260

Int. Cl. C03b *37*

U.S. Cl. 65—2 **10 Claims**



A glass fiber strand forming process which employs a computer to monitor a plurality of fiber forming positions and indicate whether the fiber diameter is correct and whether or not a process variable change should be made before the next fiber forming run is begun. The computer also gives a signal to categorize each forming package according to a plurality of weight categories. This process is accomplished by an apparatus having a bushing for supplying molten streams of glass, a winder for gathering the fibers which supplies a pulse input to a computer to record the running time, a conveyor to transport formed packages to a weight scale. The scale is connected to the computer to send a weight signal thereto whereas a signal is generated and is sent to the bushing to control the temperature of the bushing and the diameter of the forming fibers.

3,652,244
CHEMICAL TREATMENTS FOR MODIFYING PHYSICAL PROPERTIES OF VARIOUS MATERIALS

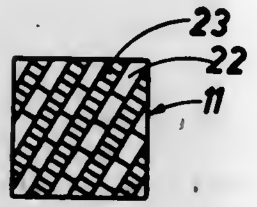
Emile Plumat, Gilly, Belgium, assignor to Glaverbel S.A., Watermael Boitsfort, Belgium

Filed Apr. 25, 1968, Ser. No. 723,981

Claims priority, application Luxembourg, Apr. 27, 1967, 53547; Great Britain, Feb. 27, 1968, 9,493/68

Int. Cl. C03c *15/00, 17/00*

U.S. Cl. 65—30 **6 Claims**



Method and apparatus for chemically treating glass, e.g., chemical tempering, wherein different areas of the glass are subjected to different treatment. For example, certain areas may be subjected to a stronger treatment than others to provide different areas of the glass with different characteristics.

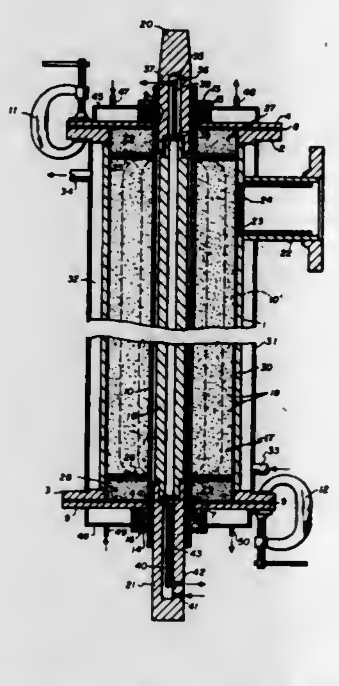
3,652,245
FURNACE FOR MAKING FUSED QUARTZ HOLLOW SLUGS

Lothar Jung, Millington, N.J., assignor to Amersil Inc., Hillside, N.J.

Filed Sept. 22, 1970, Ser. No. 74,425

Int. Cl. C03b *5/22, 23/20*

U.S. Cl. 65—157 **9 Claims**



A furnace for making fused quartz hollow slugs comprising a cylindrical tubular housing having closure means at both ends, a quartz tube mounted coaxially in the housing in spaced relationship with the housing, the tube passing through the closure means in vacuum-tight relationship therewith and forming an annular charge chamber between the quartz tube and the wall of the housing, an elongated electrical resistor heating means mounted in the quartz tube in spaced relationship and coaxially of the quartz tube, the inner space of the quartz tube being open to either atmospheric air pressure or to an atmosphere of controlled pressure and chemical composition suitably applied, and vacuum means communicating with the charge chamber for vacuumizing the charge chamber.

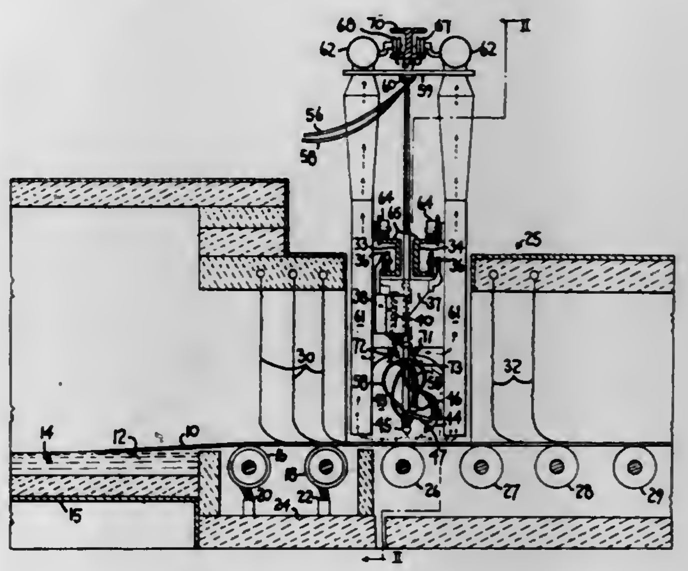
3,652,246
APPARATUS FOR COATING HOT GLASS

Joseph E. Michelotti, and Vern A. Henery, both of Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 27, 1969, Ser. No. 869,644

Int. Cl. C03b *18/02*

U.S. Cl. 65—181 **10 Claims**



Apparatus for coating a surface of a newly formed ribbon of float glass immediately after delivering the ribbon from a bath containing molten tin, while the glass surface is at a temperature sufficiently high to pyrolize said composition to form a metal oxide coating thereon of sufficient thickness to provide the coated glass with desired properties, such as reducing the transmission of certain wave lengths of light in one or more desired wavelength bands through the coated sheet or making the coated sheet electroconductive.

3,652,247
METHOD AND APPARATUS FOR SHAPING THE ENDS OF GLASS TUBE

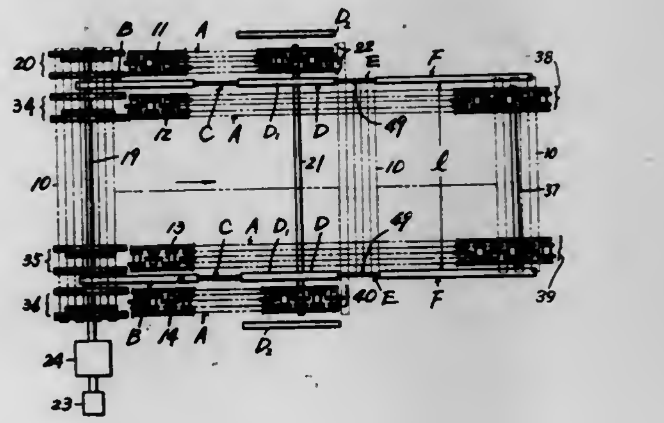
Toshio Nakayama, and Shoichi Horikawa, both of Otu-shi, Japan, assignors to Nippon Electric Glass Company Limited, Tokyo, Japan

Filed Oct. 6, 1969, Ser. No. 863,846

Claims priority, application Japan, Dec. 11, 1968, 43/90649

Int. Cl. C03b *23/04, 33/08*

U.S. Cl. 65—104 **7 Claims**



Glass tubes are transferred while being rotated by means of roller groups arranged in a plurality of rows. Intermediate between the ends of the transfer path, on both sides of the roller groups and in intermediate positions corresponding to the portions to be treated of the glass tube close to both ends thereof, there are correspondingly provided burners, a shaping rail for squeeze shaping the tube cooling pipes, a cutter burner and thin circular cutting plate for cutting the tube at the middle of the shaped portion and burners for smoothing the cut surfaces and for successively cooling those surfaces with gentle flames.

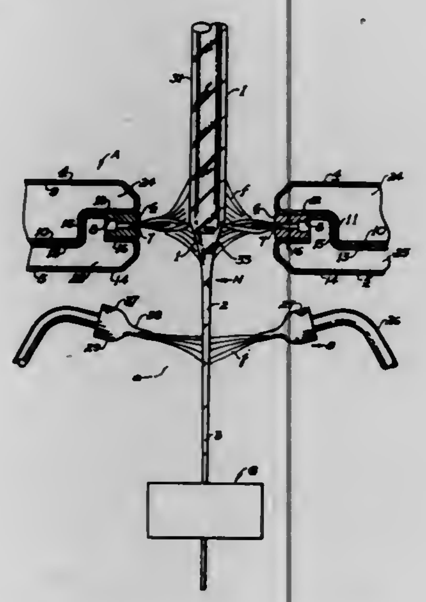
3,652,248
PROCESS FOR REDRAWING SILICA GLASS RODS

Ted A. Loxley, Mentor; John M. Webb, Chagrin Falls, and Walter G. Barber, North Perry, all of Ohio, assignors to Edward J. Mellen, Jr., East Cleveland, Ohio

Filed June 9, 1970, Ser. No. 44,791

Int. Cl. C03b *21/00, 23/04*

U.S. Cl. 65—108 **9 Claims**



A process of redrawing a hollow quartz glass rod to close tolerances comprising feeding the rod vertically between motor-driven feed rolls, directing flames radially inwardly against the periphery of the rod to heat the glass to a drawing temperature above 3,000° F., and maintaining a tension on the rod to draw it and reduce its diameter at least 70 percent, characterized in that jets of cooling air are directed radially inwardly against the periphery of the heated glass about 1 to about 2 inches below the flame and above the zone of constant diameter to reduce the length of the tapered neck substantially and thereby provide better dimensional control.

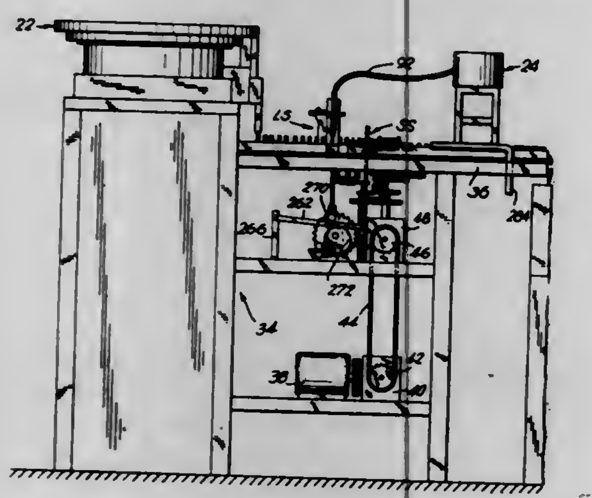
3,652,249
APPARATUS FOR MANUFACUTRING ASSEMBLIES OF CLOSED GLASS TUBES EACH WITH A PELLET THEREIN

James C. White, Rutherford, N.J., assignor to Propper Manufacturing Co., Inc.

Filed Aug. 26, 1969, Ser. No. 853,146

Int. Cl. C03b *23/18*

U.S. Cl. 65—156 **4 Claims**



A method and apparatus for manufacturing assemblies of closed tubes each with a pellet therein. The tubes initially have only one closed end and an opposed open end. These tubes are positioned in an upright attitude with open ends up, and a pellet is deposited in each tube by a pellet-depositing means at a loading station where each tube is positioned in its upright position by a positioning means. A feeding chain is intermittently driven to feed the tubes in a stepwise manner to and from the loading station where a dispenser sequentially dispenses a pellet into each tube. Beyond the loading station the successive tube, are preheated at the region of their upper open ends, and then they are sealed at these preheated upper open ends. The sealing takes place at a sealing station where each tube is rotated about its axis while its preheated upper end is held stationary to separate the preheated upper end from the remainder of the tube which becomes automatically closed at the sealing station.

3,652,250
APPARATUS FOR THE TREATMENT OR PRODUCTION OF FLAT GLASS FLOATING ON A LIQUID

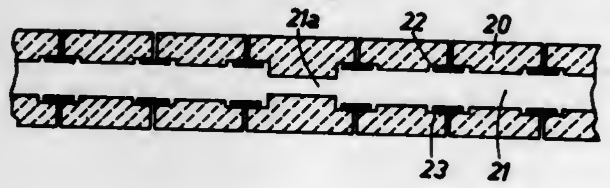
Edgard Brichard, Jumet, Belgium, assignor to Glaverbel, Watermael-Boitsfort, Belgium

Filed Oct. 3, 1969, Ser. No. 863,600

Claims priority, application Great Britain, Sept. 5, 1969, 44,044/69

Int. Cl. C03b *18/02*

U.S. Cl. 65—182 R **5 Claims**



In the production 26 treatment of flat glass floating on a liquid contained in a tank formed of refractory materials and having a passageway in the refractory material extending from one region of the tank to another some of the liquid is circulated through this passageway from one region of the tank to another in order to control or regulate the distribution of heat within the tank liquid.

3,652,251
REFRACTORY FURNACE WALL OF A GLASS SHEET FLOATING TANK

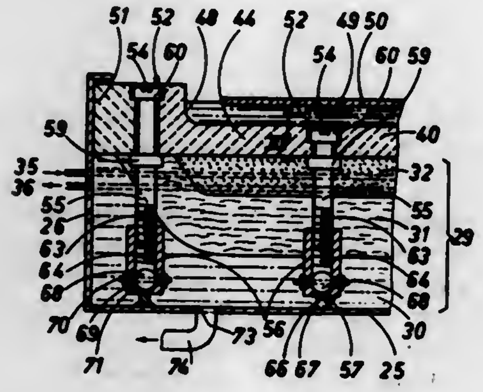
Edgard Brichard, Jumet, Belgium, assignor to Glaverbel, Watermael-Boitsfort, Belgium

Filed Oct. 29, 1969, Ser. No. 872,317

Claims priority, application Luxembourg, Oct. 30, 1968, 57195

Int. Cl. C03b *18/02*

U.S. Cl. 65—182 R **12 Claims**



A refractory furnace wall has a refractory member spaced from the inner side of a wall member so as to define an intermediate space therebetween. The wall and refractory members are interconnected by a connector member which maintains the members in spaced relationship and which may be adjusted to vary the distance between the wall and refractory members.

3,652,252
TANK FURNACE FOR THE TREATMENT OF GLASS BY THE FLOAT PROCESS

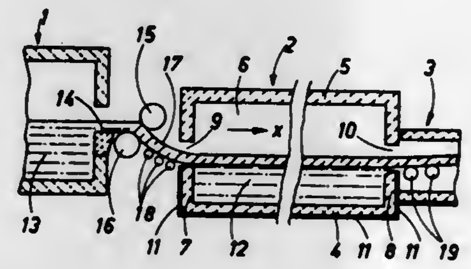
Gustave Javaux, Brussels, Belgium, assignor to Glaverbel, Watermael-Boitsfort, Belgium

Filed Oct. 3, 1969, Ser. No. 863,517

Claims priority, application Great Britain, Sept. 5, 1969, 44,043/69

Int. Cl. C03b *18/02*

U.S. Cl. 65—182 R **7 Claims**



A furnace for the treatment of glass has a tank of refractory material containing a bath of molten material upon which the glass is floated. The refractory material has a property of releasing a vitreous phase lighter than the molten material at operating temperatures of the furnace. Metallic screen means comprising a plurality of spaced or overlapping slid metal plates which may be of tungsten or tungsten alloys or positioned between the refractory material and the upper surface of the bath to prevent the vitreous phase from reaching this surface of the bath.

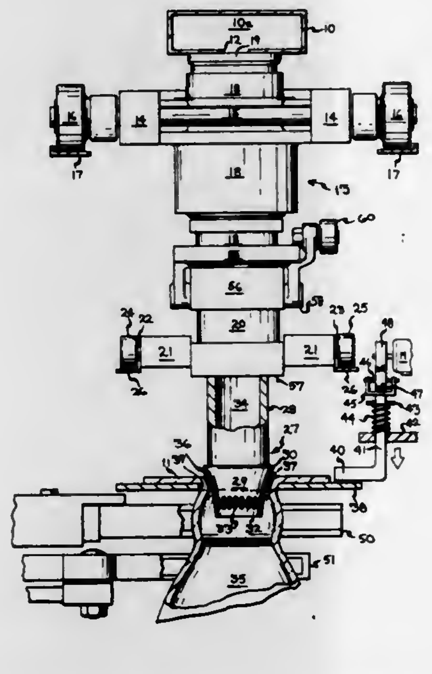
3,652,253
PRESSURIZER NOZZLE

Owen M. Small, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Jan. 16, 1970, Ser. No. 3,328

Int. Cl. C03b *5/32, 9/14*

U.S. Cl. 65—184 **12 Claims**



This invention relates to a nozzle structure for use in a pressurizer machine in glass forming. The pressurizer machine operates to insert a pipe or nozzle into the opening of a glass ribbon and newly formed glass article supported on an apertured orifice plate of a ribbon glass forming machine. Just prior to crack-off of the article from the ribbon in or near the aperture of the plate, the nozzle is inserted below the crack-off line of the glass ribbon and air is emitted in the article to flow out of the mouth opening. Any chips or loose particles of glass as may result at crack-off are carried by the air flow out of the mouth and away from the article. The nozzle structure includes: (1) a frustro conical side wall for baffling or directing air flow upwardly and radially, (2) regulating volume and pressure by the nozzle openings in proportioning their area to the supply pipe, (3) inclining these openings in a 30°-60° inclination to the axis of the nozzle in directing air emission, and (4) providing a carrier-actuator for moving the nozzle—a pressurizer head assembly—whereby the nozzle is moved into the article below the orifice plate elevation in applying the air in the article.

3,652,254
METHOD AND PLANT FOR EFFECTING MASS TRANSFER PROCESSES

Knud C. B. Knudsen, Holte, Denmark, assignor to Aktieselskabet Dansk Svovlsyre-og Superphosphat-Fabrik, Copenhagen, Denmark

Filed May 4, 1970, Ser. No. 34,230

Claims priority, application Great Britain, May 9, 1969, 23,784/69

Int. Cl. C05b *17/00;* **C01b** *25/28;* **C02b** *1/42*

U.S. Cl. 71—34 **1 Claim**

The invention relates to a method and a plant for effecting a mass transfer between a liquid and a granular solid, in which the solid is in a fixed bed arrangement in a loop circuit, the liquid being sent to part of said fixed bed through inlets and outlets which are moved forward stepwise upon exhaustion of the solid, the process liquid being replaced, in the exhausted part, by a stripping liquid, the inlet and the outlet of which are also moved stepwise forward as the transfer zone is moved.

3,652,255
AGENTS FOR RETARDING THE GROWTH OF PLANTS AND CHANGING THEIR HABIT

Hans Osieka; Karl-Heinz Koenig, both of Ludwigshafen (Rhine); Johann Jung, Limburgehof, Pfalz, and Harry Distler, Ludwigshafen (Rhine), all of Germany, assignors to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Original application May 25, 1967, Ser. No. 641,163, now abandoned. Divided and this application Sept. 3, 1969, Ser. No. 870,952

Int. Cl. A01n

U.S. Cl. 71—76 **5 Claims**

Sulfonium salts and a method of retarding plant growth with said sulfonium salts.

3,652,256
CYCLIC ESTERS OF CYANODITHIOIMIDOCARBONIC ACID AND DERIVATIVES

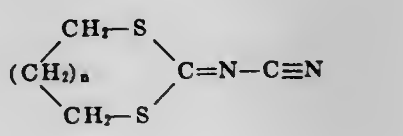
John J. D'Amico, Dunbar, W. Va., assignor to Monsanto Company, St. Louis, Mo.

Filed June 20, 1966, Ser. No. 558,593

Int. Cl. A01n *9/12;* **C07d** *71/00, 73/00*

U.S. Cl. 71—90 **7 Claims**

New compounds of the formula



$$(CH_2)_n \begin{matrix} CH_2-S \\ \\ CH_2-S \end{matrix} C=N-C\equiv N$$

where *n* is 0 to 8, inclusive, and derivatives thereof are biological toxicants, rubber accelerators and useful intermediates.

3,652,257

FLUOROPHENOXY-PYRIDAZINES AS SELECTIVE HERBICIDES

Teruomi Jojima, Tokyo, Japan, assignor to Sankyo Company Limited, Tokyo, Japan

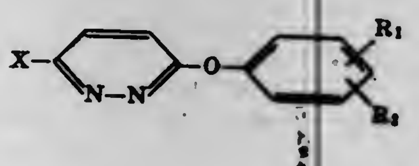
Filed Feb. 24, 1969, Ser. No. 801,745

Claims priority, application Japan, Feb. 28, 1968, 43/12727

Int. Cl. A01n *9/22*

U.S. Cl. 71—92 **3 Claims**

Herbicidal composition which comprises as an active ingredient of a 3-phenoxypyridazine compound having the formula



wherein X is hydrogen atom or chlorine atom, R_1 is trifluoromethyl group or fluorine atom and R_2 is hydrogen atom or chlorine atom, provided that, where X is hydrogen atom, R_1 is trifluoromethyl group or fluorine atom and R_2 is hydrogen atom or chlorine atom and, where X chlorine atom, R_1 is trifluoromethyl group and R_2 is hydrogen atom or chlorine atom and an agriculturally-acceptable carrier. Method for inhibiting the growth of undesirable plants which comprises applying to the locus to be protected a herbicidally effective amount of said 3-phenoxypyridazine compound.

3,652,258

METHOD OF CONTROLLING WEEDS WITH PHENOXYETHYL CARBAMATES

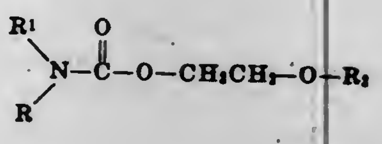
Llewellyn W. Francher, 22 Valley View Drive, Orinda, Calif.

Continuation of application Ser. No. 798,233, Sept. 19, 1968, now abandoned, which is a division of application Ser. No. 604,136, Dec. 13, 1966, now Patent No. 3,439,021, which is a continuation-in-part of application Ser. No. 367,879, May 15, 1964, now abandoned. This application Oct. 27, 1969, Ser. No. 869,961

Int. Cl. A01n *9/24*

U.S. Cl. 71—106 **7 Claims**

The compounds of the class halo-substituted phenyl oxyethyl esters of N-alkyl carbamic acids having the general formula



$$\begin{array}{l} R^1 \\ \quad\diagdown \\ \quad\; N-\overset{\overset{\large O}{\|}}{C}-O-CH_2CH_2-O-R_2 \\ \quad\diagup \\ R \end{array}$$

wherein R and R^1 are selected from the group consisting of hydrogen, lower alkyl having from one to six carbon atoms, inclusive, and lower alkenyl having from two to six carbon atoms, inclusive, at least one of R and R^1 is a group other than hydrogen; and R^2 is selected from the group consisting of nuclearly substituted phenyl, wherein said substituents are from one to five halogens, inclusive, especially chlorine; for example, 2,4-dichlorophenoxyethyl-N-methyl carbamate and 2,4,5-trichlorophenoxyethyl-N,N-di-n-propyl carbamate.

The compounds of the class are useful as preemergence and post-emergence herbicides. The compounds can be prepared by condensing a halophenyl oxyethanol and an alkyl isocyanate or condensing a halophenyl oxyethanol with an N,N-dialkyl carbamyl chloride.

3,652,259

SPHERICAL POWDERS

Walter V. Knopp, Wyckoff, N.J., assignor to Olin Mathieson Chemical Corp.

Continuation-in-part of application Ser. No. 577,840, Sept. 8, 1966, now Patent No. 3,434,831. This application May 14, 1968, Ser. No. 728,923. The portion of the term of this patent subsequent to Mar. 25, 1986, has been disclaimed.

Int. Cl. B22f *9/00;* **B29c** *23/00*

U.S. Cl. 75—0.5 B **5 Claims**

The instant disclosure teaches an improved process for obtaining dense, spherical, metal particles characterized by coating the starting material with a weld-preventing material and heating the coated particles in a protective atmosphere.

3,652,260

METHOD OF PREPARING METAL CONTAINING PELLETS FROM BLAST FURNACE DUST AND CONVERTER DUST

Masutaro Azami, 3-27 Zaimakuza, 5-chome, Kamakura, Japan

Filed Feb. 13, 1970, Ser. No. 11,116

Claims priority, application Japan, Feb. 19, 1969, 44/11771

Int. Cl. C21b *1/10*

U.S. Cl. 75—3 **10 Claims**

Blast furnace dust and converter dust are mixed with each other and then formed into green pellets containing 7 to 20 percent by weight of carbon. These pellets, after being dried at a temperature below 250° C., are charged into a rotary reducing furnace, in which the pellets are reduced by means of the carbon component contained therein.

3,652,261

IRON POWDER INFILTRANT

Pierre W. Taubenblat, Somerset, N.J., assignor to American Metal Climax, Inc., New York, N.Y.

Filed June 25, 1969, Ser. No. 836,569

Int. Cl. B22f *3/26;* **C22c** *1/04*

U.S. Cl. 75—0.5 R **10 Claims**

Infiltrant and process for using same for impregnating iron and iron base alloy powder compacts, said infiltrant being an atomized cupreous alloy powder composition containing at least 85 percent by weight of copper and having iron, manganese, aluminum and nickel as essential alloying components thereof. Carbon and lubricant may be incorporated therein as optional ingredients.

3,652,262

REFINING OF PIG IRON

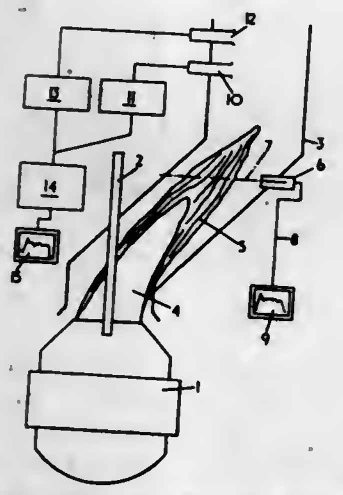
Etienne Marie Denis, Grivegnee, Belgium, assignor to Centre National De Recherches Metallurgiques, Brussels, Belgium

Filed Aug. 17, 1967, Ser. No. 661,401

Claims priority, application Luxembourg, Aug. 23, 1966, 51,810; 51,811

Int. Cl. C21c *5/32*

U.S. Cl. 75—60 **4 Claims**



It has been found that the carbon monoxide in gases emerging from a converter tends to burn to carbon dioxide by contact with oxygen in the surrounding air and that the flame so produced has an intensity which is closely related to the rate of flow of carbon monoxide, and hence to the rate of decarbonization of the iron. This is made use of in the invention by controlling the flow of gases emerging from the converter spout and measuring, generally continuously, the intensity of the flame produced when placed in contact with the surrounding air in a hood.

3,652,263

DIRECT PRODUCTION METHOD FOR MEDIUM- AND LOW-CARBON FERROMANGANESE

Hisao Shindo, Tokyo; Yoshishige Nagoya, Hachinoe-shi; Takashi Takeuchi, Hachinoe-shi, and Kosuke Murai, Hachinoe-shi, all of Japan, assignors to Taiheiyo Kinzoku Kabushiki Kaisha Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1968, Ser. No. 725,532

Int. Cl. C22b *1/00, 9/10, 47/00*

U.S. Cl. 75—80 **9 Claims**

A production method for medium- and low- carbon ferromanganese directly from silico-manganese, which method comprises charging molten silico-manganese, heated manganese ore and slagging materials (or, if necessary, with an added reducing agent) into a reaction vessel, giving a horizontal eccentric circular motion to said reaction vessel, and oxidizing and removing silicon as well as reducing manganese.

3,652,264

RECOVERY OF ZINC VALUES FROM ZINC PLANT RESIDUE

Fernand Jacques Joseph Bodson, Angleur-Liege, Belgium, assignor to Societe des Mines et Fonderies de Zinc de La Vieille Montagne, S.A., Angleur-Liege, Belgium

Filed Jan. 13, 1969, Ser. No. 790,835

Claims priority, application Belgium, Nov. 20, 1968, D41,993

Int. Cl. C22b *19/22*

U.S. Cl. 75—101 **8 Claims**

In a process of recovering metal values from leaching residues of zinc-bearing materials such as the leaching residues of roasted zinc concentrate, comprising subjecting said leaching residues to a subsequent leaching with a solution of dilute sulphuric acid for dissolving the zinc, adding a sulphur-bearing ore to said solution, separating a sulphurous residue from said solution, oxidizing said solution and precipitating the therein contained iron by using an oxidizing agent and adding a neutralizing agent containing zinc oxide.

3,652,265

RECOVERY OF METAL VALUES FROM NICKEL-COPPER MATTES

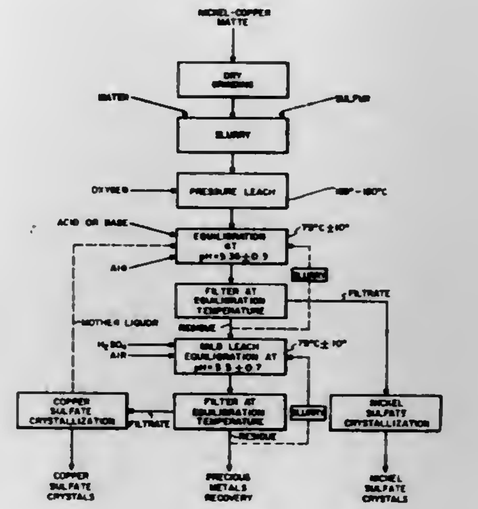
John F. Marschik, Summit, and Werner J. Cernoch, Ridgefield, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation

Filed Nov. 28, 1969, Ser. No. 880,812

Int. Cl. C01g *1/10;* **C22b** *3/00*

U.S. Cl. 75—117 **12 Claims**

A process for recovering nonferrous metal values from nickel-copper mattes includes the selective separation of nickel from the mattes by oxidative pressure leach of the matte and equilibration of the pressure leached material to a pH of preferably 5.35 ± 0.3. Thereafter copper is leached from the resultant nickel depleted residue under relatively mild conditions. Precious metals are recovered from the mild leach residue.



3,652,266

BE-SI ALLOY FOR STRUCTURAL PARTS

Albert R. Kaufmann, Lexington, Mass., assignor to Whittaker Corporation, Nuclear Metals Div., West Concord, Mass.

Filed Oct. 29, 1968, Ser. No. 771,425

Int. Cl. C22c *25/00*

U.S. Cl. 75—134 S **22 Claims**

Parts formed from a beryllium-silicon alloy containing approximately 62 weight percent silicon are readily castable without the formation of large porosities or shrinkage cavities on cooling. They are characterized by a high ratio of elastic modulus to density and a high ratio of thermal conductivity to thermal expansion, are relatively homogeneous and isotropic throughout, and are surprisingly less brittle than either of their component metals. They are especially useful as mirror substrates.

3,652,267

CARBON STEELS AND ALLOY STEELS FOR COLD FORGING

Tetsuro Ito, and Azuma Hiki, both of Nagoya, Aichi, Japan, assignors to Daido Seiko Kabushiki Kaisha, Aichi Prefecture, Japan

Filed Sept. 23, 1968, Ser. No. 761,463

Claims priority, application Japan, Oct. 11, 1967, 42/64954

Int. Cl. C22c *39/00*

U.S. Cl. 75—123 L **6 Claims**

This invention relates to machine structural carbon steels and alloy steels having an excellent cold forging property. Such a steel can be produced by deoxidizing a carbon steel or an alloy steel with a calcium-silicon alloy and controlling the calcium content thereof.

3,652,268

BARRIER COATED ELECTROPHOTOGRAPHIC SHEET SUITABLE FOR LIQUID DEVELOPMENT

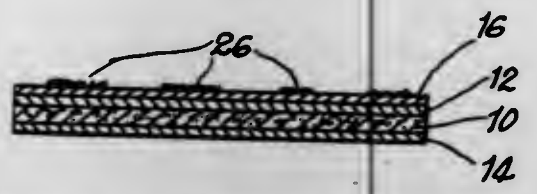
Clifton B. Rowe, Chicago, Ill., assignor to A. B. Dick Company, Chicago, Ill.

Filed Mar. 16, 1970, Ser. No. 19,954

Int. Cl. G03g *5/04*

U.S. Cl. 96—1.5 **23 Claims**

An electrophotographic reproduction process and copy sheet therefor for development of a latent electrostatic image on the copy sheet by a liquid developer wherein the copy sheet comprises a conductive base sheet having a thin barrier coating on each side thereof, the coating comprising a highly dielectric insulating material and a conductor material which is either a polymeric quaternary ammonium halide or an ammonium salt of an alkyl aryl sulfonate, and one side having a



second coating thereon comprising a thin insulating coating or a photoconductor coating for receiving an electrostatic image.

3,652,269
PHOTOCONDUCTIVE ELEMENTS CONTAINING HALOGENATED POLYETHYLENE BINDERS

Lawrence E. Contois, and Stewart H. Merrill, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 27, 1968, Ser. No. 755,716
Int. Cl. G03g *5/00;* **C08f** *3/22*

U.S. Cl. 96—1.5 **20 Claims**

Photoconductive elements containing a photoconductor and a binder comprising polymers of halogenated polyethylenes are described. These elements can be sensitized and charged either negatively or positively.

3,652,270
RECORDING DEVICES

Akio Yamashita, Ikeda-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of application Ser. No. 350,830, Mar. 10, 1964, now abandoned. This application Jan. 10, 1969, Ser. No. 793,222
Claims priority, application Japan, Mar. 16, 1963, 38/14538; Apr. 27, 1963, 38/22760; May 2, 1963, 38/23219; May 2, 1963, 38/23220; June 17, 1963, 38/32395; June 21, 1963, 38/32532; Sept. 21, 1963, 38/50994; Sept. 21, 1963, 38/50995; Oct. 25, 1963, 38/57735; Oct. 28, 1963, 38/58709
Int. Cl. G03g *5/04*

U.S. Cl. 96—1.5 **1 Claim**

A recording device comprising in series a first electrode, a layer containing a dispersed mixture of at least a semiconductor and an electrical insulator having one side contacting said electrode, a solid layer of an electrical insulator contacting the other side of the first mentioned layer, and a second electrode disposed on the other side of the solid insulator layer in electrical contact therewith. The second electrode may be either in direct abutting contact with the solid insulator layer or may act thereon through either a fluorescent phosphor layer or a photoconductive layer. When a voltage is applied between the electrodes, a charge of the same polarity as that of the first electrode is stored in both the layer of the mixture of semiconductor and insulator and in the solid insulator layer.

3,652,271
PHOTOELECTROSTATIC RECORDING MEMBER

Dennis M. Bornarth, Palatine, and Frank Schneidinger, Marengo, both of Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Continuation-in-part of application Ser. No. 664,958, Sept. 1, 1967, now abandoned. This application Apr. 20, 1970, Ser. No. 30,238
Int. Cl. G03g *5/08*

U.S. Cl. 96—1.8 **13 Claims**

A photoelectrostatic copy sheet is prepared by using a paper base sheet having a roughness in the range of from 100 to 250 Sheffield units. Bonded to the rough surfaced paper is a photoconductive layer comprising zinc oxide and in another embodiment sub-millimicron sized particles of hydrophobic silica dispersed in a resin binder. The layer conforms to the rough fiber textured surface of the base sheet to provide a finished recording surface having a roughness in the range of from 70 to 250 Sheffield units and a gloss (75°, Gardner) not in excess of 20 percent. This sheet has the appearance, feel and handle of an uncoated piece of paper.

3,652,272
PHENOXY PHOTOPOLYMER HAVING NO EPOXY GROUPS, AND ARTICLE MADE THEREFROM

Daniel C. Thomas, Wheaton, Ill., assignor to Lithoplate, Inc., Covina, Calif.

Filed Oct. 31, 1969, Ser. No. 873,085
Int. Cl. G03f *7/02;* **G03c** *1/68, 1/52*

U.S. Cl. 96—33 **16 Claims**

A photopolymer adapted for use in lithography, photomechanical processes, or other applications, consisting essentially of an actinic light-tanned product of a phenoxy resin of high molecular weight formed in the presence of a sensitizer which is a diazo resin or a chromium compound, such as ammonium bichromate. A photopolymer-yielding system or combination consisting essentially of a phenoxy resin and a sensitizer, which is a diazo resin or chromium compound yielding hexavalent chromium, the resin and sensitizer being in contact with each other. A lithographic plate including such photopolymer or such photopolymer-yielding system or combination. A method of making such photopolymer, comprising subjecting such photopolymer system or combination to treatment with actinic light.

3,652,273
PROCESS USING POLYVINYL BUTRAL TOPCOAT ON PHOTORESIST LAYER

Maung S. Htoo, Poughkeepsie, N.Y., assignor to International Business Machines Corporation

Filed Sept. 11, 1967, Ser. No. 666,860
Int. Cl. G03c *5/00*

U.S. Cl. 96—36 **9 Claims**

An improved process for the formation of photo-resist patterns on substrates by coating the subtrate with a layer of a synthetic resin photo-resist composition, applying a topcoat of vinyl butyral polymer over the photo-resist, exposing the photo-resist to a light pattern through a mask and the transparent topcoat, and removing the photo-resist from the unexposed areas with a conventional predominantly aromatic hydrocarbon developer which also removes the topcoat. The use of the topcoat eliminates scumming of the substrate due to residual insoluble photo-resist in the unexposed areas of the resist layer, and reduces pinholing in the exposed areas.

3,652,274
PHOTOGRAPHIC ETCHING RESIST AND PREPARATION THEREOF

Johan Lodewijk Verelst, Kontich, and Jozef Frans Willems, Wilrijk, both of Belgium, assignors to Gevaert AGFA N.V., Mortsel, Belgium

Filed June 10, 1968, Ser. No. 735,582
Claims priority, application Great Britain, June 9, 1967, 26,860/67
Int. Cl. G03c *5/00;* **G03f** *7/00*

U.S. Cl. 96—36.3 **1 Claim**

A printing plate of the type which is prepared by coating a metal supporting surface with a photo-insolubilizable polymer, exposing the coating to a light image, developing the exposed coating by treatment with a liquid dissolving the unexposed areas only of the coating so that the exposed areas remain as a resist layer on the metal surface, and etching the metal surface with the resist layer thereon by means of an aqueous etching liquid therefore, is given increased resistance in the exposed regions to the attack of the etching liquid by incorporating into the developing liquid a hydrophobizing agent which is either an organic compound containing at least one fluorine substituted alkyl group of an organic silane or siloxane compound containing at least one alkyl or aryl group linked to at least one of its silicon atoms, the hydrophobizing agent also containing a reactive group capable of chemically reacting with the photo-insolubilizable polymer. The polymer preferably includes active hydrogen atoms after insolubilization and preferred chemically active groups in the hydrophobizing agent are acid anhydride, isocyanate, epoxy, and acid chloride groups.

3,652,275
HEXAARYLBIIMIDAZOLE BIS (P-DIALKYLAMINOPHENYL-α,β-UNSATURATED) KETONE COMPOSITIONS

Martin D. Baum, and Cyrus P. Henry, Jr., both of Wilmington, Del., assignors to E. I du Pont de Nemours and Company, Wilmington, Del.

Filed July 9, 1970, Ser. No. 53,686
Int. Cl. G03c *1/68, 1/72, 5/24*

U.S. Cl. 96—48 **36 Claims**

Compositions comprising a hexaarylbiimidazole and a selected bis(p-aminophenyl-...α,β-unsaturated) ketone and optionally, a leuco dye, a polymerizable monomer or inert components such as binders, solvents and the like are photoactivated in the visible light wavelengths.

3,652,276
PHOTOGRAPHIC PHOTOCONDUCTOR SYSTEMS UTILIZING REVERSIBLE REDOX MATERIALS TO IMPROVE LATENT IMAGE LIFE

Richard F. Bartlett, Burlington, Mass., and Itek Corporation, Lexington, Mass.

Continuation-in-part of application Ser. No. 510,977, Dec. 1, 1965, now abandoned. This application July 2, 1969, Ser. No. 838,651
Int. Cl. G03c *5/24*

U.S. Cl. 96—48 PD **26 Claims**

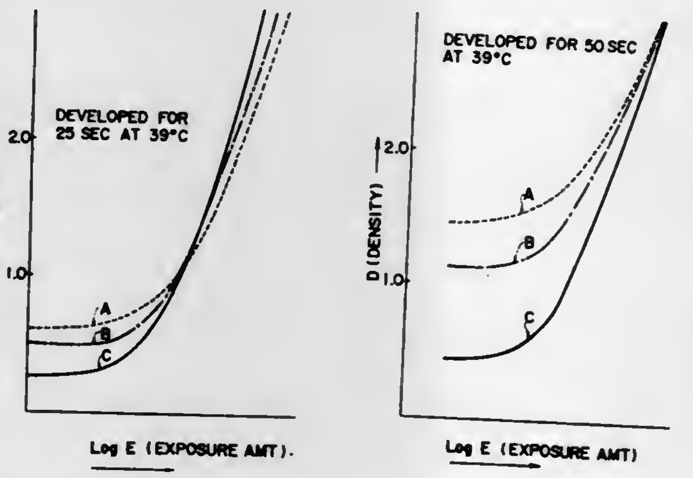
A copy medium comprising a support, a photoconductor, and a reversible oxidizing agent is exposed to produce a latent image of improved stability and then, after a time period of at least 30 seconds, contacted with image-forming materials to produce an irreversible image. Optionally, the reversible oxidizing agent may be applied to the copy medium immediately after exposure. An acidified copy medium is especially preferred since the stability of the latent image is much improved.

3,652,277
PROCESSING FOR PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE ELEMENT

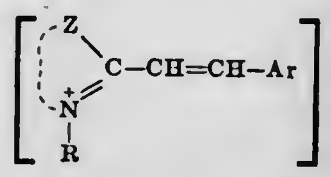
Hikoharu Hara, and Tadao Hatano, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 23, 1969, Ser. No. 844,129
Claims priority, application Japan, July 23, 1968, 43/52069
Int. Cl. G03c *5/26, 5/30*

U.S. Cl. 96—50 PT **14 Claims**



In a method of processing a photographic silver halide light-sensitive element wherein in the development processing steps of said photographic silver halide light-sensitive element, the improvement comprising processing the exposed photographic silver halide light-sensitive element in the presence of an aldehyde-type hardening agent and a compound represented by the formula



wherein Z represents an atom necessary to complete a heterocyclic ring, R represents a lower alkyl group or a substituted alkyl group, Ar represents a phenyl group or a substituted phenyl group, X represents an acid residual group, and n is 0 or 1, the n being 0 when the compound forms an internal salt.

3,652,278
PRE-DEVELOPMENT PROCESS FOR REDUCING FOG IN SILVER HALIDE PHOTOGRAPHIC MATERIALS

Toshiaki Asano; Kazushige Uenaka, both of Kanagawa, and Tomomasa Usami, Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 8, 1968, Ser. No. 743,043
Claims priority, application Japan, July 8, 1967, 42/43902
Int. Cl. G03c *5/38, 1/34*

U.S. Cl. 96—61 **16 Claims**

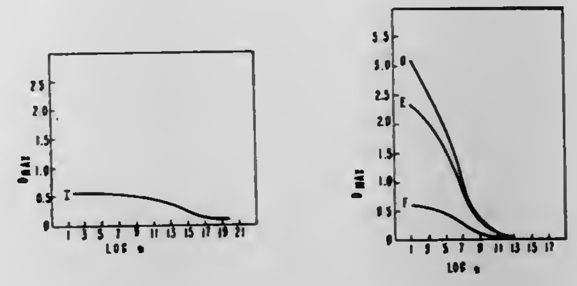
A method for reducing fog in photographic materials which are to be stored in formaldehyde containing atmospheres whereby a compound capable of reacting with and fixing said formaldehyde is incorporated into the silver halide emulsion of said photographic material. A light-sensitive silver halide photographic material which can be stored in a formaldehyde containing atmosphere without deterioration of photographic properties.

3,652,279
NITROGEN-CONTAINING DMAX MAINTAINERS FOR USE IN PHOTOSOLUBLE EMULSIONS

Ralph Kingsley Blake, Westfield, and Joseph De Witt Overman, New Shrewsbury, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 18, 1969, Ser. No. 842,864
Int. Cl. G03c *5/24*

U.S. Cl. 96—64 **8 Claims**



An improved process for forming a silver halide image by selective exposure of a photosoluble silver halide layer and dissolution of the exposed photosoluble silver halide in a silver halide solvent characterized by the presence in either the layer, solvent, or both, of a heterocyclic nitrogen-containing compound which loses a proton to form anions at an elevated pH, e.g., benzotriazoles, naphthotriazoles, 5-nitroimidazoles, and 6-nitroindazole, which compounds enhance the action of mercaptan insolubilizers in photosoluble emulsions. New photosoluble elements for making direct positive images are provided by the invention.

3,652,280
LIGHT-SENSITIVE SILVER HALIDE EMULSION WITH HIGH RESOLVING POWER

Maurice Hector De Belder, Mechelen; Rene Omer Duville, Edegem; Herman Adelbert Philippaerts, Mortsel; Theofiel Hubert Ghys, Kontich, and Henri Depoorter, Mortsel, all of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

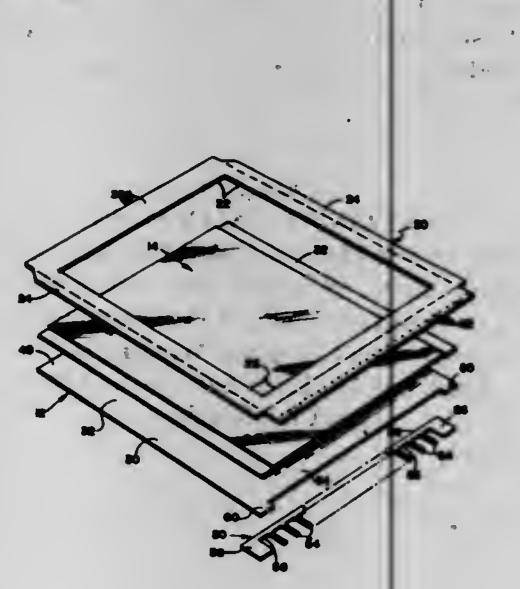
Filed Dec. 8, 1969, Ser. No. 883,235
Claims priority, application Great Britain, Dec. 11, 1968, 58,844/68
Int. Cl. G03c *5/24, 1/02*
U.S. Cl. 96—64 **17 Claims**

Lippmann silver halide emulsions comprising a hydrophilic colloid are provided which contain at least one light-absorbing dye that absorbs light of the wavelength used for the exposure of the said emulsions and that is decolorized and/or removed in at least one of the photographic processing liquids, characterized in that the said absorbing dye is present in such an amount that per micron of emulsion layer thickness a density of at least 0.05 and at most 0.14, preferably comprising between 0.08 and 0.12, measured in the spectral region of the exposure light, is obtained. The emulsions have high resolving power and acutance, and are suitable for both reversal processing and negative processing.

3,652,281
PHOTOGRAPHIC FILM UNIT

Albert J. Bachelder, Lexington, and Frederick J. Binda, Cambridge, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed July 15, 1968, Ser. No. 744,912
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 **11 Claims**



A self-developing, photosensitive film unit including a multilayer photosensitive element and a transparent image-recording element laminated to one another during manufacture and a rupturable container of processing liquid attached to the elements at one end for dispensing its liquid contents between the elements, and adapted to be processed by passing the film unit including the container and laminated elements between a pair of pressure-applying members. The film unit is formed by embossing, or attaching spacer strips, to the lateral margins of an elongated strip and then laminating the strip to a second strip by spreading a film-forming agent between the strips, severing the laminated strips to the required length to form sandwiches each comprising laminated photosensitive and image-recording elements, securing a binding around at least two sides of each sandwich and attaching a container of processing liquid to one end of the sandwich.

3,652,282
PHOTOGRAPHIC FILM UNIT AND METHOD OF MANUFACTURE

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 782,056, Dec. 9, 1968, now Patent No. 3,573,043, dated Mar. 30, 1971, which is a continuation-in-part of application Ser. No. 622,283, Mar. 10, 1967, now Patent No. 3,415,644, dated Dec. 10, 1968. This application Mar. 6, 1969, Ser. No. 804,942
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 **16 Claims**

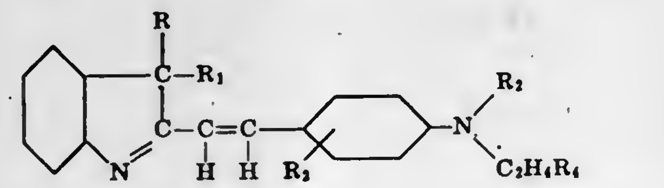
A self-developing, photosensitive film unit including a multilayer photosensitive element and a transparent image-recording element laminated to one another during manufacture and a rupturable container of processing liquid attached to the elements at one end for dispensing its liquid contents between the elements, and adapted to be processed by passing the film unit including the container and laminated elements between a pair of pressure-applying members. The film unit is formed by laminating a photosensitive element to an image-receiving element by applying a layer of a film-forming agent to one of the elements, superposing the elements and distributing a layer of a second film-forming material therebetween to form an adhesive bond that is weaker than the bond between any other layers of said film unit and is adapted to rupture readily during the spreading of a processing liquid between the elements. A binding is secured around at least two sides of the laminate and a container of processing liquid is attached to one edge of the sandwich in position to eject its contents between the elements in response to the application of compressive pressure.

3,652,283
PHOTOGRAPHIC MATERIALS CONTAINING ANTI-HALATION DYESTUFFS

E. Scudder Mackey, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed May 13, 1968, Ser. No. 728,827
Int. Cl. G03c *1/84, 1/78*
U.S. Cl. 96—84 **10 Claims**

1. A light-sensitive photographic film element comprising at least one light-sensitive gelatin silver halide emulsion coated on a film base and wherein at least one of the layers comprising said film element contains a water-soluble anti-halation dyestuff having a broad absorption in the green region of the spectrum comprising a quaternary ammonium salt of a dyestuff of the following structural formula:



wherein R, R_1, R_2, and R_3 represent alkyl containing from one to four carbon atoms and R_4 represents a member selected from the group consisting of cyano and halogen.

3,652,284
PHOTOGRAPHIC SILVER HALIDE EMULSION CONTAINING A METHINE DYE

Gene L. Oliver, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 4, 1968, Ser. No. 773,291
Int. Cl. G03c *1/12*
U.S. Cl. 96—84 R **16 Claims**

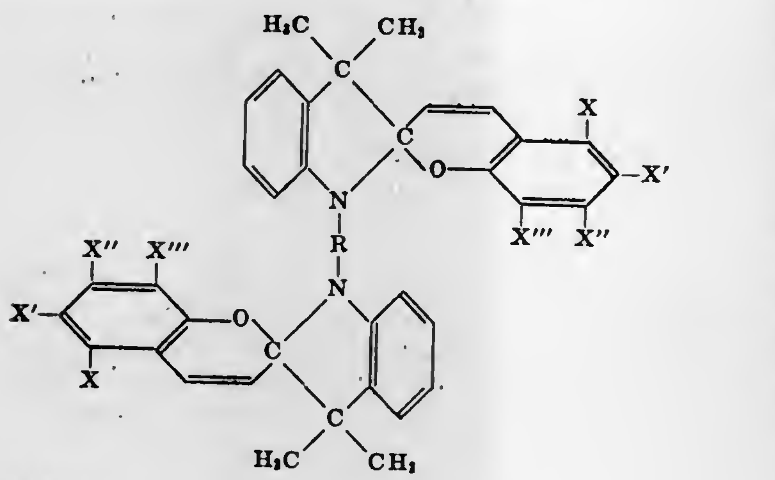
Novel methine dyes are provided which feature a bis(alkylsulfonyl)allylidene (or -pentadienylidene) group or a diaryloxysulfonyl allylidene (or -pentadienylidene group. The dyes are useful as filter dyes in photographic materials. Certain dyes of the invention function as spectral sensitizers for photographic silver halide emulsions.

3,652,285
PHOTOCHROMIC-PHOTOPOLYMERIZATION COMPOSITIONS

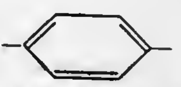
Gerard Albert Delzenne, 's-Gravenwezel; Georges Joseph Smets, Heverlee, and Jan Antonius Hoefnagels, Berchem, all of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed June 23, 1969, Ser. No. 835,727
Claims priority, application Great Britain, July 1, 1968, 31,308/68
Int. Cl. G03c *1/72, 1/68;* **C07d** *27/36*
U.S. Cl. 96—90 PC **12 Claims**

A photographic material and a process for the formation of non-fading images upon exposure to actinic light comprising a light-sensitive layer formed of a photochromic compound and a photo-hardening polymeric system is described. The photochromic compound has the formula:



wherein:

R represents $-CH_2-CH=CH-CH_2-$, $-(CH_2)_n-$$(CH_2)_n-$, $-(CH_2)_n-O-(CH_2)_n-$, $-(CH_2)_n-$, with n being an integer from 1 to 8,

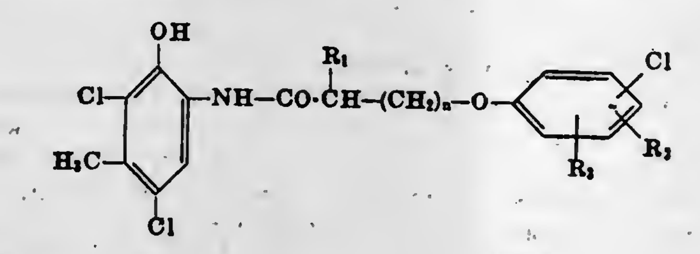
X and X″ each represents hydrogen, chlorine, bromine, nitrile, acetyl, carboxy, hydroxy, nitro or methoxy,
X′ represents hydrogen, chlorine, bromine, nitrile, acetyl, carboxy or nitro, and
X′X″ represents hydrogen, chlorine, bromine or nitro.

3,652,286
COLOR PHOTOGRAPHIC SILVER HALIDE MULTI-LAYER MATERIAL CONTAINING CYAN-FORMING COUPLERS

Hans-Heinrich Credner, Munchen; Hans Glockner, Pullach, and Fritz Nittel, Koln-Stammheim, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 26, 1970, Ser. No. 22,998
Claims priority, application Germany, Mar. 28, 1969, P 19 15 948.9
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **1 Claim**

Color photographic material having a color coupler of the general formula



wherein
R_1 is H, or a short chain alkyl;
R_2 is H, Cl, or a straight or branched chain alkyl;
R_3 is a straight or branched chain alkyl and
wherein
the chain carbon atoms of R_2 and R_3 total to at least eight carbon atoms;
n is 0, 1 or 2.

3,652,287
DIRECT-WRITING EMULSIONS PREPARED BY ADDING AFTER SILVER HALIDE PRECIPITATION IN THE PRESENCE OF LEAD, INSOLUBILIZING ACID ANIONS, AND HETEROCYCLIC NITROGEN COMPOUNDS

John Howard Bigelow, Rochester, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 10, 1969, Ser. No. 865,513
Int. Cl. G03c *1/86, 1/10, 1/28*
U.S. Cl. 96—108 **8 Claims**

Direct-writing silver halide emulsions having higher maximum densities, lower background densities and increased image aging stability are prepared by precipitating silver halides in an acidified aqueous water-permeable colloid medium in the presence of a water-soluble plumbous salt, ripening the resulting emulsion in the presence of excess bromide ions, washing said emulsion to remove the soluble salts resulting from the precipitation of silver halides, adding a heterocyclic nitrogen compound and at least one acid anion capable of forming a substantially insoluble compound with lead ions, digesting the resulting emulsion, adding a halogen acceptor and coating the emulsion on a suitable support. The direct-writing, photodevelopable elements made from the emulsions are useful in oscillographs.

3,652,288
DYES AND PHOTOGRAPHIC EMULSIONS AND ELEMENTS CONTAINING SAID DYES

Arthur Fumia, Jr., and Donald W. Heseltine, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 20, 1970, Ser. No. 56,653
Int. Cl. G03c *1/08, 1/18;* **C09b** *23/100*
U.S. Cl. 96—129 **12 Claims**

Novel polymethine cyanine dyes are derived from certain enamines containing a cyclohexene ring having a reactive methylene or methyl substituent thereon. These dyes are spectral sensitizers for photographic silver halide emulsions and sensitize such emulsions up to wavelengths ranging about from 550 to 770 mu. Many of the dyes are useful sensitizers for the red to near infrared regions of the spectrum.

3,652,289
SILVER HALIDE EMULSIONS AND ELEMENTS COMPRISING TRIMETHINE HEMIOXONAL DYES

Leslie G.S. Brooker, Rochester; Arthur Fumia, Jr., Hilton, and Donald W. Heseltine, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 20, 1970, Ser. No. 56,657
Int. Cl. G03c *1/08, 1/18;* **C09b** *23/100*
U.S. Cl. 96—139 **12 Claims**

Novel trimethine hemioxonol dyes are provided in which the polymethine chain of the dye includes the 1, 2 and 3 carbon atoms of a 1-cyclohexen-3-ylidene nucleus, the 1-carbon atom of said 1-cyclohexen-3-ylidene nucleus having the nitrogen atom of a tertiary amino group attached thereto. Photographic emulsions and elements are also provided featuring the trimethine hemioxonol dyes of the invention as spectral sensitizers or as filter material. A method for preparing the trimethine hemioxonol dyes is also provided which comprises heating a quaternary salt of a 3-chlorocyclohex-2-en-1-ylidene compound having substituted on the 1-carbon atom thereof the nitrogen atom of a tertiary amino group, with an acidic compound having an active methylene group of the type used in the preparation of hemioxonol dyes, in the presence of a basic condensing agent.

3,652,290
BEVERAGES CONTAINING STABILIZED VITAMIN C

Paul A. Hammes, Westfield, and Lewis D. Morse, Princeton, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Aug. 10, 1970, Ser. No. 62,686
Int. Cl. A23l *1/30*

U.S. Cl. 99—28 **9 Claims**

Vitamin C is stabilized by the addition of 1 to 6 percent histidine or 0.4 to 3 percent glycine or 0.7 to 4 percent methionine based on the weight of the Vitamin C. The stabilized Vitamin C composition is used to fortify beverages. Metabolically available iron can be included within the stabilized Vitamin C composition.

3,652,291
CITRUS OIL AND OTHER OILS HAVING ENHANCED SPECIFIC GRAVITY, AND USE THEREOF

Paul Z. Bedoukian, 40 Ashley Road, Hastings-on-Hudson, N.Y.
Continuation-in-part of application Ser. No. 36,439, May 11, 1970. This application Oct. 16, 1970, Ser. No. 81,505
Int. Cl. A23l *1/26;* **A23l** *5/00*

U.S. Cl. 99—28 **22 Claims**

Polyol benzoate such as glyceryl tribenzoate or propylene glycol dibenzoate or a mixture of the two is combined with an edible oil such as citrus oil or coconut oil to form a mixture having an enhanced specific gravity. The mixture is emulsified by the addition of an aqueous solution of gum arabic. The emulsion is mixed with a beverage base of approximately the same specific gravity.

3,652,292
INSTANT COFFEE PRODUCT AND A PROCESS FOR ITS MANUFACTURE

Heinz Bach; Max Bottger, both of Suchtein, and Heinrich Pabst, Schulberg, all of Germany, assignors to General Foods Corporation, White Plains, N.Y.
Filed Mar. 7, 1968, Ser. No. 711,221
Claims priority, application Austria, Mar. 8, 1967, A 2209/67; July 31, 1967, A 7104/67; A 7105/67; Nov. 16, 1967, A 10331/67
Int. Cl. A23f *1/08*

U.S. Cl. 99—71 **27 Claims**

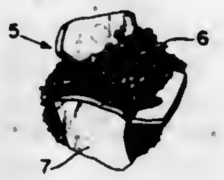
Soluble coffee solids prepared by extraction are mixed in an aqueous medium with wet ground colloidal particles of roast or extracted roast coffee, the latter representing about 3 percent to 40 percent by weight of the total weight of the coffee product. The colloidal particles are stabilized against flocculation by regulation of the pH so as not to exceed a pH of 5.2 and said particles are encased in the dried soluble coffee solids to form an instant coffee product having a fresh-brewed coffee aroma flavor and turbidity. The resultant coffee product may be admixed with additional soluble coffee powder. Drying is performed by conventional methods.

3,652,293
INSTANT COFFEE COMPOSITIONS EXHIBITING A CRYSTALLINE SHEEN

Cesar A. Lombana; Rudolph M. Phillips, both of Springfield Township, Hamilton County, and Richard Gregg, Greenhills, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation-in-part of application Ser. No. 718,569, Apr. 3, 1968, now abandoned. This application Jan. 9, 1969, Ser. No. 797,322
Int. Cl. A23f *1/08*

U.S. Cl. 99—71 **8 Claims**

Novel instant coffee compositions characterized by an appearance that presents at least one external planar surface exhibiting high sheen, and novel processes for obtaining these instant coffee compositions comprising polishing, and preferably structuring, thin dense instant coffee flakes by exposing the instant coffee flakes to a jet of moistening fluid comprised of steam or finely atomized water.



3,652,294
MANUFACTURE OF STARCH-CONTAINING FOOD PRODUCTS

Nicholas G. Marotta, Green Brook; Gary A. Zwiercan, North Plainfield, and Richard M. Boettger, Morristown, all of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 678,498, Oct. 27, 1967, now abandoned. This application Aug. 19, 1970, Ser. No. 65,279
Int. Cl. A23l *1/18, 1/10, 1/12*

U.S. Cl. 99—83 **6 Claims**

Ready-to-eat food products and a method for their preparation which comprises moistening a pregelatinized starch product, shaping the resulting blend, and thereafter putting the food product into edible form by means of a suitable baking operation.

3,652,295
FERMENTABLE STARCH COMPOSITIONS

Saul Rogols, Circleville, and Robert L. High, Canal Winchester, both of Ohio, assignors to A. E. Staley Manufacturing Company
Filed Nov. 6, 1968, Ser. No. 773,956
Int. Cl. A21d *2/36, 2/04;* **C12b** *3/06*

U.S. Cl. 99—91 **14 Claims**

A lipase-altered starch is included in a carbohydrate composition such as a sponge-dough mix to influence favorably the fermentation of such mixes. The lipase-altered starch has a higher fermentation rate than unaltered starch; which rate, in the case of wheat starch, can be further increased by the addition of a calcium salt. The lipase-altered starch has a synergistic effect on fermentation when combined with ammonium persulfate; changes the nature of the sugar material present following fermentation; and, particularly with added ammonium persulfate, improves the grain and texture of bread.

3,652,296
PROCESS FOR PREPARING SAUSAGE PRODUCT AND PRODUCTS

Forrest R. Wilkerson, Jr., and George M. McClancy, both of Charlotte, N.C., assignors to Remac, Inc., Charlotte, N.C.
Filed Sept. 4, 1969, Ser. No. 855,373
Int. Cl. A22c *11/00;* **A23b** *1/00*

U.S. Cl. 99—109 **5 Claims**

A composition for use with fresh meat, the composition including 1 to 8 parts of fresh honey in its natural state evenly blended with 100 parts of a dry granular carrier such as sodium chloride, and also including suitable dry spices and other general additives. When the composition is interspersed through the meat, as in pork sausage, for example, the fresh honey acts to retard spoilage and discoloration of the meat. A process for forming the composition includes preheating the sodium chloride to approximately 120° F., preheating the honey to approximately 90° F., continuously agitating the

preheated sodium chloride while gradually and evenly pouring the honey thereinto, after which the dry spices and other additives may also be blended into this mixture.

3,652,297
FLAVOR-STABLE MUSTARD

Marvin A. Peterson, Park Ridge, and Gerald A. Flint, Chicago, both of Ill., assignors to Beatrice Foods Co., Chicago, Ill.
Filed July 10, 1970, Ser. No. 54,002
Int. Cl. A23l *1/22*

U.S. Cl. 99—140 R **11 Claims**

A flavor-stable mustard composition is provided by dispersing an encapsulated isothiocyanic acid ester in an oil phase and emulsifying the oil phase in an aqueous medium.

3,652,298
METHOD FOR PREPARING FREE FLOWING SUGAR PRODUCTS

Justin Melvin Mickevicz, Chicago, Ill., assignor to Pro-Col Corporation, Chicago, Ill.
Continuation-in-part of application Ser. No. 530,415, Feb. 28, 1966, now abandoned. This application May 7, 1969, Ser. No. 822,691
Int. Cl. A23l *1/26*

U.S. Cl. 99—141 **3 Claims**

Free flowing powdered sugar is prepared by grinding together in a dry, solid state a white pulverized sugar component and an additive in the form of water insoluble sugar cane cellulose, beet sugar cellulose and/or edible wood cellulose, using proportions of said additive corresponding to 1.5 to 4.0 percent by weight of the sugar component, the resultant product having an average particle fineness of 200 to 325 mesh.

3,652,299
PROCESS OF MAKING SAUCE CONCENTRATES

Edgar W. Penton, Auburn, Wash., assignor to Eduardo's Industries, Auburn, Wash.
Continuation-in-part of application Ser. No. 854,776, Sept. 2, 1969, now abandoned , Continuation-in-part of application Ser. No. 533,782, Mar. 14, 1966, now abandoned. This application Dec. 5, 1969, Ser. No. 882,807
Int. Cl. A23l *1/22*

U.S. Cl. 99—144 **13 Claims**

A sauce concentrate, characterized by being a brittle solid at normal room temperature, composed of from 20–40 percent by weight of an edible fat which is a brittle solid at about 70° F. and has a melting point of 80°–40° F., from 20–40 percent by weight of a starch material, and from 20–40 percent by weight of food sauce flavoring materials made by melting the edible fat, dispersing therein the starch and flavoring materials, and cooling the resulting mixture.

3,652,300
PROCESS OF TREATING FRESH FRUITS AND VEGETABLES AND COMPOSITIONS FOR USE THEREIN

Jagan N. Sharma, West Los Angeles, Calif., assignor to Zenith Processing Corporation, Venice, Calif.
Filed Jan. 28, 1970, Ser. No. 6,546
Int. Cl. A23b *7/14;* **A23l** *3/34*

U.S. Cl. 99—154 **8 Claims**

A method of inhibiting undesirable changes in color, plasmolysis and decay of fresh fruit and vegetables (whole, sliced or shredded) by contacting the same with a liquid treating agent containing benzyl alcohol. The method employs two successive reactions, the first involving naturally occurring oxidases and the second the formation of benzoic acid. Use of solubilizing agents to facilitate the formation of aqueous solutions of benzyl alcohol, and examples of effective ranges of concentration are given.

3,652,301
POLISH COMPOSITION

Almeda J. Damron, 1120 Highland Avenue, Ashland, Ky.
Filed Oct. 14, 1969, Ser. No. 866,359
Int. Cl. C09g *1/02*

U.S. Cl. 106—5 **4 Claims**

A new composition for the cleaning and polishing of copper and brass metals comprised of feldspar, sodium chloride, acetic acid, cereal starch and water in specific proportions.

3,652,302
ANTIMONY BORATE GLASS COMPOSITIONS

Victor A. Levand, Jr., 1273 Croyden Road, Lyndhurst, Ohio; Gene I. Thomasson, 13034 Woodcrest Lane, Chesterland, Ohio, and Richard H. Holcomb, 3843 Freemont Road, South Euclid, Ohio
Original application Jan. 15, 1970, Ser. No. 3,012, now Patent No. 3,588,315. Divided and this application Nov. 23, 1970, Ser. No. 92,016
Int. Cl. C03c *3/00*

U.S. Cl. 106—47 R **2 Claims**

A glass for sealing metallic lead-in conductors in fused silica comprising a low melting antimony borate glass which preferably contains a small amount of molybdenum trioxide and which forms, at elevated temperatures, a molten seal surrounding the conductor.

3,652,303
HEAT ABSORBING BLUE SODA-LIME-SILICA GLASS

Bhogaraju V. Janakirama Rao, Aspinwall, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Jan. 26, 1970, Ser. No. 5,796
Int. Cl. C03c *3/04*

U.S. Cl. 106—52 **2 Claims**

Blue, heat absorbing glasses, particularly infrared absorbing glasses, which have high transmission in the visible portion of the spectrum and are suitable in flat form for use in the automobile, architectural and other heat-shielding applications are disclosed. These glasses consist essentially of lime, soda, silica, 0.05 to 2.0 percent of iron, said iron being in an ionic state, at least 80 percent of which is in the ferrous state, and 0.1 to 15.0 percent tin, a major portion of which is in the stannous state, the ratio of stannous to ferrous ion on a mole percent bases being at least 1:1.

3,652,304
NITRIDE-OXIDE REFRACTORIES

Alma U. Daniels, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 21, 1969, Ser. No. 878,893
Int. Cl. C04b *35/58*

U.S. Cl. 106—57 **6 Claims**

Homogeneous non-porous compositions having an average grain size of less than about 10 microns, a density in excess of 95 percent of theoretical and consisting essentially of 1.10 to 50 volume percent of alumina, zirconia or their mixtures; and 2.50 to 90 volume percent of a nitride of titanium, tantalum, zirconium, hafnium or their mixtures; demonstrate unusual resistance to frictional wear and chemical attack.

3,652,305
MOLDABLE HYDRATED MAGNESIUM OXIDE AND THE FORMATION OF MOLDED ARTICLES THEREFROM

Thomas E. Cook, 3570 Maize Road, Columbus, Ohio
Filed Feb. 24, 1970, Ser. No. 13,759
Int. Cl. C04b *35/04*

U.S. Cl. 106—58 **5 Claims**

A moldable hydrated magnesium oxide and a method of preparing various articles from such material with vitreous surfaces. The material consists mainly of magnesium oxide, ammonium persulfate which acts as a mineralizing agent, and fillers such as aluminum oxide and fine aggregate. When properly combined and formed into a slurry, the mixture can be poured or injected into a mold or extruded and cured at an elevated temperature to form desired articles which will have vitreous or glassy surfaces. A polar organic compound of the glycol or glycol ether class, which functions both as a wetting agent and a protective colloid, is also preferably used in forming the slurry.

3,652,306
HIGH DENSITY REFRACTORY SHAPES AND METHOD FOR PRODUCTION OF SAME

Jean-Pierre Kiehl, and Georges Valentin, both of Lyon, France, assignors to Societe Generale des Produits Refractaires, Paris, France

Continuation-in-part of application Ser. No. 662,276, Aug. 22, 1967, now Patent No. 3,536,505. This application May 8, 1970, Ser. No. 35,890

Claims priority, application France, Aug. 26, 1966, 74294; Jan. 16, 1967, 91257

Int. Cl. C04b *35/04*

U.S. Cl. 106—58 **5 Claims**

High density burned basic refractory shapes having low porosity and creep deformation prepared from a brickmaking batch comprising dead burned magnesia, Cr_2O_3, TiO_2, chrome ore, calcinated dolomite and 3 percent to 6 percent recrystallization additions comprising calcium silicates smaller than 74μ. The batch is shaped and then fired at between 1,550° C. and 1,680° C. to form a transient viscous phase of high vapor pressure to form monocrystals and crystalline aggregates.

3,652,307
ALUMINA REFRACTORIES

Wate T. Bakker, Severna Park, Md., assignor to General Refractories Company, Philadelphia, Pa.

Filed July 7, 1969, Ser. No. 839,663

Int. Cl. C04b *35/10*

U.S. Cl. 106—65 **8 Claims**

Disclosed herein is a refractory brick batch mix which consists essentially of, by weight, about 85 to 95 percent alumina, about 2.99 to 12.99 percent silica, about 0.01 to 0.5 percent of a lithium compound capable of oxidizing to lithium oxide, and about 2 to 7 percent volatilized silica. Refractories prepared from these mixtures exhibit increased strength, higher density, lower porosity and higher refractoriness compared to those previously available.

3,652,308
PROCESS FOR THE MANUFACTURE OF CEMENT CLINKER OF LOW FLUORINE CONTENT

Heinrich Stich, Linz/Danube; Kurt Ruckensteiner, Leonding near Linz/Danube; Walter Binder, and Josef Hutter, both of Linz/Danube, all of Austria, assignors to Osterreichische Stickstoffwerke Aktiengesellschaft, Linz/Danube, Austria

Filed Mar. 2, 1970, Ser. No. 15,843

Claims priority, application Austria, Mar. 6, 1969, A2190/69

Int. Cl. C04b *7/04*

U.S. Cl. 106—103 **2 Claims**

Manufacture of cement clinker low in fluorine compounds from phosphoric acid byproduct gypsum by heating the gypsum itself to temperatures between 500° to 900° C. without the known additives and subsequently mixing the additives with the hot gypsum without cooling the same prior to entering the calcination furnace.

3,652,309
RETARDED GYPSUM PLASTER FOR USE IN LONG SET AGGREGATED MORTAR APPLICATIONS

Marvin K. Lane, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Apr. 1, 1969, Ser. No. 812,371

Int. Cl. C04b *11/00*

U.S. Cl. 106—110 **1 Claim**

The process of making a gypsum plaster possessing a high degree of stability over extended periods of time and having a set time of at least 4 hours in aggregated mortar applications by providing a specially sized calcined gypsum having a particle size that is essentially all finer than 32 microns, and mixing said specially sized gypsum with retarder, accelerator and other additives to give the desired properties when mixed with water and aggregate.

3,652,310
METHOD OF PRODUCING LIGHTWEIGHT, HEAT-INSULATING CONSTRUCTION ELEMENTS FROM LIME AND SILICATE AND PRODUCTS THEREOF

Stefan Kraemer, Essen; Alois Seidl, Thurnstein, and Michael Seger, Krefeld, all of Germany, assignors to Wasag-Chemie Aktiengesellschaft, Essen, Germany

Filed Feb. 3, 1970, Ser. No. 8,435

Claims priority, application Germany, Feb. 18, 1969, P 19 08 049.0

Int. Cl. C04b *15/12*

U.S. Cl. 106—120 **7 Claims**

A method is disclosed by which light and heat-insulating elements, mainly for construction purposes, are manufactured from a mixture of lime and silicates. The method comprises the steps of mixing particles of foamed silicate or glass in a dry or wet state with lime, forming the elements eventually by applying pressure, and hardening the elements in a water vapor-containing atmosphere. The lime is used both in the form of calcium oxide and calcium hydroxide.

3,652,311
PROCESS OF MANUFACTURING STRUCTURAL ELEMENTS

Pieter Simon Wielinga, Vuren Aan Der Waal, Netherlands, assignor to Fabriek van Bouwmaterialen "Loevestein" N.V., Vuren Aan Der Waal, Netherlands and Rheinisch-Westfalische Kalkwerke Aktiengesellschaft, Dorngh, Germany

Filed Dec. 22, 1969, Ser. No. 887,421

Claims priority, application Netherlands, Dec. 24, 1968, 6818589

Int. Cl. C04b *1/00*

U.S. Cl. 106—120 **7 Claims**

The invention relates to a process of manufacturing hydrothermally cured structural elements from a mixture of slacked lime, unslacked lime, sand and water, to which is added one or more aliphatic polyhydroxy compounds having at least seven carbon atoms, preferably sodium 1,2,3,4,5,6-hexahydroxyhexane-1-carboxylate, or a derivative thereof, preferably a boron derivative, in a preferred small but effective amount of 0.01 to 0.1 percent by weight of total solids. The mixture is cast into moulds and the resulting structural elements removed therefrom after a short period of time, following which the elements are cured by treatment with steam in an autoclave.

3,652,312
PHTHALIMIDE PLASTICIZER AND NON-PROTEINACEOUS RESIN MIX

James Kern Sears, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 704,562, Feb. 12, 1968. This application Jan. 18, 1971, Ser. No. 107,469

Int. Cl. C08b *27/52*

U.S. Cl. 106—176 **23 Claims**

This invention relates to the use of certain phthalimides as plasticizers for non-proteinaceous thermoplastic resins.

3,652,313
PIGMENT DISPERSION FOR WATER THINNABLE PAINTS

Nobuyoshi Nagata, Hirakata-shi, and Tsuguo Yamazaki, Nishinomiya-shi, both of Japan, assignors to Nippon Paint Co., Ltd., Oyoda-ku, Osaka, Japan

Continuation of application Ser. No. 435,034, Feb. 24, 1965, now abandoned. This application Mar. 18, 1968, Ser. No. 714,113

Claims priority, application Japan, Feb. 25, 1964, 39/9339; Sept. 8, 1964, 39/50652

Int. Cl. C08b *27/08;* **C08f** *45/08*

U.S. Cl. 106—193 J **7 Claims**

A pigment dispersion for blending with water-thinnable paints, comprising at least one pigment and at least 5 percent by weight of at least one member selected from the group consisting of water-soluble hydroxyalkyl celluloses, water-soluble, partially saponified polyvinyl acetates, water-soluble, partially etherified derivatives of said partially saponified polyvinyl acetates and of polyvinyl alcohol.

3,652,314
METHOD FOR RENEWING, RESURFACING, AND PRESERVING PHONOGRAPH RECORDS

Charles S. Castner, Reading, Pa., assignor to Schuyler Development Corporation

Filed Jan. 2, 1969, Ser. No. 788,653

Int. Cl. G11b *3/58*

U.S. Cl. 117—2 **2 Claims**

A method and composition for initial surface improvement for renewing and/or resurfacing phonograph records by the steps of coating the record with a composition consisting essentially of about two to five parts nonionic acrylic polymer, about two to five parts cationic polyethylene emulsion (25 percent solids in water), about one part nonionic detergent, about two parts diethyl monoethyl ether and about 90 parts water, brushing the composition into the grooves, removing any excess, drying and playing.

3,652,315
A DEVELOPING METHOD IN ELECTROPHOTOGRAPHY USING TONER PARTICLES COATED WITH A NON-VOLATILE LIQUID

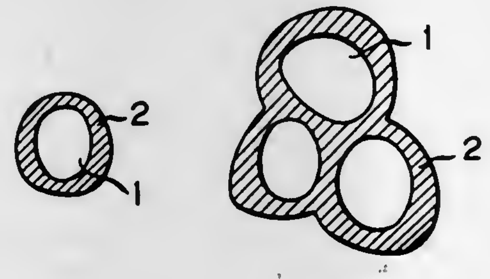
Takehiko Matsuo, Komae Apartment, 17-405, 150, Izumi Komae-cho; Umi Tosaka, 4-10-8, Kita, Asagaya; Tetsuo Hasegawa, 3-23-12, Bunka; Katsunobu Oohara, 2-1388, Sanno-cho, Kaminaruko, and Takashi Ihara, 564, Kami Hirama, Kawasaki-shi, all of Tokyo, Japan

Filed Nov. 7, 1968, Ser. No. 774,065

Claims priority, application Japan, Nov. 13, 1967, 42/72968

Int. Cl. G03g *9/02, 13/08*

U.S. Cl. 117—17.5 **4 Claims**



A developing powder for electrophotography comprising toner particles coated with a non-volatile substance such as silicone oil, Teflon oil or liquid paraffin which is liquid at normal temperature. The volume resistivity of said liquid substance is above 1× $10^{12}\Omega$ cm. and the viscosity is below 1,000 cs. Less than 10 percent by weight of said liquid substance is applied to the toner particles.

3,652,316
HEAT-SEALABLE HYDROXYETHYL CELLULOSE FILM AND PROCESS FOR PREPARING SAME

Reid L. Mitchell; Charles F. Murphy, both of Morristown, and Edmund M. La Polla, Parsippany, all of N.J., assignors to ITT Rayonier Incorporated, New York, N.Y.

Filed Jan. 23, 1969, Ser. No. 793,551

Int. Cl. B32b *23/08;* **C09j** *7/02*

U.S. Cl. 117—73 **11 Claims**

When hydroxyethyl cellulose (HEC) films are treated with a solution of a hydrophobic film former such as polyvinylidene chloride copolymers or nitrocellulose in a volatile solvent to produce a heat sealable coating on the surface of the film, the adhesion between the HEC and the hydrophobic film former is improved by passing the HEC gel film through a conditioning bath containing from about 0.3 to 2.0 percent by weight (based on total bath weight) of a water soluble block copolymer of polyoxyethylene and polyoxypropylene prior to drying the film and applying hydrophobic film former solution thereto.

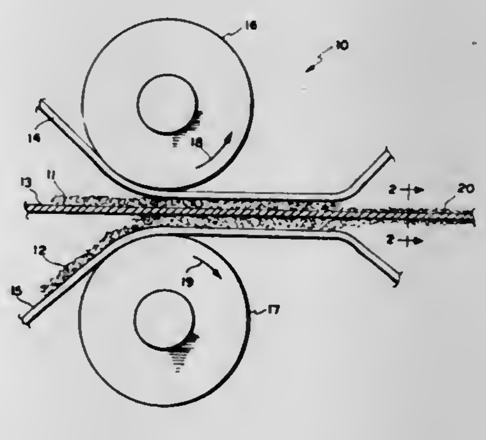
3,652,317
METHOD OF PRODUCING SUBSTRATE HAVING A PARTICULATE METALLIC COATING

Paolo Della Porta; Tiziano A. Giorgi; Bruno Kindl, and Mario Zucchinelli, all of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy

Continuation-in-part of application Ser. No. 527,906, Feb. 16, 1966, now abandoned. This application May 1, 1970, Ser. No. 33,794

Int. Cl. B05b *7/14;* **B44c** *1/06, 1/08*

U.S. Cl. 117—22 **16 Claims**



A method of producing a substrate having a particulate coating of high surface area to mass ratio, said method comprising in sequence the steps of:

I. disposing particles between a substrate and an intermediate body wherein the particles are harder than the substrate; and the intermediate body is softer than the particles but is harder than the substrate;

II. compressing the substrate and intermediate body, with particles therebetween whereby the intermediate body pushes the particles into the substrate; and

III. removing the intermediate body from the particles leaving them embedded in the substrate.

The coating substrates produced by the process of the present invention find utility as catalytic devices to accelerate or retard chemical reactions, as getter devices to sorb residual gases in closed vessels such as electronic tubes, and with further processing as capacitors.

3,652,318
PROCESS FOR THE PRODUCTION OF ANTIDAZZLE GLASS FILTERS

Herbert Heins, Hamburg-Rissen, Germany, assignor to J. D. Moller Optische Werke GmbH, Wedel, Holstein, Germany
Continuation-in-part of application Ser. No. 615,932, Feb. 14, 1967, now abandoned. This application Nov. 13, 1969, Ser. No. 876,559
Int. Cl. B44d *5/06;* **C03c** *17/00;* **C23c** *11/00*
U.S. Cl. 117—33.3 **19 Claims**

Vacuum-coated antidazzle glass filters, such as sunglasses filters, are produced by adding elementary boron or a boron-releasing compound to silicon dioxide and evaporating the mixture onto glass under a vacuum. The minimum thickness of the coating formed by evaporation should be about 1.5 μ. By adding a dyestuff to the mixture before evaporation, the degree of light absorption can be controlled.

3,652,319
CYCLIC IMAGING SYSTEM

Alan B. Amidon, and Joseph Mammino, Penfield, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Dec. 30, 1969, Ser. No. 889,273
Int. Cl. B05c *3/20;* **B44d** *1/02, 1/52*
U.S. Cl. 117—37 LE **24 Claims**

A liquid development imaging system with a cycling imaging surface to which is cyclically applied a film forming insulating solid that wets the imaging surface and sharply liquefies with low melt viscosity at a temperature above ambient operation temperature. The added solid permits relative ease in cleaning and the ability to cycle the imaging surface without complete cleaning.

3,652,320
REDUCTION OF CHAR DEPTH IN ABLATIVE COMPOSITES

Junior De Vere Seader, Salt Lake City, Utah, assignor to University of Utah
Filed May 31, 1968, Ser. No. 733,411
Int. Cl. B44d *1/02*
U.S. Cl. 117—46 **4 Claims**

Treatment of ablative composite materials with a catalyst comprising a transition metal and/or a transition metal compound to reduce the depth of thermal degradation of the composite by accelerating endothermic reactions in the thermal degradation region of the composite surface to at least partially insulate the remainder of the composite from severe hyperthermal exposure.

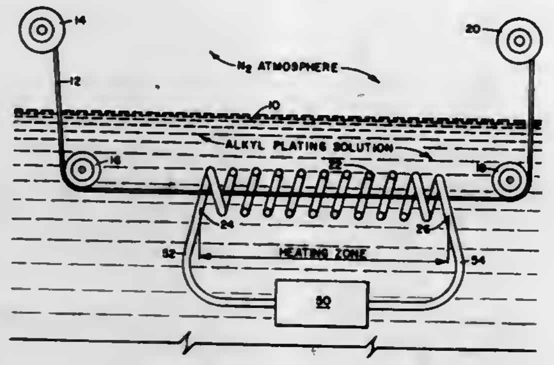
3,652,321
DEPOSITION OF ALUMINUM ON A GALVANIZED SURFACE

Larry H. Hood, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed Aug. 17, 1970, Ser. No. 64,626
Int. Cl. B32b *15/18;* **C23c** *3/00;* **B32b** *15/20*
U.S. Cl. 117—50 **7 Claims**

A galvanized substrate is plated with aluminum metal by initially heating the substrate to within a temperature range below the melting point of zinc, contacting the heated substrate with a plating solution containing an aluminum alkyl compound: thereby, depositing a thin coating of aluminum on the substrate, raising the temperature of the coated substrate to within a range above the melting point of zinc and contacting the coated substrate with the plating solution, achieving an aluminum plating of a desired thickness on the galvanized substrate.

3,652,322
METHOD FOR CONTROLLING THE HEATING OF A METAL IMMERSED IN A PLATING SOLUTION

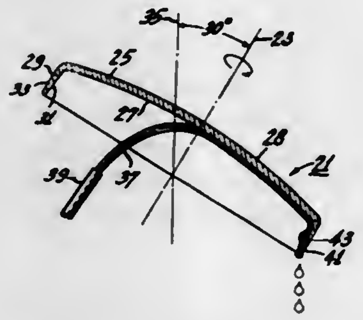
William B. Stovall, Seabrook, Tex., assignor to Continental Oil Company, Ponca City, Okla.
Filed Sept. 3, 1970, Ser. No. 69,222
Int. Cl. C23c *3/00*
U.S. Cl. 117—93 **5 Claims**



In the plating of a continuously moving metal substrate immersed in a plating solution provided with a means for continuously heating the substrate, the heat input to the substrate is cycled by means therefor to give a series of heat inputs and quenching steps so as to manipulate the temperature of the substrate within a temperature range suitable for plating to thereby achieve a quality coating of a desired thickness.

3,652,323
PROCESS FOR COATING FLATLIKE SURFACES

Bradford Knox Smith, Lititz, Pa., assignor to RCA Corporation
Filed Dec. 22, 1969, Ser. No. 887,267
Int. Cl. B44d *1/08*
U.S. Cl. 117—97 **10 Claims**



A process for coating a flatlike surface, such as the inner surface of the viewing panel of a cathode ray tube, comprising

a. slowly rotating the surface, facing downward, about an axis that is substantially normal to the surface,

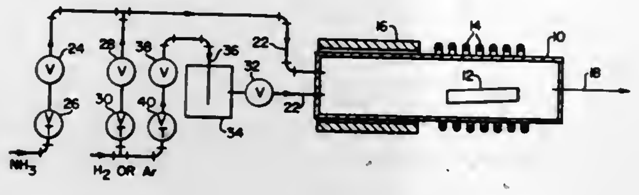
b. projecting a stream of liquid coating material in a trajectory to contact the rotating surface substantially tangentially and then to pass along the surface through the axis,

c. and then permitting excess coating material to drain from the rotating surface.

3,652,324
METHOD OF VAPOR DEPOSITING A LAYER OF Si_3N_4 ON A SILICON BASE

Ting L. Chu, Dallas, Tex.; Gilbert A. Gruber, and John R. Szedon, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 616,695, Feb. 16, 1967, now abandoned. This application Aug. 15, 1968, Ser. No. 752,849
Int. Cl. C23c *11/08, 11/16*
U.S. Cl. 117—106 **8 Claims**

The present invention relates to dielectric coatings for electronic devices such as rectifiers, transistors and capacitors. More specifically, the invention relates to dielectric coatings comprising silicon nitride films alone or in combination with silicon dioxide films, and to methods for the production of silicon nitride coatings by reacting silane, silicon halides or halosilanes with ammonia.



3,652,325
VAPOR DEPOSITION PROCESS

Charles D'A Hunt, Orinda, Calif., assignor to Air Reduction Company, Incorporated
Filed Dec. 13, 1968, Ser. No. 790,500
Int. Cl. C23c *13/02*
U.S. Cl. 117—107 **3 Claims**

A vacuum vapor deposition process is described for depositing a coating of an iron-base alloy on a substrate. The quality of the deposited coating is improved by maintaining the substrate above a minimum temperature of 1,600° F., in the case of alloys with substantially soluble constituents, and of 1,700° F., in the case of alloys having at least partially insoluble constituents.

3,652,326
SIZING COMPOSITION AND GLASS FIBERS TREATED THEREWITH

John E. Ward, Houghton, Mich., assignor to Owens-Corning Fiberglas Corporation
Filed Apr. 3, 1970, Ser. No. 25,584
Int. Cl. C03c *25/02*
U.S. Cl. 117—126 GE **4 Claims**

A sizing for glass fibers, comprising water soluble epoxy resins, an organosilane, polyvinyl acetate copolymer and a lubricant is provided, whereby the sized glass fibers in the form of strands possess excellent integrity.

3,652,327
COATINGS OF ARYLENE SULFIDE POLYMERS

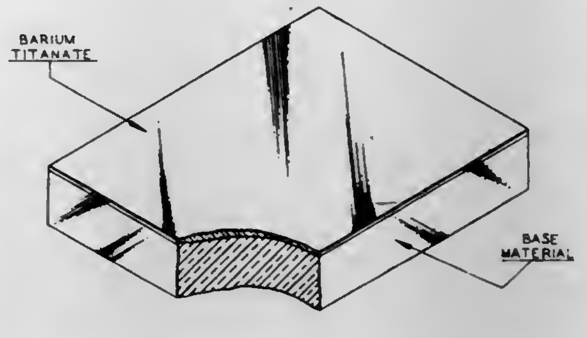
Harold Wayne Hill, Jr., and James T. Edmonds, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed July 25, 1969, Ser. No. 845,098
Int. Cl. B32b *15/08, 17/10;* **C04b** *41/06*
U.S. Cl. 117—132 B **7 Claims**

Adherent coatings of arylene sulfide polymers are formed by applying a mixture of the polymer and an oxide or sulfide of cobalt or molybdenum to a solid substrate such as iron, steel, aluminum and ceramic.

3,652,328
TRANSPARENT PLASTIC HAVING TRANSPARENT MAR-RESISTANT COATING OF BARIUM TITANATE

Ronald A. Dork, Utica, and Ronald E. White, Romeo, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 2, 1969, Ser. No. 854,528
Int. Cl. B32b *27/06;* **B44d** *5/00*
U.S. Cl. 117—138.8UA **3 Claims**

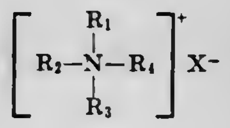
A composite optical element is disclosed having a synthetic resin substrate and an abrasion resistant surface coating of barium titanate. A polycarbonate resin substrate and an R.F. vacuum sputtered barium titanate protective surface coating provides a particularly tough and abrasion resistant optical element such as a window or windshield.



3,652,329
METHOD OF TREATING TEXTILES

Peter H. Vossos, Lisle, Ill., assignor to Nalco Chemical Company, Chicago, Ill.
Filed Jan. 27, 1970, Ser. No. 6,328
Int. Cl. C10m *5/20*
U.S. Cl. 117—139.5CQ **10 Claims**

Covers textile treating compositions and a method of improving the strength and other desirable properties of textiles by contacting said textile with an organosol comprising a non-polar organic solvent having uniformly dispersed therein discrete, dense colloidal particles of amorphous silica having an average particle diameter of 3–150 millimicrons and an average surface area of from about 20 $M^2/g.$ to 1,000 $M.^2/g.$, said silica particles having absorbed upon their surfaces a quaternary ammonium salt or hydroxide, with the weight ratio silica, expressed as SiO_2 to the quaternary ammonium salt or hydroxide being at least 2:1, wherein the quaternary ammonium compound has the formula:



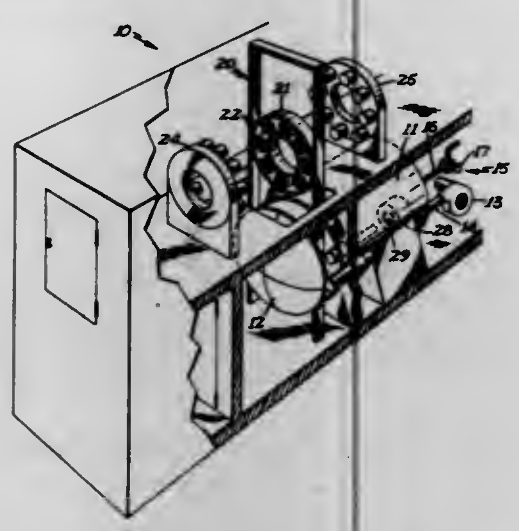
$$\left[\begin{array}{c} R_1 \\ | \\ R_2-N-R_4 \\ | \\ R_3 \end{array}\right]^+ X^-$$

wherein R_1, R_2, R_3 and R_4 are hydrocarbon groups containing one–22 carbon atoms, with the total number of carbon atoms in said quaternary ammonium compound being at least 10, and X is an anion selected from the group consisting of chloride, bromide, iodide and hydroxide.

3,652,330
PROCESS FOR COATING AMORPHOUS SELENIUM

Donald E. Anderson, Northfield, Minn., assignor to G. T. Schjeldahl Company, Northfield, Minn.
Filed Sept. 14, 1970, Ser. No. 71,671
Int. Cl. G03g *7/00*
U.S. Cl. 117—201 **5 Claims**

The method of applying a film of amorphous selenium to a substrate having a generally cylindrical surface, the method comprising inserting a charge of selenium into a generally cylindrical crucible having an inner wall extending in spaced relationship to a cylindrical axis, and treating the selenium charged therein so as to dispose the charge generally along the walls of the crucible so as to define a generally cylindrical charge profile uniformly spaced about the crucible axis. This treatment is preferably accomplished by the rotation of the crucible about its axis at a rate sufficient to centrifugally force the charge to a uniformly cylindrically profiled form. The charge is thereafter heated to a temperature at least sufficient to cause sublimation of the selenium within the crucible, while the charge is rotated about is axis at a rate sufficient to hold the charge uniformly about the inner crucible wall. While this is occurring, the substrate is inserted into the crucible with the outer cylindrical surface being spaced a predetermined distance from the surface of the cylindrical charge profile. During the deposition of the selenium onto the substrate surface, the substrate is chilled to a temperature ranging from between about 50° C. and 70° C.



3,652,331
PROCESS FOR FORMING A FILM ON THE SURFACE OF A SUBSTRATE BY A GAS PHASE

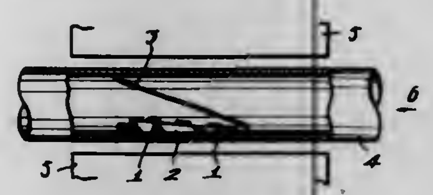
Shumpei Yamazaki, 20, 7, 1-chome, Shinkawa, Shizuoka, Japan

Filed Mar. 13, 1969, Ser. No. 806,851

Claims priority, application Japan, Mar. 22, 1968, 43/18611; Oct. 3, 1968, 43/71972

Int. Cl. C23c *13/04*

U.S. Cl. 117—201 **10 Claims**



A process for forming a film on the surface of a substrate by a gas phase method in the presence of a catalyst used in the solid state electronics at a predetermined distance from the surface of the substrate on which the film is to be formed and a process for forming a silicon oxide or silicon nitride in the presence of a catalyst selected from the group comprising platinum and the like.

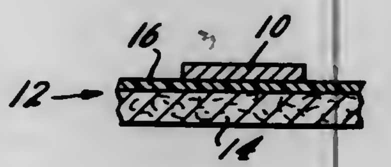
3,652,332
MANUFACTURE OF PRINTED CIRCUITS

John Seemann Brand, Cranbury, and Vladimir Paul Honeiser, Lawrenceville, both of N.J., assignors to American Can Company, New York, N.Y.

Filed July 6, 1970, Ser. No. 52,520

Int. Cl. B44d *1/18;* **H01h** *37/36;* **H05k** *3/12*

U.S. Cl. 117—212 **7 Claims**



Circuits including conductors and impedance elements are printed on paper. Component values are maintained within acceptable limits of variation by correlated selection of substrate porosity and ink to produce a high degree of absorption of the liquid ink vehicle into the porous substrate while producing relatively little penetration of the pigment. Resistance values are lowered, and their reliability and consistency greatly improved, as compared with printing on either impermeable or excessively porous substrates.

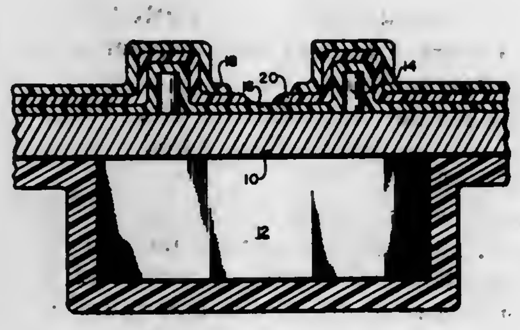
3,652,333
ENCAPSULATING COMPOSITION FOR ELECTRONIC CIRCUIT BOARDS AND PROCESS FOR APPLYING SAME

John M. Warren, Weatherford, Tex., assignor to General Dynamics Corporation, Ft. Worth, Tex.

Filed Feb. 2, 1970, Ser. No. 7,912

Int. Cl. B44d *1/42;* **H01b** *3/30*

U.S. Cl. 117—218 **5 Claims**



A process for applying a polyurethane gel composition for coating and encapsulating the electronic circuitry on a circuit board wherein the said composition consists essentially of an admixture of an elastomeric linear polyesterurethane of high molecular weight; a tetrahydrofuran intermediate monomer solvent and ethylene glycol monoethylether acetate, which composition is preferably sprayed over the object circuitry and onto the related electronic circuit board or other substrate as a vaporized gel of minute viscous globules which simultaneously forms a substantially uniform protective film over the substrate and encapsulates the circuit's conduit and conduit terminals as well as other protrusions, including elements having sharp points, knife edges and the like. This prime coat is then dried and may be subsequently followed by one or more dip coatings which are formed by immersion of the dried workpiece into a mixture of polymethyl methacrylate with a copolymer of ethyl acrylate/methyl methylacrylate.

3,652,334
MAGNETIC MATERIAL AND METHOD OF MAKING THE SAME

Wilhelm Abeck, Leverkusen-Steinbuechel; Heinrich Kober, Munich, and Bernhard Seidel, Gruenwald, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 7, 1968, Ser. No. 774,209

Claims priority, application Germany, Nov. 25, 1967, P 15 92 214.2

Int. Cl. H01f *10/00*

U.S. Cl. 117—236 **10 Claims**

Magnetic gamma-Fe_2O_3 particles particularly useful as magnetizable material for magnetic recording media, area produced by treating alpha-FeOOH particles with a solution of a hydrolysis-resistant, inorganic substance capable of forming on the alpha-FeOOH particles a firmly adhering covering, so that the individual alpha-FeOOH particles will be substantially covered by such substance, and by converting the thus pretreated alpha-FeOOH particles into gamma-Fe_2O_3.

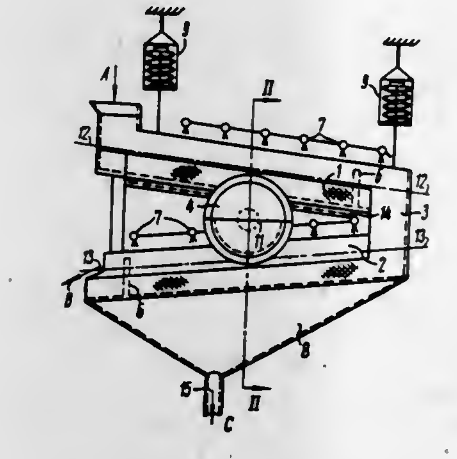
3,652,335
APPARATUS FOR WASHING LUMPY NON-METALLIC MATERIALS

Roman Andrianovich Rodin, ul. Kostyanova,9, kv. 74, and Vasily Vasilievich Oljunin, Zelenograd, 316, kv. 37, both of Moscow, U.S.S.R.

Filed May 1, 1969, Ser. No. 820,841

Int. Cl. B08b *3/02*

U.S. Cl. 134—66 **2 Claims**



A device for washing lumpy generally nonmetallic materials, particularly broken stone, gravel and flux materials, capable of high-quality washing of the materials, including high-filling level or capacity for the spouts, the possibility to control the washing time in dependence with the degree of contamination of the material being washed, the perforated spouts being arranged in tandem one above the other in such a manner that each pair of adjacent spouts is inclined oppositely with respect to each other so as to convey the material being washed from one spout to the other successively, and including vibrating means to facilitate material conveyance.

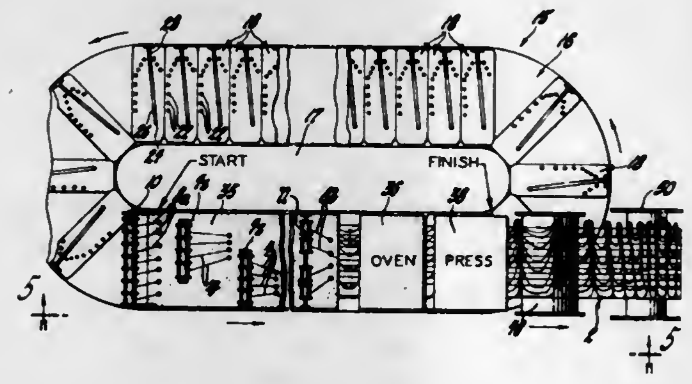
3,652,336
WOUND-WIRE STORAGE BATTERY GRID AND PROCESS

Ellis G. Wheadon, and Charles P. McCartney, both of Yorktown, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 8, 1970, Ser. No. 70,008

Int. Cl. H01m *35/04*

U.S. Cl. 136—60 **1 Claim**



A storage battery grid cut from a continuous strip of wound-wire grid segments. Continuous lengths of a plurality of wires periodically are gathered into lug-forming nested loops and fanlike arrays of conductors. Nonconductive reinforcing filaments crisscross and are bonded to the conductors at a plurality of fusion-interlocked joints.

3,652,337
CASTING PLATE STRAPS TO BATTERY PLATES

Renard E. Mix, Yorktown, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 25, 1969, Ser. No. 852,605

Int. Cl. H01m *35/32*

U.S. Cl. 136—134 R **3 Claims**

A process for consistently producing welds between portions of a plurality of Pb-acid storage battery plates and in-situ cast-on battery plate straps, including the essential step of coating a portion of the battery plate with a molten film of an alloy having a melting point at least about 200° F. lower than the melting point of the battery plate and contacting the coated portion with molten battery plate strap material while said film is in a molten condition. The process is most particularly applicable when using Pb-Ca alloys in the plate groups.

3,652,338
ELECTROCHEMICAL SYSTEM COMPRISING LAYERED SILICATE FILM SEPARATOR

Allen Charkey, Flushing, and Derryk Brooks-Smith, Brooklyn, both of N.Y., assignors to Yardney International Corporation, New York, N.Y.

Filed Aug. 22, 1969, Ser. No. 852,497

Int. Cl. H01m *3/00*

U.S. Cl. 136—146 **5 Claims**

Films, membranes and pellicle coatings of layered silicates are provided for selective ion separation. These films, as coatings upon a substrates or as flexible self-supporting foils, provide ion separation by selectively restricting ion mobility, particularly, but also, to some extent, molecular mobility as well. The specific use of layered silicates provides selective separations that are more complete than those available with similar silicates generally, not possessing the layered structures. These films are advantageously used in the strenuous environment of rechargeable electrochemical cells where they function as excellent interelectrode separators. The use of polymers as binders for the films is disclosed but the disclosure is not limited to the use of binders and the layered silicates may be formed into binderless pellicles upon substrates.

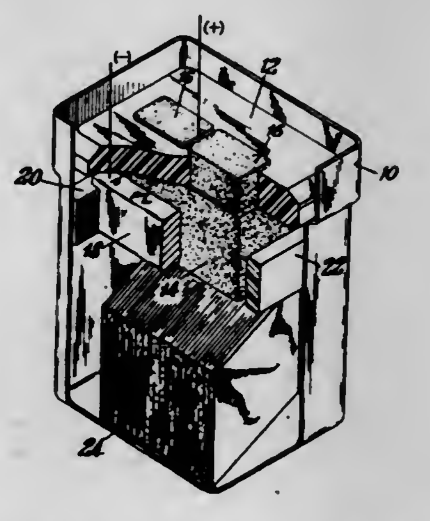
3,652,339
REGENERATIVE LIME SHEET FOR USE IN PRIMARY GALVANIC BATTERIES EMPLOYING A ZINC ANODE

Carl A. Grulke, Berea, Ohio, assignor to Union Carbide Corporation

Original application Aug. 10, 1967, Ser. No. 659,810, now Patent No. 3,497,391, dated Feb. 24, 1970. Divided and this application Oct. 6, 1969, Ser. No. 870,833

Int. Cl. H01m *33/00;* **C04b** *1/00*

U.S. Cl. 136—161 **16 Claims**



For use as the regenerative lime material in an alkaline primary galvanic battery of the type employing a zinc anode, a thin porous regenerative lime sheet comprising colloidal lime particles and dispersed cellulose fibers bonded together with an organic binder insoluble in the alkaline electrolyte of the battery.

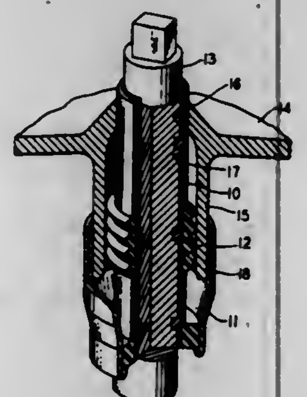
3,652,340
APPARATUS FOR AND METHOD OF FORMING POST SEAL FOR LEAD-ACID CELL

Louis H. Sharpe, Morris Township; Jayant R. Shroff, Morristown, and Frank J. Vaccaro, Parsippany, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of application Ser. No. 831,611, June 9, 1969, now abandoned. This application Dec. 29, 1969, Ser. No. 888,388

Int. Cl. H01m *1/02*

U.S. Cl. 136—168 **6 Claims**



A post seal design for a lead-acid cell utilizes the combination of a one-piece flexible seal and a post coated with a relatively rigid adhesive coating to inhibit acid leakage. Additionally, the post may contain a number of grooves in its periphery to further inhibit leakage resulting from corrosion of the post. The coating may be applied to the post prior to the installation of the flexible seal thereon, or alternatively, the flexible seal may be used as a mold to cast the coating in place on the post after the installation of the flexible seal.

3,652,341
METHOD OF MAKING A DRY CHARGED BATTERY

Vincent Michael Halsall, Bayside, and Edward Norman Mrotek, Greendale, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed May 12, 1970, Ser. No. 36,662

Int. Cl. H01m *7/00, 35/30*

U.S. Cl. 136—176 **15 Claims**

A charged storage battery having improved low temperature activation performance characteristics upon the addition of electrolyte is made by installing assembled battery elements into the container cell compartments; electrically connecting the battery elements; filling the cell compartments with the forming electrolyte, with or without the cover installed; forming the battery elements into a fully charged state; removing about 70 to about 97 (preferably about 77 to 87) weight per cent of the forming acid, based upon the total weight of the forming acid in the battery after formation, by applying an accelerative force (preferably a centrifugal force) to the battery; and installing means to seal the battery against the ingress of air into the cell compartments. In a preferred embodiment, the low temperature activation performance of the battery is further improved by allowing the battery elements to stand in the forming electrolyte for a time period after the forming step and then applying a boost charge to the battery elements prior to removing the forming acid.

3,652,342
RAZOR BLADES AND PROCESSES FOR THE PREPARATION THEREOF

Irwin W. Fischbein; Francis E. Flaherty, both of Canton; Edward P. McLaughlin, Braintree, and Fred T. Willett, Norwood, all of Mass., assignors to The Gillette Company, Boston, Mass.

Filed June 7, 1967, Ser. No. 644,052

Int. Cl. B44d *1/36*

U.S. Cl. 148—6.35 **11 Claims**

The present invention is concerned with steel razor blades having a fluorocarbon polymeric coating thereon and more particularly with processes for producing improved blades of that nature. Generally, the improvements are brought about by providing a thin, cubic iron oxide layer beneath the polymeric coating.

3,652,343
PERMANENT MAGNET MATERIAL POWDERS HAVING SUPERIOR MAGNETIC CHARACTERISTICS

Joseph J. Becker, Schenectady, N.Y., assignor to General Electric Company

Continuation-in-part of application Ser. No. 730,577, May 20, 1968, now Patent No. 3,558,371. This application Sept. 14, 1970, Ser. No. 72,099

Int. Cl. H01f *1/06*

U.S. Cl. 148—31.57 **4 Claims**

The coercive force of cobalt-rare earth intermetallic compounds is greatly enchanced by treating the compounds in finely divided form with acid.

3,652,344
ALUMINUM ALLOY-STEEL BEARING AND METHOD OF MAKING SAME

George R. Kingsbury, Cleveland, and Raymond L. Slater, Novelty, both of Ohio, assignors to Clevite Corporation

Filed Sept. 25, 1969, Ser. No. 861,196

Int. Cl. B21d *53/10;* **C21d** *1/46, 9/40*

U.S. Cl. 148—127 **6 Claims**

Bimetallic bearing material comprising aluminum alloys consisting of silicon, cadmium, copper, magnesium, and the balance aluminum, bonded directly on steel backings, are heat treated to effect improved hardness and fatigue resistance. The heat treatment comprises solution heating said bearing material at temperatures ranging from 900° F. to 975° F. for at least 15 seconds but not exceeding 80 seconds, after which it is rapidly quenched in a fluid medium having a maximum temperature of 100° F., followed by precipitation heat treatment at about 350° F. for ten hours.

3,652,345
METHOD OF REMOVING RESIDUAL STRESS FOR IMPROVING FATIGUE STRENGTH OF BOUNDARY OF HEATED ZONE

Katsunobu Tomita; Kentaro Ishii, both of Tokyo; Yoshito Tanaka, Nara, and Takao Saito, Nishinomiya, all of Japan, assignors to Japanese National Railways, Tokyo and Sumitomo Metal Industries Limited, Osaka, Japan

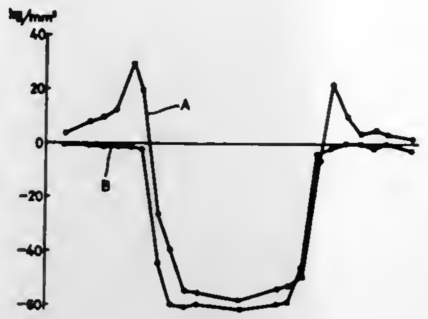
Filed Sept. 17, 1969, Ser. No. 858,814

Claims priority, application Japan, Sept. 18, 1968, 43/67744

Int. Cl. C21d *1/06, 1/08, 1/10*

U.S. Cl. 148—134 **4 Claims**

A method for removal of residual tensile stresses from a locally casehardened steel object is disclosed. In accordance with the method, a projecting fillet is provided at the boundary of the zone on the object to be hardened. The fillet is removed after hardening is accomplished.



3,652,346
METHOD OF INDUCTION HARDENING FOR IMPROVING FATIGUE STRENGTH OF BOUNDARY OF HEATED ZONE

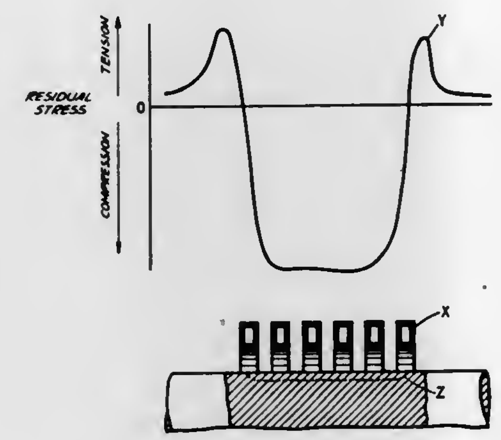
Katsunobu Tomita; Kentaro Ishii, both of Tokyo; Yoshito Tanaka, Nara, and Takao Saito, Nishinomiya, all of Japan, assignors to Japanese National Railways, Tokyo, Japan and Sumitomo Metal Industries, Limited, Osaka, Japan

Filed Sept. 17, 1969, Ser. No. 858,812

Claims priority, application Japan, Sept. 18, 1968, 43/67742

Int. Cl. C21d *1/10, 1/66*

U.S. Cl. 148—154 **4 Claims**



Residual tensile stresses are reduced in a locally casehardened steel object by cooling the boundary zone adjacent the area to be hardened during induction heating.

3,652,347
METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

Minoru Nagata, and Kozi Sato, both of Kodaira-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 4, 1968, Ser. No. 772,913

Claims priority, application Japan, Nov. 6, 1967, 42/70971

Int. Cl. H01l *7/44*

U.S. Cl. 148—187 **13 Claims**

A method for manufacturing a lateral transistor, formed by selectively diffusing a P type emitter region on one principal surface of an N type silicon substrate and introducing acceptor impurity in said emitter region and in one portion of the surface of said substrate at a prescribed distance from said emitter region, thereby forming an emitter region and a P type collector region which have a high surface impurity concentration.

3,652,348
LIQUIDS THICKENED WITH SUBMICROSCOPIC BETA-SILICON CARBIDE FIBER SHEATHED WITH SILICA

George Baum, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed June 9, 1967, Ser. No. 644,979

Int. Cl. C10l *7/02;* **C06d** *5/00*

U.S. Cl. 149—36 **10 Claims**

This invention relates to a method for increasing the viscosity of polar and nonpolar liquids through the addition thereto of submicroscopic-sized fibers containing silica-sheathed, beta-silicon carbide crystals, said fibers having diameters averaging about 0.025 microns and aspect ratios greater than about 1,000:1.

3,652,349
THIXOTROPIC GAS PRODUCING GEL

Herbert A. Bartick, Alexandria, Va., assignor to The Susquehanna Corporation, Fairfax County, Va.

Filed Aug. 25, 1969, Ser. No. 852,904

Int. Cl. C06b *11/00, 19/04*

U.S. Cl. 149—42 **7 Claims**

A combustible gas producing gel having a viscosity up to about 200 poise at a 100 reciprocal second rate of shear and a temperature of minus 65° F. and being thermally stable at temperatures up to about 165° F. comprising the combination of solid consumable particles suspended in a hydrocarbon carrier having eight to 10 carbon atoms and containing an arganoaluminum phosphonate gelling agent. The solid consumable particles may be present in a concentration of from about 77 percent to about 95 percent by weight based upon the total weight of gel; the hydrocarbon carrier may be present in a concentration of from about 5 percent to about 23 percent by weight based upon the total weight of the gel; and the weight ratio of the hydrocarbon carrier to the gelling agent is less than about 100. The solid consumable particles may be all oxidizer particles or a combination of oxidizer and fuel particles.

3,652,350
METHOD OF BLENDING PYROTECHNIC MIXTURES

Hubert G. Timmermans, Manhatten Beach, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.

Filed June 23, 1969, Ser. No. 835,917

Int. Cl. C06b *11/00*

U.S. Cl. 149—109 **8 Claims**

A method of blending pyrotechnic mixtures of the class which include an organic binder, fuel powder and oxidizer powder, comprising the dissolving of the binder in a first solvent in which it is substantially soluble and in which the fuel and oxidizer powders are substantially insoluble so as to form a binder solution, mixing the fuel and oxidizer powders into said binder solution, adding a second solvent to the product of the foregoing steps in which second solvent the binder, fuel powder and oxidizer powder are substantially insoluble in an amount sufficient to cause the precipitation of the major proportion of the binder, and then removing the solvents and drying the precipitate. This method produces a uniformly granulated product which needs no mechanical handling to secure the mixture or granulation, these properties being obtained in a wet environment devoid of the risk of explosion.

3,652,351
PROCESSES FOR ETCHING SYNTHETIC POLYMER RESINS WITH ALKALINE ALKALI METAL MANGANATE SOLUTIONS

Medie B. Guisti, Spring Valley, Ill., assignor to Carus Corporation, La Salle, Ill.

Filed May 13, 1970, Ser. No. 37,008

Int. Cl. B44c *1/22;* **C23b** *5/62*

U.S. Cl. 156—2 **3 Claims**

Processes for etching synthetic polymer resins, particularly

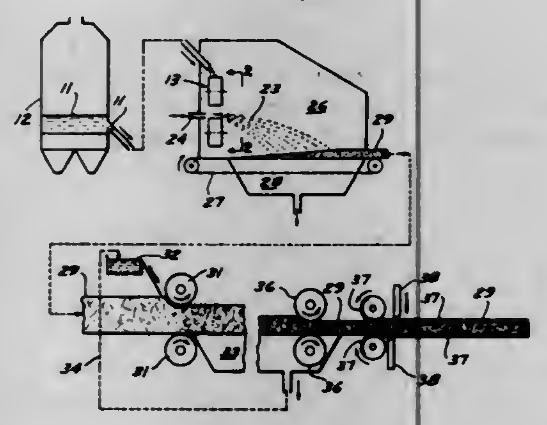
ABS resins, with aqueous, alkaline solutions of alkali metal manganate (VI) at low temperatures.

3,652,352

PROCESS FOR MANUFACTURE OF HARD MINERAL FIBER SLABS WITH COATING

Frantisek Milsimer, and Jiri Zampach, both of Prague, Czechoslovakia, assignors to World Patent Development Corp.

Filed Nov. 24, 1969, Ser. No. 879,265
Claims priority, application Czechoslovakia, Nov. 26, 1968, 8072/68
Int. Cl. B29j *5/00*
U.S. Cl. 156—62.4 **2 Claims**



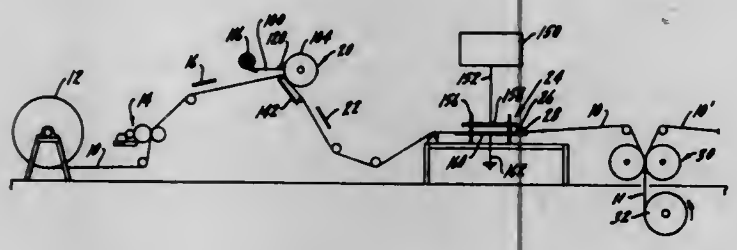
This disclosure teaches a method of manufacturing hard mineral fiber slabs with a surface finish produced from paper impregnated by a spirit solution of phenolformaldehydrate resin, adding at the same time a spirit solution of stearine and a water-spirit solution of hexamethylenetetramine together with a wetting agent. The paper is pressed onto a carpet made of mineral fibers impregnated by resin.

3,652,353

METHOD OF MAKING A NON-WOVEN REINFORCED LAMINATE

Alfred E. Belisle, Westbrook, Maine, and John C. Nelson, Appleton, Wis., assignors to Fox River Paper Corp., Appleton, Wis.

Filed June 9, 1969, Ser. No. 831,334
Int. Cl. B32b *17/00*
U.S. Cl. 156—62.4 **18 Claims**



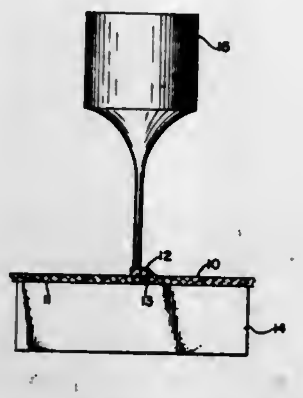
Disclosed is a non-woven reinforced laminate having an upper and lower web with two layers of fibers therebetween, wherein the fibers are substantially parallel within each of the layers and substantially perpendicular to the fibers in the adjacent and a method and apparatus for forming the laminate which include driving a web material along a predetermined route, applying an adhesive to the web in a predetermined pattern, depositing portion of fibers onto the adhesive, causing the remaining free portions of the fibers to stand upwardly from the web, deflecting the upstanding free portions to the surface of the web at an angle relative to the route direction, and laminating the web having the deflected fibers to a second web similarly processed whereby the fibers of the adjoining layers are substantially perpendicularly disposed with respect to each other.

3,652,354

METHOD OF PREPARING LAMINATES OF FIBROUS CELLULOSIC WEBS USING ULTRASONIC ENERGY

Chen-Jen Su, Alsip, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,238
Int. Cl. B32b *31/16, 31/27*
U.S. Cl. 156—73 **13 Claims**



Laminates of cellulosic webs are prepared by contacting at least part of a surface of one of the cellulosic webs to be laminated with an aqueous solution of an inorganic metal salt complex to effect swelling of the surface, placing the swelled portion of the contacted web in overlapping contact with the surface a second web to form a laminate assembly and then subjecting the assembly to a source of ultrasonic energy to effect bonding.

3,652,355

METALLIC LAMINATED STRUCTURE AND METHOD

Catlyle S. Herrick, Alplaus, N.Y., assignor to General Electric Company

Filed Mar. 12, 1970, Ser. No. 19,087
Int. Cl. C09j *5/06, 3/14;* **C23b** *13/00*
U.S. Cl. 156—151 **7 Claims**

A metallic polyimide-bonded laminated structure having enhanced bonding between the laminae and the intermediate polyimide binder. This structure is formed by electrocoating at least one surface of one lamina with an electroconducting solution or emulsion of a polyamide acid and heating the coating to convert the polyamide acid to the polyimide. A composite of the resulting coated metal is formed with a second metallic lamina, and it is heat-compressed to form the laminated structure. The curing or conversion of the polyamide acid to the polyimide is carried out so that any water of imidization liberated during the heat-compression is insufficient to form an adhesively-weakening amount of metallic oxide of the laminate.

3,652,356

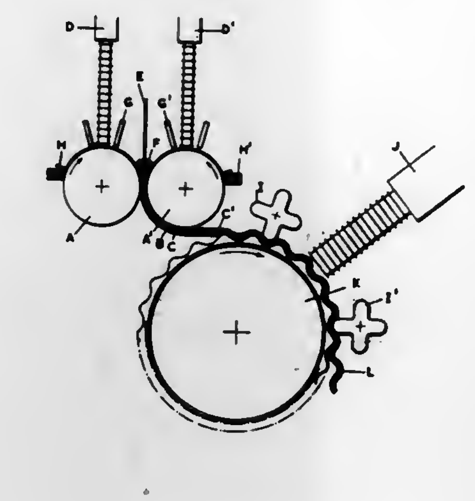
PROCESS FOR MAKING REINFORCED POLYESTER LAMINATES UTILIZING IRRADIATION

Rene L. E. Van Gasse, Schoten, Belgium, and Petrus J. C. A. Simonis, Maassluis, Netherlands, assignors to N.V. Chemische Industrie "Synres", Hoek von Holland, Netherlands

Filed Feb. 6, 1968, Ser. No. 703,459
Claims priority, application Netherlands, Feb. 7, 1967, 6701813
Int. Cl. B32b *5/00*
U.S. Cl. 156—179 **11 Claims**

Reinforced polyester laminates are made by building up a laminate from unsaturated polyester resin and reinforcing material, such as glass fiber matting, the laminate being sandwiched between two foils during the polymerization and curing, and the polyester resin being polymerized by irradiation with high-energy electrons. Preferably the laminate is provided with permanent foils, produced by applying foils of un-

saturated polyester resin in partly polymerized state to the laminate on both sides thereof and then irradiating the composite laminate with high-energy electrons to complete polymerization, whereby the foils are firmly bonded to the laminate.

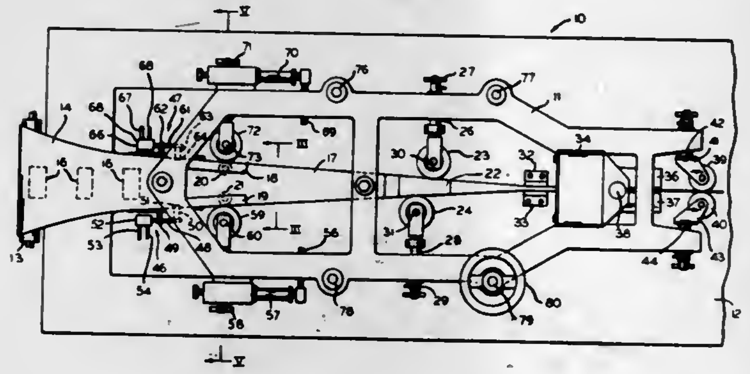


3,652,357

METHOD AND APPARATUS FOR WEB EDGE ALIGNMENT

Walter H. Vogel; Richard H. Cochrane, and Robert C. James, all of Sheboygan, Wis., assignors to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed Oct. 22, 1968, Ser. No. 769,534
Int. Cl. B29d *23/10*
U.S. Cl. 156—203 **18 Claims**



A sensor for controlling the edge position of a moving web wherein a finger rides along the edge being sensed and the position of the finger is used to control an air valve to develop fluid control signals indicative of edge position. One surface of the web moves across a backup plate or roller and the other surface of the web is provided with a tracking roller opposite the backup plate. The tracking roller is pivotable in a plane substantially parallel to the movement of the web. The fluid pressure from the air valve is used to pivot the tracking roller in response to web edge position thereby maintaining the web edge in a desired location. The apparatus includes a transport device for applying articles to the surface of the web and for folding the web to confine the articles therein. Sensors and tracking rollers are disposed on opposite sides of the machine and constantly sense and constantly adjust the edges of the moving web. The sensors are provided with an eccentric mounting to adjust the web height at which each sensor begins to operate its associated air valve.

3,652,358

PROCESS FOR THE BONDING OF MULTILAYER, OVERLAPPING FOIL RIBBONS

Ulrich Strole, Leutershausen; Rudolf Klein, Mutterstadt, and Walter Weidinger, Mannheim-Kafertal, all of Germany, assignors to Zellstoffabrik Waldhof AG, Mannheim-Waldhof, Germany

Filed Dec. 27, 1967, Ser. No. 693,745
Claims priority, application Germany, Dec. 31, 1966, Z 12,623
Int. Cl. B29d *23/10*
U.S. Cl. 156—218 **4 Claims**

This invention relates to a process for the bonding of multilayer, overlapping foil ribbons of thermoplastic material comprising the steps of forming a continuous length of at least two foil ribbons of cold thermoplastic material to overlap at the edges, whereby the said overlap comprises at least four layers of said foil ribbon, inserting a continuous heated strip of thermoplastic material in thermoplastic condition between two of said overlapping layers, said continuous heated strip having a width of less than said overlap and a temperature above that required to cause said foil ribbons of thermoplastic material to become viscous and below that required to cause said foil ribbons of thermoplastic material to melt, compacting said overlap, whereby a union is formed between said at least four layers of said foil ribbon in said overlap and said continuous strip, cooling said union and recovering a continuous, bonded, multilayer overlapping foil ribbon.

3,652,359

PROCESS OF FORMING UPHOLSTERY

Donald L. Decker, Newburgh, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Sept. 11, 1967, Ser. No. 666,941
Int. Cl. B29c *17/00*
U.S. Cl. 156—224 **5 Claims**

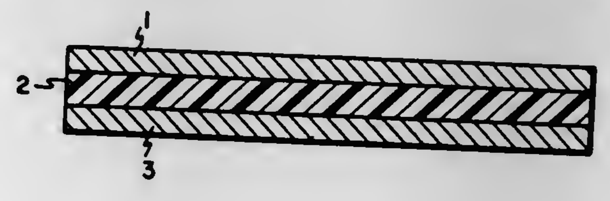
A process for molding an article of manufacture consisting of forming a laminate composed of a stretch fabric bonded to stretchable plastic film with an adhesive system. The laminate is heated to between 270°–295° F. and molded under pressure of 2 to 8 p.s.i.a. and products formed by said process.

3,652,360

METHOD FOR MANUFACTURING MASS PARTICLES IN A VISCOELASTIC MATRIX

Seymour Hartman, Mahopac, N.Y., and Francis F. Sullivan, Santa Barbara, Calif., assignors to U.S. Plywood-Champion Papers Inc., New York, N.Y.

Original application May 12, 1965, Ser. No. 455,247, now Patent No. 3,424,270, dated Jan. 28, 1969, Continuation-in-part of application Ser. No. 317,204, Oct. 18, 1963, now abandoned. Divided and this application Jan. 23, 1969, Ser. No. 793,317
Int. Cl. B29f *3/02;* **B32b** *15/08, 15/16*
U.S. Cl. 156—244 **4 Claims**



The present invention is broadly concerned with the method of manufacture of a novel composition of matter which possesses the physical properties of mass and viscoelasticity for the preparation of high quality acoustical structural units as, for example, a panel, a wall, a ceiling, a floor, or any partition wherein it is desired that it possess high acoustical or a high sound transmission loss in high quality stereo speaker enclosures and in X-ray and radiation shielding.

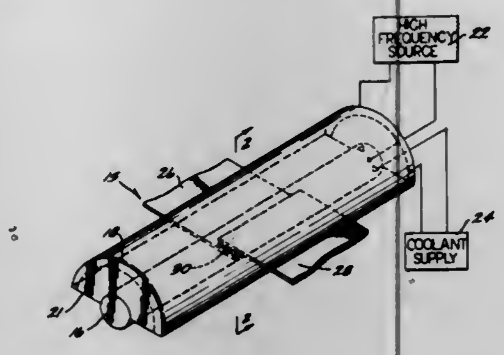
3,652,361
PROCESS FOR INDUCTION HEATING

Alfred F. Leatherman, 4256 Mountview Road, Columbus, Ohio, assignor to William C. Heller, Jr.

Original application Oct. 18, 1965, Ser. No. 497,381, now Patent No. 3,510,619, dated May 5, 1970. Divided and this application Dec. 1, 1969, Ser. No. 881,171

Int. Cl. B23k *13/00*

U.S. Cl. 156—272 **3 Claims**



An induction heating process provides a localized high frequency magnetic field by interacting a central high frequency magnetic field with a surrounding high frequency magnetic field. The localized magnetic field may be used to inductively heat nonmetallic material by means of a susceptor.

3,652,362
HOT MELT ADHESIVE BONDING PROCESS FOR CORRUGATED PAPERBOARD

Saburo Odagiri, Yokohama-shi, Japan, assignor to Toyo Mokuzai Kigyo Kabushiki Kaisha, Otaru-shi, Hokkaido, Japan

Filed June 2, 1969, Ser. No. 829,742

Claims priority, application Japan, June 4, 1968, 43/38208

Int. Cl. C09j *5/06*

U.S. Cl. 156—321 **2 Claims**

A bonding process in which a first material is coated with a hot melt adhesive which is heated to 1.5–1.7 times its melting temperature. The coated first material is then cooled to 0.6–0.7 times said melting point and then a second material which is heated to a temperature of 1–1.2 times the melting point of the adhesive is pressed against the coated first material.

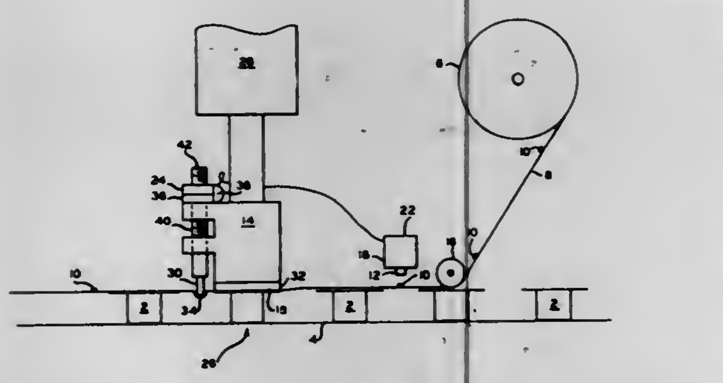
3,652,363
FILM POSITIONING APPARATUS

William G. Kinslow, Jr., Kansas City, Mo., assignor to Phillips Petroleum Company

Filed Oct. 23, 1969, Ser. No. 868,676

Int. Cl. B29c *27/06;* **B65h** *25/06*

U.S. Cl. 156—361 **5 Claims**



An apparatus for intermittently, longitudinally adjusting a printed portion of a continuous film relative to a container prior to sealing said film to the container to form a cover thereof.

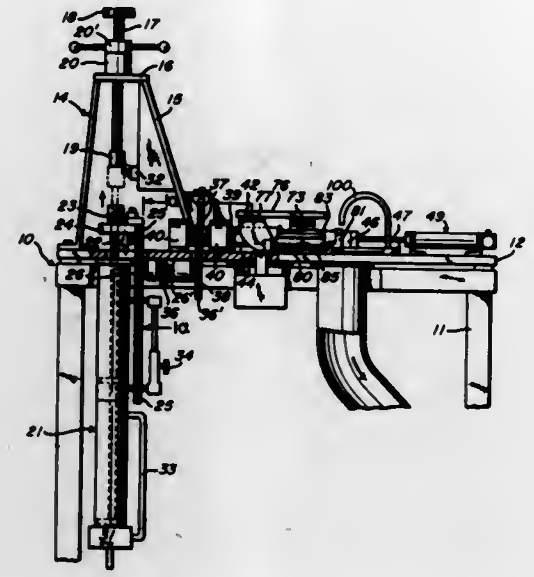
3,652,364
CARTRIDGE WINDING MACHINE

Frank F. Ali, 2973 Pascal Drive, Fairborn, Ohio

Filed Sept. 30, 1969, Ser. No. 862,261

Int. Cl. B05b *3/02*

U.S. Cl. 156—357 **15 Claims**



An automatic cartridge winding machine, a preferred embodiment of which provides means responding to receipt of a strip of abrasive surfaced material to wind the same to a generally cylindrical or conical form, to seal the strip to such form and to responsively eject the same as a finished product.

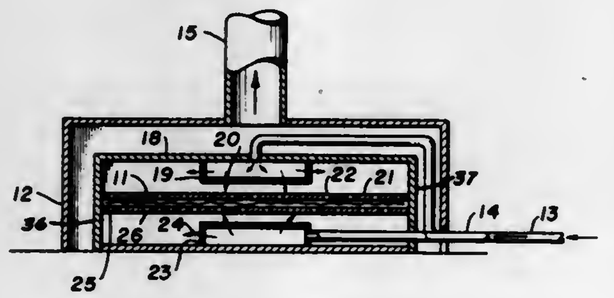
3,652,365
GAS INJECTION APPARATUS

William C. Mallonee, 3741 Curtis Street, Chester, Va.

Filed Jan. 2, 1970, Ser. No. 64

Int. Cl. B32b *31/26, 17/04*

U.S. Cl. 156—381 **1 Claim**



An activating gas chamber intimately mixes an activating gas with a nonwoven fabric as a pre-condition for interfilament bonding by increasing the velocity of the gas sufficiently such that complete penetration of the fabric by the gas is obtained in an enclosed environment.

3,652,366
APPARATUS FOR FORMING CYLINDRICAL TANKS

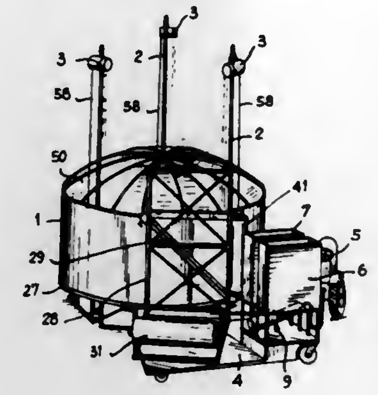
Dominique Carlini, Rousset, France, assignor to Recherches Et Applications Des Plastiques Dans L'Industrie Et Le Batiment S. A., Rousset, France

Original application Apr. 11, 1968, Ser. No. 720,710, now Patent No. 3,562,047. Divided and this application July 27, 1970, Ser. No. 58,256

Int. Cl. E04b *1/346, 1/35*

U.S. Cl. 156—443 **5 Claims**

Cylindrical tanks and a method of and apparatus for forming such tanks from reinforced plastic material, the tanks being comprised of vertically stacked cylindrical sections. Each cylindrical section is formed of two thicknesses of resin impregnated fabric which have been successively wound over a mandrel, the thicknesses being vertically displaced to permit overlapping at the joints between sections. As each section is completed, the mandrel is reduced in diameter and the section is raised vertically.



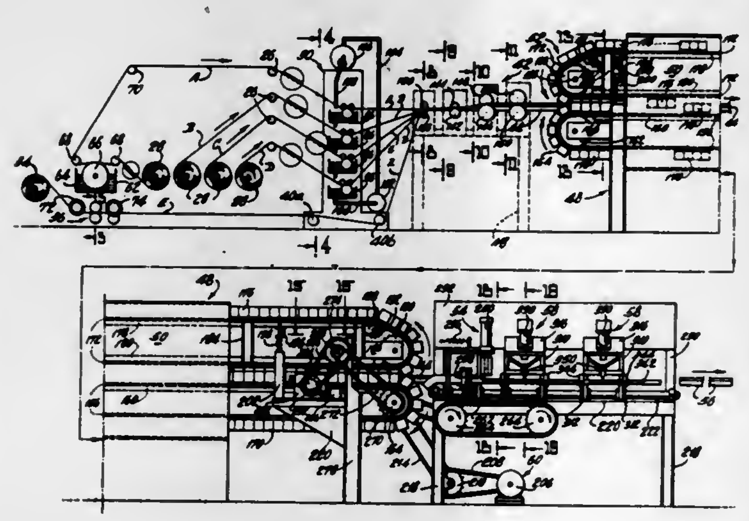
3,652,367
APPARATUS FOR MANUFACTURING CORRUGATED ANGLE MEMBERS

Jack A. Gilbert, and Stanley Franklyn, both of Clifton, N.J., assignors to Container Company of New York, Irvington, N.J.

Filed Dec. 9, 1968, Ser. No. 782,209

Int. Cl. B31f *1/36;* **B22h** *29/00*

U.S. Cl. 156—463 **19 Claims**



Apparatus for manufacturing corrugated angle members. These members are made of heavy paper, for example, and serve as protective reinforcements in relatively large packages containing appliances and the like, so that the corrugated angle members by engaging the appliances within the container of the package will protect the appliances against damage. A plurality of corrugated plies are glued to each other while being longitudinally angled to a gradually increasing extent by a forming means which provides the glued-together corrugated plies with a preselected angular cross section. Then the angled corrugated structure is dried while conveyed by a conveyor means through a heat tunnel. Thereafter, the corrugated structure is cut by a cutting means to preselected lengths.

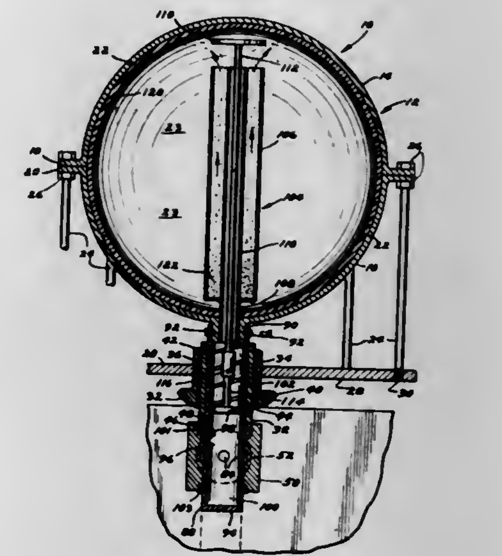
3,652,368
APPARATUS FOR ROTATIONAL MOLDING OF LAMINATED HOLLOW STRUCTURES

Jerome L. Formo, Saint Paul, Minn., assignor to Plastics, Inc., Saint Paul, Minn.

Filed Dec. 17, 1969, Ser. No. 885,911

Int. Cl. B32b *31/16*

U.S. Cl. 156—501 **4 Claims**



Apparatus for rotational molding of laminated hollow structures from plastic material is disclosed. A first plastic material is rotationally molded to the inside surface of a hollow mold until the first plastic material is in a fused condition. A second plastic material is then released from a thermally insulated container, which may be positioned within the mold and rotated with the mold, by air pressure moving an air piston attached to a cover of the insulated container to separate the cover from the insulated container. A bond is formed between the first and second plastic materials while the second plastic material is rotationally molded to the inside surface of the first plastic material to thus laminate the two materials together. After both materials are molded, the mold is cooled, rotation of the mold is stopped, and the molded structure is removed from the mold.

3,652,369
BOTTLE FEEDING MACHINE

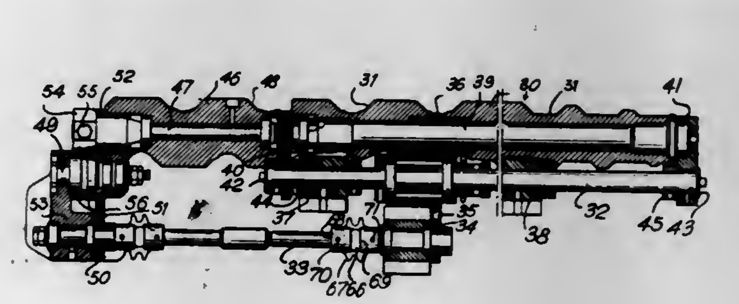
Romuald Rene Della Vite, 10 Rue Saint-Quentin, Nogent Sur Marne, France

Filed Oct. 28, 1969, Ser. No. 870,049

Claims priority, application France, Apr. 3, 1969, 6910294

Int. Cl. B65c *9/02;* **B65g** *47/26*

U.S. Cl. 156—566 **11 Claims**



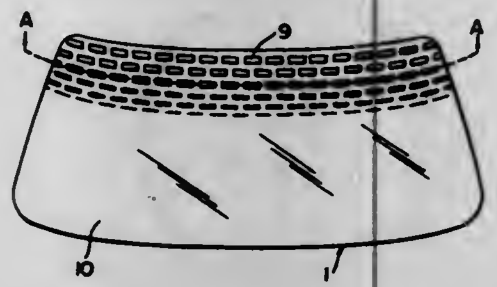
A rotary screw conveyor system for moving bottles past a turret type labelling mechanism includes two axially aligned, but independently movably mounted, rotary bodies, so that bottles of varying diameter may be accommodated without jamming the mechanism.

3,652,370

DAZZLE-PREVENTING AND HEAT-BLOCKING GLASS SHEET

Hirokazu Motai, Nishinomiya-shi, Japan, assignor to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Oct. 7, 1969, Ser. No. 864,390
Claims priority, application Japan, Oct. 12, 1968, 43/89250
Int. Cl. B44f *1/00*
U.S. Cl. 161—2 **3 Claims**



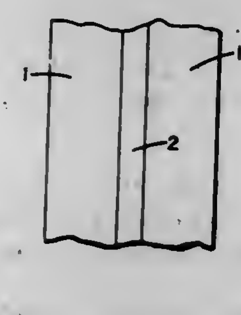
A dazzle-preventing and heat-blocking glass sheet capable of allowing a view of outside objects without any trouble, said glass sheet having a number of small fragments of glass color adhered thereto at one surface of an area to be protected from dazzle and heat to absorb considerable amounts of visible rays and heat rays from outside, said glass color fragments being arranged in a spaced-apart relationship forming a pattern to allow outside objects to be viewed with sufficient clearness through the interspaces among the glass color fragments.

3,652,371

WATER SOLUBLE PLASTIC FILM AND METHOD OF MANUFACTURING SAME

Kazuaki Hirata, Kurashiki, Japan, assignor to Kuraray Co., Ltd., Osaka, Japan

Filed Nov. 27, 1970, Ser. No. 93,265
Int. Cl. B29d *7/02;* **B32b** *3/10, 3/02*
U.S. Cl. 161—36 **6 Claims**



A composite uniplanar water soluble film comprising a strip of a cold water soluble plastic film bonded at its edge to a strip of a hot water soluble plastic film. Alternatively, there may be a plurality of cold water soluble strips and/or a plurality of hot water soluble strips constituting the uniplanar film. One of the uses of the film is in the manufacture of laundry bags.

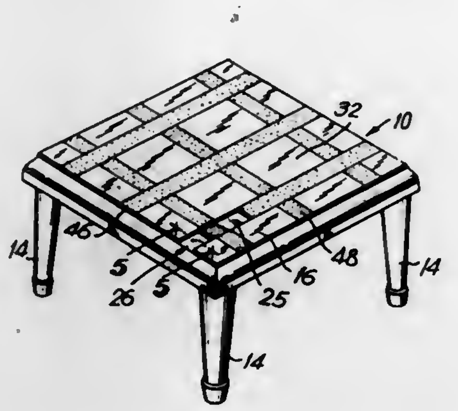
3,652,372

INLAY FURNITURE

Leonard Klazkin, East Meadow, and Jesse Feldstein, Oceanside, both of N.Y., assignors to Woodron Inc., Freeport, N.Y.

Filed Jan. 26, 1970, Ser. No. 5,465
Int. Cl. B32b *3/00, 3/30;* **B44c** *1/26*
U.S. Cl. 161—39 **6 Claims**

An article of furniture includes a metal strip inlay set in a crisscross (checkerboard) pattern on an exposed substantially flat surface thereof. To receive the metal strips, an orthogonal network of mating channels is formed in the upper surface of the furniture. The channels are rectangular in cross section and arrayed with perpendicular intersections. At the intersection of any two channels, a shallow wall extends deep enough into the surface of the furniture to receive the thickness of two strips. The strips are inlaid in the channels with each strip of one piece construction for its entire length crossing several intersections. At each intersection, one of the strips has a groove to receive an overlying crossing strip whereby the exposed upper surfaces of the strips are coplanar and are flush with the exposed surface of the furniture.

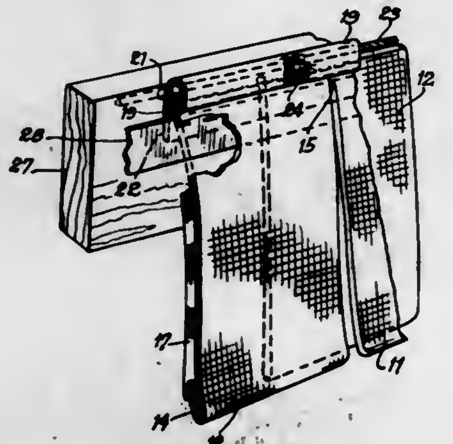


3,652,373

SKIRT FOR UPHOLSTERED FURNITURE

Wilbur E. Noble, Warrenville, Ill., assignor to Kroehler Mfg. Co., Naperville, Ill.

Filed Mar. 12, 1971, Ser. No. 123,674
Int. Cl. B32b *7/08, 7/06*
U.S. Cl. 161—50 **10 Claims**



A flounce, kick pleat or skirt for upholstered furniture having simulated pleats and presenting a pleasing smooth flat tailored appearance. The flounce includes a series of front and rear panels stitched to a welt cover. The front panels are arranged in side-edge to side-edge relationship with a rear panel behind each abutment line of adjacent front panels. The welt cover is folded around a welt cord lying adjacent the upper edges of the panels and is stitched over the front panels.

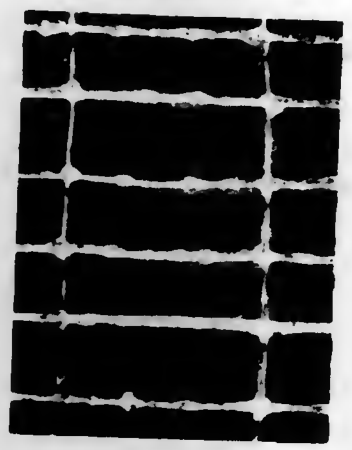
3,652,374

NONBLOCKING NONWOVEN SCRIM MATERIALS

Eugene H. Condon, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 7, 1969, Ser. No. 805,243
Int. Cl. D04h *3/02, 3/12*
U.S. Cl. 161—57 **2 Claims**

A nonwoven scrim material that may be wound up on a roll without the development of any significant degree of blocking by employing a polyvinyl chloride plastisol adhesive fused beyond its point of residual tack and having a surface level of plasticizer within certain critical limits, and methods for forming such materials.

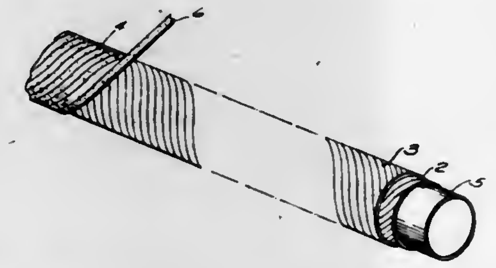


3,652,375

PLASTIC ARTICLE HAVING ULTRAVIOLET REFLECTIVE PROPERTIES

Junior L. Johnson, Mabelvale, Ark., assignor to A. O. Smith-Inland, Milwaukee, Wis.

Filed Nov. 25, 1969, Ser. No. 879,834
Int. Cl. B32b *5/22*
U.S. Cl. 161—158 **4 Claims**



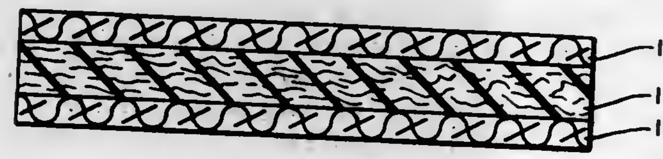
A plastic pipe composed of thermosetting resin reinforced with glass fibers. The resin in the outer portion of the pipe contains fine mesh aluminum or other light reflective metallic powder to provide protection for the pipe against ultraviolet degradation.

3,652,376

MULTI-PLY PRESS PACKING FOR THE IMPRESSION MEMBER IN A LETTER PRESS

James G. Bowden, III, Weston, Mass., assignor to W. R. Grance & Co., Cambridge, Mass.

Filed July 11, 1969, Ser. No. 841,090
Int. Cl. B32b *5/18*
U.S. Cl. 161—159 **7 Claims**



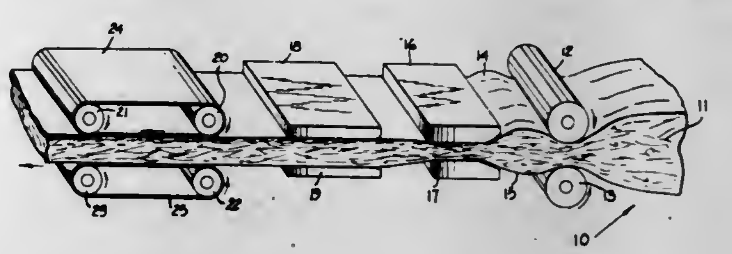
Rotary press blankets are made by laminating a highly porous, felted fibrous sheet impregnated with an elastomeric material with an an impregnated, fine-count, substantially nonstretchable textile. The fibrous layers have a residual porosity at 4 mils compression of at least about 37 percent, and the entire blanket exhibits a firmness such that a pressure of at least about 10 pounds p.s.i. must be exerted on the blanket, to produce an initial compression of 2 mils.

3,652,377

METHOD OF FORMING FIBROUS BODIES WITH DISSIMILAR DENSITIES AND APPARATUS THEREFOR

James William Helmick, Toledo, Ohio, assignor to Johns-Manville Corporation, New York, N.Y.

Filed July 3, 1969, Ser. No. 839,027
Int. Cl. B32b *7/02*
U.S. Cl. 161—166 **9 Claims**



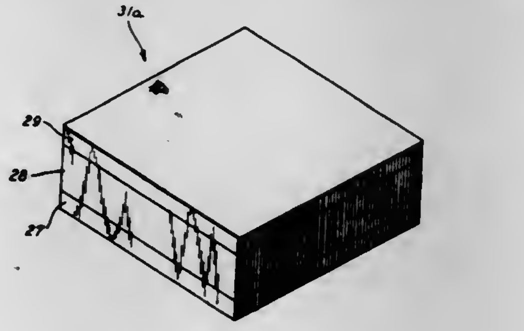
A continuous forming method, and apparatus therefor, of shaping, consolidating to dissimilar internal densities, and bonding, with low density loose mass of continuously intermeshed fiber containing thermosetting binder material throughout, comprising pulling such a body of fibers through a succession of compressing and heating operations to sequentially induce the desired dissimilar densities and commensurate therewith activating and curing the binder selectively within the designed areas of dissimilar density to permanently set the same, following an initial limited binder activation to effect coherency within the loose mass to endure the pulling through the compressing operations, and the dissimilarly densified and bonded product thereof.

3,652,378

STRENGTHENING ALUMINA SUBSTRATES BY INCORPORATING GRAIN GROWTH INHIBITOR IN SURFACE AND PROMOTER IN INTERIOR

Richard E. Mistler, Princeton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Feb. 19, 1970, Ser. No. 12,666
Int. Cl. C04b *35/18, 39/12;* **B32b** *9/00*
U.S. Cl. 161—182 **15 Claims**



A thin ceramic substrate having unusually high strength properties is manufactured by a casting process which produces a triple layered ceramic body. The exterior layers of the body having incorporated therein a grain growth inhibitor. The interior layer of the body has incorporated therein a grain growth promoter. Upon sintering, the composite body is defined by an interior grain size which is approximately twice as large as the exterior grain size.

3,652,379

LAMINATED TRANSPARENT ABRASION RESISTANT ARTICLE

Ronald E. White, Romeo, and Zachariah G. Gardlund, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 7, 1969, Ser. No. 874,771
Int. Cl. B32b *17/10;* **C03c** *27/12*
U.S. Cl. 161—183 **5 Claims**

A transparent polycarbonate resin article, such as an automobile windshield, is prepared having a three-layer, scratch resistant film (about 1 mil in thickness) on a surface thereof. The film contains three layers as formed; an inner layer of a suitable hydroxylated polycarbonate resin, an intermediate layer of silica and poly(vinyl butyral), and an outer layer of silica and poly(vinyl alcohol). The three layers are formed sequentially by wetting a surface of the polycarbonate body with a solution of the specific material in the first layer, evaporating the solvent to form a thin residual solid coating, and repeating this process with respect to the materials specified for the other two layers until the three-layer film is completed.

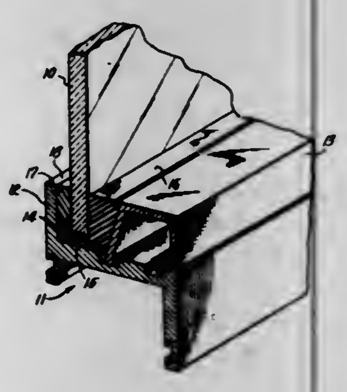
3,652,380
SELF-SUPPORTING, NONLOAD-BEARING RESILIENT TAPE SEALANT

Donald R. Strack, Dayton, Ohio, assignor to Protective Treatments, Inc., Dayton, Ohio

Original application Jan. 3, 1967, Ser. No. 607,022, now Patent No. 3,500,603. Divided and this application Aug. 19, 1969, Ser. No. 862,139

Int. Cl. B32b *27/28;* **C08d** *9/00;* **E04b** *1/62*

U.S. Cl. 161—255 **13 Claims**



Panels are mounted in an architectural mounting using using resilient elements to sustain the load, the supported panel being sealed against the weather by means of a self-supporting tape partially compressed between the panel and a wall of the mounting. The tape is formed of resilient elastomer having a Mooney value of at least 45 compounded with large amounts of plasticizing oil and filler to provide a self-supporting structure which is stable, adherent to glass and metal, incapable of bearing sustained loads and capable of maintaining a seal in a partially compressed condition.

3,652,381
METHOD OF PREPARING COLLAGEN FIBERS

Milan Kremr, and Vaclav Hrabovsky, both of Otrokovice, Czechoslovakia, assignors to Statni vyzkumny ustav Kozedelny, Gottwaldov, Czechoslovakia

Filed Aug. 14, 1969, Ser. No. 850,236

Int. Cl. D01c *3/00*

U.S. Cl. 162—2 **2 Claims**

Tannery waste, such as shoulder and belly splits and glue stock, is delimed, pickled in a salt solution containing a strong acid until it loses some of its initial water content and absorbs acid, disintegrated in the presence of excess water whereby it swells to several times it original weight, and then dewatered by contact with a solution of a soluble chloride or sulfate. The partly dewatered material may then be further processed to collagen fibers by tanning and other conventional procedures.

3,652,382
HIGH SURFACE AREA CHRYSOTILE AND METHOD OF MAKING SAME

Alan B. Gancy, W. Acton, Mass., assignor to FMC Corporation, New York, N.Y.

Filed July 29, 1969, Ser. No. 845,892

Int. Cl. C03b *37/00*

U.S. Cl. 162—3 **5 Claims**

Chrysotile fibrils having high surface are obtained by (1) attriting chrysolite asbestos in the presence of sufficient dilute mineral acid to free the fibrils without significantly affecting the SiO_2:MgO ratio; (2) treating the freed fibrils with sufficient mineral acid to form a layer of SiO_2 on the fibril surface; (3) treating the acidified fibrils with alkali to dissolve the SiO_2 layer, and (4) washing fibrils to remove excess alkali.

3,652,383
TREATMENT OF PAPER COATING WASTES CONTAINING STARCH AND PIGMENT

John Wallace de Vos, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 27, 1968, Ser. No. 716,432

Int. Cl. D21b *1/08, 1/32;* **D21c** *5/02*

U.S. Cl. 162—4 **8 Claims**

The separation of starch-containing coated paper broke or coating waste material into reusable pigment and fiber constituents together with an effluent which is subject to disposal in a manner to minimize or eliminate pollution problems. The pigment is recoverable from the coating composition waste material or coated paper broke aqueous suspension by utilizing the starch in sol form to maintain the pigment dispersed while effecting removal of other constituents, in the case of broke removal of fiber fines, for example. Subsequently, the starch is hydrolyzed and the dispersion treated to provide for pigment sedimentation and removal. The procedure is particularly beneficial in that there need be no effluent of the process which is not readily disposable by conventional means and without contamination or pollution of streams which may receive the final effluent.

3,652,384
COUNTERCURRENT PULPING OF CELLULOSIC MATERIALS INCLUDING REGULATION OF ACTIVE CHEMICAL THEREIN

Arthur Raymond Sloman, East Camberwell, Victoria, Australia, assignor to Associated Pulp and Paper Mills Limited, Melbourne C. I. Victoria, Australia

Continuation of application Ser. No. 648,257, June 23, 1967, now abandoned. This application Sept. 22, 1970, Ser. No. 74,513

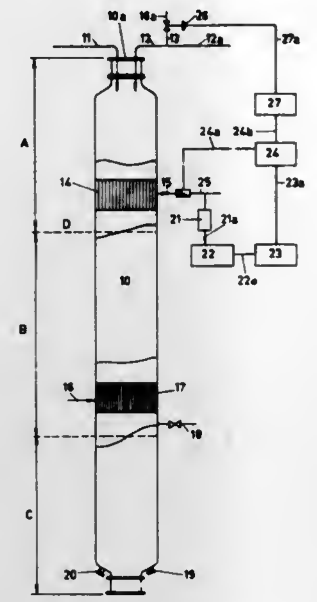
Claims priority, application Australia, June 24, 1966, 7439/66

Int. Cl. D21c *3/26, 7/12*

U.S. Cl. 162—19 **1 Claim**

A method is disclosed for the continuous treatment of wood chips in a downflow vertical digester by the alkaline process. Wood chips and black liquor are introduced near the upper end of the digester and travel downwardly therethrough to a sole point at which the black liquor is discharged from the digester. Cooking liquor is introduced at a point between the lower end and black liquor discharge point of the digester and passes upwardly to the discharge point, countercurrent to the flow of wood chips, to cook the chips and leave the digester as back liquor at the discharge point. The cooked wood chips are removed from the lower end of the digester. The active chemical in the cooking liquor is maintained constant. Active chemical is further added near the upper end of the digester and the addition thereof is regulated in response to changes in the residual active chemical in the black liquor which are monitored at the discharge point of the digester, in order to keep the residual active

chemical in the discharged black liquor at a substantially constant concentration. The quantity of active chemical added near the upper end of the digester does not exceed 20 percent of the total active chemical added to the digester.



3,652,385
PROCESS FOR TREATING CELLULOSIC MATERIALS FROM WHICH METAL IONS HAVE BEEN REMOVED WITH ALKALI AND OXYGEN IN THE PRESENCE OF COMPLEX MAGNESIUM SALTS

Sture Erik Olof Noreus, Sundasen, and Hans Olof Samuelson, Goteborg, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Continuation-in-part of application Ser. No. 869,875, Oct. 27, 1969. This application May 12, 1970, Ser. No. 36,670

Claims priority, application Sweden, May 13, 1969, 6780/69

Int. Cl. D21c *3/00*

U.S. Cl. 162—23 **33 Claims**

Cellulosic materials from which metal ions have been removed by acids or complexing agents is delignified with alkali in the presence of oxygen, and particularly air, and in the presence of magnesium compounds such as, for instance, chelates of magnesium and aliphatic alpha- and beta-hydroxycarboxylic acids. The invention is of particular application to the reduction of lignin content in cellulose pulps without causing deleterious degradation of the cellulose, the magnesium compounds reducing or entirely preventing attack of oxygen on the hemicellulose and cellulose carbohydrates, without appreciably diminishing the oxidation of the lignin and its dissolution in the course of the process. The process is also useful to obtain a controlled dissolution of the hemicellulose.

3,652,386
PROCESS FOR TREATING CELLULOSIC MATERIALS WITH ALKALI AND OXYGEN IN THE PRESENCE OF COMPLEX MAGNESIUM SALTS

Sture Erik Olof Noreus, Ornskoldsvik, and Hans Olof Smauelson, Goteborg, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Oct. 27, 1969, Ser. No. 869,875

Claims priority, application Sweden, Oct. 29, 1968, 1463868

Int. Cl. D21c *3/00*

U.S. Cl. 162—65 **20 Claims**

The invention is of particular application to the reduction of lignin content in cellulose pulps without causing deleterious degradation of the cellulose, the complex magnesium salts, such as chelates of magnesium and aliphatic alpha- and beta- hydroxycarboxylic acids, reducing or entirely preventing attack of oxygen on the hemicellulose and cellulose carbohydrates, without appreciably diminishing the oxidation of the lignin and its dissolution in the course of the process.

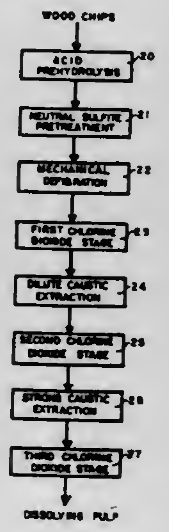
3,652,387
PROCESS FOR THE MANUFACTURE OF DISSOLVING-GRADE PULP

Harry D. Wilder, Midlothian, Va., assignor to Ethyl Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 797,209, Feb. 6, 1969, now abandoned , and a continuation-in-part of 830,709, June 5, 1969. This application Dec. 31, 1969, Ser. No. 889,661. The portion of the term of this patent subsequent to Nov. 3, 1987, has been disclaimed.

Int. Cl. D21c *9/14*

U.S. Cl. 162—25 **10 Claims**


WOOD CHIPS
ACID PREHYDROLYSIS
20
NEUTRAL SULFITE PRETREATMENT
21
MECHANICAL DEFIBRATION
22
FIRST CHLORINE DIOXIDE STAGE
23
DILUTE CAUSTIC EXTRACTION
24
SECOND CHLORINE DIOXIDE STAGE
25
STRONG CAUSTIC EXTRACTION
26
THIRD CHLORINE DIOXIDE STAGE
27
DISSOLVING PULP

Vegetable matter is treated to produce a dissolving-grade pulp, including mechanical refining of the raw material followed by, first, a lignin reaction treatment with chlorine dioxide or chlorine and chlorine dioxide and, second, an extraction treatment with a strong alkali solution such as 50 to 60 grams alkali per liter.

3,652,388
BLEACHING AND DELIGNIFICATION OF PARTIALLY DELIGNIFIED PULP WITH A MIXTURE OF CHLORINE AND CHLORINE DIOXIDE

Ingemar Liss-Albin Croon; Sten Oskar Dillen, both of Alfredshem, and Sture Erik Noreus, Sundasen, all of Sweden, assignors to Mo Och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Dec. 5, 1969, Ser. No. 882,812

Claims priority, application Sweden, Dec. 5, 1968, 16678/68

Int. Cl. D21c *9/14, 9/12*

U.S. Cl. 162—65 **16 Claims**

A process is provided for bleaching and delignifying cellulose pulps that have previously been subjected to a partial delignification under alkaline conditions with an oxygen-containing gas, which comprises delignifying the pulp with a mixture of chlorine and chlorine dioxide, and then dissolving chlorinated lignin in a further alkaline treatment.

3,652,389
ADJUSTABLE FABRIC FOR USE AS A PAPERMAKING FELT WITH ZIG-ZAG PATTERNED CROSS MACHINE YARNS

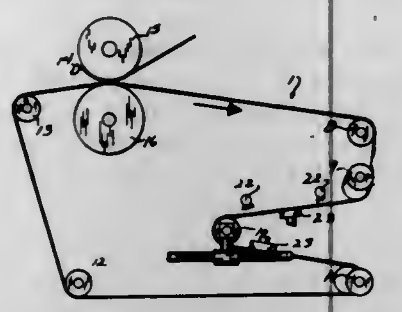
Howard M. Helland, Appleton, Wis., assignor to Appleton Mills, Appleton, Wis.

Filed Mar. 14, 1969, Ser. No. 807,348

Int. Cl. D21f *7/12;* **D03d** *25/00*

U.S. Cl. 162—275 **15 Claims**

An endless fabric, such as a papermaker's felt, composed of a series of generally parallel warp yarns and having cross machine yarns or fibers extending in a zig-zag pattern across the warp yarns. The cross machine yarns in each section of the zig-zag pattern extend at an acute angle up to 80° with respect to a line normal to the warp yarns. The cross machine yarns are stabilized in their zig-zag pattern by physical or chemical means, such as by needling or heat setting,



but remain adjustable thereafter in angularity with respect to the warp yarns once installed on a papermaking machine.

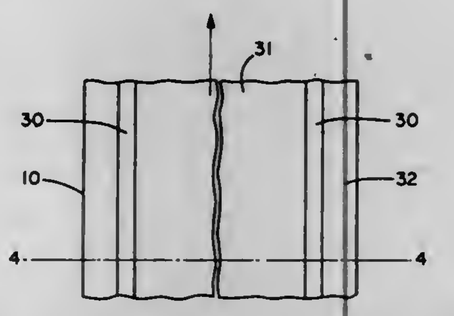
3,652,390
PAPERMAKING DRAINAGE FABRIC AND STOCK INLET COMBINATION FOR PRODUCING EVEN EDGED PAPER WEB

LeRoy L. Peterson, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of application Ser. No. 566,281, July 19, 1966, now abandoned. This application Feb. 10, 1970, Ser. No. 10,239

Int. Cl. D21f *1/00, 1/10, 7/08*

U.S. Cl. 162—303 **5 Claims**



In the paper forming art an arrangement of a stock slurry inlet and a belt of drainage fabric; the drainage fabric has liquid impermeable bands positioned inwardly of its side edges and the inlet discharges the stock slurry onto the fabric including the bands. The effect of the bands is to terminate the formed paper web sidewardly along the inner edges of the bands and to provide edges of the sheet which need not be trimmed. The arrangement has particular utility where sheet formation is between two fabrics and there is little room for positioning the usual flow restricting shoes, and is advantageous also in providing for uniform basis weight across the sheet width. The liquid impermeable bands may be one-fourth to three-eighths inches in width and the side edges may be 1 to 2 inches in width.

3,652,391
BOX-LIKE BLENDING CHAMBER WITH BARRIER ELEMENTS TO PRODUCE UNIFORM FLOW OF PAPERMAKING STOCK

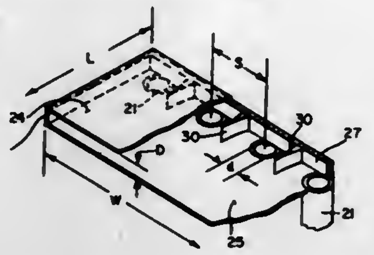
Aris C. Spengos, Wallingford, and Richard B. Kaiser, Swarthmore, both of Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Jan. 20, 1970, Ser. No. 4,225

Int. Cl. D21f *1/06*

U.S. Cl. 162—343 **14 Claims**

Apparatus for spreading the flow of papermaking stock so as to establish flow having uniform velocity across the width of a relatively wide conduit, which apparatus includes branch tubes for feeding the flow from a tapered header to the top or bottom wall of a boxlike blending chamber where the streams from the branch tubes impinge against the opposite wall. Barrier elements are disposed in the area of impingement in the blending chamber in a manner whereby they isolate the streams entering the blending chamber from the branch tubes so as to obtain a more uniform velocity profile. The barrier elements which are disposed between the center lines of the adjoining tubes extend between the top and bottom walls, and also extend from a point preceding the upstream side of the branch tubes to a point along the stock flow path through the blending chamber at least beyond the center lines of the branch tubes.



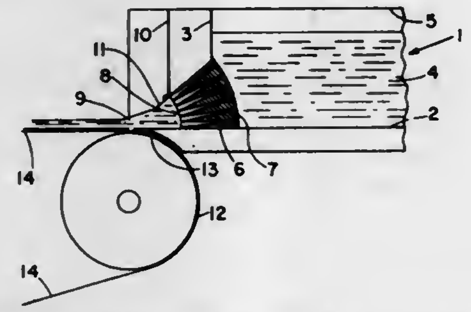
3,652,392
CONTRACTING PRE-SLICE FLOW DISTRIBUTOR FOR PAPERMAKING MACHINE HEADBOX

David W. Appel, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 24, 1969, Ser. No. 879,251

Int. Cl. D21f *1/06*

U.S. Cl. 162—343 **3 Claims**



An inlet for a papermaking machine characterized particularly by a stationary flow distributor immediately preceding the slice within the headbox. The distributor has an overall contracting dimension from the inlet to the outlet and is arranged to provide initially small scale turbulent mixing to attain universal fiber orientation followed by an expanding stilling section in which some turbulence is dissipated so that stock is discharged from the slice onto a forming wire with a controlled level of small scale agitation and minimum fiber alignment. The distributor has an inlet face remote from the slice which is convex in shape and a downstream outlet face which is arcuate in shape in the same sense as the inlet face. Each passageway connecting an inlet opening in the inlet face with an outlet port in the outlet face gradually widens toward the outlet port, and each passage of a vertical row of passages extends toward the slice at a different angle which is less than 45°.

3,652,393
ARRANGEMENT FOR BRINGING ABOUT NUCLEAR FUSION REACTIONS

Wolfgang Kaiser; Hans Opower, and Heinz Puell, all of Technische Hoshschule Munich, Physik Department, no. 21, Arcisstrasse, Munich, Germany

Filed Feb. 8, 1968, Ser. No. 704,026

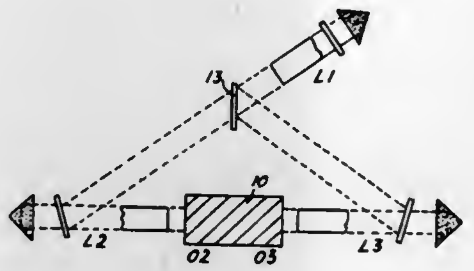
Claims priority, application Germany, Feb. 10, 1967, K 61394

Int. Cl. G21b *1/00*

U.S. Cl. 176—1 **6 Claims**

The invention provides an arrangement for bringing about nuclear fusion reactions comprising a known system of two synchronously activated lasers.

These lasers, facing each other on a common optic axis, emit light beams for producing a plasma. They are focused on two deuterium or deuterium-tritium containing concave or flat targets after having passed two objectives with hollow cones, which impart a tubular cross section to the light beams. Also the lasers themselves can be designed to emit tubular light beams.



The concave or flat targets having a surface roughly corresponding to the area of the focal point are disposed perpendicularly to the common optic axis of the laser system and symmetrically with respect to the center plane.

Each target is situated on that side of said plane remote from its associated objective, which has a numerical aperture of nearly 1.

3,652,394
DEVICE FOR CONTROLLING THE REACTIVITY OF NUCLEAR REACTORS

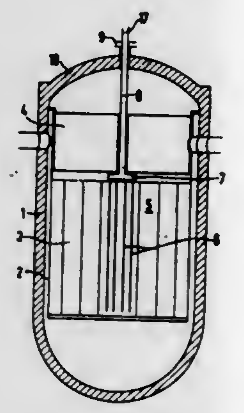
Wolfgang Braun, Buckenhof, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed May 7, 1970, Ser. No. 35,312

Claims priority, application Germany, May 23, 1969, P 19 26 344.6

Int. Cl. G21c *7/08, 7/22*

U.S. Cl. 176—86 R **15 Claims**



Device for controlling the reactivity of a nuclear reactor cooled by light water and including a reactor core formed of fuel elements, includes a tube system passing through the reactor core and traversible by a water-soluble neutron absorber of adjustable concentration, separated by the tube system from light water coolant in the reactor core, the tube system including a plurality of substantially vertically extending fingerlike tubes always fully inserted in the fuel elements; a spiderlike holder holding the fingerlike tubes together at the upper ends thereof and serving as distributor for the neutron absorber to the fingerlike tubes, and a holder rod extending from the spiderlike distributor and serving as a central supply line for the neutron absorber to the spiderlike distributor.

3,652,395
METHOD FOR THE PRODUCTION OF 5'-NUCLEOTIDES

Yoshio Nakao, Ibaraki, and Mitsuzo Kuno, Suita, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 23, 1966, Ser. No. 604,199

Claims priority, application Japan, Dec. 25, 1965, 40/80258

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 N **12 Claims**

5'-nucleotides are produced by culturing hydrocarbons-assimilating micro-organisms belonging to the genera *Corynebacterium*, *Brevibacterium*, *Pseudomonas* or *Arthrobacter* in a culture medium containing hydrocarbons as carbon sources and subsequently suspending the resultant grown micro-organisms in alkaline aqueous solution of a pH in the range of 8.0 to 10.5.

3,652,396
PROCESS FOR PREPARING CITRIC ACID BY FERMENTATION

Katsunobu Tanaka, and Kazuo Kimura, both of Tokyo-to, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha (Kyowa Hakko Kogyo Co., Ltd.), Tokyo, Japan

Filed July 18, 1968, Ser. No. 745,713

Claims priority, application Japan, July 21, 1967, 42/46586

Int. Cl. C12b *1/00*

U.S. Cl. 195—28 **5 Claims**

A process for preparing citric acid by culturing in a culture medium containing a hydrocarbon as the principal carbon source, a fungus of the genus Penicillium having the ability to metabolize the hydrocarbon to produce citric acid as a metabolite and recovering the accumulated citric acid.

3,652,397
PREPARATION OF PHOSPHATIDES

Hermann Pardun, Cleves, Germany, assignor to Lever Brothers Company, New York, N.Y.

Filed Jan. 8, 1970, Ser. No. 1,559

Claims priority, application Germany, Jan. 9, 1969, P 19 00 959.7

Int. Cl. C12b *1/00*

U.S. Cl. 195—30 **6 Claims**

Modified phosphatides of improved emulsifying power and suitable for use as anti-spattering agents in margarine are obtained by the partial hydrolysis of a vegetable phosphatide with an enzyme preparation containing lipase and phospholipase A until at least 2 percent and less than 15 percent of lysophosphatides are formed, and removal of free fatty acids by solvent extraction.

3,652,398
PRODUCTION OF CYCLODEXTRIN FROM GRANULAR MODIFIED STARCHES

Frederick C. Armbruster, La Grange, and Mukhtar Abdullah, Westmon, both of Ill., assignors to CPC International Inc.

Filed Dec. 20, 1968, Ser. No. 785,776

Int. Cl. C12b *1/00*

U.S. Cl. 195—31 R **14 Claims**

A process is described for the production of cyclodextrin which comprises: providing a water solution of a gelatinized granular modified starch; subjecting said solution to the action of cyclodextrin transglycosylase enzyme in the presence of a chemical selected from the group consisting of chemicals which will form a complex with cyclodextrin and mixtures thereof; and recovering a product containing cyclodextrin.

3,652,399

ALKALI PROTEASE

Masao Isono, Nishinomiya, Hyogo; Katsumi Tomoda, Toyonaka; Kouichi Miyata, Takatsuki; Kazutaka Maejima, Hyogo, and Keisuke Tsubaki, Suita, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 795,951, Feb. 3, 1969. This application Apr. 30, 1969, Ser. No. 820,485

Int. Cl. C12d *13/10*

U.S. Cl. 195—62 **2 Claims**

Alkaline protease is produced by cultivating an alkaline protease-producing micro-organism from the genus *Fusarium* or *Giberella* in a proper growth supporting medium and the alkaline protease is recovered from the medium. The alkaline protease degrades protein under conditions of high pH and thus is useful in the formulation of detergent and other cleanser compositions.

3,652,400

PROCESS FOR THE PREPARATION OF AMYLASE

Jiro Sawada; Tetsuo Misaki; Masao Okabe; Hajime Yasui; Kazunori Hanada, and Tadayasu Okazaki, all of Tokyo, Japan, assignors to Taisho Pharmaceutical Ltd., Tokyo, Japan

Filed Mar. 4, 1966, Ser. No. 531,816

Claims priority, application Japan, Mar. 4, 1965, 40/12114

Int. Cl. C12d *13/10*

U.S. Cl. 195—66 R **8 Claims**

Acid-active and acid-stable amylase having superior amylolytic activity under acidic conditions is obtained by culturing an amylase-producing micro-organism of the Paecilomyces subglobosum group in a nutrient medium therefor.

3,652,401

PURIFICATION OF DEXTRANASE USING IRON SALTS

Louis Chaiet, Springfield, and August J. Kempf, Stanton Island, both of N.Y., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 7, 1968, Ser. No. 774,215

Int. Cl. C07g *7/02*

U.S. Cl. 195—66 R **4 Claims**

Ferric chloride is added to crude dextranase containing solutions to selectively form a complex with the dextranase by adjustment of the pH, to thereby recover purified dextranase.

3,652,402

ASPARAGINASE HAVING ANTI-TUMOR ACTIVITY AND PROCESS FOR PREPARING THE SAME

Ichiro Chibata, Suita-shi; Tetsuya Tosa, Kyoto-shi; Ryujiro Sano, Takatsuki-shi, and Katsuko Ando, Toyonaka-shi, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Aug. 27, 1969, Ser. No. 853,496

Claims priority, application Japan, Aug. 31, 1968, 43/62674; Nov. 9, 1968, 43/82001

Int. Cl. C12d *13/10*

U.S. Cl. 195—66 A **9 Claims**

Process for preparing asparaginase having a strong anti-tumor activity which comprises cultivating an asparaginase-producing micro-organism belonging to Achromobacter, Alcaligenes, Micrococcus, Proteus or Bacterium genera in a nutrient medium under aerobic conditions and recovering the accumulated asparaginase from the fermentation broth.

3,652,403

METHOD AND APPARATUS FOR THE EVACUATION OF COKE FROM A FURNACE CHAMBER

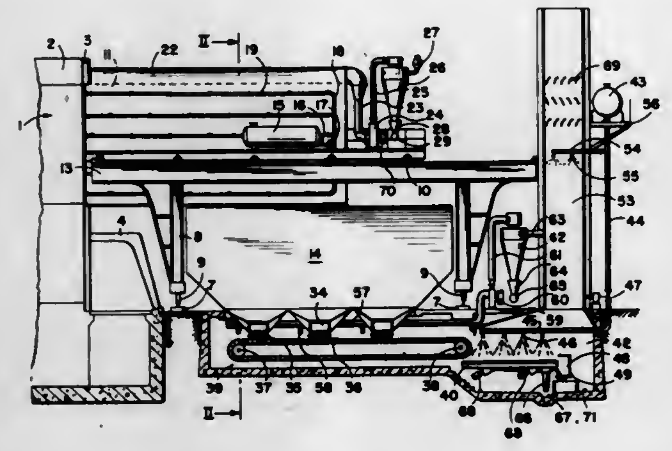
Johannes Knappstein, and Josef Stratmann, both of Recklinghausen, Germany, assignors to Firma Carl Still, Recklinghausen, Germany

Filed Nov. 28, 1969, Ser. No. 880,976

Claims priority, application Germany, Dec. 3, 1968, P 18 12 383.6; June 6, 1969, P 19 28 866.5

Int. Cl. C10b *39/04, 33/00*

U.S. Cl. 201—39 **19 Claims**



A method and apparatus for the evacuation of coke from a furnace chamber and for the wet quenching of the coke includes a coke box which is mounted for movement toward and away from the horizontal coking furnace. The coke box may be moved directly adjacent the furnace battery on a track which can place the box directly in front of the door frames of the furnace chambers. The coke box is made substantially to the dimensions of the coking mass to be received and it includes a bottom closure flap which may be opened after the coke box is moved away from the furnace and over a coke bin which also has a closable upper opening which is substantially of the plan dimensions of the coke box. The coke bin has a discharge arranged in a coke discharge flue at the bottom of the coke bin and means are provided to pass the coke into a quenching chamber which is provided with a chimney for advantageously includes spray means.

3,652,404

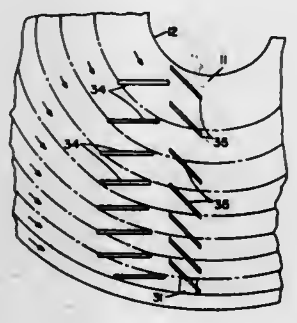
DEVOLITILIZING PROCESS USING RABBLES AND FORMING DEVICES FOR CONVEYING MATERIALS

Robert E. Schilson, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Dec. 29, 1969, Ser. No. 888,698

Int. Cl. C10b *7/02, 47/20*

U.S. Cl. 201—33 **6 Claims**



In a rotary hearth furnace utilizing rabbles to move the coke in windrows across the hearth of the furnace, a row-leveller can follow at least one of the rabbles to level off the peaks of the windrows, thus reducing maximum bed thickness and increasing heat transfer into the bed of material.

ERRATA

For Classes 202—216 thru 208—321 see:
Patent Nos. 3,652,426 thru 3,652,452

3,652,405

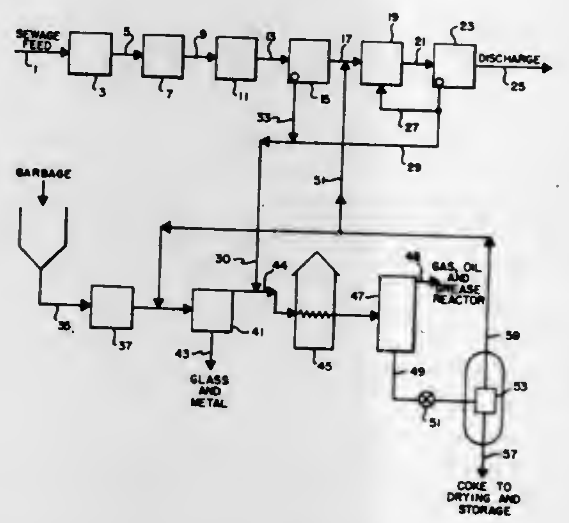
SEWAGE AND MUNICIPAL REFUSE LIQUID PHASE COKING PROCESS

Howard V. Hess, Glenham; Raymond F. Wilson, and Edward L. Cole, both of Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed June 15, 1970, Ser. No. 46,059

Int. Cl. C02c *3/00*

U.S. Cl. 210—10 **6 Claims**



A combination process for treating both municipal refuse and sewage includes the steps of shredding the solid refuse and mixing the shredded material thus obtained with a recycle stream of water resulting from a subsequent coking step to form a slurry; removing noncombustible materials from this slurry; mixing the slurry with sewage sludge and coking the resulting mixture under a pressure sufficient to prevent the vaporization of water, thereby producing grease, clean water and clean coke.

3,652,406

PROCESS FOR SEWAGE TREATMENT

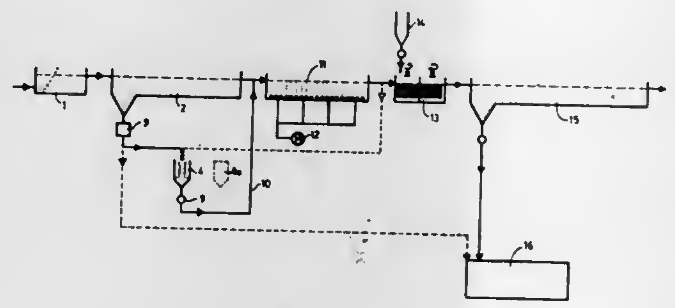
Nils K. G. Westberg, Lidingo, Sweden, assignor to Aktiebolaget Vallenbyggnadsbyran, Stockholm, Sweden

Filed Apr. 20, 1970, Ser. No. 30,146

Claims priority, application Sweden, Apr. 23, 1969, 5781/69

Int. Cl. C02c *1/02*

U.S. Cl. 210—11 **3 Claims**



A process for biological treatment of sewage is disclosed, characterized by the addition of a high-activated sludge containing a culture of heterotrophical bacteria to the sewage as an inoculum, before or after the inlet of a biological oxidizing means. The high-activated sludge is produced of at least a portion of the separated primary sludge by aeration in a separate cultivating basin.

3,652,407

DECOLORIZATION OF KRAFT WOOD PULP BLEACH EFFLUENTS

Joannis Paleos, Lansdale, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 28, 1969, Ser. No. 871,975

Int. Cl. B01d *15/04*

U.S. Cl. 210—27 **12 Claims**

Pulp mill bleach effluents are decolorized, after a suitable lime treatment, by acidifying to a pH of about 1–5 and thereafter passing the acidified effluent through a bed or mass of a macroreticular adsorbent resin. The macroreticular adsorbent resin may be aromatic or aliphatic in character and has a porosity of at least 10 percent and a specific surface area of at least 10 square meters per gram.

3,652,408

AN ANTIFRICTION MATERIAL

Vasily Vladimirovich Korshak, ulitsa Gubkina, 4, kv. 81; Irina Alexandrovna Gribova, ulitsa Vavilova, 10, korpus 20, kv. 31; Alexandr Petrovich Krasnov, prospekt Kalinina, 31, kv. 28; Mikhail Mikhailovich Teplyakov, Seleznevskaya ulitsa, 13, kv. 3; Hoza Dmitrievna Fedorova, st. Petrovshoe-Razumovskoe, 1, and Alla Nikolaevna Chumaevskaya, Leninsky prospekt, 101, korpus 163, kv. 86, all of Moscow, U.S.S.R.

Filed Jan. 11, 1968, Ser. No. 697,024

Int. Cl. C10m *5/26, 5/22*

U.S. Cl. 252—12 **2 Claims**

Antifriction materials comprising 10–50 percent of a polybenzimidazol and 90–50 percent of a filler such as molybdenum disulfide are made by mixing the above materials in powdered form and pressing the mixture at 350–550° C. and a pressure of 800–1,000 kg./cm^2.

3,652,409

BEARING COMPOSITIONS

Edward J. Mack, and Harris T. Childs, Jr., both of Bristol, R.I., assignors to Dixon Corporation, Bristol, R.I.

Continuation-in-part of application Ser. No. 669,674, Sept. 22, 1967, now abandoned. This application Sept. 12, 1968, Ser. No. 759,527

Int. Cl. C10m *5/20*

U.S. Cl. 252—12 **23 Claims**

In accordance with this invention there is obtained a polyimide-polytetrafluoroethylene resin composition which can be fabricated into bearings having unusually low frictional resistance.

3,652,410

MULTIFUNCTIONAL LUBRICANT ADDITIVE COMPOSITIONS AND LUBRICATING OILS CONTAINING

Ralph Hollinghurst, Rayleigh, England, and Andrew G. Papay, Gloucester, N.J., assignors to Mobil Oil Corporation

Filed Apr. 30, 1969, Ser. No. 820,630

Claims priority, application Great Britain, May 24, 1968, 24,918/68

Int. Cl. C10m *1/48*

U.S. Cl. 252—32.7 E **12 Claims**

Balanced oil additive compositions can be used in the engine, gears and elsewhere of mobile equipment. Appropriate concentrations of basic detergents, dispersants, antioxidants, extreme pressure agents and friction modifiers are balanced.

3,652,411
POLYGLYCOL BASE LUBRICANT

Axel Klaus Commichau, Hamburg-Rissen, Germany, assignor to Mobil Oil Corporation, New York, N.Y.
Filed Dec. 4, 1969, Ser. No. 882,268
Int. Cl. C10m *1/34*
U.S. Cl. 252—34.7 **10 Claims**

A polyglycol base lubricant is provided containing, in minor proportion, as a stabilizer, a mixture comprising: a substituted amine, an aliphatically substituted phenol, an organic phosphate, a polyhydroxyquinone, a benzotriazole, an amine salt and a substituted organic phosphite.

3,652,412
PIEZOELECTRIC CERAMIC COMPOSITIONS

Masamitsu Nishida, and Hiromu Ouchi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Aug. 28, 1968, Ser. No. 756,013
Claims priority, application Japan, Sept. 12, 1967, 42/58957
Int. Cl. C04b *35/46; 35/48*
U.S. Cl. 252—62.9 **2 Claims**

Ceramic materials within particular ranges of the ternary system $Pb(Li_{1/4}Nb_{3/4})O_3$-$PbTiO_3$-$PbZrO_3$ in solid solution form exhibit high dielectric constant along with high planar coupling coefficient, and are useful in electromechanical transducers. The ceramic materials are those within the area A, B, C, D, E and F and the area G, H, I, J and K of FIG. 2.

3,652,413
PIEZOELECTRIC CERAMIC COMPOSITIONS

Hiromu Ouchi, and Masamitsu Nishida, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Sept. 4, 1968, Ser. No. 757,338
Claims priority, application Japan, Oct. 27, 1967, 42/69770
Int. Cl. C04b *35/46, 35/48*
U.S. Cl. 252—62.9 **2 Claims**

Ceramic compositions within the polygonal area defined by the formulas

$$Pb(Mn_{1/3}Ta_{2/3})_{0.030}Ti_{0.470}Zr_{0.500}O_3$$

$$Pb(Mn_{1/3}Ta_{2/3})_{0.250}Ti_{0.500}Zr_{0.250}O_3$$

$$Pb(Mn_{1/3}Ta_{2/3})_{0.373}Ti_{0.375}Zr_{0.250}O_3$$

$$Pb(Mn_{1/3}Ta_{2/3})_{0.250}Ti_{0.125}Zr_{0.625}O_3$$

are particularly useful for making transducer elements.

The composition

$$Pb(Mn_{1/3}Ta_{2/3})_{0.250}Ti_{0.430}Zr_{0.320}O_3$$

shows a high resonant frequency stability with temperatures within the range from −20° to 80° C.

3,652,414
ANTI-SEIZE LUBRICATING COMPOUND

Frank E. Bergeron, deceased, late of 4818 Fairlawn Drive, La Canada, Calif. (by Katharine S. Bergeron, executrix)
Filed Jan. 6, 1969, Ser. No. 789,425
Int. Cl. C10m *5/22*
U.S. Cl. 252—19 **12 Claims**

A lubricating and sealing compound for sealing pipe threads and the like comprising: (1) 4 percent to 92.5 percent by weight of a base lubricating agent and, preferably, of a base grease produced using a soap from the group of aluminum, barium, calcium complex, lithium and sodium soaps; (2) 2 to 20 by weight of a fish oil-based lead soap; (3) 0.5 to 10 percent by weight of a sulfur modified sperm oil such as sulfurized or sulfonated sperm oil; and (4) 5 to 90 percent by weight of solids. The solids comprise either copper alone or, preferably, copper in combination with; (5) 5 to 30 percent by weight of this compound of powdered lead; and (6) 5 to 30 percent weight of amorphous graphite.

3,652,415
LUBRICATING COMPOUND

Frank E. Bergeron, deceased, 4818 Fairlawn Drive, late of La Canada, Calif. (by Katharine S. Bergeron, executrix)
Filed Jan. 6, 1969, Ser. No. 789,424
Int. Cl. C10m *5/22*
U.S. Cl. 252—36 **10 Claims**

A lubricating compound for use in extreme pressure environments comprising, in one embodiment, a major amount of a base lubricating agent and a minor amount, but at least about 1 percent by weight, of a fish oil-based lead soap. The base lubricating agent includes calcium complex grease, barium grease, aluminum grease, sodium grease and lithium grease. The fish oil in the lead soap includes tuna oil, herring oil, menhaden oil and sardine oil.

3,652,416
OXIDE MAGNETIC MATERIALS

Izuru Sugano; Tsuneo Akashi; Tetsujin Matsubara; Yoshihiro Kenmoku, and Taneaki Okuda, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed Oct. 29, 1969, Ser. No. 872,094
Claims priority, application Japan, Oct. 30, 1968, 43/79540
Int. Cl. C04b *35/38*
U.S. Cl. 252—62.59 **3 Claims**

Manganese-zinc ferrites are provided consisting essentially of manganese oxide, zinc oxide and iron oxide and small but effective amount of stannic oxide and lithium oxide ranging up to about 3.2 percent by weight of stannic acid and up to about 0.125 percent by weight of lithium oxide.

3,652,417
STABILIZATION OF ALKALI METAL PERMANGANATE IN ALKALINE SOLUTION

Hans S. Posselt, La Salle, Ill., assignor to Carus Corporation
Filed Mar. 1, 1968, Ser. No. 709,816
Int. Cl. C02b *5/02;* **C11d** *1/28*
U.S. Cl. 252—80 **7 Claims**

Stabilization of alkali metal permanganate against deoxidative, self-decomposition in aqueous, alkaline solution by preventing ultrafine (colloidal) MnO_2 dispersed in said solution from agglomerating by providing therein small amounts of anionic anti-coagulating agent for dispersed MnO_2, preferably perfluorocarbon surfactant.

3,652,418
TRACTIVE FLUID COMPOSITIONS

James C. Wygant, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed May 21, 1970, Ser. No. 39,529
Int. Cl. C09k *3/00*
U.S. Cl. 252—73 **6 Claims**

A composition consisting essentially of a mixture of 30–60 percent hydrogenated dicumyl, 30–60 percent tercyclohexyl and 5–20 percent of dicyclohexyl or alkyl dicyclohexyl. The properties of this fluid composition make it particularly well suited for use as a tractant in tractive drive apparatus intended for low temperature service.

3,652,419
ANTISTATIC FIBER LUBRICANT

Gerhart Karg, Pompton Lakes, N.J., assignor to Witco Chemical Corporation, New York, N.Y.
Filed Mar. 6, 1968, Ser. No. 710,761
Int. Cl. D06m *13/34, 13/26*
U.S. Cl. 252—8.8 **2 Claims**

An emulsifiable antistatic fiber lubricant composition, which exhibits excellent long term emulsion stability, comprising a mixture of a mineral oil, a methyl ester of a long chain fatty acid, a neutralized phosphoric acid ester of an

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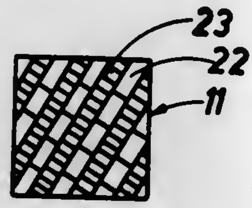
3,652,244
CHEMICAL TREATMENTS FOR MODIFYING PHYSICAL PROPERTIES OF VARIOUS MATERIALS

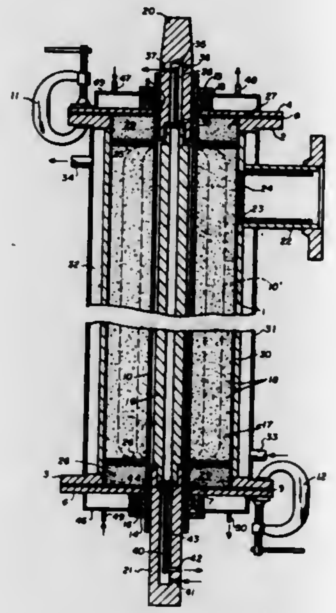
Emile Plumat, Gilly, Belgium, assignor to Glaverbel S.A., Watermael Boitsfort, Belgium
Filed Apr. 25, 1968, Ser. No. 723,981
Claims priority, application Luxembourg, Apr. 27, 1967, 53547; Great Britain, Feb. 27, 1968, 9,493/68
Int. Cl. C03c *15/00, 17/00*
U.S. Cl. 65—30 **6 Claims**



Method and apparatus for chemically treating glass, e.g., chemical tempering, wherein different areas of the glass are subjected to different treatment. For example, certain areas may be subjected to a stronger treatment than others to provide different areas of the glass with different characteristics.

3,652,245
FURNACE FOR MAKING FUSED QUARTZ HOLLOW SLUGS

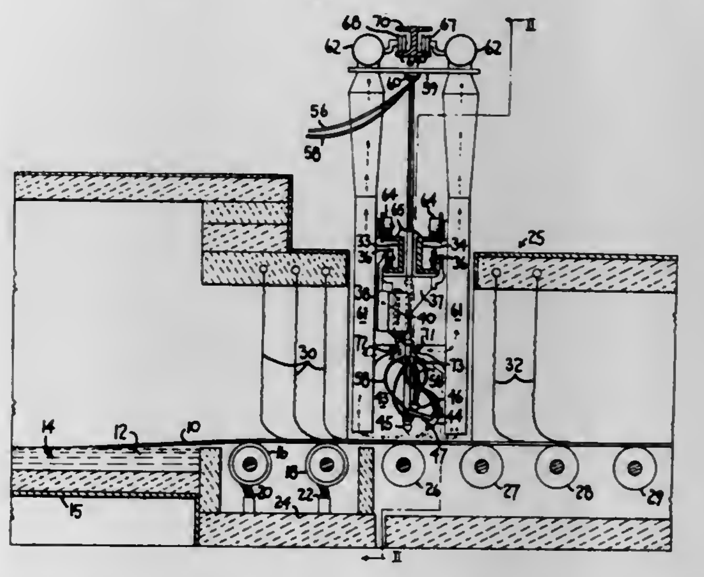
Lothar Jung, Millington, N.J., assignor to Amersil Inc., Hillside, N.J.
Filed Sept. 22, 1970, Ser. No. 74,425
Int. Cl. C03b *5/22, 23/20*
U.S. Cl. 65—157 **9 Claims**



A furnace for making fused quartz hollow slugs comprising a cylindrical tubular housing having closure means at both ends, a quartz tube mounted coaxially in the housing in spaced relationship with the housing, the tube passing through the closure means in vacuum-tight relationship therewith and forming an annular charge chamber between the quartz tube and the wall of the housing, an elongated electrical resistor heating means mounted in the quartz tube in spaced relationship and coaxially of the quartz tube, the inner space of the quartz tube being open to either atmospheric air pressure or to an atmosphere of controlled pressure and chemical composition suitably applied, and vacuum means communicating with the charge chamber for vacuumizing the charge chamber.

3,652,246
APPARATUS FOR COATING HOT GLASS

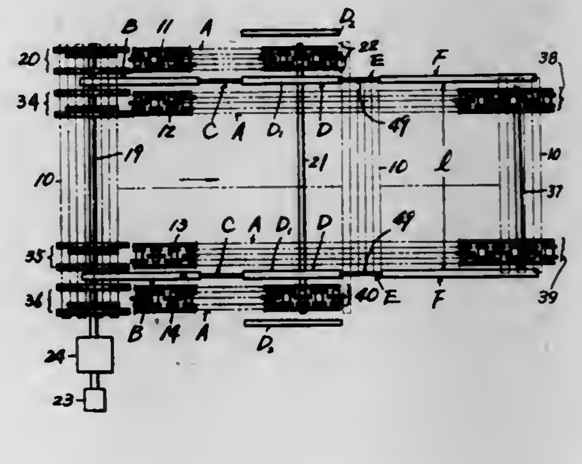
Joseph E. Michelotti, and Vern A. Henery, both of Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Oct. 27, 1969, Ser. No. 869,644
Int. Cl. C03b *18/02*
U.S. Cl. 65—181 **10 Claims**



Apparatus for coating a surface of a newly formed ribbon of float glass immediately after delivering the ribbon from a bath containing molten tin, while the glass surface is at a temperature sufficiently high to pyrolize said composition to form a metal oxide coating thereon of sufficient thickness to provide the coated glass with desired properties, such as reducing the transmission of certain wave lengths of light in one or more desired wavelength bands through the coated sheet or making the coated sheet electroconductive.

3,652,247
METHOD AND APPARATUS FOR SHAPING THE ENDS OF GLASS TUBE

Toshio Nakayama, and Shoichi Horikawa, both of Otu-shi, Japan, assignors to Nippon Electric Glass Company Limited, Tokyo, Japan
Filed Oct. 6, 1969, Ser. No. 863,846
Claims priority, application Japan, Dec. 11, 1968, 43/90649
Int. Cl. C03b *23/04, 33/08*
U.S. Cl. 65—104 **7 Claims**



Glass tubes are transferred while being rotated by means of roller groups arranged in a plurality of rows. Intermediate between the ends of the transfer path, on both sides of the roller groups and in intermediate positions corresponding to the portions to be treated of the glass tube close to both ends thereof, there are correspondingly provided burners, a shaping rail for squeeze shaping the tube cooling pipes, a cutter burner and thin circular cutting plate for cutting the tube at the middle of the shaped portion and burners for smoothing the cut surfaces and for successively cooling those surfaces with gentle flames.

3,652,248

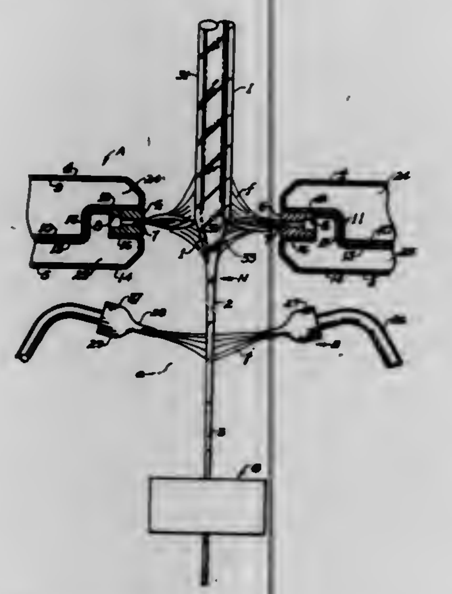
PROCESS FOR REDRAWING SILICA GLASS RODS

Ted A. Loxley, Mentor; John M. Webb, Chagrin Falls, and Walter G. Barber, North Perry, all of Ohio, assignors to Edward J. Mellen, Jr., East Cleveland, Ohio

Filed June 9, 1970, Ser. No. 44,791

Int. Cl. C03b *21/00, 23/04*

U.S. Cl. 65—108 **9 Claims**



A process of redrawing a hollow quartz glass rod to close tolerances comprising feeding the rod vertically between motor-driven feed rolls, directing flames radially inwardly against the periphery of the rod to heat the glass to a drawing temperature above 3,000° F., and maintaining a tension on the rod to draw it and reduce its diameter at least 70 percent, characterized in that jets of cooling air are directed radially inwardly against the periphery of the heated glass about 1 to about 2 inches below the flame and above the zone of constant diameter to reduce the length of the tapered neck substantially and thereby provide better dimensional control.

3,652,249

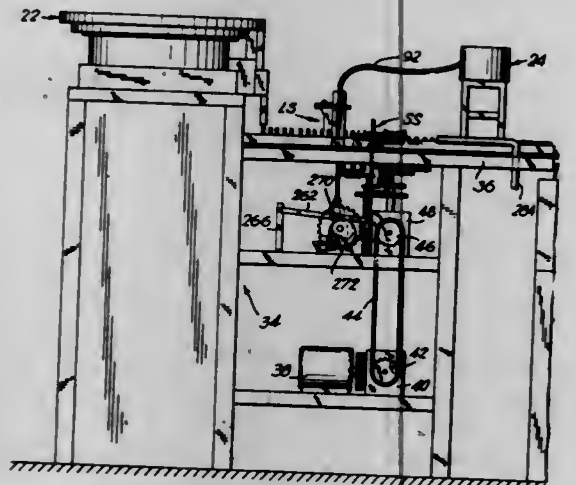
APPARATUS FOR MANUFACUTRING ASSEMBLIES OF CLOSED GLASS TUBES EACH WITH A PELLET THEREIN

James C. White, Rutherford, N.J., assignor to Propper Manufacturing Co., Inc.

Filed Aug. 26, 1969, Ser. No. 853,146

Int. Cl. C03b *23/18*

U.S. Cl. 65—156 **4 Claims**



A method and apparatus for manufacturing assemblies of closed tubes each with a pellet therein. The tubes initially have only one closed end and an opposed open end. These tubes are positioned in an upright attitude with open ends up, and a pellet is deposited in each tube by a pellet-depositing means at a loading station where each tube is positioned in its upright position by a positioning means. A feeding chain is intermittently driven to feed the tubes in a stepwise manner to and from the loading station where a dispenser sequentially dispenses a pellet into each tube. Beyond the loading station the successive tube, are preheated at the region of their upper open ends, and then they are sealed at these preheated upper open ends. The sealing takes place at a sealing station where each tube is rotated about its axis while its preheated upper end is held stationary to separate the preheated upper end from the remainder of the tube which becomes automatically closed at the sealing station.

3,652,250

APPARATUS FOR THE TREATMENT OR PRODUCTION OF FLAT GLASS FLOATING ON A LIQUID

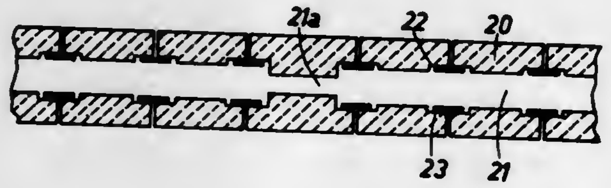
Edgard Brichard, Jumet, Belgium, assignor to Glaverbel, Watermael-Boitsfort, Belgium

Filed Oct. 3, 1969, Ser. No. 863,600

Claims priority, application Great Britain, Sept. 5, 1969, 44,044/69

Int. Cl. C03b *18/02*

U.S. Cl. 65—182 R **5 Claims**



In the production 26 treatment of flat glass floating on a liquid contained in a tank formed of refractory materials and having a passageway in the refractory material extending from one region of the tank to another some of the liquid is circulated through this passageway from one region of the tank to another in order to control or regulate the distribution of heat within the tank liquid.

3,652,251

REFRACTORY FURNACE WALL OF A GLASS SHEET FLOATING TANK

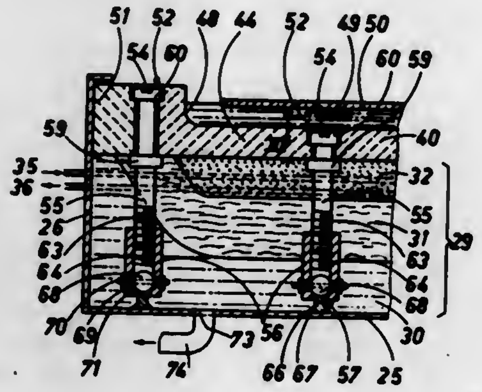
Edgard Brichard, Jumet, Belgium, assignor to Glaverbel, Watermael-Boitsfort, Belgium

Filed Oct. 29, 1969, Ser. No. 872,317

Claims priority, application Luxembourg, Oct. 30, 1968, 57195

Int. Cl. C03b *18/02*

U.S. Cl. 65—182 R **12 Claims**



A refractory furnace wall has a refractory member spaced from the inner side of a wall member so as to define an intermediate space therebetween. The wall and refractory members are interconnected by a connector member which maintains the members in spaced relationship and which may be adjusted to vary the distance between the wall and refractory members.

3,652,252

TANK FURNACE FOR THE TREATMENT OF GLASS BY THE FLOAT PROCESS

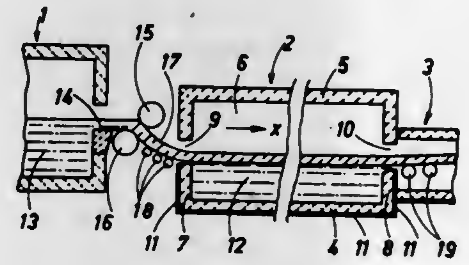
Gustave Javaux, Brussels, Belgium, assignor to Glaverbel, Watermael-Boitsfort, Belgium

Filed Oct. 3, 1969, Ser. No. 863,517

Claims priority, application Great Britain, Sept. 5, 1969, 44,043/69

Int. Cl. C03b *18/02*

U.S. Cl. 65—182 R **7 Claims**



A furnace for the treatment of glass has a tank of refractory material containing a bath of molten material upon which the glass is floated. The refractory material has a property of releasing a vitreous phase lighter than the molten material at operating temperatures of the furnace. Metallic screen means comprising a plurality of spaced or overlapping slid metal plates which may be of tungsten or tungsten alloys or positioned between the refractory material and the upper surface of the bath to prevent the vitreous phase from reaching this surface of the bath.

3,652,253

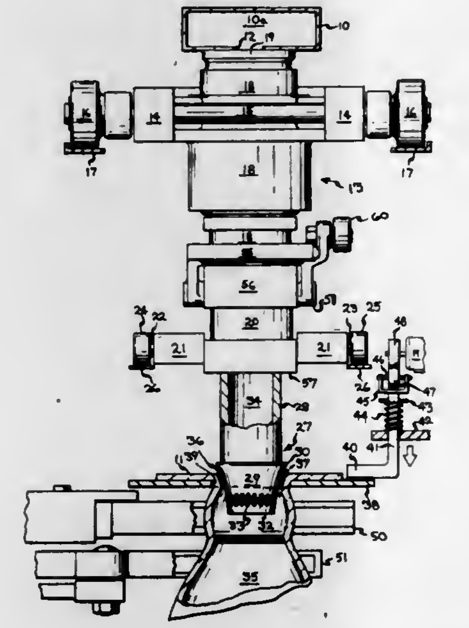
PRESSURIZER NOZZLE

Owen M. Small, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Jan. 16, 1970, Ser. No. 3,328

Int. Cl. C03b *5/32, 9/14*

U.S. Cl. 65—184 **12 Claims**



This invention relates to a nozzle structure for use in a pressurizer machine in glass forming. The pressurizer machine operates to insert a pipe or nozzle into the opening of a glass ribbon and newly formed glass article supported on an apertured orifice plate of a ribbon glass forming machine. Just prior to crack-off of the article from the ribbon in or near the aperture of the plate, the nozzle is inserted below the crack-off line of the glass ribbon and air is emitted in the article to flow out of the mouth opening. Any chips or loose particles of glass as may result at crack-off are carried by the air flow out of the mouth and away from the article. The nozzle structure includes: (1) a frustro conical side wall for baffling or directing air flow upwardly and radially, (2) regulating volume and pressure by the nozzle openings in proportioning their area to the supply pipe, (3) inclining these openings in a 30°–60° inclination to the axis of the nozzle in directing air emission, and (4) providing a carrier-actuator for moving the nozzle—a pressurizer head assembly—whereby the nozzle is moved into the article below the orifice plate elevation in applying the air in the article.

3,652,254

METHOD AND PLANT FOR EFFECTING MASS TRANSFER PROCESSES

Knud C. B. Knudsen, Holte, Denmark, assignor to Aktieselskabet Dansk Svovlsyre-og Superphosphat-Fabrik, Copenhagen, Denmark

Filed May 4, 1970, Ser. No. 34,230

Claims priority, application Great Britain, May 9, 1969, 23,784/69

Int. Cl. C05b *17/00;* **C01b** *25/28;* **C02b** *1/42*

U.S. Cl. 71—34 **1 Claim**

The invention relates to a method and a plant for effecting a mass transfer between a liquid and a granular solid, in which the solid is in a fixed bed arrangement in a loop circuit, the liquid being sent to part of said fixed bed through inlets and outlets which are moved forward stepwise upon exhaustion of the solid, the process liquid being replaced, in the exhausted part, by a stripping liquid, the inlet and the outlet of which are also moved stepwise forward as the transfer zone is moved.

3,652,255

AGENTS FOR RETARDING THE GROWTH OF PLANTS AND CHANGING THEIR HABIT

Hans Osieka; Karl-Heinz Koenig, both of Ludwigshafen (Rhine); Johann Jung, Limburgehof, Pfalz, and Harry Distler, Ludwigshafen (Rhine), all of Germany, assignors to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Original application May 25, 1967, Ser. No. 641,163, now abandoned. Divided and this application Sept. 3, 1969, Ser. No. 870,952

Int. Cl. A01n

U.S. Cl. 71—76 **5 Claims**

Sulfonium salts and a method of retarding plant growth with said sulfonium salts.

3,652,256

CYCLIC ESTERS OF CYANODITHIOIMIDOCARBONIC ACID AND DERIVATIVES

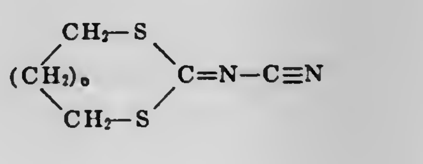
John J. D'Amico, Dunbar, W. Va., assignor to Monsanto Company, St. Louis, Mo.

Filed June 20, 1966, Ser. No. 558,593

Int. Cl. A01n *9/12;* **C07d** *71/00, 73/00*

U.S. Cl. 71—90 **7 Claims**

New compounds of the formula



where *n* is 0 to 8, inclusive, and derivatives thereof are biological toxicants, rubber accelerators and useful intermediates.

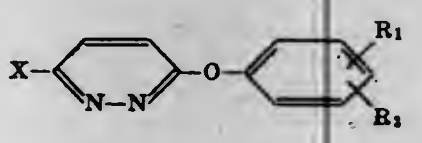
3,652,257

FLUOROPHENOXY-PYRIDAZINES AS SELECTIVE HERBICIDES

Teruomi Jojima, Tokyo, Japan, assignor to Sankyo Company Limited, Tokyo, Japan
Filed Feb. 24, 1969, Ser. No. 801,745
Claims priority, application Japan, Feb. 28, 1968, 43/12727
Int. Cl. A01n *9/22*

U.S. Cl. 71—92 **3 Claims**

Herbicidal composition which comprises as an active ingredient of a 3-phenoxypyridazine compound having the formula



wherein X is hydrogen atom or chlorine atom, R_1 is trifluoromethyl group or fluorine atom and R_2 is hydrogen atom or chlorine atom, provided that, where X is hydrogen atom, R_1 is trifluoromethyl group or fluorine atom and R_2 is hydrogen atom or chlorine atom and, where X chlorine atom, R_1 is trifluoromethyl group and R_2 is hydrogen atom or chlorine atom and an agriculturally-acceptable carrier. Method for inhibiting the growth of undesirable plants which comprises applying to the locus to be protected a herbicidally effective amount of said 3-phenoxypyridazine compound.

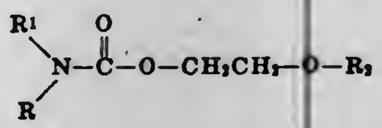
3,652,258

METHOD OF CONTROLLING WEEDS WITH PHENOXYETHYL CARBAMATES

Llewellyn W. Francher, 22 Valley View Drive, Orinda, Calif.
Continuation of application Ser. No. 798,233, Sept. 19, 1968, now abandoned, which is a division of application Ser. No. 604,136, Dec. 13, 1966, now Patent No. 3,439,021, which is a continuation-in-part of application Ser. No. 367,879, May 15, 1964, now abandoned. This application Oct. 27, 1969, Ser. No. 869,961
Int. Cl. A01n *9/24*

U.S. Cl. 71—106 **7 Claims**

The compounds of the class halo-substituted phenyl oxyethyl esters of N-alkyl carbamic acids having the general formula



$$\begin{matrix} R^1 & & O & & \\ & \diagdown & \| & & \\ & & N-C-O-CH_2CH_2-O-R_2 & & \\ & \diagup & & & \\ R & & & & \end{matrix}$$

wherein R and R^1 are selected from the group consisting of hydrogen, lower alkyl having from one to six carbon atoms, inclusive, and lower alkenyl having from two to six carbon atoms, inclusive, at least one of R and R^1 is a group other than hydrogen; and R^2 is selected from the group consisting of nuclearly substituted phenyl, wherein said substituents are from one to five halogens, inclusive, especially chlorine; for example, 2,4-dichlorophenoxyethyl-N-methyl carbamate and 2,4,5-trichlorophenoxyethyl-N,N-di-n-propyl carbamate.

The compounds of the class are useful as preemergence and post-emergence herbicides. The compounds can be prepared by condensing a halophenyl oxyethanol and an alkyl isocyanate or condensing a halophenyl oxyethanol with an N,N-dialkyl carbamyl chloride.

3,652,259

SPHERICAL POWDERS

Walter V. Knopp, Wyckoff, N.J., assignor to Olin Mathieson Chemical Corp.
Continuation-in-part of application Ser. No. 577,840, Sept. 8, 1966, now Patent No. 3,434,831. This application May 14, 1968, Ser. No. 728,923. The portion of the term of this patent subsequent to Mar. 25, 1986, has been disclaimed.
Int. Cl. B22f *9/00;* **B29c** *23/00*

U.S. Cl. 75—0.5 B **5 Claims**

The instant disclosure teaches an improved process for obtaining dense, spherical, metal particles characterized by coating the starting material with a weld-preventing material and heating the coated particles in a protective atmosphere.

3,652,260

METHOD OF PREPARING METAL CONTAINING PELLETS FROM BLAST FURNACE DUST AND CONVERTER DUST

Masutaro Azami, 3-27 Zaimakuza, 5-chome, Kamakura, Japan
Filed Feb. 13, 1970, Ser. No. 11,116
Claims priority, application Japan, Feb. 19, 1969, 44/11771
Int. Cl. C21b *1/10*

U.S. Cl. 75—3 **10 Claims**

Blast furnace dust and converter dust are mixed with each other and then formed into green pellets containing 7 to 20 percent by weight of carbon. These pellets, after being dried at a temperature below 250° C., are charged into a rotary reducing furnace, in which the pellets are reduced by means of the carbon component contained therein.

3,652,261

IRON POWDER INFILTRANT

Pierre W. Taubenblat, Somerset, N.J., assignor to American Metal Climax, Inc., New York, N.Y.
Filed June 25, 1969, Ser. No. 836,569
Int. Cl. B22f *3/26;* **C22c** *1/04*

U.S. Cl. 75—0.5 R **10 Claims**

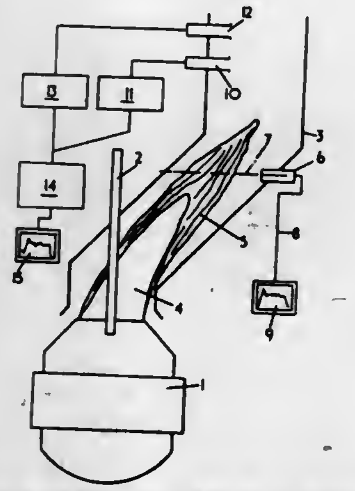
Infiltrant and process for using same for impregnating iron and iron base alloy powder compacts, said infiltrant being an atomized cupreous alloy powder composition containing at least 85 percent by weight of copper and having iron, manganese, aluminum and nickel as essential alloying components thereof. Carbon and lubricant may be incorporated therein as optional ingredients.

3,652,262

REFINING OF PIG IRON

Etienne Marie Denis, Grivegnee, Belgium, assignor to Centre National De Recherches Metallurgiques, Brussels, Belgium
Filed Aug. 17, 1967, Ser. No. 661,401
Claims priority, application Luxembourg, Aug. 23, 1966, 51,810; 51,811
Int. Cl. C21c *5/32*

U.S. Cl. 75—60 **4 Claims**



It has been found that the carbon monoxide in gases emerging from a converter tends to burn to carbon dioxide by contact with oxygen in the surrounding air and that the flame so produced has an intensity which is closely related to the rate of flow of carbon monoxide, and hence to the rate of decarbonization of the iron. This is made use of in the invention by controlling the flow of gases emerging from the converter spout and measuring, generally continuously, the intensity of the flame produced when placed in contact with the surrounding air in a hood.

3,652,263

DIRECT PRODUCTION METHOD FOR MEDIUM- AND LOW-CARBON FERROMANGANESE

Hisao Shindo, Tokyo; Yoshishige Nagoya, Hachinoe-shi; Takashi Takeuchi, Hachinoe-shi, and Kosuke Murai, Hachinoe-shi, all of Japan, assignors to Taiheiyo Kinzoku Kabushiki Kaisha Co., Ltd., Tokyo, Japan
Filed Apr. 30, 1968, Ser. No. 725,532
Int. Cl. C22b *1/00, 9/10, 47/00*

U.S. Cl. 75—80 **9 Claims**

A production method for medium- and low- carbon ferromanganese directly from silico-manganese, which method comprises charging molten silico-manganese, heated manganese ore and slagging materials (or, if necessary, with an added reducing agent) into a reaction vessel, giving a horizontal eccentric circular motion to said reaction vessel, and oxidizing and removing silicon as well as reducing manganese.

3,652,264

RECOVERY OF ZINC VALUES FROM ZINC PLANT RESIDUE

Fernand Jacques Joseph Bodson, Angleur-Liege, Belgium, assignor to Societe des Mines et Fonderies de Zinc de La Vieille Montagne, S.A., Angleur-Liege, Belgium
Filed Jan. 13, 1969, Ser. No. 790,835
Claims priority, application Belgium, Nov. 20, 1968, D41,993
Int. Cl. C22b *19/22*

U.S. Cl. 75—101 **8 Claims**

In a process of recovering metal values from leaching residues of zinc-bearing materials such as the leaching residues of roasted zinc concentrate, comprising subjecting said leaching residues to a subsequent leaching with a solution of dilute sulphuric acid for dissolving the zinc, adding a sulphur-bearing ore to said solution, separating a sulphurous residue from said solution, oxidizing said solution and precipitating the therein contained iron by using an oxidizing agent and adding a neutralizing agent containing zinc oxide.

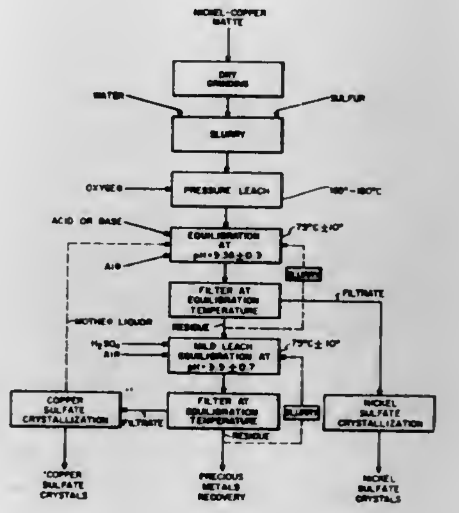
3,652,265

RECOVERY OF METAL VALUES FROM NICKEL-COPPER MATTES

John F. Marschik, Summit, and Werner J. Cernoch, Ridgefield, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation
Filed Nov. 28, 1969, Ser. No. 880,812
Int. Cl. C01g *1/10;* **C22b** *3/00*

U.S. Cl. 75—117 **12 Claims**

A process for recovering nonferrous metal values from nickel-copper mattes includes the selective separation of nickel from the mattes by oxidative pressure leach of the matte and equilibration of the pressure leached material to a pH of preferably 5.35 ± 0.3. Thereafter copper is leached from the resultant nickel depleted residue under relatively mild conditions. Precious metals are recovered from the mild leach residue.



3,652,266

BE-SI ALLOY FOR STRUCTURAL PARTS

Albert R. Kaufmann, Lexington, Mass., assignor to Whittaker Corporation, Nuclear Metals Div., West Concord, Mass.
Filed Oct. 29, 1968, Ser. No. 771,425
Int. Cl. C22c *25/00*

U.S. Cl. 75—134 S **22 Claims**

Parts formed from a beryllium-silicon alloy containing approximately 62 weight percent silicon are readily castable without the formation of large porosities or shrinkage cavities on cooling. They are characterized by a high ratio of elastic modulus to density and a high ratio of thermal conductivity to thermal expansion, are relatively homogeneous and isotropic throughout, and are surprisingly less brittle than either of their component metals. They are especially useful as mirror substrates.

3,652,267

CARBON STEELS AND ALLOY STEELS FOR COLD FORGING

Tetsuro Ito, and Azuma Hiki, both of Nagoya, Aichi, Japan, assignors to Daido Seiko Kabushiki Kaisha, Aichi Prefecture, Japan
Filed Sept. 23, 1968, Ser. No. 761,463
Claims priority, application Japan, Oct. 11, 1967, 42/64954
Int. Cl. C22c *39/00*

U.S. Cl. 75—123 L **6 Claims**

This invention relates to machine structural carbon steels and alloy steels having an excellent cold forging property. Such a steel can be produced by deoxidizing a carbon steel or an alloy steel with a calcium-silicon alloy and controlling the calcium content thereof.

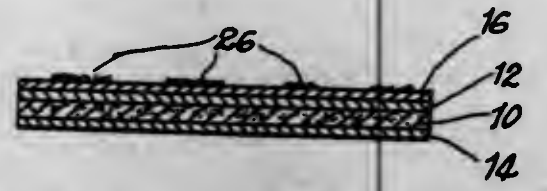
3,652,268

BARRIER COATED ELECTROPHOTOGRAPHIC SHEET SUITABLE FOR LIQUID DEVELOPMENT

Clifton B. Rowe, Chicago, Ill., assignor to A. B. Dick Company, Chicago, Ill.
Filed Mar. 16, 1970, Ser. No. 19,954
Int. Cl. G03g *5/04*

U.S. Cl. 96—1.5 **23 Claims**

An electrophotographic reproduction process and copy sheet therefor for development of a latent electrostatic image on the copy sheet by a liquid developer wherein the copy sheet comprises a conductive base sheet having a thin barrier coating on each side thereof, the coating comprising a highly dielectric insulating material and a conductor material which is either a polymeric quaternary ammonium halide or an ammonium salt of an alkyl aryl sulfonate, and one side having a



second coating thereon comprising a thin insulating coating or a photoconductor coating for receiving an electrostatic image.

3,652,269
PHOTOCONDUCTIVE ELEMENTS CONTAINING HALOGENATED POLYETHYLENE BINDERS

Lawrence E. Contois, and Stewart H. Merrill, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 27, 1968, Ser. No. 755,716
Int. Cl. G03g *5/00;* **C08f** *3/22*
U.S. Cl. 96—1.5 20 Claims

Photoconductive elements containing a photoconductor and a binder comprising polymers of halogenated polyethylenes are described. These elements can be sensitized and charged either negatively or positively.

3,652,270
RECORDING DEVICES

Akio Yamashita, Ikeda-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of application Ser. No. 350,830, Mar. 10, 1964, now abandoned. This application Jan. 10, 1969, Ser. No. 793,222

Claims priority, application Japan, Mar. 16, 1963, 38/14538; Apr. 27, 1963, 38/22760; May 2, 1963, 38/23219; May 2, 1963, 38/23220; June 17, 1963, 38/32395; June 21, 1963, 38/32532; Sept. 21, 1963, 38/50994; Sept. 21, 1963, 38/50995; Oct. 25, 1963, 38/57735; Oct. 28, 1963, 38/58709
Int. Cl. G03g *5/04*
U.S. Cl. 96—1.5 1 Claim

A recording device comprising in series a first electrode, a layer containing a dispersed mixture of at least a semiconductor and an electrical insulator having one side contacting said electrode, a solid layer of an electrical insulator contacting the other side of the first mentioned layer, and a second electrode disposed on the other side of the solid insulator layer in electrical contact therewith. The second electrode may be either in direct abutting contact with the solid insulator layer or may act thereon through either a fluorescent phosphor layer or a photoconductive layer. When a voltage is applied between the electrodes, a charge of the same polarity as that of the first electrode is stored in both the layer of the mixture of semiconductor and insulator and in the solid insulator layer.

3,652,271
PHOTOELECTROSTATIC RECORDING MEMBER

Dennis M. Bornarth, Palatine, and Frank Schneidinger, Marengo, both of Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Continuation-in-part of application Ser. No. 664,958, Sept. 1, 1967, now abandoned. This application Apr. 20, 1970, Ser. No. 30,238
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.8 13 Claims

A photoelectrostatic copy sheet is prepared by using a paper base sheet having a roughness in the range of from 100 to 250 Sheffield units. Bonded to the rough surfaced paper is a photoconductive layer comprising zinc oxide and in another embodiment sub-millimicron sized particles of hydrophobic silica dispersed in a resin binder. The layer conforms to the rough fiber textured surface of the base sheet to provide a finished recording surface having a roughness in the range of from 70 to 250 Sheffield units and a gloss (75°, Gardner) not in excess of 20 percent. This sheet has the appearance, feel and handle of an uncoated piece of paper.

3,652,272
PHENOXY PHOTOPOLYMER HAVING NO EPOXY GROUPS, AND ARTICLE MADE THEREFROM

Daniel C. Thomas, Wheaton, Ill., assignor to Lithoplate, Inc., Covina, Calif.

Filed Oct. 31, 1969, Ser. No. 873,085
Int. Cl. G03f *7/02;* **G03c** *1/68, 1/52*
U.S. Cl. 96—33 16 Claims

A photopolymer adapted for use in lithography, photomechanical processes, or other applications, consisting essentially of an actinic light-tanned product of a phenoxy resin of high molecular weight formed in the presence of a sensitizer which is a diazo resin or a chromium compound, such as ammonium bichromate. A photopolymer-yielding system or combination consisting essentially of a phenoxy resin and a sensitizer, which is a diazo resin or chromium compound yielding hexavalent chromium, the resin and sensitizer being in contact with each other. A lithographic plate including such photopolymer or such photopolymer-yielding system or combination. A method of making such photopolymer, comprising subjecting such photopolymer system or combination to treatment with actinic light.

3,652,273
PROCESS USING POLYVINYL BUTRAL TOPCOAT ON PHOTORESIST LAYER

Maung S. Htoo, Poughkeepsie, N.Y., assignor to International Business Machines Corporation

Filed Sept. 11, 1967, Ser. No. 666,860
Int. Cl. G03c *5/00*
U.S. Cl. 96—36 9 Claims

An improved process for the formation of photo-resist patterns on substrates by coating the subtrate with a layer of a synthetic resin photo-resist composition, applying a topcoat of vinyl butyral polymer over the photo-resist, exposing the photo-resist to a light pattern through a mask and the transparent topcoat, and removing the photo-resist from the unexposed areas with a conventional predominantly aromatic hydrocarbon developer which also removes the topcoat. The use of the topcoat eliminates scumming of the substrate due to residual insoluble photo-resist in the unexposed areas of the resist layer, and reduces pinholing in the exposed areas.

3,652,274
PHOTOGRAPHIC ETCHING RESIST AND PREPARATION THEREOF

Johan Lodewijk Verelst, Kontich, and Jozef Frans Willems, Wilrijk, both of Belgium, assignors to Gevaert AGFA N.V., Mortsel, Belgium

Filed June 10, 1968, Ser. No. 735,582
Claims priority, application Great Britain, June 9, 1967, 26,860/67
Int. Cl. G03c *5/00;* **G03f** *7/00*
U.S. Cl. 96—36.3 1 Claim

A printing plate of the type which is prepared by coating a metal supporting surface with a photo-insolubilizable polymer, exposing the coating to a light image, developing the exposed coating by treatment with a liquid dissolving the unexposed areas only of the coating so that the exposed areas remain as a resist layer on the metal surface, and etching the metal surface with the resist layer thereon by means of an aqueous etching liquid therefore, is given increased resistance in the exposed regions to the attack of the etching liquid by incorporating into the developing liquid a hydrophobizing agent which is either an organic compound containing at least one fluorine substituted alkyl group of an organic silane or siloxane compound containing at least one alkyl or aryl group linked to at least one of its silicon atoms, the hydrophobizing agent also containing a reactive group

capable of chemically reacting with the photo-insolubilizable polymer. The polymer preferably includes active hydrogen atoms after insolubilization and preferred chemically active groups in the hydrophobizing agent are acid anhydride, isocyanate, epoxy, and acid chloride groups.

3,652,275
HEXAARYLBIIMIDAZOLE BIS (P-DIALKYL-AMINOPHENYL-α,β-UNSATURATED) KETONE COMPOSITIONS

Martin D. Baum, and Cyrus P. Henry, Jr., both of Wilmington, Del., assignors to E. I du Pont de Nemours and Company, Wilmington, Del.

Filed July 9, 1970, Ser. No. 53,686
Int. Cl. G03c *1/68, 1/72, 5/24*
U.S. Cl. 96—48 36 Claims

Compositions comprising a hexaarylbiimidazole and a selected bis(p-aminophenyl-...α,β-unsaturated) ketone and optionally, a leuco dye, a polymerizable monomer or inert components such as binders, solvents and the like are photoactivated in the visible light wavelengths.

3,652,276
PHOTOGRAPHIC PHOTOCONDUCTOR SYSTEMS UTILIZING REVERSIBLE REDOX MATERIALS TO IMPROVE LATENT IMAGE LIFE

Richard F. Bartlett, Burlington, Mass., and Itek Corporation, Lexington, Mass.

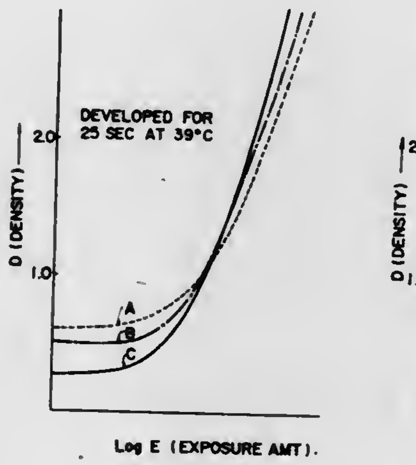
Continuation-in-part of application Ser. No. 510,977, Dec. 1, 1965, now abandoned. This application July 2, 1969, Ser. No. 838,651
Int. Cl. G03c *5/24*
U.S. Cl. 96—48 PD 26 Claims

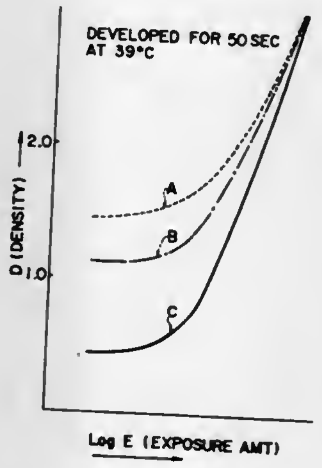
A copy medium comprising a support, a photoconductor, and a reversible oxidizing agent is exposed to produce a latent image of improved stability and then, after a time period of at least 30 seconds, contacted with image-forming materials to produce an irreversible image. Optionally, the reversible oxidizing agent may be applied to the copy medium immediately after exposure. An acidified copy medium is especially preferred since the stability of the latent image is much improved.

3,652,277
PROCESSING FOR PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE ELEMENT

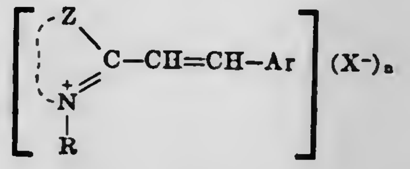
Hikoharu Hara, and Tadao Hatano, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 23, 1969, Ser. No. 844,129
Claims priority, application Japan, July 23, 1968, 43/52069
Int. Cl. G03c *5/26, 5/30*
U.S. Cl. 96—50 PT 14 Claims





In a method of processing a photographic silver halide light-sensitive element wherein in the development processing steps of said photographic silver halide light-sensitive element, the improvement comprising processing the exposed photographic silver halide light-sensitive element in the presence of an aldehyde-type hardening agent and a compound represented by the formula



wherein Z represents an atom necessary to complete a heterocyclic ring, R represents a lower alkyl group or a substituted alkyl group, Ar represents a phenyl group or a substituted phenyl group, X represents an acid residual group, and n is 0 or 1, the n being 0 when the compound forms an internal salt.

3,652,278
PRE-DEVELOPMENT PROCESS FOR REDUCING FOG IN SILVER HALIDE PHOTOGRAPHIC MATERIALS

Toshiaki Asano; Kazushige Uenaka, both of Kanagawa, and Tomomasa Usami, Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

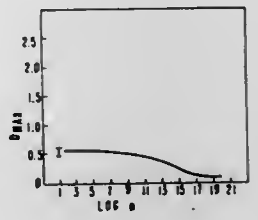
Filed July 8, 1968, Ser. No. 743,043
Claims priority, application Japan, July 8, 1967, 42/43902
Int. Cl. G03c *5/38, 1/34*
U.S. Cl. 96—61 16 Claims

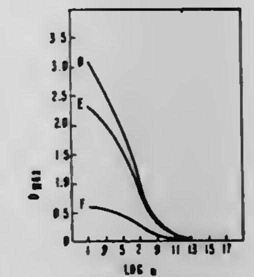
A method for reducing fog in photographic materials which are to be stored in formaldehyde containing atmospheres whereby a compound capable of reacting with and fixing said formaldehyde is incorporated into the silver halide emulsion of said photographic material. A light-sensitive silver halide photographic material which can be stored in a formaldehyde containing atmosphere without deterioration of photographic properties.

3,652,279
NITROGEN-CONTAINING DMAX MAINTAINERS FOR USE IN PHOTOSOLUBLE EMULSIONS

Ralph Kingsley Blake, Westfield, and Joseph De Witt Overman, New Shrewsbury, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 18, 1969, Ser. No. 842,864
Int. Cl. G03c *5/24*
U.S. Cl. 96—64 8 Claims





An improved process for forming a silver halide image by selective exposure of a photosoluble silver halide layer and dissolution of the exposed photosoluble silver halide in a silver halide solvent characterized by the presence in either the layer, solvent, or both, of a heterocyclic nitrogen-containing compound which loses a proton to form anions at an elevated pH, e.g., benzotriazoles, naphthotriazoles, 5-nitroimidazoles, and 6-nitroindazole, which compounds enhance the action of mercaptan insolubilizers in photosoluble emulsions. New photosoluble elements for making direct positive images are provided by the invention.

3,652,280
LIGHT-SENSITIVE SILVER HALIDE EMULSION WITH HIGH RESOLVING POWER

Maurice Hector De Belder, Mechelen; Rene Omer Duville, Edegem; Herman Adelbert Philippaerts, Mortsel; Theofiel Hubert Ghys, Kontich, and Henri Depoorter, Mortsel, all of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

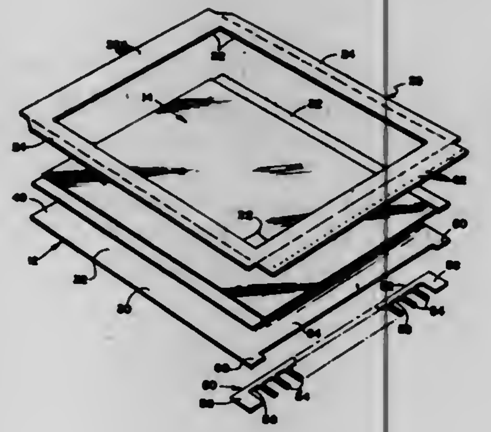
Filed Dec. 8, 1969, Ser. No. 883,235
Claims priority, application Great Britain, Dec. 11, 1968, 58,844/68
Int. Cl. G03c *5/24, 1/02*
U.S. Cl. 96—64 **17 Claims**

Lippmann silver halide emulsions comprising a hydrophilic colloid are provided which contain at least one light-absorbing dye that absorbs light of the wavelength used for the exposure of the said emulsions and that is decolorized and/or removed in at least one of the photographic processing liquids, characterized in that the said absorbing dye is present in such an amount that per micron of emulsion layer thickness a density of at least 0.05 and at most 0.14, preferably comprising between 0.08 and 0.12, measured in the spectral region of the exposure light, is obtained. The emulsions have high resolving power and acutance, and are suitable for both reversal processing and negative processing.

3,652,281
PHOTOGRAPHIC FILM UNIT

Albert J. Bachelder, Lexington, and Frederick J. Binda, Cambridge, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed July 15, 1968, Ser. No. 744,912
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 **11 Claims**



A self-developing, photosensitive film unit including a multilayer photosensitive element and a transparent image-recording element laminated to one another during manufacture and a rupturable container of processing liquid attached to the elements at one end for dispensing its liquid contents between the elements, and adapted to be processed by passing the film unit including the container and laminated elements between a pair of pressure-applying members. The film unit is formed by embossing, or attaching spacer strips, to the lateral margins of an elongated strip and then laminating the strip to a second strip by spreading a film-forming agent between the strips, severing the laminated strips to the required length to form sandwiches each comprising laminated photosensitive and image-recording elements, securing a binding around at least two sides of each sandwich and attaching a container of processing liquid to one end of the sandwich.

3,652,282
PHOTOGRAPHIC FILM UNIT AND METHOD OF MANUFACTURE

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 782,056, Dec. 9, 1968, now Patent No. 3,573,043, dated Mar. 30, 1971, which is a continuation-in-part of application Ser. No. 622,283, Mar. 10, 1967, now Patent No. 3,415,644, dated Dec. 10, 1968. This application Mar. 6, 1969, Ser. No. 804,942
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 **16 Claims**

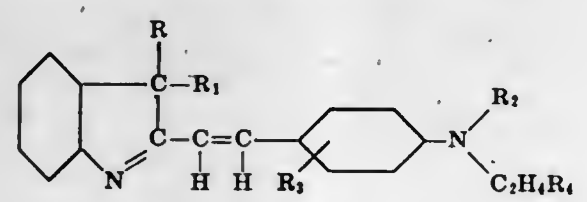
A self-developing, photosensitive film unit including a multilayer photosensitive element and a transparent image-recording element laminated to one another during manufacture and a rupturable container of processing liquid attached to the elements at one end for dispensing its liquid contents between the elements, and adapted to be processed by passing the film unit including the container and laminated elements between a pair of pressure-applying members. The film unit is formed by laminating a photosensitive element to an image-receiving element by applying a layer of a film-forming agent to one of the elements, superposing the elements and distributing a layer of a second film-forming material therebetween to form an adhesive bond that is weaker than the bond between any other layers of said film unit and is adapted to rupture readily during the spreading of a processing liquid between the elements. A binding is secured around at least two sides of the laminate and a container of processing liquid is attached to one edge of the sandwich in position to eject its contents between the elements in response to the application of compressive pressure.

3,652,283
PHOTOGRAPHIC MATERIALS CONTAINING ANTI-HALATION DYESTUFFS

E. Scudder Mackey, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed May 13, 1968, Ser. No. 728,827
Int. Cl. G03c *1/84, 1/78*
U.S. Cl. 96—84 **10 Claims**

1. A light-sensitive photographic film element comprising at least one light-sensitive gelatin silver halide emulsion coated on a film base and wherein at least one of the layers comprising said film element contains a water-soluble anti-halation dyestuff having a broad absorption in the green region of the spectrum comprising a quaternary ammonium salt of a dyestuff of the following structural formula:



wherein R, R_1, R_2, and R_3 represent alkyl containing from one to four carbon atoms and R_4 represents a member selected from the group consisting of cyano and halogen.

3,652,284
PHOTOGRAPHIC SILVER HALIDE EMULSION CONTAINING A METHINE DYE

Gene L. Oliver, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 4, 1968, Ser. No. 773,291
Int. Cl. G03c *1/12*
U.S. Cl. 96—84 R **16 Claims**

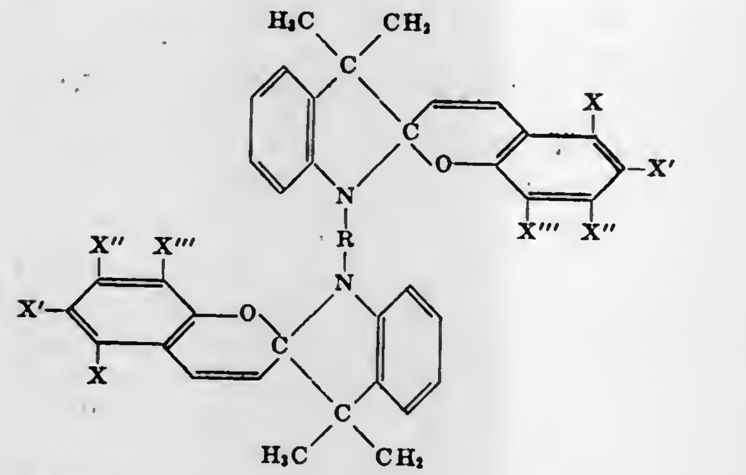
Novel methine dyes are provided which feature a bis(alkylsulfonyl)allylidene (or -pentadienylidene) group or a diaryloxysulfonyl allylidene (or -pentadienylidene group. The dyes are useful as filter dyes in photographic materials. Certain dyes of the invention function as spectral sensitizers for photographic silver halide emulsions.

3,652,285
PHOTOCHROMIC-PHOTOPOLYMERIZATION COMPOSITIONS

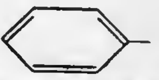
Gerard Albert Delzenne, 's-Gravenwezel; Georges Joseph Smets, Heverlee, and Jan Antonius Hoefnagels, Berchem, all of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed June 23, 1969, Ser. No. 835,727
Claims priority, application Great Britain, July 1, 1968, 31,308/68
Int. Cl. G03c *1/72, 1/68;* **C07d** *27/36*
U.S. Cl. 96—90 PC **12 Claims**

A photographic material and a process for the formation of non-fading images upon exposure to actinic light comprising a light-sensitive layer formed of a photochromic compound and a photo-hardening polymeric system is described. The photochromic compound has the formula:



wherein:

R represents $-CH_2-CH=CH-CH_2-$, $-(CH_2)_n-$$(CH_2)_n-$, $-(CH_2)_n-O-(CH_2)_n-$, $-(CH_2)_n-$, with n being an integer from 1 to 8,

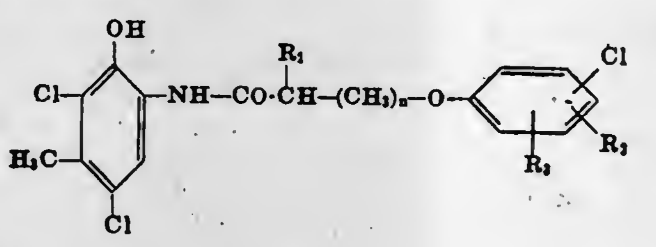
X and X″ each represents hydrogen, chlorine, bromine, nitrile, acetyl, carboxy, hydroxy, nitro or methoxy,
X′ represents hydrogen, chlorine, bromine, nitrile, acetyl, carboxy or nitro, and
X′X″ represents hydrogen, chlorine, bromine or nitro.

3,652,286
COLOR PHOTOGRAPHIC SILVER HALIDE MULTI-LAYER MATERIAL CONTAINING CYAN-FORMING COUPLERS

Hans-Heinrich Credner, Munchen; Hans Glockner, Pullach, and Fritz Nittel, Koln-Stammheim, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 26, 1970, Ser. No. 22,998
Claims priority, application Germany, Mar. 28, 1969, P 19 15 948.9
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **1 Claim**

Color photographic material having a color coupler of the general formula



wherein
R_1 is H, or a short chain alkyl;
R_2 is H, Cl, or a straight or branched chain alkyl;
R_3 is a straight or branched chain alkyl and
wherein
the chain carbon atoms of R_2 and R_3 total to at least eight carbon atoms;
n is 0, 1 or 2.

3,652,287
DIRECT-WRITING EMULSIONS PREPARED BY ADDING AFTER SILVER HALIDE PRECIPITATION IN THE PRESENCE OF LEAD, INSOLUBILIZING ACID ANIONS, AND HETEROCYCLIC NITROGEN COMPOUNDS

John Howard Bigelow, Rochester, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 10, 1969, Ser. No. 865,513
Int. Cl. G03c *1/86, 1/10, 1/28*
U.S. Cl. 96—108 **8 Claims**

Direct-writing silver halide emulsions having higher maximum densities, lower background densities and increased image aging stability are prepared by precipitating silver halides in an acidified aqueous water-permeable colloid medium in the presence of a water-soluble plumbous salt, ripening the resulting emulsion in the presence of excess bromide ions, washing said emulsion to remove the soluble salts resulting from the precipitation of silver halides, adding a heterocyclic nitrogen compound and at least one acid anion capable of forming a substantially insoluble compound with lead ions, digesting the resulting emulsion, adding a halogen acceptor and coating the emulsion on a suitable support. The direct-writing, photodevelopable elements made from the emulsions are useful in oscillographs.

3,652,288
DYES AND PHOTOGRAPHIC EMULSIONS AND ELEMENTS CONTAINING SAID DYES

Arthur Fumia, Jr., and Donald W. Heseltine, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 20, 1970, Ser. No. 56,653
Int. Cl. G03c *1/08, 1/18;* **C09b** *23/100*
U.S. Cl. 96—129 **12 Claims**

Novel polymethine cyanine dyes are derived from certain enamines containing a cyclohexene ring having a reactive methylene or methyl substituent thereon. These dyes are spectral sensitizers for photographic silver halide emulsions and sensitize such emulsions up to wavelengths ranging about from 550 to 770 mu. Many of the dyes are useful sensitizers for the red to near infrared regions of the spectrum.

3,652,289
SILVER HALIDE EMULSIONS AND ELEMENTS COMPRISING TRIMETHINE HEMIOXONAL DYES

Leslie G.S. Brooker, Rochester; Arthur Fumia, Jr., Hilton, and Donald W. Heseltine, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 20, 1970, Ser. No. 56,657
Int. Cl. G03c *1/08, 1/18;* **C09b** *23/100*
U.S. Cl. 96—139 **12 Claims**

Novel trimethine hemioxonol dyes are provided in which the polymethine chain of the dye includes the 1, 2 and 3 carbon atoms of a 1-cyclohexen-3-ylidene nucleus, the 1-carbon atom of said 1-cyclohexen-3-ylidene nucleus having the nitrogen atom of a tertiary amino group attached thereto. Photographic emulsions and elements are also provided featuring the trimethine hemioxonol dyes of the invention as spectral sensitizers or as filter material. A method for preparing the trimethine hemioxonol dyes is also provided which comprises heating a quaternary salt of a 3-chlorocyclohex-2-en-1-ylidene compound having substituted on the 1-carbon atom thereof the nitrogen atom of a tertiary amino group, with an acidic compound having an active methylene group of the type used in the preparation of hemioxonol dyes, in the presence of a basic condensing agent.

3,652,290
BEVERAGES CONTAINING STABILIZED VITAMIN C

Paul A. Hammes, Westfield, and Lewis D. Morse, Princeton, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 10, 1970, Ser. No. 62,686

Int. Cl. A23l *1/30*

U.S. Cl. 99—28 **9 Claims**

Vitamin C is stabilized by the addition of 1 to 6 percent histidine or 0.4 to 3 percent glycine or 0.7 to 4 percent methionine based on the weight of the Vitamin C. The stabilized Vitamin C composition is used to fortify beverages. Metabolically available iron can be included within the stabilized Vitamin C composition.

3,652,291
CITRUS OIL AND OTHER OILS HAVING ENHANCED SPECIFIC GRAVITY, AND USE THEREOF

Paul Z. Bedoukian, 40 Ashley Road, Hastings-on-Hudson, N.Y.

Continuation-in-part of application Ser. No. 36,439, May 11, 1970. This application Oct. 16, 1970, Ser. No. 81,505

Int. Cl. A23l *1/26;* **A23d** *5/00*

U.S. Cl. 99—28 **22 Claims**

Polyol benzoate such as glyceryl tribenzoate or propylene glycol dibenzoate or a mixture of the two is combined with an edible oil such as citrus oil or coconut oil to form a mixture having an enhanced specific gravity. The mixture is emulsified by the addition of an aqueous solution of gum arabic. The emulsion is mixed with a beverage base of approximately the same specific gravity.

3,652,292
INSTANT COFFEE PRODUCT AND A PROCESS FOR ITS MANUFACTURE

Heinz Bach; Max Bottger, both of Suchtein, and Heinrich Pabst, Schulberg, all of Germany, assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 7, 1968, Ser. No. 711,221

Claims priority, application Austria, Mar. 8, 1967, A 2209/67; July 31, 1967, A 7104/67; A 7105/67; Nov. 16, 1967, A 10331/67

Int. Cl. A23f *1/08*

U.S. Cl. 99—71 **27 Claims**

Soluble coffee solids prepared by extraction are mixed in an aqueous medium with wet ground colloidal particles of roast or extracted roast coffee, the latter representing about 3 percent to 40 percent by weight of the total weight of the coffee product. The colloidal particles are stabilized against flocculation by regulation of the pH so as not to exceed a pH of 5.2 and said particles are encased in the dried soluble coffee solids to form an instant coffee product having a fresh-brewed coffee aroma flavor and turbidity. The resultant coffee product may be admixed with additional soluble coffee powder. Drying is performed by conventional methods.

3,652,293
INSTANT COFFEE COMPOSITIONS EXHIBITING A CRYSTALLINE SHEEN

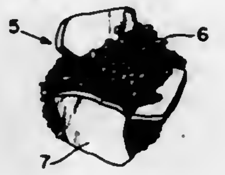
Cesar A. Lombana; Rudolph M. Phillips, both of Springfield Township, Hamilton County, and Richard Gregg, Greenhills, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 718,569, Apr. 3, 1968, now abandoned. This application Jan. 9, 1969, Ser. No. 797,322

Int. Cl. A23f *1/08*

U.S. Cl. 99—71 **8 Claims**

Novel instant coffee compositions characterized by an appearance that presents at least one external planar surface exhibiting high sheen, and novel processes for obtaining these instant coffee compositions comprising polishing, and preferably structuring, thin dense instant coffee flakes by exposing the instant coffee flakes to a jet of moistening fluid comprised of steam or finely atomized water.



3,652,294
MANUFACTURE OF STARCH-CONTAINING FOOD PRODUCTS

Nicholas G. Marotta, Green Brook; Gary A. Zwiercan, North Plainfield, and Richard M. Boettger, Morristown, all of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 678,498, Oct. 27, 1967, now abandoned. This application Aug. 19, 1970, Ser. No. 65,279

Int. Cl. A23l *1/18, 1/10, 1/12*

U.S. Cl. 99—83 **6 Claims**

Ready-to-eat food products and a method for their preparation which comprises moistening a pregelatinized starch product, shaping the resulting blend, and thereafter putting the food product into edible form by means of a suitable baking operation.

3,652,295
FERMENTABLE STARCH COMPOSITIONS

Saul Rogols, Circleville, and Robert L. High, Canal Winchester, both of Ohio, assignors to A. E. Staley Manufacturing Company

Filed Nov. 6, 1968, Ser. No. 773,956

Int. Cl. A21d *2/36, 2/04;* **C12b** *3/06*

U.S. Cl. 99—91 **14 Claims**

A lipase-altered starch is included in a carbohydrate composition such as a sponge-dough mix to influence favorably the fermentation of such mixes. The lipase-altered starch has a higher fermentation rate than unaltered starch; which rate, in the case of wheat starch, can be further increased by the addition of a calcium salt. The lipase-altered starch has a synergistic effect on fermentation when combined with ammonium persulfate; changes the nature of the sugar material present following fermentation; and, particularly with added ammonium persulfate, improves the grain and texture of bread.

3,652,296
PROCESS FOR PREPARING SAUSAGE PRODUCT AND PRODUCTS

Forrest R. Wilkerson, Jr., and George M. McClancy, both of Charlotte, N.C., assignors to Remac, Inc., Charlotte, N.C.

Filed Sept. 4, 1969, Ser. No. 855,373

Int. Cl. A22c *11/00;* **A23b** *1/00*

U.S. Cl. 99—109 **5 Claims**

A composition for use with fresh meat, the composition including 1 to 8 parts of fresh honey in its natural state evenly blended with 100 parts of a dry granular carrier such as sodium chloride, and also including suitable dry spices and other general additives. When the composition is interspersed through the meat, as in pork sausage, for example, the fresh honey acts to retard spoilage and discoloration of the meat. A process for forming the composition includes preheating the sodium chloride to approximately 120° F., preheating the honey to approximately 90° F., continuously agitating the preheated sodium chloride while gradually and evenly pouring the honey thereinto, after which the dry spices and other additives may also be blended into this mixture.

3,652,297
FLAVOR-STABLE MUSTARD

Marvin A. Peterson, Park Ridge, and Gerald A. Flint, Chicago, both of Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Filed July 10, 1970, Ser. No. 54,002

Int. Cl. A23l *1/22*

U.S. Cl. 99—140 R **11 Claims**

A flavor-stable mustard composition is provided by dispersing an encapsulated isothiocyanic acid ester in an oil phase and emulsifying the oil phase in an aqueous medium.

3,652,298
METHOD FOR PREPARING FREE FLOWING SUGAR PRODUCTS

Justin Melvin Mickevicz, Chicago, Ill., assignor to Pro-Col Corporation, Chicago, Ill.

Continuation-in-part of application Ser. No. 530,415, Feb. 28, 1966, now abandoned. This application May 7, 1969, Ser. No. 822,691

Int. Cl. A23l *1/26*

U.S. Cl. 99—141 **3 Claims**

Free flowing powdered sugar is prepared by grinding together in a dry, solid state a white pulverized sugar component and an additive in the form of water insoluble sugar cane cellulose, beet sugar cellulose and/or edible wood cellulose, using proportions of said additive corresponding to 1.5 to 4.0 percent by weight of the sugar component, the resultant product having an average particle fineness of 200 to 325 mesh.

3,652,299
PROCESS OF MAKING SAUCE CONCENTRATES

Edgar W. Penton, Auburn, Wash., assignor to Eduardo's Industries, Auburn, Wash.

Continuation-in-part of application Ser. No. 854,776, Sept. 2, 1969, now abandoned , Continuation-in-part of application Ser. No. 533,782, Mar. 14, 1966, now abandoned. This application Dec. 5, 1969, Ser. No. 882,807

Int. Cl. A23l *1/22*

U.S. Cl. 99—144 **13 Claims**

A sauce concentrate, characterized by being a brittle solid at normal room temperature, composed of from 20–40 percent by weight of an edible fat which is a brittle solid at about 70° F. and has a melting point of 80°–40° F., from 20–40 percent by weight of a starch material, and from 20–40 percent by weight of food sauce flavoring materials made by melting the edible fat, dispersing therein the starch and flavoring materials, and cooling the resulting mixture.

3,652,300
PROCESS OF TREATING FRESH FRUITS AND VEGETABLES AND COMPOSITIONS FOR USE THEREIN

Jagan N. Sharma, West Los Angeles, Calif., assignor to Zenith Processing Corporation, Venice, Calif.

Filed Jan. 28, 1970, Ser. No. 6,546

Int. Cl. A23b *7/14;* **A23l** *3/34*

U.S. Cl. 99—154 **8 Claims**

A method of inhibiting undesirable changes in color, plasmolysis and decay of fresh fruit and vegetables (whole, sliced or shredded) by contacting the same with a liquid treating agent containing benzyl alcohol. The method employs two successive reactions, the first involving naturally occurring oxidases and the second the formation of benzoic acid. Use of solubilizing agents to facilitate the formation of aqueous solutions of benzyl alcohol, and examples of effective ranges of concentration are given.

3,652,301
POLISH COMPOSITION

Almeda J. Damron, 1120 Highland Avenue, Ashland, Ky.

Filed Oct. 14, 1969, Ser. No. 866,359

Int. Cl. C09g *1/02*

U.S. Cl. 106—5 **4 Claims**

A new composition for the cleaning and polishing of copper and brass metals comprised of feldspar, sodium chloride, acetic acid, cereal starch and water in specific proportions.

3,652,302
ANTIMONY BORATE GLASS COMPOSITIONS

Victor A. Levand, Jr., 1273 Croyden Road, Lyndhurst, Ohio; Gene I. Thomasson, 13034 Woodcrest Lane, Chesterland, Ohio, and Richard H. Holcomb, 3843 Freemont Road, South Euclid, Ohio

Original application Jan. 15, 1970, Ser. No. 3,012, now Patent No. 3,588,315. Divided and this application Nov. 23, 1970, Ser. No. 92,016

Int. Cl. C03c *3/00*

U.S. Cl. 106—47 R **2 Claims**

A glass for sealing metallic lead-in conductors in fused silica comprising a low melting antimony borate glass which preferably contains a small amount of molybdenum trioxide and which forms, at elevated temperatures, a molten seal surrounding the conductor.

3,652,303
HEAT ABSORBING BLUE SODA-LIME-SILICA GLASS

Bhogaraju V. Janakirama Rao, Aspinwall, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 26, 1970, Ser. No. 5,796

Int. Cl. C03c *3/04*

U.S. Cl. 106—52 **2 Claims**

Blue, heat absorbing glasses, particularly infrared absorbing glasses, which have high transmission in the visible portion of the spectrum and are suitable in flat form for use in the automobile, architectural and other heat-shielding applications are disclosed. These glasses consist essentially of lime, soda, silica, 0.05 to 2.0 percent of iron, said iron being in an ionic state, at least 80 percent of which is in the ferrous state, and 0.1 to 15.0 percent tin, a major portion of which is in the stannous state, the ratio of stannous to ferrous ion on a mole percent bases being at least 1:1.

3,652,304
NITRIDE-OXIDE REFRACTORIES

Alma U. Daniels, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 21, 1969, Ser. No. 878,893

Int. Cl. C04b *35/58*

U.S. Cl. 106—57 **6 Claims**

Homogeneous non-porous compositions having an average grain size of less than about 10 microns, a density in excess of 95 percent of theoretical and consisting essentially of 1.10 to 50 volume percent of alumina, zirconia or their mixtures; and 2.50 to 90 volume percent of a nitride of titanium, tantalum, zirconium, hafnium or their mixtures; demonstrate unusual resistance to frictional wear and chemical attack.

3,652,305
MOLDABLE HYDRATED MAGNESIUM OXIDE AND THE FORMATION OF MOLDED ARTICLES THEREFROM

Thomas E. Cook, 3570 Maize Road, Columbus, Ohio

Filed Feb. 24, 1970, Ser. No. 13,759

Int. Cl. C04b *35/04*

U.S. Cl. 106—58 **5 Claims**

A moldable hydrated magnesium oxide and a method of preparing various articles from such material with vitreous surfaces. The material consists mainly of magnesium oxide, ammonium persulfate which acts as a mineralizing agent, and fillers such as aluminum oxide and fine aggregate. When properly combined and formed into a slurry, the mixture can be poured or injected into a mold or extruded and cured at an elevated temperature to form desired articles which will have vitreous or glassy surfaces. A polar organic compound of the glycol or glycol ether class, which functions both as a wetting agent and a protective colloid, is also preferably used in forming the slurry.

3,652,306

HIGH DENSITY REFRACTORY SHAPES AND METHOD FOR PRODUCTION OF SAME

Jean-Pierre Kiehl, and Georges Valentin, both of Lyon, France, assignors to Societe Generale des Produits Refractaires, Paris, France

Continuation-in-part of application Ser. No. 662,276, Aug. 22, 1967, now Patent No. 3,536,505. This application May 8, 1970, Ser. No. 35,890

Claims priority, application France, Aug. 26, 1966, 74294; Jan. 16, 1967, 91257

Int. Cl. C04b *35/04*

U.S. Cl. 106—58 **5 Claims**

High density burned basic refractory shapes having low porosity and creep deformation prepared from a brickmaking batch comprising dead burned magnesia, Cr_2O_3, TiO_2, chrome ore, calcinated dolomite and 3 percent to 6 percent recrystallization additions comprising calcium silicates smaller than 74μ. The batch is shaped and then fired at between 1,550° C. and 1,680° C. to form a transient viscous phase of high vapor pressure to form monocrystals and crystalline aggregates.

3,652,307

ALUMINA REFRACTORIES

Wate T. Bakker, Severna Park, Md., assignor to General Refractories Company, Philadelphia, Pa.

Filed July 7, 1969, Ser. No. 839,663

Int. Cl. C04b *35/10*

U.S. Cl. 106—65 **8 Claims**

Disclosed herein is a refractory brick batch mix which consists essentially of, by weight, about 85 to 95 percent alumina, about 2.99 to 12.99 percent silica, about 0.01 to 0.5 percent of a lithium compound capable of oxidizing to lithium oxide, and about 2 to 7 percent volatilized silica. Refractories prepared from these mixtures exhibit increased strength, higher density, lower porosity and higher refractoriness compared to those previously available.

3,652,308

PROCESS FOR THE MANUFACTURE OF CEMENT CLINKER OF LOW FLUORINE CONTENT

Heinrich Stich, Linz/Danube; Kurt Ruckensteiner, Leonding near Linz/Danube; Walter Binder, and Josef Hutter, both of Linz/Danube, all of Austria, assignors to Osterreichische Stickstoffwerke Aktiengesellschaft, Linz/Danube, Austria

Filed Mar. 2, 1970, Ser. No. 15,843

Claims priority, application Austria, Mar. 6, 1969, A2190/69

Int. Cl. C04b *7/04*

U.S. Cl. 106—103 **2 Claims**

Manufacture of cement clinker low in fluorine compounds from phosphoric acid byproduct gypsum by heating the gypsum itself to temperatures between 500° to 900° C. without the known additives and subsequently mixing the additives with the hot gypsum without cooling the same prior to entering the calcination furnace.

3,652,309

RETARDED GYPSUM PLASTER FOR USE IN LONG SET AGGREGATED MORTAR APPLICATIONS

Marvin K. Lane, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Apr. 1, 1969, Ser. No. 812,371

Int. Cl. C04b *11/00*

U.S. Cl. 106—110 **1 Claim**

The process of making a gypsum plaster possessing a high degree of stability over extended periods of time and having a set time of at least 4 hours in aggregated mortar applications by providing a specially sized calcined gypsum having a particle size that is essentially all finer than 32 microns, and mixing said specially sized gypsum with retarder, accelerator and other additives to give the desired properties when mixed with water and aggregate.

3,652,310

METHOD OF PRODUCING LIGHTWEIGHT, HEAT-INSULATING CONSTRUCTION ELEMENTS FROM LIME AND SILICATE AND PRODUCTS THEREOF

Stefan Kraemer, Essen; Alois Seidl, Thurnstein, and Michael Seger, Krefeld, all of Germany, assignors to Wasag-Chemie Aktiengesellschaft, Essen, Germany

Filed Feb. 3, 1970, Ser. No. 8,435

Claims priority, application Germany, Feb. 18, 1969, P 19 08 049.0

Int. Cl. C04b *15/12*

U.S. Cl. 106—120 **7 Claims**

A method is disclosed by which light and heat-insulating elements, mainly for construction purposes, are manufactured from a mixture of lime and silicates. The method comprises the steps of mixing particles of foamed silicate or glass in a dry or wet state with lime, forming the elements eventually by applying pressure, and hardening the elements in a water vapor-containing atmosphere. The lime is used both in the form of calcium oxide and calcium hydroxide.

3,652,311

PROCESS OF MANUFACTURING STRUCTURAL ELEMENTS

Pieter Simon Wielinga, Vuren Aan Der Waal, Netherlands, assignor to Fabriek van Bouwmaterialen "Loevestein" N.V., Vuren Aan Der Waal, Netherlands and Rheinisch-Westfalische Kalkwerke Aktiengesellschaft, Dorngh, Germany

Filed Dec. 22, 1969, Ser. No. 887,421

Claims priority, application Netherlands, Dec. 24, 1968, 6818589

Int. Cl. C04b *1/00*

U.S. Cl. 106—120 **7 Claims**

The invention relates to a process of manufacturing hydrothermally cured structural elements from a mixture of slacked lime, unslacked lime, sand and water, to which is added one or more aliphatic polyhydroxy compounds having at least seven carbon atoms, preferably sodium 1,2,3,4,5,6-hexahydroxyhexane-1-carboxylate, or a derivative thereof, preferably a boron derivative, in a preferred small but effective amount of 0.01 to 0.1 percent by weight of total solids. The mixture is cast into moulds and the resulting structural elements removed therefrom after a short period of time, following which the elements are cured by treatment with steam in an autoclave.

3,652,312

PHTHALIMIDE PLASTICIZER AND NON-PROTEINACEOUS RESIN MIX

James Kern Sears, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 704,562, Feb. 12, 1968. This application Jan. 18, 1971, Ser. No. 107,469

Int. Cl. C08b *27/52*

U.S. Cl. 106—176 **23 Claims**

This invention relates to the use of certain phthalimides as plasticizers for non-proteinaceous thermoplastic resins.

3,652,313

PIGMENT DISPERSION FOR WATER THINNABLE PAINTS

Nobuyoshi Nagata, Hirakata-shi, and Tsuguo Yamazaki, Nishinomiya-shi, both of Japan, assignors to Nippon Paint Co., Ltd., Oyoda-ku, Osaka, Japan

Continuation of application Ser. No. 435,034, Feb. 24, 1965, now abandoned. This application Mar. 18, 1968, Ser. No. 714,113

Claims priority, application Japan, Feb. 25, 1964, 39/9339; Sept. 8, 1964, 39/50652

Int. Cl. C08b *27/08;* **C08f** *45/08*

U.S. Cl. 106—193 J **7 Claims**

A pigment dispersion for blending with water-thinnable paints, comprising at least one pigment and at least 5 percent by weight of at least one member selected from the group consisting of water-soluble hydroxyalkyl celluloses, water-soluble, partially saponified polyvinyl acetates, water-soluble, partially etherified derivatives of said partially saponified polyvinyl acetates and of polyvinyl alcohol.

3,652,314

METHOD FOR RENEWING, RESURFACING, AND PRESERVING PHONOGRAPH RECORDS

Charles S. Castner, Reading, Pa., assignor to Schuyler Development Corporation

Filed Jan. 2, 1969, Ser. No. 788,653

Int. Cl. G11b *3/58*

U.S. Cl. 117—2 **2 Claims**

A method and composition for initial surface improvement for renewing and/or resurfacing phonograph records by the steps of coating the record with a composition consisting essentially of about two to five parts nonionic acrylic polymer, about two to five parts cationic polyethylene emulsion (25 percent solids in water), about one part nonionic detergent, about two parts diethyl monoethyl ether and about 90 parts water, brushing the composition into the grooves, removing any excess, drying and playing.

3,652,315

A DEVELOPING METHOD IN ELECTROPHOTOGRAPHY USING TONER PARTICLES COATED WITH A NON-VOLATILE LIQUID

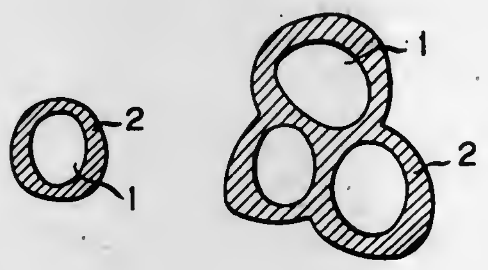
Takehiko Matsuo, Komae Apartment, 17-405, 150, Izumi Komae-cho; Umi Tosaka, 4-10-8, Kita, Asagaya; Tetsuo Hasegawa, 3-23-12, Bunka; Katsunobu Oohara, 2-1388, Sanno-cho, Kaminaruko, and Takashi Ihara, 564, Kami Hirama, Kawasaki-shi, all of Tokyo, Japan

Filed Nov. 7, 1968, Ser. No. 774,065

Claims priority, application Japan, Nov. 13, 1967, 42/72968

Int. Cl. G03g *9/02, 13/08*

U.S. Cl. 117—17.5 **4 Claims**



A developing powder for electrophotography comprising toner particles coated with a non-volatile substance such as silicone oil, Teflon oil or liquid paraffin which is liquid at normal temperature. The volume resistivity of said liquid substance is above 1× 10^{12}Ω cm. and the viscosity is below 1,000 cs. Less than 10 percent by weight of said liquid substance is applied to the toner particles.

3,652,316

HEAT-SEALABLE HYDROXYETHYL CELLULOSE FILM AND PROCESS FOR PREPARING SAME

Reid L. Mitchell; Charles F. Murphy, both of Morristown, and Edmund M. La Polla, Parsippany, all of N.J., assignors to ITT Rayonier Incorporated, New York, N.Y.

Filed Jan. 23, 1969, Ser. No. 793,551

Int. Cl. B32b *23/08;* **C09j** *7/02*

U.S. Cl. 117—73 **11 Claims**

When hydroxyethyl cellulose (HEC) films are treated with a solution of a hydrophobic film former such as polyvinylidene chloride copolymers or nitrocellulose in a volatile solvent to produce a heat sealable coating on the surface of the film, the adhesion between the HEC and the hydrophobic film former is improved by passing the HEC gel film through a conditioning bath containing from about 0.3 to 2.0 percent by weight (based on total bath weight) of a water soluble block copolymer of polyoxyethylene and polyoxypropylene prior to drying the film and applying hydrophobic film former solution thereto.

3,652,317

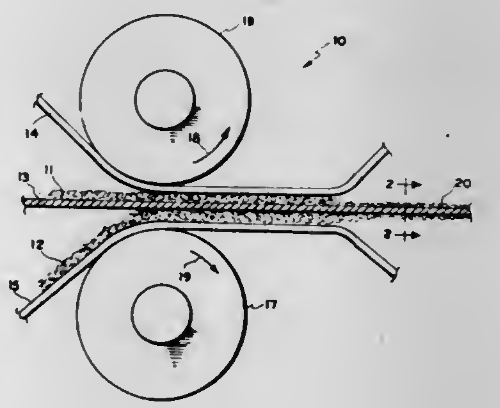
METHOD OF PRODUCING SUBSTRATE HAVING A PARTICULATE METALLIC COATING

Paolo Della Porta; Tiziano A. Giorgi; Bruno Kindl, and Mario Zucchinelli, all of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy

Continuation-in-part of application Ser. No. 527,906, Feb. 16, 1966, now abandoned. This application May 1, 1970, Ser. No. 33,794

Int. Cl. B05b *7/14;* **B44c** *1/06, 1/08*

U.S. Cl. 117—22 **16 Claims**



A method of producing a substrate having a particulate coating of high surface area to mass ratio, said method comprising in sequence the steps of:

I. disposing particles between a substrate and an intermediate body wherein the particles are harder than the substrate; and the intermediate body is softer than the particles but is harder than the substrate;

II. compressing the substrate and intermediate body, with particles therebetween whereby the intermediate body pushes the particles into the substrate; and

III. removing the intermediate body from the particles leaving them embedded in the substrate.

The coating substrates produced by the process of the present invention find utility as catalytic devices to accelerate or retard chemical reactions, as getter devices to sorb residual gases in closed vessels such as electronic tubes, and with further processing as capacitors.

3,652,318
PROCESS FOR THE PRODUCTION OF ANTIDAZZLE GLASS FILTERS

Herbert Heins, Hamburg-Rissen, Germany, assignor to J. D. Moller Optische Werke GmbH, Wedel, Holstein, Germany
Continuation-in-part of application Ser. No. 615,932, Feb. 14, 1967, now abandoned. This application Nov. 13, 1969, Ser. No. 876,559
Int. Cl. B44d *5/06;* **C03c** *17/00;* **C23c** *11/00*
U.S. Cl. 117—33.3 **19 Claims**

Vacuum-coated antidazzle glass filters, such as sunglasses filters, are produced by adding elementary boron or a boron-releasing compound to silicon dioxide and evaporating the mixture onto glass under a vacuum. The minimum thickness of the coating formed by evaporation should be about 1.5 μ. By adding a dyestuff to the mixture before evaporation, the degree of light absorption can be controlled.

3,652,319
CYCLIC IMAGING SYSTEM

Alan B. Amidon, and Joseph Mammino, Penfield, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Dec. 30, 1969, Ser. No. 889,273
Int. Cl. B05c *3/20;* **B44d** *1/02, 1/52*
U.S. Cl. 117—37 LE **24 Claims**

A liquid development imaging system with a cycling imaging surface to which is cyclically applied a film forming insulating solid that wets the imaging surface and sharply liquefies with low melt viscosity at a temperature above ambient operation temperature. The added solid permits relative ease in cleaning and the ability to cycle the imaging surface without complete cleaning.

3,652,320
REDUCTION OF CHAR DEPTH IN ABLATIVE COMPOSITES

Junior De Vere Seader, Salt Lake City, Utah, assignor to University of Utah
Filed May 31, 1968, Ser. No. 733,411
Int. Cl. B44d *1/02*
U.S. Cl. 117—46 **4 Claims**

Treatment of ablative composite materials with a catalyst comprising a transition metal and/or a transition metal compound to reduce the depth of thermal degradation of the composite by accelerating endothermic reactions in the thermal degradation region of the composite surface to at least partially insulate the remainder of the composite from severe hyperthermal exposure.

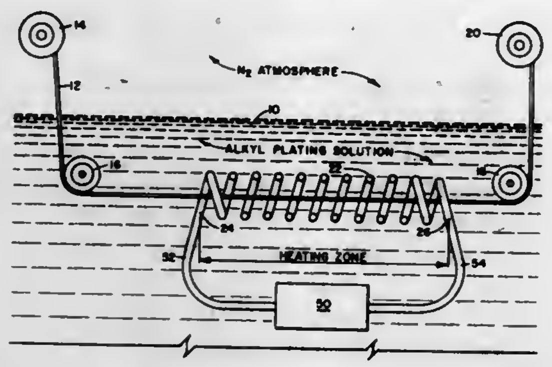
3,652,321
DEPOSITION OF ALUMINUM ON A GALVANIZED SURFACE

Larry H. Hood, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed Aug. 17, 1970, Ser. No. 64,626
Int. Cl. B32b *15/18;* **C23c** *3/00;* **B32b** *15/20*
U.S. Cl. 117—50 **7 Claims**

A galvanized substrate is plated with aluminum metal by initially heating the substrate to within a temperature range below the melting point of zinc, contacting the heated substrate with a plating solution containing an aluminum alkyl compound: thereby, depositing a thin coating of aluminum on the substrate, raising the temperature of the coated substrate to within a range above the melting point of zinc and contacting the coated substrate with the plating solution, achieving an aluminum plating of a desired thickness on the galvanized substrate.

3,652,322
METHOD FOR CONTROLLING THE HEATING OF A METAL IMMERSED IN A PLATING SOLUTION

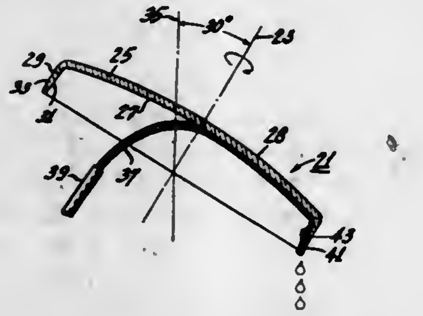
William B. Stovall, Seabrook, Tex., assignor to Continental Oil Company, Ponca City, Okla.
Filed Sept. 3, 1970, Ser. No. 69,222
Int. Cl. C23c *3/00*
U.S. Cl. 117—93 **5 Claims**



In the plating of a continuously moving metal substrate immersed in a plating solution provided with a means for continuously heating the substrate, the heat input to the substrate is cycled by means therefor to give a series of heat inputs and quenching steps so as to manipulate the temperature of the substrate within a temperature range suitable for plating to thereby achieve a quality coating of a desired thickness.

3,652,323
PROCESS FOR COATING FLATLIKE SURFACES

Bradford Knox Smith, Lititz, Pa., assignor to RCA Corporation
Filed Dec. 22, 1969, Ser. No. 887,267
Int. Cl. B44d *1/08*
U.S. Cl. 117—97 **10 Claims**



A process for coating a flatlike surface, such as the inner surface of the viewing panel of a cathode ray tube, comprising

a. slowly rotating the surface, facing downward, about an axis that is substantially normal to the surface,

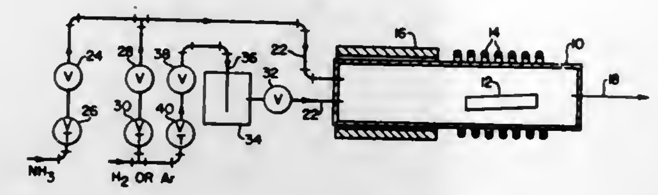
b. projecting a stream of liquid coating material in a trajectory to contact the rotating surface substantially tangentially and then to pass along the surface through the axis,

c. and then permitting excess coating material to drain from the rotating surface.

3,652,324
METHOD OF VAPOR DEPOSITING A LAYER OF SI_3N_4 ON A SILICON BASE

Ting L. Chu, Dallas, Tex.; Gilbert A. Gruber, and John R. Szedon, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 616,695, Feb. 16, 1967, now abandoned. This application Aug. 15, 1968, Ser. No. 752,849
Int. Cl. C23c *11/08; 11/16*
U.S. Cl. 117—106 **8 Claims**

The present invention relates to dielectric coatings for electronic devices such as rectifiers, transistors and capacitors. More specifically, the invention relates to dielectric coatings comprising silicon nitride films alone or in combination with silicon dioxide films, and to methods for the production of silicon nitride coatings by reacting silane, silicon halides or halosilanes with ammonia.



3,652,325
VAPOR DEPOSITION PROCESS

Charles D'A Hunt, Orinda, Calif., assignor to Air Reduction Company, Incorporated
Filed Dec. 13, 1968, Ser. No. 790,500
Int. Cl. C23c *13/02*
U.S. Cl. 117—107 **3 Claims**

A vacuum vapor deposition process is described for depositing a coating of an iron-base alloy on a substrate. The quality of the deposited coating is improved by maintaining the substrate above a minimum temperature of 1,600° F., in the case of alloys with substantially soluble constituents, and of 1,700° F., in the case of alloys having at least partially insoluble constituents.

3,652,326
SIZING COMPOSITION AND GLASS FIBERS TREATED THEREWITH

John E. Ward, Houghton, Mich., assignor to Owens-Corning Fiberglas Corporation
Filed Apr. 3, 1970, Ser. No. 25,584
Int. Cl. C03c *25/02*
U.S. Cl. 117—126 GE **4 Claims**

A sizing for glass fibers, comprising water soluble epoxy resins, an organosilane, polyvinyl acetate copolymer and a lubricant is provided, whereby the sized glass fibers in the form of strands possess excellent integrity.

3,652,327
COATINGS OF ARYLENE SULFIDE POLYMERS

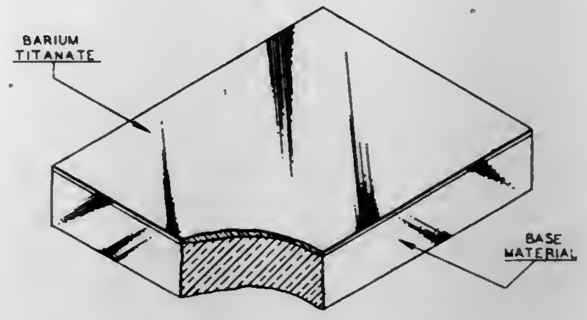
Harold Wayne Hill, Jr., and James T. Edmonds, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed July 25, 1969, Ser. No. 845,098
Int. Cl. B32b *15/08, 17/10;* **C04b** *41/06*
U.S. Cl. 117—132 B **7 Claims**

Adherent coatings of arylene sulfide polymers are formed by applying a mixture of the polymer and an oxide or sulfide of cobalt or molybdenum to a solid substrate such as iron, steel, aluminum and ceramic.

3,652,328
TRANSPARENT PLASTIC HAVING TRANSPARENT MAR-RESISTANT COATING OF BARIUM TITANATE

Ronald A. Dork, Utica, and Ronald E. White, Romeo, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 2, 1969, Ser. No. 854,528
Int. Cl. B32b *27/06;* **B44d** *5/00*
U.S. Cl. 117—138.8UA **3 Claims**

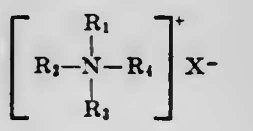
A composite optical element is disclosed having a synthetic resin substrate and an abrasion resistant surface coating of barium titanate. A polycarbonate resin substrate and an R.F. vacuum sputtered barium titanate protective surface coating provides a particularly tough and abrasion resistant optical element such as a window or windshield.



3,652,329
METHOD OF TREATING TEXTILES

Peter H. Vossos, Lisle, Ill., assignor to Nalco Chemical Company, Chicago, Ill.
Filed Jan. 27, 1970, Ser. No. 6,328
Int. Cl. C10m *5/20*
U.S. Cl. 117—139.5CQ **10 Claims**

Covers textile treating compositions and a method of improving the strength and other desirable properties of textiles by contacting said textile with an organosol comprising a non-polar organic solvent having uniformly dispersed therein discrete, dense colloidal particles of amorphous silica having an average particle diameter of 3–150 millimicrons and an average surface area of from about 20 M^2/g. to 1,000 $M.^2/g$., said silica particles having absorbed upon their surfaces a quaternary ammonium salt or hydroxide, with the weight ratio silica, expressed as SiO_2 to the quaternary ammonium salt or hydroxide being at least 2:1, wherein the quaternary ammonium compound has the formula:



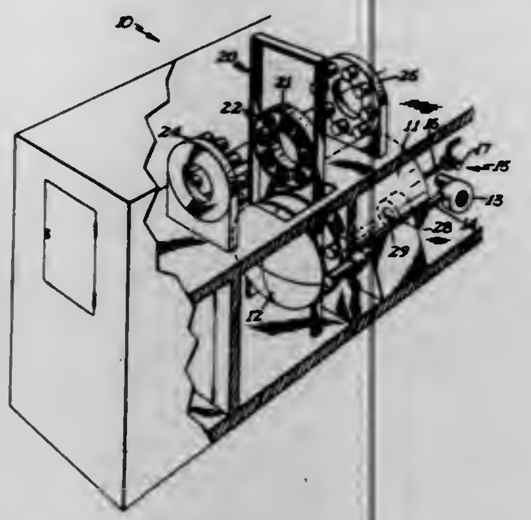
$$\left[\begin{array}{c} R_1 \\ | \\ R_2\text{—}N\text{—}R_4 \\ | \\ R_3 \end{array}\right]^+ X^-$$

wherein R_1, R_2, R_3 and R_4 are hydrocarbon groups containing one–22 carbon atoms, with the total number of carbon atoms in said quaternary ammonium compound being at least 10, and X is an anion selected from the group consisting of chloride, bromide, iodide and hydroxide.

3,652,330
PROCESS FOR COATING AMORPHOUS SELENIUM

Donald E. Anderson, Northfield, Minn., assignor to G. T. Schjeldahl Company, Northfield, Minn.
Filed Sept. 14, 1970, Ser. No. 71,671
Int. Cl. G03g *7/00*
U.S. Cl. 117—201 **5 Claims**

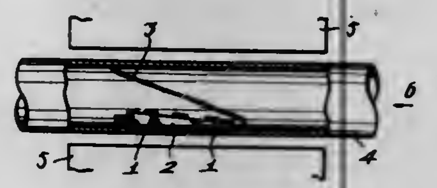
The method of applying a film of amorphous selenium to a substrate having a generally cylindrical surface, the method comprising inserting a charge of selenium into a generally cylindrical crucible having an inner wall extending in spaced relationship to a cylindrical axis, and treating the selenium charged therein so as to dispose the charge generally along the walls of the crucible so as to define a generally cylindrical charge profile uniformly spaced about the crucible axis. This treatment is preferably accomplished by the rotation of the crucible about its axis at a rate sufficient to centrifugally force the charge to a uniformly cylindrically profiled form. The charge is thereafter heated to a temperature at least sufficient to cause sublimation of the selenium within the crucible, while the charge is rotated about is axis at a rate sufficient to hold the charge uniformly about the inner crucible wall. While this is occurring, the substrate is inserted into the crucible with the outer cylindrical surface being spaced a predetermined distance from the surface of the cylindrical charge profile. During the deposition of the selenium onto the substrate surface, the substrate is chilled to a temperature ranging from between about 50° C. and 70° C.



3,652,331
PROCESS FOR FORMING A FILM ON THE SURFACE OF A SUBSTRATE BY A GAS PHASE

Shumpei Yamazaki, 20, 7, 1-chome, Shinkawa, Shizuoka, Japan

Filed Mar. 13, 1969, Ser. No. 806,851
Claims priority, application Japan, Mar. 22, 1968, 43/18611; Oct. 3, 1968, 43/71972
Int. Cl. C23c *13/04*
U.S. Cl. 117—201 **10 Claims**

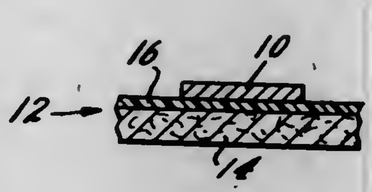


A process for forming a film on the surface of a substrate by a gas phase method in the presence of a catalyst used in the solid state electronics at a predetermined distance from the surface of the substrate on which the film is to be formed and a process for forming a silicon oxide or silicon nitride in the presence of a catalyst selected from the group comprising platinum and the like.

3,652,332
MANUFACTURE OF PRINTED CIRCUITS

John Seemann Brand, Cranbury, and Vladimir Paul Honeiser, Lawrenceville, both of N.J., assignors to American Can Company, New York, N.Y.

Filed July 6, 1970, Ser. No. 52,520
Int. Cl. B44d *1/18;* **H01h** *37/36;* **H05b** *3/12*
U.S. Cl. 117—212 **7 Claims**

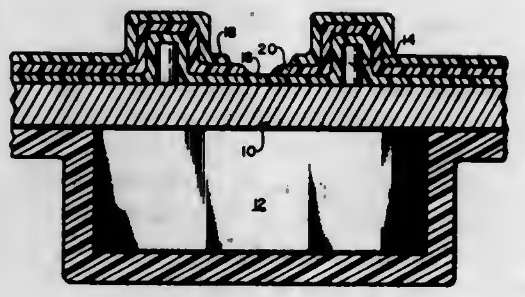


Circuits including conductors and impedance elements are printed on paper. Component values are maintained within acceptable limits of variation by correlated selection of substrate porosity and ink to produce a high degree of absorption of the liquid ink vehicle into the porous substrate while producing relatively little penetration of the pigment. Resistance values are lowered, and their reliability and consistency greatly improved, as compared with printing on either impermeable or excessively porous substrates.

3,652,333
ENCAPSULATING COMPOSITION FOR ELECTRONIC CIRCUIT BOARDS AND PROCESS FOR APPLYING SAME

John M. Warren, Weatherford, Tex., assignor to General Dynamics Corporation, Ft. Worth, Tex.

Filed Feb. 2, 1970, Ser. No. 7,912
Int. Cl. B44d *1/42;* **H01b** *3/30*
U.S. Cl. 117—218 **5 Claims**



A process for applying a polyurethane gel composition for coating and encapsulating the electronic circuitry on a circuit board wherein the said composition consists essentially of an admixture of an elastomeric linear polyesterurethane of high molecular weight; a tetrahydrofuran intermediate monomer solvent and ethylene glycol monoethylether acetate, which composition is preferably sprayed over the object circuitry and onto the related electronic circuit board or other substrate as a vaporized gel of minute viscous globules which simultaneously forms a substantially uniform protective film over the substrate and encapsulates the circuit's conduit and conduit terminals as well as other protrusions, including elements having sharp points, knife edges and the like. This prime coat is then dried and may be subsequently followed by one or more dip coatings which are formed by immersion of the dried workpiece into a mixture of polymethyl methacrylate with a copolymer of ethyl acrylate/methyl methylacrylate.

3,652,334
MAGNETIC MATERIAL AND METHOD OF MAKING THE SAME

Wilhelm Abeck, Leverkusen-Steinbuechel; Heinrich Kober, Munich, and Bernhard Seidel, Gruenwald, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

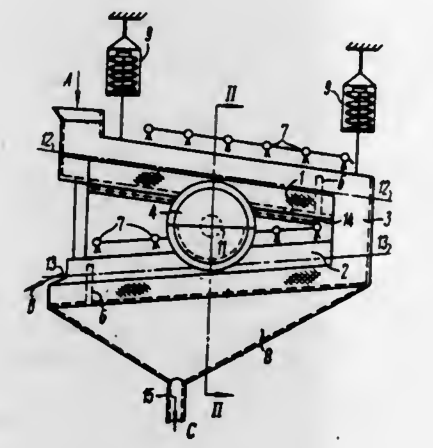
Filed Nov. 7, 1968, Ser. No. 774,209
Claims priority, application Germany, Nov. 25, 1967, P 15 92 214.2
Int. Cl. H01f *10/00*
U.S. Cl. 117—236 **10 Claims**

Magnetic gamma-Fe_2O_3 particles particularly useful as magnetizable material for magnetic recording media, area produced by treating alpha-FeOOH particles with a solution of a hydrolysis-resistant, inorganic substance capable of forming on the alpha-FeOOH particles a firmly adhering covering, so that the individual alpha-FeOOH particles will be substantially covered by such substance, and by converting the thus pretreated alpha-FeOOH particles into gamma-Fe_2O_3.

3,652,335
APPARATUS FOR WASHING LUMPY NON-METALLIC MATERIALS

Roman Andrianovich Rodin, ul. Kostyanova,9, kv. 74, and Vasily Vasilievich Oljunin, Zelenograd, 316, kv. 37, both of Moscow, U.S.S.R.

Filed May 1, 1969, Ser. No. 820,841
Int. Cl. B08b *3/02*
U.S. Cl. 134—66 **2 Claims**

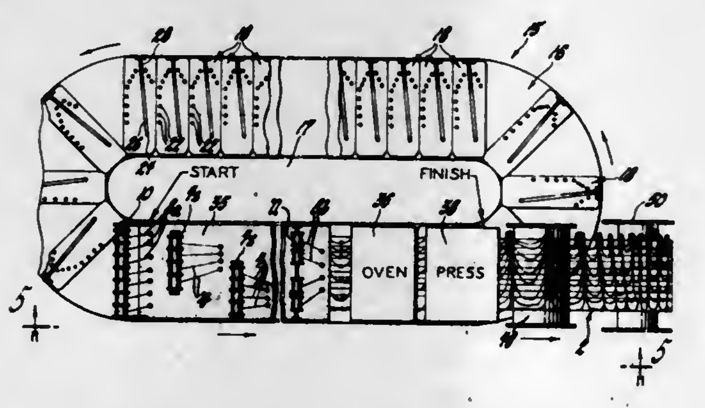


A device for washing lumpy generally nonmetallic materials, particularly broken stone, gravel and flux materials, capable of high-quality washing of the materials, including high-filling level or capacity for the spouts, the possibility to control the washing time in dependence with the degree of contamination of the material being washed, the perforated spouts being arranged in tandem one above the other in such a manner that each pair of adjacent spouts is inclined oppositely with respect to each other so as to convey the material being washed from one spout to the other successively, and including vibrating means to facilitate material conveyance.

3,652,336
WOUND-WIRE STORAGE BATTERY GRID AND PROCESS

Ellis G. Wheadon, and Charles P. McCartney, both of Yorktown, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 8, 1970, Ser. No. 70,008
Int. Cl. H01m *35/04*
U.S. Cl. 136—60 **1 Claim**



A storage battery grid cut from a continuous strip of wound-wire grid segments. Continuous lengths of a plurality of wires periodically are gathered into lug-forming nested loops and fanlike arrays of conductors. Nonconductive reinforcing filaments crisscross and are bonded to the conductors at a plurality of fusion-interlocked joints.

3,652,337
CASTING PLATE STRAPS TO BATTERY PLATES

Renard E. Mix, Yorktown, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 25, 1969, Ser. No. 852,605
Int. Cl. H01m *35/32*
U.S. Cl. 136—134 R **3 Claims**

A process for consistently producing welds between portions of a plurality of Pb-acid storage battery plates and in-situ cast-on battery plate straps, including the essential step of coating a portion of the battery plate with a molten film of an alloy having a melting point at least about 200° F. lower than the melting point of the battery plate and contacting the coated portion with molten battery plate strap material while said film is in a molten condition. The process is most particularly applicable when using Pb-Ca alloys in the plate groups.

3,652,338
ELECTROCHEMICAL SYSTEM COMPRISING LAYERED SILICATE FILM SEPARATOR

Allen Charkey, Flushing, and Derryk Brooks-Smith, Brooklyn, both of N.Y., assignors to Yardney International Corporation, New York, N.Y.

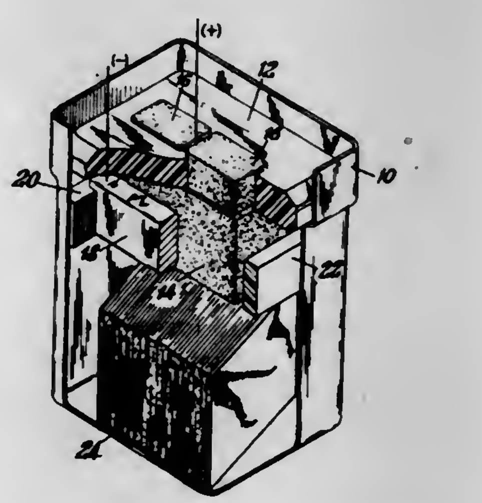
Filed Aug. 22, 1969, Ser. No. 852,497
Int. Cl. H01m *3/00*
U.S. Cl. 136—146 **5 Claims**

Films, membranes and pellicle coatings of layered silicates are provided for selective ion separation. These films, as coatings upon a substrates or as flexible self-supporting foils, provide ion separation by selectively restricting ion mobility, particularly, but also, to some extent, molecular mobility as well. The specific use of layered silicates provides selective separations that are more complete than those available with similar silicates generally, not possessing the layered structures. These films are advantageously used in the strenuous environment of rechargeable electrochemical cells where they function as excellent interelectrode separators. The use of polymers as binders for the films is disclosed but the disclosure is not limited to the use of binders and the layered silicates may be formed into binderless pellicles upon substrates.

3,652,339
REGENERATIVE LIME SHEET FOR USE IN PRIMARY GALVANIC BATTERIES EMPLOYING A ZINC ANODE

Carl A. Grulke, Berea, Ohio, assignor to Union Carbide Corporation

Original application Aug. 10, 1967, Ser. No. 659,810, now Patent No. 3,497,391, dated Feb. 24, 1970. Divided and this application Oct. 6, 1969, Ser. No. 870,833
Int. Cl. H01m *33/00;* **C04b** *1/00*
U.S. Cl. 136—161 **16 Claims**



For use as the regenerative lime material in an alkaline primary galvanic battery of the type employing a zinc anode, a thin porous regenerative lime sheet comprising colloidal lime particles and dispersed cellulose fibers bonded together with an organic binder insoluble in the alkaline electrolyte of the battery.

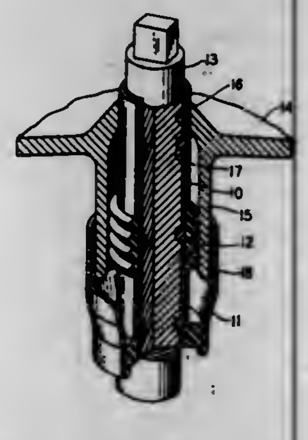
3,652,340
APPARATUS FOR AND METHOD OF FORMING POST SEAL FOR LEAD-ACID CELL

Louis H. Sharpe, Morris Township; Jayant R. Shroff, Morristown, and Frank J. Vaccaro, Parsippany, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of application Ser. No. 831,611, June 9, 1969, now abandoned. This application Dec. 29, 1969, Ser. No. 888,388

Int. Cl. H01m *1/02*

U.S. Cl. 136—168 **6 Claims**



A post seal design for a lead-acid cell utilizes the combination of a one-piece flexible seal and a post coated with a relatively rigid adhesive coating to inhibit acid leakage. Additionally, the post may contain a number of grooves in its periphery to further inhibit leakage resulting from corrosion of the post. The coating may be applied to the post prior to the installation of the flexible seal thereon, or alternatively, the flexible seal may be used as a mold to cast the coating in place on the post after the installation of the flexible seal.

3,652,341
METHOD OF MAKING A DRY CHARGED BATTERY

Vincent Michael Halsall, Bayside, and Edward Norman Mrotek, Greendale, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed May 12, 1970, Ser. No. 36,662

Int. Cl. H01m *7/00, 35/30*

U.S. Cl. 136—176 **15 Claims**

A charged storage battery having improved low temperature activation performance characteristics upon the addition of electrolyte is made by installing assembled battery elements into the container cell compartments; electrically connecting the battery elements; filling the cell compartments with the forming electrolyte, with or without the cover installed; forming the battery elements into a fully charged state; removing about 70 to about 97 (preferably about 77 to 87) weight per cent of the forming acid, based upon the total weight of the forming acid in the battery after formation, by applying an accelerative force (preferably a centrifugal force) to the battery; and installing means to seal the battery against the ingress of air into the cell compartments. In a preferred embodiment, the low temperature activation performance of the battery is further improved by allowing the battery elements to stand in the forming electrolyte for a time period after the forming step and then applying a boost charge to the battery elements prior to removing the forming acid.

3,652,342
RAZOR BLADES AND PROCESSES FOR THE PREPARATION THEREOF

Irwin W. Fischbein; Francis E. Flaherty, both of Canton; Edward P. McLaughlin, Braintree, and Fred T. Willett, Norwood, all of Mass., assignors to The Gillette Company, Boston, Mass.

Filed June 7, 1967, Ser. No. 644,052

Int. Cl. B44d *1/36*

U.S. Cl. 148—6.35 **11 Claims**

The present invention is concerned with steel razor blades having a fluorocarbon polymeric coating thereon and more particularly with processes for producing improved blades of that nature. Generally, the improvements are brought about by providing a thin, cubic iron oxide layer beneath the polymeric coating.

3,652,343
PERMANENT MAGNET MATERIAL POWDERS HAVING SUPERIOR MAGNETIC CHARACTERISTICS

Joseph J. Becker, Schenectady, N.Y., assignor to General Electric Company

Continuation-in-part of application Ser. No. 730,577, May 20, 1968, now Patent No. 3,558,371. This application Sept. 14, 1970, Ser. No. 72,099

Int. Cl. H01f *1/06*

U.S. Cl. 148—31.57 **4 Claims**

The coercive force of cobalt-rare earth intermetallic compounds is greatly enchanced by treating the compounds in finely divided form with acid.

3,652,344
ALUMINUM ALLOY-STEEL BEARING AND METHOD OF MAKING SAME

George R. Kingsbury, Cleveland, and Raymond L. Slater, Novelty, both of Ohio, assignors to Clevite Corporation

Filed Sept. 25, 1969, Ser. No. 861,196

Int. Cl. B21d *53/10;* **C21d** *1/46, 9/40*

U.S. Cl. 148—127 **6 Claims**

Bimetallic bearing material comprising aluminum alloys consisting of silicon, cadmium, copper, magnesium, and the balance aluminum, bonded directly on steel backings, are heat treated to effect improved hardness and fatigue resistance. The heat treatment comprises solution heating said bearing material at temperatures ranging from 900° F. to 975° F. for at least 15 seconds but not exceeding 80 seconds, after which it is rapidly quenched in a fluid medium having a maximum temperature of 100° F., followed by precipitation heat treatment at about 350° F. for ten hours.

3,652,345
METHOD OF REMOVING RESIDUAL STRESS FOR IMPROVING FATIGUE STRENGTH OF BOUNDARY OF HEATED ZONE

Katsunobu Tomita; Kentaro Ishii, both of Tokyo; Yoshito Tanaka, Nara, and Takao Saito, Nishinomiya, all of Japan, assignors to Japanese National Railways, Tokyo and Sumitomo Metal Industries Limited, Osaka, Japan

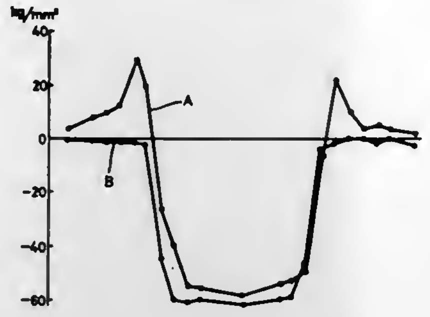
Filed Sept. 17, 1969, Ser. No. 858,814

Claims priority, application Japan, Sept. 18, 1968, 43/67744

Int. Cl. C21d *1/06, 1/08, 1/10*

U.S. Cl. 148—134 **4 Claims**

A method for removal of residual tensile stresses from a locally casehardened steel object is disclosed. In accordance with the method, a projecting fillet is provided at the boundary of the zone on the object to be hardened. The fillet is removed after hardening is accomplished.



3,652,346
METHOD OF INDUCTION HARDENING FOR IMPROVING FATIGUE STRENGTH OF BOUNDARY OF HEATED ZONE

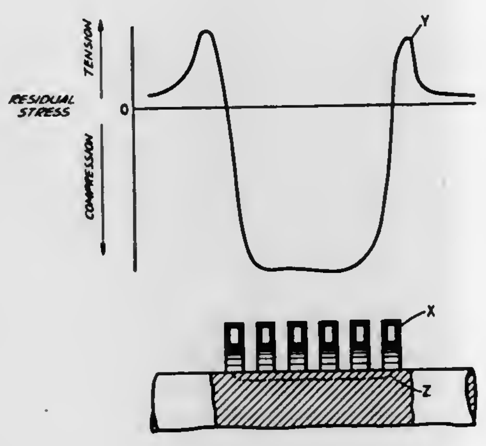
Katsunobu Tomita; Kentaro Ishii, both of Tokyo; Yoshito Tanaka, Nara, and Takao Saito, Nishinomiya, all of Japan, assignors to Japanese National Railways, Tokyo, Japan and Sumitomo Metal Industries, Limited, Osaka, Japan

Filed Sept. 17, 1969, Ser. No. 858,812

Claims priority, application Japan, Sept. 18, 1968, 43/67742

Int. Cl. C21d *1/10, 1/66*

U.S. Cl. 148—154 **4 Claims**



Residual tensile stresses are reduced in a locally casehardened steel object by cooling the boundary zone adjacent the area to be hardened during induction heating.

3,652,347
METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

Minoru Nagata, and Kozi Sato, both of Kodaira-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 4, 1968, Ser. No. 772,913

Claims priority, application Japan, Nov. 6, 1967, 42/70971

Int. Cl. H01l *7/44*

U.S. Cl. 148—187 **13 Claims**

A method for manufacturing a lateral transistor, formed by selectively diffusing a P type emitter region on one principal surface of an N type silicon substrate and introducing acceptor impurity in said emitter region and in one portion of the surface of said substrate at a prescribed distance from said emitter region, thereby forming an emitter region and a P type collector region which have a high surface impurity concentration.

3,652,348
LIQUIDS THICKENED WITH SUBMICROSCOPIC BETA-SILICON CARBIDE FIBER SHEATHED WITH SILICA

George Baum, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed June 9, 1967, Ser. No. 644,979

Int. Cl. C10l *7/02;* **C06d** *5/00*

U.S. Cl. 149—36 **10 Claims**

This invention relates to a method for increasing the viscosity of polar and nonpolar liquids through the addition thereto of submicroscopic-sized fibers containing silica-sheathed, beta-silicon carbide crystals, said fibers having diameters averaging about 0.025 microns and aspect ratios greater than about 1,000:1.

3,652,349
THIXOTROPIC GAS PRODUCING GEL

Herbert A. Bartick, Alexandria, Va., assignor to The Susquehanna Corporation, Fairfax County, Va.

Filed Aug. 25, 1969, Ser. No. 852,904

Int. Cl. C06b *11/00, 19/04*

U.S. Cl. 149—42 **7 Claims**

A combustible gas producing gel having a viscosity up to about 200 poise at a 100 reciprocal second rate of shear and a temperature of minus 65° F. and being thermally stable at temperatures up to about 165° F. comprising the combination of solid consumable particles suspended in a hydrocarbon carrier having eight to 10 carbon atoms and containing an arganoaluminum phosphonate gelling agent. The solid consumable particles may be present in a concentration of from about 77 percent to about 95 percent by weight based upon the total weight of gel; the hydrocarbon carrier may be present in a concentration of from about 5 percent to about 23 percent by weight based upon the total weight of the gel; and the weight ratio of the hydrocarbon carrier to the gelling agent is less than about 100. The solid consumable particles may be all oxidizer particles or a combination of oxidizer and fuel particles.

3,652,350
METHOD OF BLENDING PYROTECHNIC MIXTURES

Hubert G. Timmermans, Manhatten Beach, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.

Filed June 23, 1969, Ser. No. 835,917

Int. Cl. C06b *11/00*

U.S. Cl. 149—109 **8 Claims**

A method of blending pyrotechnic mixtures of the class which include an organic binder, fuel powder and oxidizer powder, comprising the dissolving of the binder in a first solvent in which it is substantially soluble and in which the fuel and oxidizer powders are substantially insoluble so as to form a binder solution, mixing the fuel and oxidizer powders into said binder solution, adding a second solvent to the product of the foregoing steps in which second solvent the binder, fuel powder and oxidizer powder are substantially insoluble in an amount sufficient to cause the precipitation of the major proportion of the binder, and then removing the solvents and drying the precipitate. This method produces a uniformly granulated product which needs no mechanical handling to secure the mixture or granulation, these properties being obtained in a wet environment devoid of the risk of explosion.

3,652,351
PROCESSES FOR ETCHING SYNTHETIC POLYMER RESINS WITH ALKALINE ALKALI METAL MANGANATE SOLUTIONS

Medie B. Guisti, Spring Valley, Ill., assignor to Carus Corporation, La Salle, Ill.

Filed May 13, 1970, Ser. No. 37,008

Int. Cl. B44c *1/22;* **C23b** *5/62*

U.S. Cl. 156—2 **3 Claims**

Processes for etching synthetic polymer resins, particularly

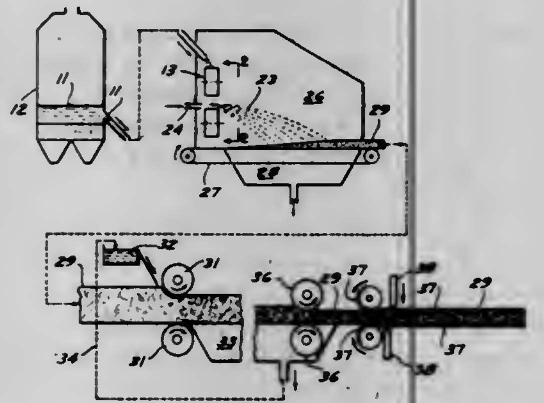
ABS resins, with aqueous, alkaline solutions of alkali metal manganate (VI) at low temperatures.

3,652,352

PROCESS FOR MANUFACTURE OF HARD MINERAL FIBER SLABS WITH COATING

Frantisek Milsimer, and Jiri Zampach, both of Prague, Czechoslovakia, assignors to World Patent Development Corp.

Filed Nov. 24, 1969, Ser. No. 879,265
Claims priority, application Czechoslovakia, Nov. 26, 1968, 8072/68
Int. Cl. B29j *5/00*
U.S. Cl. 156—62.4 **2 Claims**



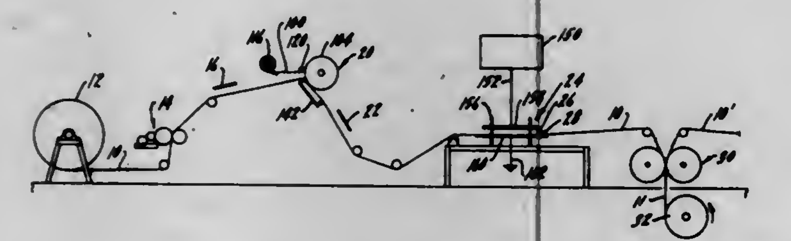
This disclosure teaches a method of manufacturing hard mineral fiber slabs with a surface finish produced from paper impregnated by a spirit solution of phenolformaldehydrate resin, adding at the same time a spirit solution of stearine and a water-spirit solution of hexamethylenetetramine together with a wetting agent. The paper is pressed onto a carpet made of mineral fibers impregnated by resin.

3,652,353

METHOD OF MAKING A NON-WOVEN REINFORCED LAMINATE

Alfred E. Belisle, Westbrook, Maine, and John C. Nelson, Appleton, Wis., assignors to Fox River Paper Corp., Appleton, Wis.

Filed June 9, 1969, Ser. No. 831,334
Int. Cl. B32b *17/00*
U.S. Cl. 156—62.4 **18 Claims**



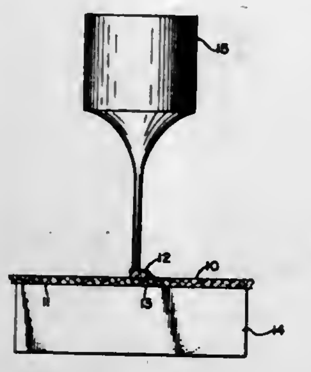
Disclosed is a non-woven reinforced laminate having an upper and lower web with two layers of fibers therebetween, wherein the fibers are substantially parallel within each of the layers and substantially perpendicular to the fibers in the adjacent and a method and apparatus for forming the laminate which include driving a web material along a predetermined route, applying an adhesive to the web in a predetermined pattern, depositing portion of fibers onto the adhesive, causing the remaining free portions of the fibers to stand upwardly from the web, deflecting the upstanding free portions to the surface of the web at an angle relative to the route direction, and laminating the web having the deflected fibers to a second web similarly processed whereby the fibers of the adjoining layers are substantially perpendicularly disposed with respect to each other.

3,652,354

METHOD OF PREPARING LAMINATES OF FIBROUS CELLULOSIC WEBS USING ULTRASONIC ENERGY

Chen-Jen Su, Alsip, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,238
Int. Cl. B32b *31/16, 31/27*
U.S. Cl. 156—73 **13 Claims**



Laminates of cellulosic webs are prepared by contacting at least part of a surface of one of the cellulosic webs to be laminated with an aqueous solution of an inorganic metal salt complex to effect swelling of the surface, placing the swelled portion of the contacted web in overlapping contact with the surface a second web to form a laminate assembly and then subjecting the assembly to a source of ultrasonic energy to effect bonding.

3,652,355

METALLIC LAMINATED STRUCTURE AND METHOD

Catlyle S. Herrick, Alplaus, N.Y., assignor to General Electric Company

Filed Mar. 12, 1970, Ser. No. 19,087
Int. Cl. C09j *5/06, 3/14;* **C23b** *13/00*
U.S. Cl. 156—151 **7 Claims**

A metallic polyimide-bonded laminated structure having enhanced bonding between the laminae and the intermediate polyimide binder. This structure is formed by electrocoating at least one surface of one lamina with an electroconducting solution or emulsion of a polyamide acid and heating the coating to convert the polyamide acid to the polyimide. A composite of the resulting coated metal is formed with a second metallic lamina, and it is heat-compressed to form the laminated structure. The curing or conversion of the polyamide acid to the polyimide is carried out so that any water of imidization liberated during the heat-compression is insufficient to form an adhesively-weakening amount of metallic oxide of the laminate.

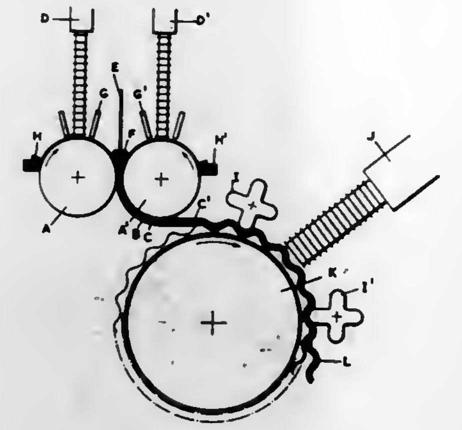
3,652,356

PROCESS FOR MAKING REINFORCED POLYESTER LAMINATES UTILIZING IRRADIATION

Rene L. E. Van Gasse, Schoten, Belgium, and Petrus J. C. A. Simonis, Maassluis, Netherlands, assignors to N.V. Chemische Industrie "Synres", Hoek von Holland, Netherlands

Filed Feb. 6, 1968, Ser. No. 703,459
Claims priority, application Netherlands, Feb. 7, 1967, 6701813
Int. Cl. B32b *5/00*
U.S. Cl. 156—179 **11 Claims**

Reinforced polyester laminates are made by building up a laminate from unsaturated polyester resin and reinforcing material, such as glass fiber matting, the laminate being sandwiched between two foils during the polymerization and curing, and the polyester resin being polymerized by irradiation with high-energy electrons. Preferably the laminate is provided with permanent foils, produced by applying foils of unsaturated polyester resin in partly polymerized state to the laminate on both sides thereof and then irradiating the composite laminate with high-energy electrons to complete polymerization, whereby the foils are firmly bonded to the laminate.

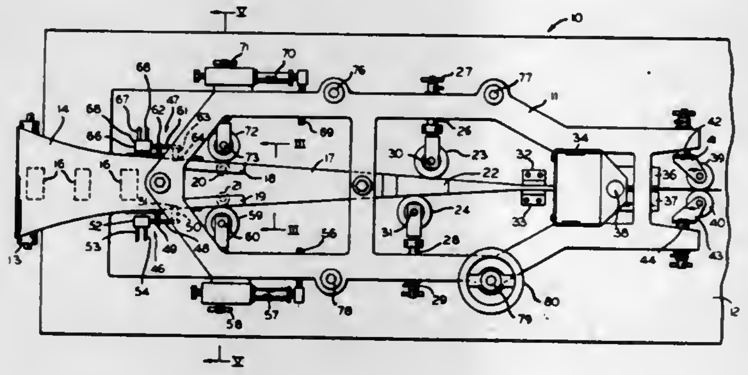


3,652,357

METHOD AND APPARATUS FOR WEB EDGE ALIGNMENT

Walter H. Vogel; Richard H. Cochrane, and Robert C. James, all of Sheboygan, Wis., assignors to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed Oct. 22, 1968, Ser. No. 769,534
Int. Cl. B29d *23/10*
U.S. Cl. 156—203 **18 Claims**



A sensor for controlling the edge position of a moving web wherein a finger rides along the edge being sensed and the position of the finger is used to control an air valve to develop fluid control signals indicative of edge position. One surface of the web moves across a backup plate or roller and the other surface of the web is provided with a tracking roller opposite the backup plate. The tracking roller is pivotable in a plane substantially parallel to the movement of the web. The fluid pressure from the air valve is used to pivot the tracking roller in response to web edge position thereby maintaining the web edge in a desired location. The apparatus includes a transport device for applying articles to the surface of the web and for folding the web to confine the articles therein. Sensors and tracking rollers are disposed on opposite sides of the machine and constantly sense and constantly adjust the edges of the moving web. The sensors are provided with an eccentric mounting to adjust the web height at which each sensor begins to operate its associated air valve.

3,652,358

PROCESS FOR THE BONDING OF MULTILAYER, OVERLAPPING FOIL RIBBONS

Ulrich Strole, Leutershausen; Rudolf Klein, Mutterstadt, and Walter Weidinger, Mannheim-Kafertal, all of Germany, assignors to Zellstoffabrik Waldhof AG, Mannheim-Waldhof, Germany

Filed Dec. 27, 1967, Ser. No. 693,745
Claims priority, application Germany, Dec. 31, 1966, Z 12,623
Int. Cl. B29d *23/10*
U.S. Cl. 156—218 **4 Claims**

This invention relates to a process for the bonding of multilayer, overlapping foil ribbons of thermoplastic material comprising the steps of forming a continuous length of at least two foil ribbons of cold thermoplastic material to overlap at the edges, whereby the said overlap comprises at least four layers of said foil ribbon, inserting a continuous heated strip of thermoplastic material in thermoplastic condition between two of said overlapping layers, said continuous heated strip having a width of less than said overlap and a temperature above that required to cause said foil ribbons of thermoplastic material to become viscous and below that required to cause said foil ribbons of thermoplastic material to melt, compacting said overlap, whereby a union is formed between said at least four layers of said foil ribbon in said overlap and said continuous strip, cooling said union and recovering a continuous, bonded, multilayer overlapping foil ribbon.

3,652,359

PROCESS OF FORMING UPHOLSTERY

Donald L. Decker, Newburgh, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Sept. 11, 1967, Ser. No. 666,941
Int. Cl. B29c *17/00*
U.S. Cl. 156—224 **5 Claims**

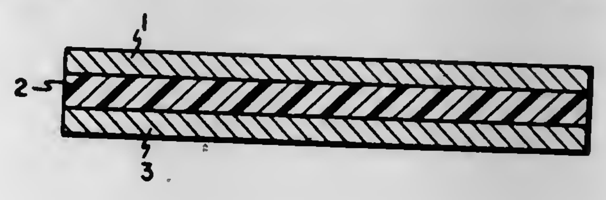
A process for molding an article of manufacture consisting of forming a laminate composed of a stretch fabric bonded to stretchable plastic film with an adhesive system. The laminate is heated to between 270°–295° F. and molded under pressure of 2 to 8 p.s.i.a. and products formed by said process.

3,652,360

METHOD FOR MANUFACTURING MASS PARTICLES IN A VISCOELASTIC MATRIX

Seymour Hartman, Mahopac, N.Y., and Francis F. Sullivan, Santa Barbara, Calif., assignors to U.S. Plywood-Champion Papers Inc., New York, N.Y.

Original application May 12, 1965, Ser. No. 455,247, now Patent No. 3,424,270, dated Jan. 28, 1969, Continuation-in-part of application Ser. No. 317,204, Oct. 18, 1963, now abandoned. Divided and this application Jan. 23, 1969, Ser. No. 793,317
Int. Cl. B29f *3/02;* **B32b** *15/08, 15/16*
U.S. Cl. 156—244 **4 Claims**



The present invention is broadly concerned with the method of manufacture of a novel composition of matter which possesses the physical properties of mass and viscoelasticity for the preparation of high quality acoustical structural units as, for example, a panel, a wall, a ceiling, a floor, or any partition wherein it is desired that it possess high acoustical or a high sound transmission loss in high quality stereo speaker enclosures and in X-ray and radiation shielding.

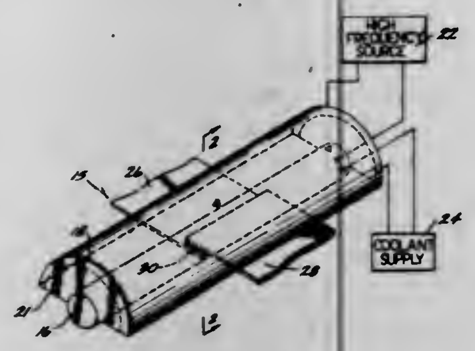
3,652,361
PROCESS FOR INDUCTION HEATING

Alfred F. Leatherman, 4256 Mountview Road, Columbus, Ohio, assignor to William C. Heller, Jr.

Original application Oct. 18, 1965, Ser. No. 497,381, now Patent No. 3,510,619, dated May 5, 1970. Divided and this application Dec. 1, 1969, Ser. No. 881,171

Int. Cl. B23k *13/00*

U.S. Cl. 156—272 **3 Claims**



An induction heating process provides a localized high frequency magnetic field by interacting a central high frequency magnetic field with a surrounding high frequency magnetic field. The localized magnetic field may be used to inductively heat nonmetallic material by means of a susceptor.

3,652,362
HOT MELT ADHESIVE BONDING PROCESS FOR CORRUGATED PAPERBOARD

Saburo Odagiri, Yokohama-shi, Japan, assignor to Toyo Mokuzai Kigyo Kabushiki Kaisha, Otaru-shi, Hokkaido, Japan

Filed June 2, 1969, Ser. No. 829,742

Claims priority, application Japan, June 4, 1968, 43/38208

Int. Cl. C09j *5/06*

U.S. Cl. 156—321 **2 Claims**

A bonding process in which a first material is coated with a hot melt adhesive which is heated to 1.5–1.7 times its melting temperature. The coated first material is then cooled to 0.6–0.7 times said melting point and then a second material which is heated to a temperature of 1–1.2 times the melting point of the adhesive is pressed against the coated first material.

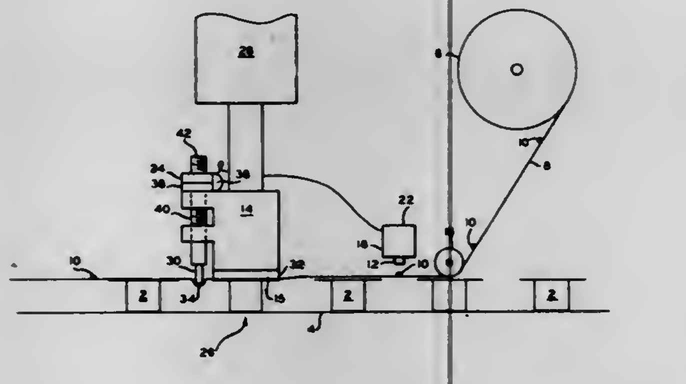
3,652,363
FILM POSITIONING APPARATUS

William G. Kinslow, Jr., Kansas City, Mo., assignor to Phillips Petroleum Company

Filed Oct. 23, 1969, Ser. No. 868,676

Int. Cl. B29c *27/06;* **B65h** *25/06*

U.S. Cl. 156—361 **5 Claims**



An apparatus for intermittently, longitudinally adjusting a printed portion of a continuous film relative to a container prior to sealing said film to the container to form a cover thereof.

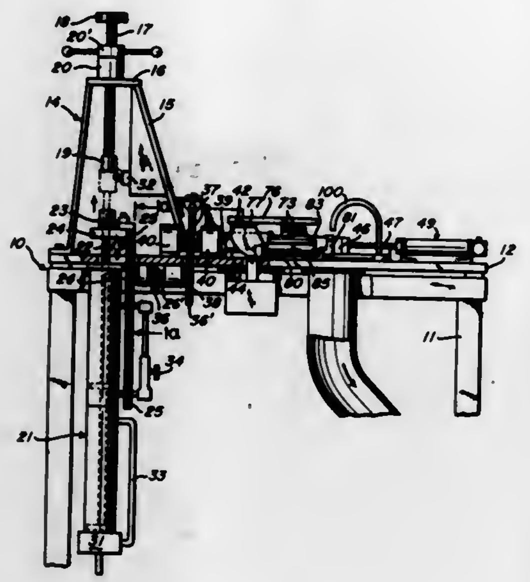
3,652,364
CARTRIDGE WINDING MACHINE

Frank F. Ali, 2973 Pascal Drive, Fairborn, Ohio

Filed Sept. 30, 1969, Ser. No. 862,261

Int. Cl. B05b *3/02*

U.S. Cl. 156—357 **15 Claims**



An automatic cartridge winding machine, a preferred embodiment of which provides means responding to receipt of a strip of abrasive surfaced material to wind the same to a generally cylindrical or conical form, to seal the strip to such form and to responsively eject the same as a finished product.

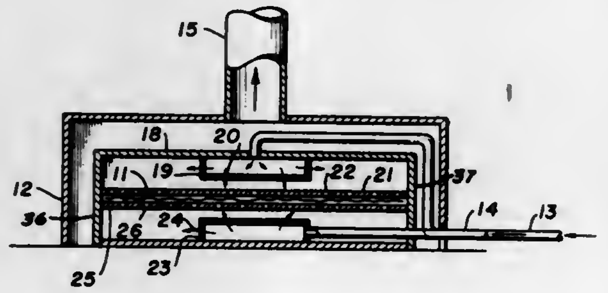
3,652,365
GAS INJECTION APPARATUS

William C. Mallonee, 3741 Curtis Street, Chester, Va.

Filed Jan. 2, 1970, Ser. No. 64

Int. Cl. B32b *31/26, 17/04*

U.S. Cl. 156—381 **1 Claim**



An activating gas chamber intimately mixes an activating gas with a nonwoven fabric as a pre-condition for interfilament bonding by increasing the velocity of the gas sufficiently such that complete penetration of the fabric by the gas is obtained in an enclosed environment.

3,652,366
APPARATUS FOR FORMING CYLINDRICAL TANKS

Dominique Carlini, Rousset, France, assignor to Recherches Et Applications Des Plastiques Dans L'Industrie Et Le Batiment S. A., Rousset, France

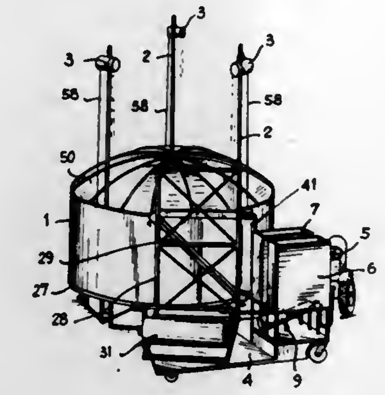
Original application Apr. 11, 1968, Ser. No. 720,710, now Patent No. 3,562,047. Divided and this application July 27, 1970, Ser. No. 58,256

Int. Cl. E04b *1/346, 1/35*

U.S. Cl. 156—443 **5 Claims**

Cylindrical tanks and a method of and apparatus for forming such tanks from reinforced plastic material, the tanks being comprised of vertically stacked cylindrical sections.

Each cylindrical section is formed of two thicknesses of resin impregnated fabric which have been successively wound over a mandrel, the thicknesses being vertically displaced to permit overlapping at the joints between sections. As each section is completed, the mandrel is reduced in diameter and the section is raised vertically.



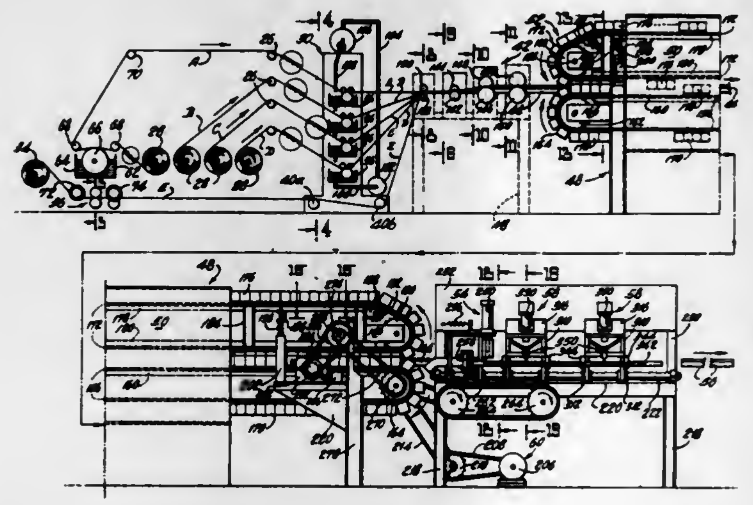
3,652,367
APPARATUS FOR MANUFACTURING CORRUGATED ANGLE MEMBERS

Jack A. Gilbert, and Stanley Franklyn, both of Clifton, N.J., assignors to Container Company of New York, Irvington, N.J.

Filed Dec. 9, 1968, Ser. No. 782,209

Int. Cl. B31f *1/36;* **B22h** *29/00*

U.S. Cl. 156—463 **19 Claims**



Apparatus for manufacturing corrugated angle members. These members are made of heavy paper, for example, and serve as protective reinforcements in relatively large packages containing appliances and the like, so that the corrugated angle members by engaging the appliances within the container of the package will protect the appliances against damage. A plurality of corrugated plies are glued to each other while being longitudinally angled to a gradually increasing extent by a forming means which provides the glued-together corrugated plies with a preselected angular cross section. Then the angled corrugated structure is dried while conveyed by a conveyor means through a heat tunnel. Thereafter, the corrugated structure is cut by a cutting means to preselected lengths.

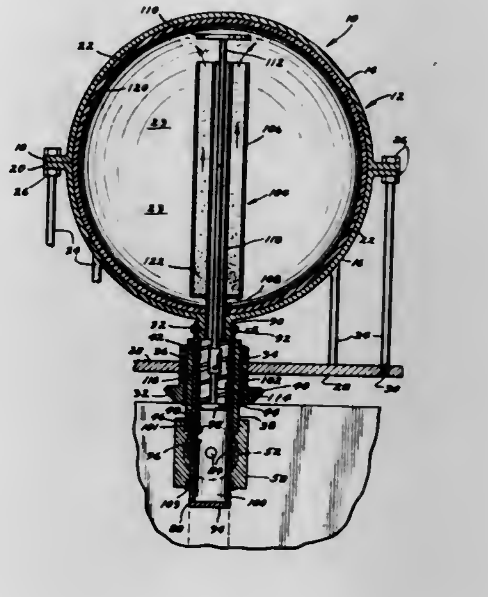
3,652,368
APPARATUS FOR ROTATIONAL MOLDING OF LAMINATED HOLLOW STRUCTURES

Jerome L. Formo, Saint Paul, Minn., assignor to Plastics, Inc., Saint Paul, Minn.

Filed Dec. 17, 1969, Ser. No. 885,911

Int. Cl. B32b *31/16*

U.S. Cl. 156—501 **4 Claims**



Apparatus for rotational molding of laminated hollow structures from plastic material is disclosed. A first plastic material is rotationally molded to the inside surface of a hollow mold until the first plastic material is in a fused condition. A second plastic material is then released from a thermally insulated container, which may be positioned within the mold and rotated with the mold, by air pressure moving an air piston attached to a cover of the insulated container to separate the cover from the insulated container. A bond is formed between the first and second plastic materials while the second plastic material is rotationally molded to the inside surface of the first plastic material to thus laminate the two materials together. After both materials are molded, the mold is cooled, rotation of the mold is stopped, and the molded structure is removed from the mold.

3,652,369
BOTTLE FEEDING MACHINE

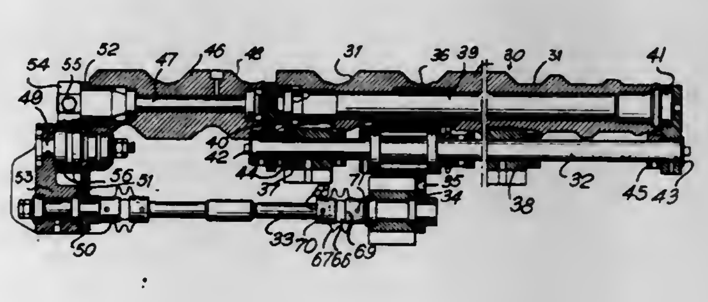
Romuald Rene Della Vite, 10 Rue Saint-Quentin, Nogent Sur Marne, France

Filed Oct. 28, 1969, Ser. No. 870,049

Claims priority, application France, Apr. 3, 1969, 6910294

Int. Cl. B65c *9/02;* **B65g** *47/26*

U.S. Cl. 156—566 **11 Claims**

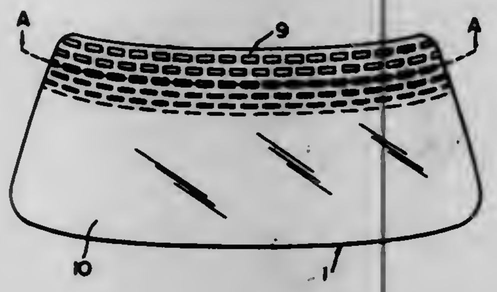


A rotary screw conveyor system for moving bottles past a turret type labelling mechanism includes two axially aligned, but independently movably mounted, rotary bodies, so that bottles of varying diameter may be accommodated without jamming the mechanism.

3,652,370
DAZZLE-PREVENTING AND HEAT-BLOCKING GLASS SHEET

Hirokazu Motai, Nishinomiya-shi, Japan, assignor to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Oct. 7, 1969, Ser. No. 864,390
Claims priority, application Japan, Oct. 12, 1968, 43/89250
Int. Cl. B44f *1/00*
U.S. Cl. 161—2 **3 Claims**

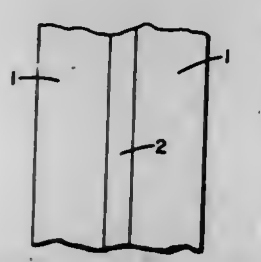


A dazzle-preventing and heat-blocking glass sheet capable of allowing a view of outside objects without any trouble, said glass sheet having a number of small fragments of glass color adhered thereto at one surface of an area to be protected from dazzle and heat to absorb considerable amounts of visible rays and heat rays from outside, said glass color fragments being arranged in a spaced-apart relationship forming a pattern to allow outside objects to be viewed with sufficient clearness through the interspaces among the glass color fragments.

3,652,371
WATER SOLUBLE PLASTIC FILM AND METHOD OF MANUFACTURING SAME

Kazuaki Hirata, Kurashiki, Japan, assignor to Kuraray Co., Ltd., Osaka, Japan

Filed Nov. 27, 1970, Ser. No. 93,265
Int. Cl. B29d *7/02;* **B32b** *3/10, 3/02*
U.S. Cl. 161—36 **6 Claims**



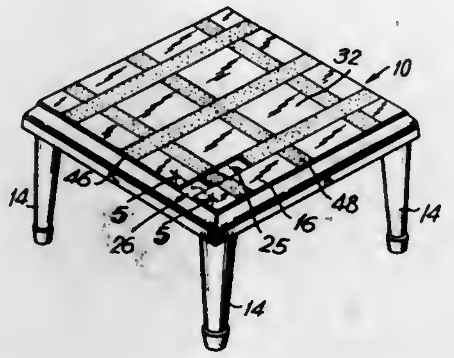
A composite uniplanar water soluble film comprising a strip of a cold water soluble plastic film bonded at its edge to a strip of a hot water soluble plastic film. Alternatively, there may be a plurality of cold water soluble strips and/or a plurality of hot water soluble strips constituting the uniplanar film. One of the uses of the film is in the manufacture of laundry bags.

3,652,372
INLAY FURNITURE

Leonard Klazkin, East Meadow, and Jesse Feldstein, Oceanside, both of N.Y., assignors to Woodron Inc., Freeport, N.Y.

Filed Jan. 26, 1970, Ser. No. 5,465
Int. Cl. B32b *3/00, 3/30;* **B44c** *1/26*
U.S. Cl. 161—39 **6 Claims**

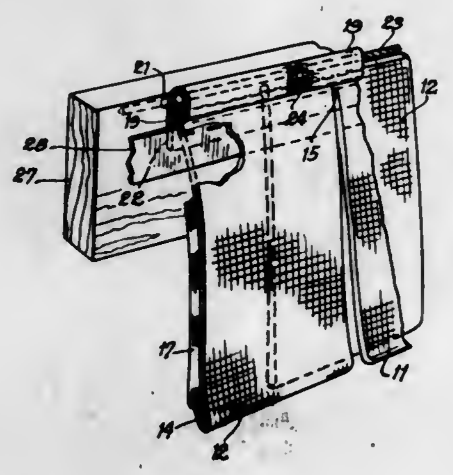
An article of furniture includes a metal strip inlay set in a crisscross (checkerboard) pattern on an exposed substantially flat surface thereof. To receive the metal strips, an orthogonal network of mating channels is formed in the upper surface of the furniture. The channels are rectangular in cross section and arrayed with perpendicular intersections. At the intersection of any two channels, a shallow wall extends deep enough into the surface of the furniture to receive the thickness of two strips. The strips are inlaid in the channels with each strip of one piece construction for its entire length crossing several intersections. At each intersection, one of the strips has a groove to receive an overlying crossing strip whereby the exposed upper surfaces of the strips are coplanar and are flush with the exposed surface of the furniture.



3,652,373
SKIRT FOR UPHOLSTERED FURNITURE

Wilbur E. Noble, Warrenville, Ill., assignor to Kroehler Mfg. Co., Naperville, Ill.

Filed Mar. 12, 1971, Ser. No. 123,674
Int. Cl. B32b *7/08, 7/06*
U.S. Cl. 161—50 **10 Claims**



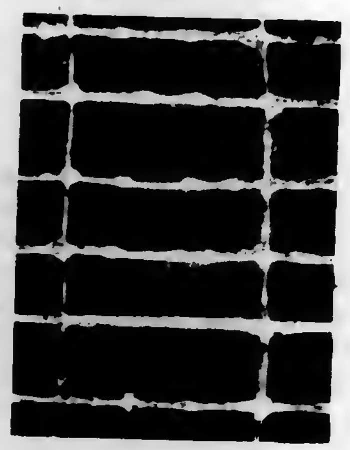
A flounce, kick pleat or skirt for upholstered furniture having simulated pleats and presenting a pleasing smooth flat tailored appearance. The flounce includes a series of front and rear panels stitched to a welt cover. The front panels are arranged in side-edge to side-edge relationship with a rear panel behind each abutment line of adjacent front panels. The welt cover is folded around a welt cord lying adjacent the upper edges of the panels and is stitched over the front panels.

3,652,374
NONBLOCKING NONWOVEN SCRIM MATERIALS

Eugene H. Condon, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 7, 1969, Ser. No. 805,243
Int. Cl. D04h *3/02, 3/12*
U.S. Cl. 161—57 **2 Claims**

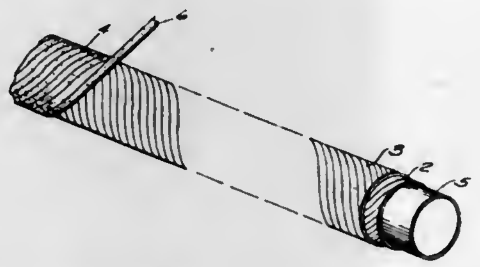
A nonwoven scrim material that may be wound up on a roll without the development of any significant degree of blocking by employing a polyvinyl chloride plastisol adhesive fused beyond its point of residual tack and having a surface level of plasticizer within certain critical limits, and methods for forming such materials.



3,652,375
PLASTIC ARTICLE HAVING ULTRAVIOLET REFLECTIVE PROPERTIES

Junior L. Johnson, Mabelvale, Ark., assignor to A. O. Smith-Inland, Milwaukee, Wis.

Filed Nov. 25, 1969, Ser. No. 879,834
Int. Cl. B32b *5/22*
U.S. Cl. 161—158 **4 Claims**

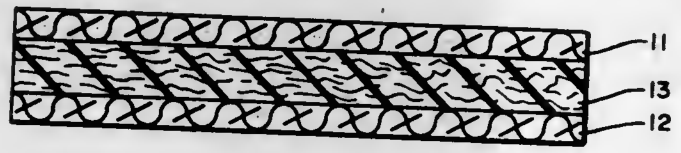


A plastic pipe composed of thermosetting resin reinforced with glass fibers. The resin in the outer portion of the pipe contains fine mesh aluminum or other light reflective metallic powder to provide protection for the pipe against ultraviolet degradation.

3,652,376
MULTI-PLY PRESS PACKING FOR THE IMPRESSION MEMBER IN A LETTER PRESS

James G. Bowden, III, Weston, Mass., assignor to W. R. Grance & Co., Cambridge, Mass.

Filed July 11, 1969, Ser. No. 841,090
Int. Cl. B32b *5/18*
U.S. Cl. 161—159 **7 Claims**

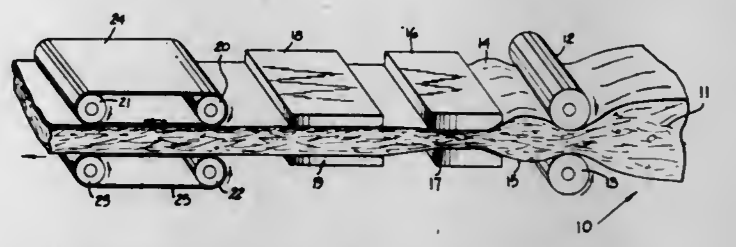


Rotary press blankets are made by laminating a highly porous, felted fibrous sheet impregnated with an elastomeric material with an an impregnated, fine-count, substantially nonstretchable textile. The fibrous layers have a residual porosity at 4 mils compression of at least about 37 percent, and the entire blanket exhibits a firmness such that a pressure of at least about 10 pounds p.s.i. must be exerted on the blanket, to produce an initial compression of 2 mils.

3,652,377
METHOD OF FORMING FIBROUS BODIES WITH DISSIMILAR DENSITIES AND APPARATUS THEREFOR

James William Helmick, Toledo, Ohio, assignor to Johns-Manville Corporation, New York, N.Y.

Filed July 3, 1969, Ser. No. 839,027
Int. Cl. B32b *7/02*
U.S. Cl. 161—166 **9 Claims**

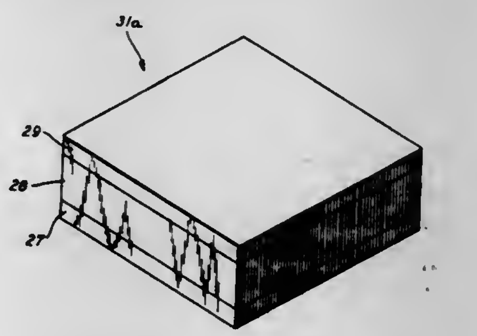


A continuous forming method, and apparatus therefor, of shaping, consolidating to dissimilar internal densities, and bonding, with low density loose mass of continuously intermeshed fiber containing thermosetting binder material throughout, comprising pulling such a body of fibers through a succession of compressing and heating operations to sequentially induce the desired dissimilar densities and commensurate therewith activating and curing the binder selectively within the designed areas of dissimilar density to permanently set the same, following an initial limited binder activation to effect coherency within the loose mass to endure the pulling through the compressing operations, and the dissimilarly densified and bonded product thereof.

3,652,378
STRENGTHENING ALUMINA SUBSTRATES BY INCORPORATING GRAIN GROWTH INHIBITOR IN SURFACE AND PROMOTER IN INTERIOR

Richard E. Mistler, Princeton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Feb. 19, 1970, Ser. No. 12,666
Int. Cl. C04b *35/18, 39/12;* **B32b** *9/00*
U.S. Cl. 161—182 **15 Claims**



A thin ceramic substrate having unusually high strength properties is manufactured by a casting process which produces a triple layered ceramic body. The exterior layers of the body having incorporated therein a grain growth inhibitor. The interior layer of the body has incorporated therein a grain growth promoter. Upon sintering, the composite body is defined by an interior grain size which is approximately twice as large as the exterior grain size.

3,652,379
LAMINATED TRANSPARENT ABRASION RESISTANT ARTICLE

Ronald E. White, Romeo, and Zachariah G. Gardlund, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 7, 1969, Ser. No. 874,771
Int. Cl. B32b *17/10;* **C03c** *27/12*
U.S. Cl. 161—183 **5 Claims**

A transparent polycarbonate resin article, such as an automobile windshield, is prepared having a three-layer, scratch resistant film (about 1 mil in thickness) on a surface thereof. The film contains three layers as formed; an inner layer of a suitable hydroxylated polycarbonate resin, an intermediate layer of silica and poly(vinyl butyral), and an outer layer of silica and poly(vinyl alcohol). The three layers are formed sequentially by wetting a surface of the polycarbonate body with a solution of the specific material in the first layer, evaporating the solvent to form a thin residual solid coating, and repeating this process with respect to the materials specified for the other two layers until the three-layer film is completed.

3,652,380

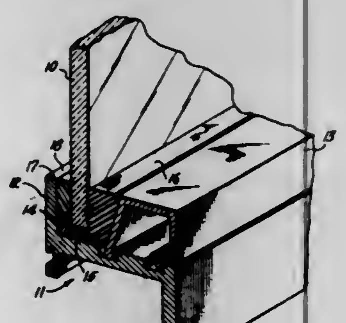
SELF-SUPPORTING, NONLOAD-BEARING RESILIENT TAPE SEALANT

Donald R. Strack, Dayton, Ohio, assignor to Protective Treatments, Inc., Dayton, Ohio

Original application Jan. 3, 1967, Ser. No. 607,022, now Patent No. 3,500,603. Divided and this application Aug. 19, 1969, Ser. No. 862,139

Int. Cl. B32b *27/28;* **C08d** *9/00;* **E04b** *1/62*

U.S. Cl. 161—255 **13 Claims**



Panels are mounted in an architectural mounting using using resilient elements to sustain the load, the supported panel being sealed against the weather by means of a self-supporting tape partially compressed between the panel and a wall of the mounting. The tape is formed of resilient elastomer having a Mooney value of at least 45 compounded with large amounts of plasticizing oil and filler to provide a self-supporting structure which is stable, adherent to glass and metal, incapable of bearing sustained loads and capable of maintaining a seal in a partially compressed condition.

3,652,381

METHOD OF PREPARING COLLAGEN FIBERS

Milan Kremr, and Vaclav Hrabovsky, both of Otrokovice, Czechoslovakia, assignors to Statni vyzkumny ustav Kozedelny, Gottwaldov, Czechoslovakia

Filed Aug. 14, 1969, Ser. No. 850,236

Int. Cl. D01c *3/00*

U.S. Cl. 162—2 **2 Claims**

Tannery waste, such as shoulder and belly splits and glue stock, is delimed, pickled in a salt solution containing a strong acid until it loses some of its initial water content and absorbs acid, disintegrated in the presence of excess water whereby it swells to several times it original weight, and then dewatered by contact with a solution of a soluble chloride or sulfate. The partly dewatered material may then be further processed to collagen fibers by tanning and other conventional procedures.

3,652,382

HIGH SURFACE AREA CHRYSOTILE AND METHOD OF MAKING SAME

Alan B. Gancy, W. Acton, Mass., assignor to FMC Corporation, New York, N.Y.

Filed July 29, 1969, Ser. No. 845,892

Int. Cl. C03b *37/00*

U.S. Cl. 162—3 **5 Claims**

Chrysotile fibrils having high surface are obtained by (1) attriting chrysolite asbestos in the presence of sufficient dilute mineral acid to free the fibrils without significantly affecting the SiO_2:MgO ratio; (2) treating the freed fibrils with sufficient mineral acid to form a layer of SiO_2 on the fibril surface; (3) treating the acidified fibrils with alkali to dissolve the SiO_2 layer, and (4) washing fibrils to remove excess alkali.

3,652,383

TREATMENT OF PAPER COATING WASTES CONTAINING STARCH AND PIGMENT

John Wallace de Vos, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 27, 1968, Ser. No. 716,432

Int. Cl. D21b *1/08, 1/32;* **D21c** *5/02*

U.S. Cl. 162—4 **8 Claims**

The separation of starch-containing coated paper broke or coating waste material into reusable pigment and fiber constituents together with an effluent which is subject to disposal in a manner to minimize or eliminate pollution problems. The pigment is recoverable from the coating composition waste material or coated paper broke aqueous suspension by utilizing the starch in sol form to maintain the pigment dispersed while effecting removal of other constituents, in the case of broke removal of fiber fines, for example. Subsequently, the starch is hydrolyzed and the dispersion treated to provide for pigment sedimentation and removal. The procedure is particularly beneficial in that there need be no effluent of the process which is not readily disposable by conventional means and without contamination or pollution of streams which may receive the final effluent.

3,652,384

COUNTERCURRENT PULPING OF CELLULOSIC MATERIALS INCLUDING REGULATION OF ACTIVE CHEMICAL THEREIN

Arthur Raymond Sloman, East Camberwell, Victoria, Australia, assignor to Associated Pulp and Paper Mills Limited, Melbourne C. I. Victoria, Australia

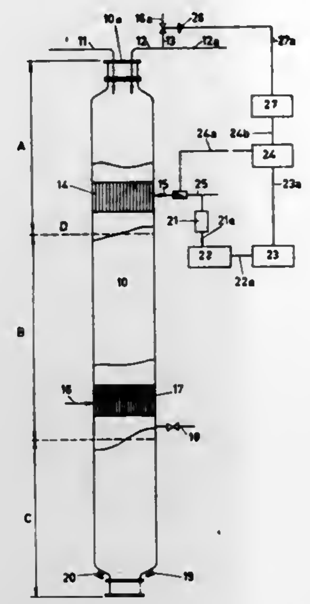
Continuation of application Ser. No. 648,257, June 23, 1967, now abandoned. This application Sept. 22, 1970, Ser. No. 74,513

Claims priority, application Australia, June 24, 1966, 7439/66

Int. Cl. D21c *3/26, 7/12*

U.S. Cl. 162—19 **1 Claim**

A method is disclosed for the continuous treatment of wood chips in a downflow vertical digester by the alkaline process. Wood chips and black liquor are introduced near the upper end of the digester and travel downwardly therethrough to a sole point at which the black liquor is discharged from the digester. Cooking liquor is introduced at a point between the lower end and black liquor discharge point of the digester and passes upwardly to the discharge point, countercurrent to the flow of wood chips, to cook the chips and leave the digester as back liquor at the discharge point. The cooked wood chips are removed from the lower end of the digester. The active chemical in the cooking liquor is maintained constant. Active chemical is further added near the upper end of the digester and the addition thereof is regulated in response to changes in the residual active chemical in the black liquor which are monitored at the discharge point of the digester, in order to keep the residual active chemical in the discharged black liquor at a substantially constant concentration. The quantity of active chemical added near the upper end of the digester does not exceed 20 percent of the total active chemical added to the digester.



3,652,385

PROCESS FOR TREATING CELLULOSIC MATERIALS FROM WHICH METAL IONS HAVE BEEN REMOVED WITH ALKALI AND OXYGEN IN THE PRESENCE OF COMPLEX MAGNESIUM SALTS

Sture Erik Olof Noreus, Sundasen, and Hans Olof Samuelson, Goteborg, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Continuation-in-part of application Ser. No. 869,875, Oct. 27, 1969. This application May 12, 1970, Ser. No. 36,670

Claims priority, application Sweden, May 13, 1969, 6780/69

Int. Cl. D21c *3/00*

U.S. Cl. 162—23 **33 Claims**

Cellulosic materials from which metal ions have been removed by acids or complexing agents is delignified with alkali in the presence of oxygen, and particularly air, and in the presence of magnesium compounds such as, for instance, chelates of magnesium and aliphatic alpha- and beta-hydroxycarboxylic acids. The invention is of particular application to the reduction of lignin content in cellulose pulps without causing deleterious degradation of the cellulose, the magnesium compounds reducing or entirely preventing attack of oxygen on the hemicellulose and cellulose carbohydrates, without appreciably diminishing the oxidation of the lignin and its dissolution in the course of the process. The process is also useful to obtain a controlled dissolution of the hemicellulose.

3,652,386

PROCESS FOR TREATING CELLULOSIC MATERIALS WITH ALKALI AND OXYGEN IN THE PRESENCE OF COMPLEX MAGNESIUM SALTS

Sture Erik Olof Noreus, Ornskoldsvik, and Hans Olof Smauelson, Goteborg, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Oct. 27, 1969, Ser. No. 869,875

Claims priority, application Sweden, Oct. 29, 1968, 1463868

Int. Cl. D21c *3/00*

U.S. Cl. 162—65 **20 Claims**

The invention is of particular application to the reduction of lignin content in cellulose pulps without causing deleterious degradation of the cellulose, the complex magnesium salts, such as chelates of magnesium and aliphatic alpha- and beta- hydroxycarboxylic acids, reducing or entirely preventing attack of oxygen on the hemicellulose and cellulose carbohydrates, without appreciably diminishing the oxidation of the lignin and its dissolution in the course of the process.

3,652,387

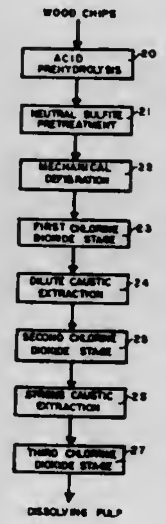
PROCESS FOR THE MANUFACTURE OF DISSOLVING-GRADE PULP

Harry D. Wilder, Midlothian, Va., assignor to Ethyl Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 797,209, Feb. 6, 1969, now abandoned , and a continuation-in-part of 830,709, June 5, 1969. This application Dec. 31, 1969, Ser. No. 889,661. The portion of the term of this patent subsequent to Nov. 3, 1987, has been disclaimed.

Int. Cl. D21c *9/14*

U.S. Cl. 162—25 **10 Claims**


WOOD CHIPS
ACID PREHYDROLYSIS
20
NEUTRAL SULFITE PRETREATMENT
21
MECHANICAL DEFIBRATION
22
FIRST CHLORINE DIOXIDE STAGE
23
DILUTE CAUSTIC EXTRACTION
24
SECOND CHLORINE DIOXIDE STAGE
25
STRONG CAUSTIC EXTRACTION
26
THIRD CHLORINE DIOXIDE STAGE
27
DISSOLVING PULP

Vegetable matter is treated to produce a dissolving-grade pulp, including mechanical refining of the raw material followed by, first, a lignin reaction treatment with chlorine dioxide or chlorine and chlorine dioxide and, second, an extraction treatment with a strong alkali solution such as 50 to 60 grams alkali per liter.

3,652,388

BLEACHING AND DELIGNIFICATION OF PARTIALLY DELIGNIFIED PULP WITH A MIXTURE OF CHLORINE AND CHLORINE DIOXIDE

Ingemar Liss-Albin Croon; Sten Oskar Dillen, both of Alfredshem, and Sture Erik Noreus, Sundasen, all of Sweden, assignors to Mo Och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Dec. 5, 1969, Ser. No. 882,812

Claims priority, application Sweden, Dec. 5, 1968, 16678/68

Int. Cl. D21c *9/14, 9/12*

U.S. Cl. 162—65 **16 Claims**

A process is provided for bleaching and delignifying cellulose pulps that have previously been subjected to a partial delignification under alkaline conditions with an oxygen-containing gas, which comprises delignifying the pulp with a mixture of chlorine and chlorine dioxide, and then dissolving chlorinated lignin in a further alkaline treatment.

3,652,389

ADJUSTABLE FABRIC FOR USE AS A PAPERMAKING FELT WITH ZIG-ZAG PATTERNED CROSS MACHINE YARNS

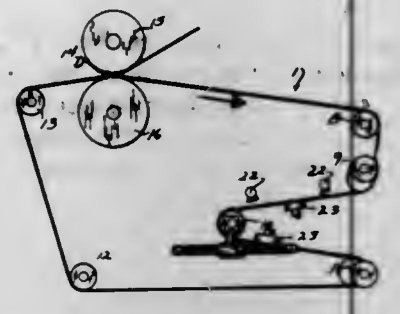
Howard M. Helland, Appleton, Wis., assignor to Appleton Mills, Appleton, Wis.

Filed Mar. 14, 1969, Ser. No. 807,348

Int. Cl. D21f *7/12;* **D03d** *25/00*

U.S. Cl. 162—275 **15 Claims**

An endless fabric, such as a papermaker's felt, composed of a series of generally parallel warp yarns and having cross machine yarns or fibers extending in a zig-zag pattern across the warp yarns. The cross machine yarns in each section of the zig-zag pattern extend at an acute angle up to 80° with respect to a line normal to the warp yarns. The cross machine yarns are stabilized in their zig-zag pattern by physical or chemical means, such as by needling or heat setting,



but remain adjustable thereafter in angularity with respect to the warp yarns once installed on a papermaking machine.

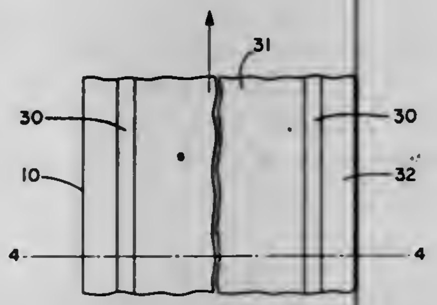
3,652,390
PAPERMAKING DRAINAGE FABRIC AND STOCK INLET COMBINATION FOR PRODUCING EVEN EDGED PAPER WEB

LeRoy L. Peterson, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of application Ser. No. 566,281, July 19, 1966, now abandoned. This application Feb. 10, 1970, Ser. No. 10,239

Int. Cl. D21f *1/00, 1/10, 7/08*

U.S. Cl. 162—303 **5 Claims**



In the paper forming art an arrangement of a stock slurry inlet and a belt of drainage fabric; the drainage fabric has liquid impermeable bands positioned inwardly of its side edges and the inlet discharges the stock slurry onto the fabric including the bands. The effect of the bands is to terminate the formed paper web sidewardly along the inner edges of the bands and to provide edges of the sheet which need not be trimmed. The arrangement has particular utility where sheet formation is between two fabrics and there is little room for positioning the usual flow restricting shoes, and is advantageous also in providing for uniform basis weight across the sheet width. The liquid impermeable bands may be one-fourth to three-eighths inches in width and the side edges may be 1 to 2 inches in width.

3,652,391
BOX-LIKE BLENDING CHAMBER WITH BARRIER ELEMENTS TO PRODUCE UNIFORM FLOW OF PAPERMAKING STOCK

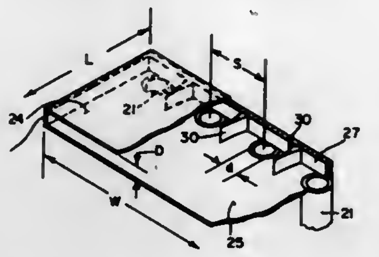
Aris C. Spengos, Wallingford, and Richard B. Kaiser, Swarthmore, both of Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Jan. 20, 1970, Ser. No. 4,225

Int. Cl. D21f *1/06*

U.S. Cl. 162—343 **14 Claims**

Apparatus for spreading the flow of papermaking stock so as to establish flow having uniform velocity across the width of a relatively wide conduit, which apparatus includes branch tubes for feeding the flow from a tapered header to the top or bottom wall of a boxlike blending chamber where the streams from the branch tubes impinge against the opposite wall. Barrier elements are disposed in the area of impingement in the blending chamber in a manner whereby they isolate the streams entering the blending chamber from the branch tubes so as to obtain a more uniform velocity profile. The barrier elements which are disposed between the center lines of the adjoining tubes extend between the top and bottom walls, and also extend from a point preceding the upstream side of the branch tubes to a point along the stock flow path through the blending chamber at least beyond the center lines of the branch tubes.



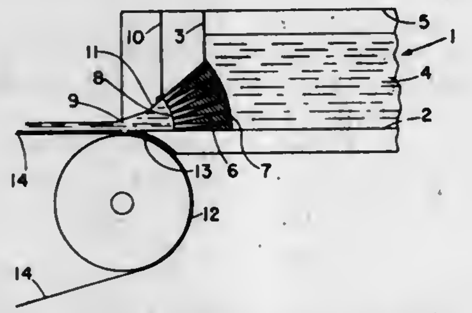
3,652,392
CONTRACTING PRE-SLICE FLOW DISTRIBUTOR FOR PAPERMAKING MACHINE HEADBOX

David W. Appel, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 24, 1969, Ser. No. 879,251

Int. Cl. D21f *1/06*

U.S. Cl. 162—343 **3 Claims**



An inlet for a papermaking machine characterized particularly by a stationary flow distributor immediately preceding the slice within the headbox. The distributor has an overall contracting dimension from the inlet to the outlet and is arranged to provide initially small scale turbulent mixing to attain universal fiber orientation followed by an expanding stilling section in which some turbulence is dissipated so that stock is discharged from the slice onto a forming wire with a controlled level of small scale agitation and minimum fiber alignment. The distributor has an inlet face remote from the slice which is convex in shape and a downstream outlet face which is arcuate in shape in the same sense as the inlet face. Each passageway connecting an inlet opening in the inlet face with an outlet port in the outlet face gradually widens toward the outlet port, and each passage of a vertical row of passages extends toward the slice at a different angle which is less than 45°.

3,652,393
ARRANGEMENT FOR BRINGING ABOUT NUCLEAR FUSION REACTIONS

Wolfgang Kaiser; Hans Opower, and Heinz Puell, all of Technische Hoshschule Munich, Physik Department, no. 21, Arcisstrasse, Munich, Germany

Filed Feb. 8, 1968, Ser. No. 704,026

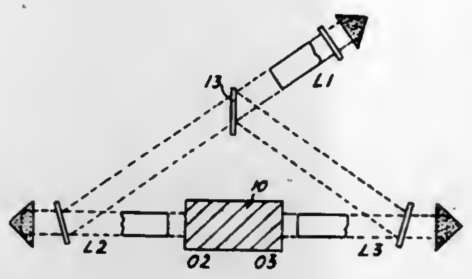
Claims priority, application Germany, Feb. 10, 1967, K 61394

Int. Cl. G21b *1/00*

U.S. Cl. 176—1 **6 Claims**

The invention provides an arrangement for bringing about nuclear fusion reactions comprising a known system of two synchronously activated lasers.

These lasers, facing each other on a common optic axis, emit light beams for producing a plasma. They are focused on two deuterium or deuterium-tritium containing concave or flat targets after having passed two objectives with hollow cones, which impart a tubular cross section to the light beams. Also the lasers themselves can be designed to emit tubular light beams.



The concave or flat targets having a surface roughly corresponding to the area of the focal point are disposed perpendicularly to the common optic axis of the laser system and symmetrically with respect to the center plane.

Each target is situated on that side of said plane remote from its associated objective, which has a numerical aperture of nearly 1.

3,652,394
DEVICE FOR CONTROLLING THE REACTIVITY OF NUCLEAR REACTORS

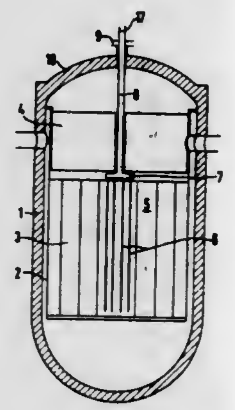
Wolfgang Braun, Buckenhof, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed May 7, 1970, Ser. No. 35,312

Claims priority, application Germany, May 23, 1969, P 19 26 344.6

Int. Cl. G21c *7/08, 7/22*

U.S. Cl. 176—86 R **15 Claims**



Device for controlling the reactivity of a nuclear reactor cooled by light water and including a reactor core formed of fuel elements, includes a tube system passing through the reactor core and traversible by a water-soluble neutron absorber of adjustable concentration, separated by the tube system from light water coolant in the reactor core, the tube system including a plurality of substantially vertically extending fingerlike tubes always fully inserted in the fuel elements; a spiderlike holder holding the fingerlike tubes together at the upper ends thereof and serving as distributor for the neutron absorber to the fingerlike tubes, and a holder rod extending from the spiderlike distributor and serving as a central supply line for the neutron absorber to the spiderlike distributor.

3,652,395
METHOD FOR THE PRODUCTION OF 5′-NUCLEOTIDES

Yoshio Nakao, Ibaraki, and Mitsuzo Kuno, Suita, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 23, 1966, Ser. No. 604,199

Claims priority, application Japan, Dec. 25, 1965, 40/80258

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 N **12 Claims**

5′-nucleotides are produced by culturing hydrocarbons-assimilating micro-organisms belonging to the genera *Corynebacterium*, *Brevibacterium*, *Pseudomonas* or *Arthrobacter* in a culture medium containing hydrocarbons as carbon sources and subsequently suspending the resultant grown micro-organisms in alkaline aqueous solution of a pH in the range of 8.0 to 10.5.

3,652,396
PROCESS FOR PREPARING CITRIC ACID BY FERMENTATION

Katsunobu Tanaka, and Kazuo Kimura, both of Tokyo-to, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha (Kyowa Hakko Kogyo Co., Ltd.), Tokyo, Japan

Filed July 18, 1968, Ser. No. 745,713

Claims priority, application Japan, July 21, 1967, 42/46586

Int. Cl. C12b *1/00*

U.S. Cl. 195—28 **5 Claims**

A process for preparing citric acid by culturing in a culture medium containing a hydrocarbon as the principal carbon source, a fungus of the genus Penicillium having the ability to metabolize the hydrocarbon to produce citric acid as a metabolite and recovering the accumulated citric acid.

3,652,397
PREPARATION OF PHOSPHATIDES

Hermann Pardun, Cleves, Germany, assignor to Lever Brothers Company, New York, N.Y.

Filed Jan. 8, 1970, Ser. No. 1,559

Claims priority, application Germany, Jan. 9, 1969, P 19 00 959.7

Int. Cl. C12b *1/00*

U.S. Cl. 195—30 **6 Claims**

Modified phosphatides of improved emulsifying power and suitable for use as anti-spattering agents in margarine are obtained by the partial hydrolysis of a vegetable phosphatide with an enzyme preparation containing lipase and phospholipase A until at least 2 percent and less than 15 percent of lysophosphatides are formed, and removal of free fatty acids by solvent extraction.

3,652,398
PRODUCTION OF CYCLODEXTRIN FROM GRANULAR MODIFIED STARCHES

Frederick C. Armbruster, La Grange, and Mukhtar Abdullah, Westmon, both of Ill., assignors to CPC International Inc.

Filed Dec. 20, 1968, Ser. No. 785,776

Int. Cl. C12b *1/00*

U.S. Cl. 195—31 R **14 Claims**

A process is described for the production of cyclodextrin which comprises: providing a water solution of a gelatinized granular modified starch; subjecting said solution to the action of cyclodextrin transglycosylase enzyme in the presence of a chemical selected from the group consisting of chemicals which will form a complex with cyclodextrin and mixtures thereof; and recovering a product containing cyclodextrin.

3,652,399

ALKALI PROTEASE

Masao Isono, Nishinomiya, Hyogo; Katsumi Tomoda, Toyonaka; Kouichi Miyata, Takatsuki; Kazutaka Maejima, Hyogo, and Keisuke Tsubaki, Suita, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 795,951, Feb. 3, 1969. This application Apr. 30, 1969, Ser. No. 820,485

Int. Cl. C12d *13/10*

U.S. Cl. 195—62 **2 Claims**

Alkaline protease is produced by cultivating an alkaline protease-producing micro-organism from the genus *Fusarium* or *Giberella* in a proper growth supporting medium and the alkaline protease is recovered from the medium. The alkaline protease degrades protein under conditions of high pH and thus is useful in the formulation of detergent and other cleanser compositions.

3,652,400

PROCESS FOR THE PREPARATION OF AMYLASE

Jiro Sawada; Tetsuo Misaki; Masao Okabe; Hajime Yasui; Kazunori Hanada, and Tadayasu Okazaki, all of Tokyo, Japan, assignors to Taisho Pharmaceutical Ltd., Tokyo, Japan

Filed Mar. 4, 1966, Ser. No. 531,816

Claims priority, application Japan, Mar. 4, 1965, 40/12114

Int. Cl. C12d *13/10*

U.S. Cl. 195—66 R **8 Claims**

Acid-active and acid-stable amylase having superior amylolytic activity under acidic conditions is obtained by culturing an amylase-producing micro-organism of the Paecilomyces subglobosum group in a nutrient medium therefor.

3,652,403

METHOD AND APPARATUS FOR THE EVACUATION OF COKE FROM A FURNACE CHAMBER

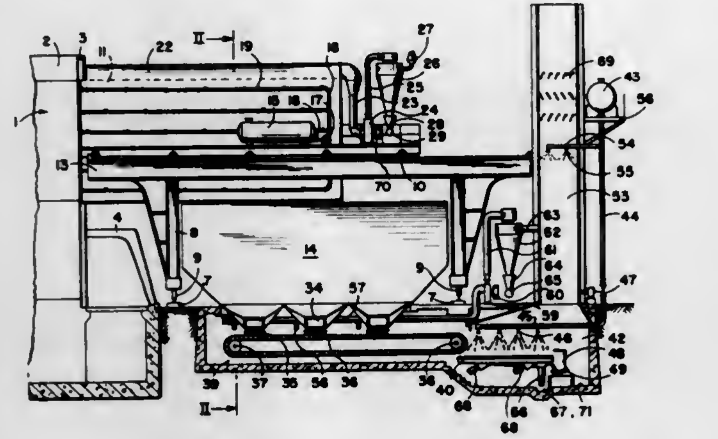
Johannes Knappstein, and Josef Stratmann, both of Recklinghausen, Germany, assignors to Firma Carl Still, Recklinghausen, Germany

Filed Nov. 28, 1969, Ser. No. 880,976

Claims priority, application Germany, Dec. 3, 1968, P 18 12 383.6; June 6, 1969, P 19 28 866.5

Int. Cl. C10b *39/04, 33/00*

U.S. Cl. 201—39 **19 Claims**



A method and apparatus for the evacuation of coke from a furnace chamber and for the wet quenching of the coke includes a coke box which is mounted for movement toward and away from the horizontal coking furnace. The coke box may be moved directly adjacent the furnace battery on a track which can place the box directly in front of the door frames of the furnace chambers. The coke box is made substantially to the dimensions of the coking mass to be received and it includes a bottom closure flap which may be opened

ERRATA

For Classes 202—216 thru 208—321 see:
Patent Nos. 3,652,426 thru 3,652,452

3,652,405

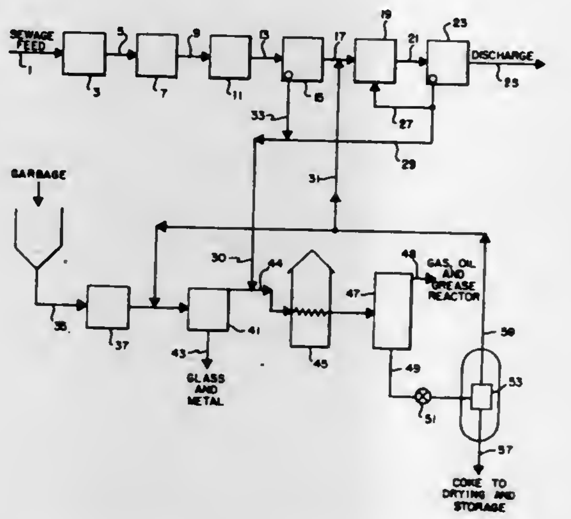
SEWAGE AND MUNICIPAL REFUSE LIQUID PHASE COKING PROCESS

Howard V. Hess, Glenham; Raymond F. Wilson, and Edward L. Cole, both of Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed June 15, 1970, Ser. No. 46,059

Int. Cl. C02c *3/00*

U.S. Cl. 210—10 **6 Claims**



A combination process for treating both municipal refuse and sewage includes the steps of shredding the solid refuse and mixing the shredded material thus obtained with a recy-

3,652,407

DECOLORIZATION OF KRAFT WOOD PULP BLEACH EFFLUENTS

Joannis Paleos, Lansdale, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 28, 1969, Ser. No. 871,975

Int. Cl. B01d *15/04*

U.S. Cl. 210—27 **12 Claims**

Pulp mill bleach effluents are decolorized, after a suitable lime treatment, by acidifying to a pH of about 1–5 and thereafter passing the acidified effluent through a bed or mass of a macroreticular adsorbent resin. The macroreticular adsorbent resin may be aromatic or aliphatic in character and has a porosity of at least 10 percent and a specific surface area of at least 10 square meters per gram.

3,652,408

AN ANTIFRICTION MATERIAL

Vasily Vladimirovich Korshak, ulitsa Gubkina, 4, kv. 81; Irina Alexandrovna Gribova, ulitsa Vavilova, 10, korpus 20, kv. 31; Alexandr Petrovich Krasnov, prospekt Kalinina, 31, kv. 28; Mikhail Mikhailovich Teplyakov, Seleznevskaya ulitsa, 13, kv. 3; Hoza Dmitrievna Fedorova, st. Petrovshoe-Razumovskoe, 1, and Alla Nikolaevna Chumaevskaya, Leninsky prospekt, 101, korpus 163, kv. 86, all of Moscow, U.S.S.R.

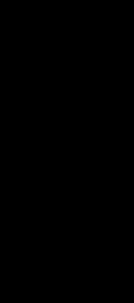
Filed Jan. 11, 1968, Ser. No. 697,024

Int. Cl. C10m *5/26, 5/22*

U.S. Cl. 252—12 **2 Claims**

Antifriction materials comprising 10–50 percent of a polybenzimidazol and 90–50 percent of a filler such as molybdenum disulfide are made by mixing the above materials in powdered form and pressing the mixture at 350–550°

These lasers, facing each other on a common optic axis, emit light beams for producing a plasma. They are focused on two deuterium or deuterium-tritium containing concave or flat targets after having passed two objectives with hollow cones, which impart a tubular cross section to the light beams. Also the lasers themselves can be designed to emit tubular light beams.



The concave or flat targets having a surface roughly corresponding to the area of the focal point are disposed perpendicularly to the common optic axis of the laser system and symmetrically with respect to the center plane.

Each target is situated on that side of said plane remote from its associated objective, which has a numerical aperture of nearly 1.

3,652,394
DEVICE FOR CONTROLLING THE REACTIVITY OF NUCLEAR REACTORS

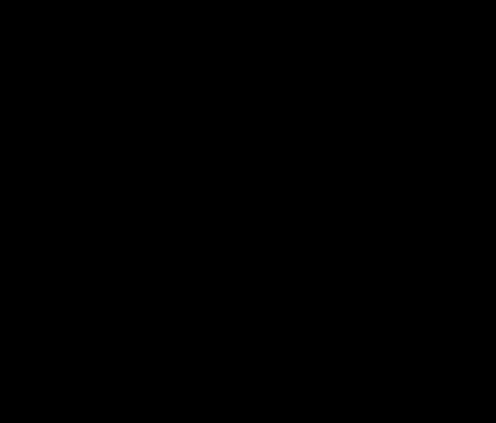
Wolfgang Braun, Buckenhof, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed May 7, 1970, Ser. No. 35,312

Claims priority, application Germany, May 23, 1969, P 19 26 344.6

Int. Cl. G21c *7/08, 7/22*

U.S. Cl. 176—86 R **15 Claims**



Device for controlling the reactivity of a nuclear reactor cooled by light water and including a reactor core formed of fuel elements, includes a tube system passing through the reactor core and traversible by a water-soluble neutron absorber of adjustable concentration, separated by the tube system from light water coolant in the reactor core, the tube system including a plurality of substantially vertically extending fingerlike tubes always fully inserted in the fuel elements; a spiderlike holder holding the fingerlike tubes together at the upper ends thereof and serving as distributor for the neutron absorber to the fingerlike tubes, and a holder rod extending from the spiderlike distributor and serving as a central supply line for the neutron absorber to the spiderlike distributor.

3,652,395
METHOD FOR THE PRODUCTION OF 5′-NUCLEOTIDES

Yoshio Nakao, Ibaraki, and Mitsuzo Kuno, Suita, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 23, 1966, Ser. No. 604,199

Claims priority, application Japan, Dec. 25, 1965, 40/80258

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 N **12 Claims**

5′-nucleotides are produced by culturing hydrocarbons-assimilating micro-organisms belonging to the genera *Corynebacterium*, *Brevibacterium*, *Pseudomonas* or *Arthrobacter* in a culture medium containing hydrocarbons as carbon sources and subsequently suspending the resultant grown micro-organisms in alkaline aqueous solution of a pH in the range of 8.0 to 10.5.

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Katsunobu Tanaka, and Kazuo Kimura, both of Tokyo-to, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha (Kyowa Hakko Kogyo Co., Ltd.), Tokyo, Japan

Filed July 18, 1968, Ser. No. 745,713

Claims priority, application Japan, July 21, 1967, 42/46586

Int. Cl. C12b *1/00*

U.S. Cl. 195—28 **5 Claims**

A process for preparing citric acid by culturing in a culture medium containing a hydrocarbon as the principal carbon source, a fungus of the genus Penicillium having the ability to metabolize the hydrocarbon to produce citric acid as a metabolite and recovering the accumulated citric acid.

3,652,397
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Hermann Pardun, Cleves, Germany, assignor to Lever Brothers Company, New York, N.Y.

Filed Jan. 8, 1970, Ser. No. 1,559

Claims priority, application Germany, Jan. 9, 1969, P 19 00 959.7

Int. Cl. C12b *1/00*

U.S. Cl. 195—30 **6 Claims**

Modified phosphatides of improved emulsifying power and suitable for use as anti-spattering agents in margarine are obtained by the partial hydrolysis of a vegetable phosphatide with an enzyme preparation containing lipase and phospholipase A until at least 2 percent and less than 15 percent of lysophosphatides are formed, and removal of free fatty acids by solvent extraction.

3,652,398
PRODUCTION OF CYCLODEXTRIN FROM GRANULAR MODIFIED STARCHES

Frederick C. Armbruster, La Grange, and Mukhtar Abdullah, Westmon, both of Ill., assignors to CPC International Inc.

Filed Dec. 20, 1968, Ser. No. 785,776

Int. Cl. C12b *1/00*

U.S. Cl. 195—31 R **14 Claims**

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3,652,399

ALKALI PROTEASE

Masao Isono, Nishinomiya, Hyogo; Katsumi Tomoda, Toyonaka; Kouichi Miyata, Takatsuki; Kazutaka Maejima, Hyogo, and Keisuke Tsubaki, Suita, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 795,951, Feb. 3, 1969. This application Apr. 30, 1969, Ser. No. 820,485

Int. Cl. C12d *13/10*

U.S. Cl. 195—62 **2 Claims**

Alkaline protease is produced by cultivating an alkaline protease-producing micro-organism from the genus *Fusarium* or *Giberella* in a proper growth supporting medium and the alkaline protease is recovered from the medium. The alkaline protease degrades protein under conditions of high pH and thus is useful in the formulation of detergent and other cleanser compositions.

3,652,400

PROCESS FOR THE PREPARATION OF AMYLASE

Jiro Sawada; Tetsuo Misaki; Masao Okabe; Hajime Yasui; Kazunori Hanada, and Tadayasu Okazaki, all of Tokyo, Japan, assignors to Taisho Pharmaceutical Ltd., Tokyo, Japan

Filed Mar. 4, 1966, Ser. No. 531,816

Claims priority, application Japan, Mar. 4, 1965, 40/12114

Int. Cl. C12d *13/10*

U.S. Cl. 195—66 R **8 Claims**

Acid-active and acid-stable amylase having superior amylolytic activity under acidic conditions is obtained by culturing an amylase-producing micro-organism of the Paecilomyces subglobosum group in a nutrient medium therefor.

3,652,401

PURIFICATION OF DEXTRANASE USING IRON SALTS

Louis Chaiet, Springfield, and August J. Kempf, Stanton Island, both of N.Y., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 7, 1968, Ser. No. 774,215

Int. Cl. C07g *7/02*

U.S. Cl. 195—66 R **4 Claims**

Ferric chloride is added to crude dextranase containing solutions to selectively form a complex with the dextranase by adjustment of the pH, to thereby recover purified dextranase.

3,652,402

ASPARAGINASE HAVING ANTI-TUMOR ACTIVITY AND PROCESS FOR PREPARING THE SAME

Ichiro Chibata, Suita-shi; Tetsuya Tosa, Kyoto-shi; Ryujiro Sano, Takatsuki-shi, and Katsuko Ando, Toyonaka-shi, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Aug. 27, 1969, Ser. No. 853,496

Claims priority, application Japan, Aug. 31, 1968, 43/62674; Nov. 9, 1968, 43/82001

Int. Cl. C12d *13/10*

U.S. Cl. 195—66 A **9 Claims**

Process for preparing asparaginase having a strong anti-tumor activity which comprises cultivating an asparaginase-producing micro-organism belonging to Achromobacter, Alcaligenes, Micrococcus, Proteus or Bacterium genera in a nutrient medium under aerobic conditions and recovering the accumulated asparaginase from the fermentation broth.

3,652,403

METHOD AND APPARATUS FOR THE EVACUATION OF COKE FROM A FURNACE CHAMBER

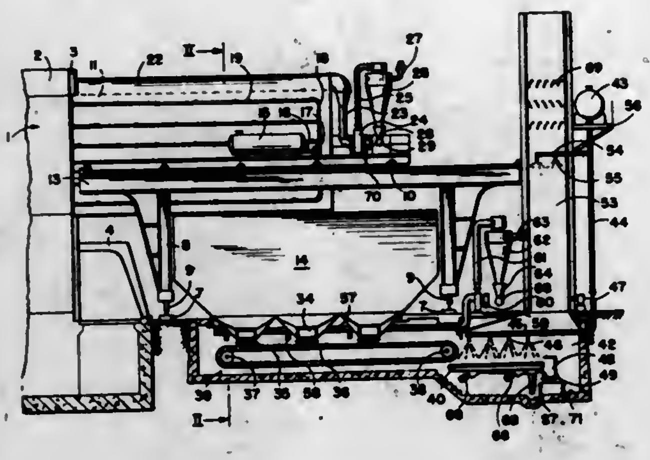
Johannes Knappstein, and Josef Stratmann, both of Recklinghausen, Germany, assignors to Firma Carl Still, Recklinghausen, Germany

Filed Nov. 28, 1969, Ser. No. 880,976

Claims priority, application Germany, Dec. 3, 1968, P 18 12 383.6; June 6, 1969, P 19 28 866.5

Int. Cl. C10b *39/04, 33/00*

U.S. Cl. 201—39 **19 Claims**



A method and apparatus for the evacuation of coke from a furnace chamber and for the wet quenching of the coke includes a coke box which is mounted for movement toward and away from the horizontal coking furnace. The coke box may be moved directly adjacent the furnace battery on a track which can place the box directly in front of the door frames of the furnace chambers. The coke box is made substantially to the dimensions of the coking mass to be received and it includes a bottom closure flap which may be opened after the coke box is moved away from the furnace and over a coke bin which also has a closable upper opening which is substantially of the plan dimensions of the coke box. The coke bin has a discharge arranged in a coke discharge flue at the bottom of the coke bin and means are provided to pass the coke into a quenching chamber which is provided with a chimney for advantageously includes spray means.

3,652,404

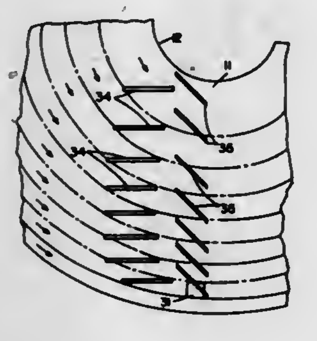
DEVOLITILIZING PROCESS USING RABBLES AND FORMING DEVICES FOR CONVEYING MATERIALS

Robert E. Schilson, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Dec. 29, 1969, Ser. No. 888,698

Int. Cl. C10b *7/02, 47/20*

U.S. Cl. 201—33 **6 Claims**



In a rotary hearth furnace utilizing rabbles to move the coke in windrows across the hearth of the furnace, a row-leveller can follow at least one of the rabbles to level off the peaks of the windrows, thus reducing maximum bed thickness and increasing heat transfer into the bed of material.

ERRATA

For Classes 202—216 thru 208—321 see:
Patent Nos. 3,652,426 thru 3,652,452

3,652,405

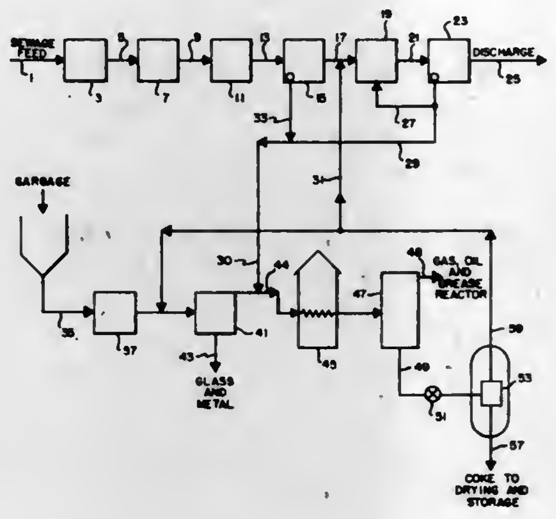
SEWAGE AND MUNICIPAL REFUSE LIQUID PHASE COKING PROCESS

Howard V. Hess, Glenham; Raymond F. Wilson, and Edward L. Cole, both of Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed June 15, 1970, Ser. No. 46,059

Int. Cl. C02c *3/00*

U.S. Cl. 210—10 **6 Claims**



A combination process for treating both municipal refuse and sewage includes the steps of shredding the solid refuse and mixing the shredded material thus obtained with a recycle stream of water resulting from a subsequent coking step to form a slurry; removing noncombustible materials from this slurry; mixing the slurry with sewage sludge and coking the resulting mixture under a pressure sufficient to prevent the vaporization of water, thereby producing grease, clean water and clean coke.

3,652,406

PROCESS FOR SEWAGE TREATMENT

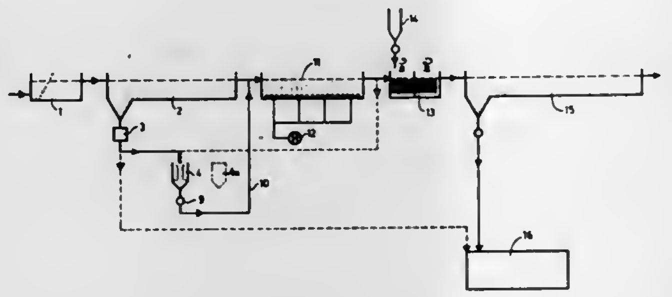
Nils K. G. Westberg, Lidingo, Sweden, assignor to Aktiebolaget Vallenbyggnadsbyran, Stockholm, Sweden

Filed Apr. 20, 1970, Ser. No. 30,146

Claims priority, application Sweden, Apr. 23, 1969, 5781/69

Int. Cl. C02c *1/02*

U.S. Cl. 210—11 **3 Claims**



A process for biological treatment of sewage is disclosed, characterized by the addition of a high-activated sludge containing a culture of heterotrophical bacteria to the sewage as an inoculum, before or after the inlet of a biological oxidizing means. The high-activated sludge is produced of at least a portion of the separated primary sludge by aeration in a separate cultivating basin.

3,652,407

DECOLORIZATION OF KRAFT WOOD PULP BLEACH EFFLUENTS

Joannis Paleos, Lansdale, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 28, 1969, Ser. No. 871,975

Int. Cl. B01d *15/04*

U.S. Cl. 210—27 **12 Claims**

Pulp mill bleach effluents are decolorized, after a suitable lime treatment, by acidifying to a pH of about 1–5 and thereafter passing the acidified effluent through a bed or mass of a macroreticular adsorbent resin. The macroreticular adsorbent resin may be aromatic or aliphatic in character and has a porosity of at least 10 percent and a specific surface area of at least 10 square meters per gram.

3,652,408

AN ANTIFRICTION MATERIAL

Vasily Vladimirovich Korshak, ulitsa Gubkina, 4, kv. 81; Irina Alexandrovna Gribova, ulitsa Vavilova, 10, korpus 20, kv. 31; Alexandr Petrovich Krasnov, prospekt Kalinina, 31, kv. 28; Mikhail Mikhailovich Teplyakov, Seleznevskaya ulitsa, 13, kv. 3; Hoza Dmitrievna Fedorova, st. Petrovshoe-Razumovskoe, 1, and Alla Nikolaevna Chumaevskaya, Leninsky prospekt, 101, korpus 163, kv. 86, all of Moscow, U.S.S.R.

Filed Jan. 11, 1968, Ser. No. 697,024

Int. Cl. C10m *5/26, 5/22*

U.S. Cl. 252—12 **2 Claims**

Antifriction materials comprising 10–50 percent of a polybenzimidazol and 90–50 percent of a filler such as molybdenum disulfide are made by mixing the above materials in powdered form and pressing the mixture at 350–550° C. and a pressure of 800–1,000 kg./cm^2.

3,652,409

BEARING COMPOSITIONS

Edward J. Mack, and Harris T. Childs, Jr., both of Bristol, R.I., assignors to Dixon Corporation, Bristol, R.I.

Continuation-in-part of application Ser. No. 669,674, Sept. 22, 1967, now abandoned. This application Sept. 12, 1968, Ser. No. 759,527

Int. Cl. C10m *5/20*

U.S. Cl. 252—12 **23 Claims**

In accordance with this invention there is obtained a polyimide-polytetrafluoroethylene resin composition which can be fabricated into bearings having unusually low frictional resistance.

3,652,410

MULTIFUNCTIONAL LUBRICANT ADDITIVE COMPOSITIONS AND LUBRICATING OILS CONTAINING

Ralph Hollinghurst, Rayleigh, England, and Andrew G. Papay, Gloucester, N.J., assignors to Mobil Oil Corporation

Filed Apr. 30, 1969, Ser. No. 820,630

Claims priority, application Great Britain, May 24, 1968, 24,918/68

Int. Cl. C10m *1/48*

U.S. Cl. 252—32.7 E **12 Claims**

Balanced oil additive compositions can be used in the engine, gears and elsewhere of mobile equipment. Appropriate concentrations of basic detergents, dispersants, antioxidants, extreme pressure agents and friction modifiers are balanced.

3,652,411

POLYGLYCOL BASE LUBRICANT

Axel Klaus Commichau, Hamburg-Rissen, Germany, assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 4, 1969, Ser. No. 882,268

Int. Cl. C10m *1/34*

U.S. Cl. 252—34.7 **10 Claims**

A polyglycol base lubricant is provided containing, in minor proportion, as a stabilizer, a mixture comprising: a substituted amine, an aliphatically substituted phenol, an organic phosphate, a polyhydroxyquinone, a benzotriazole, an amine salt and a substituted organic phosphite.

3,652,412

PIEZOELECTRIC CERAMIC COMPOSITIONS

Masamitsu Nishida, and Hiromu Ouchi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Aug. 28, 1968, Ser. No. 756,013

Claims priority, application Japan, Sept. 12, 1967, 42/58957

Int. Cl. C04b *35/46, 35/48*

U.S. Cl. 252—62.9 **2 Claims**

Ceramic materials within particular ranges of the ternary system $Pb(Li_{1/4}Nb_{3/4})O_3$-$PbTiO_3$-$PbZrO_3$ in solid solution form exhibit high dielectric constant along with high planar coupling coefficient, and are useful in electromechanical transducers. The ceramic materials are those within the area A, B, C, D, E and F and the area G, H, I, J and K of FIG. 2.

3,652,413

PIEZOELECTRIC CERAMIC COMPOSITIONS

Hiromu Ouchi, and Masamitsu Nishida, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Sept. 4, 1968, Ser. No. 757,338

Claims priority, application Japan, Oct. 27, 1967, 42/69770

Int. Cl. C04b *35/46, 35/48*

U.S. Cl. 252—62.9 **2 Claims**

Ceramic compositions within the polygonal area defined by the formulas

$$Pb(Mn_{1/3}Ta_{2/3})_{0.030}Ti_{0.470}Zr_{0.500}O_3$$

$$Pb(Mn_{1/3}Ta_{2/3})_{0.250}Ti_{0.500}Zr_{0.250}O_3$$

$$Pb(Mn_{1/3}Ta_{2/3})_{0.375}Ti_{0.375}Zr_{0.250}O_3$$

$$Pb(Mn_{1/3}Ta_{2/3})_{0.250}Ti_{0.125}Zr_{0.625}O_3$$

are particularly useful for making transducer elements.

The composition

$$Pb(Mn_{1/3}Ta_{2/3})_{0.250}Ti_{0.430}Zr_{0.320}O_3$$

shows a high resonant frequency stability with temperatures within the range from −20° to 80° C.

3,652,414

ANTI-SEIZE LUBRICATING COMPOUND

Frank E. Bergeron, deceased, late of 4818 Fairlawn Drive, La Canada, Calif. (by Katharine S. Bergeron, executrix)

Filed Jan. 6, 1969, Ser. No. 789,425

Int. Cl. C10m *5/22*

U.S. Cl. 252—19 **12 Claims**

A lubricating and sealing compound for sealing pipe threads and the like comprising: (1) 4 percent to 92.5 percent by weight of a base lubricating agent and, preferably, of a base grease produced using a soap from the group of aluminum, barium, calcium complex, lithium and sodium soaps; (2) 2 to 20 by weight of a fish oil-based lead soap; (3) 0.5 to 10 percent by weight of a sulfur modified sperm oil such as sulfurized or sulfonated sperm oil; and (4) 5 to 90 percent by weight of solids. The solids comprise either copper alone or, preferably, copper in combination with; (5) 5 to 30 percent by weight of this compound of powdered lead; and (6) 5 to 30 percent weight of amorphous graphite.

3,652,415

LUBRICATING COMPOUND

Frank E. Bergeron, deceased, 4818 Fairlawn Drive, late of La Canada, Calif. (by Katharine S. Bergeron, executrix)

Filed Jan. 6, 1969, Ser. No. 789,424

Int. Cl. C10m *5/22*

U.S. Cl. 252—36 **10 Claims**

A lubricating compound for use in extreme pressure environments comprising, in one embodiment, a major amount of a base lubricating agent and a minor amount, but at least about 1 percent by weight, of a fish oil-based lead soap. The base lubricating agent includes calcium complex grease, barium grease, aluminum grease, sodium grease and lithium grease. The fish oil in the lead soap includes tuna oil, herring oil, menhaden oil and sardine oil.

3,652,416

OXIDE MAGNETIC MATERIALS

Izuru Sugano; Tsuneo Akashi; Tetsujin Matsubara; Yoshihiro Kenmoku, and Taneaki Okuda, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Oct. 29, 1969, Ser. No. 872,094

Claims priority, application Japan, Oct. 30, 1968, 43/79540

Int. Cl. C04b *35/38*

U.S. Cl. 252—62.59 **3 Claims**

Manganese-zinc ferrites are provided consisting essentially of manganese oxide, zinc oxide and iron oxide and small but effective amount of stannic oxide and lithium oxide ranging up to about 3.2 percent by weight of stannic acid and up to about 0.125 percent by weight of lithium oxide.

3,652,417

STABILIZATION OF ALKALI METAL PERMANGANATE IN ALKALINE SOLUTION

Hans S. Posselt, La Salle, Ill., assignor to Carus Corporation

Filed Mar. 1, 1968, Ser. No. 709,816

Int. Cl. C02b *5/02;* **C11d** *1/28*

U.S. Cl. 252—80 **7 Claims**

Stabilization of alkali metal permanganate against deoxidative, self-decomposition in aqueous, alkaline solution by preventing ultrafine (colloidal) MnO_2 dispersed in said solution from agglomerating by providing therein small amounts of anionic anti-coagulating agent for dispersed MnO_2, preferably perfluorocarbon surfactant.

3,652,418

TRACTIVE FLUID COMPOSITIONS

James C. Wygant, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed May 21, 1970, Ser. No. 39,529

Int. Cl. C09k *3/00*

U.S. Cl. 252—73 **6 Claims**

A composition consisting essentially of a mixture of 30–60 percent hydrogenated dicumyl, 30–60 percent tercyclohexyl and 5–20 percent of dicyclohexyl or alkyl dicyclohexyl. The properties of this fluid composition make it particularly well suited for use as a tractant in tractive drive apparatus intended for low temperature service.

3,652,419

ANTISTATIC FIBER LUBRICANT

Gerhart Karg, Pompton Lakes, N.J., assignor to Witco Chemical Corporation, New York, N.Y.

Filed Mar. 6, 1968, Ser. No. 710,761

Int. Cl. D06m *13/34, 13/26*

U.S. Cl. 252—8.8 **2 Claims**

An emulsifiable antistatic fiber lubricant composition, which exhibits excellent long term emulsion stability, comprising a mixture of a mineral oil, a methyl ester of a long chain fatty acid, a neutralized phosphoric acid ester of an ethoxylated alkyl phenol or alkyl alcohol, a polyoxyethylene sorbitan tristearate and fatty alkanolamide.

3,652,420

CLEANSER COMPOSITONS FOR ARTIFICIAL DENTURES AND METHODS OF PREPARING THE SAME

William H. Hill, Stamford, Conn., assignor to Peter, Strong & Company, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 385,029, July 24, 1964, now abandoned. This application May 27, 1968, Ser. No. 732,086

Int. Cl. C11d *7/54*

U.S. Cl. 252—101 **14 Claims**

A glass-clear gel medium is provided, in which medium free acid is distributed and which is highly effective in denture cleansing for the removal of tartar and other oral deposits. Processes are employable in producing an acidic gel in which various combination of ingredients such as acids, solvents, surfactants, and gelling agents are usable.

3,652,421

N-TYPE LEAD TELLURIDE

Louis F. Kendall, Jr., Scotia, N.Y., and James H. Bredt, Garrett Park, Md., assignors to General Electric Company

Filed Aug. 1, 1968, Ser. No. 749,347

Int. Cl. H01v *1/18*

U.S. Cl. 252—62.3 **5 Claims**

It is herein disclosed that the use of small amounts of scandium, yttrium, and the metals of the lanthanide series of the rare earths are effective N-type dopants for lead telluride.

3,652,422

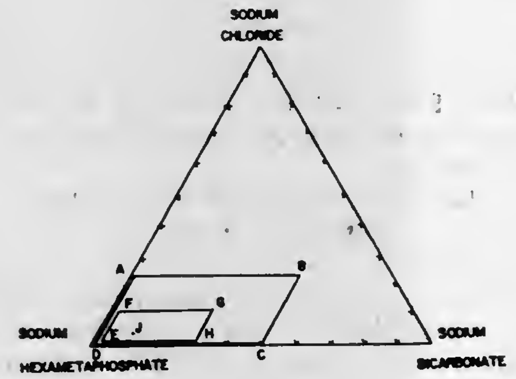
CLEANER FOR WIGS

Agnes M. Hughes, 825 Michelle Drive, Everman, Tex.

Filed Aug. 5, 1970, Ser. No. 61,176

Int. Cl. C11d *7/12, 7/16;* **D06l** *1/12*

U.S. Cl. 252—135 **9 Claims**



A dry cleaner, and an aqueous wig cleaning solution formed by adding the cleaner to water, characterized by critical concentrations; sufficient to effect detergentless cleaning and less than that adversely affecting the hairlike fiber and backing materials of the wig; of sodium chloride, sodium bicarbonate, and sodium hexametaphosphate. No other ingredients are necessary to effect a surprisingly good cleaning solution that is also remarkably and surprisingly effective in restoring and maintaining excellent quality and body in the wig materials.

3,652,423

HUMIDIFIER PREPARATORY SOLUTION OF FORMALDEHYDE, POLYOXYPROPYLENE GLYCOL-ETHYLENE OXIDE CONDENSATION PRODUCT AND WATER AND METHOD OF USE

Eugene C. Roberts, 1 Sunnyside Drive, Belleville, Ill.

Filed Oct. 1, 1969, Ser. No. 862,964

Int. Cl. C02b *5/06*

U.S. Cl. 252—180 **7 Claims**

The means for humidifying a vapor includes a humidifier having a reservoir and a wick therein. A preparatory solution adapted to be added to water within the reservoir contains between 69 percent and 94 percent by weight of water approximately 1 percent by weight of a 37 percent solution of formaldehyde, and between 5 percent and 30 percent by weight of a condensation product selected from the group of polyoxypropylene glycols condensed with ethylene oxide to form a molecule consisting of (A) a polyoxypropylene portion and (B) a polyoxyethylene portion. The ratio of the molecular weight of (A) to the percentage by weight of (B) in the total molecule is one from the group consisting of 1,501–1,800 : 80, 1,501–1,800 : 40; 1,501–1,800 : 20, and 2,101–2,500 : 80.

3,652,424

STABLE TOLYLENE DIISOCYANATE COMPOSITIONS

Roy Jackson, and John Francis Wehner, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 29, 1969, Ser. No. 888,925

Int. Cl. C07c *119/04;* **C07d** *55/38;* **C08g** *22/18*

U.S. Cl. 252—182 **12 Claims**

A process for preparing a tolylene diisocyanate (TDI) composition containing about 5–19 percent by weight nominal TDI trimer and having improved stability by heating a TDI composition containing about 25–40 percent nominal TDI trimer and an amount of TDI dimer such that the dimer/trimer ratio is greater than about 0.14 at a temperature of at least about 130° C. until the dimer/trimer ratio is less than about 0.14 and diluting the resulting composition with a monomeric TDI composition to achieve a nominal trimer concentration of about 5–19 percent.

3,652,425

PROCESS FOR THE PREPARATION OF HETEROPOLY ACID COMPLEX COMPOUNDS OF METAPHOSPHORIC METASILIC ACID, METAPHOSPHORIC ACID AND PHOSPHOROUS PENTOXIDE

Harold W. Wilson, El Paso, Tex., assignor to Wilson Laboratories, Inc.

Filed Feb. 18, 1969, Ser. No. 800,292

Int. Cl. B01d *17/00;* **C09k** *3/00*

U.S. Cl. 252—194 **24 Claims**

A process for the production and recovery of oxygen containing compounds of phosphorous or silicon from starting materials comprising orthophosphoric acid and amorphous silica or its hydrates by adding siliceous material to an aqueous solution of orthophosphoric acid and thereafter heating the resulting product to dissolve the added silica and then to effect volatilization and boiling off of at least some of the water of solution and combined water of hydration of said product and continuing the heating to obtain a dry solid product which is at least one oxygen containing compound of phosphorous and/or silicon.

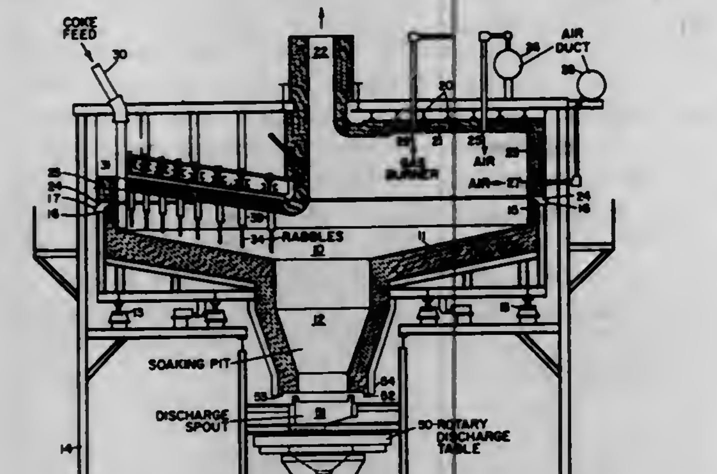
3,652,426
PROCESS AND APPARATUS FOR REMOVAL OF VOLATILE MATTER BY ELECTRICAL RESISTANCE HEATING

Thaddeus J. Oleszko, Neuotting, Germany, assignor to Marathon Oil Company, Findlay, Ohio

Filed Oct. 6, 1969, Ser. No. 866,790

Int. Cl. C10b *1/00, 7/20;* **B01d** *3/00;* **H05b** *11/00;* **C10b** *19/00;* **H05b** *3/60*

U.S. Cl. 202—216 **13 Claims**



Volatile matter can be removed from material containing volatile matter removable by heat, e.g., coal and coke by delivering the material to a hearth so as to form a bed, touching the bed with downwardly projecting members disposed above the hearth, e.g., rabbles, moving the hearth and rabbles in relation to each other so as to cause movement of said material from the point of delivery of said material onto said hearth toward point of exit from said hearth, imposing an electrical potential between a point on the projecting members and a spaced point in the bed of material so as to cause heating by electrical resistance and thus remove at least a portion of the volatile matter. Preferably, the volatile matter is oxidizable and can be oxidized within a chamber enclosing the hearth so as to deliver additional heat to the bed causing additional devolatilization.

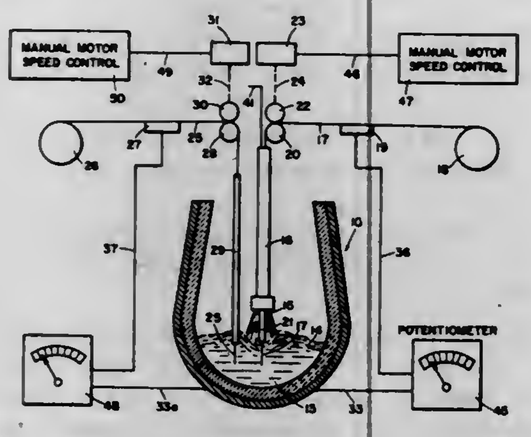
3,652,427
METHOD FOR MONITORING THE OXYGEN AND CARBON CONTENTS IN A MOLTEN METAL

Harold W. Flood, Acton; George H. Hall, Westford, and Herman P. Miessner, Winchester, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Dec. 22, 1969, Ser. No. 886,819

Int. Cl. G01n *27/28*

U.S. Cl. 204—1 T **4 Claims**



Method and apparatus for continuously measuring the oxygen and carbon contents of a molten metal, particularly of iron in a BOF furnace. A wire containing as a component a metal which is a getter for oxygen continuously fed into the melt. A concentration cell is established and the EMF developed is used as a measure of oxygen content. Carbon content is a function of the reciprocal of the oxygen and is calculated therefrom. Automatic control over the oxygen feed results in automatic control over the carbon content. When the EMF of the cell is temperature dependent, means are incorporated for simultaneously measuring the melt temperature.

3,652,428
METHOD OF ELECTROPLATING A CHAIN

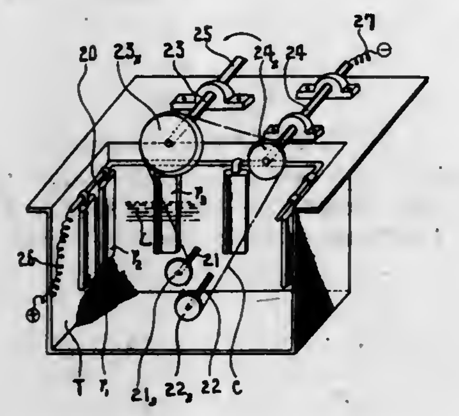
Kumakichi Araya, No. 2, Doishaji Seki-machi, Kaga-shi, Japan

Filed Apr. 26, 1968, Ser. No. 724,562

Claims priority, application Japan, Sept. 25, 1967, 42/61239; Sept. 7, 1967, 42/57000

Int. Cl. C23b *5/58, 5/48;* **B01k** *3/00*

U.S. Cl. 204—28 **4 Claims**



A method of electroplating a chain comprising electroplating the chain while making the same pass over some sprockets arranged in a plating solution. The chain may be endless for being recirculated in and out of the plating solution. The sprocket arranged in the plating solution may have an inclined shaft. A pair of the sprockets in the plating solution may have compensatingly inclined shafts for completely plating constituents of the chain along clearances formed between these constituents. Arrangements for carrying out the method are also disclosed.

3,652,429
SEALING OF COLORED ANODIZED ALUMINUM

Emile J. Deltombe, Reading, Pa., assignor to Frye Industries, Inc., New York, N.Y.

Filed Sept. 8, 1967, Ser. No. 666,487

Int. Cl. C23f *5/04*

U.S. Cl. 204—35 N **5 Claims**

A process for treating anodized aluminum colored with a dye which is insoluble in water comprising sealing the colored anodized surface in a strong solution of a neutral salt in water, which solution is held at or near its boiling point. Advantageously sodium sulfate is used as the neutral salt.

3,652,430
ELECTROLYTIC CONDENSATION OF CARBOXYLIC ACIDS

Fritz Beck, Ludwigshafen; Walter Himmele, Walldorf; Juergen Haufe, Lambsheim, and Andreas Brunold, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Nov. 8, 1968, Ser. No. 774,415

Claims priority, application Germany, Nov. 11, 1967, P 16 43 693.4

Int. Cl. B01d *3/00*

U.S. Cl. 204—72 **7 Claims**

Process for the electrochemical condensation of carboxylic acids by the electrolysis of monocarboxylic acids, half esters of dicarboxylic acids or aminocarboxylic acids in which current densities of more than 10 amp./dm.^{2} on vibrating electrode pairs are used, and in which the degree of neutralization of the carboxylic acids is kept below 10 percent, said process providing high space-time yields and a reaction product which can be worked up without difficulty.

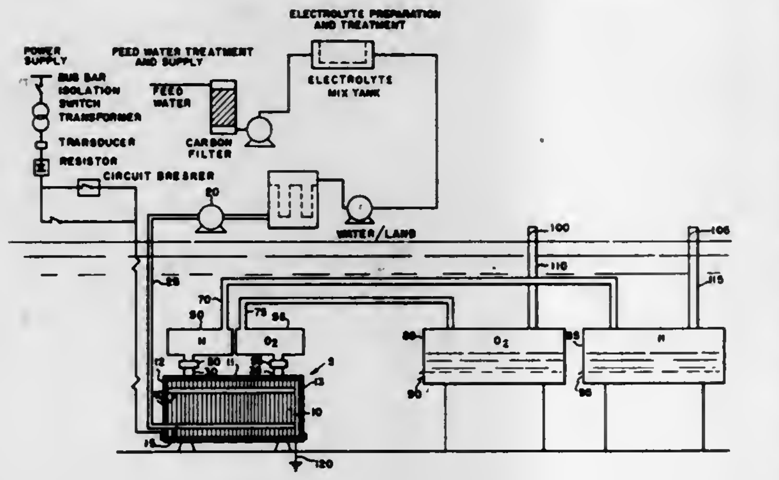
3,652,431
METHOD OF OPERATING AN ELECTROLYSIS CELL FOR THE PRODUCTION OF GASES UNDER HYDROSTATIC PRESSURE

Julian Louis Reynolds, 5511 Cary Street Road, Richmond, Va.

Continuation-in-part of application Ser. No. 503,693, Dec. 23, 1965, now abandoned. This application Mar. 12, 1970, Ser. No. 18,933

Int. Cl. C01b *13/06;* **H01m** *1/00*

U.S. Cl. 204—129 **3 Claims**



A method of carrying out an electrolytic process for producing gases in an electrolyzer comprising at least one electrolytic cell and a containment vessel therefor, said method comprising supplying electric power to said electrolyzer from an external source during operation thereof, subjecting said vessel to an external superatmospheric hydrostatic pressure, continuously charging said electrolyzer with electrolyte under pressure and while operating pressure of the continuous electrolytic system by collecting the produced gases external to said electrolyzer and external hydrostatic pressure against said collected gases generated and being in fluid communication with the interior of said electrolyzer so that said internal and external pressures are approximately the same during said operating.

3,652,432
METHOD FOR PREVENTING CAUSTIC SPRAY IN ELECTROCHEMICAL CLEANING

Isidore Pollack, Westminister, and Charles L. Dohogne, San Pedro, both of Calif., assignors to Purex Corporation, Ltd., Lakewood, Calif.

Filed Oct. 15, 1969, Ser. No. 866,728

Int. Cl. C23b *1/04;* **C03c** *23/00*

U.S. Cl. 204—141 **6 Claims**

Throwing of caustic solution into the air over electrochemical cleaning baths by evolved hydrogen is prevented by addition of trisodium hydroxyethylethylenediamine triacetate to the bath to form a blanket of foam on the bath during electrochemical cleaning operation.

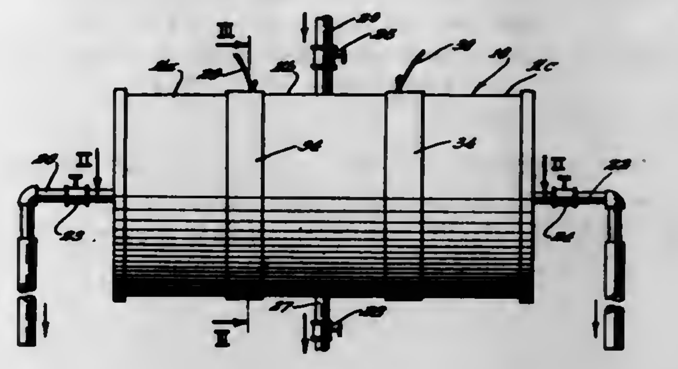
3,652,433
ELECTROLYTIC SOFTENING OF WATER

Ralph Brewster Thompson, Oak Brook, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Oct. 9, 1968, Ser. No. 766,050

Int. Cl. C22d *1/02*

U.S. Cl. 204—152 **4 Claims**



A method of deionizing water having a dissolved solids content consisting largely of relatively insoluble calcium and magnesium salts by passing through the water a unidirectional electric current of sufficient voltage between electrodes immersed in the water to effect ionization thereof and recovering water substantially deionized and of a lesser degree of hardness. The electrolytic system includes a horizontally disposed container, preferably of dielectric structural material, for the feed water, horizontally spaced electrodes in the container between which the feed water is introduced and controlled means for removing substantially deionized water laterally of the electrodes and other controlled means for removing settled solids from below the space between the electrodes. The anode electrode is inert toward electrolytic action, while the cathode electrode need not be inert since under the conditions of operation it is not substantially corroded.

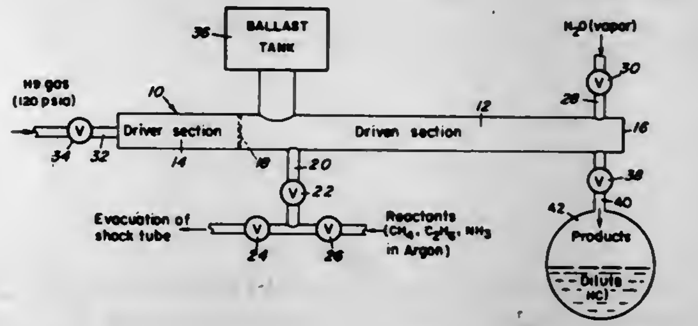
3,652,434
PRESSURE WAVE SYNTHESIS OF AMINOCARBOXYLIC ACIDS

Akiva Bar-Nun, Palo Alto, Calif.; Simon H. Bauer, and Carl Sagan, both of Ithaca, N.Y., assignors to Cornell Research Foundations, Inc., Ithaca, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,619

Int. Cl. B01j *1/12;* **C07c** *99/00, 101/50*

U.S. Cl. 204—158 S **10 Claims**



A homogenous vapor phase method for preparing aminocarboxylic acids by subjecting a gaseous mixture of compounds containing the elements hydrogen, oxygen, carbon and nitrogen (with the latter two in reduced compounds), which are optionally mixed in an inert carrier gas to pressure wave heating and rapid expansion wave cooling. The products from the heating and cooling process are immediately withdrawn from the reaction chamber into a dilute aqueous solution of a mineral acid wherein the aminocarboxylic acids produced from the process are recovered.

3,652,435

PROCESS FOR GRAFT POLYMERIZATION OF POLYMERIZABLE MONOMERS TO POLYETHYLENE TEREPHTHALATE IN PRESENCE OF A CARBON OR SILICON HALIDE

Ichiro Sakurada, Kyoto-shi, Kyoto-fu, and Toshio Okada, Moriguchi-shi, Osaka-fu, both of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Mar. 17, 1969, Ser. No. 807,938

Claims priority, application Japan, Mar. 19, 1968, 43/17842

Int. Cl. C08g *39/10, 51/30;* **B01j** *1/10*

U.S. Cl. 204—159.15 **14 Claims**

Graft polymerization of a polymerizable monomer to polyethylene terephthalate or to a polyester polymer consisting mainly of polyethylene terephthalate is carried out in the presence of a halide of the general formula

$$M_nX_{2n+2}$$

wherein M is carbon or silicon, X is halogen and n is a positive integer.

3,652,436

METHOD FOR POLYMERIZING TETRAOXANE

Yoshiaki Nakase; Masaru Yoshida; Akihiko Ito, all of Takasaki-shi, and Seifo Okamura, Kyoto-shi, all of Japan, assignors to Mitsubishi Petrochemical Company Ltd., Tokyo and Ube Industries, Ltd., Ube-shi, Yamaguchi-ken, Japan

Filed Oct. 20, 1969, Ser. No. 867,933

Claims priority, application Japan, Sept. 6, 1969, 44/70674

Int. Cl. C08g *1/00, 11/00*

U.S. Cl. 204—159.21 **13 Claims**

Method for polymerizing tetraoxane by carrying out the polymerization at temperatures above 60° C. and in the presence of at least one hydrocarbon halide of the general formula RX_n, wherein R is a radical having one to 15 carbon atoms, and may be a saturated or unsaturated aliphatic or alicyclic hydrocarbon residue, with different substituents for hydrogen in the hydrocarbon residue, X may be F, Cl, Br, or I, and n a positive integer not exceeding 10. The polymerization reaction can be promoted by ionizing irradiation either before or after hydrogen halides are added to the tetraoxane. The molecular weight and the yield of the polymer obtained by the invention are increased as compared to those obtained by conventional methods.

3,652,437

PROCESS FOR THE PREPARATION OF PHOSPHINE

Eugene J. Mezey, Upper Arlington, and Robert G. Laughlin, Springfield Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sept. 25, 1969, Ser. No. 861,154

Int. Cl. C01b *25/06;* **B01k** *1/00*

U.S. Cl. 204—164 **13 Claims**

A process for preparing phosphine from elemental phosphorus and hydrogen using a plasma stream of electronically excited hydrogen is disclosed. Phosphine is useful as a fumigant and as an intermediate in the preparation of tetrakis(hydroxymethyl)phosphonium chloride, used to impart fire retardancy to fabrics.

3,652,438

PHOTOELECTROPHORETIC IMAGING PROCESS USING DIVALENT HEAVY METAL SALTS OF 1(1'-SULFO-2-NAPHTHYLAZO)-Z-NAPHTHOLS AS IMAGING MATERIAL

Freeman B. Jones, Jr., East Lansing, Mich., assignor to Xerox Corporation, Rochester, N.Y.

Original application Feb. 1, 1967, Ser. No. 613,295, now Patent No. 3,574,182. Divided and this application May 21, 1970, Ser. No. 48,595

Int. Cl. G03g *13/22;* **B01k** *5/02*

U.S. Cl. 204—181 **11 Claims**

New compositions consisting of a group of metal salts of 1(1'-sulfo-20'-naphthalazo)-2-naphthols. Also, photoelectrophoretic imaging processes using these compositions are described.

3,652,439

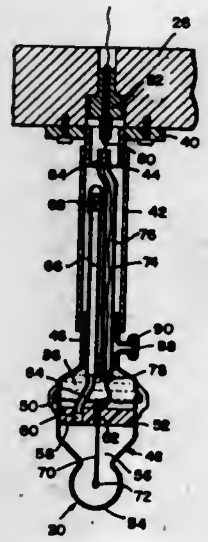
APPARATUS FOR MEASURING PH IN HIGH-PRESSURE ENVIRONMENTS

Shmuel Ben-Yaakov, Beverly Hills, and Isaac R. Kaplan, Sherman Oaks, both of Calif., assignors to The Regents of the University of California

Filed Feb. 28, 1969, Ser. No. 803,173

Int. Cl. G01n *27/30, 27/36*

U.S. Cl. 204—195 **8 Claims**



Continuous direct measurement of pH at great depths in the ocean from a surface vessel is accomplished by a cable-supported probe which measures the electric potential between an Ag/AgCl/glass membrane electrode and an Ag/AgCl reference electrode immersed in a reference solution in contact with the sea water; converts the measured potential into a variable-frequency signal in situ; and transmits the signal to readout equipment at the surface. The ruggedness and simplicity which make the device suitable for routine field use at great depths are achieved by pressure equalization in the electrode structures through membrane arrangements while maintaining high electrode insulation levels; by a simplified method of electrode preparation; by remote switching and calibrating of the pH sensor and associated temperature and pressure sensors; and by a simplified analog-to-frequency converter.

3,652,440

SPARK SENSING SYSTEM FOR ECM APPARATUS

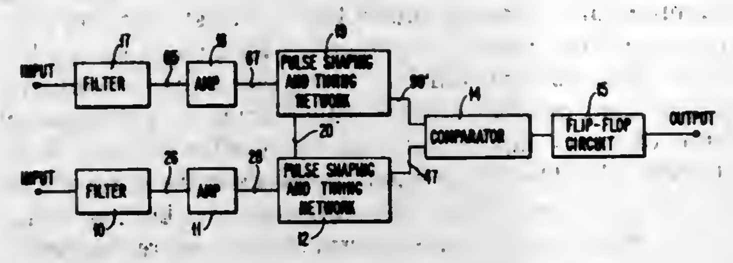
Gareth A. Dehner, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Nov. 12, 1968, Ser. No. 774,812

Int. Cl. B01k *3/00;* **B23p** *1/04*

U.S. Cl. 204—228 **11 Claims**

A sensing system responds only to high frequency voltages created by sparks to shut down an electrochemical machining apparatus. The system includes means to prevent shutting down of the apparatus due to noise.



3,652,441

ELECTRODE FOR AN ELECTROPHORESIS PAINTING INSTALLATION

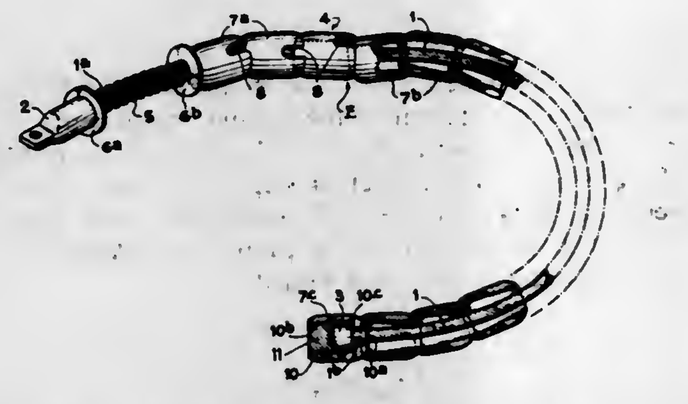
Raymond Esselin, Valentigney, and Jean-Claude Poirier, Grand-Charmont, both of France, assignors to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, France

Filed Apr. 21, 1970, Ser. No. 30,537

Claims priority, application France, May 7, 1969, 6914555

Int. Cl. B01r *3/02;* **C23b** *5/72;* **B01d** *15/02*

U.S. Cl. 204—280 **11 Claims**



An electrode, in particular for an electrophoresis painting installation. The metal conductor has threaded thereon a row of rigid beads constituting a flexible insulating sheath. The beads are maintained at both ends of the conductor in such manner that they are constantly in contact with each other. At least some of the beads have passages putting the conductor in communication with the exterior of the sheath.

3,652,442

ELECTROPLATING CELL INCLUDING MEANS TO AGITATE THE ELECTROLYTE IN LAMINAR FLOW

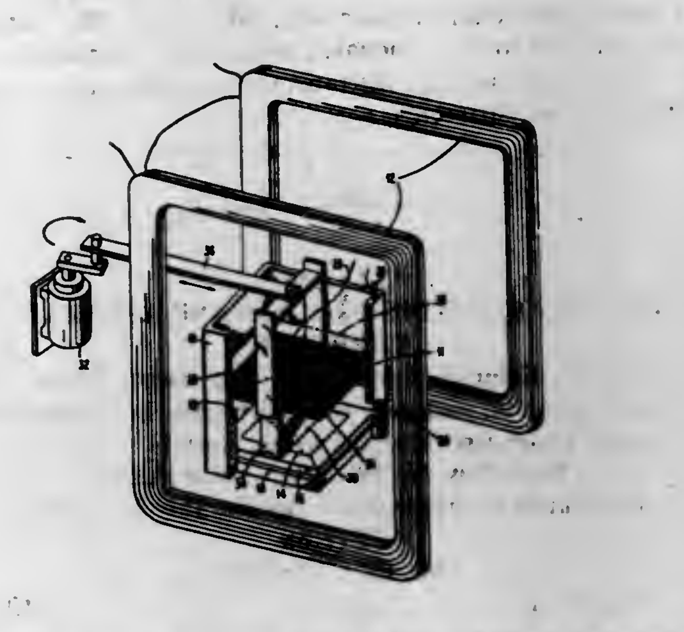
John V. Powers, Shenorock, and Lubomyr T. Romankiw, Millwood, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of application Ser. No. 693,375, Dec. 26, 1967, now abandoned. This application Apr. 6, 1970, Ser. No. 25,708

Int. Cl. B01k *3/00*

U.S. Cl. 204—273 **5 Claims**

An electroplating cell is constructed to prevent current spreading in the electrolyte during the plating of a metal or metal alloy onto a substrate. The cell is constructed such that the cross-sectional area of current path is substantially the same as the cross-sectional area of a pair of electrodes spaced apart in the cell. This is accomplished by placing the electrodes in the cell such that their edges are substantially in contact with the dielectric or insulating walls of the cell. The cell also contains electrolyte agitating means to provide uniform laminar flow of the electrolyte across the surface of one of the electrode. Metal alloy films deposited with the use of this cell exhibit uniform thicknesses on rather large surface areas. Where magnetic metal alloys are plated, the films not only exhibit uniform thicknesses laterally on the whole cathode but uniform composition and magnetic properties throughout as well.



3,652,443

DEPOSITION APPARATUS

Frank H. Fish, Westwood, and Edward P. McLaughlin, Braintree, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Aug. 25, 1970, Ser. No. 66,842

Int. Cl. C23c *15/00*

U.S. Cl. 204—298 **14 Claims**

Deposition apparatus includes a vacuum chamber with a target, a substrate holder and a screen disposed in the chamber. The screen has graduated transparency and is disposed between the target and the substrate holder. Material is transferred from the target through the screen to a substrate on the holder and the graduated transparency of the screen is coordinated with the transfer process so that the thickness of the film deposited on the substrate is substantially uniform.

3,652,444

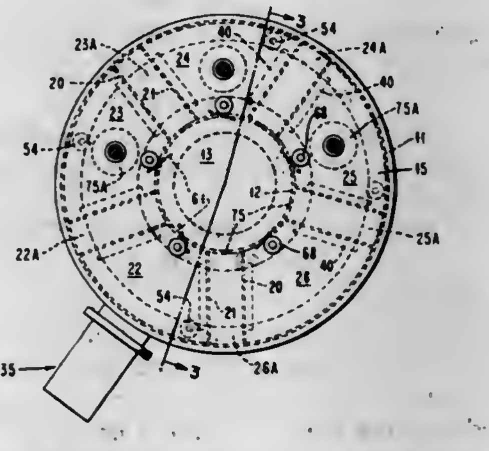
CONTINUOUS VACUUM PROCESS APPARATUS

William C. Lester, Hopewell Junction; Carlo Nuccio, Poughkeepsie, and Ernest S. Ward, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1969, Ser. No. 869,295

Int. Cl. C23c *15/00*

U.S. Cl. 204—298 **13 Claims**

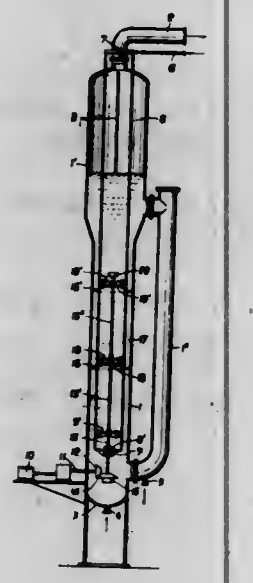


The invention is directed to a continuous vacuum multi-processing system for treating, evaporation, or sputter vacuum depositing on a substrate or wafer for the preparation of semiconductors. The utilized structure comprises an annular chamber partitioned into alternating process and isolation compartments which are circularly arranged around a common (central) vacuum manifold. A circular transport ring, confined to the evacuated annular mechanically transports (via rotation) the substrates through the various serially connected compartments.

3,652,445
BITUMEN BLASTING PROCESS AND APPARATUS THEREFOR

Hans Senolt; Heinrich Tomaschko, and Georg Palvik, all of Vienna, Austria, assignors to Osterreichische Mineralolverwaltung Aktiengesellschaft, Vienna, Austria

Filed July 23, 1969, Ser. No. 843,955
Claims priority, application Austria, July 25, 1968, A 7211/68
Int. Cl. C10g *1/00*
U.S. Cl. 208—6 **2 Claims**



Soft asphalt is hardened by passing a stream of air into and through the asphalt in a molten state. The air stream forms air bubbles which rise through the asphalt. The air bubbles are forcibly coalesced into air sacs and the air sacs are redispersed into air bubbles. The air bubbles may be coalesced into air sacs and redispersed more than once.

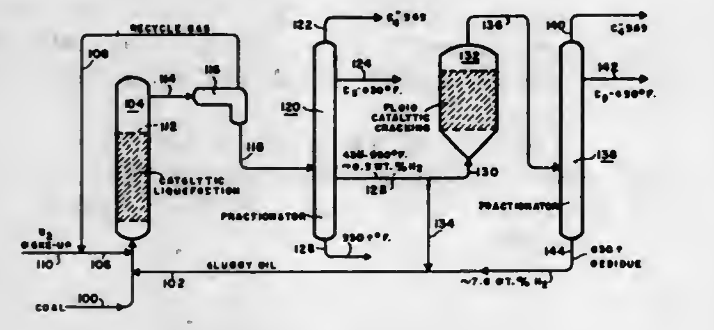
3,652,446
COMBINATION PROCESS FOR LIQUEFACTION OF COAL AND CATALYTIC CRACKING OF SELECTED FRACTIONS THEREOF

Herbert P. Dengler, Fairhaven, and Bernard L. Schulman, Livingston, both of N.J., assignors to Esso Research and Engineering Company

Filed Nov. 17, 1969, Ser. No. 877,314
Int. Cl. C10g *1/08*
U.S. Cl. 208—10 **9 Claims**

The present process is a combination of a liquid fluidized bed catalytic coal liquefaction zone and a fluidized catalytic cracking zone. In the liquefaction zone, finely divided coal is contacted with the fluidized catalyst bed while in a solvent oil and in contact with molecular hydrogen. A liquefaction zone product stream, containing a substantial amount of liquid materials boiling in an intermediate temperature range (e.g., 430° F. to 950° F.), is obtained, and boiling intermediate boilding range material separated from the remainder of the product stream. A first portion of the intermediate boiling range material is charged into a fluid catalyst cracking zone wherein the first portion is contacted with a cracking catalyst such as silica alumina under cracking conditions to obtain a cracking zone product stream which contains a substantial amount of heavy liquid materials hereinafter referred to as "cat cycle oil." The heavy liquid materials in the cat cycle oil will boil not lower than the intermediate boiling range material. The cat cycle oil is separated from the remainder of the cracking zone product stream and admixed with a second portion of the intermediate boiling range material to obtain the slurry oil used as a solvent oil in the liquefaction zone.

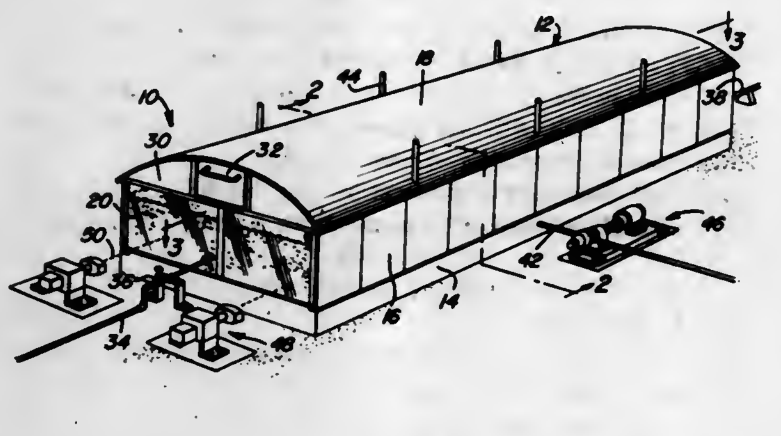
By the present process, the cat cycle oil, which is very refractory due to a low hydrogen content, is reacted with hydrogen in the liquefaction zone to increase the hydrogen content and to crack some of the heavier components of that stream. The hydrogenated oil is also more susceptible to cracking in the catalytic cracking step. Thus, the cat cycle oil is used as a slurry oil while at the same time being upgraded so that it can be recycled to the catalytic cracking zone for further reduction in molecular weight.



3,652,447
PROCESS FOR EXTRACTING OIL FROM OIL SHALE

Milfred R. Yant, Laredo, Tex., assignor to Samuel S. Williams, Laredo; Samuel Herrmann and Cleo Herrmann, El Paso, Tex., part interest to each

Filed Apr. 18, 1969, Ser. No. 817,418
Int. Cl. C10g *1/02;* **C10b** *53/06*
U.S. Cl. 208—11 **11 Claims**



Pyrolytic recovery of shale oil by passage of pulsed, laser beams through a body of crushed shale housed in an enclosure from which gaseous products are withdrawn by a vacuum pump. Operation of the vacuum pump is synchronized with the laser generators to generate negative pressure pulses between the energy pulsations of the laser beams.

3,652,448
PRODUCTION OF IMPROVED LUBRICATING OILS

Billy H. Cummins, Nederland, Tex., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed June 30, 1969, Ser. No. 837,930
Int. Cl. C10g *13/00*
U.S. Cl. 208—87 **9 Claims**

Lubricating oils of improved color, viscosity index and stability towards ultraviolet light are obtained by a processing sequence involving in a specific embodiment solvent refining a lube oil stock, hydrocracking the solvent refined material and subjecting the hydrocracked product to a second solvent refining. Superior results are obtained using N-methyl-2-pyrrolidone as the solvent.

3,652,449
HYDROCARBON CONVERSION PROCESSES USING ALUMINA-BONDED CATALYSTS

Dean Arthur Young and Grant A. Mickelson, Yorba Linda, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Continuation-in-part of application Ser. No. 713,993, Mar. 18, 1968, now Patent No. 3,557,024. This application June 24, 1970, Ser. No. 49,584
Int. Cl. C10g *13/02, 23/00*
U.S. Cl. 208—111 **17 Claims**

Hydrocarbon conversion processes, e.g., hydrocracking, hydrofining and the like, use highly stable catalysts prepared from siliceous materials such as aluminosilicate zeolites employing acid-treated boehmite alumina as a binder. The boehmite alumina is treated with at least 0.5 equivalent of acid per mole of boehmite. The acid employed in the treatment is a mineral acid having a monovalent anion or a salt thereof, e.g., nitric acid, hydrochloric acid or their salts. These catalysts find utility in processes such as cracking, hydrocracking, hydrotreating, isomerization and the like. The binder composition comprising the acid-treated boehmite may also be used for binding a variety of siliceous compositions such as amorphous combinations of silica and alumina, activated clays and silica gel.

3,652,450
FLUID DISTRIBUTION FOR FLUID-SOLIDS CONTACTING CHAMBERS

David M. Boyd, Clarendon Hills, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

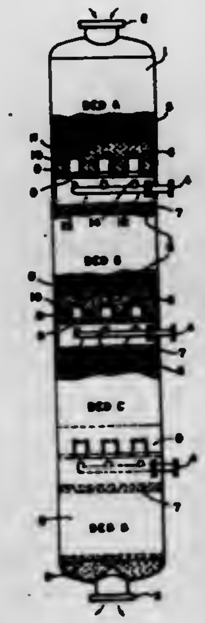
Original application Dec. 20, 1968, Ser. No. 785,666, now Patent No. 3,556,736, dated Jan. 19, 1971. Divided and this application June 15, 1970, Ser. No. 46,237
Int. Cl. C10g *37/02*
U.S. Cl. 208—146 **8 Claims**

Method and apparatus for contacting two fluids in a fluid-solids contacting zone such as an adsorption zone or a reaction zone. A first fluid is passed downwardly into a distributor downcomer and a second fluid is passed upwardly into the downcomer via an inlet nozzle contained within the downcomer. A resulting mixture of first and second fluid passes downflow through the annulus confined between the downcomer wall and the inlet nozzle, and enters a bed of particulated solids below. The method and apparatus are also applicable to upflow processing through beds of particulated solids. Specific application is in hydrogenation, hydrotreating, hydrocracking, and hydrodealkylation reaction zones, wherein a hydrogen stream is utilized for the thermal quench of reactant hydrocarbon between catalyst beds.

3,652,451
FLUID DISTRIBUTION FOR FLUID-SOLIDS CONTACTING CHAMBERS

David M. Boyd, Clarendon Hills, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Original application Dec. 20, 1968, Ser. No. 785,667, now Patent No. 3,556,737, dated Jan. 19, 1971. Divided and this application June 15, 1970, Ser. No. 46,347
Int. Cl. C10g *37/02*
U.S. Cl. 208—146 **8 Claims**



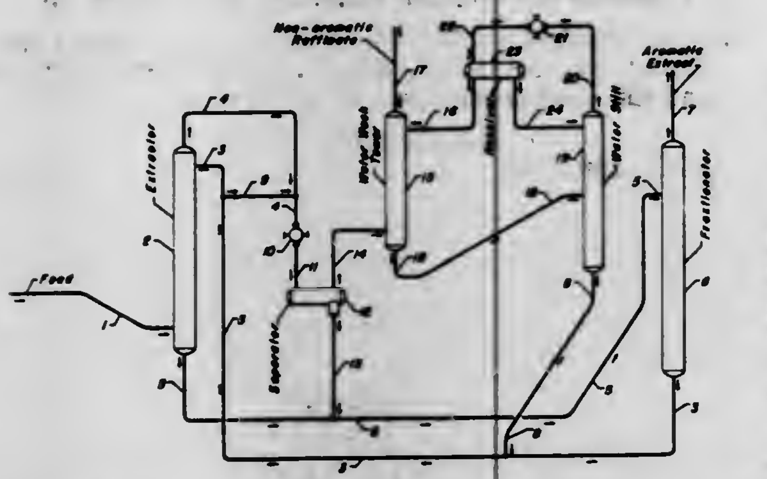
Method and apparatus for contacting two fluids in a fluid-solids contacting zone, such as an adsorption zone or a reaction zone. A first fluid is discharged downwardly from a passageway spaced above a bed of particulated solids. From a nozzle spaced below the passageway, a second fluid is discharged upward into the first fluid discharged in a manner sufficient to produce a spray of mixed first and second fluid which passes into the bed below. Specific application is in hydrogenation, hydrotreating, hydrocracking, and hydrodealkylation reaction zones, wherein a hydrogen stream is utilized for the thermal quench of reactant hydrocarbon between catalyst beds.

3,652,452
SOLVENT RECOVERY PROCESS

Volker W. Eyermann, Houston, Tex., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 28, 1969, Ser. No. 880,656
Int. Cl. C10g *21/28*
U.S. Cl. 208—321 **9 Claims**

Process for recovery of primary solvent contained in a raffinate stream produced by a primary extraction process, wherein cooling of the raffinate stream inherently produces a relatively stable mist of free primary solvent phase in the raffinate, and said mist interferes with extraction of primary solvent from the raffinate in a subsequent secondary extraction zone utilizing a secondary solvent. The process comprises mixing and cooling the raffinate stream with a stream of primary solvent in a conditioning zone under conditions sufficient to produce a conditioned raffinate free of primary solvent mist and thereby render the raffinate more readily extractable in the secondary extraction zone. The process has particular application where the primary extraction process is an aromatics extraction process, the raffinate comprises non-aromatic hydrocarbons, the secondary extraction zone is an aqueous extraction zone, and the secondary solvent comprises water. Primary solvents recoverable within the scope of the inventive process include sulfolane-type chemicals, sulfolene chemicals, polyethylene glycols, polypropylene glycols, dimethyl sulfoxide, etc.



3,652,453
DEFOAMER COMPOSITION

Thomas Francis MacDonnell, Newfoundland, N.J., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Jan. 27, 1970, Ser. No. 6,296

Int. Cl. B01d *17/00, 19/00*

U.S. Cl. 252—358 **12 Claims**

Defoamer compositions are prepared using certain amides and/or hydrocarbon waxes, oil soluble organic polymers, and an inert liquid vehicle, by means of a quick-chilling process. Optionally, castor oil, silicone oil, water, an alkylene oxide-castor oil reaction product, a high molecular weight sulfonated naphthalene condensate, and an emulsifier may be present. The compositions may be used for defoaming and/or preventing foam in other than hydrocarbon oil base systems.

3,652,454
HIGH PRESSURE WATER-GAS SHIFT CONVERSION PROCESS

Allen M. Robin, Claremont, and Joseph P. Tassoney, Whittier, Calif., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed May 27, 1968, Ser. No. 732,074

Int. Cl. C01b *1/08*

U.S. Cl. 252—373 **2 Claims**

High pressure continuous catalytic water-gas shift conversion process in which CO conversion is maximized and an effluent gas stream comprising essentially H_2 and CO_2 is produced having a substantially constant composition at all times throughout the life of the catalyst. Process design and operation are optimized to yield an overall CO conversion of about from 80 to 98 mole percent over a period of two years or more on stream. Steam and a CO containing gaseous feedstream are reacted in an adiabatic catalytic reaction zone comprising one or more fixed beds of iron-chromium oxide catalyst connected in series and provided with interbed cooling. The catalyst is characterized by its activity increasing as a function of pressure over the operating range of about 35 to 250 atmospheres. This is contrary to the present general idea that the activity of an iron oxide shift catalyst levels out at about 400 p.s.i.g. The temperature of the gases leaving each bed is maintained in the range of about 30° F. to 100° F. less than the corresponding equilibrium temperature and to offset catalyst deactivation the inlet and exit temperatures of the gas stream in each bed is increased as a logarithmic function of time on stream.

3,652,455
PROCESS FOR REGENERATING A HYDRATION CATALYST

Herbert Baader, Hermülheim, near Cologne, and Wolfgang Opitz and Armin Jacobowsky, Knapsack, near Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Apr. 17, 1970, Ser. No. 29,636

Claims priority, application Germany, Apr. 24, 1969, P 19 20 805.0

Int. Cl. B01j *11/18*

U.S. Cl. 252—415 **4 Claims**

A catalyst comprising metallic palladium deposited on a silica gel or active carbon carrier for use in the hydration and dechlorination of dichloroacetic acid and/or trichloroacetic acid to produce monochloroacetic acid and/or acetic acid is regenerated. To this effect, the poisoned catalyst is subjected in the hydration zone itself at temperatures of between 50 and 200° C. to treatment with dry chlorine gas until it is saturated, and the hydration zone is exhausted under a pressure of between about 500 and 750 mm. mercury.

3,652,456
MULTIFUNCTIONAL POLYMERIZATION INITIATORS FROM ALLYL-SUBSTITUTED TERTIARY AMINES

Floyd E. Naylor, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed June 9, 1969, Ser. No. 831,753

Int. Cl. C07f *1/02*

U.S. Cl. 252—431 **5 Claims**

A multifunctional polymerization initiator is formed on admixing an allyl-substituted tertiary amine and organomonolithium compound, optionally with the further addition of a solubilizing monomer.

3,652,457
HYDROTHERMAL METHOD OF MANUFACTURING A HYDROCARBON CONVERSION CATALYST CONTAINING AT LEAST ONE HYDROGENATING COMPONENT, AND THE CATALYST SO MANUFACTURED

Joseph Jaffe, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Sept. 30, 1968, Ser. No. 763,922

Int. Cl. B01j *11/78, 11/40*

U.S. Cl. 252—442 **13 Claims**

Hydrothermal conversion method for manufacturing a hydrocarbon conversion catalyst comprising at least one hydrogenating component in intimate admixture with a layered synthetic crystalline clay-type aluminosilicate component, said intimate admixture being a result of forming said aluminosilicate component in the presence of a precursor of said hydrogenating component, from precursors of said aluminosilicate component, under conditions of elevated temperature and pressure, and catalyst so manufactured.

3,652,458
HYDROGENATION CATALYSTS COMPRISING NICKEL OR COPPER DEPOSITED ON SILICA

Georges Gobron, Melle, France, and Marcel Motillon, deceased, late of Melle, France, by Jacqueline Sudan, Caluire, Colette Viaud, Melle, and Jeannine Motillon and Michel Motillon, Caluire, France, legal heirs

Continuation-in-part of application Ser. No. 626,964, Mar. 30, 1967. This application Nov. 7, 1969, Ser. No. 874,877

Int. Cl. B01j *11/22, 11/40*

U.S. Cl. 252—454 **4 Claims**

This disclosure describes hydrogenation catalysts comprising nickel or copper deposited on a highly pure silica carrier. The catalysts are prepared by reaction between a water soluble salt of the metal and an alkaline reagent such as sodium hydroxide in water. The insoluble metallic compound which precipitates is washed and dried. It is then reduced with hydrogen at an elevated temperature.

3,652,459
HYDROCRACKING CATALYST

R. Parthasarathy, Silver Spring, and Julius Scherzer and John L. Warthen, Baltimore, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Feb. 25, 1970, Ser. No. 14,231

Int. Cl. B01j *11/40;* **C01b** *33/28*

U.S. Cl. 252—455 Z **3 Claims**

A nickel oxide promoted hydrocracking catalyst having a base consisting of partially chromium exchanged calcined faujasite combined with an inorganic matrix. The activity of the catalyst remains essentially constant over extended periods of use.

3,652,460
METHOD FOR THE PREPARATION OF A CYCLOHEXANOL-TO-CYCLOHEXANONE DEHYDROGENATION CATALYST

Nester Petrovich Emelyanov, Ulitsa Kavaleriiskaya 10, kv. 4; Rogneda Ivanovna Belskaya, Ulitsa Ya. Kolosa 26, kv. 27; and Rostislav Yakovlevich Semyachko, Melnichny pereulok 17, kv. 2, all of Minsk, U.S.S.R.

No Drawing. Filed Oct. 31, 1969, Ser. No. 873,095

Int. Cl. B01j *11/00*

U.S. Cl. 252—475 **10 Claims**

A process of preparing a catalyst for cyclohexanol dehydrogenation to cyclohexanone which comprises impregnating zinc oxide with a solution of cupric nitrate, followed by treating the resultant mass with a solution of oxalic acid and thereafter with hydrogen.

3,652,461
CARBON BLACK DISPERSIONS, THEIR PREPARATION AND PRODUCTS THEREFROM

Harold R. Dalton, 931 Rydal Road, Jenkintown, Pa. 19046

No Drawing. Continuation-in-part of application Ser. No. 502,614, Oct. 22, 1965. This application Nov. 10, 1969, Ser. No. 875,591

Int. Cl. H01b *1/06;* **C08h** *17/08*

U.S. Cl. 252—511 **17 Claims**

A dispersion of carbon black particles is dispersed, and has on their surfaces as an adsorbate a mono-layer of an organic resin adsorbed from its solution, in a readily volatile organic solvent for the resin. The solvent and the adsorbate are compatible with (a) solvent used for making with a film-forming resin (differing from the adsorbate) a solution for preparing an electric-signal-responsive film for a recording blank, and (b) the film-forming resin. The dispersion is prepared by (i) milling the carbon black particles with solution of the organic resin adsorbate in its solvent and (ii) until a smooth dispersion of the particles in the solvent results and a mono-layer of the adsorbate is adsorbed over the particle surfaces. The quantity of adsorbate in the solution is at least sufficient to enable a mono-layer of it to be adsorbed on the surfaces of the carbon black particles.

3,652,462
PROCESS FOR PRODUCING SODIUM TUNGSTEN BRONZES

Till J. N. Peters, Towanda, and John A. Powers, New Albany, Pa., assignors to Sylvania Electric Products Inc.

No Drawing. Filed Oct. 8, 1970, Ser. No. 79,317

Int. Cl. H01b *1/06;* **C01g** *5/00;* **C22b** *59/00*

U.S. Cl. 252—518 **14 Claims**

A process for manufacturing sodium tungsten bronzes whereby finely divided pure tungsten oxide, sodium tungstate, and tungsten powder are blended, gassed with an inert gas, and heat treated in an inert gas atmosphere under specific conditions for a predetermined length of time.

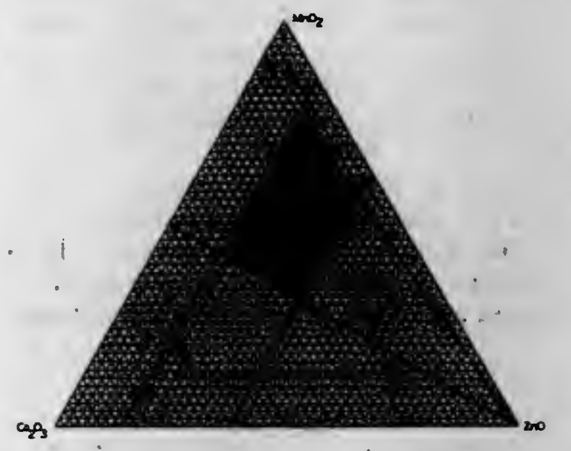
3,652,463
THERMISTOR COMPOSITION

John W. Riddel, Fenton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 26, 1970, Ser. No. 5,852

Int. Cl. C09c *1/04;* **H01b** *1/06*

U.S. Cl. 252—519 **3 Claims**



A composition for a thermistor wherein the composition comprises approximately ⅓ mole percent zinc oxide, ⅓ mole percent cobaltic oxide, and ⅓ mole percent manganic oxide reacted to form a spinel structure.

3,652,464
PERFLUOROALKYLENE ETHER AND THIOETHER TRIAZINE POLYMERS

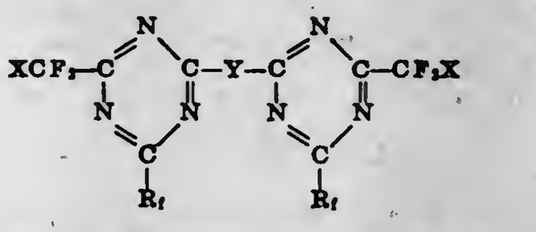
George A. Grindahl, Ogden R. Pierce, and John R. Greenwald, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Original application Oct. 28, 1968, Ser. No. 771,291, now Patent No. 3,566,835, dated Mar. 2, 1971. Divided and this application Nov. 12, 1970, Ser. No. 89,023

Int. Cl. C07d *55/50;* **C08g** *33/02*

U.S. Cl. 260—2 R **6 Claims**

The invention provides triazines of the formula



Y being a perfluoroalkylene radical containing at least one ether or thioether linkage, R_f being a monovalent polyfluorinated hydrocarbon radical of no more than 12 carbon atoms, X being bromine or iodine. Triazine polymers of these compounds are also disclosed, as heat-stable elastomers.

3,652,465
PROCESS FOR PRODUCING POLYMERS OF CYCLIC ACETALS

Koichi Takakura, Kurashiki, Japan, assignor to Kuraray Co., Ltd., Kurashiki, Japan

No Drawing. Filed June 24, 1970, Ser. No. 49,545

Claims priority, application Japan, July 8, 1969, 44/53,987

Int. Cl. C08g *11/00*

U.S. Cl. 260—2 BP **7 Claims**

Cyclic acetals such as 1,3-dioxolane can be polymerized at high conversion rates to polyethers by using a catalyst system consisting of a zinc halide and a carbon tetrahalide.

3,652,466
PROCESS OF RECOVERING POLYESTER FROM POLYESTER FILMS HAVING POLYMERIC COATINGS
Erwin Ross Hittel, Brevard, N.C., and Foster Wilson Rennie, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed July 16, 1968, Ser. No. 745,266
Int. Cl. C08g *53/22*
U.S. Cl. 260—2.3 **7 Claims**

A process for the recovery of polyester base material from films, including photographic films, having at least one macromolecular organic polymer coating comprising (1) treating pieces or flakes of such films with a caustic alkali solution to form a slurry of flakes, (2) feeding the slurry into a classification column and allowing flakes to move downwardly to a rising column of aqueous liquid to separate the polyester material from the coating material, (3) removing flakes settling to the bottom of the column, and (4) recovering the polymeric coating material from the top of the column. The flakes are then dried and used as a source of polyester material.

3,652,467
MASTIC ADHESIVE COMPOSITION CONTAINING ROSIN POT RESIDUE OR ITS ZINC SALT OR GLYCOL POLYESTER
Albert R. Bunk, Columbus, Bailey Bennett, Worthington, and David A. Berry, Columbus, Ohio, and Bernard A. Parkin, Jr., Walter H. Schuller, and Ray V. Lawrence, Lake City, Fla., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Feb. 27, 1970, Ser. No. 15,229
Int. Cl. C08d *13/38, 9/12*
U.S. Cl. 260—2.3 **12 Claims**

Mastic adhesive compositions having excellent properties for adhesive applications in the building trades industry, which compositions comprise relative proportions by weight of: 100 parts of reclaim rubber; 50 to 200 parts of a rosin pot residue or its zinc salt or glycol polyester; and a hydrocarbon vehicle for the rubber.

3,652,468
REINFORCED RUBBER COMPOSITIONS
Johann Schwab and Robert Grill, Vienna, Austria, assignors to Semperit Oesterreichisch-Amerikanische Gummiwerke Aktiengesellschaft, Vienna, Austria
No Drawing. Filed June 3, 1968, Ser. No. 733,796
Claims priority, application Austria, June 6, 1967, A 5,261/67
Int. Cl. C08g *41/04, 22/44*
U.S. Cl. 260—2.5 **8 Claims**

Disclosed is a process for the manufacture of vulcanized reinforced rubber compositions having superior mechanical properties and good processability. The process comprises steps of incorporating into a raw rubber composition, prior to its vulcanization, an active hydrogen containing compound which will polymerize to form a polyurethane, and then vulcanizing and polymerizing the resulting mixture to form a polyurethane lattice reinforced rubber composition.

3,652,469
POLYMERIC FAT ACID POLYAMIDE RESIN INK BINDER
David W. Glaser and Paul D. Whyzmuzis, St. Paul, Minn., assignors to General Mills, Inc.
No Drawing. Filed Dec. 2, 1969, Ser. No. 881,571
Int. Cl. C09d *11/06;* **C08g** *20/26*
U.S. Cl. 260—18 N **13 Claims**

Polymeric fat acid polyamide resins obtained by reacting an acid mixture comprising a polymeric fat acid and a low aliphatic monocarboxylic acid with an amine mixture comprising an alkylene diamine and a polyhexamethylene polyamine, such as bis(hexamethylene) triamine. The resins are particularly useful in flexographic ink where the resins perform as a binder for the ink, the resins generally being used in the form of alcohol solutions thereof.

3,652,470
HEAT-CURABLE COMPOSITIONS COMPRISING PARTIALLY CRYSTALLINE UNSATURATED POLYESTER
Rolf Zimmermann and Wolfram Busch, Wiesbaden-Biebrich, and Josef Schmitz, Laubenheim (Rhine), Germany, assignors to Chemische Werke Albert, Wiesbaden-Biebrich, Germany
No Drawing. Continuation-in-part of application Ser. No. 441,897, Mar. 22, 1965. This application July 14, 1969, Ser. No. 841,566
Claims priority, application Germany, Apr. 4, 1964, C 32,568
Int. Cl. C08f *21/04*
U.S. Cl. 260—22 CB **11 Claims**

A heat curable partially crystalline unsaturated polyester having an acid value below 50, the acid component derived from 40–80 mol percent maleic units that are 50–85% converted to fumaric units in the esterification reaction and 60 to 20 mol percent of a dicarboxylic acid selected from the group consisting of (A) terephthalic units and (B) a combination of at least 4 mols of terephthalic units with 1 mol of at least one other dicarboxylic acid containing 3 to 10 carbon atoms and having no polymerisable olefinic bond, the content of terephthalic units being always at least 20 mol percent, and the alcohol component of the polyester derived substantially from dihydric alcohols, at least 30 mol percent of which have two hydroxy groups of equal reactivity and also a symmetrical molecule.

3,652,471
POLYESTER AMIDE-IMIDE WIRE ENAMELS
Frank A. Sattler, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
No Drawing. Filed July 28, 1969, Ser. No. 845,482
The portion of the term of the patent subsequent to Jan. 12, 1988, has been disclaimed
Int. Cl. C09d *3/66, 3/72*
U.S. Cl. 260—22 R **8 Claims**

Economical wire enamels are made by cold blending a polyester-amide-imide of high amide-imide content with polyester of modest cost. Preferably, the composition also comprises an ester-urethane isocyanate as compatibilizing agent.

There are thus obtained wire-enamel formulations of low or modest cost that outperform the oil-modified acrylics in thermal life and the plain enamels (oleoresinous or synthetic oil-modified polyester) in several other properties.

3,652,472
STABLE DISPERSIONS OF CROSS-LINKED ADDITION POLYMER AND PROCESS OF PREPARING SAID DISPERSIONS
Michael Raymond Clarke, Frankston, Victoria, and Leon Filipowicz, East St. Kilda, Victoria, Australia, assignors to Balm Paints Limited, Melbourne, Victoria, Australia
No Drawing. Filed Oct. 15, 1968, Ser. No. 767,802
Claims priority, application Australia, Oct. 27, 1967, 29,088/67
Int. Cl. C08f *47/18;* **C09d** *5/02*
U.S. Cl. 260—22 CB **14 Claims**

A process of preparing stable dispersions of cross-linked addition polymer in an organic liquid by first preparing a dispersion of a suitably chemically reactive addition polymer and then cross-linking it with a cross-linking agent

which is at least difunctional with respect to the cross-linking reaction. In one embodiment the cross-linked polymer is further cross-linkable by an autoxidative or free radical initiated cross-linking reaction or both.

3,652,473
MODIFIED POLYOLEFIN COMPOSITIONS
Thomas M. Quinn, West Chester, Pa., and James G. Villanueva, New Castle, Del., assignors to Standard Oil Company, Chicago, Ill.
No Drawing. Filed Mar. 12, 1970, Ser. No. 19,101
Int. Cl. C08f *29/02, 37/00;* **C09k** *3/16*
U.S. Cl. 260—23 **12 Claims**

Modified polyolefin compositions capable of being fabricated into articles having reduced coefficients of friction, anti-static properties and resistance to "dusting" are provided from a composition comprising a film-forming polyolefin and from about 0.1% to about 4% by weight of (a) the reaction product of a glycerol monostearate-propylene glycol, (b) a phosphoglyceride and (c) a fatty acid ester of a polyglycerol. The modified polyolefin compositions are useful in preparing self-supporting thin gauge films capable of being used in high speed packaging equipment.

3,652,474
HOT-MELT ADHESIVE COMPOSITION CONTAINING ROSIN POLYESTER
David A. Berry and Albert R. Bunk, Columbus, Ohio, and Noah J. Halbrook, Walter H. Schuller, and Ray V. Lawrence, Lake City, Fla., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Feb. 27, 1970, Ser. No. 15,236
Int. Cl. C09j *3/26*
U.S. Cl. 260—27 EV **4 Claims**

Hot-melt adhesive composition consisting essentially, in relative proportions by weight, of 100 parts of an ethylene-vinyl acetate resin of Ball and Ring softening point between 220° and 280° F. and whose ethylene-vinyl acetate weight percent comonomer ratio is between 85:15 and 65:35; between 40 and 120 parts of a petroleum-derived paraffin or microcrystalline wax; and between 25 and 125 parts of a rosin polyester having an Acid No. below 45 and a Ball and Ring softening point between 50° and 150° F. which rosin polyester is the diethylene glycol ester of β-propiolactone-modified or acrylic-acid-modified rosin.

3,652,475
HEAT-CURABLE ELASTOMERIC SILICONE COMPOSITIONS
Tadashi Wada and Kunio Itoh, Annaka-shi, Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan
No Drawing. Filed Apr. 8, 1970, Ser. No. 26,791
Claims priority, application Japan, Apr. 25, 1969, 44/32,147
Int. Cl. C08g *51/22*
U.S. Cl. 260—29.1 B **10 Claims**

A heat curable elastomeric silicone composition consisting of:

(a) 100 parts by weight of polydiorganosiloxane having a degree of polymerization of at least 3,000 and containing at most 0.3 mole percent of vinyl group-containing siloxane units;

(b) From 1 to 10 parts by weight of polydiorganosiloxane having a degree of polymerization of at least 3,000, and containing from 5 to 20 mole percent of vinyl group-containing siloxane units;

(c) From 0.5 to 5 parts by weight of polydiorganosiloxane having a degree of polymerization of from 10 to 1,000 and containing from 5 to 90 mole percent vinyl group-containing siloxane units;

(d) From 20 to 200 parts by weight of a silica filler having a surface area of at least 150 $m.^2/g$; and

(e) A catalytic amount of organic peroxide.

The composition is cured to yield a silicone rubber having a high tear strength, or it is employed as a wire-insulating material, sealing material and packing material, because of its excellent compression set, resiliency, heat-, steam-, and weather-resistances and electrical properties.

3,652,476
THERMOSET MOLDING POWDERS EMPLOYING GLYCIDYL METHACRYLATE AND AROMATIC AMINES
John F. Fellers, Livonia, Santokh S. Labana, Dearborn Heights, and Seymour Newman, Southfield, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed June 5, 1970, Ser. No. 43,895
Int. Cl. C08f *45/22*
U.S. Cl. 260—29.1 R **19 Claims**

Novel thermosetting resin powders which can be molded to form products characterized, in tensile measurement, by high elongation-to-break, high strength and modulus and by a high glass transition temperature are prepared from a mixture of a prepolymer consisting essentially of glycidyl methacrylate, methyl methacrylate, and methacrylonitrile or acrylonitrile and an amine crosslinking agent.

3,652,477
RESOLE VARNISH MIXTURE
George J. Anderson, Wilbraham, and Ronald H. Dahms, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed July 25, 1968, Ser. No. 747,481
Int. Cl. C08g *37/08*
U.S. Cl. 260—29.3 **8 Claims**

Phenolic varnishes having dissolved therein two different resole resins. These varnishes are suitable for use in the production of paper laminates having high electrical properties by using only a single pass preparation procedure.

3,652,478
COATING COMPOSITION FOR ELECTRODEPOSITION COATING
Masao Ishii, Tokyo, and Takashi Sunamori and Sadao Kimura, Ohtake-shi, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
No Drawing. Filed Oct. 15, 1968, Ser. No. 767,818
Claims priority, application Japan, Oct. 27, 1967, 42/69,146, 42/69,147
Int. Cl. C08f *15/40*
U.S. Cl. 260—29.4 UA **13 Claims**

Aqueous solution for coating metal surfaces by electrodeposition wherein main element is a copolymer of an acrylate, another ethylenically unsaturated monomer, a dicarboxylic acid and an alkoxyalkylacrylamide. The behavior of the acid resin in water is defined by $pH=pKa+n\log(\alpha/1-\alpha)$. Excellent one-coat surface gloss is achieved when paK, the acidity of the resin, is at least 8.0, n, a parameter based on the extension of the resin in water, is in the range 0.5–1.5, and α, the neutralization degree, is 30–80%. The resin is self-cross linking, but durability of the film is enhanced when an epoxy or melamine resin is added. A pigment having an acidity pKp werein the absolute value of the difference pKp—pKa is at least 0.1 may be incorporated in the aqueous solution.

3,652,479

WATER-SOLUBLE MIXTURES OF AMINO-CONDENSATION POLYMERS AND CATIONIC VINYL ADDITION POLYMERS FOR SLUDGE CONDITIONING

Stanley Mogelnicki, Midland, and Eugene M. Gatza, Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Original application June 1, 1966, Ser. No. 554,342, now Patent No. 3,409,546. Divided and this application May 29, 1968, Ser. No. 749,234
Int. Cl. C08g *9/00*
U.S. Cl. 260—29.4 UA **4 Claims**

Compositions containing 1 part by weight of a water-soluble amino-condensation polymer such as a polyalkylene polyamine per 0.02–0.3 part by weight of a water-soluble, cationic vinyl-addition polymer such as those which contain a plurality of aminoalkyl-N-acrylamide units. The polymer mixtures are useful in dewatering sludge and may be applied in the form of an aqueous solution.

3,652,480

VINYL ESTER COPOLYMERIC EMULSIONS AND PAINTS PREPARED THEREFROM

James Newton Coker, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed June 23, 1969, Ser. No. 835,798
Int. Cl. C09d *3/74, 5/04*
U.S. Cl. 260—29.6 TA **19 Claims**

A vinyl ester-based copolymer emulsion is provided which, because of internal modification, is suited for formulation into high-gloss and semigloss paints. The emulsion exhibits interaction with added pigment, thixotropy, body, pH and viscosity stability, as well as mechanical and freeze-thaw stability. The emulsion is readily coalescible under ambient conditions into clear, tough films which cure on drying and develop a high level of water resistance. The essential components of the emulsion are a copolymer of about 75 to 99 percent by weight of vinyl ester, 0 to about 24 percent by weight of softening monomer and about 1 to 3.5 percent by weight of the ammonium salt of an unsaturated carboxylic acid; 0.5 to 7 percent by weight surfactant, preferably 0.5 to 2.5 percent by weight of anionic surfactant and 1 to 4 percent by weight of nonionic surfactant; 0.3 to 3 percent by weight of alkylene imine added in a post-treatment step to iminate the copolymer; and sufficient ammonia banked as the carbonate-bicarbonate to maintain the pH between 7 and 8.4. The presence of about 0.01 to 1 percent by weight of one of a variety of colloidal carboxylated copolymer thickening agents in the emulsion, while not essential, enhances further the desired formulating rheology of the emulsion. Processes for preparing the emulsion and the derived paints are provided.

3,652,481

STABLE AQUEOUS EMULSIONS OF GRAFT COPOLYMERS

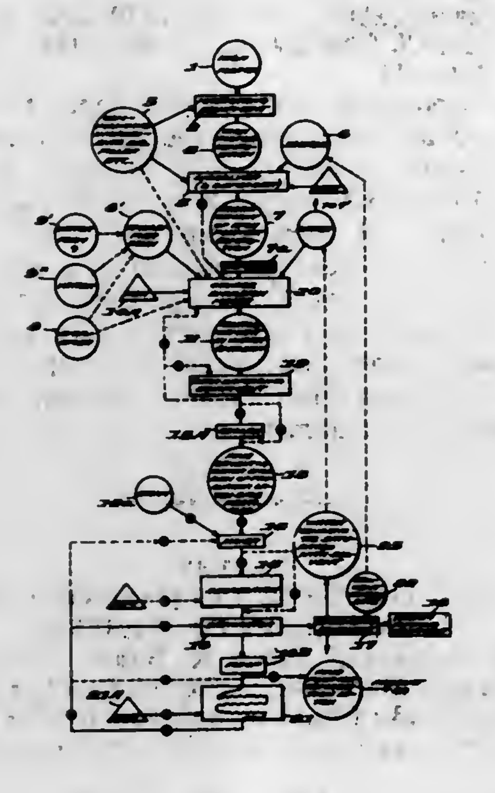
Eugene S. Barabas, Watchung, and Frederick Grosser, Midland Park, N.J., assignors to GAF Corporation, New York, N.Y.
No Drawing. Filed Jan. 29, 1970, Ser. No. 6,956
Int. Cl. C08f *19/00, 41/00*
U.S. Cl. 260—29.6 WB **10 Claims**

Stable aqueous emulsions comprising a graft copolymer of an alkyl acrylate graft copolymerized on a substrate copolymer of maleic anhydride with an N-vinyl lactam are disclosed. These copolymers are useful as cast films, protective coatings, impregnants, and sizing agents. They are redispersible in water.

3,652,482

PROCESSES OF PRODUCING AQUEOUS LATICES OF POLYMER COMPOSITIONS

Oliver W. Burke, Jr., P.O. Box 1266,
Fort Lauderdale, Fla. 33061
Continuation-in-part of application Ser. No. 691,823, Dec. 19, 1967, which is a continuation-in-part of application Ser. No. 621,997, Mar. 7, 1967. This application Sept. 10, 1970, Ser. No. 70,949
Int. Cl. C08d *7/00;* **C09d** *5/02*
U.S. Cl. 260—29.7 **40 Claims**



Aqueous latices are prepared from solvent dispersions of polymer compositions by forming a precursor latex particle size emulsion of the solvent dispersion, converting the same to an aerosol or suspension of latex droplets in a solvent vapor stream, providing a flow of latex, and impinging the suspension on the flow of latex to separate the suspended latex droplets from the solvent vapor stream, preferably after subjecting the suspended droplets to partial coalescence. Latices of elastomers and/or plastomers and/or other high polymer compositions having average molecular weights of the order of 10^3 to 10^8 can be produced economically while reducing or eliminating foaming and coagulation losses. Certain embodiments employ particular emulsifier combinations, form latices comprising fillers and/or plasticers or softeners, and/or produce latices of mixed polymers. Particular apparatus combination disclosed, and latices produced, are claimed in separate applications filed pursuant to requirements for restriction under 35 U.S.C. 121.

3,652,483

IMPACT-RESISTANT POLYVINYL CHLORIDE COMPOSITION

Takashi Tanaka and Haruhiko Yusa, Iwaki-shi, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed Oct. 1, 1969, Ser. No. 862,931
Claims priority, application Japan, Oct. 4, 1968, 43/72,356
Int. Cl. C08f *29/24, 29/50;* **C08d** *9/08*
U.S. Cl. 260—29.7 UP **3 Claims**

Impact-resistant polyvinyl chloride resin added to MBS polymer composition consisting of cross-linked MBS graft copolymer and polymethylmethacrylate latex.

3,652,484

THERMOPLASTIC MOLDING COMPOSITIONS BASED ON SATURATED POLYESTERS

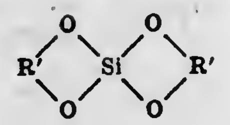
Klaus Weissermel, Kelkheim, Taunus, Rudolf Uebe, Hofheim, Taunus, and Walter Herwig, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed July 2, 1969, Ser. No. 838,667
Claims priority, application Germany, July 2, 1968, P 17 69 713.1
Int. Cl. C08g *51/50*
U.S. Cl. 260—29.15 B **16 Claims**

Molding compositions from linear saturated polyesters, inert inorganic solid materials or ionic copolymers, and silicon compounds of Formula I, II or III

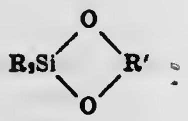
(I) $R_mSi(OR_1)_{4-m}$

(in which *m* represents zero or a whole number from 1 to 3)

(II)



(III)



or mixtures of these compounds, which molding compositions may be shaped in the thermoplastic range and from which molded articles are obtained which can easily be removed from the mold.

3,652,485

AIRCRAFT CARRIER DECK COATING NASL–C–1230

Albert W. Cizek, Jr., Valley Stream, Irving Lerner, Woodside, and Raymond Simeon, Howard Beach, N.Y., assignors to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Oct. 13, 1970, Ser. No. 80,489
Int. Cl. C08g *51/36*
U.S. Cl. 260—31.2 **2 Claims**

A high performance non-slip deck coating for deck areas of ships that has long pot-life, cures readily over a wide temperature range including below 50 degree temperatures and when applied is thicker, tougher, and more resistant to wear and shock than currently used non-slip deck coatings.

3,652,486

CARVABLE EPOXY RESIN COMPOSITIONS

James Young, East Lansing, Mich., assignor to Ren Plastics, Inc., Lansing, Mich.
No Drawing. Filed Nov. 13, 1968, Ser. No. 775,510
Int. Cl. C08g *51/04, 51/44*
U.S. Cl. 260—32.6 R **18 Claims**

Epoxy resin compositions are described which contain micro size, hollow glass spheres and a wax-like, lubricous material and which cure to low-density, dimensionally stable solids having low coefficients of thermal expansion and which are carvable and machinable with unusually low wear on cutting tools. The properties of the cured products make them especially useful in the production of models, prototypes, molds, dies and the like.

3,652,487

PROCESS FOR THE POLYMERIZATION OF ALICYCLIC MONOMER MASTERBATCHES

John P. Ward, Cuyahoga Falls, and William A. Judy, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Feb. 5, 1970, Ser. No. 9,056
Int. Cl. B01j *11/06;* **C08f** *45/02, 45/28*
U.S. Cl. 260—33.6 AQ **8 Claims**

There is disclosed a process for the polymerization of a monomeric premix comprised of monomer, filler, antioxidant, extending oil and crosslinking agent, by subjecting said monomeric premix under polymerization conditions to a four component catalyst system comprised of an organoaluminum compound, molecular oxygen, a tungsten metal salt and at least one compound of the general formula R—Y—H, wherein Y is selected from the group consisting of oxygen and sulfur and R is selected from a group consisting of hydrogen and hydrocarbon radicals and the products obtained by such a process.

3,652,488

FLAME RESISTANT SILICONE ELASTOMERS CONTAINING CARBON BLACK AND PLATINUM

James W. Harder, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed July 16, 1969, Ser. No. 842,396
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB **16 Claims**

A flame resistant silicone elastomer stock having improved flame resistance cures to a flame resistant silicone elastomer. The silicone elastomer stock contains 100 parts by weight of a silicone polymer free of silicon bonded hydrogen atoms, 10 to 100 parts by weight of a reinforcing silica filler, 10 to 150 parts per million by weight based on the weight of the silicone polymer of platinum and 0.05 to 2 parts by weight of carbon black essentially free of sulfur.

3,652,489

POLYESTER MOULDING COMPOSITIONS

Alan Crowe, St. Fagan, Cardiff, and David P. Fry, Llanishen, Cardiff, Glamorgan, South Wales, assignors to BP Chemicals Limited, London, England
No Drawing. Filed June 9, 1970, Ser. No. 44,887
Claims priority, application Great Britain, June 19, 1969, 31,070/69
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R **10 Claims**

Solid free flowing moulding compositions based on a liquid unsaturated polyester resin system which is adsorbed on a finely divided inorganic primary filler and then blended with a secondary filler or larger average particle size to produce the free flowing particulate product.

3,652,490

SURFACE COATING COMPOSITIONS AND ARTICLES COATED THEREWITH

Morgan E. Gager, 16 Skyline Drive,
South Hadley, Mass. 01075
No Drawing. Filed Apr. 6, 1970, Ser. No. 23,084
Int. Cl. B44d *3/18;* **C08g** *41/04, 51/04*
U.S. Cl. 260—41 A **2 Claims**

Polyurea coated papers or boards or cloths or films or metal sheets serving as substrates or bases or surfaces for artists' paints or color preparations are produced by the application of a polyurea polymer coating composition having free polyisocyanate groups to the substrate and the curing of the so coated substrate.

3,652,491
BORON-REINFORCED COMPOSITE

Lawrence E. Nielsen, Creve Coeur, and Joseph E. Fields, Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Aug. 20, 1968, Ser. No. 753,856
Int. Cl. C08f *45/10*
U.S. Cl. 260—41 **5 Claims**

A shaped composite structure comprising boron fiber as reinforcing filler in a matrix comprising the zinc salt of an acrylic acid polymer, and the method of preparing the same which comprises heating in a mold at a temperature of from about 175° C. to 400° C. and a pressure of from about 5,000 p.s.i. to 50,000 p.s.i. mixture of zinc oxide and an acrylic acid polymer in contact with the boron fiber.

3,652,492
PROCESS FOR PRODUCTION OF HIGH MOLECULAR SUBSTANCE HAVING OPTICAL SPECIFICITY

Hiroyoshi Kamogawa, Kawasaki-shi, and Masao Kato, Yokohama, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan
No Drawing. Filed Feb. 8, 1968, Ser. No. 703,898
Int. Cl. C08f *45/14*
U.S. Cl. 260—41 **3 Claims**

A process for the production of a phototropic high molecular weight polymer comprising reacting thionine with an N-hydroxymethyl group of a polymer of an N-hydroxymethyl(meth)acrylamide in a dehydrative condensation reaction to join said thionine to said polymer.

3,652,493
POLYESTERS STABILIZED WITH ORGANO SUBSTITUTED SILANES

Mary J. Stewart, Media, Pa., assignor to FMC Corporation, Philadelphia, Pa.
No Drawing. Filed Apr. 14, 1970, Ser. No. 28,530
Int. Cl. C08g *51/58*
U.S. Cl. 260—45.7 R **5 Claims**

A thermal stabilized polyester composition comprising a highly polymeric polyester containing a stabilizing amount of a compound selected from the group consisting of $HOSi(C_6H_5)_3$, $(C_6H_5)_2Si(OR)_2$, $(C_6H_5)_2(OH)_2$ and $(C_6H_5)_3SiH$ wherein R is a lower alkyl radical.

3,652,494
STABILIZED FLAMEPROOFED THERMOPLASTIC COMPOSITIONS

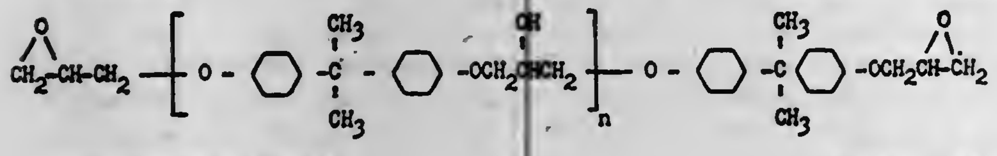
Robert M. Baker, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Aug. 16, 1968, Ser. No. 753,077
Int. Cl. C08f *45/58, 51/58*
U.S. Cl. 260—45.85 **6 Claims**

Development of adverse color formation during processing of flameproofed thermoplastic compositions having a halogenated flameproofing agent therein is suppressed by the incorporation into the polyolefin composition of a color suppressing agent selected from the group consisting of

(a) tetrakis [3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionyloxymethyl]methane;

(b) 4,6 - di - (4 - hydroxy-3,5-di-tert-butylphenoxy)-2-octyl thio-1,3,5-triazine;

(c) a polyepoxed resin containing more than one vicinal epoxy group formed by the reaction of bisphenol A (4,4′-isopropylidenediphenol) and epichlorohydrin in the presence of caustic and having the general formula



or mixtures thereof.

3,652,495
STABILIZATION OF RELATIVELY SATURATED POLYMERS WITH PHENOLIC STABILIZERS AND SULFUR-CONTAINING COMPOUNDS

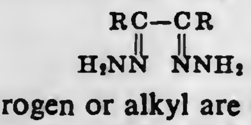
Paul R. Dean II, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Continuation of application Ser. No. 643,044, June 21, 1967. This application Jan. 13, 1970, Ser. No. 1,986
Int. Cl. C08d *11/04;* **C08f** *45/58*
U.S. Cl. 260—45.85 **20 Claims**

A stabilization system comprising an alkylated phenol and sulfur-containing compounds and polymers, including polystyrene, modified polystyrene, polypropylene and polyethylene polymers, having said stabilization system incorporated therein.

3,652,496
VIC-DIHYDRAZONOALKANES AS BIOSTATS IN PLASTICS, PAINTS AND TEXTILES

Christian H. Stapfer, Newtown, Pa., assignor to Cincinnati Milacron Chemicals Inc., Reading, Ohio
No Drawing. Filed June 18, 1969, Ser. No. 834,525
Int. Cl. C08f *45/62;* **C08g** *51/60*
U.S. Cl. 260—45.9 R **6 Claims**

Vic-dihydrazonoalkanes having the formula:



$$\begin{array}{cc} RC & -CR \\ \| & \| \\ H_2NN & NNH_2 \end{array}$$

wherein R is hydrogen or alkyl are used as active biostats for the protection of poly(vinyl halide) formulations as well as other plastic compositions, textiles, coating compositions and paint compositions against fungi and bacteria.

3,652,497
POLYMERIC THICKENERS AND METHOD OF PREPARING SAME

Thomas B. Junas, Arlington, and Augustin La Torre, Burlington, Mass., assignors to General Latex and Chemical Corporation, Cambridge, Mass.
No Drawing. Filed Apr. 20, 1970, Ser. No. 30,285
Int. Cl. C08f *15/36, 19/00*
U.S. Cl. 260—47 UA **18 Claims**

A polymeric surfactant thickener comprising a copolymer of an ester of an alkylarylpolyether alcohol, such as an alkylphenoxypolyethyleneoxyethanol, with an unsaturated carboxylic acid compound, such as acrylic or methacrylic acid, and an unsaturated acid compound, which copolymer comprises from about 70 to 95% of the ester and from about 5 to 30% of the unsaturated carboxylic acid, and which copolymer contains from about 20 to 100 oxyethylene groups. The polymeric surfactant thickener is particularly useful in thickening polymeric latex compositions, such as carboxylated styrene-butadiene latex containing filler material.

3,652,498
PROCESS FOR PREPARING POLYAMIDE-IMIDES

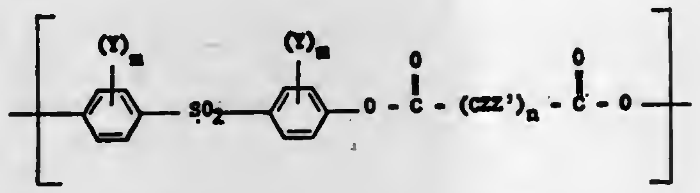
Edwin F. Morello, Whiting, Ind., and Carl Serres, Jr., Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 26,429, Apr. 7, 1970. This application Mar. 1, 1971, Ser. No. 119,875
Int. Cl. C08g *20/32*
U.S. Cl. 260—47 CP **12 Claims**

An improved process for producing soluble polymers for use as a polyamide-imide wire enamel. In a process where wire enamels are produced from an equimolar reaction of an acid halide of a benzene tricarboxylic acid anhydride and an aromatic primary diamine in an alkyl substituted phenol or phenol medium, the improvement in said process comprising pretreating the reaction medium with about 1 to 5% water or aliphatic alcohol based on weight prior to the scavenging of the entrained hydrogen halide with an alkylene oxide consisting of about 2 to 4 carbon atoms thus reducing the tendency of the polymer solution to gel and improving the properties of said polymer.

3,652,499
SOLVENT RESISTANT POLYESTERS

Willem F. H. Borman, Pittsfield, Mass., assignor to General Electric Company
No Drawing. Filed Apr. 29, 1969, Ser. No. 820,338
Int. Cl. C08g *17/06, 17/08*
U.S. Cl. 260—49 **12 Claims**

This invention is for a novel class of linear polyesters having the repeating structural unit



where Y is an inert substituent on the phenylene nucleus; Z and Z′ are individually selected from the group of hydrogen, lower alkyl and halogen; the letter *m* is any whole number from and including 0 to the number of positions on the phenylene nucleus available for substitution; and the letter *n* is 1, 3 or 5. The polymer preferably has sufficient repeating units to have a molecular weight of at least 10,000. Preferred polymers are derived from 4,4′-sulfonyl diphenol; 4,4′ - sulfonyl-di-(2,6-xylenol); 4,4′-sulfonyl-bis-(2,6-dichloro phenol) or 4,4′-sulfonyl-bis-(2,6-dibromo phenol) and glutaric acid. The polyesters of this invention are similar in structure to polyesters of the prior art, but are distinguishable therefrom by unexpectedly superior solvent resistant properties.

3,652,500
PROCESS FOR PRODUCING POLYAMIDE COATING MATERIALS BY ENDCAPPING

Marvin A. Peterson, Fort Wayne, Ind., assignor to General Electric Company
Filed Aug. 21, 1969, Ser. No. 851,835
Int. Cl. C08g *20/32*
U.S. Cl. 260—65 **12 Claims**

I first prepare a polyamide prepolymer using aromatic dianhydride and aromatic diamine starting materials wherein the reactants are in the molar ratio of 2/1 and thereby produce a stable precursor material. There is added to this stable precursor, which may be represented by the formula XYX, or YXY, wherein X represents aromatic dianhydride and Y represents aromatic diamine, a further amount of X or Y in a predetermined molar excess to effect polymerization of the precursors which are "zipped up" to any desirable molecular weight range and thereafter I slowly add either X or Y (depending upon which reactant was used to zip up the precursor) as a back addition. It is noted that the inherent viscosity which is an indicator of molecular weight climbs sharply, and if the X or Y is slowly added to the precursor, the formulator can closely control the molecular weight of the polyorthoamic acid prepolyimide material.

Applying the described procedure it has been found that aromatic carboxylic dianhydride terminated molecules exhibit certain undesirable properties when the prepolyimide materials produced are used as a coating on magnet wire; and therefore, following the described synthesis procedure, and subsequently to the back-titration, I proceed to endcap the molecules by the addition of Y so that all of the molecules are terminated by Y or its equivalent whereby the untoward effect of X terminated molecules will not manifest undesirable reactions when the material is used in producing coatings for magnet wire.

3,652,501
WATER SOLUBLE ALKYD RESINS

Kenneth H. Albers, Alden E. Blood, and Thomas C. Snapp, Jr., Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed May 28, 1970, Ser. No. 41,577
Int. Cl. C08g *20/30*
U.S. Cl. 260—75 N **16 Claims**

This invention relates to a curable, water-soluble alkyd resin useful in an improved protective coating composition. The resin is a polyesteramide of at least one polycarboxylic acid and at least one polyhydroxyalcohol, the alcohol comprising a substantial amount of N,N-bis[2-hydroxyethyl]-2-hydroxyethoxyacetamide and preferably one additional polyhydroxyaliphatic or cycloaliphatic alcohol, e.g. 1,4-cyclohexane dimethanol.

3,652,502
LINEAR POLYESTERS HAVING FREE CARBOXYL RADICALS DISTRIBUTED ALONG THE MOLECULAR CHAIN, COATINGS THEREOF AND COATED SUBSTRATES

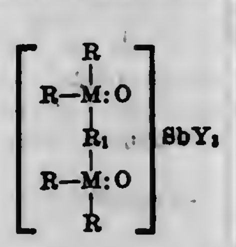
Winston J. Jackson, Jr., John R. Caldwell, and Herbert F. Kuhfuss, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Aug. 5, 1970, Ser. No. 61,441
Int. Cl. C08g *17/04, 17/18, 39/02*
U.S. Cl. 260—75 R **14 Claims**

Carboxylated linear polyester having linear chains from polyester forming constituents including a trihydric alcohol (e.g., glycerine) having two primary hydroxyl groups and one secondary hydroxyl group, said secondary hydroxyl group being esterified with a di- or tricarboxyl-containing anhydride constituent (e.g., trimellitic anhydride) to give said carboxylated linear polyester containing from 1–15 weight percent of free carboxyl groups from said esterified anhydride constituent which are pendant from the linear chains. These linear carboxylated polyesters form coatings and promote adhesion of polymeric coating material to substrates such as metal, glass, etc., e.g., coatings for steel, coatings for electrical components, ink compositions having improved adhesion, etc.

3,652,503
PRODUCTION OF AROMATIC POLYESTERS OF IMPROVED COLOUR

Warren Hewertson, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Nov. 17, 1969, Ser. No. 877,502
Claims priority, application Great Britain, Dec. 3, 1968, 57,271/68
Int. Cl. C08g *17/015*
U.S. Cl. 260—75 R **16 Claims**

In the production of highly polymeric polyesters of aromatic dicarboxylic acids and ethylene glycols by the polycondensation of polycondensable material at least 85 mole percent of which consists of at least one bis ethylene glycol ester of an aromatic dicarboxylic acid especially bis ethylene glycol terephthalates the use of a co-ordination compound of a trivalent antimony compound and an organic oxo compound of phosphorus or arsenic as polycondensation catalyst leads to products having a reduced tendency to a grey discolouration compared with those prepared using conventional antimonial catalysts. The preferred catalysts are coordination compound having the structure



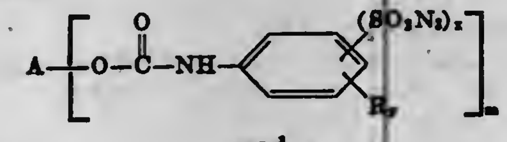
where each M is phosphorus or arsenic, each R is hydrocarbyl or hydrocarbyloxy, R_1 is a direct link or a divalent hydrocarbon group, especially —CH_2— or —CH_2CH_2—, and Y is an anion, especially halide.

3,652,504

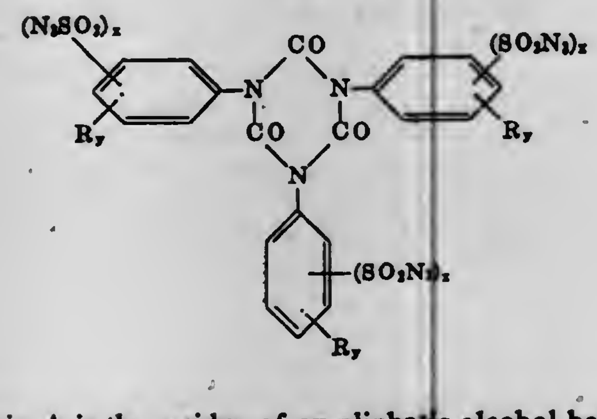
RADIATION SENSITIVE POLYURETHANE

Adnan A. R. Sayigh and Fred A. Stuber, North Haven, and Henri Ulrich, Northford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Mar. 2, 1970, Ser. No. 15,948
Int. Cl. C08q *22/04*
U.S. Cl. 260—77.5 A **4 Claims**

Polyurethane coatings are chemically bonded to substrates including polyolefins and like substrates with which polyurethanes will not normally react, by incorporating, into the polyurethane coating composition used to prepare the coating, from 0.1 percent to 10 percent by weight, based on polyurethane, of a sulfonylazide of formulae:



and



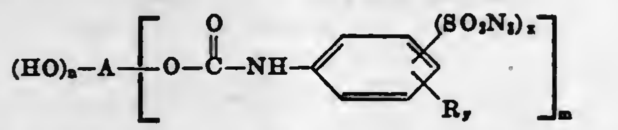
wherein A is the residue of an aliphatic alcohol having *m* hydroxyl groups and a molecular weight less than 300, R is lower-alkoxy or halo, *x* is 1 to 2, *y* is 0 to 2 and $x+y$ is $\ngtr 3$, the SO_2N_3 groups are in 3, 4, or 5-positions in the phenyl rings provided that one such position is always unsubstituted and *m* is 1 to 6. The chemical bonding can be carried out by irradiation imagewise thereby making the compositions useful in photoresist systems.

3,652,505

RADIATION SENSITIVE POLYURETHANES

Adnan A. R. Sayigh and Fred A. Stuber, North Haven, and Henri Ulrich, Northford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Mar. 2, 1970, Ser. No. 15,949
Int. Cl. C08g *22/04, 22/16*
U.S. Cl. 260—77.5 AQ **4 Claims**

Radiation (both heat and light)-sensitive polyurethanes are provided and are useful in the preparation of coatings which can be chemically bonded, by exposure to an appropriate source of radiation, to substrates containing C—H bonds (preferred substrates are polyolefins). The exposure can be carried out selectively in accordance with photoresist system technology or can be carried out over complete surfaces so as to bond paint and like sealant coatings to substrates such as exterior building surfaces and the like. The radiation-sensitive polyurethanes are derived by replacing part or the whole of the active hydrogen containing component, conventionally employed to form polyurethanes (by reaction with polyisocyanates), by a polyol of the formula:



where A=residue of an aliphatic alcohol of valency $(m+n)$ and M.W. <300, *n* is 2 to 5, *m* is 1 to 4 and $m+n$ is $\ngtr 6$, R is lower-alkyl or halogen, $x=1$ to 2, $y=0$ to 2 and $x+y$ is $\ngtr 3$, and SO_2N_3 is in the 3, 4, or 5-position in the phenyl nucleus, one of said positions being unsubstituted.

3,652,506

PROCESS FOR THE PREPARATION OF POLYURETHANE PREPOLYMERS COMPRISING TERMINAL ISOCYANATE GROUPS

Alain Gibler-Rambaud and Bernard Blanc, Martigues, France, assignors to Naphtachimie, Paris, France
No Drawing. Continuation-in-part of abandoned application Ser. No. 804,703, Mar. 5, 1969. This application July 22, 1970, Ser. No. 57,295
Claims priority, application France, July 25, 1969, 6925422
Int. Cl. C08g *22/34*
U.S. Cl. 260—77.5 AB **8 Claims**

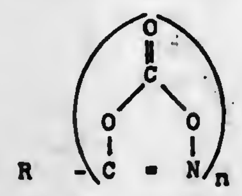
Preparation of polyurethane prepolymers having terminal isocyanate groups comprising reacting an organic polyisocyanate with a polyhydroxylated compound having less than 0.1 percent by weight of water in the presence of a hydrolyzable metal halide at a temperature within the range of 50° to 100° C.

3,652,507

CATALYTIC CONDENSATION OF CYCLIC NITRILE CARBONATES

Emmett H. Burk, Jr., Glenwood, Ill., Helmuth W. Kutta, Buffalo, N.Y., and Larry G. Wolgemuth, Hickory Hills, Ill., assignors to Atlantic Richfield Company, New York, N.Y.
No Drawing. Filed Dec. 3, 1968, Ser. No. 780,878
The portion of the term of the patent subsequent to Sept. 29, 1987, has been disclaimed
Int. Cl. C08g *22/00, 22/04, 22/34*
U.S. Cl. 260—77.5 AB **33 Claims**

An improved method of preparing an organic compound having one or more urea, urethane or thiourethane groups by condensing nucleophilic compounds having one or more primary amino, secondary amino, hydroxyl or mercapto radicals with cyclic nitrile carbonates of the formula:



wherein R is an organic radical which is free of reactive hydrogen atoms and *n* is 1 to 4. The method involves catalyzing the condensation reaction with the catalyst combination of:

(I) a first metal selected from the metals of Groups III through V of the Periodic Chart, e.g., tin, and

(II) a second metal selected from the metals of Groups I and II and the iron series of Group VIII of the Periodic Chart, e.g., and alkali metal. Thus, for example, polyurethanes with weight average molecular weights of from about 150,000, or even about 300,000, to 1 million or more can be prepared by condensing a poly(tetramethylene ether) glycol with butane-1,4-di(nitrile carbonate) using a catalyst combination of tin (supplied as dibutyl tin dilaurate) and sodium (supplied as sodium t-butoxide).

3,652,508

VISCOSITY STABLE ALIPHATIC POLYURETHANE COMPOSITIONS AND METHOD OF PREPARATION THEREOF

Donald L. Segur, Andover, and Harold E. Garey, Jr., Ipswich, Mass., assignors to General Latex and Chemical Corporation, Cambridge, Mass.
No Drawing. Filed Apr. 7, 1969, Ser. No. 814,159
Int. Cl. C08g *22/04, 22/08*
U.S. Cl. 260—77.5 AA **24 Claims**

Viscosity-stable aliphatic polyurethane resin compositions are prepared by reacting an alkylene oxide with moisture present in the organic polyfunctional compound prior to the reaction of the compound, such as a polyol, with the aliphatic polyisocyanate compounds to prepare the aliphatic polyurethane resin.

3,652,509

COPOLYAMIDES OF PARAXYLYLENE DIAMINE

Yoshizo Tsuda, Akinori Yamamoto, and Masamitsu Tanimura, Otsu-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan
No Drawing. Filed Nov. 18, 1969, Ser. No. 877,851
Claims priority, application Japan, Nov. 27, 1968, 43/86,397
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **26 Claims**

The present invention relates to a polyamide, and a fiber thereof, consisting of a novel paraxylylene copolyamide. More particularly, the invention relates to a polyamide fiber consisting of a copolyamide of paraxylylene diamine with two α-ω dicarboxylic alkanes each having 6–13 carbon atoms and differing from one another in that one of said acids has 1–2 carbon atoms more than the other.

3,652,510

POLY(1,4-BENZAMIDE) PARTICLES AND THE PREPARATION THEREOF

Richard N. Blomberg, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation of abandoned application Ser. No. 747,126, July 24, 1968. This application Mar. 17, 1971, Ser. No. 125,354
Int. Cl. C08g *20/04*
U.S. Cl. 260—78 A **9 Claims**

Shaped acicular particles of poly(1,4-benzamide) of specified characteristics are precipitated from a composition comprising the polymer, an amide or urea medium and lithium chloride, using specified non-solvents. Articles of manufacture including textile denier fibers, that are comprised of these particles exhibit excellent tensile properties.

3,652,511

WATER-DISPERSIBLE POLYIMIDE COATINGS

Gerald G. Vincent, Barrington, and Thomas E. Anderson, Palatine, Ill., assignors to De Soto, Inc., Des Plaines, Ill.
No Drawing. Filed Apr. 28, 1969, Ser. No. 820,017
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 UA **10 Claims**

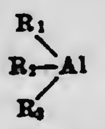
Water dispersible polyimide coatings are formed by reacting an unsaturated anhydride such as maleic anhydried with a diprimary amine such as polyoxypropylene diamine, and the bis-imide so provided is then reacted with further diprimary amine to produce a resinous polyimide polymer having secondary amino-hydrogen atoms which enable reaction with a polycarboxylic acid monoanhydride, such as maleic anhydride, to produce an acidic derivative which can be dispersed in water with the aid of a base. The water-dispersed resin can be electrodeposited at the anode with a unidirectional electrical current. If desired, a sulfhydryl-terminated low molecular weight elastomer may be incorporated into the polyimide utilizing the unsaturation of the polymer for this purpose.

3,652,512

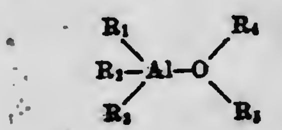
POLYMERS OF 3-METHYL-1,3-PENTADIENE

James Neil Henderson, Hudson, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Continuation of application Ser. No. 836,200, June 11, 1969, which is a continuation of application Ser. No. 554,655, June 2, 1966. This application June 16, 1970, Ser. No. 48,909
Int. Cl. C08d *3/08, 1/14*
U.S. Cl. 260—79.5 B **7 Claims**

A polymer of 3-methyl-1,3-pentadiene having a high cis-1,4 content prepared by subjecting 3-methyl-1,3-pentadiene to polymerization in the presence of a catalyst formed from (1) at least one metal halide selected from the group consisting of titanium tetrachloride and vanadium trichloride, and (2) at least one compound selected from the group consisting of (A) an organoaluminum compound of the formula



and (B) organo etherates of compounds having the formula:

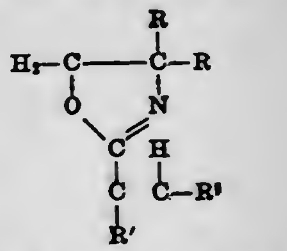


3,652,513

POLYMERS OF FLUOROOXAZOLINES AND THEIR PREPARATION

Domenick Donald Gagliardi, East Greenwich, R.I., assignor to Commercial Solvents Corporation, New York, N.Y.
No Drawing. Original application Dec. 12, 1966, Ser. No. 600,713. Divided and this application Feb. 12, 1969, Ser. No. 871,151
Int. Cl. C08f *7/12*
U.S. Cl. 260—80.3 **15 Claims**

Polymers of compositions having the formula



wherein R is a radical selected from the group consisting of —CH_2OH, lower alkyl having 1 up to about 3 carbon atoms and —CH_2OOCR^2; R^2 is a radical selected from the group consisting of alkyl having 1 up to about 22 carbon atoms and fluoroalkyl having 1 up to about 22 carbon atoms; R′ is a radical selected from the group consisting of alkyl having 1 up to about 21 carbon atoms and fluoroalkyl having 1 up to about 21 carbon atoms wherein not less than 75% of the hydrogen atoms have been replaced by fluorine atoms and wherein at least 2 of the hydrogen atoms on at least one terminal carbon have been replaced by fluorine atoms with the provision that when R′ is an alkyl radical at least one of the substituents designated R is the radical —CH_2OOCR^2 and the substituent R^2 is a fluoroalkyl radical having 1 up to about 22 carbon atoms wherein not less than 75% of the hydrogen atoms have been replaced by fluorine atoms and wherein at least 2 of the hydrogen atoms on at least one of the terminal carbon atoms have been replaced by fluorine atoms; and R^9 is a radical selected from the group consisting of hydrogen, lower alkyl, and aryl, are provided as well as methods for their preparation.

3,652,514

CURABLE, AMORPHOUS, OLEFINIC TERPOLYMERS FROM ALPHAMONO OLEFINS AND POLYENES

Sebastiano Cesca, Sergio Arrighetti, and Walter Marconi, Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

No Drawing. Filed Sept. 5, 1969, Ser. No. 855,771
Claims priority, application Italy, Sept. 5, 1968, 843,706/68
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.78 **10 Claims**

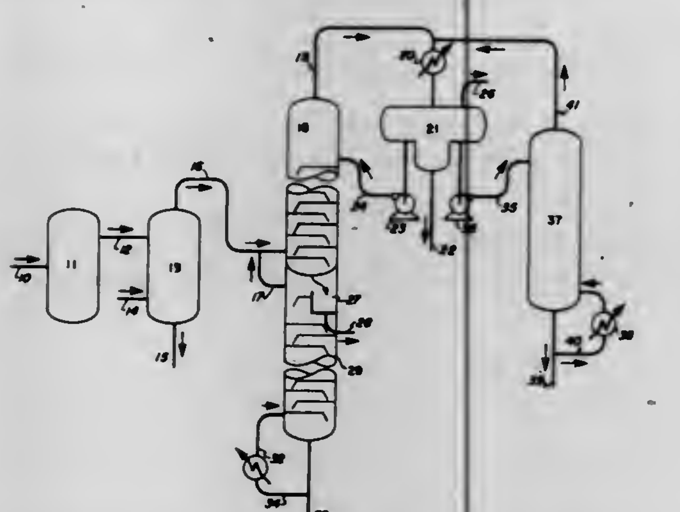
A curable amorphous olefinic terpolymer of two different alpha-olefins having up to 10 carbon atoms and a polycyclic polyene, such as 4,7 endomethylene-4,7-dihydroindene, which contains an endomethylene group ortho-condensed with a hydrocarbon ring, the two carbon atoms common to two rings being part of a conjugated diene system the double bonds of which are in the ring other than that containing the endomethylene group, is disclosed.

3,652,515

NOVEL PROCESS WHEREIN MONOMERS AND DILUENT SOLVENT ARE RECOVERED FROM FLASHED EFFLUENT FROM THE POLYMERIZATION OF ETHYLENE, A C_3–C_{10} HIGHER ALPHA OLEFIN, AND OPTIONALLY A THIRD MONOMER

James H. Love, Somerville, N.J., assignor to Esso Research and Engineering Company

Filed Dec. 8, 1969, Ser. No. 883,042
Int. Cl. C08f *15/40, 15/04*
U.S. Cl. 260—80.78 **12 Claims**



Monomers and diluent-solvent are recovered from flashed effluent from the polymerization of ethylene, a C_3 to C_{10} higher alpha olefin, and optionally third monomer.

3,652,516

POLYMERIZATION OF CONJUGATED DIENES OR MONOVINYL AROMATIC MONOMERS WITH MULTIFUNCTIONAL INITIATORS FROM DIISOPROPENYLBENZENE

Ralph C. Farrar, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Feb. 10, 1969, Ser. No. 798,128
Int. Cl. C08f *7/04, 15/04;* **C08d** *1/32*
U.S. Cl. 260—83.7 **7 Claims**

Hydrocarbon soluble multifunctional polymerization initiators are produced by reacting diisopropenylbenzene compounds with organomonolithium compounds.

3,652,517

VULCANIZABLE POLYMERS AND PROCESS FOR PRODUCING THEM

Toshio Yoshimoto, Seiya Kaneko, Takashi Sasaki, Tsuneaki Narumiya, Hiroshi Yoshii, and Tetsuya Takamatsu, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Filed Feb. 5, 1970, Ser. No. 9,071
Claims priority, application Japan, Feb. 8, 1969, 44/9,010
Int. Cl. C08d *5/00, 5/04*
U.S. Cl. 260—85.1 **17 Claims**

Halogenated and hydrogenated polymers which are vulcanizable and which are produced by hydrogenating a polymer dissolved in an inert solvent in the presence of a Ziegler-type hydrogenation catalyst, halogenating the resulting hydrogenated polymer by contacting halogen therewith, mixing water or a non-solvent with said hydrogenated polymer solution, removing the catalyst with water or the non-solvent, and recovering the halogenated hydrogenated polymer free from the catalyst.

3,652,518

PROCESS FOR PREPARING ALTERNATING COPOLYMERS OF BUTADIENE AND α-OLEFINE AND HIGH MOLECULAR WEIGHT ALTERNATING COPOLYMERS

Akihiro Kawasaki, Ichihara-shi, Hiroaki Ueda, Chiba-shi, and Isao Maruyama, Ichihara-shi, Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1969, Ser. No. 884,871
Claims priority, application Japan, Dec. 26, 1968, 43/94,939; Mar. 22, 1969, 44/21,423; Apr. 15, 1969, 44/28,632
Int. Cl. C08d *1/14, 3/02*
U.S. Cl. 260—85.3 **9 Claims**

A process for preparing an alternating copolymer of butadiene and α-olefine is disclosed. Said process comprises contacting butadiene and α-olefine in liquid phase with a catalyst system comprising the first component of an organoaluminum compound having the general formula AlR_3 (R represents a hydrocarbon radical), the second component being a vanadium compound having no vanadium-halogen linkage and the third component being chlorine, bromine, iodine, a compound thereof or a mixture of them. The copolymerization conditions such as temperature, initial monomer composition, diluent etc. are also disclosed. Physical properties of a novel high molecular weight alternating copolymer of butadiene and an α-olefine having the formula $CH_2{=}CHR$, wherein R represents a C_1–C_4 normal or branched chain alkyl radical are also disclosed.

3,652,519

ALTERNATING COPOLYMERS OF BUTADIENE AND α-OLEFINE AND A PROCESS FOR THEIR PREPARATION

Akihiro Kawasaki, Ichihara-shi, Hiroaki Ueda, Chiba-shi, and Isao Maruyama, Ichihara-shi, Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1969, Ser. No. 884,479
Claims priority, application Japan, Dec. 21, 1968, 43/93,503, 43/93,504
Int. Cl. C08d *3/02*
U.S. Cl. 260—85.3 **10 Claims**

Alternating copolymers of butadiene and α-olefine of the formula $CH_2{=}CHR$ wherein R is C_1–C_4 alkyl or phenyl are formed by reaction in the presence of a catalyst comprising an organoaluminum compound and certain vanadium chlorides or oxychlorides. When styrene is used, the copolymer has an intrinsic viscosity greater than 0.1 dl./g. in chloroform at 30° C.; otherwise the copolymers have an intrinsic viscosity not greater than 0.1 dl./g., measured similarly.

3,652,520

POLYMERS OF POLYMERIZABLE POLYDIENE ETHYLENICALLY UNSATURATED ESTERS

Patrick W. Ryan, Chicago Heights, and Ronald E. Thompson, Park Forest, Ill., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Mar. 22, 1968, Ser. No. 715,155
Int. Cl. C08f *3/62, 15/18*
U.S. Cl. 260—86.1 **14 Claims**

Polymerizable polydiene ethylenically-unsaturated esters having at least about one terminal, ethylenically-unsaturated acyloxy group are obtained by esterifying certain intermediate polyhydroxy polymers with an acyl compound, reactive with hydroxyl to form an ester, and having its acyl group ethylenically-unsaturated, such as acrylic, crotonic or methacrylic acid. The usually liquid intermediate polyhydroxy polymer has an average of at least about 1.8 predominantly primary, terminal, allylic hydroxyl groups per molecule and is an addition polymer containing 0 to about 75% by weight of the residue of an alpha-monoolefin, such as styrene, and 25 to 100% of the residue of a 1,3-diene, such as butadiene, the intermediate polyhydroxy polymer having a viscosity at 30° C. of about 5–20,000 poises, having the majority of its unsaturation in the main carbon chain, and a number average molecular weight of about 400 to 25,000. These usually liquid polydiene ethylenically-unsaturated esters contain terminal, allylic, ethylenically unsaturated acyloxy or ester groups and are capable of further polymerization through these unsaturated end groups to produce homopolymers and copolymers with polymerizable vinyl monomers, such as styrene, ranging in properties from soft rubbers to high impact plastics. These ethylenically-unsaturated esters can be used as modifiers in various plastic and other poly-ester compositions to improve flexibility, electrical properties and hydrolytic stability.

3,652,521

LATENTLY REACTIVE COMPOSITION REACTABLE UNDER INFLUENCE OF MOISTURE AND ITS METHOD OF PREPARATION AND USE

Thomas Abend, Rapperswil, Switzerland, assignor to Gurit AG, Richterswil, Switzerland

No Drawing. Filed Aug. 29, 1969, Ser. No. 854,282

Claims priority, application Switzerland, Sept. 4, 1968, 13,265/68

Int. Cl. C08f *3/64, 15/18*
U.S. Cl. 260—86.1 **16 Claims**

A composition of matter containing a monomer wherein the monomer may be caused to form a polymer at some time in the future without the necessity of adding any additional ingredients to the composition. Polymerization is caused by exposing the composition to moisture. Essentially, the presence of the moisture results in a free-radical reaction wherein certain radicals cause the monomer to undergo a polymerization reaction. The novel composition of this invention comprises (1) at least one liquid material polymerizable under the action of radicals, (2) at least one initiator system causing the formation of radicals under the influence of surrounding moisture, and (3) a drying agent. Certain optional ingredients such as fillers, surface active agents and the like may also be added.

3,652,522

PROCESS FOR THE POLYMERIZATION OF VINYL CHLORIDE

Sergio Lo Monaco and Corrado Mazzolini, Mestre, Luigi Patron, Sestriere, and Alberto Moretti, Venezia, Italy, assignors to Chatillon Societa Anonima Italiana per le Fibre Tessili Artificiali S.p.A., Milan, Italy

No Drawing. Filed Dec. 16, 1968, Ser. No. 784,191

Claims priority, application Italy, Dec. 19, 1967, 24,081/67

Int. Cl. C08f *1/62, 1/04, 3/30*
U.S. Cl. 260—87.5 R **16 Claims**

A low-temperature bulk polymerization process for vinyl chloride is disclosed wherein the polymerization is carried out in the presence of a combined catalyst system consisting of an organic hydroperoxide and a salt of a monoester of sulphurous acid.

3,652,523

3,3-DIMETHYL-4,5-EPOXYPENTENE-1 AND POLYETHERS THEREOF

Thomas N. Baker III, Philadelphia, and Giovanni A. Bonetti, Wynnewood, Pa., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Mar. 24, 1970, Ser. No. 22,379

Int. Cl. C08f *7/12*
U.S. Cl. 260—88.3 **3 Claims**

The novel monomer, 3,3-dimethyl-4,5-epoxypentene-1, and the polyethers prepared therefrom. The polyethers are characterized by having an unsaturated side chain which is amenable to curing, graft polymerization and in particular the production of stable halogenated fire resistant polymers.

3,652,524

PROCESS FOR POLYMERIZING VINYL CHLORIDE WITH LOW MOLECULAR WEIGHT ACYL PEROXYCARBONIC ESTERS

Roger N. Lewis, Pinole, and Ronald L. Friedman, San Rafael, Calif., assignors to Argus Chemical Corp., Brooklyn, N.Y.

No Drawing. Original application Dec. 26, 1967, Ser. No. 693,187, now Patent No. 3,585,232, dated June 15, 1971. Divided and this application May 4, 1970, Ser. No. 46,587

Int. Cl. C08f *3/30, 1/11, 1/74*
U.S. Cl. 260—92.8 W **7 Claims**

Low molecular weight (4–7 carbon atoms) acyl peroxycarbonic aliphatic esters.

3,652,525

METHOD FOR PRODUCING POLYVINYL CHLORIDE PARTICLES

Akihide Nakamura, Iko Ito, and Mutuo Goto, Niihama-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed June 17, 1968, Ser. No. 737,292

Int. Cl. C08f *1/13, 3/30, 47/20*
U.S. Cl. 260—92.8 W **5 Claims**

Vinyl chloride polymer having a composite structure in which the average polymerization degree of molecules constituting unit particles lowers from their respective central portions towards the circumferential portions is obtained by elevating the polymerization temperature or by adding a chain transfer agent to the polymerization system in the course of emulsion polymerization of vinyl chloride. Plastisol prepared from the vinyl chloride resin obtained by subjecting the polymer latex to spray drying has lower gelation temperature than that of a plastisol prepared from vinyl chloride polymer obtained according to usual processes, and is very useful for various uses such as coating, dipping and slush molding.

3,652,526

POLYMERIZATION PROCESS FOR VINYLIDENE MONOMERS

Robert L. Bourget, North Wilbraham, and Nandlal S. Reejhsinghani, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 24, 1969, Ser. No. 888,086

Int. Cl. C08f *1/11, 3/30*

U.S. Cl. 260—92.8 W **14 Claims**

Vinylidene monomers are polymerized in a relatively short polymerization cycle utilizing a fast polymerization initiator and a substantially constant polymerization rate over a substantial portion thereof. Early in the cycle, the hourly rate of conversion is brought to about 26.0 to 35.0 percent and, to the point of termination of the reaction, it is maintained at a level not exceeding about 35.0 percent. The conversion rate is maintained substantially constant within the range specified until at least about 60.0 percent of the monomer is converted to polymer, and this is accomplished by controlling heat removal from the reaction and by incrementally adding initiator and water. The process has proven particularly advantageous for polymerizing vinyl chloride monomer formulations with acetyl sulfonyl peroxide initiators.

3,652,527

POLYMERIZATION OF PROPYLENE WITH ZIEGLER CATALYSTS IN A STIRRED GAS PHASE REACTOR

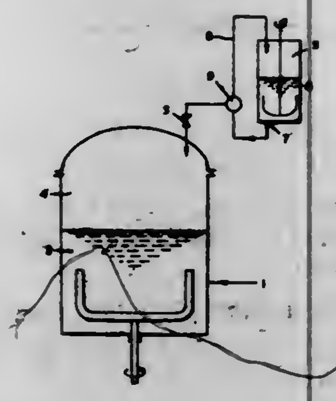
Hans-Georg Trieschmann, Hambach, Wolfgang Rau, Heidelberg, and Theodor Jacobsen and Helmut Pfannmueller, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Oct. 27, 1969, Ser. No. 869,577

Claims priority, application Germany, Oct. 29, 1968, P 18 05 765.3

Int. Cl. C08f *1/42, 3/08*

U.S. Cl. 260—93.7 **7 Claims**



A process for the polymerization of propylene in the gas phase in a bed of powdered polypropylene by means of a catalyst system of: (a) a solution of an aluminum alkyl in a hydrocarbon; and (b) a suspension of a titanium or vanadium halide compound in a hydrocarbon; in which the two components (a) and (b) are supplied separately to the reaction zone.

3,652,528

PROCESS FOR THE POLYMERIZATION OF ISOPRENE IN HOMOGENEOUS PHASE

Augusto Bonfardeci, Milan, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Feb. 11, 1970, Ser. No. 10,622

Claims priority, application Italy, Feb. 11, 1969, 12,702/69

Int. Cl. C08d *1/12, 3/02, 3/10*

U.S. Cl. 260—94.3 **6 Claims**

There is disclosed a process for polymerizing isoprene, in homogeneous phase, to high polymers in which the proportion of isoprene units having cis-1,4 enchainment is practically identical with that of natural rubber. The process utilizes a ternary catalyst system prepared by mixing $TiCl_4$, an organometallic compound of the type AlR_2Cl in which R is an alkyl group, and an unsaturated polymer, preferably a polybutadiene or polyisoprene having at least prevailingly cis-1,4 structure and a molecular weight such that the catalyst is soluble in the polymerization mixture and preferably corresponding to an intrinsic viscosity of from 0.4 to 0.8 dl./g., determined in toluene at 30° C.

3,652,529

METHOD FOR PRODUCING SOLID POLYBUTADIENE CONTAINING MORE THAN 60 PERCENT 1,2-MICROSTRUCTURE

William A. Judy and Morford C. Throckmorton, Akron Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,354

Int. Cl. C08d *1/14, 3/06*

U.S. Cl. 260—94.3 **4 Claims**

A method is disclosed to produce a polybutadiene containing more than 60 percent of the polymer in a 1,2 microstructure which comprises polymerizing butadiene under solution polymerization conditions, with a catalyst comprising (1) an organoaluminum compound, (2) tungsten oxychloride and (3) a nickel salt of a carboxylic acid or an organo complex compound of nickel in which the mole ratio of aluminum to tungsten is equal to or greater than 1.5/1.

3,652,530

ANTIHEMOPHILIC FACTOR PREPARED FROM BLOOD PLASMA USING POLYETHYLENE GLYCOL

Alan J. Johnson, New York, Jack Newman, Pelham, and Margaret Howell Karpatkin, New York, N.Y., assignors to American National Red Cross, Washington, D.C.

No Drawing. Filed Aug. 28, 1967, Ser. No. 663,507

Int. Cl. A23j *1/06;* **C08h** *1/00*

U.S. Cl. 260—112 B **11 Claims**

Antihemophilic factor is separated as a precipitate from fresh-frozen human plasma with a low concentration of ethanol, preferably 3 percent, at low temperature, followed by extraction with a low ionic strength buffer, preferably a TRIS buffer solution. The resulting product of

intermediate purity (25–60× purified) can be lyophilized and stored or can be further treated to obtain a high purity AHF (200–400× purified). High purity AHF is produced by further treating the intermediate purity product with PEG, preferably of a molecular weight of 4,000, in two steps, the first at about 6 percent and the second at about 12 percent. The high purity product is lyophilized before storage. Both the intermediate, and the high, purity AHF are used in the treatment of classical hemophilia.

3,652,531

R-GLYCYL-L-TRYPTOPHYL-L-METHIONYL-GLYCINE AMIDES AND PREPARATION THEREOF

Munetugu Miyoshi, Nishinomiya-shi, Kouichi Niwa, Ikeda-shi, Takanobu Ohnishi, Osaka-shi, Tamotsu Danno, Moriguchi-shi, and Koh Higaki, Nara-shi, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

No Drawing. Filed Aug. 22, 1969, Ser. No. 852,492

Claims priority, application Japan, Aug. 24, 1968, 43/60,772

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 **6 Claims**

A glycyl-L-tryptophyl-L-methionyl-glycine ester having a protected terminal α-amino group is amidated. A glycyl-L-tryptophyl - L - methionyl-glycine amide having a protected terminal α-amino group is produced. This compound inhibits gastric juice secretion. The terminal α-amino group is protected with an alkyl carbonyl, an alkoxycarbonyl, an aralkoxycarbonyl or an arylsulfonyl group.

3,652,532

CATIONIC AZO DYES CONTAINING AMMONIUM SALTS

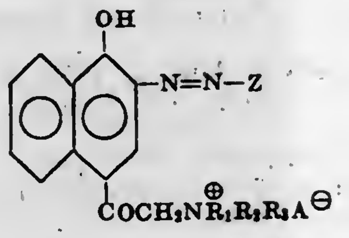
John Blackwell, Kennett Square, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 27, 1969, Ser. No. 794,407

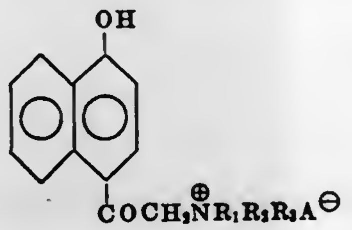
Int. Cl. C09b *29/10*

U.S. Cl. 260—187 **6 Claims**

Cationic dyes based on (4-hydroxy-1-naphthacyl) ammonium salts and having the structure:



where R_1 is alkyl; R_2 and R_3 are independently alkyl or hydroxyalkyl, or together form an alicyclic ring; $A^\ominus$ is an anion; Z is a group of a diazo compound of the carbocyclic or heterocyclic aromatic series, free of sulfonic and carboxylic acid groups. In addition, the coupler utilized in the preparation of these dyes and having the structure:



where R_1 is alkyl; R_2 and R_3 are independently alkyl or hydroxyalkyl, or together form an alicyclic ring; and A is an anion, is included in the invention.

3,652,533

PHENYL-AZO-HYDROXYNAPHTHOLIC ACID AMIDE PIGMENTS

Armand Roueche, Neu-Allschwil, Switzerland, assignor to Ciba Limited, Basel, Switzerland

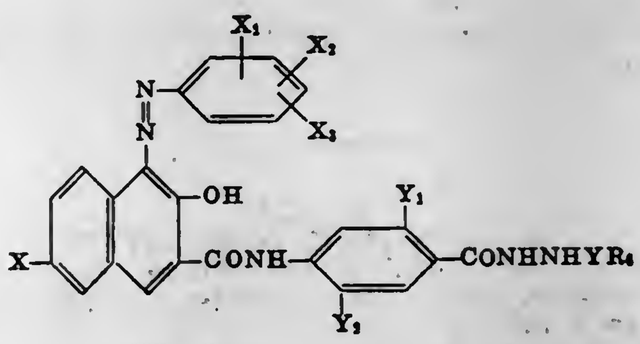
No Drawing. Filed Nov. 19, 1968, Ser. No. 777,164

Claims priority, application Switzerland, Dec. 6, 1967, 17,111/67

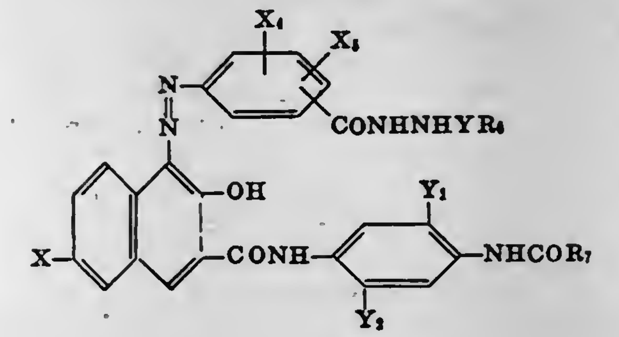
Int. Cl. C07c *107/08;* **C09b** *29/28*

U.S. Cl. 260—203 **7 Claims**

Monoazo pigment of the formulae



and



in which X is hydrogen, bromine, nitro or lower alkoxy, Y is —CO— or —SO_2—, X_1 and X_2 each is hydrogen, chlorine, lower alkyl, lower alkoxy, phenoxy, chlorophenoxy, lower alkylphenoxy, nitro, lower carbalkoxy, carbophenoxy, lower alkanoylamino or trifluoromethyl, X_3 is hydrogen, chlorine or —$CONHR_5$ in which R_5 is hydrogen, lower alkyl, phenyl or substituted phenyl, Y_1 and Y_2 each is hydrogen, chlorine or lower alkyl and R_6 is hydrogen, lower alkyl, phenyl or substituted phenyl, X_4 is chlorine, lower alkyl, lower alkoxy, lower carbophenoxy, phenoxy, chlorophenoxy or lower alkyl phenoxy, X_5 is hydrogen or chlorine, and R_7 is hydrogen, lower alkyl, amino, lower alkylamino, unsubstituted phenyl or phenylamino, substituted phenyl or substituted phenylamino; suitable for the spin-coloration of filament and staple-fibre viscose, cellulose ethers, cellulose esters, polyamides, polyurethanes and polyesters.

3,652,534

PHENYL-AZO-PHENYL DYESTUFFS

Hans E. Wegmuller, Riehen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

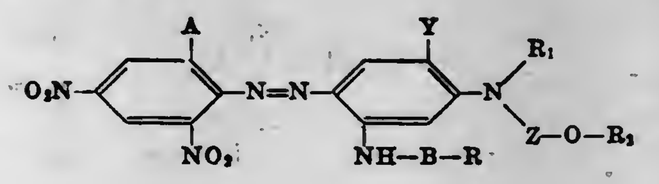
No Drawing. Original application Sept. 19, 1966, Ser. No. 580,184, now Patent No. 3,533,722. Divided and this application Oct. 20, 1969, Ser. No. 871,082

Claims priority, application Switzerland, Sept. 24, 1965, 13,252/65

Int. Cl. C07c *107/06;* **C09b** *29/24, 29/08*

U.S. Cl. 260—207 **8 Claims**

Dyestuffs of the formula



wherein:

A represents hydrogen, chlorine or bromine, lower alkyl, lower alkoxy, lower carbalkoxy or lower alkylsulfonyl;
Y represents lower alkoxy;
B represents the —CO—, —COO— or —SO_2— group;
R represents lower alkyl;
Z represents alkylene having 2 to 4 carbon atoms;
R_1 represents phenyl-lower alkylene which may be ring-substituted by bromine, chlorine, lower alkyl or lower alkoxy; and
R_2 represents lower alkanoyl

are provided. These dyestuffs are only slightly water-soluble and are especially suitable for dyeing hydrophobic organic fibers.

3,652,535
KASUGAMYCIN DERIVATIVES

John G. Kell, Manlius, and Richard H. Schreiber, Canastota, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed May 1, 1970, Ser. No. 33,865
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R **3 Claims**

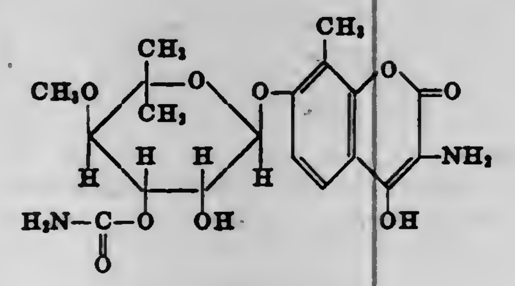
Semi-synthetic kasugamycin derivatives have been found useful in the treatment of diseases caused by bacterial infection. These derivatives can be prepared by the use of the intermediate compound, Bios C (5-[2-carbobenzoxamido-2,3,4,6-tetradeoxy - 4 - amino-α-D-arabinohexopyranosyl]-[IR:2S:3S:4R:5R:6R]-inositol).

3,652,536
NOVENAMINE COMPOUNDS AND DERIVATIVES

Oldrich K. Sebek and Herman Hoeksema, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed June 2, 1969, Ser. No. 829,757
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R **6 Claims**

Enzymatic cleavage of the amide bond in the antibiotic novobiocin yields novenamine, a novel compound, having the structure:



Novenamine is antibacterially active and, thus, can be used as an antibacterial agent. Further, it can be acylated to form novel compounds which possess antimicrobial properties.

3,652,537
EPIERYTHROMYCYLAMINE AND EPIERYTHROMYCYL B AMINE

Eddie H. Massey and Barbara S. Kitchell, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,937
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 E **3 Claims**

The novel compounds epierythromycylamine and epierythromycyl B amine are isolated, along with erythromycylamine and erythromycyl B amine, from the hydrogenation of erythromycin oxime and erythromycin B oxime. The epi amines are antibiotically active.

3,652,538
FORMULATION PROCESS FOR POLYNUCLEOTIDE HOMOPOLYMERS

John F. Niblack, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Aug. 8, 1969, Ser. No. 848,716
Int. Cl. C07d *51/52, 51/54*
U.S. Cl. 260—211.5 R **2 Claims**

Clear, non-particulate, free-flowing, sterile, aqueous solutions of polyinosinic:polycytidilic acid complexes suitable for medicinial application are prepared by an improved process.

3,652,539
PROCESS FOR THE PRODUCTION OF HYDROXYPROPYL CELLULOSE

Kabuo Miura, Schichitaro Sekigawa, and Kyosaku Nishizawa, Niigata, and Kazuo Nishimura, Tokyo, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1970, Ser. No. 17,726
Int. Cl. C08b *11/08, 11/20*
U.S. Cl. 260—231 R **1 Claim**

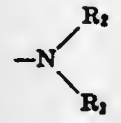
Alkali cellulose is allowed to react with 20–80% of total moles of propylene oxide and after the reaction, 60–90% of alkali component in the reaction mixture is neutralized with acid and then the remaining propylene oxide is reacted further with alkali cellulose and the remaining alkali component is finally neutralized. The produced hydroxypropyl cellulose has good solubility properties for cold water and for many kinds of organic solvents.

3,652,540
NOVEL ION EXCHANGERS ON THE BASIS OF CELLULOSE AND A METHOD FOR PREPARING THE SAME

Helmut Determann, Frankfurt am Main-Niederrad, and Theodor Wieland, Heidelberg, Germany, assignors to Pharmacia Fine Chemicals AB, Bjorkgatan, Uppsala, Sweden

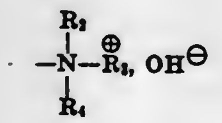
No Drawing. Filed Feb. 6, 1970, Ser. No. 9,400
Claims priority, application Sweden, Feb. 7, 1969, 1,646/69
The portion of the term of the patent subsequent to Aug. 3, 1988, has been disclaimed
Int. Cl. C08b *11/04, 11/14, 29/03*
U.S. Cl. 260—232 A **9 Claims**

A novel ion-exchanger consisting of rounded particles of regenerated cellulose substituted by groups of the formula —R_1—Z, wherein R_1 stands for a lower alkylene group, containing 1–3 carbon atoms and optionally substituted with a hydroxyl group, and Z stands for a carboxylic, sulfo or phosphono group, or salts thereof, or an amino group of the formula



$$-N\begin{matrix} \diagup R_2 \\ \diagdown R_3 \end{matrix}$$

or a quaternized amino group of the formula



$$\begin{matrix} R_2 \\ | \\ -\overset{\oplus}{N}-R_3,\ OH^{\ominus} \\ | \\ R_4 \end{matrix}$$

or salts thereof, wherein R_2, R_3 and R_4 each stand for hydrogen or an optionally hydroxyl group-substituted lower alkylene group, containing 1–4 carbon atoms, the substitution degree corresponding to an ion exchange capacity within the limits of 0.2–1.8 milliequivalents per gram of dry substance, preferably 0.5–1.2 milliequivalents per gram of dry substance, said particles containing from 2 to 25 percent of cellulose, calculated as unsubstituted product in weight per volume, and presenting pores substantially in the range of from 2 to 2000 mμ is disclosed.

3,652,541
ETHERIFIED DEPOLYMERIZED STARCH PRODUCT COMPATIBLE WITH POLYVINYL ALCOHOL

Erling T. Hjermstad and Leonard J. Coughlin, Cedar Rapids, Iowa, assignors to Penick & Ford Limited, Cedar Rapids, Iowa

No Drawing. Filed Jan. 26, 1970, Ser. No. 5,971
Int. Cl. C08b *19/06*
U.S. Cl. 260—233.3 R **7 Claims**

An etherified depolymerized starch product exhibiting compatibility with aqueous polyvinyl alcohol solutions useful for size or adhesive application, said starch product consisting essentially of starch containing acid salt radicals selected from —SO_3X, or SO_3X and —COOX, wherein X is a cation selected from Na^+, K^+, or NH_4^+, in the amount of .45 to 4.5% by weight based on said product of —SO_3Na, or molar equivalents of —SO_3K, —SO_3NH_4, —COONa, —COOK, or —$COONH_4$, said —SO_3X radical being present in ether-linked groups containing from 2 to 3 carbons, said mixture containing at least .15% —SO_3Na radicals, or molar equivalents of —SO_3K or —SO_3NH_4, said —COOX radicals being present as

starch—O—COOX

said starch product being further characterized by an alkali fluidity of less than 95 and above 5 and by being substantially free of inorganic salts.

3,652,542
PROCESS FOR PREPARING ETHERIFIED DEPOLYMERIZED STARCH PRODUCT COMPATIBLE WITH POLYVINYL ALCOHOL

Erling T. Hjermstad and Leonard J. Coughlin, Cedar Rapids, Iowa, assignors to Penick & Ford Limited, Cedar Rapids, Iowa

No Drawing. Filed July 15, 1969, Ser. No. 841,961
Int. Cl. C08b *19/06*
U.S. Cl. 260—233.3 R **5 Claims**

An etherified depolymerized starch product exhibiting compatibility with aqueous polyvinyl alcohol solutions useful for size or adhesive application, said starch product consisting essentially of starch containing —COOX groups, wherein X is a cation selected from Na^+, K^+, or NH_4^+, in the amount of 0.3 to 3% by weight based on said product of —COONa, or molar equivalent of —COOK or —$COONH_4$, said —COOX groups being present as starch—O—CH_2—COOX, or as a mixture of starch—O—CH_2—COOX and starch—COOX, said mixture containing at least 0.1% —COONa, or molar equivalent of —COOK or —$COONH_4$, as said

starch—O—CH_2—COOX

said starch product being further characterized by an alkali fluidity of less than 95 and above 5 and by being substantially free of inorganic salts. The corresponding starch—O—CH_2CH_2—COOX groups can be substituted for the starch—O—CH_2—COOX groups.

ERRATUM

For Class 260—239 see:
Patent No. 3,652,754

3,652,543
PROCESS FOR THE PRODUCTION OF 1,2,4,5-TETRAHYDRO-3-AZEPINES

Karl Hoegerle, Basel, Switzerland, assignor to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Feb. 15, 1968, Ser. No. 705,612
Claims priority, application Switzerland, Feb. 17, 1967, 2,386/67
Int. Cl. C07d *41/08*
U.S. Cl. 260—239 BB **3 Claims**

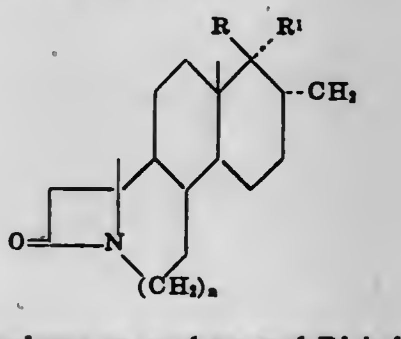
Process for the production of 1,2,4,5-tetrahydro-3-azepines from styrene via N-aziridinyl-alkyl-benzenes, and halogeno-alkylamino-alkyl-benzenes, which latter intermediates are useful as herbicides; from the latter, the corresponding 1,2,4,5-tetrahydro-3-azepines are obtained in a simple, industrially applicable process and in very satisfactory yields. 1,2,4,5-tetrahydroazepines are useful as intermediates in the production of antihypertensive agents, hypoglycemic agents and some possess themselves anorexogenic properties.

3,652,544
3,4-BISNOR-5-AZA-B-HOMO-D-HOMOANDROSTANES

Seymour D. Levine, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Dec. 18, 1968, Ser. No. 784,883
Int. Cl. C07d *25/02*
U.S. Cl. 260—239 A **4 Claims**

This invention relates to the preparation of novel steroidal β-lactams having the formula:



wherein R is hydroxy or acyloxy and R^1 is hydrogen and R and R^1 together are oxo (O═) and *n* represents 1 or 2. The β-lactams of this invention are physiologically active materials possessing antiandrogenic activity.

3,652,545
PROCESS FOR PREPARING N-(6-AMINOHEXYL) HEXAMETHYLENEIMINE

Theodore Horlenko and Hopkins W. Tatum, Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 509,242, Oct. 14, 1965, now Patent No. 3,524,892, which is a division of application Ser. No. 238,293, Nov. 16, 1962, now Patent No. 3,268,588, which in turn is a continuation-in-part of application Ser. No. 860,349, Dec. 18, 1959. This application Nov. 28, 1969, Ser. No. 880,979
Int. Cl. C07d *41/04*
U.S. Cl. 260—239 B **4 Claims**

N-(6-aminohexyl) hexamethyleneimine, a new composition of matter useful as a corrosion inhibitor and as a component of lubricants for pumps and compressors handling process streams in the ammonolysis of 1,6-hexanediol to produce hexamethylenediamine and related compounds, is produced by reacting hexamethylenediamine, hexamethyleneimine, or a mixture of these compounds in the presence of ammonia and a catalyst selected from the group consisting of Raney nickel, Raney cobalt, and Raney nickel or kieselguhr. In a specific embodiment the compound is produced by the catalytic ammonolysis of 1,6-hexanediol to form a mixture of products which then react further to form the N-(6-aminohexyl) hexamethyleneimine. Hexamethylenediamine can be withdrawn from the reaction product for use as such; at least a portion of the hexamethyleneimine contained in the product is preferably recycled to the reaction zone for further conversion to N-(6-aminohexyl) hexamethyleneimine.

3,652,546
ESTERS OF 6-AMINOPENICILLANIC ACID

Lee C. Cheney, Fayetteville, John C. Godfrey, Syracuse, Leonard B. Crast, Jr., North Syracuse, and Joyce R. Luttinger, Syracuse, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed July 22, 1965, Ser. No. 474,155

Int. Cl. C07d *99/14*

U.S. Cl. 260—239.1 **13 Claims**

Activated esters of 6-aminopenicillanic acid are useful as intermediates in the production of penicillins.

3,652,547
3-QUINAZOLINYLPENICILLANIC ACID

Milton Wolf, West Chester, James L. Diebold, Havertown, and Stanley C. Bell, Penn Valley, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Dec. 17, 1969, Ser. No. 886,018

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **6 Claims**

This invention is concerned with novel 3-quinazolinylpenicillanic acids.

3,652,548
6-CARBONYLAMINO PENICILLANIC ACID DERIVATIVES OF SUBSTITUTED HYDROXYAMINOACETIC ACIDS, -ACETIC ACID ALKYL ESTERS AND -ACETANILIDES

Ronald J. McCaully, Malvern, and Stanley C. Bell, Penn Valley, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Dec. 17, 1969, Ser. No. 886,019

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **6 Claims**

This invention relates to novel 6-carbonylamino penicillanic acid derivatives of substituted hydroxyamino acetic acids, hydroxyamino acetic acid alkyl esters, and hydroxyaminoacetanilides.

3,652,549
PRODUCTION OF ε-CAPROLACTAM

Isamu Fujita, Ishibashi Ikeda, and Kiyoshi Otoi, Kuwatacho, Ibaraki, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed July 18, 1968, Ser. No. 745,702

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 **13 Claims**

ε-Caprolactam, useful as a raw material in the manufacture of nylon, is prepared by the gaseous catalytic reaction of at least one compound of the formula

$$X—(CH_2)_4COY$$

wherein X is $—CH_2OH$, $—CHO$, $—(CH(OR)(OR')$, $—COOH$, $—COONH_4$, $—CONH_2$ or $COOR''$, Y is $—OH$, $—ONH_4$, $—NH_2$ or $—OR'''$ and each of R, R′, R″ and R‴ is methyl, ethyl, propyl, butyl or cyclohexyl, with ammonia, hydrogen and/or steam in the presence of a copper-chromite catalyst.

3,652,550
11-AMINOALKYL ETHERS OF 6-MORPHANTHRIDONES

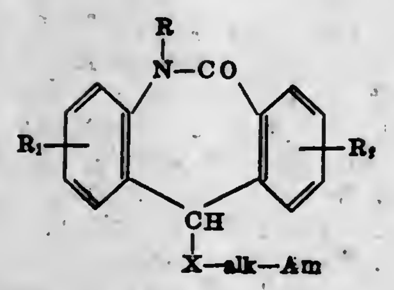
Gordon Northrop Walker, Morristown, N.J., assignor to Ciba Corporation, Summit, N.J.

No Drawing. Filed Nov. 19, 1968, Ser. No. 777,146

Int. Cl. C07d *41/00*

U.S. Cl. 260—239.3 **11 Claims**

11-aminoalkyl ethers of 5,6-dihydro-6-morphanthridones, e.g. those having the formula



X=O or S
alk=lower alkylene with at least 2C
Am=an amino group
R=H or alkyl
$R_{1,2}$=H, alkyl, alkoxy, alkylmercapto, halogeno, CF_3, NO_2 or amino acyl derivatives, iminoethers, salts and quaternaries thereof decrease gastric secretion.

3,652,551
PROCESS FOR PRODUCING 1-ALKYL-NITROBENZODIAZEPINE DERIVATIVES

Hisao Yamamoto, Nishinomiya-shi, Shigeho Inaba, Takarazuka-shi, Tadashi Okamoto, Ashiya-shi, Toshiyuki Hirohashi, Kobe, Kikuo Ishizumi, Minoo-shi, Michihiro Yamamoto, Takarazuka-shi, Isamu Maruyama, Minoo-shi, Kazuo Mori, Kobe, and Tsuyoshi Kobayashi, Minoo-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

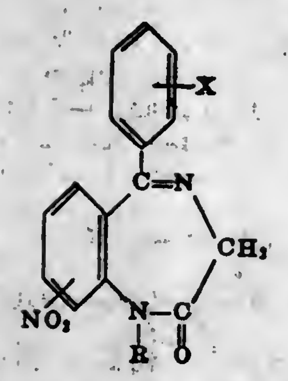
No Drawing. Filed Nov. 20, 1968, Ser. No. 777,458

Claims priority, application Japan, Dec. 1, 1967, 42/77,237; Dec. 9, 1967, 42/79,166; Dec. 14, 1967, 42/80,322; Dec. 15, 1967, 42/80,512, 42/80,513; Dec. 21, 1967, 42/82,273; Dec. 28, 1967, 43/84,961; Jan. 10, 1968, 43/11,501; Mar. 11, 1968, 43/16,033

Int. Cl. C07d *53/06*

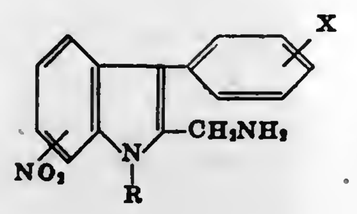
U.S. Cl. 260—239.3 **25 Claims**

Benzodiazepine derivatives, which have been well known as excellent tranquillizers and which have the formula:



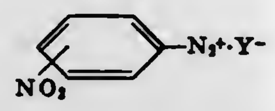
wherein R signifies a methyl, ethyl or the like group; and X signifies a hydrogen, chlorine or the like atom, are obtained by reacting with an oxidizing agent, such as

chromic acid or the like, a novel 2-aminomethyl-indole derivative of the formula:

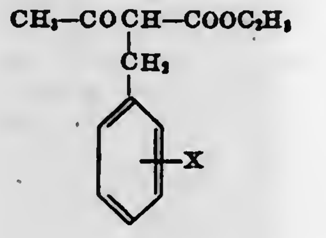


wherein R and X have the same significances as mentioned above, or its salt.

The starting 2-aminomethylindole derivative is prepared by reacting a nitrobenzenediazonium derivative of the formula:

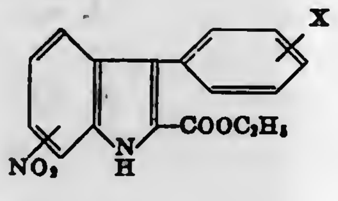


wherein Y signifies a halogen atom, with an ester of β-keto-acid of the formula:



$$CH_3—COCH—COOC_2H_5$$

wherein X has the same significance as mentioned above, to form an indole-2-carboxylic acid ester derivative of the formula:



wherein X has the same significance as mentioned above, subjecting said derivative to N-alkylation, hydrolysis, and amidation to form a corresponding acid amide, dehydrating said acid amide to a corresponding carbonitrile, and then reducing said carbonitrile.

3,652,552
PREPARATION OF LACTAMS FROM CYCLOALKANES

Johan W. Garritsen, Geleen, and Johannes H. A. Hofman, Maastricht, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed Dec. 18, 1967, Ser. No. 691,194

Claims priority, application Netherlands, Dec. 16, 1966, 6617753, 6617754

Int. Cl. C07d *29/16*

U.S. Cl. 260—239.3 **16 Claims**

A process for producing lactams from cycloalkanes is disclosed. Cycloalkanes are reacted with nitrosyl chloride while subjected to irradiation, in the presence of a nitrile which does not contain any methylene groups capable of reacting with nitrosyl under the reaction conditions. ω-Lactams are directly produced by heating the reaction product.

3,652,553
PROCESS FOR THE PRODUCTION OF CAPROLACTAM

Manfred Mansmann, Krefeld-Bockum, Otto Immel, Krefeld-Uerdingen, and Hans Zirngibl, Duisburg, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 8, 1969, Ser. No. 883,269

Claims priority, application Germany, Dec. 13, 1968, P 18 14 489.3

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 **2 Claims**

An improvement for the process to produce lactams by catalytically rearranging cyclic ketoximes by passing a gas mixture consisting of a gaseous cyclic ketoxime and steam or a mixture of a gaseous cyclic ketoxime, steam and an inert gas over a boron oxide catalyst at temperatures of from 200 to 400° C. and recovering the lactam from the gas mixture thus obtained. Before passing the steam over the boron oxide catalyst they are saturated with boron oxide by passing over the X-ray crystalline modification of boron oxide at a temperature of from 200 to 450° C.

3,652,554
HALOGEN-PREGNADIENES

Georg Anner, Ludwig Ehmann, and Jaroslav Kalvoda, Basel, Switzerland, assignors to Ciba Corporation, Summit, N.J.

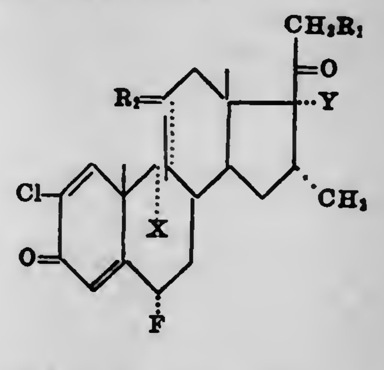
No Drawing. Filed Nov. 15, 1968, Ser. No. 776,270

Claims priority, application Switzerland, Nov. 17, 1967, 16,101/67

Int. Cl. C07c *169/28*

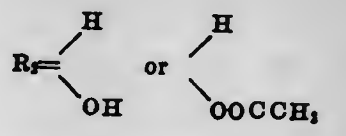
U.S. Cl. 260—239.55 **12 Claims**

Compounds of the formula



wherein

R_1=free, esterified or etherified hydroxyl



X=H or F; or
R_2+X represents a 9,11-double bond or a 9β,11β-oxido group and
Y=H, free or esterified hydroxyl

for example $\Delta^{1,4}$-2-chloro-6α,9α-difluoro-16α-methyl-3,20-dioxo-11β,17α-dihydroxy-21-acetoxypregnadiene.

Use: as corticoid analogous and antiphlogistics.

3,652,555
1,2-DISUBSTITUTED-5-NITROIMIDAZOLES

Jay Donald Albright, Nanuet, and Robert Gordon Shepherd, South Nyack, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 16, 1969, Ser. No. 833,683

Int. Cl. C07d *49/36*

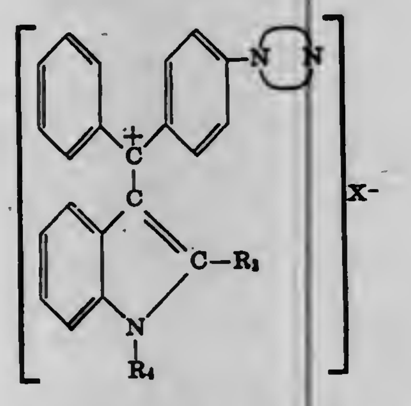
U.S. Cl. 260—240 D **6 Claims**

Methods of preparing 2-cyano-1-loweralkyl-5-nitroimidazoles and 1-lower-alkanoyloxy-lower-alkyl-2-cyano-5-nitroimidazoles and novel intermediates resulting from related 1-substituted-2-methyl-5-nitroimidazoles are described. Some of the compounds are active as analgesics, antiparasitics and diuretics and others are useful as intermediates to produce antibacterial agents such as 2-(2-amino-5-thiadiazolyl)-1-methyl-5-nitroimidazole.

3,652,556
AMINODIPHENYL-INDOLYL-METHANE DYESTUFFS

Hans-Peter Kühlthau and Roderich Raue, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Mar. 29, 1968, Ser. No. 717,393
Claims priority, application Germany, Apr. 10, 1967, F 52,081
Int. Cl. C07d *29/26, 51/70, 87/38*
U.S. Cl. 260—242 **4 Claims**

Dyestuffs of the general formula

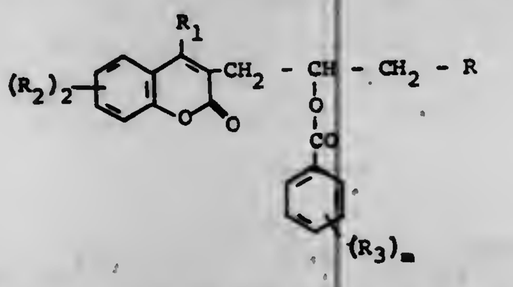


are prepared which are adapted for use in dyeing and printing materials made of leather, tannin treated cotton, cellulose acetate, synthetic super polyamides and polyurethanes and for the dyeing of lignin-containing fibers as well as for use in preparing ink-type materials. As dyestuffs the materials are characterized by good fastness to light, wet processing, rubbing and sublimination, and they are generally characterized by good affinity to the subject fibers.

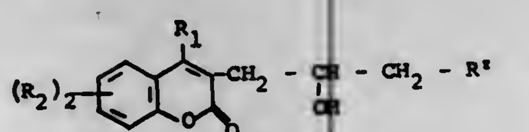
3,652,557
3-[γ-TERTIARY AMINO-β-ALKOXY BENZOYLOXY-PROPYL] - 4 - HYDROCARBON - 5,8 - ALKOXY COUMARINS

Rudi Beyerle, Bruchkobel, and Adolf Stachel, Rolf-Eberhard Nitz, Klaus Resag, and Eckard Schraven, Frankfurt am Main-Fechenheim, Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany
No Drawing. Filed Jan. 8, 1969, Ser. No. 789,919
Claims priority, application Germany, Jan. 19, 1968, P 16 68 877.0
Int. Cl. C07d *87/42*
U.S. Cl. 260—247.2 B **3 Claims**

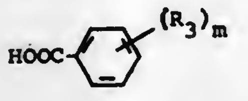
The present invention relates to new coumarin compounds useful as coronary dilators and having the formula



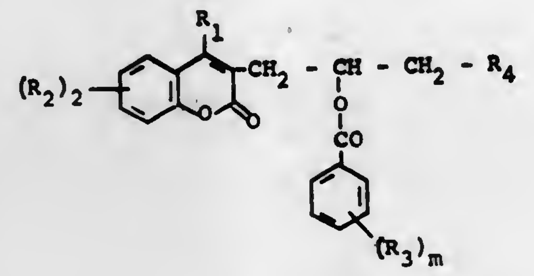
or the hydrochloric acid addition salts thereof, and to methods of preparing same either by acylating, in the presence of acid-binding agents, if desired, coumarin derivatives having the formula



with acylating agents selected from the group consisting of alkoxybenzoic acid having the formula



and functional derivative thereof, or by condensing, in the presence of acid-binding agents, if desired, coumarin derivatives having the formula



with an amine having the formula RH, wherein R is a radical selected from the group consisting of morpholino, piperidino and pyrrolidine, which is bound via a nitrogen atom; R_1 is selected from the group consisting of alkyl radicals having 1–4 carbon atoms and phenyl radicals; R_2 is selected from the group consisting of 5,7-, 6,7- and 7,8-positioned alkoxy groups having 1–4 carbon atoms; R_3 is selected from alkoxy groups having 1–4 carbon atoms; R_4 is selected from the group consisting of chlorine and bromine; R' is selected from the group consisting of morpholino, piperidino and pyrrolidino, which is bound via a nitrogen atom; and *m* is selected from the group consisting of 1, 2, and 3.

3,652,558
SPIRO CONDENSED AROMATIC COMPOUNDS

Carl Dalton Lunsford, Richmond, Albert Duncan Cale, Jr., Mechanicsville, and Norman David Dawson, Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.
No Drawing. Continuation-in-part of abandoned application Ser. No. 517,842, Dec. 30, 1965. This application Apr. 21, 1969, Ser. No. 818,134
Int. Cl. C07d *7/42, 27/04, 27/08, 65/16*
U.S. Cl. 260—247.2 **9 Claims**

Novel spiro condensed aromatic compounds prepared by intramolecular rearrangement of

9-(1-substituted-3-pyrrolidinyl)fluorene-9-carboxylic acids,
9-(1-substituted-3-pyrrolidinyl)thioxanthene-9-carboxylic acids,
9-(1-substituted-3-pyrrolidinyl)xanthene-9-carboxylic acids, and
5-(1-substituted-3-pyrrolidinyl)-5H-dibenzo[a,d]-dihydrocycloheptene-5-carboxylic acids

useful as sedatives and antidepressants are disclosed.

3,652,559
DIAMINOCYCLOALKANES

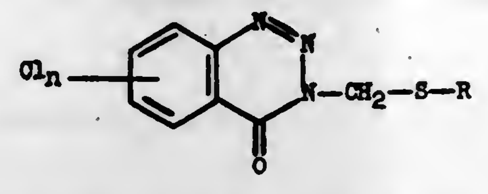
Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Continuation-in-part of application Ser. No. 638,611, May 15, 1967. This application May 13, 1968, Ser. No. 728,779
Int. Cl. C07d *87/38*
U.S. Cl. 260—247.5 R **33 Claims**

Cis- and trans-diaminocycloalkanes, acid addition and quaternary ammonium salts thereof. The novel compounds are useful as tertiary amines and catalysts. In addition, many of the 1,2- and 1,3-diaminocycloalkanes exhibit activity as central nervous system stimulants, diuretics, anorexigenic and antidiabetic agents.

3,652,560
3-[(ALKYLTHIO)METHYL]-1,2,3-BENZOTRIAZIN-4(3H)-ONES

John E. Livak, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed June 18, 1970, Ser. No. 47,603
Int. Cl. C07d *55/08*
U.S. Cl. 260—248 AS **5 Claims**

Disclosed are compounds corresponding to the formula



wherein R represents loweralkyl of 1 to 4 carbon atoms, inclusive, and *n* represents an integer of 0, 1 or 3, the method of preparation and the use of these compounds as fungicides.

3,652,561
2,4,6-TRIS-(ALKYLTHIOALKYLTHIO)-1,3,5-TRIAZINES

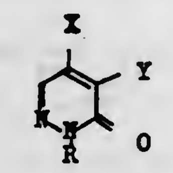
Martin Dexter, 416 Cedar Drive, Briarcliff Manor, N.Y. 10510, and Martin Knell, 4 Possum Road, Ossining, N.Y. 10562
No Drawing. Filed July 23, 1969, Ser. No. 844,744
Int. Cl. C07d *55/50*
U.S. Cl. 260—248 CS **9 Claims**

2,4,6-tris-(alkylthioalkylthio)-1,3,5-triazines are prepared by reacting cyanuric chloride, an alkylthioalkylmercaptan and a base. Said compounds are useful as stabilizers of organic material subject to oxidative deterioration and particularly as synergists in combination with other stabilizers.

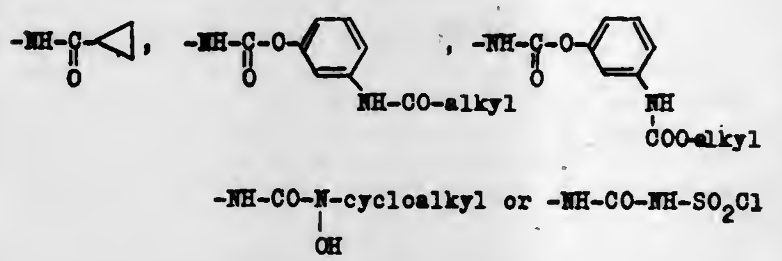
3,652,562
PYRIDAZONE DERIVATIVES

Franz Reicheneder and Rudolf Kropp, Ludwigshafen, and Adolf Fischer, Mutterstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Mar. 9, 1970, Ser. No. 17,923
Claims priority, application Germany, Mar. 13, 1969, P 19 12 770.9
Int. Cl. C07d *51/04*
U.S. Cl. 260—250 A **6 Claims**

New and valuable pyridazone derivatives having the formula



where R denotes a phenyl or aralkyl radical which may be substituted by halogen, alkyl, alkoxy or haloalkyl, a cyclohexyl radical which may be substituted by halogen or alkyl, Y denotes hydrogen, halogen, alkoxy or mercaptoalkyl, X denotes the groups

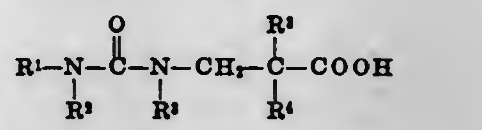


and, when Y denotes hydrogen or R denotes aralkyl, X may additionally denote the amino or acetylamino group, and a process for controlling the growth of unwanted plants with these compounds.

3,652,563
2-OXO-HEXAHYDROPYRIMIDYL-N,N'-ALKANOIC ACIDS

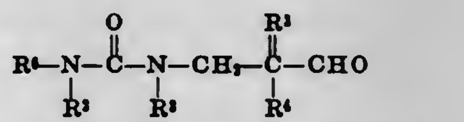
Harro Petersen and Klaus-Christian Renner, Frankenthal, Pfalz, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Aug. 8, 1968, Ser. No. 751,071
Claims priority, application Germany, Aug. 9, 1967, P 16 70 263.9
Int. Cl. C07d *51/18*
U.S. Cl. 260—251 R **5 Claims**

Ureidopropionic acids of the formula:


(I)

$$R^1-\underset{R^2}{\underset{|}{N}}-\overset{O}{\overset{\|}{C}}-\underset{R^3}{\underset{|}{N}}-CH_2-\overset{R^5}{\overset{|}{\underset{R^4}{\underset{|}{C}}}}-COOH \qquad (I)$$

wherein R^1 to R^5 denote identical or different aliphatic, cycloaliphatic, araliphatic or aromatic radicals, said ureidopropionic acids being prepared by reacting a ureidopropionaldehyde having the formula:


(II)

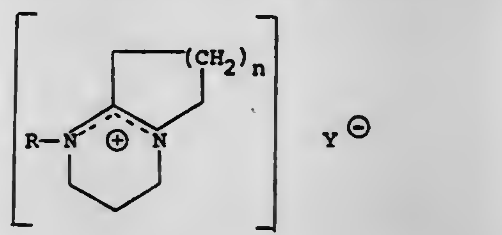
$$R^1-\underset{R^2}{\underset{|}{N}}-\overset{O}{\overset{\|}{C}}-\underset{R^3}{\underset{|}{N}}-CH_2-\overset{R^5}{\overset{\|}{\underset{R^4}{\underset{|}{C}}}}-CHO \qquad (II)$$

with an oxidizing agent at a temperature of from 0° to 100° C., said acids being useful as paper finishing agents and as starting materials for the production of paper finishing agents and herbicides.

3,652,564
5-ALKYL-1,6-FUSED CYCLOALKYLENE-TETRAHYDRO-1,5-DIAZINE SALTS

David J. Ellis, Mountain View, and David Rammler, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama
No Drawing. Filed Dec. 1, 1969, Ser. No. 881,299
Int. Cl. C07d *51/46*
U.S. Cl. 260—251 A **17 Claims**

Quaternary ammonium salts of the formula:



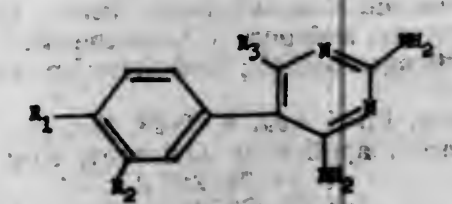
wherein R is a straight or branched alkyl group having between 10 to 24 carbon atoms in the straight chain, *n* is a positive integer of from 1 to 3; Y is an acceptable ion; and the broken line (— — —) indicates that the carbon-nitrogen double bond resonates between the two nitrogen atoms and the positive charge is distributed between the two nitrogens;

and methods of preparing such methods by the reaction of a diazabicycloalkene with a substituted alkane. The compounds have utility as anti-bacterial agents.

3,652,565
NOVEL DIBASIC ACID COMPOUNDS AND MEANS FOR THE PRODUCTION THEREOF

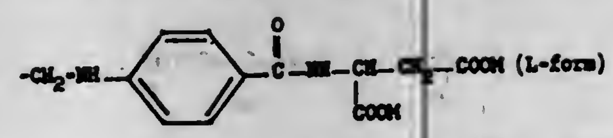
John Davoll, Shepperton, Middlesex, and Anthony Michael Johnson, Twickenham, Middlesex, England, assignors to Parke, Davis & Company, Detroit, Mich.
No Drawing. Filed July 29, 1969, Ser. No. 845,886
Claims priority, application Great Britain, Nov. 1, 1968, 51,867/68
Int. Cl. C07d *51/42*
U.S. Cl. 260—256.4 N **8 Claims**

Novel pyrimidinylbenzylaminobenzoyl aspartic acid compounds (I), di-salts, and acid addition salts are provided by hydrolysis of corresponding compounds having groups hydrolyzable to aspartic acid carboxyl groups



(I)

where one of R_1 and R_2 is the group



(II)

and the other of R_1 and R_2 is H or C_{1-4} alkyl or alkoxy, R_3 is H or C_{1-4} alkyl, and M is H or a cation. The compounds have antimetabolic and bacteriostatic properties and are useful antimetabolic and bacteriostatic agents.

3,652,566

2-ACYLAMINO PYRIMIDIN-4YL CARBAMATES

Ranajit Ghosh and Nigel Douglas Bishop, Wokingham, and Derek John William Bullock, Marlow, England, assignors to Imperial Chemical Industries Limited, London, England

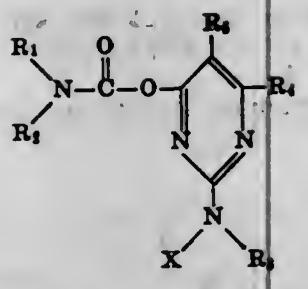
No Drawing. Filed Sept. 29, 1969, Ser. No. 862,008

Claims priority, application Great Britain, Oct. 29, 1968, 51,274/68

Int. Cl. C07d

U.S. Cl. 260—256.4 C **3 Claims**

Pesticidally active pyrimidine derivative of formula:



wherein R_1, R_2 and R_3 are alkyl, R_5 and R_6 are hydrogen, alkyl, cyanoalkyl or together alkylene, and X is acyl.

3,652,567

QUINAZOLINONE DERIVATIVE AND PROCESS FOR THE PRODUCTION THEREOF

Karl-Heinz Boltze, Bensberg-Kippekausen, and Dietrich Lorenz, Kleinhurden Post, Immekeppel, near Bensberg, Germany, assignors to Troponwerke Dinklage & Co., Cologne-Mulheim, Germany

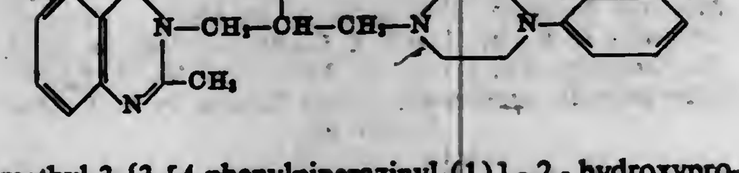
No Drawing. Filed Oct. 15, 1969, Ser. No. 866,719

Claims priority, application Germany, Oct. 16, 1968, P 18 03 210.5

Int. Cl. C07d *51/48*

U.S. Cl. 260—256.4 Q **1 Claim**

A quinazolinone compound of the formula:



2-methyl-3-{3-[4-phenylpiperazinyl-(1)] - 2 - hydroxypropyl}-quinazoline-4-one. This compound has antitussive and analgesic activity.

3,652,568

DIPHENYL METHOXYALKYL-PIPERAZINYL - 4-ACETIC ACID-ANILIDE COMPOUNDS AND THERAPEUTIC COMPOSITIONS

Werner Winter and Max Thiel, Mannheim, Kurt Stach, Wolfgang Schaumann, and Karl Dietmann, Mannheim-Waldhof, and Wolfgang Juhran, Mannheim, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

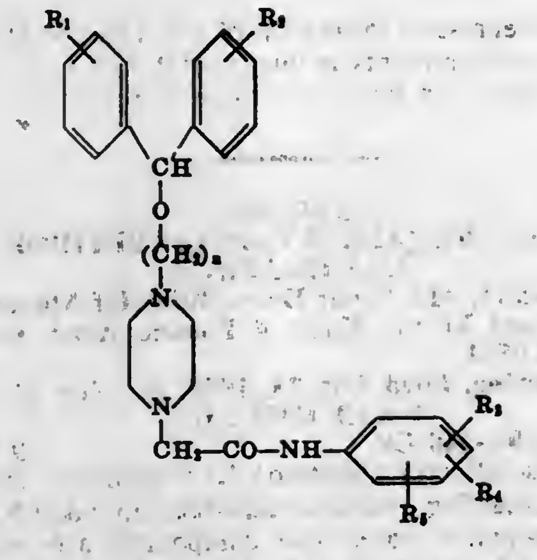
No Drawing. Filed Sept. 15, 1969, Ser. No. 858,169

Claims priority, application Germany, Sept. 21, 1968, P 17 95 375.2

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 BZ **10 Claims**

Basic ethers characterized by coronary dilating activity having the formula:



wherein R_1 and R_2 each designate hydrogen, halogen or lower alkyl, R_3, R_4 and R_5 each designate hydrogen, halogen, lower alkyl, alkoxy or trifluoromethyl, and *n* is 2 or 3, and non toxic salts of said baisc ethers.

3,652,569

ERGONINE, ERGOPTINE AND THE 1-METHYL AND 9,10-DIHYDRO DERIVATIVES THEREOF

Paul Stadler, Biel-Benken, Hartmut Hauth, Riehen, Gernot Wersin, Bottmingen, Stephan Guttmann, Allschwil, Albert Hofmann, Bottmingen, Peter Stutz, Basel, and Hans Willems, Allschwil, Switzerland, assignors to Sandoz Ltd., also known as Sandoz AG, Basel, Switzerland

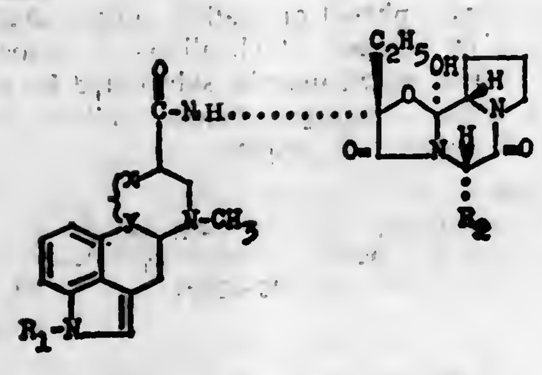
No Drawing. Continuation-in-part of application Ser. No. 747,819, July 26, 1968. This application Jan. 21, 1971, Ser. No. 108,641

Claims priority, application Switzerland, Aug. 2, 1967, 10,900/67

Int. Cl. C07d *51/72*

U.S. Cl. 260—268 PE **14 Claims**

The invention concerns new ergot peptide alkaloids of the formula



wherein

$\widehat{x\ y}$ is $-CH_2-CH\lt$ or $-CH=C\lt$

R_1 is hydrogen or methyl, and
R_2 is isopropyl or isobutyl,

and pharmaceutically acceptable and addition salts thereof.

The compounds are useful in the treatment of migraine. Compounds in which

$\widehat{x\ y}$ is $-CH=C\lt$

R_1 is hydrogen and R_2 has the above significance are also vasoconstrictors. Furthermore, compounds in which R_1 is hydrogen are also diuretics.

3,652,570

1 CYCLOALKYLAMINO 3,4 DIHYDRO ISOQUINOLINES

Maurice Ward Gittos, Slough, John William James, Langley, and John Pomfret Verge, Middle Assendon, near Henley, England, assignors to Aspro-Nicholas Limited, London, England

No Drawing. Filed Mar. 10, 1969, Ser. No. 805,868

Claims priority, application Great Britain, Mar. 9, 1968, 11,633/68

Int. Cl. C07d *35/14*

U.S. Cl. 260—288 R **5 Claims**

Novel 1-amino derivatives of 3,4-dihydroisoquinoline and 4,5-dihydro-3H-2-benzazepines are provided together with a process by which they may be prepared from the corresponding 1-thio; lower alkylthio- or arylthioimidates. The 1-amino derivatives possess hypotensive activity.

3,652,571

PRODUCTION OF 2,4-DIHYDROXYQUINOLINES

Hans Juergen Sturm, Grunstadt, and Helmut Goerth, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed May 22, 1969, Ser. No. 827,020

Claims priority, application Germany, May 22, 1968, P 17 70 482.4

Int. Cl. C07d *33/38*

U.S. Cl. 260—289 R **4 Claims**

Production of 2,4-dihydroxyquinolines or derivatives thereof starting from benzoxazinones and using a strong base.

3,652,572

PROCESS FOR THE PRODUCTION OF 2,6-DICYANOTRICHLOROPYRIDINE FROM A 2,6-DICYANOPIPERIDINE COMPOUND

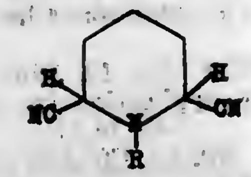
Thomas A. Magee, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,141

Int. Cl. C07d *31/46*

U.S. Cl. 260—294.9 **9 Claims**

A two-stage process is described for preparing 2,6-dicyanotrichloropyridine which consists essentially of reacting, in the first stage, a 2,6-dicyanopiperidine compound having the structural formula



wherein R=H or C_{1-5} alkyl, with chlorine at a temperature of 20°–80° C. with the aid of ultraviolet radiation to effect substantial dehydrogenation together with aromatization and perchlorination of at least a portion of the original dicyanopiperidine material; thereafter reacting the resulting partly chlorinated product mass with chlorine, preferably in the vapor phase at a reaction temperature of 150–500° C., to obtain 2,6-dicyanotrichloropyridine of high purity in at least 50 percent yield. The compound produced by the claimed process is an important industrial biocidal agent. It is known to exhibit fungicidal, pesticidal and herbicidal activity.

3,652,573

N-[3-(4 - PYRAZOLYL) - 3-OXO- OR -3-HYDROXYPROPYL]AZACYCLOALIPHATIC COMPOUNDS

Vishwa Prakash Arya, Bombay, India, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Filed Feb. 13, 1968, Ser. No. 705,013

Claims priority, application Switzerland, Mar. 1, 1967, 2,975/67; Jan. 24, 1968, 1,061/68

Int. Cl. C07d *31/42*

U.S. Cl. 260—295 S **5 Claims**

The compounds of the formula

$$Pyr—C(=X)—Alk—CH(R)—N=Z \qquad (A)$$

in which N=Z denotes an N-azacycloaliphatic residue containing 5–8 ring members and at most one carbon-carbon double bond, Pyr denotes a 4-pyrazolyl residue, X stands for oxygen or a free or substituted hydroxyl group together with a hydrogen atom, Alk represents a 1:1-lower alkylidene residue, and R denotes a hydrogen atom or a lower alkyl group, or salts thereof have antihypertensive, as well as antitussive or antiinflammatory properties.

3,652,574

CERTAIN 1,2,3,4 - TETRAHYDRO-5H-PYRIDO[4,3-b] INDOLES AND THE CORRESPONDING 1,2,3,4-TETRAHYDRO-9H-PYRIDO[3,4-b]INDOLES AND DERIVATIVES THEREOF

David L. Garmaise, Montreal, Quebec, Canada, assignor to Abbott Laboratories, Chicago, Ill.

No Drawing. Filed Apr. 1, 1970, Ser. No. 24,874

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 A **5 Claims**

A new series of closely related compounds, the β- and γ-carbolines, carrying simple substituents in specific positions of the molecule were found to be highly effective against *T. cruzi* in very low concentrations.

3,652,575

PHENYLPYRIDINE-ALKANOLS AND DERIVATIVES THEREOF

Jonathan Hutton and Gilbert Joseph Stacey, Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Sept. 9, 1968, Ser. No. 758,581

Claims priority, application Great Britain, Sept. 26, 1967, 43,677/67

Int. Cl. C07d *31/34*

U.S. Cl. 260—297 R **3 Claims**

This invention relates to new heterocyclic compounds, and more particularly to new phenyl-heterocyclic-alkanol derivatives, which have anti-inflammatory, analgesic and antipyretic activity.

3,652,576

CERTAIN 1,2,3,6 OR 1,2,5,6-TETRAHYDROPYRIDINE INTERMEDIATES

Harry G. Pars, Lexington, and Raj K. Razdan, Belmont, Mass., assignors to Beecham Group Limited, Brentford, England

No Drawing. Application May 1, 1969, Ser. No. 821,125, which is a continuation-in-part of application Ser. No. 707,448, Feb. 23, 1968. Divided and this application Aug. 20, 1969, Ser. No. 862,140

Int. Cl. C07d *31/28*

U.S. Cl. 260—297 R **9 Claims**

Novel compounds having beneficial central nervous system activity and useful as analgesics are provided as well as their stereo- and geometric isomers, the compounds being 3,4,5,6 - tetrahydro - 2,6 - methano-2H-1,5-benzoxazocin derivatives and intermediates therefor and procedure for making the same. Typical compounds are 2,5-dimethyl - 3,4,5,6 - tetrahydro - 2,6-methano-2H-1,5-benzoxazocin-7-ol and 2,8-dimethyl-3,4,5,6 - tetrahydro-2,6-methano-2H-1,5-benzoxazocin. The compounds may be in the form of acid-addition salts and N-oxides and are formulated with the usual excipients or carriers into unit dosage form.

3,652,577
CERTAIN 3-ALKYL-2-ALKYLIMINO-4-HALO-PHENYLTHIAZOLIDIN-4-OLS

Robert E. Manning, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Continuation-in-part of application Ser. No. 780,236, Nov. 29, 1968. This application July 28, 1969, Ser. No. 845,535
Int. Cl. C07d *91/16*
U.S. Cl. 260—306.7 **3 Claims**

Substituted 2-alkyliminothiazolidinols, e.g., 4-p-chlorophenyl-3-methyl-2-methyliminothiazolidin-4-ol, are useful as anorexics, CNS stimulants and anti - inflammatory agents.

3,652,578
[ANTHRACENOTRIAZOLE]BENZOIC ACID DERIVATIVES

Hubert Linares, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed July 30, 1969, Ser. No. 846,279
Claims priority, application France, Aug. 1, 1968, 161,552
Int. Cl. C07d *55/02;* **C09k** *1/02*
U.S. Cl. 260—308 B **5 Claims**

[Anthraceno(1,2 - d)triazole(1,2,3)]benzoic acids and their esters, which are novel, are useful optical bluing agents for synthetic fibres.

3,652,579
1-METHYL-2-SUBSTITUTED 5-NITROIMIDAZOLES

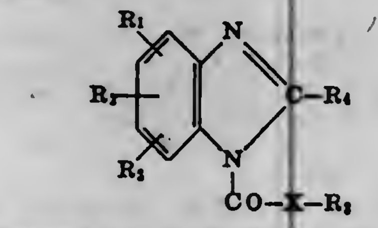
Max Hoffer, Nutley, and Alexander MacDonald, Jr., Fairfield, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed June 26, 1969, Ser. No. 836,942
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **10 Claims**

Novel 1-methyl-2-substituted 5-nitroimidazoles, novel intermediates therefor and processes for their production are provided. The end products, 1-methyl-2-isopropyl-5-nitroimidazole, 1-methyl-2-(1-methyl-1-methoxyethyl)-5-nitroimidazole and 1-methyl-2-(1-methyl - 1 - hydroxyethyl)-5-nitroimidazole, are useful in the treatment of protozoal and bacterial infections.

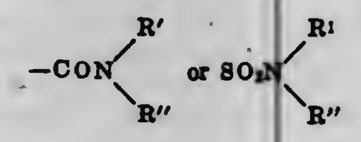
3,652,580
BENZIMIDAZOLE COMPOUNDS AND PESTICIDAL PREPARATIONS CONTAINING THEM

Stefan Janiak, Basel, and Otto Rohr, Therwil, Switzerland, assignors to Ciba Limited, Basel, Switzerland
No Drawing. Filed Oct. 22, 1968, Ser. No. 769,699
Claims priority, application Switzerland, Oct. 26, 1967, 15,005/67
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 **3 Claims**

The invention relates to benzimidazolyle derivatives of the general formula



wherein R_1, R_2 and R_3 may be identical or different and each represents hydrogen, halogen, alkyl, alkoxy, alkylthio, alkylSO—, alkylSO_2—, —NO_2, —CN, CF_3, CHO, COOR′,



$$-CON\begin{matrix}R' \\ R''\end{matrix} \quad \text{or} \quad SO_2N\begin{matrix}R' \\ R''\end{matrix}$$

wherein R′ and R″ each represents hydrogen or lower alkyl and R_4 represents hydrogen or an aliphatic or cycloaliphatic residue, X═O, S, —NH— or N-alkyl and R_5 represents an aliphatic, araliphatic or aromatic residue.

These new compounds are very effective as ingredients in bicidal preparations for plant-protection and combating insects, acarides, nematodes, endoparasites and microbes.

3,652,581
PRODUCTION OF SUBSTITUTED IMIDAZOLES

Hermann Spaenig, Limburgerhof, and Anna Steimmig and Jakob Sand, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Dec. 16, 1968, Ser. No. 784,237
Claims priority, application Germany, Dec. 16, 1967, P 16 70 293.5
Int. Cl. C07d *49/36, 49/38*
U.S. Cl. 260—309.2 **7 Claims**

Production of imidazoles substituted on nitrogen by reacting imidazoles with aliphatic alcohols or ethers at 200–450° C. in the presence of, as catalyst, alumina, pumice or titanium oxide having at least 5% phosphoric acid deposited thereon or alumina impregnated with at least 5% of $Ca(H_2PO_4)_2$ or thorium oxide in an amount equivalent to at least 5% $Th(NO_3)_4$. The products are valuable intermediate for the production of dyes, textile auxiliaries and insecticides.

3,652,582
ADDUCT OF 5,5-DIMETHYLHYDANTOIN WITH CHLORAL HYDRATE AND ITS PREPARATION

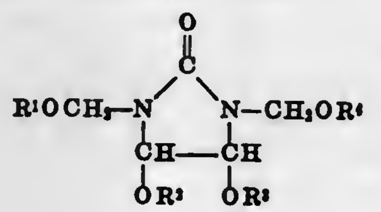
Janos Csaszar, Laszlo Nizsalovszky, and Laszlo Tardos, Budapest, Hungary, assignors to Chinoin Gyogyser-Es Vegyeszeti Termekek Gyara RT, Budapest, Hungary
No Drawing. Filed Feb. 18, 1969, Ser. No. 800,287
Claims priority, application Hungary, Feb. 21, 1968, CI 782
Int. Cl. C07d *49/32*
U.S. Cl. 260—309.5 **2 Claims**

An addition compound is formed by reaction of dimethylhydantoin with chloral hydrate at room temperature. The product is a hypnotic free of the side effects of chloral hydrate.

3,652,583
CONDENSATES OF IMIDAZOLIDONE DERIVATIVES AND POLYALKYLENE GLYCOL USEFUL FOR IMPROVING TEXTILE MATERIALS

Shigeru Tajima, Ashiya-shi, Katsumi Kobayashi, Toyonaka-shi, Hiroshi Fukuhara, Osaka, Hiroki Yamamoto, Takarazuka-shi, and Shigeru Ura, Nishinomiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
No Drawing. Filed Mar. 11, 1969, Ser. No. 806,284
Claims priority, application Japan, Mar. 14, 1968, 43/16,919
Int. Cl. C07d *49/34*
U.S. Cl. 260—309.7 **5 Claims**

Novel composition of matter is produced by reacting 1 mole of alkylated derivatives of 4,5-bis-hydroxy-1,3-bis-hydroxymethyl-imidazolidone-2 of the formula,



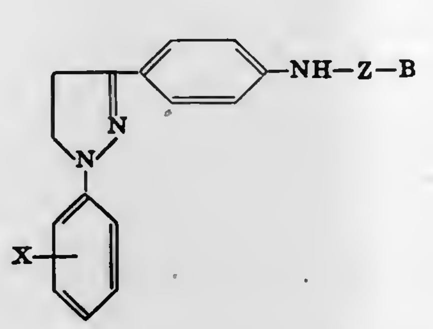
wherein R^1, R^2, R^3 and R^4 respectively represent hydrogen or alkyl having 1 to 4 carbon atoms and at least one member of R^1, R^2, R^3 and R^4 is the said alkyl, with 0.2 to 2 moles of a water-soluble polyalkylene glycol having a molecular weight of 400 to 10,000.

This composition of matter is useful for improving hydrophobic synthetic textile materials or blends of hydrophobic synthetic fibers and cellulosic fibers.

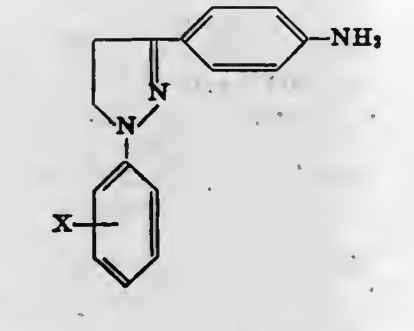
3,652,584
1,3-DI-ARYL-1,2-PYRAZOLINES AND THEIR PREPARATION

Andre Henri Passedouet, Maisons-Lafitte, Michel G. Roussos, Lyon, and Jacqueline Pigeot and Nicole Paillole, Maisons-Lafitte, France, assignors to Societe Melle Bezons, Melle, France
No Drawing. Filed Feb. 16, 1968, Ser. No. 705,914
Claims priority, application France, Feb. 17, 1967, 95,347
Int. Cl. C07d *49/10*
U.S. Cl. 260—310 **10 Claims**

1,3-di-aryl-1,2-pyrazolines having detectable affinity for different nervous tissues to provide sedative, anti-inflammatory and/or anti-pyretic properties. The compositions are of the formula



in which X is Cl or CF_3; Z is a keto-alkylene group having 2 to 4 carbon atoms; B is a basic radical of the formula NR_1 R_2, where R_1 is an alkyl group having 1 to 4 carbon atoms and R_2 is the same as R_1 or hydrogen, and the pharmaceutically acceptable acid addition salts thereof. The compounds are prepared by condensing a compound of the formula



with a compound of the formula C1ZB.

3,652,585
1-(PHENYL LOWER ALKYL)-4,5,6,7-TETRAHYDROINDOLES AND METHODS OF PREPARING SAME

William Alan Remers, Suffern, N.Y., and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Jan. 6, 1970, Ser. No. 1,042
Int. Cl. C07d *27/54*
U.S. Cl. 260—319.1 **8 Claims**

This disclosure describes compounds of the class of 1-(phenyl lower alkyl)-4,5,6,7-tetrahydroindoles useful as antibacterial, antifungal and diuretic agents.

3,652,586
PROCESS FOR THE PRODUCTION OF SUBSTITUTED PHENYLACETIC ACIDS AND THEIR ESTERS

Rolf Denss, Basel, Switzerland, Niels Clauson-Kaas, Farum, Denmark, and Franz Ostermayer, Riehen, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.
No Drawing. Filed Apr. 22, 1969, Ser. No. 818,401
Claims priority, application Switzerland, Apr. 29, 1968, 6,375/68
Int. Cl. C07d *27/24*
U.S. Cl 260—326.3 **5 Claims**

Process for the production of p-(1-pyrryl)-phenylacetic acids and their esters with analgesic and anti-inflammatory activity, comprising reacting a p-nitrosophenylacetic acid or an ester thereof with butadiene to obtain the corresponding p-(3,6-dihydro-2H-1,2-oxazin-2-yl)-phenylacetic acid or an ester thereof and subjecting said acid or ester to acidic and/or temperature conditions under which water is split off and ring contraction occurs, optionally hydrolysing the immediate reaction product either completely to form the desired acid or a salt thereof or converting it completely into a desired ester.

3,652,587
1-(p-OXYPHENETHYL)-3-(m-OXYPHENYL) PYRROLIDINE COMPOUNDS

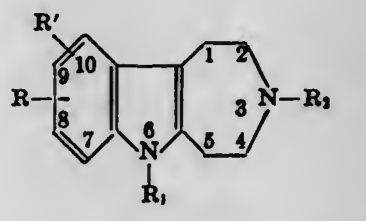
Ian Moyle Lockhart, Egham, England, assignor to Parke, Davis & Company, Detroit, Mich.
No Drawing. Filed Aug. 25, 1969, Ser. No. 852,937
Claims priority, application Great Britain, Sept. 11, 1968, 43,269/68
Int. Cl. C07d *27/04*
U.S. Cl. 260—326.3 **4 Claims**

m - [1 - (p - hydroxyphenethyl) - 3 - alkyl - 3 - pyrrolidinyl]-phenols in which the 3-alkyl group contains from 2 to 5 carbon atoms inclusive; esters thereof; and salts of the foregoing compounds. These compounds are pharmacological agents. The phenols can be prepared by cleavage of the corresponding lower alkyl, benzyl, or substituted benzyl ethers. The esters can be prepared by esterification of the phenols.

3,652,588
6-ALKYL-1,2,3,4,5,6-HEXAHYDROAZEPINO-[4,5-b]INDOLES

Jackson B. Hester, Jr., Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Continuation-in-part of application Ser. No. 548,880, May 10, 1966. This application Oct. 23, 1969, Ser. No. 868,927
Int. Cl. C07d *27/54, 41/08*
U.S. Cl. 260—326.3 **9 Claims**

A 6-alkyl - 1,2,3,4,5,6 - hexahydroazepino[4,5-b]indole having a sedative tranquilizing and anorexigenic action of the formula:



wherein R and R′ are selected from the group consisting of hydrogen, alkoxy and alkyl containing from 1 to 3 carbon atoms, inclusive, and halogen; wherein R_1 is alkyl defined as above; and wherein R_2 is selected from the group consisting of hydrogen, methyl, ethyl, propyl, alkanoyl groups containing 1 to 3 carbon atoms, inclusive, benzyl and benzoyl, and the organic and inorganic acid addition salts of those compounds wherein $>N—R_2$ is an amino moiety, including pharmacologically acceptable acid addition salts of those compounds, are prepared. The compounds are used to tranquilize and sedate mammals or suppress hunger in mammals.

3,652,589

1-(m-SUBSTITUTED PHENYL)-2-AMINOMETHYL CYCLOHEXANOLS

Kurt Flick, Bochum-Stiepel, and Ernst Frankus, Schleckheim, near Aachen, Germany, assignors to Chemie Grunenthal G.m.b.H., Stolberg, Rhineland, Germany
No Drawing. Continuation-in-part of application Ser. No. 357,024, Mar. 30, 1964. This application July 27, 1967, Ser. No. 656,314
Int. Cl. C07d *27/04*
U.S. Cl. 260—326.5 M **23 Claims**

This invention relates to cycloalkanol-substituted phenol ethers having a basic amine group in the cycloalkyl ring, which are useful as analgesic drugs.

3,652,590

4-BROMO AND CHLORO-4'-TERTIARY AMINOALKOXY BIPHENYLS

Frederick Louis Bach, Montvale, John Claire Barclay, New York, and Elliott Cohen, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Continuation-in-part of application Ser. No. 595,359, Nov. 18, 1966, which is a continuation-in-part of application Ser. No. 427,094, Jan. 21, 1965, which in turn is a continuation-in-part of application Ser. No. 370,044, May 25, 1964. This application Jan. 12, 1968, Ser. No. 697,294
The portion of the term of the patent subsequent to Mar. 26, 1985, has been disclaimed
Int. Cl. C07d *27/04*
U.S. Cl. 260—326.5 M **4 Claims**

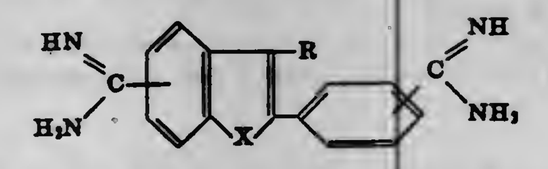
This disclosure describes compounds of the class of 4-substituted-4'-tertiary aminoethoxy biphenyls, useful as hypocholesteremic agents.

3,652,591

DIAMIDINE COMPOUNDS

Otto Dann, Bubenreuth, near Erlangen, Germany (% Farbwerke Hoechst AG, Frankfurt am Main, Germany)
No Drawing. Filed May 22, 1968, Ser. No. 731,287
Claims priority, application Germany, May 26, 1967, P 16 18 288.0
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.15 **5 Claims**

Diamidine compounds having trypanocidal action and corresponding to the general formula



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in which R represents hydrogen or lower alkyl, and X represents oxygen, —NH— or —CH_2—, and salts of these compounds with inorganic or organic acids.

3,652,592

2-HALO-4-OXO-4,5,6,7-TETRAHYDROINDOLES AND METHODS OF PREPARING SAME

William Alan Remers, Suffern, N.Y., and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Jan. 6, 1970, Ser. No. 1,041
Int. Cl. C07d *24/54*
U.S. Cl. 260—326.16 **2 Claims**

This disclosure describes compounds of the class of 2-halo-4-oxo-4,5,6,7-tetrahydroindoles useful as analgesic agents.

3,652,593

OXA-THIA-BICYCLO[3.3.0]OCTADIENES

Fritz Gautschi, Sous-chez-Troppet, Commugny, Vaud, Switzerland; Bruno Willhalm, 45 ch. du Petit-Bel-Air, Chene-Bourg, Geneva, Switzerland; and George H. Buchi, 100 Memorial Drive, Cambridge, Mass. 02142
No Drawing. Filed Dec. 23, 1969, Ser. No. 887,776
Claims priority, application Switzerland, Dec. 27, 1968, 19,288/68
Int. Cl. A23l *1/22;* **C07d** *63/18*
U.S. Cl. 260—332.3 H **8 Claims**

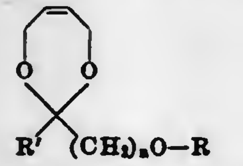
New heterocyclic compounds containing oxygen and sulphur and including 2 - methyl - 3-oxa-8-thiabicyclo-[3.3.0]1,4 - octadiene, 2 - oxa-7-thiabicyclo[3.3.0]5,8-octadiene and its 8-methyl and 6,8-dimethyl derivatives, and methods for the preparation of these compounds, and their use as flavouring agents in imitation flavours and in foodstuffs, beverages, animal feeds, pharmaceutical preparations and tobacco products.

3,652,594

SUBSTITUTED 1,3-DIOXEPINS

Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Jan. 6, 1970, Ser. No. 1,032
Int. Cl. C07d *17/00*
U.S. Cl. 260—338 **9 Claims**

The present invention is directed to new substituted 1,3-dioxepin compounds corresponding to the formula:



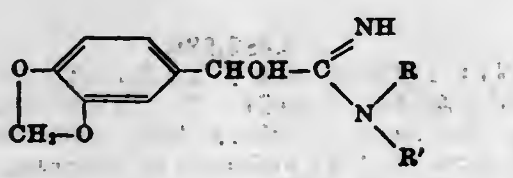
wherein R is a lower alkyl group of from 1 to about 8, both inclusive, carbon atoms or an aryl group of from 6 to about 8 carbon atoms inclusive. R' is hydrogen or an alkyl group of from 1 to about 8, both inclusive, carbon atoms, and *n* is an integer of from 0 to about 8. The present invention is further directed to a novel process for the preparation of such substituted 1,3-dioxepin compounds wherein *n* is 0 by reacting, at room temperatures, a corresponding trialkyl orthoalkanoate with cis-2-butene-1,4-diol in the presence of a non-oxidizing acid catalyst. The compounds of the present invention are suitable for use as herbicides.

3,652,595

MANDELAMIDINE DERIVATIVES AND PROCESSES FOR PREPARING THE SAME

Louis Lafon, Paris, France, assignor to Société Anonyme dite: ORSYMONDE, Paris, France
No Drawing. Continuation-in-part of application Ser. No. 778,315, Nov. 22, 1968. This application Apr. 23, 1970, Ser. No. 31,365
Claims priority, application Great Britain, Nov. 29, 1967, 54,430/67; July 22, 1968, 34,947/68; France, Nov. 14, 1968, 173,696
Int. Cl. C07d *13/10*
U.S. Cl. 260—340.5 **6 Claims**

This invention relates to mandelamidines of the formula:



(I)

in which R represents a hydrogen atom, or a lower alkyl radical having not more than 3 carbon atoms, and R' represents a hydrogen atom, or an OH group or a lower alkyl radical having not more than 3 carbon atoms, their optically active isomers and their addition salts with physiologically acceptable acids. The compounds corresponding

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to the above formula have activities upon the cardiovascular system and are particularly of interest for the treatment of arterial hypertension.

3,652,596

PRODUCTION OF UNSATURATED CARBOCYCLIC KETONES

John H. Fried, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama
No Drawing. Continuation-in-part of applications Ser. No. 687,502, Dec. 4, 1967, and Ser. No. 747,465, July 25, 1968. This application Nov. 4, 1968, Ser. No. 773,320
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 **7 Claims**

Preparation of α,β-unsaturated carbocyclic ketones by reacting an enol lactone with a carbanion generated by treatment of a methylphosphonate or a mono-substituted methylphosphonate with base.

3,652,597

PRODUCTION OF DI-HYDROXY PRODUCTS

Henry Bader and Edwin G. Jahngen, Jr., Newton Center, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
No Drawing. Filed Mar. 2, 1970, Ser. No. 15,965
Int. Cl. C07d *7/26, 39/08*
U.S. Cl. 260—343.2 R **13 Claims**

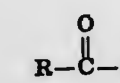
Di-hydroxy products of monohydric phenol compounds are prepared by persulfate oxidation in the presence of ethylenediaminetetraacetic acid and an olefinic free radical trap.

3,652,598

INTERNAL DIANHYDRIDE OF 2,2',3,3'-TETRACARBOXY BENZOPHENONE

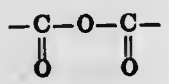
Ronald L. Broadhead, Addison, Ill., assignor to Standard Oil Company, Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 25,548, Apr. 29, 1960. This application Oct. 8, 1963, Ser. No. 314,593
Int. Cl. C07d *1/00*
U.S. Cl. 260—346.3 **1 Claim**

The novel anhydrides of my invention can be represented in general by the following structural formula:



$$R-\overset{\overset{\large O}{\|}}{C}-R$$

wherein R is a phenyl radical containing a carboxylic anhydride group, i.e. a group having the structural formula:



$$-\underset{\underset{\large O}{\|}}{C}-O-\underset{\underset{\large O}{\|}}{C}-$$

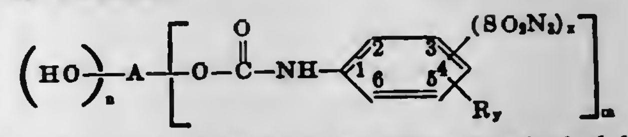
which is attached to adjacent positions on said phenyl radical. The remaining positions on said phenyl radical may be substituted with various aryl radicals; specific examples of such substituted dianhydrides are the phenyl-substituted tetracarboxylic dianhydrides, carboxyphenyl-substituted tetracarboxylic dianhydrides, naphthyl-substituted tetracarboxylic dianhydrides, carboxynaphthyl-substituted tetracarboxylic dianhydrides, benzoyl-substituted tetracarboxylic dianhydrides, carboxybenzoyl-substituted tetracarboxylic dianhydrides, and the like, wherein the dianhydride groups are in the 2,3,2',3', and 3,4,3',4' positions.

3,652,599

NOVEL AZIDOSULFONYLCARBANILATES

Adnan A. R. Sayigh, North Haven, Benjamin W. Tucker, Bethany, and Henri Ulrich, Northford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Mar. 20, 1970, Ser. No. 15,839
Int. Cl. C07c *117/00*
U.S. Cl. 260—349 **6 Claims**

Azidosulfonylcarbanilates are disclosed which are derived from aliphatic alcohols in which the hydrogen atom in one or more of the hydroxyl groups is replaced by an azidosulfonylphenylcarbamoyl group. The compounds have the formula:



wherein A is the residue of an aliphatic alcohol having $(n+m)$ hydroxyl groups and a molecular weight of less than 300, *n* is an integer from 0 to 5, *m* is an nteger from 1 to 6, provided that the sum of $n+m$ is not greater than 6, R is lower-alkyl or halogen, *x* is an integer from 1 to 2, *y* is an integer from 0 to 2, provided that the sum of $x+y$ is not greater than 3, and the SO_2N_3 group is in any of positions 3, 4, or 5, one of said positions being unsubstituted. The above compounds are prepared by reacting the starting aliphatic alcohol with the appropriate proportion of the appropriately substituted isocyanatobenzenesulfonyl chloride and reacting the intermediate chlorosulfonylcarbanilate with sodium azide. The above compounds are useful as crosslinkers in a wide variety of polymer systems containing C—H bonds and are activated either photolytically or thermally.

3,652,600

2-FLUORO-2,2-DINITROETHYL GLYCIDYL ETHER

Vytautas Grakauskas, Arcadia, Calif., assignor to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Nov. 26, 1969, Ser. No. 880,457
Int. Cl. C07d *1/18*
U.S. Cl. 260—348 R **1 Claim**

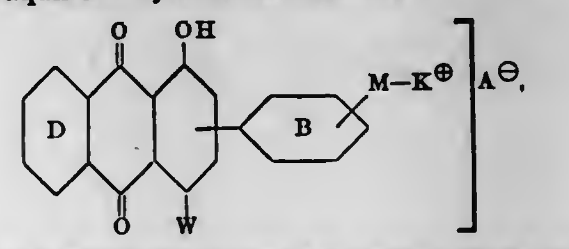
2-fluoro-2,2-dinitroethyl glycidyl ether is synthesized by reacting 2-fluoro-2,2-dinitroethanol with an epihalohydrin in the presence of sodium hydroxide and water.

3,652,601

ANTHRAQUINONE DYES

Berthold Gertisser, Munchenstein, Basel-Land, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz A.G.), Basel, Switzerland
No Drawing. Filed Feb. 12, 1968, Ser. No. 704,528
Claims priority, application Switzerland, Feb. 20, 1967, 2,436/67; Feb. 21, 1967, 2,497/67; Feb. 23, 1967, 2,797/67; Dec. 21, 1967, 18,016/67; Jan. 18, 1968, 784/68, 785/68, 786/68
Int. Cl. C07c *1/50*
U.S. Cl. 260—380 **8 Claims**

Anthraquinone dyes of the formula



wherein M stands for a divalent radical, W for the nitro group or for an amino group, $K^{\oplus}$ e.g. for an ammonium-, hydrazinium- or an ammino group, $A^{\ominus}$ for an anion and wherein the ring B and/or D may be further substituted. They can be used for the dyeing of acrylonitrile polymers or copolymers.

3,652,602

DYESTUFFS OF THE TRIPHENYLROSANILINE SERIES AND PROCESS FOR THEIR PREPARATION

Gustav Schafer, Frankfurt am Main, and Ferdinand Quint, Cratzenbach, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 16, 1968, Ser. No. 745,119

Claims priority, application Germany, July 22, 1967, F 53,032

Int. Cl. C09b *11/20*

U.S. Cl. 260—391 **7 Claims**

New asymmetrical di- and triphenylrosaniline dyestuffs which are substituted on one phenyl or naphthyl radical by fluorine, chlorine, bromine, iodine, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, phenyl, nitro, cyano or sulfonamide group in m- or p-position to the imino group and a process for their preparation.

3,652,603

METHOD FOR PRODUCTION OF 2,3-DI(LOWER ALKOXY)-5-METHYL-1,4-BENZOQUINONE

Yutaka Kawamatsu and Hirosada Sugihara, Suita, Osaka, and Hiroshi Morimoto, Nishinomiya, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed June 11, 1969, Ser. No. 832,456

Claims priority, application Japan, June 11, 1968, 43/40,151

Int. Cl. C07c *49/64*

U.S. Cl. 260—396 R **10 Claims**

2,3-di(lower alkoxy) - 5-methyl-1,4-benzoquinones are produced by oxidizing 3,4,5-tri(lower alkoxy) toluene with a peroxide. These materials are useful as starting materials for the synthesis of ubiquinones, the latter compounds which are medicinally important substances used in the electron transferring activity of mitochondria in living tissues.

3,652,604

HALOHYDRINS AND PROCESS FOR THE PREPARATION THEREOF

Rudolf Wiechert, Berlin, Germany, assignor to Schering Aktiengesellschaft, Berlin, Germany

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,937

Claims priority, application Germany, Mar. 7, 1969, P 19 12 794.7

Int. Cl. C07c *169/30*

U.S. Cl. 260—397.4 **19 Claims**

Epoxides, e.g., steroidal epoxides, are converted to the corresponding halohydrins, by reaction with lithium chloride or lithium bromide in the presence of an aliphatic carboxylic acid.

3,652,605

ISOMERISATION OF 17β-HYDROXY-STEROIDS

Jacobus Antonius van Gorp and Pieter Juriaanus van Ree, Oss, Netherlands, assignors to Organon Inc., West Orange, N.J.

No Drawing. Filed Mar. 30, 1970, Ser. No. 24,020

Claims priority, application Netherlands, Apr. 8, 1969, 6905418

Int. Cl. C07c *169/08*

U.S. Cl. 260—397.4 **4 Claims**

The invention relates to an improved process for the preparation of 17α-hydroxy-steroids from the corresponding 17β-hydroxy-steroids by treating a 17-sulphonate of the latter with a mixture of an aliphatic carboxylic acid, an alkali metal salt of an aliphatic carboxylic acid and an aprotic solvent, followed by hydrolysis of the thus obtained 17α-acyloxy-compound.

3,652,606

3-OXYGENATED 11β-METHYLESTR-4-EN-17β-OL AND ESTERS THEREOF

John S. Baran, Morton Grove, and Ivar Laos, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Aug. 7, 1970, Ser. No. 62,195

Int. Cl. C07c *169/20*

U.S. Cl. 260—397.5 **2 Claims**

Preparation of the captioned compounds and their valuable biological properties—including unexpectedly potent anabolic and androgenic activity—are disclosed.

3,652,607

THIAMPHENICOL DERIVATIVES

Uberto Maria Teotino and Davide Dellabella, Milan, Italy, assignors to Zambon S.p.A., Bresso, Milan, Italy

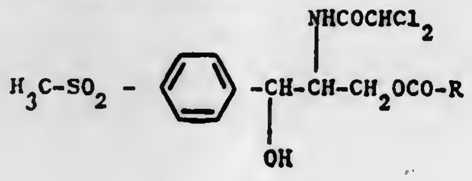
No Drawing. Filed May 2, 1969, Ser. No. 822,104

Claims priority, application Italy, May 11, 1968, 16,364/68

Int. Cl. C07c *143/90;* **C11d** *1/20*

U.S. Cl. 260—401 **1 Claim**

The invention provides new thiamphenicol salts comprised in the general formula:



d-threo

wherein R is an alkyl radical comprising from 13 to 17 carbon atoms. The new salts are characterized by a much more long-lasting activity than thiamphenicol alone.

3,652,608

PREPARATION OF UNSATURATED ESTERS

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Sept. 20, 1968, Ser. No. 761,338

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R **8 Claims**

Hydrocarbon olefins are reacted with alkyl chloroformates in the presence of a Group VIII noble metal catalyst to yield alpha,beta-ethylenically unsaturated carboxylic acid esters and/or beta-chloro-alkanoic esters. The alkyl chloroformates may be prepared from carbon monoxide, chlorine and an alkanol under conventional conditions, thereby providing a process for the preparation of alpha,beta-ethylenically unsaturated carboxylic acid esters from an olefin and an alcohol. The by-product beta-chloro alkanoic acid esters can be pyrolyzed to obtain the complete conversion of the reactants to the more valuable ethylenically unsaturated esters which are useful as monomers for polymerization to desired products. The reaction is typified by the conversion of ethylene to alkyl acrylates and alkyl beta-chloro propionates which is performed at a temperature of about 150° C. and superatmospheric pressures in the presence of a palladium containing catalyst.

3,652,609

2-PARACHLOROPHENOXY-2-METHYLPROPIONIC ACID-FATTY ACID GLYCERIDES

Harvey E. Alburn, West Chester, William Dvonch, Radnor, and Norman H. Grant, Wynnewood, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed June 24, 1969, Ser. No. 836,162

Int. Cl. A61k *27/00;* **C07c** *69/30, 69/76*

U.S. Cl. 260—408 **6 Claims**

Fatty acid glycerides of 2-phenoxy-2-methylpropionic acids are prepared which are useful in lowering blood cholesterol and triglyceride levels in warm-blooded animals.

3,652,610

PLASTICIZERS FROM HINDERED ACID GLYCOL MONOESTERS

Myron Coopersmith, New York, N.Y., and Gerald Rubin, Fords, and Edward Wickson, Scotch Plains, N.J., assignors to Esso Research and Engineering Company

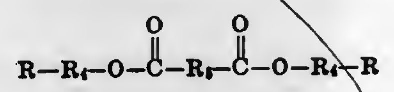
No Drawing. Filed Nov. 22, 1966, Ser. No. 600,343

Int. Cl. C07c *69/34, 69/76;* **C11c** *3/04*

U.S. Cl. 260—410.6 **2 Claims**

Novel esters having the generic formula:

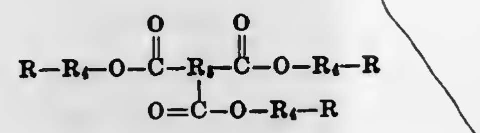
(I)



$$R-R_4-O-\overset{O}{\overset{\|}{C}}-R_5-\overset{O}{\overset{\|}{C}}-O-R_4-R$$

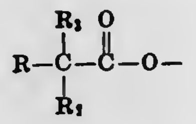
and

(II)



$$R-R_4-O-\overset{O}{\overset{\|}{C}}-\underset{O=C-O-R_4-R}{\underset{|}{R_5}}-\overset{O}{\overset{\|}{C}}-O-R_4-R$$

wherein R has the following general formula:



$$R-\overset{R_3}{\overset{|}{\underset{\underset{R_2}{|}}{C}}}-\overset{O}{\overset{\|}{C}}-O-$$

wherein R_1, R_2 and R_3 are each C_1–C_{20} hydrocarbyl radicals, R_4 is selected from the group consisting of C_2–C_{15} alkyl, aryl, cycloalkyl and alkaryl radicals, and R_5 is selected from the group consisting of C_0–C_{15} alkyl, aryl, cycloalkyl and alkaryl radicals, are prepared by the reaction of a neo-acid glycol monoester with a di- or tri-basic acid or anhydrides. The novel esters formed by the above-described process are prepared in substantially pure form and find usefulness as excellent plasticizers and lubricants.

3,652,611

PRODUCTION OF CARBOXYLIC ACIDS BY OXIDATION OF 1,2-EPOXIDES

Clyde E. Bishop, Indianapolis, Ind., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Dec. 30, 1970, Ser. No. 102,990

Int. Cl. C07c *51/24*

U.S. Cl. 260—413 **6 Claims**

1,2-epoxides are converted to carboxylic acids by oxidizing the epoxides with nitric acid in the presence of a vanadium compound promoter at a temperature in the range of from about 0° C. to about 110° C.

3,652,612

PROCESS FOR THE PREPARATION OF DIANIONS AND OF α-SUBSTITUTED CARBOXYLIC ACIDS AND THEIR DECARBOXYLATED DERIVATIVES

Philip E. Pfeffer and Leonard S. Silbert, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Aug. 27, 1969, Ser. No. 853,505

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **18 Claims**

A process for the preparation of dianions of straight chain saturated and unsaturated aliphatic carboxylic acids and of α-substituted carboxylic acids and their decarboxylated derivatives. The carboxylic acid is metalated with lithium diisopropylamide in the mixed solvent system tetrahydrofuran - hexane - hexamethylphosphoramide and the metalated fatty acid is reacted in the same solvent system with an electrophile to produce the desired α-substituted carboxylic acid. Decarboxylation is also effected in the same solution thus making this method essentially a one step process for any of the products.

3,652,613

PROCESS FOR THE PRODUCTION OF PLATINUM COMPOUNDS

Donald Wright, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Sept. 23, 1969, Ser. No. 860,408

Claims priority, application Great Britain, Oct. 4, 1968, 47,229/68

Int. Cl. C07f *15/00*

U.S. Cl. 260—429 R **10 Claims**

Platinous carboxylates, particularly platinous alkanoates such as platinous acetate, are obtained by reacting a platinic halide with a metal carboxylate, particularly a silver carboxylate, which forms a halide insoluble in the reaction medium.

3,652,614

RHODIUM COMPLEXES CONTAINING TERT-PHOSPHINE LIGAND

Kenneth C. Dewhirst, New Rochelle, N.Y., and Wilhelm Keim, Alameda, and Helmut E. Thyret, Oakland, Calif., assignors to Shell Oil Corporation, New York, N.Y.

No Drawing. Original application Oct. 20, 1966, Ser. No. 587,972, now Patent No. 3,502,725, dated Mar. 24, 1970. Divided and this application Oct. 23, 1969, Ser. No. 871,328

Int. Cl. C07f *9/50*

U.S. Cl. 260—429 **6 Claims**

Production of aromatic 2,7-alkadienyl ethers and N-(2,7-alkadienyl)amines by reacting phenols or organic amines, wherein there is present at least one N-hydrogen substituent, with conjugated alkadienes in the presence of rhodium(I) complexes containing tertiary phosphine ligands and additionally containing hydrogen, phenoxide, acetate, alkyl, aryl or π-allyl ligands.

3,652,615

PLATINUM COMPLEXES

Nicou Parasko, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Original application Mar. 14, 1968, Ser. No. 712,961, now Patent No. 3,522,327, dated July 28, 1970. Divided and this application Dec. 24, 1969, Ser. No. 889,837

Claims priority, application France, Mar. 29, 1967, 100,664

Int. Cl. C07f *15/00*

U.S. Cl. 260—429 R **4 Claims**

The invention provides new complexes of platinous chloride with triaminophosphines which are useful as catalysts for promoting the reaction between alkenyl groups and hydrogen attached to silicon e.g. in curable organopolysiloxane compositions.

3,652,616

ADDITIVES FOR FUELS AND LUBRICANTS

Roger W. Watson, Highland, Ind., William T. Brannen, Jr., Westlake, Ohio, and Warren W. Hillstrom, Bel Air, Md., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Aug. 14, 1969, Ser. No. 850,244

Int. Cl. C07f *11/00, 15/00, 7/28*

U.S. Cl. 260—429 R **8 Claims**

Disclosed are compositions prepared by (a) reacting a hydrocarbon-substituted succinic anhydride and an alkylene polyamine having the formula H_2N (-alkylene-$NH)_nH$, where *n* is an integer from about 1 to about 12 and "alkylene" is a saturated divalent hydrocarbon having from about 1 to about 10 carbon atoms; and (b) reacting the material formed in step (a) with a reactant having an available metal atom capable of being sequestered. These compositions are useful as fuel and lubricant additives.

3,652,617
VANADIUM OXYTRIALCOHOLATES

Erich Termin, Niederkassel, Otto Bleh, Bergheim, and Arnold Lenz, Cologne-Stammheim, Germany, assignors to Dynamit-Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Dec. 9, 1969, Ser. No. 883,527
Claims priority, application Germany, Dec. 21, 1968, P 18 16 386.5
Int. Cl. C07f *9/00*
U.S. Cl. 260—429 R **6 Claims**

Preparation of alcoholates of orthovanadic acid, called vanadium oxy esters or vanadyl esters, having the general formula:

$$VO(OR)_3$$

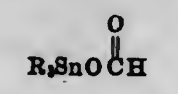
in which R represents alkyl or cycloalkyl radicals, especially those having 1 to 5 carbon atoms in the alkyl radical, by the reaction of vanadium pentoxide with anhydrous alcohols.

3,652,618
PROCESS FOR PREPARING HEXAORGANODITIN COMPOUNDS

Gerald H. Reifenberg, Hightstown, and William J. Considine, Somerset, N.J., assignors to M & T Chemicals Inc., New York, N.Y.

No Drawing. Filed Nov. 4, 1968, Ser. No. 773,329
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **4 Claims**

This invention is a method for preparing compounds of the formula R_3SnSnR_3 comprising pyrolyzing a triorganotin formate of the formula



$$R_3SnO\overset{O}{\overset{\|}{C}}H$$

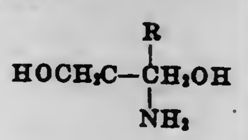
wherein R is a hydrocarbon selected from the group consisting of alkyl, alkenyl, aralkyl, and cycloalkyl radicals, and separating R_3SnSnR_3.

3,652,619
ORGANO-ZINC ALKANOLAMINE COMPLEX FOR STABILIZING VINYL HALIDE RESINS

Lawrence R. Jones, Terre Haute, Ind., assignor to Commercial Solvents Corporation

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,804
Int. Cl. C07f *3/06*
U.S. Cl. 260—429.9 **4 Claims**

Stabilized polyvinyl halide compositions including copolymers thereof, stabilized against heat degradation by incorporating therein from 1–10% by weight of a complex obtained by reacting an alkanolamine represented by the formula



$$HOCH_2C-\underset{NH_2}{\overset{R}{C}}H_2OH$$

where R is methyl, ethyl or hydroxymethyl with zinc glutamate or zinc sulfate.

3,652,620
α,β-UNSATURATED OXIME COMPLEXES OF NICKEL NITROSYL HALIDES AND THEIR PREPARATION

Robert A. Clement, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 23, 1970, Ser. No. 83,639
Int. Cl. C07f *15/04;* **C07c** *3/10*
U.S. Cl. 260—439 R **9 Claims**

Novel complexes of nickel nitrosyl halides with α,β-unsaturated oximes, e.g., nickel nitrosyl bromide-acrolein oxime complex, are prepared by reacting nitric oxide with (1) a π-allyl nickel halide or (2) an allylic halide and nickel tetracarbonyl. The new complexes are useful precursors of known complexes, e.g., triphenylphosphine (nitrosyl)bromonickel, a known catalyst for the oligomerization of olefins.

3,652,621
CONTINUOUS PRODUCTION OF ORGANO-ALUMINUM COMPOUND

Eiichi Ichiki, Kazuo Iida, and Aturo Matui, Niihama, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 680,321, Nov. 3, 1967. This application May 21, 1970, Ser. No. 39,211
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 A **7 Claims**

In a process for synthesizing an alkylaluminum compound by reacting aluminum, hydrogen and an olefin, or aluminum and hydrogen in the presence of trialkylaluminum as a catalyst, the alkylaluminum compound is economically produced in a continuous manner by introducing a trialkylaluminum compound, hydrogen or an olefin to the lower part of a column-type reactor packed with aluminum cut pieces having an apparent specific surface area of not more than 60 cm.²/g. for effecting reaction and withdrawing the formed alkylaluminum compound from the upper part of the reactor.

3,652,622
ORGANICALLY SUBSTITUTED SODIUM ALUMINUM HYDRIDES AND METHOD OF MAKING AND USING THE SAME

Jaroslav Vit, Bohuslav Casensky, and Milan Mamula, Prague, and Jiri Machacek, Rez, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

No Drawing. Filed Nov. 10, 1966, Ser. No. 594,971
Claims priority, application Czechoslovakia, Nov. 13, 1965, 6,771/65; Mar. 26, 1966, 2,009/66, 2,010/66
Int. Cl. C01b *6/28;* **C07f** *5/06*
U.S. Cl. 260—448 AD **10 Claims**

1. A substituted sodium aluminum hydride of the formula $NaAlH_xQ_{4-x}$, wherein x is 1 or 2 and wherein Q is an organic residue derived by splitting off an active hydrogen atom from a compound selected from the ground consisting of:

(1) ether alcohols of the formula $R'O(CH_2)_z OH$ where R′ is alkyl of 1 to 4 carbon atoms and z is an integer from 2 to 4;

(2) polyether alcohols of the formula

$$R'(OCH_2)_nO(CH_2)_zOH$$

wherein n is an integer from 2 to 4 and R′ and z have the same meaning as in (1) above;

(3) an amino alcohol of the general formula

$$R''R'''N(CH_2)_zOH$$

wherein R″ and R‴ are each selected from the group consisting of $RO(CH_2)_z$ and R, and wherein R is selected from the group consisting of alkyl of 1 to 4 carbon atoms and aryl of 6 to 8 carbon atoms, and wherein z has same meaning as in (1) above.

3,652,623
ORGANIC ALUMINUM COMPOUNDS

Shigeaki Washio and Shunji Araki, Befucho, Kakogawa, Japan, assignors to Taki Kasei Co., Ltd., Kakogawa, Japan

No Drawing. Filed Sept. 24, 1968, Ser. No. 762,130
Claims priority, application Japan, Sept. 30, 1967, 42/63,152, 42/63,153
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 AD **3 Claims**

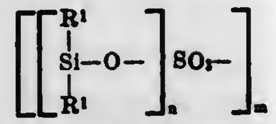
Complex organic aluminum compounds of the following empirical formula: $Al_xCl(OR)_yO_z$ wherein R is an alkyl radical having from 1 to 8 carbon atoms; x, y, and z are numbers between 1.5 and 5.0, 3.0 and 7.0 and 1.5 and 3.5, respectively, and $y+2z=3x-1$ are disclosed. The compounds have astringent-antiperspirant properties.

3,652,624
EQUILIBRATED POLYDIORGANOSILOXANYLSULFATE MIXTURES AND PROCESS FOR THEIR PREPARATION

Gerd Rossmy, Essen-Werden, Germany, assignor to Th. Goldschmidt A.G., Essen, Germany

No Drawing. Filed Jan. 28, 1970, Ser. No. 6,549
Int. Cl. C07f *7/02*
U.S. Cl. 260—448.2 N **46 Claims**

Equilibrated polydiorganosiloxanylsulfate mixtures of the formula



$$\left[\left[\underset{R^1}{\overset{R^1}{Si}}-O-\right]_n SO_3-\right]_m$$

wherein R^1 is the same or different in the molecule or molecule mixture and stands for methyl or ethyl; n has a value of from 2 to 20 and m has a value of from 1 to 2. The novel mixtures are useful as water repellents.

The application also discloses procedures for preparing such mixtures.

3,652,625
PROCESS FOR THE PREPARATION OF BIS(TRIORGANOSILYL)ACETYLENE

Georges Bakassian, Caluire, and André Bazouin, Luzinay, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,762
Claims priority, application France, Feb. 2, 1970, 7003549
Int. Cl. C07f *7/08*
U.S. Cl. 260—448.2 E **10 Claims**

Bis-trihydrocarbylsilyl acetylenes are obtained by reacting tetrachloroethylene and a trihydrocarbyl-chlorosilane with zinc or magnesium in the presence of a hexaalkylphosphotriamide or an N-alkylpyrrolidone.

3,652,626
PROCESS FOR THE PREPARATION OF COMPOUNDS WITH TRIORGANOSILYLETHYNYL GROUPS

Georges Bakassian, Caluire, and André Bazouin, Luzinay, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Feb. 12, 1971, Ser. No. 115,053
Claims priority, application France, Feb. 13, 1970, 7005153
Int. Cl. C07f *7/08*
U.S. Cl. 260—448.2 E **10 Claims**

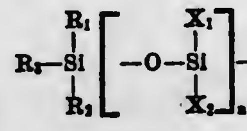
Tri-hydrocarbyl-silyl acetylenes are obtained by reacting trichloroethylene and a tri-hydrocarbylchlorosilane with zinc or magnesium in the presence of a hexaalkylphosphotriamide or an N-alkyl-pyrrolidone.

3,652,627
CYANOACETIC SILICON ALCOHOL ESTERS AND METHOD FOR PREPARATION OF SAME

Francois Meiller, Palaiseau, France, assignor to Societe Industrielle des Silicones, Paris, France

No Drawing. Filed June 19, 1969, Ser. No. 834,895
Claims priority, application France, June 21, 1968, 155,984
Int. Cl. C07f *7/10*
U.S. Cl. 260—448.2 N **10 Claims**

Cyanoacetic esters of silicon alcohols having thhe general formula



$$R_2-\underset{R_3}{\overset{R_1}{Si}}\left[-O-\underset{X_2}{\overset{X_1}{Si}}\right]_n-X_3$$

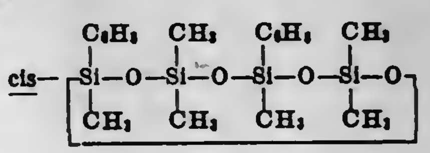
in which R_1, R_2 and R_3, which may be the same or different, represent an alkyl group containing from 1 to 3 carbon atoms, X_1, X_2 and X_3, which may be the same or different, represent an alkyl halogenoalkyl or cyanoacetoxyalkyl group in which the alkyl residue has from 1 to 3 carbon atoms, phenyl or halogenophenyl group, in which at least one of the groups is a cyanoacetoxyalkyl group and n is a whole number of from 1 to 40 in which the ester is produced by reacting a mono- or polyfunctional silicon alcohol with cyanoacetic acid or alkyl cyanoacetate or with cyanoacetic acid and a hexaalkyldisiloxane. The novel compounds are useful as hydraulic-fluids, lubricants, and coatings for glass fibers.

3,652,628
CYCLOTETRASILOXANES WHICH IMPART ALTERATION OF GENITAL FUNCTION IN MAMMALS

James Franklin Hyde and David E. Spielvogel, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed July 7, 1969, Ser. No. 839,696
Int. Cl. C07f *7/08, 7/20*
U.S. Cl. 260—448.2 R **1 Claim**

Certain phenyl and methyl containing cyclotetrasiloxane compounds which exhibit androgen depressant effects. For example, by orally administering a cyclotetrasiloxane of the formula



It has been shown that one can alter the genital function (which includes reproductive capacity as well as androgenic and estrogenic capacity) of mammals.

3,652,629
NITROGEN CONTAINING POLYMERS

Godfrey Fort, Ardrossan, Scotland, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Dec. 16, 1969, Ser. No. 885,637
Claims priority, application Great Britain, Dec. 30, 1968, 61,661/68
Int. Cl. C07f *7/02*
U.S. Cl. 260—448.2 N **14 Claims**

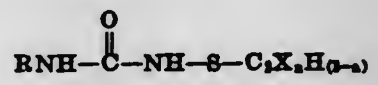
Siloxane-oxyalkylene copolymers containing one or more units having an oxyalkylene block connected to a silicon atom through an N-alkylene carbamyloxy group. The compounds are useful as emulsifiers, dispersing agents, lubricants for fibres and plastics, nonionic surface active agents and latex coagulants.

3,652,630
N-POLYHALOVINYLTHIO UREAS

Melancthon S. Brown, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Jan. 7, 1969, Ser. No. 789,596
Int. Cl. C07c *119/00*
U.S. Cl. 260—453 R **5 Claims**

Ureas of the formula



$$RNH-\overset{O}{\overset{\|}{C}}-NH-S-C_2X_nH_{(3-n)}$$

in which R is hydrogen, hydrocarbyl radicals of 1 to 15 carbon atoms which are free of aliphatic unsaturation and have 0 to 3 halogen substituents, X is Cl or Br and *a* is 2 or 3 the $-S-C_2X_aH_{(3-a)}$ group indicating a polyhalovinylthio group. These ureas are biologically active against fungi and aquatic weeds.

3,652,631

O,O'-DIOL BISPEROXYCARBONATES

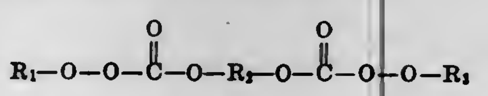
Henry C. Stevens, Akron, and Hans J. Wartmann, Wadsworth, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation of application Ser. No. 458,449, May 24, 1965. This application Nov. 19, 1969, Ser. No. 871,691

Int. Cl. C07c *3/10;* **C08f** *1/60*

U.S. Cl. 260—453 R **7 Claims**

Described are diesters of diols of poly(oxyalkylene) diols and two acid peroxyesters of a monohydric alcohol and carbonic acid wherein the carbonyl groups of the peroxyesters are esterified with the diol. These compounds are represented by the structure



$$R_1-O-O-\overset{O}{\overset{\|}{C}}-O-R_2-O-\overset{O}{\overset{\|}{C}}-O-O-R_3$$

R_1 and R_3 are organic radicals having up to 10 carbon atoms and R_2 is the divalent radical of a diol.

Method of their preparations involve reaction of a bischloroformate of the diol with an organic hydroperoxide. These compounds and compositions thereof with an organic hydroperoxide and/or diperoxide are described. The compounds and compositions are useful for polymerizing olefinically unsaturated monomers.

3,652,632

ORGANIC SULFUR COMPOUNDS AND METHOD OF PRODUCTION THEREOF

Lubomir C. Vacek, Toledo, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Continuation-in-part of applications Ser. No. 477,011, Aug. 3, 1965, and Ser. No. 601,327, Dec. 13, 1966, the latter being a continuation-in-part of applications Ser. No. 477,030, Aug. 3, 1965, and Ser. No. 373,092, June 5, 1964. This application Nov. 6, 1968, Ser. No. 773,958

Int. Cl. C07c *154/00, 154/02, 113/04*

U.S. Cl. 260—455 B **20 Claims**

The invention provides new organic sulfur compounds which are organic xanthates, alkylenedixanthates, di- and trithiocarbonates and dixanthate esters which are useful as fungicides and as chemical intermediates, and a meth-

3,652,633

PRODUCTION OF PHOSPHORUS SULFITOBETAINES

Harry Distler, Ludwigshafen, and Rudi Widder, Eppelheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Aug. 4, 1969, Ser. No. 847,434

Claims priority, application Germany, Aug. 13, 1968, P 17 93 184.9

Int. Cl. C07c *137/00*

U.S. Cl. 260—456 R **10 Claims**

Production of phosphorus sulfitobetaines by reaction of tertiary phosphines with 1,2-glycol sulfites. The products are catalysts for the oxyalkylation of saturated or unsaturated carboxylic acids and starting materials for the production of dyes, detergents, wetting agents, finishing agents and pesticides.

3,652,634

PROCESS FOR PREPARING A [(2-BENZOYLPHENYLCARBAMOYL)METHYL]-HYDROXY CARBAMIC ACID, ETHYL ESTER, ETHYL CARBONATE

Stanley C. Bell, Philadelphia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Original application Feb. 18, 1966, Ser. No. 528,623, now Patent No. 3,489,747, dated Jan. 13, 1970. Divided and this application June 23, 1969, Ser. No. 852,135

Int. Cl. C07c *125/06*

U.S. Cl. 260—463 **2 Claims**

2-amino-phenylbenzylideneaminoacetic acid N-oxides are reacted with ethyl chloroformate to produce the corresponding [(2 - benzoylphenylcarbamoyl)methyl]hydroxycarbamic acid, ethyl ester, ethyl carbonate. The products are intermediates in the preparation of 1,4-benzodiazepine compounds which have central nervous system activity.

3,652,635

STABILIZED α-CYANOACRYLATE ADHESIVE COMPOSITIONS

Sukeyoshi Kawamura, Kishichiro Kondo, Kenji Ito, Hiroshi Suzuki, and Eizo Yasui, Minato-ku, and Toshiro Kobayashi, Takaoka-shi, Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed July 28, 1969, Ser. No. 845,528

Claims priority, application Japan, Aug. 9, 1968, 43/56,118; Jan. 16, 1969, 44/2,617

Int. Cl. C07c *121/00, 121/40, 121/60*

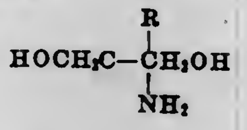
Lawrence R. Jones, Terre Haute, Ind., assignor to Commercial Solvents Corporation

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,804

Int. Cl. C07f *3/06*

U.S. Cl. 260—429.9 **4 Claims**

Stabilized polyvinyl halide compositions including copolymers thereof, stabilized against heat degradation by incorporating therein from 1–10% by weight of a complex obtained by reacting an alkanolamine represented by the formula



$$HOCH_2C-\underset{NH_2}{\overset{R}{C}}H_2OH$$

where R is methyl, ethyl or hydroxymethyl with zinc glutamate or zinc sulfate.

3,652,620

α,β-UNSATURATED OXIME COMPLEXES OF NICKEL NITROSYL HALIDES AND THEIR PREPARATION

Robert A. Clement, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 23, 1970, Ser. No. 83,639

Int. Cl. C07f *15/04;* **C07c** *3/10*

U.S. Cl. 260—439 R **9 Claims**

Novel complexes of nickel nitrosyl halides with α,β-unsaturated oximes, e.g., nickel nitrosyl bromide-acrolein oxime complex, are prepared by reacting nitric oxide with (1) a π-allyl nickel halide or (2) an allylic halide and

an organic residue derived by splitting off an active hydrogen atom from a compound selected from the ground consisting of:

(1) ether alcohols of the formula $R'O(CH_2)_z\,OH$ where R' is alkyl of 1 to 4 carbon atoms and *z* is an integer from 2 to 4;

(2) polyether alcohols of the formula

$$R'(OCH_2)_nO(CH_2)_zOH$$

wherein *n* is an integer from 2 to 4 and R' and *z* have the same meaning as in (1) above;

(3) an amino alcohol of the general formula

$$R''R'''N(CH_2)_zOH$$

wherein R'' and R''' are each selected from the group consisting of $RO(CH_2)_z$ and R, and wherein R is selected from the group consisting of alkyl of 1 to 4 carbon atoms and aryl of 6 to 8 carbon atoms, and wherein *z* has same meaning as in (1) above.

3,652,623

ORGANIC ALUMINUM COMPOUNDS

Shigeaki Washio and Shunji Araki, Befucho, Kakogawa, Japan, assignors to Taki Kasei Co., Ltd., Kakogawa, Japan

No Drawing. Filed Sept. 24, 1968, Ser. No. 762,130

Claims priority, application Japan, Sept. 30, 1967, 42/63,152, 42/63,153

Int. Cl. C07f *5/06*

U.S. Cl. 260—448 AD **3 Claims**

Complex organic aluminum compounds of the following empirical formula: $Al_xCl(OR)_yO_z$ wherein R is an

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3,652,626

PROCESS FOR THE PREPARATION OF COMPOUNDS WITH TRIORGANOSILYLETHYNYL GROUPS

Georges Bakassian, Caluire, and André Bazouin, Luzinay, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Feb. 12, 1971, Ser. No. 115,053

Claims priority, application France, Feb. 13, 1970, 7005153

Int. Cl. C07f *7/08*

U.S. Cl. 260—448.2 E **10 Claims**

Tri-hydrocarbyl-silyl acetylenes are obtained by reacting trichloroethylene and a tri-hydrocarbylchlorosilane with zinc or magnesium in the presence of a hexaalkylphosphotriamide or an N-alkyl-pyrrolidone.

3,652,627

CYANOACETIC SILICON ALCOHOL ESTERS AND METHOD FOR PREPARATION OF SAME

Francois Meiller, Palaiseau, France, assignor to Societe Industrielle des Silicones, Paris, France

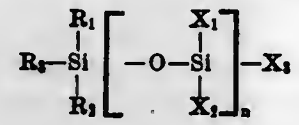
No Drawing. Filed June 19, 1969, Ser. No. 834,895

Claims priority, application France, June 21, 1968, 155,984

Int. Cl. C07f *7/10*

U.S. Cl. 260—448.2 N **10 Claims**

Cyanoacetic esters of silicon alcohols having thhe general formula



$$R_2-\underset{R_3}{\overset{R_1}{Si}}\left[-O-\underset{X_2}{\overset{X_1}{Si}}-\right]_n-X_3$$

[illegible]

NITROGEN CONTAINING POLYMERS

Godfrey Fort, Ardrossan, Scotland, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Dec. 16, 1969, Ser. No. 885,637

Claims priority, application Great Britain, Dec. 30, 1968, 61,661/68

Int. Cl. C07f *7/02*

U.S. Cl. 260—448.2 N **14 Claims**

Siloxane-oxyalkylene copolymers containing one or more units having an oxyalkylene block connected to a silicon atom through an N-alkylene carbamyloxy group. The compounds are useful as emulsifiers, dispersing agents, lubricants for fibres and plastics, nonionic surface active agents and latex coagulants.

3,652,630

N-POLYHALOVINYLTHIO UREAS

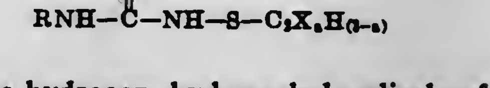
Melancthon S. Brown, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Jan. 7, 1969, Ser. No. 789,596

Int. Cl. C07c *119/00*

U.S. Cl. 260—453 R **5 Claims**

Ureas of the formula



$$RNH-\overset{O}{\overset{\|}{C}}-NH-S-C_2X_aH_{(3-a)}$$

in which R is hydrogen, hydrocarbyl radicals of 1 to 15 carbon atoms which are free of aliphatic unsaturation and have 0 to 3 halogen substituents, X is Cl or Br and *a* is 2 or 3 the $-S-C_2X_aH_{(3-a)}$ group indicating a polyhalovinylthio group. These ureas are biologically active against fungi and aquatic weeds.

3,652,631

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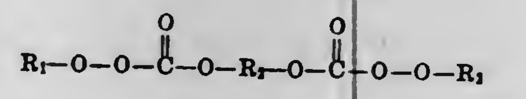
Henry C. Stevens, Akron, and Hans J. Wartmann, Wadsworth, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation of application Ser. No. 458,449, May 24, 1965. This application Nov. 19, 1969, Ser. No. 871,691

Int. Cl. C07c *3/10;* **C08f** *1/60*

U.S. Cl. 260—453 R **7 Claims**

Described are diesters of diols of poly(oxyalkylene) diols and two acid peroxyesters of a monohydric alcohol and carbonic acid wherein the carbonyl groups of the peroxyesters are esterified with the diol. These compounds are represented by the structure



$$R_1-O-O-\overset{O}{\overset{\|}{C}}-O-R_2-O-\overset{O}{\overset{\|}{C}}-O-O-R_3$$

R_1 and R_3 are organic radicals having up to 10 carbon atoms and R_2 is the divalent radical of a diol.

Method of their preparations involve reaction of a bischloroformate of the diol with an organic hydroperoxide. These compounds and compositions thereof with an organic hydroperoxide and/or diperoxide are described. The compounds and compositions are useful for polymerizing olefinically unsaturated monomers.

3,652,632

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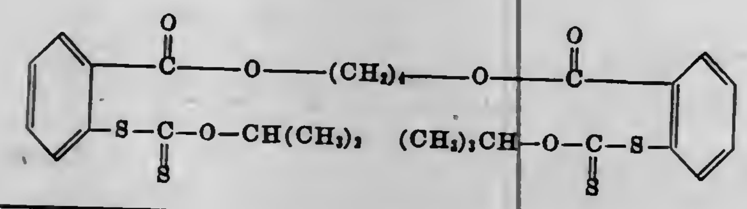
Int. Cl. C07c *154/00, 154/02, 113/04*

U.S. Cl. 260—455 B **20 Claims**

The invention provides new organic sulfur compounds which are organic xanthates, alkylenedixanthates, di- and trithiocarbonates and dixanthate esters which are useful as fungicides and as chemical intermediates, and a method for the production thereof. Examples of such compounds are o-methoxycarbonylphenyl ethylxanthate, bis-(o-methoxycarbonylphenyl) ethylenedixanthate, S,S-bis-(o-methoxycarbonylphenyl) dithiocarbonate, bis(o-methoxycarbonylphenyl) trithiocarbonate and 1,4-butanediol bis[(o-isopropoxy thiocarbonyl mercapto)[1] benzoate], i.e., a compound having the formula



3,652,633

PRODUCTION OF PHOSPHORUS SULFITOBETAINES

Harry Distler, Ludwigshafen, and Rudi Widder, Eppelheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Aug. 4, 1969, Ser. No. 847,434

Claims priority, application Germany, Aug. 13, 1968, P 17 93 184.9

Int. Cl. C07c *137/00*

U.S. Cl. 260—456 R **10 Claims**

Production of phosphorus sulfitobetaines by reaction of tertiary phosphines with 1,2-glycol sulfites. The products are catalysts for the oxyalkylation of saturated or unsaturated carboxylic acids and starting materials for the production of dyes, detergents, wetting agents, finishing agents and pesticides.

3,652,634

PROCESS FOR PREPARING A [(2-BENZOYLPHENYLCARBAMOYL)METHYL]-HYDROXY CARBAMIC ACID, ETHYL ESTER, ETHYL CARBONATE

Stanley C. Bell, Philadelphia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Original application Feb. 18, 1966, Ser. No. 528,623, now Patent No. 3,489,747, dated Jan. 13, 1970. Divided and this application June 23, 1969, Ser. No. 852,135

Int. Cl. C07c *125/06*

U.S. Cl. 260—463 **2 Claims**

2-amino-phenylbenzylideneaminoacetic acid N-oxides are reacted with ethyl chloroformate to produce the corresponding [(2 - benzoylphenylcarbamoyl)methyl]hydroxycarbamic acid, ethyl ester, ethyl carbonate. The products are intermediates in the preparation of 1,4-benzodiazepine compounds which have central nervous system activity.

3,652,635

STABILIZED α-CYANOACRYLATE ADHESIVE COMPOSITIONS

Sukeyoshi Kawamura, Kishichiro Kondo, Kenji Ito, Hiroshi Suzuki, and Eizo Yasui, Minato-ku, and Toshiro Kobayashi, Takaoka-shi, Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed July 28, 1969, Ser. No. 845,528

Claims priority, application Japan, Aug. 9, 1968, 43/56,118; Jan. 16, 1969, 44/2,617

Int. Cl. C07c *121/00, 121/40, 121/60*

U.S. Cl. 260—464 **7 Claims**

An adhesive composition containing an aromatic sulfonic acid as a stabilizer. This composition can be increased in tackiness, without causing length, by addition of an acrylate ester-acrylonitrile copolymer.

3,652,636

NITRILE CONTAINING STYRYL DYES

Horst Scheuermann and Matthias Seefelder, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

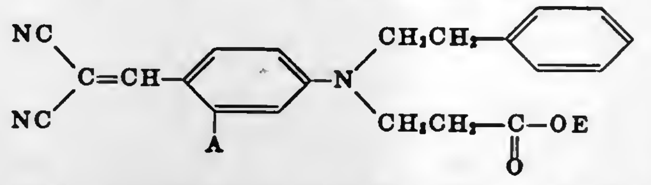
No Drawing. Filed Aug. 13, 1968, Ser. No. 752,142

Claims priority, application Germany, Aug. 19, 1967, P 15 69 674.9

Int. Cl. C07c *121/72*

U.S. Cl. 260—465 D **3 Claims**

A class of p-N-N-disubstituted styryl compounds which are methine or styryl dyes particularly useful for dyeing textile material of cellulose esters and synthetic polyamides or polyesters fast green-yellow shades. Particularly useful styryl dyes are those of the formula



wherein A is hydrogen or methyl and E is methyl, ethyl, n-butyl or isobutyl.

3,652,637

VAPOR PHASE SYNTHESIS OF CHLORINATED AROMATIC NITRILES

Russell M. Bimber, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Nov. 22, 1968, Ser. No. 778,091

Int. Cl. C07c *121/02, 121/62, 121/64*

U.S. Cl. 260—465 G **7 Claims**

An all-vapor phase process for the synthesis of chlorinated aromatic nitriles and chlorinated heteroaromatic nitriles involves reacting substituted aromatic and heteroaromatic compounds with ammonia and a source of oxygen under ammoxidation conditions followed by reacting the ammoxidation product while in the vapor phase with chlorine under chlorination conditions with subsequent condensation of the synthesized product to the solid state.

3,652,638

NITRILE PRODUCTION

Herbert Riegel, Maplewood, N.J., Harvey D. Schindler, New York, N.Y., and Morgan C. Sze, Upper Montclair, N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Dec. 9, 1968, Ser. No. 782,020

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.3 **28 Claims**

Process for producing nitriles by contacting a hydrocarbon containing feed, such as an alkane, alkene or alkyl-substituted aromatic hydrocarbon, with ammonia and either oxygen and a melt containing a multivalent metal halide in both its higher and lower valence state, such as a mixture of copper chlorides; or a melt containing a multivalent metal halide in both its higher and lower valence state and the corresponding metal oxyhalide in the absence or presence of oxygen.

3,652,639

GRAFT COPOLYMERS OF ACRYLONITRILE ON UNSATURATED POLYOLS

Louis C. Pizzini, Trenton, John G. Demou, Lincoln Park, and John T. Patton, Jr., and William W. Levis, Jr., Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed Nov. 20, 1969, Ser. No. 878,594

Int. Cl. C08f *21/00, 25/00*

U.S. Cl. 260—465.4 **9 Claims**

Graft copolymers are prepared by the in situ polymerization of acrylonitrile in an unsaturated polyol in the presence of a free radical catalyst. The copolymers are transparent homogeneous liquids which may be employed in the preparation of flexible urethane foams having superior load bearing properties.

3,652,640

OXYHALOGENATED PROCESS

Francis T. Wadsworth, Trenton, and Jack Newcombe, Trenton, N.J., and Floyd T. Welch, Sulphur, La., assignors to Cities Service Company, New York, N.Y.

No Drawing. Filed July 9, 1968, Ser. No. 750,418

Int. Cl. C07c *121/30*

U.S. Cl. 260—465.7 **4 Claims**

Processes are described for producing α-halogenated derivatives of aliphatic compounds containing an electron withdrawing functional group, α,β-ethylenic unsaturation and at least one α-hydrogen radical by contacting the aliphatic compound with oxygen and a hydrogen halide in the presence of an oxyhalogenation catalyst. Illustrations show the production of high yields of α-chloro-acrylonitrile by passing a mixture of acrylonitrile, air and hydrogen chloride through a heated bed of a supported copper oxychlorination catalyst.

3,652,641

HYDROCYANATION OF OLEFINS

Joe Douglas Druliner, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 4, 1969, Ser. No. 847,400

Int. Cl. C07c *121/04*

U.S. Cl. 260—465.8 **10 Claims**

A process for the hydrocyanation of non-conjugated ethylenically unsaturated organic compounds using certain nickel complexes, such as a tetrakis (triaryl phosphite) nickel (0), as catalyst and a boron compound selected from the class consisting of $B(OR')_3$ where R′ is an alkyl or aryl group of up to 7 carbon atoms, and $nB(OH)_3-xH_2O$ where *n* is 1 or 2 and *x* is from 0 to 3.

3,652,642

CONTINUOUS PROCESS FOR THE PREPARATION OF 2-METHYLENE GLUTARONITRILE

Theodore B. Baba, Hillsdale, N.J., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Aug. 22, 1969, Ser. No. 852,288

Int. Cl. C07c *121/20*

U.S. Cl. 260—465.8 D **12 Claims**

A continuous process for the preparation of 2-methylene glutaronitrile by dimerizing, in a cascading series of reaction stages, acrylonitrile dissolved in a solvent comprising an alkanol and an aromatic hydrocarbon in the presence of a tertiary phosphine containing at least one cycloalkyl group. The preferred solvent is a mixture of tertiary butanol and benzene. The preferred catalyst is tricyclohexyl phosphine. The 2-methylene glutaronitrile is separated from the reactor effluent from the series of reactor stages by stripping out the lower boiling acrylonitrile and solvents and then distilling off the 2-methylene glutaronitrile from the higher boiling residue.

3,652,643

METHYL 3,3-DICHLORO-1-LOWER ALKOXY-2-OXO CYCLOPENTANE CARBOXYLATE

Charles M. Leir, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Apr. 28, 1969, Ser. No. 820,013

Int. Cl. C07c *69/74, 49/36*

U.S. Cl. 260—468 R **6 Claims**

Preparation of 2-hydroxy-3-lower alkyl-cyclopent-2-en-1-one via cyclizing dialkyladipate to 2-carboalkoxycyclopentan-1-one, 2-alkylation thereof to obtain 2-lower alkyl-2-carboalkoxycyclopentan-1-one, chlorination thereof to the corresponding 5,5-dichloro compound, a new compound, and acid hydrolysis to desired product, said product being used as a flavor enhancing agent.

3,652,644

QUATERNARY AMMONIUM SALTS OF ESTERS OF SALICYLIC ACID AS RUST INHIBITORS

Elizabeth L. Fareri, Pittsburgh, Robert J. McGuire, Monroeville, and Harold O. Strange, Penn Hills Township, Allegheny County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Original application Aug. 2, 1965, Ser. No. 476,717, now Patent No. 3,433,607, dated Mar. 18, 1969. Divided and this application Apr. 1, 1968, Ser. No. 717,971

Int. Cl. C07c *101/42*

U.S. Cl. 260—471 R **4 Claims**

Quaternary ammonium salts of esters of salicylic acid are used as rust inhibitors in hydrocarbon oil.

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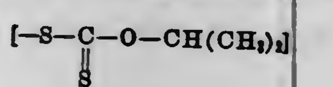
[1] So far as is known no recognized name for the moiety



$$[-S-\underset{S}{\underset{\|}{C}}-O-CH(CH_3)_2]$$

has been established, the above-suggested name uses "o-isopropoxy thiocarbonyl mercapto" for the moiety.

3,652,645
HALOPHENOXY BENZOIC ACID HERBICIDES

Robert J. Theissen, Westfield, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Apr. 25, 1969, Ser. No. 819,412
Int. Cl. C07c *79/46*
U.S. Cl. 260—471 R **5 Claims**

2-nitro-5-(halophenoxy)benzoic acids and esters, salts, amides, and acyl halides thereof comprise a class of compounds that are highly effective pre- and post-emergence herbicides.

3,652,646
CARBOXYLIC ACID DERIVATIVES

Thomas Leigh, Jeffrey Meyrick Thorp, and Wilson Shaw Waring, Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 15, 1967, Ser. No. 623,230
Claims priority, application Great Britain, Mar. 31, 1966, 14,264/66, 14,265/66
Int. Cl. C07c *65/00, 69/76*
U.S. Cl. 260—473 G **8 Claims**

Biphenylyloxy- and biphenylylthio-alkanoic acid derivatives which lower the concentration of cholesterol and/or triglycerides in the blood serum and reduce the level of fibrinogen in blood plasma, and which possess anti-inflammatory activity. Pharmaceutical compositions containing such compounds and a method of using such compounds in the treatment of coronary artery disease and atherosclerosis.

3,652,647
ESTERIFICATION OF CARBOXYLIC ACIDS WITH EPOXIDES USING A CARBON CATALYST

Edward G. Zey, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 869,326, Oct. 24, 1969. This application Aug. 3, 1970, Ser. No. 60,719
Int. Cl. C07c *69/54, 69/82*
U.S. Cl. 260—475 P **22 Claims**

Process for the production of β-hydroxyalkyl esters of carboxylic acids by reacting the carboxylic acid with an alkylene monoepoxide utilizing a catalyst which is finely-divided carbon. Specific useful embodiments include the production of bis-(β-hydroxyethyl)terephthalate and the β-hydroxyethyl esters of acrylic and methacrylic acids.

3,652,648
PRODUCTION OF 4,5-BENZTROPONE-2,7-DICARBOXYLIC ESTERS

Baldur Foehlisch, Stuttgart, Germany, assignor to Badische Anilin- & Soda-Fabric Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Apr. 15, 1970, Ser. No. 28,957
Claims priority, application Germany, Apr. 21, 1969, P 19 20 081.8
Int. Cl. C07c *69/76*
U.S. Cl. 260—475 FR **7 Claims**

Production of benztropone dicarboxylic esters by condensation of o-phthalaldehydes with acetone dicarboxylic esters in an acid medium.

3,652,649
PURIFICATION OF BIS-BETA-HYDROXYETHYL TEREPHTHALATE

Charles Woo and Roger M. Butler, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company

No Drawing. Filed June 5, 1967, Ser. No. 643,387
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 PR **4 Claims**

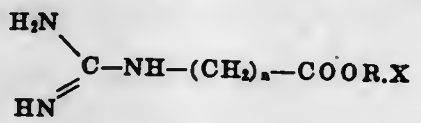
Crude bis-beta-hydroxyethyl terephthalate, useful in the preparation of fibers and films, is purified by dissolving the ester in a solvent, with or without the presence of minor amounts of an organic acid, contacting the solution with an adsorbent and crystallizing purified bis-beta-hydroxyethyl terephthalate from the treated solution.

3,652,650
GUANIDINO FATTY ACID ESTERS AND THEIR PRODUCTION

Setsuro Fujii, 78, 1-chome, Kuramoto Shomachi, Tokushima, Japan

Filed Oct. 23, 1968, Ser. No. 769,815
Claims priority, application Japan, Oct. 24, 1967, 42/68,692
Int. Cl. C07c *129/12*
U.S. Cl. 260—482 R **2 Claims**

ω-Guanidino fatty acid esters of the formula



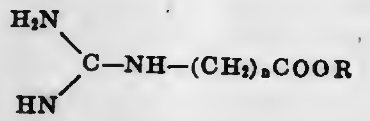
wherein *n* is an integer of from 3 to 5 inclusive and R is an alkyl, aryl or arylalkyl group in which the aromatic may or may not be substituted.

3,652,651
SYNTHESIS OF NOVEL GUANIDINO FATTY ACID ESTERS

Setsuro Fujii, 78, 1-chome, Kuramoto Shomachi, Tokushima, Japan

No Drawing. Filed Oct. 23, 1968, Ser. No. 770,072
Claims priority, application Japan, Oct. 24, 1967, 42/68,693
Int. Cl. C07c *101/24*
U.S. Cl. 260—482 R **2 Claims**

A method for producing a guanidino fatty acid ester of the formula



wherein *n* is an integer of from 3 to 5 inclusive and R is an alkyl group of 1–7 carbon atoms, aryl or arylalkyl group in which the aromatic ring may be or may not be substituted, which comprises reacting an amino fatty acid ester of the formula:

$$H_2N(CH_2)_nCOOR$$

wherein *n* and R are as defined above, with S-methyl thiourea or cyanamide.

3,652,652
3-METHALLYLLEVULINATES AND PREPARATION THEREOF

Marc Julia, Paris, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Application July 1, 1966, Ser. No. 574,520, which is a division of application Ser. No. 329,242, Dec. 9, 1963. Divided and this application Apr. 22, 1969, Ser. No. 818,399
Claims priority, application France, Dec. 9, 1962, 919,497
Int. Cl. C07c *67/00, 69/66*
U.S. Cl. 260—483 **3 Claims**

The invention provides alkyl 3-methallyllevulinates useful as intermediates in the preparation of chrysanthemic acid and a process for their production by reaction of an alkyl enol ether of an alkyl levulinate with methallyl alcohol and heating.

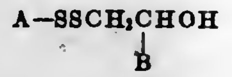
3,652,653
POLYHALO DISULFIDE ALCOHOL DERIVATIVES

Carl D. Emerson, Kansas City, Mo., and Paul C. Aichenegg, Prairie Village, Kans., assignors to Baychem Corporation, New York, N.Y.

No Drawing. Application Sept. 4, 1968, Ser. No. 757,487, which is a continuation-in-part of application Ser. No. 560,125, June 24, 1966. Divided and this application Mar. 27, 1969, Ser. No. 811,190
Int. Cl. C07c *69/34, 69/60*
U.S. Cl. 260—485 H **14 Claims**

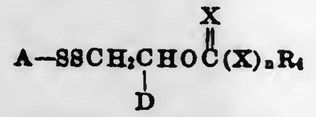
Compounds are prepared having one of the formulae

(1)



$$A{-}SSCH_2\underset{\substack{|\\B}}{C}HOH$$

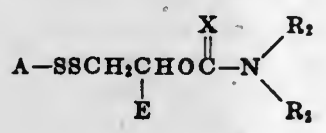
(2)



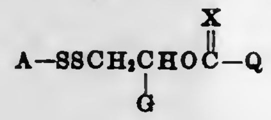
$$A{-}SSCH_2\underset{\substack{|\\D}}{C}HO\overset{\substack{X\\ \|}}{C}(X)_nR_4$$

(3) $(A{-}SSCH_2CH_2O)_2C{=}X$

(4)



(5)



$$A{-}SSCH_2\underset{\substack{|\\G}}{C}HO\overset{\substack{X\\ \|}}{C}{-}Q$$

and

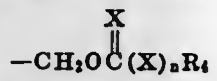
(6) $A{-}SSCH_2CH_2{-}K$

where

A is selected from the group consisting of di to tetrahaloethyl and di to trihalovinyl;

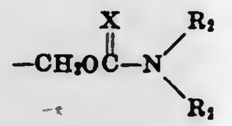
B is selected from the group consisting of hydrogen and $-CH_2OH$;

D is selected from the group consisting of hydrogen and

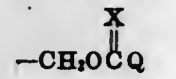


$$-CH_2O\overset{\substack{X\\ \|}}{C}(X)_nR_4$$

E is selected from the group consisting of hydrogen and



G is selected from the group consisting of hydrogen and



$$-CH_2O\overset{\substack{X\\ \|}}{C}Q$$

n is 0 or 1,

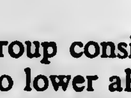
X is selected from the group consisting of oxygen and sulfur except that when *n* is 0 in formula (2) X must be oxygen;

Q is halogen;

R_1 is selected from the group consisting of alkyl, phenyl, lower alkyl phenyl, halo lower alkyl, halophenyl, naphthyl, lower alkyl naphthyl and lower alkyl halophenyl;

R_2 and R_3 individually are the same as R_1 or hydrogen with the proviso that not more than one of R_2 and R_3 is hydrogen and collectively together with the adjacent nitrogen atom form a 5 to 6 membered heterocyclic ring having up to 1 oxygen atom therein;

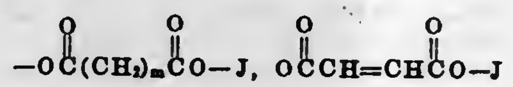
R_4 is R_1 or



$$R_1O\overset{\substack{S\\ \|}}{C}-$$

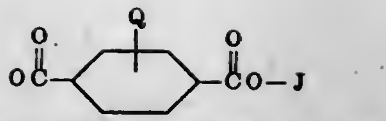
or phenyl ethylene or halophenoxymethyl having up to 3 halogens and up to 1 methyl group on the aromatic ring;

K is selected from the group consisting of



$$-O\overset{\substack{O\\ \|}}{C}(CH_2)_m\overset{\substack{O\\ \|}}{C}O-J,\quad O\overset{\substack{O\\ \|}}{C}CH{=}CH\overset{\substack{O\\ \|}}{C}O-J$$

and



J is selected from the group consisting of hydrogen and $ASSCH_2CH_2-$;

m is an integer from 0 to 2 inclusive, and all halogen atoms in the compounds have an atomic weight of 35 to 80.

The compounds are useful as herbicides, fungicides, nematocides, defoliants and desiccants. 1,2,2-trichloroethyldithioethyl-2′-methyl-4′-chlorophenoxy acetate is a particularly effective herbicide.

3,652,654
STAGED OXYGEN FEED IN A CATALYTIC PROCESS FOR THE MANUFACTURE OF UNSATURATED ACIDS AND ESTERS

Kin Hsueh-Yuan Tsu, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 818,818, Apr. 23, 1969. This application May 5, 1970, Ser. No. 34,907
Int. Cl. C07c *51/24, 67/00, 69/54*
U.S. Cl. 260—486 D **7 Claims**

In a process of making an unsaturated aliphatic acid or ester by catalytic dehydrogenation of a saturated aliphatic acid or ester reactant passed with oxygen through a solid catalyst reaction zone, the total oxygen for the catalytic reaction is introduced in fractions at several spaced-apart intervals along the path of the acid or ester reactant through the solid catalyst reaction zone. Such staged addition of oxygen improves the percent conversion and product selectivity for the reaction.

3,652,655
PREPARATION OF ESTERS OF UNSATURATED CARBOXYLIC ACIDS

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Oct. 10, 1969, Ser. No. 865,489
Int. Cl. C07c *67/00*
U.S. Cl. 260—486 AC **16 Claims**

The invention comprises the carbonylation of a hydrocarbon olefin by contacting the olefin and carbon monoxide with a carbonyl compound in the presence of a Group VIII noble metal catalyst to produce an ester of an unsaturated carboxylic acid. A typical process comprises contacting ethylene and carbon monoxide with butanal in a liquid medium containing a palladium catalyst to produce butyl acrylate, a valuable polymerization monomer.

3,652,656
FORMATE ESTERS

Basil Jason Heywood and Otto Meresz, Hornchurch, England, assignors to May & Baker Limited, Dagenham, Essex, England

Filed Nov. 21, 1966, Ser. No. 595,663
Claims priority, application Great Britain, Nov. 26, 1965, 50,403/65; May 17, 1966, 21,839/66
Int. Cl. C07c *67/04, 69/08*
U.S. Cl. 260—488 R **13 Claims**

1. The diformate fraction of impirical formula $C_{11}H_{16}O_4$ obtained by the reaction of cycloocta-1,5-diene with formaldehyde or paraformaldehyde in the presence of formic acid, said fraction having a boiling point of 90–110° C./0.05 to 0.2 mm. Hg, a density of 1.1–1.2 g./ml. at 22° C., and refractive index 1.47–1.50 at 21° C. in the D line of sodium.

3,652,657
ESTROGENIC AGENTS

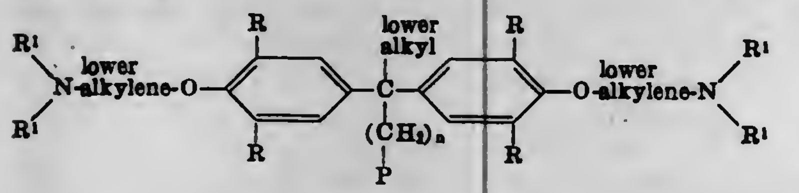
John H. Fried, Palo Alto, and John A. Edwards and William McCrae, Los Altos, Calif., assignors to Syntex Corporation, Panama, Panama
No Drawing. Filed July 24, 1968, Ser. No. 747,083
Int. Cl. C07c *61/28, 61/32;* **C07d** *9/00*
U.S. Cl. 260—488 R **10 Claims**

Novel 1,6-methano-, 1,6-dichloromethano-, 1,6-difluoromethano-, and 1,6-oxido-cyclodecapentaene alcohols, aldehydes and acids and derivatives having estrogenic activity.

3,652,658
ESTER DERIVATIVES OF BIS[p-(AMINO-LOWER ALKYLENEOXY)PHENYL]ALKANOLS

Josef Fried, 5715 S. Kenwood Ave., Chicago, Ill. 60637; Edward Joseph Pribyl, 80 Mason Drive, Metuchen, N.J. 08840; and John Krapcho, 150 DeMott Lane, Somerset, N.J. 08873
No Drawing. Continuation-in-part of application Ser. No. 566,245, July 19, 1966, which is a continuation-in-part of application Ser. No. 288,630, June 18, 1963. This application Jan. 23, 1969, Ser. No. 793,608
Int. Cl. C07c *93/14*
U.S. Cl. 260—490 **5 Claims**

This application relates to acids and esters of the general formula



and to acid addition salts thereof. These substances inhibit cholesterol biosynthesis and aid in the regulation of cholesterol in the blood.

3,652,659
METHOD FOR THE MANUFACTURE OF VINYL ESTERS

Bruno Otto Kruger and James Wilson Waites, Jr., Baton Rouge, La., assignors to Borden, Inc., New York, N.Y.
Filed Aug. 20, 1969, Ser. No. 851,568
Int. Cl. C07c *67/04*
U.S. Cl. 260—498 **6 Claims**

Method and apparatus for producing vinyl esters by introducing acetylene and an alkanoic acid in vapor phase into a catalyst containing reaction zone, withdrawing vaporous reaction products therefrom, and periodically changing the direction in which the vapors flow through the reaction zone. The apparatus comprises valved conduit means interconnecting the reactor with the feed and product recovery unit, said means providing a change or reversal of vapor flow in the reactor.

3,652,660
N-HALO-N-ALKYL-o-SULFOBENZAMIDES

Frederick Edward Hardy, Newcastle-upon-Tyne, England, assignors to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Apr. 2, 1970, Ser. No. 25,292
Claims priority, application Great Britain, Apr. 25, 1969, 21,200/69
Int. Cl. C07c *143/52*
U.S. Cl. 260—507 R **7 Claims**

The invention relates to novel N-halo-N-alkyl-o-sulfobenzamides. These compounds are useful in bleaching compositions and methods. Some are activators for peroxygen bleaching agents, and some have bleaching activity themselves.

3,652,661
9,9-BIS-AMINO ALKYL FLUORENE SULPHONIC ACIDS AND METAL SALTS THEREOF

John Ewart Lodge, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Feb. 5, 1968, Ser. No. 702,784
Int. Cl. C07c *143/56*
U.S. Cl. 260—510 **6 Claims**

Polyamides containing sulphofluorene links to accept basic dyestuffs (not acid) for single stage pattern dyeing.

3,652,662
HYDROGENATED OLEFIN SULFONATE DETERGENT BARS

William A. Sweeney, San Rafael, and Gar Lok Woo, Tiburon, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed June 16, 1969, Ser. No. 833,801
Int. Cl. C07c *143/02*
U.S. Cl. 260—513 R **4 Claims**

Novel detergent compositions suitable for use in improved nonsoap detergent toilet bars are prepared from a solution of a complex mixture of hydrogenated olefin sulfonates containing from 10 to 24 carbon atoms by cooling the solution to a temperature in the range of from 0° C. to 35° C. and subsequently filtering the solution to recover the improved hydrogenated olefin sulfonates as the precipitate.

3,652,663
NAPHTHENIC ACID COMPOSITIONS

Carroll J. Wedel, Walnut Creek, and John D. Gardner, Richmond, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Mar. 5, 1969, Ser. No. 804,670
Int. Cl. C10g *41/00;* **C07c** *61/00*
U.S. Cl. 260—514 N **6 Claims**

Petroleum naphthenic acid distillate is stabilized against color degradation by the addition of salicyl anilide or hydrocarbyl phosphite.

3,652,664
PROCESS FOR THE PRODUCTION OF AROMATIC POLYCARBOXYLATES

Donald G. Kuper, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Nov. 20, 1969, Ser. No. 878,538
Int. Cl. C07c *51/52*
U.S. Cl. 260—515 P **6 Claims**

Improved catalytic disproportionation of aromatic carboxylates to aromatic polycarboxylates containing at least one additional carboxyl group is achieved by carrying out the catalytic disproportionation process in the presence of a conventional disproportionation catalyst and at least one hydrocarboncarbonitrile adjuvant compound of the formula $R—(CN)_n$ wherein R is a hydrocarbon radical having 1–10 carbon atoms therein and *n* is 1, 2 or 3.

3,652,665
HALO-PHENOXY SALICYLIC ACIDS

Tsung-Ying Shen, Gordon L. Walford, and Bruce E. Witzel, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Continuation-in-part of application Ser. No. 836,640, June 25, 1969. This application Apr. 20, 1970, Ser. No. 30,299
Int. Cl. C07c *65/14*
U.S. Cl. 260—520 **8 Claims**

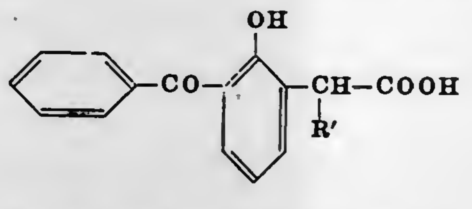
New substituted phenoxysalicylic acids and non-toxic-pharmaceutically accepable salts, esters, and amides derived therefrom. The substituted phenoxysalicylic acids

disclosed herein have anti-inflammatory, anti-pyretic, and analgesic activity. Also included are methods for preparing said phenoxysalicylic acid compounds.

3,652,666
2-(3-BENZYL-2-METHOXY-PHENYL) ALKANOIC ACIDS

Daniel Farge, Thiais, Mayer Naoum Messer, Bievres, and Claude Moutonnier, Paris, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Dec. 18, 1969, Ser. No. 886,386
Claims priority, application France, Dec. 20, 1968, 179,627
Int. Cl. C07c *65/14*
U.S. Cl. 260—520 **1 Claim**

2-(3-benzoyl-2-hydroxyphenyl)alkanoic acids of the formula:



wherein R′ is alkyl of 1 through 4 carbon atoms, which are therapeutically useful as anti-inflammatory agents, are prepared by demethylating corresponding 2-(3-benzoyl-2-methoxyphneyl)alkanoic acids, which themselves are obtained by oxidation of the methylene group of corresponding 2-(3-benzyl-2-methoxyphenyl)alkanoic acids to a carbonyl group.

3,652,667
PROCESS FOR THE PREPARATION OF NAPHTHALENE-1,4-DICARBOXYLIC ACID

Hans Frischkorn and Erich Schinzel, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Apr. 2, 1968, Ser. No. 718,240
Int. Cl. C07c *51/28, 63/02*
U.S. Cl. 260—524 M **3 Claims**

Naphthalene-1,4-dicarboxylic acid is obtained by oxidation of 1-methyl-4-acetyl-naphthalene with sodium dichromate.

3,652,668
PROCESS FOR THE OXIDATION OF HYDROCARBONS

Derek Bryce-Smith, Sonning Common, near Reading, and Stuart Samuel Adcock, Reading, England, assignors to Ethyl Corporation, New York, N.Y.
No Drawing. Filed Dec. 6, 1966, Ser. No. 599,382
Claims priority, application Great Britain, Apr. 15, 1966, 16,641/66
Int. Cl. C07c *47/54, 63/02, 69/14*
U.S. Cl. 260—524 R **11 Claims**

Oxidation of non-acetylenic hydrocarbons, particularly alkyl aromatics, with molecular oxygen using a catalyst system composed of a silver substance (e.g., silver acetate) and a carboxylic acid anhydride (e.g., acetic anhydride). Small amounts of fluorine containing substances (e.g., silver fluoride) are preferably present.

3,652,669
PREPARATION OF OXALIC ACID

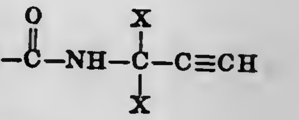
Leonard Levine, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Nov. 4, 1970, Ser. No. 86,945
Int. Cl. C07c *51/24*
U.S. Cl. 260—538 **8 Claims**

Oxalic acid is prepared by reacting a lower alkylene oxide with concentrated nitric acid.

3,652,670
SUBSTITUTED PROPARGYL BENZAMIDES

Bruce Wayne Horrom, Waukegan, and Aldo Joseph Crovetti, Lake Forest, Ill., assignors to Abbott Laboratories, North Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 620,651, Mar. 6, 1967. This application Dec. 5, 1968, Ser. No. 783,779
The portion of the term of the patent subsequent to Dec. 2, 1986, has been disclaimed
Int. Cl. C07c *103/30*
U.S. Cl. 260—558 D **2 Claims**

Substituted propargyl benzamides having the formula



$$R-\overset{\overset{\displaystyle O}{\|}}{C}-NH-\underset{\underset{\displaystyle X}{|}}{\overset{\overset{\displaystyle X}{|}}{C}}-C\equiv CH$$

useful as biocidal agents.

3,652,671
PROCESS FOR MAKING A CATIONIC METHACRYLAMIDE

Benny G. Barron, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed June 1, 1970, Ser. No. 42,502
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 N **10 Claims**

N-(dialkylaminoalkyl)methacrylamides are prepared by thermally decomposing the corresponding N-(dialkylaminoalkyl)-2-methyl-β-alanine. The latter compound can be made by reacting methacrylic acid with an N,N-dialkylalkylenediamine. The substituted methacrylamide product is a useful cationic monomer for making flocculants, paper pulp additives, and the like.

3,652,672
NOVEL DIIMINE COMPOUNDS

Jonathan M. Kliegman and Robert K. Barnes, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Apr. 27, 1970, Ser. No. 32,384
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 R **3 Claims**

A compound of the general formula:

$$RN{=}CHCH{=}NR$$

wherein R is either an i-propyl or t-butyl radical, and prepared by the reaction of an aqueous solution of glyoxal with a primary amine of the general formula:

$$RNH_2$$

wherein R is either the i-propyl or t-butyl radical. These compounds have been found to have excellent utility in inducing nonlethal physiological action on those subjected to its vapors.

3,652,673
1,2-DI[4-(2-AMINOETHYL)PHENYL]-3-AMINOPROPANE

William J. Farrissey, Jr., Northford, and Edward J. Thompson, Watertown, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Original application Jan. 15, 1968, Ser. No. 697,652, now Patent No. 3,539,611, dated Nov. 10, 1970. Divided and this application May 8, 1970, Ser. No. 35,920
Int. Cl. C07c *87/28*
U.S. Cl. 260—570.5 P **1 Claim**

A triisocyanate, 1,2-di[4-(2-isocyanatoethyl)phenyl]-3-isocyanatopropane, is prepared by phosgenation of the corresponding triamine. The latter is prepared by catalytic hydrogenation of the corresponding trinitrile. The latter is obtained by reaction of α,α′-dihalo-p-xylene with sodium cyanide. The triisocyanate is an intermediate in the preparation of polyurethanes; the triamine is a curative for epoxy resins and the like.

3,652,674

PROCESS FOR THE CATALYTIC DEHYDROGENATION OF CYCLODODECANOL AND CATALYST THEREFOR

Manfred Zur Hausen, Günter Höckele, and Wilhelm Knepper, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed Aug. 10, 1967, Ser. No. 659,602

Claims priority, application Germany, Aug. 12, 1966, C 39,864

The portion of the term of the patent subsequent to June 22, 1988, has been disclaimed

Int. Cl. C07c *35/02*

U.S. Cl. 260—586 A **2 Claims**

Cyclododecanol is dehydrogenated in liquid phase by contacting it, at elevated temperature e.g. from about 180° C. up to the boiling point of the cyclododecanol (271° C.), with a catalyst consisting essentially of a molded and calcined mixture (calcined at 300–700° C.) of a carrier of highly dispersed silicic acid which after drying at 120° C. still has a loss on ignition of 1–10% by weight, 5–20% by weight of copper relative to the loss on ignition, up to 5% by weight of chromium and 0.5 to 15% by weight of barium ions.

3,652,675

2-METHOXY-5-HYDROXYBENZALDEHYDE

Durvasula V. Rao, Hamden, and Henri Ulrich, Northford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed June 22, 1970, Ser. No. 48,519

Int. Cl. C07c *47/56*

U.S. Cl. 260—600 **1 Claim**

The novel compound, 2-methoxy-5-hydroxybenzaldehyde is disclosed. This compound is distinguished from its known isomers by its capability of forming photochromic polyspirans via conversion to its O-acrylate, polymerization of the latter, demethylation of the original 2-methoxy group and condensation of the resulting poly(salicylaldehyde) derivative with 2-methylene-1,3,3-trimethylindoline. 2-methoxy-5-hydroxybenzaldehyde is obtained by selective demethylation of 2,5-dimethoxybenzaldehyde using sulfuric acid.

3,652,676

HYDROFORMYLATION PROCESS AND CATALYST

Gerald R. Kahle and James W. Cleary, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed July 11, 1969, Ser. No. 840,952

Int. Cl. C07c *45/02*

U.S. Cl. 260—604 HF **11 Claims**

Hydroformylation reactions are carried out in the presence of a catalyst comprising a solid polymer having associated therewith a metal of the group cobalt, rhodium, ruthenium, platinum and palladium. The polymer is formed by polymerizing a pyridine and a styrene in the presence of a polyvinylaromatic compound. This polymer can be used to remove catalyst residues from hydroformylation reaction effluent streams.

3,652,677

POLYALKYLENEETHERS HAVING DANGLING PHOSPHONIUM GROUPS

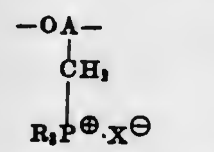
Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Original application Sept. 26, 1966, Ser. No. 581,771, now Patent No. 3,571,514, dated Mar. 30, 1971. Divided and this application Apr. 22, 1970, Ser. No. 30,955

Int. Cl. C07f *9/54;* **B44d** *1/42*

U.S. Cl. 260—606.5 F **8 Claims**

Polyalkyleneethers having dangling phosphonium groups. This is illustrated by a polymer having the following unit



$$\begin{array}{c}-\mathrm{OA}-\\ |\\ \mathrm{CH_2}\\ |\\ \mathrm{R_3P^{\oplus}\cdot X^{\ominus}}\end{array}$$

where OA is an oxirane-derived moiety, R is a substituted group, preferably hydrocarbon, for example alkyl, aryl, cycloalkyl, alkaryl, aralkyl, etc. Also included are copolymers of the above basic unit, such as with other oxirane units, for example copolymers with ethylene oxide, propylene oxide, butylene oxide, styrene oxide, etc. These compounds are used in inhibiting the corrosion of metals and particularly in preventing corrosion of metals, particularly iron, steel and ferrous alloys.

3,652,678

PROCESS FOR PREPARING PHOSPHOROUS CONTAINING POLYMERS

Keith George Allum, Bagshot, Ronald David Hancock, Thames Ditton, and Peter John Robinson, Twickenham, England, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed Sept. 25, 1969, Ser. No. 861,177

Claims priority, application Great Britain, Sept. 30, 1968, 46,215/68

Int. Cl. C07f *9/03, 15/00;* **B01b** *11/12*

U.S. Cl. 260—606.5 P **6 Claims**

Polymers useful as catalyst support materials and containing phosphine groups are prepared by reacting a metal phosphide with a halogen-containing polymer in an inert solvent. Typical halogen-containing polymers are chloromethylated polystyrene, brominated polybutadiene, polyvinyl chloride, polychloroprene and poly(parabromostyrene). The metal phosphide can be an alkali metal phosphide e.g. potassium diphenyl phosphide.

3,652,679

PHENOLIC PROCESS FOR PRODUCING SULFIDES

Edward F. Zaweski, Pleasant Ridge, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed July 7, 1969, Ser. No. 839,715

Int. Cl. C07c *149/36*

U.S. Cl. 260—609 F **10 Claims**

A process for making α,α′-thiobiscresols by reacting α-alkoxycresols with alkali metal or alkaline earth metal sulfides. For example, the reaction of α-methoxy-2,6-di-tert-butyl-p-cresol with sodium sulfide yields α,α′-thiobis (2,6-di-tert-butyl-p-cresol). The products are useful antioxidants.

3,652,680

CYCLOALIPHATIC SULFIDES

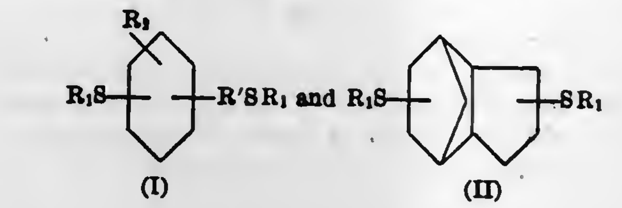
Bernard Buchholz, Blue Bell, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Aug. 8, 1969, Ser. No. 848,737

Int. Cl. C07c *149/30*

U.S. Cl. 260—609 E **16 Claims**

Cycloalkane bis(alkylsulfide) compounds of structure



(I) (II)

where R_1 is higher alkyl, R_2 is H or lower alkyl and R′ is lower alkylene and the use of these compounds in polyolefins as antioxidant-synergists.

3,652,681

ALPHA-HALO SUBSTITUTED ASYMMETRICAL DIACYL PEROXIDES

Donald W. Wood, San Pablo, Calif., assignor to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Filed Oct. 16, 1967, Ser. No. 675,360

Int. Cl. C07c *73/02*

U.S. Cl. 260—610 D **4 Claims**

Asymmetrical diacyl and aroyl-acyl organic peroxide polymerization initiators characterized by the presence of an acyclic acyl group of four or more carbon atoms in which the alpha carbon atom is substituted with one or more bromine and/or chlorine atoms.

3,652,682

PROCESS FOR THE PREPARATION OF ALKYL, PERFLUOROALKYL AND ARYL IODIDES

Leonard S. Silbert, Philadelphia, Pa., assignor to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Feb. 28, 1968, Ser. No. 708,804, now Patent No. 3,531,535, dated Sept. 29, 1970. Divided and this application Mar. 23, 1970, Ser. No. 24,923

Int. Cl. C07c *25/04, 76/12*

U.S. Cl. 260—612 D **7 Claims**

High yields of alkyl, perfluoroalkyl and aryl iodides are prepared directly from their corresponding carboxylic acids by reaction in solution with iodine and aroyl peroxide or t-butylperoxy isopropyl carbonate. The reaction is conducted at a temperature of about 110–125° C. for about two to three hours in solvents such as 1,3-dichloropropane, 1,3-dibromopropane and 1,1,2,2-tetrachlorodifluorethane. Solvents such as 1,2-dichloroethane and carbon tetrachloride can be used as solvents but they require longer reaction times.

3,652,683

2-(1-HALOETHYL)-6-METHOXYNAPHTHALENES

Ian T. Harrison, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Filed Sept. 30, 1969, Ser. No. 862,473

Int. Cl. C07c *43/20*

U.S. Cl. 260—612 D **2 Claims**

2-(6-methoxy-2-naphthyl)propionic acid is prepared by reacting a 2-(1-haloethyl)-6-methoxynaphthalene with nickel carbonyl in a lower t-alkanol solvent in the presence of an alkali metal t-alkoxide until a t-alkyl 2-(6-methoxy-2-naphthyl)propionate is formed, and hydrolyzing the ester group thereof. The product has anti-inflammatory, analgesic and anti-pyretic activities.

3,652,684

PREPARATION OF ALCOHOLS

Louis Schmerling, Riverside, and Robert A. Dombro, Chicago, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 668,693, Sept. 18, 1967. This application May 4, 1970, Ser No. 34,554

Int. Cl. C07c *35/02, 35/08*

U.S. Cl. 260—617 R **9 Claims**

A primary, secondary, or tertiary alcohol may be prepared by the hydrolysis of a cycloalkanesulfonic acid or salt thereof at elevated temperatures using an alcoholic alkali medium.

3,652,685

PROCESS FOR CATALYST REMOVAL FROM REACTION MASS

James C. Geddes, Jr., Orangeburg, S.C., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 188,939, Apr. 20, 1962. This application Feb. 27, 1969, Ser. No. 804,373

Int. Cl. C07c *39/06*

U.S. Cl. 260—624 C **7 Claims**

A process for removal of aluminum alcoholate catalyst from reaction mass produced in ortho-alkylation of phenolic compounds which comprises adding thereto, preferably, from about 3 to about 6 mols of water per mol of aluminum-containing catalyst in the reaction mass. Process applicable to orthoalkylation of mono- or poly-nuclear and mono- or poly-hydroxy phenolic compounds and may or may not have other substituents on the ring. Addition of water is critical to efficient removal of catalyst from reaction mass.

3,652,686

PROCESS FOR THE SYNTHESIS OF 2-FLUORO-2,2-DINITROETHANOL

George W. Nauflett and Robert E. Farncomb, Oxon Hill, Md., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Oct. 1, 1969, Ser. No. 866,070

Int. Cl. C07c *31/34*

U.S. Cl. 260—633 **5 Claims**

Process for the preparation of 2-fluoro-2,2-dinitroethanol which involves the reaction of nitromethane and formaldehyde in the presence of a base, nitrating the product thereof by the action of tetranitromethane to form 2,2-dinitrol-1,3-propanediol, contacting the 2,2-dinitrol-1,3-propanediol with an alkali metal base and fluorinating the product thereof.

3,652,687

PROCESS FOR THE PRODUCTION OF C_5–C_8 OLEFINES

Normann Bergem, Oslo, Ulf Blindheim, Skedsmokorset, Olav-Torgeir Onsager, Baerum, and Hagbarth Wang, Oslo, Norway, assignors to Sentralinstitutt for Industriell Forskning, Oslo, Norway

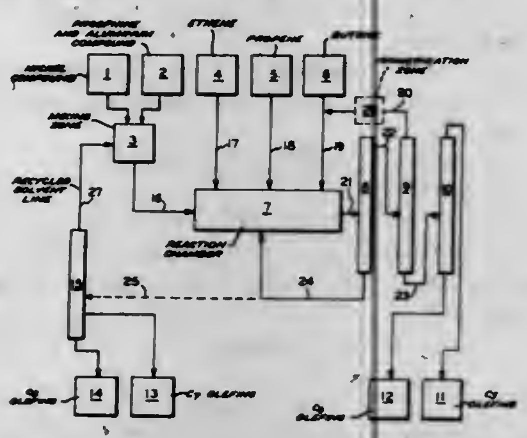
Filed July 9, 1968, Ser. No. 743,435

Claims priority, application Norway, July 17, 1967, 169,072

Int. Cl. C07c *3/10*

U.S. Cl. 260—683.15 D **3 Claims**

Process for the production of C_5–C_8-olefins by the catalytic codimerization of a mixture of ethene and optionally propene in the presence of a catalyst system containing (a) a nickel haloacetate, (b) an aluminum alkyl halide and (c) a Lewis base selected from the group consisting of alkyl and cycloalkyl phosphines in a reaction zone with a butene concentration equal to or higher than the butene concentration at which the conversion of butene to higher olefins takes place at the same rate as the formation of butenes by dimerization of the ethene in the reaction zone, separating normal butenes from the resultant olefin mixture, recycling the thus-produced normal butenes from the



reaction zone and recovering the C_5 to C_8-olefin reaction product.

3,652,688
HALOGENATION OF UNSATURATED HYDROCARBONS
Jerome Robert Olechowski, Trenton, and Ralph Levine, Freehold, N.J., assignors to Cities Service Company
No Drawing. Filed Dec. 30, 1968, Ser. No. 788,041
Int. Cl. C07c *17/02, 23/02*
U.S. Cl. 260—648 R **9 Claims**

Processes are described for the reaction of multi-unsaturated aliphatic or cycloaliphatic hydrocarbons with elemental halogen to produce predominantly halohydrocarbon addition products. Increased yields of such fully halogenated addition products are obtained by conducting the halogenation in the presence of a halohydrocarbyl ether or ester solvent and up to about 10 moles per mole of said ether or ester of a liquid halogen free polar organic solvent. Working examples show the preparation of high purity bromoalkanes; e.g. tetra bromocyclooctane from cyclooctadiene and hexabromocyclododecane from cyclododecatriene. These high bromine content saturated products are useful as flame retardants for thermo plastic polymers.

3,652,689
PROCESS FOR SEPARATING MONO-CHLOROMETHYLATION AND DI-CHLOROMETHYLATION PRODUCT OF A C_{10} OR LOWER AROMATIC HYDROCARBON
Harry E. Cier and Hulen L. Wilder, Baytown, Tex., assignors to Esso Research and Engineering Company
Filed May 2, 1968, Ser. No. 726,053
Int. Cl. C07c *25/14*
U.S. Cl. 200—651 R **6 Claims**

A process for separating the mono-chloromethylation from the di-chloromethylation products of aromatic hydrocarbons of C_{10} or lower whose mono-chloromethylation products have a melting point of about 25° C. or higher. A chloromethylation reaction mixture is heated with a C_6 to C_9 aromatic hydrocarbon in the liquid phase to dissolve the mono-chloromethylation and di-chloromethylation products and is then cooled to precipitate solid di-chloromethylation product. Solid di-chloromethylation product is separated from the aromatic hydrocarbon solution and washed with a C_5 to C_8 saturated hydrocarbon in the liquid phase to high purity. The aromatic hydrocarbon solution is vaporized to leave a residue including the mono-chloromethylated product. The residue is heated with a saturated C_5 to C_8 hydrocarbon in the liquid phase to dissolve mono-chloromethylated product therein. Then the hot saturated hydrocarbon is separated from undissolved solids and is cooled to precipitate solid mono-chloromethylated product, which is then recovered from the saturated hydrocarbon.

3,652,690
2,3-DIBROMO-1,2,4-TRICHLOROBUTANE
Ryoi Ito, Tarumi-ku, and Takeshi Kojima, Hyogo-ku, Japan, assignors to Kanegafuchi Kogaku Kogyo Kabushiki, Kitaku, Osaka, Japan
No Drawing. Filed July 14, 1969, Ser. No. 841,580
Claims priority, application Japan, July 26, 1968, 43/53,123, 43/53,124; Sept. 6, 1968, 43/64,508; Nov. 22, 1968, 43/85,988, 43/85,989
Int. Cl. C07c *19/00*
U.S. Cl. 260—652 R **1 Claim**

A novel compound 2,3-dibromo-1,2,4-trichlorobutane is formed by reacting bromine and 1,2,4-trichlorobut-2-ene. Such compound may be mixed with an inflammable plastic to form a self-extinguishing composition.

3,652,691
PYROLYSIS OF OCTAFLUOROCYCLOBUTANE
Geir Bjornson and Homer M. Fox, Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Nov. 3, 1969, Ser. No. 873,433
Int. Cl. C07c *17/24, 21/18*
U.S. Cl. 260—653.3 **11 Claims**

Octafluorocyclobutane is converted principally to tetrafluoroethylene by pyrolysis at a given conversion level in a process comprising heating said octafluorocyclobutane to a temperature sufficient to selectively produce, in the converted products, a high yield of tetrafluoroethylene based on weight percent of the total tetrafluoroethylene and hexafluoropropene produced.

3,652,692
PROCESS FOR THE PREPARATION OF MIXTURES OF CHLOROFLUORINATED DERIVATIVES OF METHANE, CONTAINING MONOCHLORO-DIFLUOROMETHANE
Martino Vecchio, Milan, and Italo Cammarata, Bollate, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
No Drawing. Filed July 10, 1969, Ser. No. 840,855
Claims priority, application Italy, July 11, 1968, 18,825/68
Int. Cl. C07c *17/10, 17/20*
U.S. Cl. 260—653.7 **18 Claims**

Mixture of chlorofluorinated derivatives of methane containing chlorodifluoromethane are prepared by chlorofluorinating methane, in the vapor phase, with Cl_2 and HF, in the presence of a recycling mixture of chlorinated and chlorofluorinated hydrocarbons, and of a solid fluorination catalyst.

3,652,693
SELECTIVE PRODUCTION OF DICHLOROETHANE
Julien Mulders and Pierre Godfrine, Brussels, Belgium, assignors to Solvay & Cie., Brussels, Belgium
Filed July 21, 1967, Ser. No. 655,164
Claims priority, application France, July 22, 1966, 70,509; May 25, 1967, 107,820
Int. Cl. C07c *17/02*
U.S. Cl. 260—662 R **9 Claims**

Process for selectively producing 1,2-dichloroethane by the chlorination of the ethylene present in a mixture with acetylene by bringing a gaseous mixture of acetylene, ethylene, chlorine and inert gaseous compounds acting as diluents, in which the molar ratio of chlorine to ethylene is about 1 and the molar ratio of acetylene to ethylene is less than 3, into the presence of a contact catalyst in a reaction zone at a temperature of between 85° and 200° C. for inducing a reaction in which 1,2-dichloroethane is produced from the ethylene, with a large proportion of the acetylene remaining unchanged.

3,652,694
PREPARATION OF SUBSTITUTED AROMATIC COMPOUNDS
George R. Lester, Park Ridge, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Mar. 18, 1970, Ser. No. 20,809
Int. Cl. C07c *15/02*
U.S. Cl. 260—668 A **9 Claims**

Substituted aromatic compounds containing the same number of carbon atoms as the starting material are prepared in a two-step process by subjecting a geminally substituted cycloalkane to isomerization in the presence of a gold-containing catalyst at a temperature in the range of from about 250° to about 400° C. and thereafter aromatizing the resultant non-geminally substituted cycloalkane at an elevated temperature and pressure in the presence of certain catalysts to prepare the desired product. The process is exemplified by the conversion of 1,1-dimethylcyclohexane to ethylbenzene and o-xylene.

3,652,695
PREPARATION OF SUBSTITUTED AROMATIC COMPOUNDS
George R. Lester, Park Ridge, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Mar. 18, 1970, Ser. No. 20,810
Int. Cl. C07c *15/02*
U.S. Cl. 260—668 A **7 Claims**

Substituted aromatic compounds containing the same number of carbon atoms as the starting material are prepared in a one-step process by subjecting a geminally-substituted cycloalkane to conversion in the presence of a gold-containing catalyst at elevated temperatures above about 450° C. The process is exemplified by the conversion of 1,1-dimethylcyclohexane to ethylbenzene and o-xylene.

3,652,696
PREPARATION OF MICROCRYSTALLINE WAXES
Sammy C. Honeycutt, Gastonia, N.C., assignor to Lithium Corporation of America, New York, N.Y.
No Drawing. Filed Sept. 4, 1970, Ser. No. 69,903
Int. Cl. C07c *15/08*
U.S. Cl. 260—668 B **9 Claims**

Preparation of microcrystalline waxes by the telomerization of ethylene with p-xylene in the presence of a complex of a polylithio hydrocarbon, especially a complex of a dilithio adduct of a conjugated polyene hydrocarbon with tetramethylethylenediamine or similar amine, in the presence of an aliphatic liquid hydrocarbon at a temperature of about 90 to 110° C. at an elevated pressure.

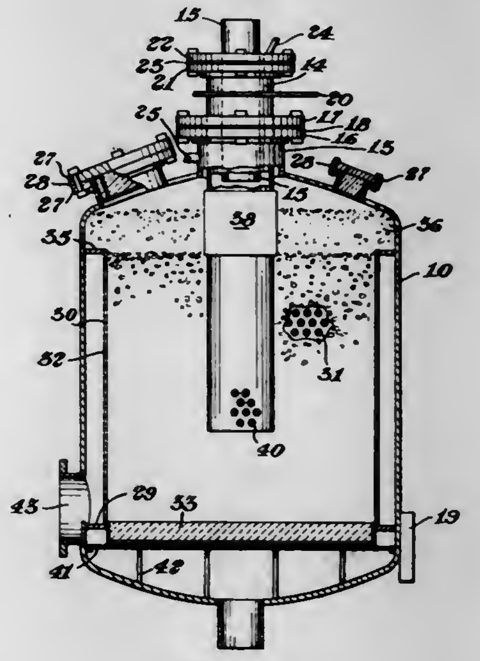
3,652,697
HYDROCARBON ISOMERIZATION PROCESS
John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 839,086, July 3, 1969. This application Aug. 21, 1969, Ser. No. 852,118
Int. Cl. C07c *5/30, 15/04*
U.S. Cl. 260—668 A **24 Claims**

Isomerizable hydrocarbons are isomerized using a catalytic composite comprising a combination of a platinum group component, a germanium component and a rhenium component with a porous carrier material. A catalytic composite comprising a platinum group component, a germanium component, a rhenium component and a Friedel-Crafts metal halide component combined with a refractory inorganic oxide is also disclosed.

3,652,698
DEHYDROGENATION OF ETHYLBENZENE
Roger M. Benslay, Northfield, and Arthur L. Jones, Solon, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio
No Drawing. Filed July 20, 1970, Ser. No. 56,696
Int. Cl. C07c *15/10, 5/18*
U.S. Cl. 260—669 **4 Claims**

Styrene is produced by contacting a mixture of ethylbenzene, air, steam, and optionally hydrogen sulfide or sulfur dioxide with an iron oxide-containing activated carbon at an elevated temperature and recovering the product.

3,652,699
ELECTRICAL RESISTANCE HEATED REACTORS AND DEHYDROGENATION OF ALKYL BENZENES
Frederick J. Soderquist, Essexville, and Howard Kehde and Lyle E. Martz, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Dec. 18, 1969, Ser. No. 886,116
Int. Cl. C07c *15/10, 5/18*
U.S. Cl. 260—669 **16 Claims**



Reactors, capable of maintaining a desired temperature in a catalyst bed by resistance to passage of electrical energy through such bed have one electrode in contact with the catalyst and the other in contact with a reactor wall and a method of dehydrogenating alkyl benzenes in said reactor.

3,652,700
PROCESS FOR DISPROPORTIONATION OF METHYLBENZENES
Takashi Suzuki and Hiroyuki Iesaka, Niigata, Japan, assignors to Japan Gas-Chemical Company, Inc., Tokyo, Japan
No Drawing. Filed Sept. 4, 1970, Ser. No. 69,935
Claims priority, application Japan, Sept. 9, 1969, 44/70,953
Int. Cl. C07c *3/62*
U.S. Cl. 260—672 T **9 Claims**

The disproportionation of methylbenzenes including toluene and xylenes by use of HF—BF_3 catalyst can be accelerated by adding to the reaction system a small amount of hydrocarbon which releases a tertiary carbonium ion under the reaction condition. The reaction becomes possible to be effected at a lower temperature and in a reduced reaction time to obtain benzene or lower methylbenzenes and higher methylbenzenes, preventing the formation of by-products.

3,652,701

IN SITU PREPARATION OF CLATHRATING SOLIDS

Everett J. Fuller, Gillettte, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 823,958, May 12, 1969, now Patent No. 3,567,791. This application May 25, 1970, Ser. No. 40,396

Int. Cl. C07c *7/10*

U.S. Cl. 260—674 WC 15 Claims

A separation process in which aromatics are separated from feed streams in which they are contained by contacting said aromatics on a continuous basis with a slurry comprising a solvent and a Werner Complex which is capable of complexing with said aromatic is improved by forming said Werner Complex in situ within the solvent.

3,652,702

PROCESS FOR PRODUCING ISOPRENE

Nobuyoshi Hara, TBR Bldg. 10—10, 2-chome, Nagatacho, Chiyoda-ku, Tokyo, Japan

No Drawing. Filed Mar. 20, 1970, Ser. No. 21,531

Int. Cl. B01j *11/82;* **C07c** *1/00, 1/20*

U.S. Cl. 208—681 9 Claims

A one-step process for producing isoprene by reacting isobutylene and formaldehyde is effected by use of a boric acid catalyst.

3,652,703

CONVERSION OF OLEFINS

Robert B. Regier, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,505

Int. Cl. C07c *3/62, 11/02, 13/00*

U.S. Cl. 260—683 D 11 Claims

An olefin is converted to one or more different olefins by contact with a catalyst comprising silica and ruthenium or a compound of ruthenium.

3,652,704

CONVERSION OF OLEFINES

Edward Denis Michael Eades and Philip Richard Hughes, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Aug. 1, 1969, Ser. No. 846,965

Claims priority, application Great Britain, Aug. 23, 1968, 40,474/68; Nov. 29, 1968, 56,786/68

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D 3 Claims

A process for disproportionating olefines using an organo-metal compound and a compound of tungsten, molybdenum or rhenium, in which the tungsten, molybdenum, or rhenium is in a higher or its highest valence state, in such proportions that the atomic ratio of the metal of the organo-metal compound to tungsten, molybdenum or rhenium exceeds 2:1.

3,652,705

PROCESS FOR THE OLIGOMERIZATION OF ETHYLENE

Takaaki Arakawa and Kenji Saeki, Iwakuni-shi, Yoshikuni Sato, Otake-shi, and Yoriya Kitazawa, Wakimura, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Sept. 29, 1969, Ser. No. 862,029

Claims priority, application Japan, Oct. 3, 1968, 43/71,612, 43/71,613, 43/71,614, 43/71,616; Feb. 25, 1969, 44/13,605, 44/13,606; Mar. 25, 1969, 44/22,043

Int. Cl. C07c *3/10*

U.S. Cl. 260—683.15 D 6 Claims

A process for the preparation of higher olefins by oligomerization of ethylene, which comprises contacting ethylene with a catalyst in a solvent at temperatures ranging from −30 to +80° C., the catalyst being prepared by the steps of reacting titanium tetrachloride with at least one electron donor selected from the group consisting of tertiary phosphines, ketones, esters, nitriles, ethers, amines, and organic sulfur compounds, and mixing the reaction product with an aluminum alkyl halide component containing 1.8–2.8 bonded halogen atoms per one aluminum atom.

3,652,706

POLYMERIZATION OF OLEFINS

George S. Saines, Fishkill, and Stanley Kravitz, Wiccopee, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Sept. 16, 1969, Ser. No. 858,519

Int. Cl. C07c *3/18*

U.S. Cl. 260—683.15 B 10 Claims

An olefin hydrocarbon polymerization process which produces a polymer having a molecular weight within the range of from about 700 to about 2500, by polymerizing such olefins in the presence of a catalyst system comprising a Friedel-Crafts metal halide in admixture with the hydrogen form of mordenite preferably in the presence of aluminum bromide in admixture with the hydrogen form of synthetic mordenite.

3,652,707

PROCESS FOR THE POLYMERIZATION OF OLEFIN HYDROCARBONS

George S. Saines, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Sept. 16, 1969, Ser. No. 858,520

Int. Cl. C07c *3/18*

U.S. Cl. 260—683.15 B 10 Claims

An olefin hydrocarbon polymerization process which produces a polymer having a molecular weight within the range of from about 700 to about 2500, by polymerizing such olefins in the presence of a Friedel Crafts metal halide catalyst in admixture with halogen containing hydrocarbon polymer cocatalyst, preferably in the presence of aluminum chloride in admixture with a poly-vinyl chloride polymer cocatalyst.

3,652,708

REDUCTION OF HYDROCARBON CONTENT OF SPENT SULFURIC ACID

Ralph M. Lewis, Weston, Conn., Charles T. Lewis, Jr., Nederland, Tex., George B. Tupper, Baton Rouge, La., and Gary D. Popken, Nederland, Tex., assignors to Texaco Inc., New York, N.Y.

Filed June 24, 1970, Ser. No. 49,471

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.62 9 Claims

Hydrocarbon content of spent sulfuric acid is reduced by heating with agitation at a temperature of 260–275° F. in admixture with a hydrocarbon which is non-boiling at this temperature. Method is applicable to a residue acid obtained by absorbing propylene in used sulfuric acid alkylation catalyst to form diisopropyl sulfate and extracting dipropyl sulfate therefrom with isobutane. Sulfur dioxide and propylene are evolved as off gases.

3,652,709

HYDROISOMERIZATION IN THE PRESENCE OF CARBON OXIDE PROMOTED CATALYST

Joseph A. Durkin, Fishkill, John H. Estes, Wappingers Falls, and William L. Lafferty, Jr., Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed June 16, 1970, Ser. No. 46,803

Int. Cl. C07c *5/28*

U.S. Cl. 260—683.68 14 Claims

A method for the hydroisomerization of C_4–C_7 hydrocarbons in the presence of a chloride activated metal-

alumina catalyst, where the metal is selected from the group consisting of ruthenium, rhodium, palladium and platinum, where the selectivity of the catalyst is enhanced by treating the catalyst with a carbon oxide at a temperature within the range of about 50° F. to 400° F.

3,652,710

CURABLE POLYARYLENEOXIDE COMPOSITIONS

Fred F. Holub, Schenectady, and Carl M. Emerick, Mechanicville, N.Y., assignors to General Electric Company

No Drawing. Filed July 1, 1969, Ser. No. 838,316

Int. Cl. C08f *27/08*

U.S. Cl. 260—823 9 Claims

Polyaryleneoxide having at least one chemically combined aliphatically unsaturated imido radical is provided and a method for making such materials. Blends of the imido-substituted polyaryleneoxide and a variety of aliphatically unsaturated organic monomers, such as styrene, diallylphthalate, N-phenylmaleimide, or organic polymers such as polystyrene, polysulfone, polycarbonate, polyphenyleneoxides, etc., also are provided. The imido-substituted compositions of the present invention can be employed as coatings, varnishes, injection molding compounds, laminating compounds, etc.

3,652,711

METHOD OF POLYMERIZING SILOXANES

Hermann Triem, Wissenbach, Manfred Wick, Munich, and Siegfried Nitzsche and Karl-Heinrich Wegehaupt, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Filed Mar. 18, 1969, Ser. No. 808,324

Claims priority, application Germany, Mar. 18, 1968, P 17 45 572.0

Int. Cl. C08g *47/02, 47/06*

U.S. Cl. 260—825 6 Claims

High polymeric gum-like copolymers of dimethylsiloxane and methylvinylsiloxane are prepared by (1) preparation of a copolymer of 75 to 90 mol percent dimethylsiloxane units and 10 to 25 mol percent methylvinylsiloxane units and (2) equilibration of the copolymer so obtained with dimethylsiloxane.

3,652,712

PLASTICIZATION OF AMINO COMPOUNDS WITH HYDROLYZED COPOLYMERS OF VINYL MONOCARBOXYLATE AND PRODUCTS THEREOF

Muktar Ahmed, 3310 Mordecai, Durham, N.C. 27705, and Victorin Mallet, 70 Steadman St., Moncton, New Brunswick, Canada

Filed Nov. 27, 1968, Ser. No. 779,537

Int. Cl. C08f *19/10*

U.S. Cl. 260—837 PV 8 Claims

A dyeable and anti-static plastic composition produced by heating an intimate mixture of a non-volatile amino compound having a melting temperature lower than 150° C., with an hydrolyzed copolymer of vinyl monocarboxylate and another α-monoethylenically unsaturated compound copolymerizable therewith, the said hydrolyzed copolymer having hydroxyl groups on from 5% to 50% of the carbon atoms in the copolymer chain, the proportion by weight of said amino compound to said hydrolyzed copolymer being from 1:200 parts by weight to 200:1 parts, the said heating occuring above the melting points of said amino compound and said hydrolyzed copolymer and the process of making the same. If desired, an epoxy compound may be reacted with the product.

3,652,713

POLYESTER COMPOSITION HAVING IMPROVED ANTISTATIC PROPERTIES, AND PROCESS FOR THE PREPARATION THEREOF

Kaoru Okazaki, Shunroku Tohyama, Minoru Nakata, and Kiyomi Kishimoto, Nagoya-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Feb. 13, 1970, Ser. No. 11,041

Claims priority, application Japan, Feb. 18, 1969, 44/11,475; Feb. 21, 1969, 44/12,507

Int. Cl. C08g *39/10*

U.S. Cl. 260—860 20 Claims

A polyester composition consisting of a polyetherpolyester block copolymer consisting of a polyether segment and a polyester segment, the average degree of polymerization of said polyether segment being 100–1,000 and the polyester segment being a synthetic linear polyester. The composition forms fibers, bristles, films and other three-dimensional shaped articles, and has improved antistatic properties.

3,652,714

DYEABLE BLENDS OF POLY(ETHYLENE TEREPHTHALATE) AND POLYESTERETHER POLYMERS

Richard S. Berger, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Feb. 20, 1970, Ser. No. 13,211

Int. Cl. C08g *39/10;* **D06** *3/04, 3/36*

U.S. Cl. 260—860 9 Claims

The disperse dyeability and dry cleaning fastness of poly(ethylene terephthalate) melt-spun fibers are greatly improved by blending the synthetic fiber-forming poly(ethylene terephthalate) with at least one polyesterether polymer.

3,652,715

CURABLE POLYCARBONATE COMPOSITIONS

Fred F. Holub and Milton L. Evans, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Filed July 1, 1969, Ser. No. 838,306

Int. Cl. C08f *27/08*

U.S. Cl. 260—860 7 Claims

Polycarbonate compositions are provided comprising polycarbonates substituted with at least one chemically-combined aliphatically unsaturated imido radical, such as a maleimido radical. The imido-substituted polycarbonates can be blended with various aliphatically unsaturated monomers, such as styrene, chlorostyrene, N-phenyl maleimide, diallylphthalate, triallylcyanurate, etc. and various organic polymers, such as polystyrene, polycarbonate, polysulfone, polyphenyleneoxide, polyurethane, etc. The polycarbonate, compositions of the present inventions can be employed as molding compounds, for making films, laminates, etc.

3,652,716

IMIDO-SUBSTITUTED POLYESTER COMPOSITIONS

Fred F. Holub and Milton L. Evans, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Filed July 1, 1969, Ser. No. 838,314

Int. Cl. C08f *27/08*

U.S. Cl. 260—860 6 Claims

Polyesters having at least one chemically combined aliphatically unsaturated imido radical, such as a maleimido radical are provided and a method for making such materials. Reaction can be effected between a polyester and an imido-substituted acylhalide, such as a maleimidobenzoylchloride in the presence of an acid acceptor. Blends of the imido-substituted polyester and a variety of aliphatically unsaturated organic monomers, such as styrene, chlorostyrene, diallylphthalate, N-phenylmaleimide, bismaleimides or organic polymers such as polystyrenes, styrene-butadiene block copolymers, polyvinylfluoride, polyvinylchloride, polyesters, polysulfone, polysulfone ethers, polycarbonate, polyphenylene oxides, epoxy resins, phenol-formaldehyde resins, acrylonitrile butadiene styrene terpolymers, etc., also are provided. The imido-substituted polyester compositions of the present invention can be employed as coatings, varnishes, injection molding compounds, laminating compounds, etc.

3,652,717

PEROXIDIC COMPOSITIONS FROM DIACETONE ALCOHOL AND THEIR USE AS INITIATORS FOR POLYMERIZATION OF UNSATURATED POLYESTER RESINS

Hans G. Gerritsen and Arnold Schroeder, Deventer, Netherlands, assignors to Koninklijke Industrieele Maatschappij Noury & van der Lande N.V., Deventer, Netherlands

No Drawing. Original application Feb. 19, 1968, Ser. No. 706,608, now Patent No. 3,546,249, filed Dec. 8, 1970. Divided and this application Nov. 4, 1969, Ser. No. 870,819

Claims priority, application Netherlands, Feb. 21, 1967, 6702570

Int. Cl. C08f *21/00, 21/02, 43/02*

U.S. Cl. 260—861 **9 Claims**

Peroxidic compositions are provided which are useful e.g. as initiators for polymerizing unsaturated polyester resins from unsaturated polyesters and monomers containing one or more $CH_2{=}C<$ groups such as e.g. styrene. The peroxidic compositions are obtained by reacting diacetone alcohol with an aqueous solution of hydrogen peroxide under certain rather closely specified reaction conditions.

3,652,718

CURING OF POLYESTER COMPOSITIONS

Shoshana Abrahami, Beersheba, Aharon Molcho, Rehovot, and Reuven (Roman) Wachs, Beersheba, Israel, assignors to Makhteshim Chemical Works Ltd., Beersheba, Israel

No Drawing. Continuation-in-part of application Ser. No. 856,871, June 26, 1969, which is a division of application Ser. No. 558,627, June 20, 1966. This application Jan. 13, 1971, Ser. No. 106,288

Int. Cl. C08f *21/02*

U.S. Cl. 260—863 **6 Claims**

Uncured polyester-accelerator compositions. The compositions contain unsaturated polyester resin, water and a vanadium accelerator obtained by dissolving vanadium compound oxide in concentrated aqueous hydrochloric acid and admixing to the resulting solution an alkyl ester of phosphorous acid. There is also provided a method of curing unsaturated polyester resin wherein said resin is admixed with water and said vanadium accelerator and an organic peroxide.

3,652,719

TERPOLYMER OF TEREPHTHALIC ACID, AND/OR ITS ALKYL ESTERS, 1,4-BIS(2-HYDROXYETHOXY) BENZENE AND PENTAERYTHRITOL USEFUL AS A DYE RECEPTOR ADDITIVE FOR POLYOLEFIN, E.G., POLYPROPYLENE

James W. Cleary, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 25, 1970, Ser. No. 40,280

Int. Cl. C08g *33/10, 39/10*

U.S. Cl. 260—873 **6 Claims**

A new polyetherester prepared from terephthalic acid (TPA) or an alkyl ester thereof, the alkyl radical having from 1–4 carbon atoms, 1,4-bis(2-hydroxyethoxy)benzene and minor amounts (less than about 10 mol percent) pentaerythritol, is an effective dye receptor additive for polypropylene, especially for use in fibers.

3,652,720

BLENDS OF RUBBERY POLYMERS WITH BLOCK COPOLYMERS CONTAINING LACTONES

Roy F. Wright, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Jan. 30, 1970, Ser. No. 7,233

Int. Cl. C08f *29/12, 33/08, 37/18*

U.S. Cl. 260—876 B **10 Claims**

The ozone resistance of rubbery polymers is greatly improved by blending therewith a block copolymer containing a lactone to provide a final blend that contains at least 9 weight percent lactone.

3,652,721

NOVEL GRAFT COPOLYMER BLENDS WITH TWO DIFFERENT PARTICLE SIZES AND METHOD OF MAKING SAME

William O. Dalton, Hampden, and Quirino A. Trementozzi, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed July 24, 1970, Ser. No. 58,154

Int. Cl. C08f *41/12, 37/18*

U.S. Cl. 260—876 R **15 Claims**

A latex of a rubbery polymer having a particle size of less than 0.25 micron is agglomerated by use of an organic acid anhydride to a particle size of 0.35–1.2 micron and of relatively narrow size distribution. This agglomerated rubber is subjected to grafting with a vinylidene monomer formulation. The final polyblend also contains a larger amount of small particle rubbery polymer also grafted with the vinylidene monomer formulation and a matrix of vinylidene polymer.

3,652,722

RUBBER-MODIFIED POLYESTER THERMOSET

Ray A. Dickie, Pleasant Ridge, and Robert A. Pett, Westland, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,467

Int. Cl. C08g *45/14, 45/04, 15/00*

U.S. Cl. 260—835 **10 Claims**

Novel thermoset materials of improved impact strength and fatigue properties are prepared from an alpha-beta olefinically unsaturated polyester prepolymer and a cross-linking amount of particulate graded-rubber having alpha-beta olefinic-unsaturation surface functionality. The graded-rubber particles have a rubbery core and a glass-like polymeric outer shell.

3,652,723

THERMOSET MOLDING POWDERS EMPLOYING POLYCARBOXYL FUNCTIONAL PREPOLYMER AND DIEPOXIDE CROSSLINKING AGENT

John F. Fellers, Livonia, Seymour Newman, Southfield, and Amos Golovoy, Westland, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,052

Int. Cl. C08g *45/04*

U.S. Cl. 260—836 **16 Claims**

Novel thermosetting resin powders which can be molded to form products characterized, in tensile measurement, by high elongation-to-break, high strength and modulus and by a high glass transition temperature are prepared from a mixture of a prepolymer consisting essentially of methacrylic acid, methyl methacrylate, and methacrylonitrile or acrylonitrile and a diepoxide cross-linking agent.

3,652,724

PROCESS FOR PRODUCING BLOCK COPOLYMERS

Takatoshi Shimomura, Toyonaka-shi, and Ken-Ichi Kudo, Suita-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,878

Claims priority, application Japan, Feb. 27, 1969, 44/15,081; May 26, 1969, 44/41,209

Int. Cl. C08f *29/12, 29/50, 33/08*

U.S. Cl. 260—877 **11 Claims**

A block copolymer composed of a polymer block of an anionically polymerizable conjugated vinyl compound and a polymer block of a radically polymerizable monomer is produced by polymerizing a conjugated vinyl compound giving a stable carbanion, such as for example, a monovinyl aromatic compound, a vinylpyridine, a methacrylic acid ester, a vinylketone or a conjugated diene, in a solvent using as a catalyst an alkali metal, an organolithium compound or an aromatic hydrocarbon-alkali metal complex, thereby obtaining a living polymer and (1) treating the said living polymer with an azonitrile to synthesize a polymer having an azo group in the main chain and then thermally decomposing the resulting polymer in the presence of a radically polymerizable monomer such as, for example, an unsaturated halide, an allyl compound, acrylic acid, an acrylic acid ester, a vinyl compound, a diene or acrylamide, or (2) treating the above-mentioned living polymer with oxygen to synthesize a polymer having a hydroperoxy group at the polymer chain end and then subjecting the resulting polymer to thermal decomposition or redox decomposition in the presence of the above-mentioned radically polymerizable monomer, thereby polymerizing the said radically polymerizable monomer.

Block copolymers obtained according to the above-mentioned process are white powders and can be made into various molded and shaped articles by use of such thermoplastic resin-processing means as injection molding, compression molding, blow molding, fiber extrusion or film extrusion means.

3,652,725

EXTRUSION COATING COMPOSITIONS

Juan C. Diaz and Robert A. Mears, Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 23, 1970, Ser. No. 74,928

Int. Cl. C08f *29/12*

U.S. Cl. 260—876 B **6 Claims**

Extrusion coating compositions providing coatings having an improved balance of properties including good adhesion to the substrate and substantial elimination of pinholes are disclosed. These coatings are composed of polyethylene, crystalline propylene containing polymer and either a polymerized DAC-B hydrocarbon resin or a vinyl toluene-alpha-methyl styrene copolymer.

3,652,726

THERMOPLASTIC COMPOSITIONS

Eric Nield, Watton-at-Stone, and John Brewster Rose, St. Albans, England, assignors to Imperial Chemical Industries Limited, London, England.

No Drawing. Continuation-in-part of application Ser. No. 447,971, Apr. 14, 1965. This application May 17, 1968, Ser. No. 729,891

Claims priority, application Great Britain Apr. 21, 1964, 16,502/64; Nov. 6, 1964, 45,289/64; May 22, 1967, 23,670/67

Int. Cl. C08f *17/00*

U.S. Cl. 260—876 **7 Claims**

A high softening thermoplastic composition derived from acrylonitrile, N-aryl maleimide and an aromatic olefin is (i) a graft copolymer (a) comprising a diene rubber substrate and a superstrate resin of 1 to 50% acrylonitrile, 1 to 50% N-aryl maleimide and 1 to 98% aromatic olefin; (ii) a blend of the graft copolymer (a) with acrylonitrile/aromatic olefin resin; (iii) a blend of graft copolymer (a) with a compatible resin; (iv) a blend of graft copolymer (a) with an ABS resin; or (v) a blend of a resin of 1 to 50% acrylonitrile, 1 to 50% N-aryl maleimide and 1 to 95% aromatic olefin with an ABS graft copolymer. The grafts and their blends can be used to make shaped articles having good resistance to impact.

3,652,727

VINYL CHLORIDE SERIES RESIN COMPOSITIONS

Shuzo Yonezu, Nishinomiya, and Takeshi Tanaka, Minoru Tsuzuki, and Takashi Kobayashi, Settsu, Japan, assignors to Kanegafuchi Kagaku-Kogyo Kabushiki-Kaisha, Osaka, Japan

No Drawing. Filed Sept. 29, 1969, Ser. No. 862,068

Claims priority, application Japan, Oct. 15, 1968, 43/75,151

Int. Cl. C08f *29/24, 29/50, 29/56*

U.S. Cl. 260—876 R **13 Claims**

Vinyl chloride series resin compositions particularly excellent in processing property comprise more than 60 parts by weight of vinyl chloride series resins and less than 40 parts by weight of the graft polymers obtained by graft-polymerizing with less than 10 parts by weight of synthetic rubber, 100 parts by weight of monomers consisting of 30–85% by weight of methacrylic esters, 10–60% by weight of vinyl aromatic hydrocarbons and 2–30% by weight acrylonitrile series monomer or more than 80% by weight of these three ingredients and less than 20% by weight of comonomers copolymerizable therewith.

3,652,728

CHLORINATED ETHYLENE POLYMER COMPOSITIONS FOR ELECTRICAL INSULATION

Clement J. Cornay, Lafayette, and Allen R. Guy and Warren L. Young, Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 689,259, Dec. 11, 1967. This application Feb. 9, 1970, Ser. No. 10,001

Int. Cl. C08f *29/04, 29/14*

U.S. Cl. 260—878 R **5 Claims**

This invention is directed to compositions consisting essentially of certain inherently flexible suspension chlorinated ethylene polymers, from 1 to 10 parts by weight per 100 parts of chlorinated ethylene polymer of a cross-linkable polyfunctional monomer, from 1 to 10 parts by weight per 100 parts of chlorinated ethylene polymer of a polybutadiene having from about 20 to 25 percent of vinyl unsaturation and a molecular weight of about 2500, and a chemical curing agent for the chlorinated ethylene polymer; which compositions may be rapidly cured to form easily processable, tough, smooth, coherent, inherently flexible coverings for electrical conductors.

3,652,729

BRANCHED-CHAIN HYDROCARBON ELASTOMERS

Nicolas Brodoway, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 19, 1970, Ser. No. 38,861

Int. Cl. C08f *15/40*

U.S. Cl. 260—878 R **4 Claims**

The incorporation of about 1%–10% by weight of polybutadiene units, each unit containing about 25–750 vinyl groups, in an EPDM elastomer produces chain branching with a consequent improvement in properties, such as cold-flow of the uncured stock, and improved ozone resistance of natural rubber blends.

3,652,730

PROCESS FOR GRAFTING POLYMERISABLE MONOMERS ONTO CRYSTALLINE UNPREACTIVATED POLYOLEFINES

Claude Favie, Billere, and Werner Dellsperger and Philippe Meline, Pau, France, assignors to Société Anonyme dite: Société Nationales des Petroles d'Aquitaine, Courbevoie, France

No Drawing. Filed June 24, 1969, Ser. No. 836,146
Claims priority, application France, June 28, 1968, 157,144
Int. Cl. C08f *15/00*
U.S. Cl. 260—878 R **19 Claims**

A process for grafting polymerisable monomers onto crystalline unpreactivated polyolefines in an aqueous suspension and with the aid of chemical producers of free radicals comprises forming a suspension of the crystalline polyolefine containing the monomer to be grafted, bringing this polyolefine to a temperature which is at least equal to the fusion temperature, adding the producer of free radicals to the suspension and maintaining the reaction temperature at at least the said fusion temperature during the grafting reaction.

3,652,731

NEW POLYMERIC COMPOSITIONS

Gerald P. Coffey, Cleveland Heights, and Lawrence E. Ball, Cuyahoga Falls, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

No Drawing. Continuation-in-part of application Ser. No. 799,094, Feb. 13, 1969. This application Nov. 13, 1970, Ser. No. 89,504
Int. Cl. C08f *1/13, 15/16, 19/08*
U.S. Cl. 260—879 **10 Claims**

Impact-resistant thermoplastic polymers having low permeability to gases and vapors are prepared by polymerizing acrylonitrile with an alpha-olefin such as isobutylene, at least one member selected from the group consisting of an acrylic ester, a methacrylic ester, methacrylonitrile, an acrylamide, and a vinyl ester, and optionally another vinyl monomer component such as a vinyl aromatic monomer in an aqueous medium in the presence of a rubbery polymer of a conjugated diolefin.

3,652,732

SOLVENTLESS ENCAPSULATING BLOCK COPOLYMERS

Henry S. Makowski, Scotch Plains, Merrill Lynn, Elizabeth, and John J. Jaruzelski, Westfield, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

No Drawing. Continuation-in-part of application Ser. No. 545,839, Apr. 28, 1966. This application Nov. 5, 1968, Ser. No. 773,630
Int. Cl. C08f *15/04*
U.S. Cl. 260—880 B **7 Claims**

Solventless, room temperature-pourable, encapsulating block copolymers and terpolymers may be prepared by polymerizing a diolefin (e.g. butadiene) or copolymerizing a diolefin-monovinyl aromatic hydrocarbon (e.g. butadiene and styrene) with an organolithium catalyst so as to obtain a poly-diolefin homo- or copolymer-terminated with lithium residues. The lithium-containing homo- or copolymer is then reacted with a multi-vinyl compound (e.g. divinyl benzene) and the resultant block co- or terpolymer is recovered after inactivation of the catalyst.

3,652,733

CURABLE POLYMERS AS PLASTICIZERS

Noel Ernest Davenport, % W. R. Grace & Co., Cromwell Road, St. Neots, England

No Drawing. Filed Feb. 9, 1970, Ser. No. 10,032
Int. Cl. C08f *29/24, 45/38*
U.S. Cl. 260—884 **4 Claims**

Thermoplastic polymer compositions contain a plasticiser having addition-polymerisable double bonds and a polythiol. The compositions can be cured by exposure to free-radicals, and it is believed that the cured product is a polythioether. Preferably the thermoplastic polymer is vinyl chloride and the plasticiser diallyl phthalate. The compositions are useful for forming protective or decorative coatings.

3,652,734

DYEABLE POLYOLEFIN COMPOSITION

Milton Farber, Verona, and Ronald W. Fuest, Kinnelon, N.J., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed May 1, 1970, Ser. No. 33,987
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 B **20 Claims**

A dyeable fiber-forming composition comprising a major amount of polyolefin blended with a minor amount of a high molecular weight ethylene oxide containing polymer and a styrene-acrylonitrile copolymer.

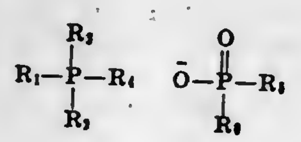
3,652,735

QUATERNARY PHOSPHONIUM DIALKYL PHOSPHATES

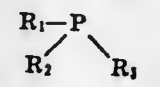
Ingenuin Hechenbleikner and Kenneth R. Molt, Cincinnati, Ohio, assignors to Carlisle Chemical Works, Inc., Reading, Ohio

No Drawing. Filed May 1, 1969, Ser. No. 821,136
Int. Cl. A01n *9/36;* **C07f** *9/54*
U.S. Cl. 260—926 **2 Claims**

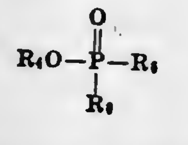
Compound of the formula



are prepared by reacting a tertiary phosphine of the formula



with a phosphate, primary phosphonate or secondary phosphonate of the formula



where R_1, R_2 and R_3 are alkyl, haloalkyl, alkenyl, aralkyl, aryl or haloaryl, R_4 is methyl or ethyl and R_5 and R_6 are the same or different and are OR_7 and R_8 where R_7 and R_8 are alkyl, haloalkyl, alkenyl, aralkyl, aryl or haloaryl. The compounds are useful as flame proofing agents, wetting agents, fungicides and bactericides.

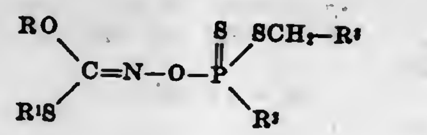
3,652,736

OXIMINOPHOSPHONODITHIOATES

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,149
Int. Cl. C07d *105/02;* **C07f** *9/40*
U.S. Cl. 260—940 **6 Claims**

Compounds having the formula



in which R is (1) alkyl or (2) allyl; R^1 is alkyl; R^2 is alkyl; and R^3 is (1) hydrogen, (2) lower alkylthio, (3) cyano, (4) phenylthio, (5) substituted phenylthio wherein the substituent is halogen, (6) ethynyl, or (7)

$$CCl_2{=}CH{-}$$

their use as insecticides and acaricides, a process for preparing the compounds, intermediates and a process for preparing the intermediates.

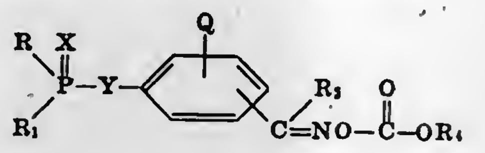
3,652,737

OXIME CARBAMATE PHOSPHATE, PHOSPHONATE, PHOSPHINATE AND PHOSPHOROAMIDATES

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Application May 20, 1968, Ser. No. 730,588, which is a continuation-in-part of application Ser. No. 646,467, June 16, 1967. Divided and this application June 25, 1970, Ser. No. 49,933
Int. Cl. A01n *9/36;* **C07f** *9/12, 9/18*
U.S. Cl. 260—944 **3 Claims**

Oxime carbamate phosphates, phophonates, phosphinates and phosphoroamidates having the general formula:



in which X and Y are independently selected from the group consisting of oxygen and sulfur; R is selected from the group lower alkyl or lower alkoxy, having from 1 to 6 carbon atoms inclusive; R_1 is selected from the group consisting of lower alkyl or lower alkoxy having from 1 to 6 carbon atoms, inclusive, amino, lower alkyl-substituted amino and phenyl; Q is selected from the group consisting of divalent tetramethylenediene-1,3, lower alkoxy or lower alkyl having from 1 to 4 carbon atoms inclusive, each, nitro, halogen and combinations thereof, and lower dialkyl-substituted thionophosphoryloxy; R_2 is selected from the group consisting of hydrogen, lower alkyl having from 1 to 4 carbon atoms, and phenyl; R_4 is lower alkyl having from 1 to 4 carbon atoms, inclusive, and β-chloro-loweralkyl having from 2 to 4 carbon atoms.

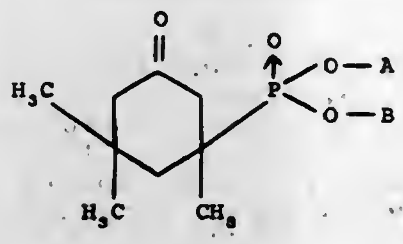
3,652,738

ISOPHORONE PHOSPHONATES

Abdul-Munim Nashu, Hamden, Henri Ulrich, Northford, and Adnan A. R. Sayigh, North Haven, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Oct. 1, 1969, Ser. No. 862,972
Int. Cl. C07f *9/40*
U.S. Cl. 260—946 **2 Claims**

Compounds are disclosed having the formula:



wherein A and B are members selected from the group consisting of lower hydroxyalkyl, hydroxyaryl of 6 to 12 carbon atoms and a moiety of formula

$$\left(R{-}O\right)_n{-}H$$

wherein R is lower-alkylene of 2 to 12 carbon atoms having 2 carbon atoms separating the valencies, and *n* is an integer of 2 to 20. These compounds are useful as flame retarding components of polymer systems such as polyurethane and polyamide foam systems.

3,652,739

(CIS-1,2-EPOXYPROPYL)PHOSPHONIC ACID INTERMEDIATES

Peter I. Pollak, Scotch Plains, Norman L. Wendler, Summit, and Burton G. Christensen, Scotch Plains, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 729,424, May 15, 1968. This application Aug. 27, 1968, Ser. No. 755,729
Int. Cl. C07f *9/38, 9/40*
U.S. Cl. 260—948 **10 Claims**

A method for the preparation of (±) and (−) (cis-1,2-epoxypropyl)phosphonic acid and its corresponding salts and ester derivatives which comprises treating a 1,2-disubstituted n-propylphosphonic acid or a salt or ester thereof under ring closure conditions, at least one of which substitutents is hydroxy or a functionally equivalent oxygen-containing moiety and the remaining substituent being any leaving group which can be displaced to yield the desired epoxide product.

The (±) and (−) (cis-1,2-epoxypropyl)phosphonic acid of this invention and its salts are antibiotics which have utility as antibacterials in inhibiting the growth of gram-positive and gram-negative pathogenic bacteria.

3,652,740

O-ALKYL-O-PHENYL-THIOLPHOSPHORIC ACID ESTERS

Gerhard Schrader, Wuppertal-Cronenberg, Ingeborg Hammann, Cologne, Wilhelm Stendel, Wuppertal-Vohwinkel, and Gunter Unterstenhofer and Bernhard Homeyer, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 1, 1969, Ser. No. 846,938
Claims priority, application Germany, Aug. 13, 1968, P 17 93 188.3
Int. Cl. A01n *9/36;* **C07f** *9/12, 9/14*
U.S. Cl. 260—949 **6 Claims**

O-alkyl-O-phenyl-thiolphosphoric acid esters, i.e. O-alkyl - O - (3-methyl-4-methylmercapto-phenyl)-S-(alkylmercapto-methyl and β - alkylmercapto-ethyl)thiolphosphoric acid esters, which possess arthropodicidal, especially acaricidal and insecticidal, and nematocidal properties and which may be produced by conventional methods.

3,652,741

MONO(ALKYL AND ALKENYL)MONO-OMEGA-ALKYNYLARALKYL PHOSPHONATES

Ronald Eugene Montgomery, Middleport, and Harry Hobart Incho, Medina, N.Y., assignors to FMC Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 630,204, Apr. 12, 1967, which is a continuation-in-part of applications Ser. No. 559,422, June 22, 1966, and Ser. No. 624,689, Mar. 21, 1967. This application Feb. 18, 1969, Ser. No. 800,264
Int. Cl. A01n *936;* **C07f** *9/40*
U.S. Cl. 260—956 **3 Claims**

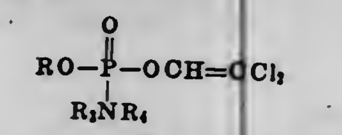
Mono (alkyl and alkenyl) mono-ω-alkynyl aryl-and aralkylphosphonates are described. The compounds are combined with esters of certain cyclopropanecarboxylic acids, e.g. pyrethrins, allethrin and related compounds to form synergistic insecticidal compositions.

3,652,742
2,2-DICHLORO-VINYLPHOSPHORIC ACID ESTER AMIDES

Wilhelm Sirrenberg, Sprockhovel, Ingeborg Hammann, Cologne, Wolfgang Behrenz, Cologne-Stammheim, Wilhelm Stendel, Wuppertal-Vohwinkel, and Gunter Unterstenhofer, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 3, 1968, Ser. No. 726,554
Claims priority, application Germany, May 6, 1967, F 52,338
Int. Cl. C07f *9/24;* **A01n** *9/36*
U.S. Cl. 260—957 **9 Claims**

2,2-dichloro-vinyl-phosphoric acid ester amides having acaricidal properties of the formula



$$RO-\overset{\overset{O}{\|}}{P}(-NR_3R_4)-OCH=CCl_2$$

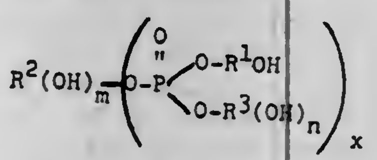
wherein R is hydrocarbon, R_3 is hydrogen and R_4 is halogen and hydrocarbon.

3,652,743
PREPARATION OF HYDROXYALKYL PHOSPHATES AND POLYPHOSPHATES

Guy H. Harris, Concord, Robert S. Olson, Lafayette, and Robert D. Wilcox, Palo Alto, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 26, 1968, Ser. No. 715,992
Int. Cl. C07f *9/08, 9/12*
U.S. Cl. 260—982 **9 Claims**

A process is disclosed for the preparation of hydroxyalkyl phosphates. Cyclic bis-alkylene pyrophosphates are converted to hydroxyalkyl phosphate and polyphosphate compounds having the formula



$$R^2(OH)_m\left(-O-\overset{\overset{O}{\|}}{P}\begin{matrix}\diagup O-R^1OH\\ \diagdown O-R^3(OH)_n\end{matrix}\right)_x$$

wherein R^1 represents a divalent vicinal alkylene radical, R^2 represents a hydrocarbyl radical which may be substituted or unsubstituted, R^3 represents hydrogen or a radical of the R^2 type, *m* and *n* are integers having a value of from 0 to 7 each, and *x* is an integer having a value of from 1 to 8.

3,652,744
METHOD OF MAKING NUCLEAR FUEL ELEMENTS

Richard C. Dahlberg, La Jolla, and Walter V. Goeddel, San Diego, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,198
Int. Cl. G21c *21/02*
U.S. Cl. 264—.5 **3 Claims**

Nuclear fuel elements which contain different amounts of nuclear fuel in the form of minute particulate nuclear fuel cores having fission product-retentive coatings are made using casings which have the same amount of fuel chamber volume for holding the nuclear fuel. First and second groups of coated fuel particles are used which vary from each other either in core composition, core size, or coating thickness and thereby contain different amounts of nuclear fuel per unit volume of coated particles. Thus, different fuel elements contain different amounts of nuclear fuel as a result of containing different relative amounts of coated nuclear fuel particles from the first and second groups.

3,652,745
METHOD OF FABRICATING POROUS METAL BODIES

Neal P. Strazza, Towson, Md., assignor to Isotopes, Inc., Westwood, N.J.

No Drawing. Filed July 30, 1969, Ser. No. 846,284
Int. Cl. G21c *21/00, 21/02*
U.S. Cl. 264—.5 **24 Claims**

In the fabrication of porous metal bodies, and in particular, control bodies for nuclear reactors with or without integral fuel material, by powder metallurgical techniques, the utilization of a metal hydride binder imparts green strength to the body formed prior to sintering and results in a sintered body with smooth, strong bonds connecting the powder particles and with clean, uncontaminated interior surfaces.

3,652,746
PROCESS FOR PRODUCING METAL POWDER CONTAINING IRON AND MOLYBDENUM

Roger B. Bargainnier, Madison, Wis., and William Scheithauer, Jr., Towanda, Pa., assignors to Sylvania Electric Products Inc., Seneca Falls, N.Y.

No Drawing. Filed Feb. 13, 1970, Ser. No. 11,355
Int. Cl. B01j *2/04*
U.S. Cl. 264—14 **8 Claims**

A finely divided iron and molybdenum alloy powder wherein the iron and molybdenum are homogeneously distributed is produced by a process comprising: forming an aqueous solution of iron and molybdenum compound each containing a fugitive anion, the weight ratio of iron to molybdenum in the solution is from about 1:10 to about 4:1, the solution that is formed is thereafter atomized into droplets having a size of less than about two microns in a chamber containing a gas having a temperature of from about 150° C. to about 450° C. to form discrete particles containing iron and molybdenum and thereafter heating the particles in a reducing atmosphere to reduce the iron and molybdenum compounds and to form at least some Fe_3Mo_2.

3,652,747
PROCESS FOR MANUFACTURING SYNTHETIC LEATHER

Hiroharu Shirota, Osaka, Kunio Yonemoto, Ikeda, Tuyoshi Masuda, Kobe, Takayuki Ito, Amagasaki, and Ryuzo Nagaki, Izumi-Otsu, Japan, assignors to Dainippon Ink and Chemicals, Incorporated, Tokyo, Japan

No Drawing. Filed Mar. 9, 1970, Ser. No. 17,909
Claims priority, application Japan, Mar. 17, 1969, 44/19,551; Apr. 7, 1969, 44/26,173
Int. Cl. B29d *27/04*
U.S. Cl. 264—41 **13 Claims**

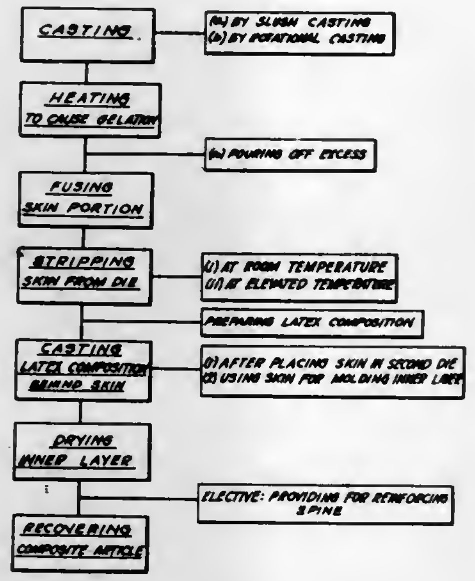
A process for manufacturing a synthetic leather made up of a base cloth, a sponge layer (at times also a skin layer) and a surface treating agent layer, in which the sponge layer is formed by using an aqueous dispersion containing gas bubbles which has been obtained by mixing a polyurethane resin.

3,652,748
PROCESS FOR PREPARING MOLDED HOLLOW ARTICLES

Arthur H. Roberts, 12 Lynwood, Drive, Westbury, N.Y. 11590

Continuation-in-part of application Ser. No. 475,989, July 30, 1965, which is a continuation-in-part of applications Ser. No. 455,764, May 14, 1965, and Ser. No. 22,002, Apr. 13, 1960. This application Sept. 18, 1968, Ser. No. 774,230
The portion of the term of the patent subsequent to Oct. 7, 1985, has been disclaimed
Int. Cl. B29c *13/04*
U.S. Cl. 264—45 **9 Claims**

Process for preparing rigid, three-dimensional, hollow article comprising an outer layer component and an inner layer component. The article is formed by preparing separately (1) a premolded skin from a pliable plastic material and (2) a filler-containing latex composition. The latex composition is cast behind the premolded skin, is dried and the article is recovered.


CASTING
(a) BY SLUSH CASTING
(b) BY ROTATIONAL CASTING
HEATING TO CAUSE GELATION
(a) POURING OFF EXCESS
FUSING SKIN PORTION
STRIPPING SKIN FROM DIE
(i) AT ROOM TEMPERATURE
(ii) AT ELEVATED TEMPERATURE
PREPARING LATEX COMPOSITION
CASTING LATEX COMPOSITION BEHIND SKIN
(1) AFTER PLACING SKIN IN SECOND DIE
(2) USING SKIN FOR MOLDING INNER LAYER
DRYING INNER LAYER
ELECTIVE: PROVIDING FOR REINFORCING SPINE
RECOVERING COMPOSITE ARTICLE

3,652,749
CONTINUOUS DRAWING OF FIBERS FROM A MIXTURE CONTAINING AN INORGANIC OXIDE SOL COVERED BY A PROTECTIVE FLUID

Jay E. Sobel, Des Plaines, and John C. Foley, Waukegan, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Jan. 26, 1970, Ser. No. 5,916
Int. Cl. D01d *5/04, 1/02;* **C04b** *35/10*
U.S. Cl. 264—63 **18 Claims**

A method of preparing refractory inorganic oxide fibers. A refractory inorganic oxide sol, e.g., an alumina sol, is admixed with a soluble fiber-forming organic polymer, e.g. (a polyethylene oxide). This mixture after being concentrated to a viscosity of 1–3000 poises, is covered with a water immiscible and moderately volatile liquid, e.g., n-hexane, after which fibers are drawn up from the mixture. The organic matter is thereafter burned from the fibers which are calcined at 300–1000° C. The fiber forming mixture may also contain a soluble organic amine. The layer of water immiscible liquid permits continuous fibers to be drawn from the concentrated mixture without breaking which has been a problem in the prior art. After the fibers are drawn the layer of water immiscible liquid remaining on their surfaces vaporizes.

3,652,750
CHROMIUM-SILICON MONOXIDE FILM RESISTORS

Reinhard Glang, 13 Horizon Hill Drive 12603; Richard A. Holmwood, Haviland Road, Cedar Apartments 12601; and Leon I. Maissel, 6 Vincent Road, R.D. 2 12603, all of Poughkeepsie, N.Y.; and Jean Vergnolle, 46 Route de Croissy, 78 Le Vesinet, France

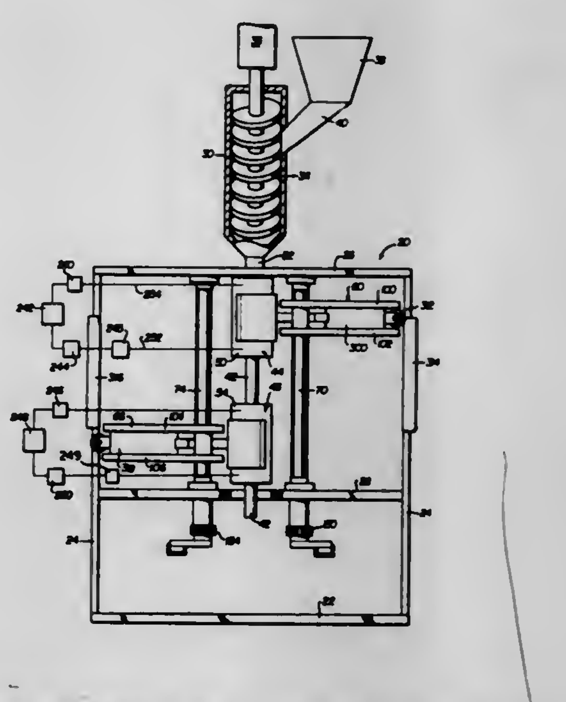
Filed Mar. 30, 1967, Ser. No. 627,173
Int. Cl. B28b *11/16;* **B44d** *11/18*
U.S. Cl. 264—67 **17 Claims**

A chromium-silicon monoxide film resistor produced by admixing chromium and silicon monoxide in a predetermined atomic ratio ranging from 90:10 to 50:50 in powder form, admixing with a binder, heating and forming into pellets. These pellets are then caused to evaporate at high temperatures resulting in highly accurate compositional film deposits of chromium-silicon monoxide.

3,652,751
METHOD AND APPARATUS FOR BLOW MOLDING PLASTIC ARTICLES

Donald H. Criss, Toledo, Ohio, and Erwin P. Pollitt, Glencoe, Ill., assignors to Owens-Illinois, Inc.

Filed June 20, 1969, Ser. No. 835,091
Int. Cl. B29c *17/07*
U.S. Cl. 264—99 **15 Claims**



A plastic blow molding machine for the manufacture of bottles or the like articles and capable of extremely rapid operation, multiple molds being used to successively engage spaced portions of a continuously extruded vertically disposed tube. The closed molds move vertically with the tube during blowing, and each mold in succession opens to release the blown article, the opened mold returning toward the extrusion orifice by passing around the next consecutive, closed mold. This "hand-over-hand" operation forms a series of blown articles linked together by non-blown waste portions.

To speed up the cycle, a purely mechanical drive system is utilized, eliminating any delays for limit switch operation, valve opening and the like. The vertical drive for the molds incorporates cranks driven from a common crankshaft, and the mold opening and closing movements are also driven from this crankshaft. Rotary valves on the crankshaft control the introduction and exhaust of blown air. The resultant apparatus is extremely simple, foolproof and the sequencing of the method steps is carried out automatically.

The molds are refrigerated in order to reduce the mold-closed time, the mold itself receiving gaseous refrigerant directly from the evaporator of a refrigeration unit.

3,652,752
PRESSURE TREATMENT OF DISPERSED GRANULES

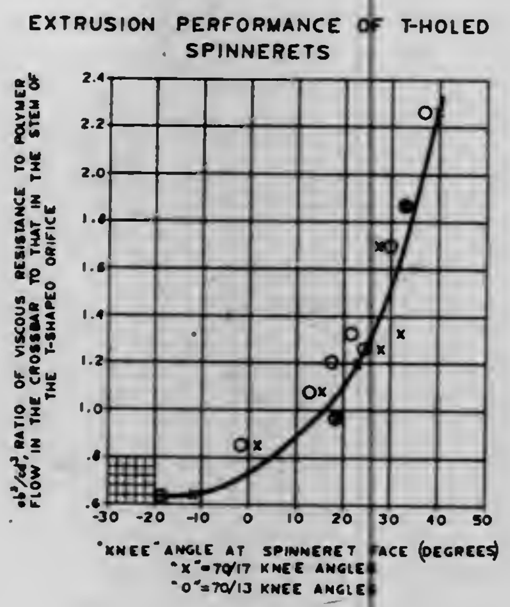
Christian Rosenthal, Berg, near Starnberg, Germany, assignor to Chemiche Werke Munchen Otto Barlocher G.m.b.H., Munich, Germany

No Drawing. Continuation-in-part of application Ser. No. 725,271, Apr. 26, 1968, now Patent No. 3,577,489, which is a continuation-in-part of application Ser. No. 649,088, June 26, 1967, which in turn is a continuation-in-part of applications Ser. No. 609,712, Jan. 10, 1967, and Ser. No. 631,885, Apr. 19, 1967. This application Dec. 10, 1968, Ser. No. 782,763
Int. Cl. B01j *2/10*
U.S. Cl. 264—117 **4 Claims**

Solid materials (e.g. polyvinyl chloride) which are granulated and dispersed in a liquid medium in which they are insoluble (e.g. water) are submitted to a pressure of at least 1.5 atmospheres. The pressure treatment increases the bulk density of the granulated solid and results in particles having a smooth surface and other improved properties.

3,652,753
PROCESS FOR EXTRUDING FILAMENTS HAVING ASYMMETRIC CROSS-SECTION

Bejar Hazin Shemdin, Brooklyn, N.Y. assignor to Fiber Industries, Inc.
Filed Feb. 26, 1970, Ser. No. 14,352
Int. Cl. B28h *21/54;* **B29f** *3/00*
U.S. Cl. 264—177 F **4 Claims**

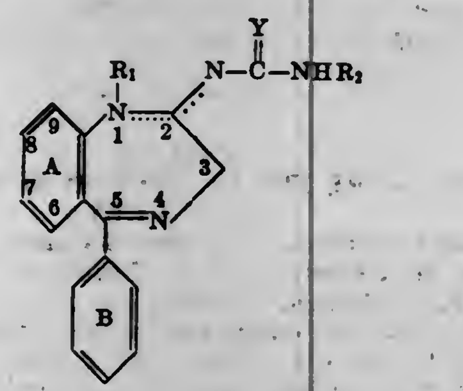


A process to reduce kneeing during the melt spinning of continuous filaments through a T-shaped orifice by selecting dimensions of the orifice so that its extrusion factor is within a defined range.

3,652,754
BENZODIAZEPINE DERIVATIVES

Kanji Meguro, Nishinomiya, Yutaka Kuwada, Ashiya, Yuji Nagawa, Otokunigun, and Toru Masuda, Nishinomiya, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Filed Aug. 22, 1969, Ser. No. 852,471
Claims priority, application Japan, Aug. 26, 1968, 43/61,070
Int. Cl. A61k *27/00;* **C07d** *53/06*
U.S. Cl. 260—239 BD **18 Claims**

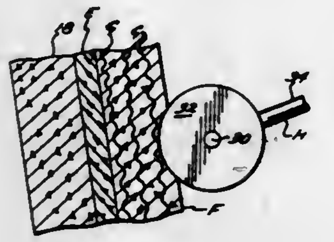
Benzodiazepine derivatives of the formula



wherein R_1 is hydrogen or alkyl; R_2 is a hydrocarbon group, Y is oxygen or sulfur atom and the respective benzene rings A and B may have one or more substituents from the group of nitro, trifluoromethyl, halogen, alkyl and alkoxy, and their 4 N-oxides, and pharmaceutically acceptable salts thereof, are useful tranquilizing, muscle relaxant and anticonvulsant agents.

3,652,755
METHOD OF FORMING REINFORCED CONCRETE STRUCTURE

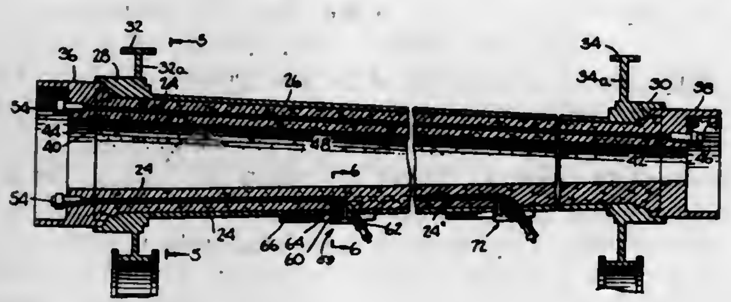
Martin E. Iorns, 1512 Lakewood Drive, and Louis L. Watson, 1601 Lakewood Drive, both of West Sacramento, Calif. 95691
Filed Jan. 27, 1969, Ser. No. 794,229
Int. Cl. B29d *3/02, 9/02*
U.S. Cl. 264—219 **1 Claim**



Method of forming a reinforced hollow marine structure that includes a bottom and upwardly extending side walls by forming a female mold that conforms to the exterior surface thereof, and applying a first cementitious layer to the interior of said mold. A second cementitious layer is applied to the first layer, with first reinforcing means being pressed into the second layer while it is plastic. Reinforcing means so pressed into the second layer is in full surface contact therewith, and maximum strength is obtained therefrom. The marine structure is removed from the mold after the layers have become dimensionally stable.

3,652,756
REINFORCEMENT OF CONCRETE STRUCTURES

Myers Van Buren, Cheriton, Va., assignor to Bayshore Concrete Products Corp., Cape Charles, Va.
Original application May 18, 1967, Ser. No. 639,371, now Patent No. 3,501,881, dated Mar. 24, 1970. Divided and this application Jan. 16, 1970, Ser. No. 8,139
Int. Cl. B28b *1/20, 21/22, 23/04*
U.S. Cl. 264—228 **1 Claim**

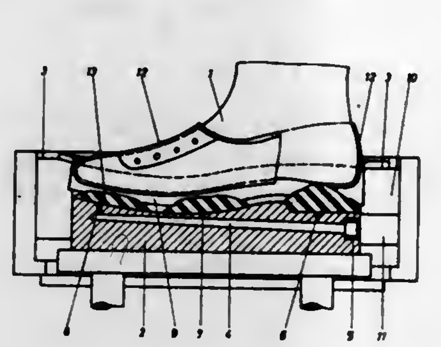


Use of pretensioned elongated reinforcing rods in concrete structures, the rods being terminated at various intermediate ends of the structure, and special anchor arrangements for permitting intermediate termination of the rods.

3,652,757
METHOD FOR INJECTION MOLDING OF MULTILAYER SOLES OF ELASTOMERS ONTO UPPERS OF A SHOE

Karl-Heinz Wessel, Vlotho, and Erich Sabadello, Bad Oeynhausen, Germany, assignors to Firma Stubbe Maschinenfabrik G.m.b.H., Kalletal-Kalldorf, Germany
Filed Aug. 14, 1968, Ser. No. 752,608
Claims priority, application Germany, Oct. 20, 1967, St: 27,488
Int. Cl. B29h *3/08*
U.S. Cl. 264—244 **1 Claim**

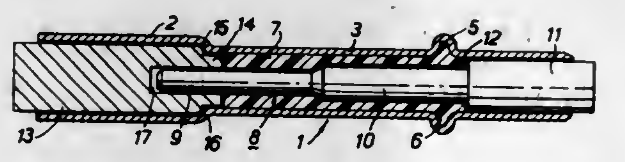
A method of injection molding a multilayer sole of elastomers onto an upper of a shoe by means of a multipart mold which includes a last carrying the upper of the shoe. Side cheeks are movable relative to each other and a sole plate is displaceable relative to the last. The sole plate provided with a sprue channel, extending in the longitudinal direction of the sole plate, and further provided with a plurality of junction channels distributed along the length of the sprue channel and terminating in a hollow space of the mold. The method comprises the steps of injecting elastomer material for a first sole layer into the hollow space of the mold upon enlarging the hollow space by displacement of the sole plate, without filling up completely the hollow space. The elastomers are distributed over the length of the sole plate in dependence upon the number of the junction channels chosen.



The cross-sections of the junction channels and the injection speed relative to each other, are adjusted such, that the distribution takes place in quantities of said elastomer material required for the formation of the toe end, the heel end and the center part of that sole layer, respectively. The elastomer material is pressed onto the upper of the shoe by slow displacement of the sole plate towards the last. A sole layer is formed by slow build-up of a pressure in the hollow space of the mold, and by injecting thereafter again elastomer material into the enlarged hollow space of said mold, a second sole layer is formed by renewed slow displacement of the sole plate towards the last.

3,652,758
METHOD OF MANUFACTURING AN ELECTRICAL CONNECTOR

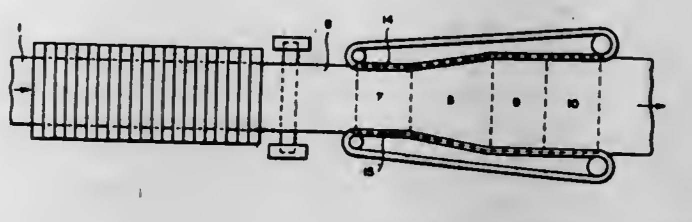
Henri de Saint Pierre, Paris, France, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Dec. 7, 1970, Ser. No. 95,746
Int. Cl. B29c *27/12;* **H01r** *17/08*
U.S. Cl. 264—249 **3 Claims**



A method of manufacturing an electrical connector in which a sleeve of dielectric material is secured within a metal tube, comprising the steps of inserting a dielectric sleeve of thermo-plastics material into an open ended metal tube having an internal recess, inserting a core member into the dielectric sleeve, axially compressing the dielectric sleeve under heat to mold the dielectric sleeve between between the inside surface of the metal tube and the core member, and force dielectric sleeve material into the recess, allowing the dielectric sleeve to set, and removing the core member from within the dielectric sleeve.

3,652,759
PRODUCTION OF BIAXIALLY ORIENTED POLYAMIDE FILM

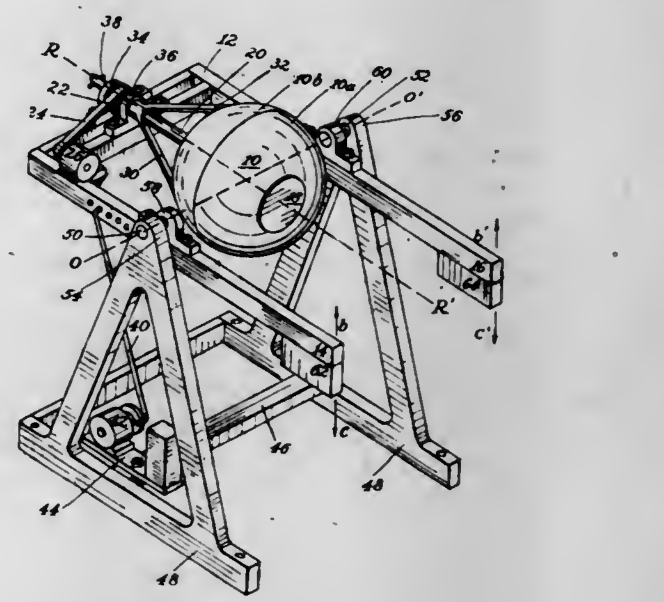
Lothar Schlemmer, Fussgonheim, Eudaldo Sabater, Hassloch, and Gerhard Kress, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Filed Jan. 8, 1970, Ser. No. 1,437
Claims priority, application Germany, Jan. 10, 1969, P 19 01 059.4
Int. Cl. B29d *7/24*
U.S. Cl. 264—289 **3 Claims**



Improved biaxially oriented polyamide film, particularly suitable for packaging applications, may be made from amorphous film or sheeting by drawing the same in the machine direction at a draw ratio of 2.5:1 to 4:1, drawing being effected in the free paths in the gaps between non-driven draw rolls of diameter 40 to 150 mm., said free paths being less than 22 mm. long in all cases and said rolls being held at specific temperatures depending on their peripheral speeds, and then drawing the sheeting transversely at a draw ratio of 3:1 to 6:1 and at a temperature of 165 to 205° C.

3,652,760
PROCESS FOR CASTING ACRYLIC SPHERES

Jan Petri, Pomfret, Conn., assignor to Spheres, Inc., Warminster, Pa.
Filed Jan. 15, 1969, Ser. No. 791,251
Int. Cl. B29c *5/04*
U.S. Cl. 264—310 **4 Claims**



Method for casting thermoplastic bodies, such as acrylic spheres, involving the rotation about a first axis of a hollow mold containing a liquid charge of the thermoplastic, and the simultaneous oscillation of the mold about a second axis, substantially perpendicular to the first and parallel to the earth's horizontal, for a period of time sufficient to permit the thermoplastic to distribute itself evenly over the mold surface while solidifying, and thereby provide a hollow cast body characterized by a substantially uniform wall thickness and a configuration matching the interior surface of the mold.

3,652,761
IMMUNOCHEMICAL COMPOSITES AND ANTIGEN OR ANTIBODY PURIFICATION THEREWITH

Howard H. Weetall, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.

No Drawing. Filed Sept. 4, 1969, Ser. No. 855,376

Int. Cl. G01n *1/00, 1/34, 31/06*

U.S. Cl. 424—12 **27 Claims**

This invention relates to the stabilization of antigens or antibodies by chemically coupling the antigens or antibodies to an inorganic carrier by means of an intermediate silane coupling agent whereby the antigens or antibodies become insolubilized.

The isolation and purification of antibodies are necessary steps in the study of antibody structure and synthesis. This is especially true where antibodies to specific antigens are concerned. Similarly, techniques which can be used to isolate and purify specific antibodies or antigens can also be employed for their detection and purification. This area has particular utility in the field of diagnostic medicine, analytical biochemistry, and related fields.

3,652,762
PHARMACEUTICAL COMPOSITIONS AND METHODS EMPLOYING SUBSTITUTED DERIVATIVES OF 2-ANILINOPHENYLACETIC ACIDS AND ESTERS

Alfred Sallmann, Bottmingen, and Rudolf Pfister, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Division of application Ser. No. 861,571, Sept. 29, 1969, which is a continuation-in-part of applications Ser. No. 782,206, Dec. 9, 1968, Ser. No. 782,473, Dec. 9, 1968, and Ser. No. 625,326, Mar. 23, 1967. Divided and this application Apr. 14, 1970, Ser. No. 28,507

Int. Cl. A61k *27/00*

U.S. Cl. 424—60 **46 Claims**

Pharmaceutical compositions containing substituted 2-anilinophenylacetic acids, their esters and salts have desirable absorption patterns for protecting the skin against the irritating effect of ultraviolet light and are also anti-inflammatory agents. Typical embodiments are compositions containing 2-(2,6-dichloroanilino)phenylacetic acid, the sodium salt thereof and the methyl ester thereof.

3,652,763
GROWTH STIMULANT COMPOSITION

Julius Berger, Passaic, Wilbur Lewis Marusich, Wayne, and Milan Mitrovic, Nutley, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Apr. 28, 1969, Ser. No. 820,023

Int. Cl. A61k *21/00*

U.S. Cl. 424—181 **4 Claims**

A composition and method for stimulating the growth of poultry and increasing feed efficiency comprising orally administering chartreusin to the animals in combination with their feed. The method comprises feeding poultry a ration containing, per 100 parts by weight of feed, from about 0.0001 to about 0.01 parts by weight of chartreusin.

3,652,764
ANTIMICROBIAL COMPOSITIONS AND METHODS OF USE

Vincent Lamberti, Upper Saddle River, N.J., and Henry Lemaire, Westport, Conn., assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 502,299, Oct. 22, 1965, now Patent No. 3,427,248. This application Nov. 14, 1968, Ser. No. 775,960

The portion of the term of the patent subsequent to Feb. 11, 1986, has been disclaimed

Int. Cl. A01n *9/00, 9/12, 9/14*

U.S. Cl. 424—235 **15 Claims**

The specification is concerned with an antimicrobial agent which is a polyolether, polyolpolyether or sulfur analog thereof. It is also concerned with a composition containing these antimicrobial agents.

3,652,765
PHARMACEUTICAL COMPOSITIONS AND METHODS FOR THE TREATMENT OF ALLERGIC ASTHMA

Gwynn Pennant Ellis, Heath, Cardiff, Wales, and Arthur Hedley Wragg, Middlewich, England, assignors to Fisons Pharmaceuticals Limited, Loughborough, Leicestershire, England

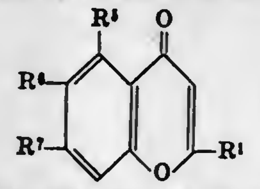
No Drawing. Continuation-in-part of application Ser. No. 643,352, June 5, 1967, which is a continuation-in-part of application Ser. No. 300,901, Aug. 8, 1963. This application Oct. 9, 1969, Ser. No. 865,160

Claims priority, application Great Britain, Aug. 18, 1962, 31,797/62

Int. Cl. A61k *27/00*

U.S. Cl. 424—282 **14 Claims**

Pharmaceutical compositions which are useful in the treatment of asthma and the like contain, as active ingredient, a chromone derivative of the formula:



or a salt, ester or amide thereof, wherein the variables are defined in the following specification, for example:

6-propoxychromone-2-carboxylic acid;
6,7-methylenedioxychromone-2-carboxylic acid;
cyclopento[g]chromone-2-carboxylic acid; and
5,6-benzochromone-2-carboxylic acid.

3,652,766
PROCESS FOR COMBATTING BACTERIA AND FUNGI BY USING AMIDINOUREAS AND AMIDINOTHIOUREAS

Royal A. Cutler, Sand Lake, and Samuel Schalit, Albany, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 556,897, June 13, 1966, which is a continuation-in-part of application Ser. No. 462,077, June 7, 1965, both now abandoned. This application Aug. 5, 1968, Ser. No. 749,986

Int. Cl. A01n *9/12*

U.S. Cl. 424—322 **14 Claims**

Antibacterial and antifungal mono- and disubstituted amidinoureas and amidinothioureas are obtained by interaction of guanidines and isocyanates or isothiocyanates.

3,652,767
GERMICIDAL COMPOSITIONS

Eric Jungermann, Chicago, David Taber, Evanston, and Leo A. Raphaelian, Wilmette, Ill., assignors to Armour-Dial, Inc., Chicago, Ill.

Filed June 30, 1969, Ser. No. 837,488

Int. Cl. C11d *3/48;* **A01n** *9/12*

U.S. Cl. 424—322 **4 Claims**

Compositions possessing antibacterial activity through the use of a synergistic mixture of hexachlorophene, triclocarban and halogen substituted phenyl 2-ethylhexyl-1-ureas.

3,652,768
ANTISEPTIC COMPOSITIONS

Eric Jungermann, 336 Wellington Ave., Chicago, Ill. 60657; David Taber, 2000 Lincoln, Evanston, Ill. 60201; and Leo A. Raphaelian, 2640 Laurel Lane, Wilmette, Ill. 60091

Filed June 30, 1969, Ser. No. 837,489

Int. Cl. C11d *3/48;* **A01n** *9/12*

U.S. Cl. 424—322 **4 Claims**

Compositions possessing antibacterial activity through the use of a synergistic mixture of hexachlorophene and halogen substituted phenyl 2-ethylhexyl-1-ureas.

3,652,769
CYCLOALKYLAMINES IN THE TREATMENT OF MENTAL DISORDERS INVOLVING DEPRESSION AND COMPOSITIONS THEREFOR

Walfred S. Saari, Lansdale, Pa., assignor to Merck & Co., Rahway, N.J.

No Drawing. Filed Oct. 1, 1969, Ser. No. 862,943

Int. Cl. A61k *27/00*

U.S. Cl. 424—325 **13 Claims**

A method for the treatment of depression comprising the administration of substituted cyclopentyl, cyclohexyl and cycloheptylamine compounds is disclosed. These compounds also exhibit a highly desirable degree of stimulation on the central nervous system. The preparation of pharmaceutical compositions containing these cycloalkylamines is also described.

3,652,770
COMBATTING PHYTOPATHOGENIC FUNGI ON PLANTS WITH SUB-PHYTOTOXIC FUNGICIDALLY EFFECTIVE AMOUNTS OF HERBICIDAL OXIMES OF 3,5-DIHALOSALICYLALDEHYDE

Otto Rohr, Therwil, Ludwig Ebner, Stein Aargau, Volker Dittrich, Basel, and Heinz Siegel, Binningen, Switzerland, assignors to Ciba Limited, Basel, Switzerland

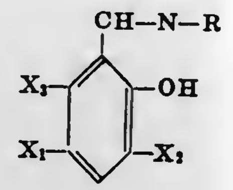
No Drawing. Continuation of application Ser. No. 677,760, Oct. 24, 1967. This application Apr. 1, 1970, Ser. No. 31,868

Claims priority, application Switzerland, Oct. 28, 1966, 15,711/66

Int. Cl. A01n *9/24;* **A61k** *27/00;* **A61l** *13/00*

U.S. Cl. 424—327 **3 Claims**

A preparation for combating harmful insects, acarides, nematodes phytopathogenic fungi and bacteria, which comprises, as active substance, a compound of general formula



wherein X_1 and X_2 represent halogen atoms, X_3 represents a hydrogen or a halogen atom and R represents the hydroxyl group or an aryl or an aralkyl residue which is substituted by at least one member selected from the group consisting of a halogen atom, the CF_3, NO_2, CN, alkyl, alkoxy, SCN and a tertiary amino group, together with a carrier. If desired, there may be present one or more of the following additives: a carrier, a solvent, a diluent, a dispersing agent, a wetting agent, an adhesive, a fertiliser or other pesticides.

3,652,771
QUATERNARY AMMONIUM COMPOUNDS USED TO CONTROL BACTERIA IN HARD WATER

Reginald L. Wakeman, Philadelphia, Pa., and John J. Merianos, Jersey City, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

No Drawing. Filed Aug. 1, 1969, Ser. No. 846,970

Int. Cl. A01n *9/20*

U.S. Cl. 424—329 **3 Claims**

The mixture of dodecyl dimethyl 2,4,6-trimethylbenzyl ammonium chlorides or bromides with tetradecyl dimethyl 2,4,6-trimethylbenzyl ammonium chlorides or bromides form a synergistic blend having a higher degree of microbiocidal activity in hard water than either compound by itself.

3,652,772
2-HYDROXY-3-METHOXY-β-NITROSTYRENE AND 2-HYDROXY - 5 - β-NITROSTYRENE AS ANTIFUNGAL AND ANTIBACTERIAL AGENTS

Glentworth Lamb, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 6, 1969, Ser. No. 789,386

Int. Cl. A01n *9/20*

U.S. Cl. 424—340 **8 Claims**

A novel method for protecting growing plants from attack by plant pathogenic fungi is given whereby an effective amount of a compound selected from the group consisting of 2-hydroxy-3-methoxy-beta-nitrostyrene and 2-hydroxy-5-methoxy-beta-nitrostyrene is applied to said plants.

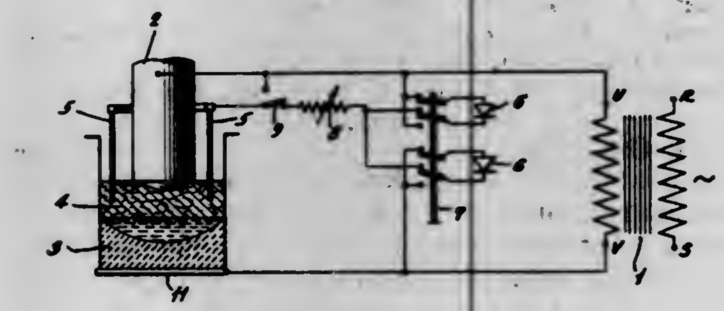
3,652,773
PROCESS OF ELECTRICALLY REMELTING HIGH-MELTING METALS

Wolfgang Holzgruber, Peter Junnergasse 16, A8605, Kapfenberg, and Peter Machner, Mullgasse 7, A8700, Leoben, both of Austria

Original application Oct. 18, 1967, Ser. No. 676,094, now Patent No. 3,571,475. Divided and this application May 28, 1970, Ser. No. 41,177

Int. Cl. H05b *3/60*

U.S. Cl. 13—9 7 Claims



High-melting point solid metal is maintained immersed in an electrically conduction, electrolysable slag and is melted to form and maintain a pool of molten metal under said slag. An auxiliary electrode is maintained immersed in said slag. Unidirectional electric current is conducted through said auxiliary electrode and through said slag to induce fusion electrolysis in said slag so as to control ionic chemical reactions in a predetermined polarity direction taking place in said slag.

3,652,774
KEYING SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENTS

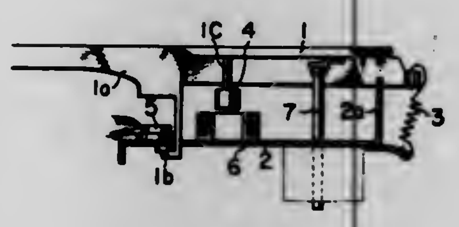
Junji Ohno, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Oct. 15, 1970, Ser. No. 80,937

Claims priority, application Japan, Oct. 16, 1969, 44/82723

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.24 22 Claims



In an electronic musical instrument having playing keys of a keyboard and associated keyer circuits, the effect of double-control can be obtained by the provision of a keying system including first and second keyer controllers provided for each key to control the respective keyers. The first keyer controller is operative for normal key depression stroke prior to the key's lowest position, while the second keyer controller is responsive to a depressing force applied to the key during its stay at the lowermost end of its stroke.

3,652,775
PERCUSSION KEYER FOR AN ELECTRONIC MUSICAL INSTRUMENT

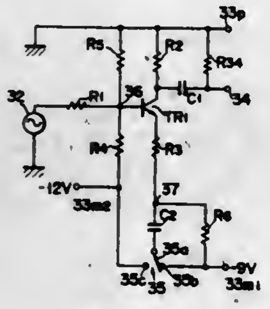
Takeshi Adachi, and Takatosi Okumura, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed June 23, 1970, Ser. No. 49,053

Claims priority, application Japan, June 25, 1969, 44/49914; Sept. 3, 1969, 44/69583

Int. Cl. G10b *1/02*

U.S. Cl. 84—1.26 11 Claims



In an electronic musical instrument having a plurality of selectively operable keys associated with key switches and keyer circuits; a keyer circuit is turned ON to give out a tone signal by a trigger voltage derived from the key switch through a series-interposed capacitor and is subsequently turned OFF gradually by the charging operation of the capacitor. When the key switch is at a rest state, the capacitor is connected with a discharging route to prepare for the next operation of the key switch.

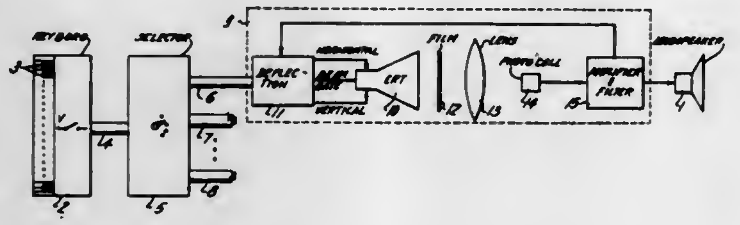
3,652,776
APPARATUS FOR SIMULATING MUSICAL SOUND EMPLOYING A SCANNABLE RECORD AND FLYING SPOT SCANNER

Karl F. Milde, Jr., 198 Baltic St., Brooklyn, N.Y.

Continuation-in-part of application Ser. No. 2,032, Jan. 12, 1970, now abandoned. This application July 13, 1970, Ser. No. 54,448

Int. Cl. G10h *3/04*

U.S. Cl. 84—1.28 17 Claims



Apparatus for simulating the sounds of a musical instrument. The apparatus includes an input device, such as keyboard, for producing signals determinative of the pitch of the notes to be played and an output device, connected to the input device, for producing notes simulating a musical instrument at the determined pitch. The simulation of the musical instrument is achieved by providing a record of the attack transient, the steady state characteristic and the decay transient of a plurality of musical notes and by reading first the attack transient, then the steady state and finally the decay transient of selected ones of these notes upon receipt of a signal or signals from the input device.

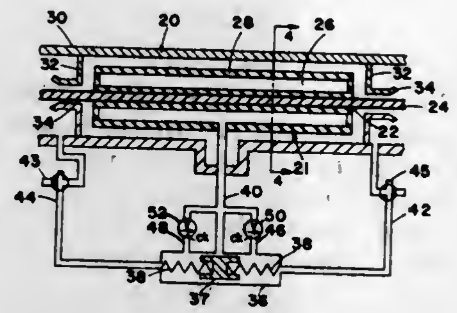
3,652,777
AUTOMATIC STOP JOINT FOR PIPE-TYPE CABLE

James H. Elliott, Columbus, Ohio, assignor to Electrical Constructors and Associates, Columbus, Ohio

Filed Mar. 16, 1970, Ser. No. 19,978

Int. Cl. H02g *15/20*

U.S. Cl. 174—11 R 4 Claims



An automatic stop joint for a pipe-type electrical cable characterized by a stop gland means mounted between adjacent portions of the cable and the inner wall of the conduit carrying the cable. The stop gland means includes an expandable chamber and moveable wall means which are automatically activated to move between sealing and nonsealing relationship with the cable and conduit portions responsive to the occurrence of a pressure differential across the stop joint and a subsequent dissipation of that pressure differential.

ERRATUM

For Class 174—15 see:
Patent No. 3,652,797

3,652,778
INSULATING SPACER

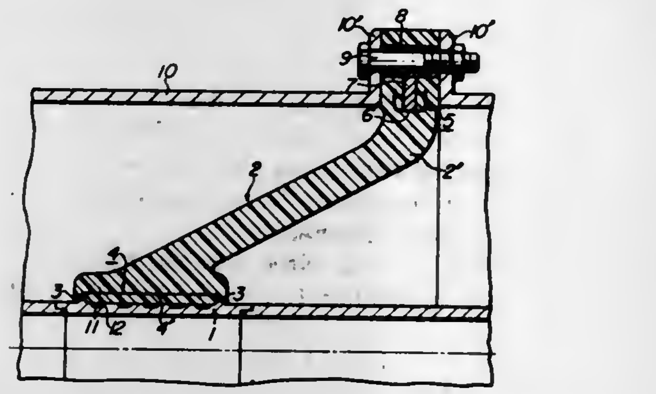
Yoshikazu Sakai, Kagamihara, Japan, assignor to NGK Insulators, Ltd., Mizuho-ku, Kagoya, Japan

Filed Oct. 6, 1970, Ser. No. 78,373

Claims priority, application Japan, Oct. 16, 1969, 44/98379

Int. Cl. H01b *9/04*

U.S. Cl. 174—28 3 Claims



An insulating spacer comprising a central conductor, a cylindrically shaped metallic shield which is arranged around said central conductor and is partially in contact with said central conductor, an insulating member made of a thermosetting resin said shield is embedded into the inner diameter thereof and said central conductor is enclosed thereby, and a shield of the earth side which is deeply embedded into a outwardly extending flange portion of said insulating member, and also preferably comprises fiber-reinforced resin formed of fibrous tissues which is tightly wound around a plurality of independent grooves provided on the periphery of said central conductor and a thermosetting resin which is infiltrated into said fibrous tissues so that said insulating member formed of a thermosetting resin may be firmly fixed around over said central conductor, thus said insulating spacer being adapted to be applied to a duct line air power transmission bus bar, gas-filled breaker or the like in which a sulfur hexafluoride gas is employed as an insulating medium.

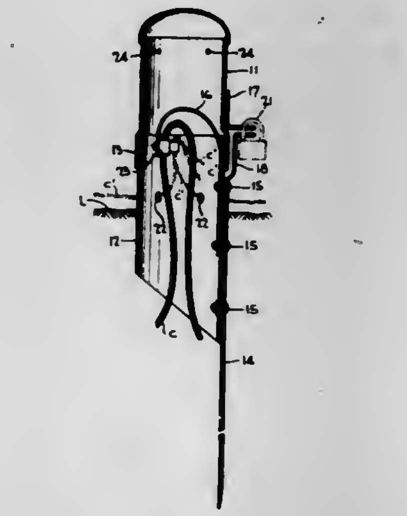
3,652,779
UNDERGROUND CABLE PEDESTAL

Kenneth D. Grinols, 5354 Calle Florida, Siesta Key, Sarasota, Fla.

Filed Apr. 21, 1971, Ser. No. 135,940

Int. Cl. H02g *9/02*

U.S. Cl. 174—38 5 Claims



An underground cable pedestal comprising a lower tubular section partially embedded in the ground and having a grounding bar secured thereto as well as a grounding strap. A slideably removable cover section is provided for closing the top of the lower section; mating locking flanges being provided on both the cover and grounding bar to facilitate locking of the cover.

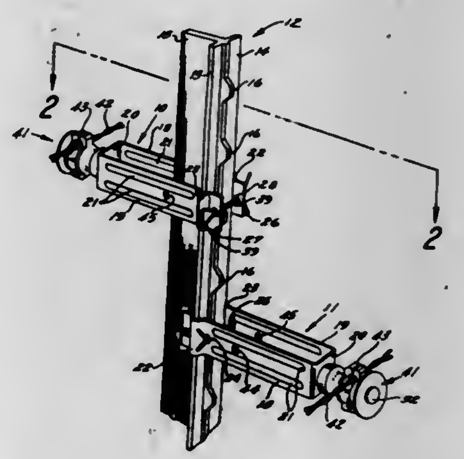
3,652,780
REVERSIBLY MOUNTABLE INSULATOR

Robert M. Wilson, Battle Creek, Mich., assignor to Dare Products, Incorporated, Battle Creek, Mich.

Filed Oct. 30, 1970, Ser. No. 85,494

Int. Cl. H01b *17/16*; A01k *3/00*

U.S. Cl. 174—45 R 7 Claims

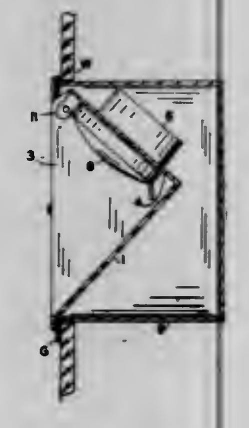


An insulator assembly is provided adapted to be mounted on an electric fence post and to support electrically charged wire. The insulator is provided with a long extender body adapted to support the electrically charged wire in a position wherein it is spaced apart from the fence post a substantial distance. The base of the insulator assembly is provided with a clip adapted to engage laterally extending flanges of the fence post, as for example, the laterally extending flanges of a steel fence post having a T-shaped cross section. Apertures are provided in the extender body immediately adjacent the base clip to receive a cotter pin or other means for clamping the jaws of the clip together on the fence post, when the insulator is so mounted that the extender is directed outboard of the fence post. Additionally, longitudinally extended flanges are provided in the base clip and provided with apertures to receive a cotter pin or similar means for clamping the jaws together when the extender body is positioned inboard of the flanges of the fence post.

3,652,781

RECESSED WATERPROOF ELECTRICAL CONNECTION BOX COVER

Alfred Robbins, 80 East Gates Ave, Lindenhurst, N.Y.
Continuation-in-part of application Ser. No. 887,276, Dec. 22, 1969, now Patent No. 3,594,693. This application Apr. 7, 1971, Ser. No. 131,887
Int. Cl. H02g *3/14*
U.S. Cl. 174—67 **4 Claims**

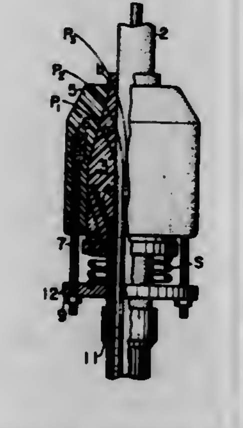


A wall recessed outdoor electrical connection box cover which is protected against rain and snow. The recessed face of the cover containing the electrical socket is angled down at a substantial angle and is recessed in the wall to protect the face from rain and snow. Snap type caps are mounted over the electrical socket or sockets.

3,652,782

STRESS RELIEF APPARATUS FOR CABLE CONNECTION

Hisatomo Furusawa; Kazuyoshi Inoka, and Masahiro Maruyama, all of c/o Furukawa Denki Kogyo Kabushiki Kaisha, Yokohama Densen Seizosho, No. 6-1, Nishihiranuma-cho, Nishi-ku, Yokohama-shi, Kanagawa-ken, Japan
Filed Aug. 4, 1969, Ser. No. 847,161
Int. Cl. H02g *15/02, 15/22*
U.S. Cl. 174—73 R **3 Claims**



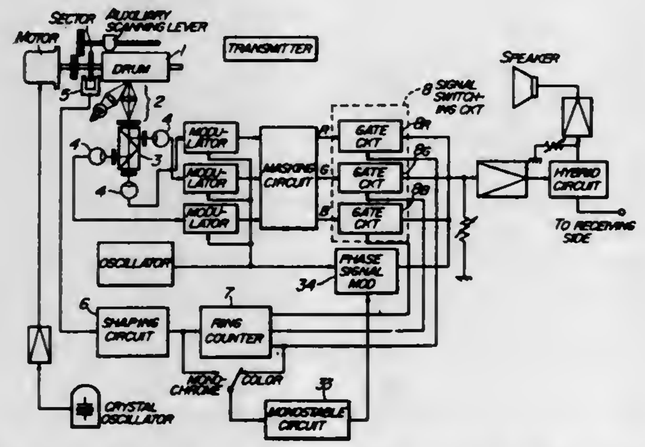
A tubular body made of an elastomer has conical surfaces at both ends and an axial bore to receive the cable insulation of a sheathed cable, and is provided with a conductive stress cone.

A solid support cylinder made of an insulating material has a stress relief electrode embedded therein and exerts an axial compression on the tubular body in cooperation with a clamping member. Owing to the compression, the tubular body is brought into intimate contact with the cable insulation. The arrangement of the stress relief electrode in the support cylinder is such that it comes on an extension of the conical surface of the stress cone. The stress relief electrode is grounded.

3,652,783

COLOR FACSIMILE SYNCHRONIZATION SYSTEM

Yutaka Tanaka, Chofu-shi, and Koichi Kobitsu, Tokyo, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and Toho Denki Co., Ltd., Tokyo, Japan
Filed June 2, 1969, Ser. No. 829,382
Claims priority, application Japan, June 4, 1968, 43/38935
Int. Cl. H04n *9/42*
U.S. Cl. 178—5.2 R **4 Claims**

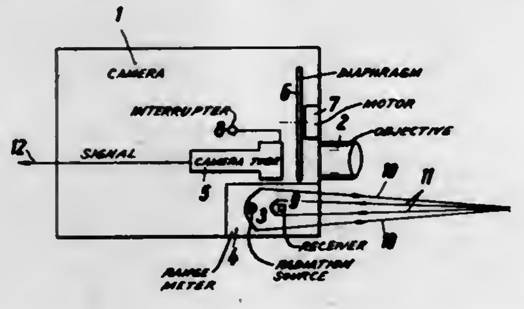


This invention relates to a color facsimile synchronization system employed in a color facsimile system for transmitting a colored original in line sequence and reproducing the original in color at a receiving apparatus. The color facsimile synchronization system includes means for simultaneously effecting color and phase synchronization between both transmitting and receiving apparatus, synchronization being accomplished in the receiving apparatus by means of a phase signal generated in and transmitted from the transmitting apparatus. This invention also discloses an electronic circuit for electronically switching color signals which are transmitted in line sequence by the transmitting apparatus.

3,652,784

AUTOMATIC RANGE ADJUSTMENT OF OBJECTIVES IN TELEVISION CAMERAS

Max E. Wupper; Richard von Felgel-Farnholz, and Dietmar Gornott, all of Darmstat, Germany, assignors to Fernseh GmbH, Darmstadt, Germany
Filed Dec. 12, 1969, Ser. No. 884,514
Claims priority, application Germany, Dec. 21, 1968, P 18 16 331.0
Int. Cl. H04n *1/00*
U.S. Cl. 178—5.2 R **14 Claims**

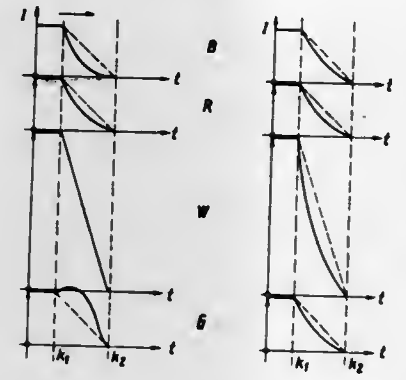


A modulated light source and a receiver determine range of scenes to be photographed. Preferably, ranging is accomplished during vertical flyback so that ranging light rays do not interfere with the ambient light reception and control signals do not interfere with camera electronics. Physical or electronic means are employed to ensure camera insensitivity during ranging.

3,652,785

ARRANGEMENT FOR SUPPRESSING FRINGE EFFECTS IN COLOR TELEVISION CAMERAS

Hans-Dieter Schneider, Gross-Gerau, Germany, assignor to Fernseh GmbH, Darmstadt, Germany
Filed May 14, 1970, Ser. No. 37,268
Claims priority, application Germany, May 16, 1969, P 19 24 911.1
Int. Cl. H04n *9/04*
U.S. Cl. 178—5.4 R **10 Claims**

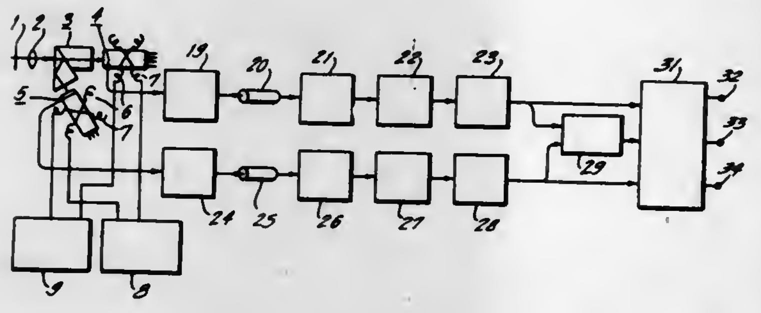


An arrangement in which fringe effects associated with moving objects in color television cameras, are suppressed. The camera tubes are provided with scanning beams of low velocity electrons, and their beam current intensities are adjusted so that the resulting intensities exceed that intensity of the beam current required for discharge of the target at a predetermined brightness level. The beam current intensities are adjusted so that the inertia characteristics of the tubes which determine the fringe effects, become equalized among the tubes. A linear matrix connected to the outputs of the camera tubes combine the output signals in the required manner. Limiting elements connected to the inputs of the matrix limit the signal levels from the tubes to substantially the maximum level of the camera tube with the smallest beam current.

3,652,786

TWO-TUBE TYPE COLOR CAMERA SYSTEM

Masanobu Morishita, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan
Filed Oct. 8, 1970, Ser. No. 79,023
Claims priority, application Japan, Oct. 13, 1969, 44/81999; Aug. 7, 1970, 45/69627
Int. Cl. H04n *9/08*
U.S. Cl. 178—5.4 R **5 Claims**

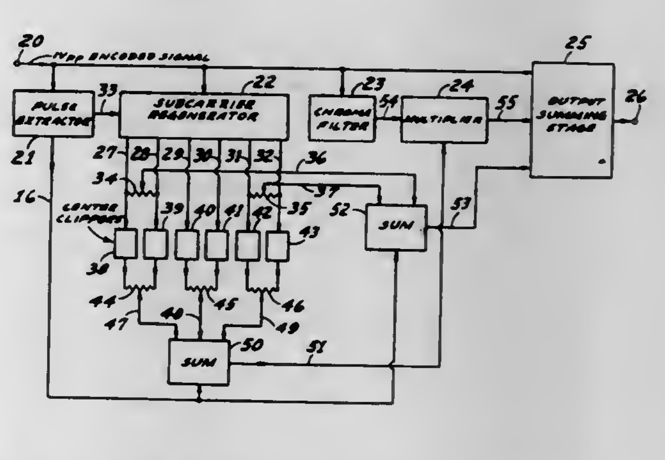


A color TV system in which reflected light from the object is split into short and long wavelength components which are then scanned in the conventional manner by TV camera tubes. The long and short wavelength components are selected so as to at least partially overlap one another. The scanned signals generated by the camera tubes, after undergoing noise removal and compensation to correct for frequency deterioration and attenuation, are combined in a multiplier circuit to form a signal representative of the product of the two input signals. The product signal is then combined with the short and long wavelength signals in a matrix circuit where the signals are combined in three different predetermined manners to form resultant output signals representative of the red, green and blue component signals, thus enabling the generation of the three primary color signal through the use of only a two-tube system.

3,652,787

TELEVISION SIGNAL COLOR CORRECTOR

Katarina Tkacenko, 2305 East 2nd St., Bloomington, Ind.
Filed Nov. 12, 1970, Ser. No. 88,727
Int. Cl. H04n *9/00*
U.S. Cl. 178—5.4 R **5 Claims**



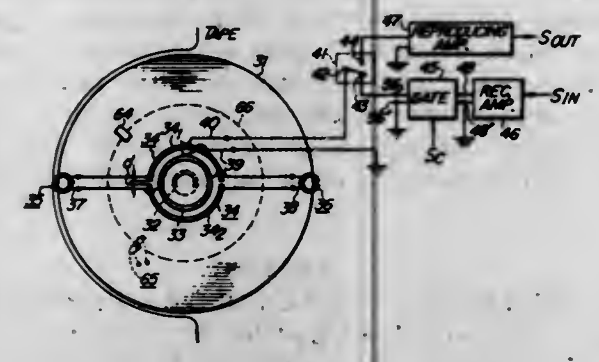
A television signal color corrector operable to correct the signal without demodulation. A pulse extractor, subcarrier regenerator, chroma filter, multiplier and output summing stage are connected together to receive the incoming encoded composite color signal. The pulse extractor provides a burst flag pulse to the subcarrier regenerator which has six outputs corresponding to the phase of color chrominance of red, blue, green and their complementaries. Center clippers are connected to the outputs of the regenerator and remove the center portion of the subcarrier regenerator output signals. Three potentiometers receive the outputs from the center clippers and allow adjustment of the red, blue and green signals. A summing stage is connected to the three potentiometers and receives a blanking pulse from the pulse extractor and provides the correcting color signal to an electronic multiplier connected to the output of the chroma filter. The output of the multiplier is fed to an output summing stage which provides the corrected signal. Two potentiometers connected each between two of the subcarrier regenerator outputs are adjustable to provide a black balance signal which is fed to the output summing stage. A gamma compressor may be connected between a black balance summing circuit and the output summing stage.

3,652,788

FIELD SKIP MODE VIDEO TAPE RECORDER

Takashi Nakashima, and Kazuaki Kakinuma, both of Katsuta-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed June 10, 1969, Ser. No. 831,853
Claims priority, application Japan, June 17, 1968, 43/41361
Int. Cl. H04h *5/78*; **H04n** *7/12*; **G11b** *5/48*
U.S. Cl. 178—6.6 SF **17 Claims**

A field skip mode video tape recorder wherein a magnetic tape is transported while being slantly wound about half the periphery of two rotary magnetic heads which are connected to two sections of a halved slip ring and a brush is adapted to be alternately contacted with said two sections of the slip ring so that during the recording operation, only even fields of a video signal to be recorded may be supplied to one of the two heads, namely a recording head in synchronism with the period during which the recording head is connected with the brush and the tape, and during the reproducing operation, output signals from the heads which alternately appear at the brush are supplied to a single playback amplifier.



3,652,789

REPRODUCTION SYSTEM FOR AIRCRAFT SCANNERS

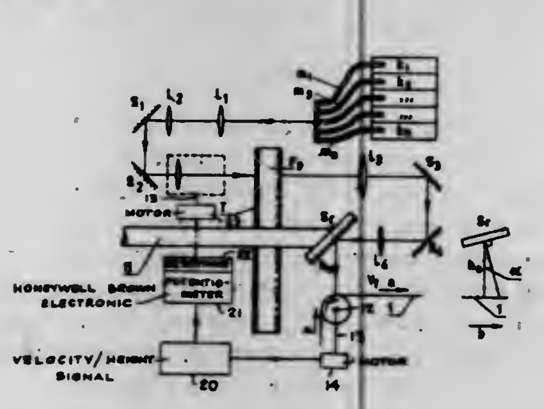
Arie N. De Jong, Pijnacker, Netherlands, assignor to Nederlandse, Organisatie voor Toegepast-Natuurweten-Schappelijk Onderzoek, The Hague, Netherlands

Filed Aug. 12, 1969, Ser. No. 849,412

Claims priority, application Netherlands, Aug. 29, 1968, 6812267

Int. Cl. H04n *5/72, 5/86*

U.S. Cl. 178—6.7 R **2 Claims**



The invention relates to a device for filming an area scanned electronically with the aid of an aircraft.

The scanning results in a number of intensity-modulated beams of rays produced by crater lamps. Between the crater lamps and the film are provided a fiber sheet, a transmission filter and a zoom lens, the zoom position of which is coupled with the film transport, which transport itself is carried out in such a way that the film velocity is adapted to the aircraft velocity/aircraft height ratio.

The conditions of fiber sheet and transmission filter are coupled with the position of a rotating mirror for exposing the film.

Sheet and filter are provided between zoom lens and rotating mirror.

3,652,790

SEARCH AND TRACKING TELEVISION SYSTEM AND METHOD

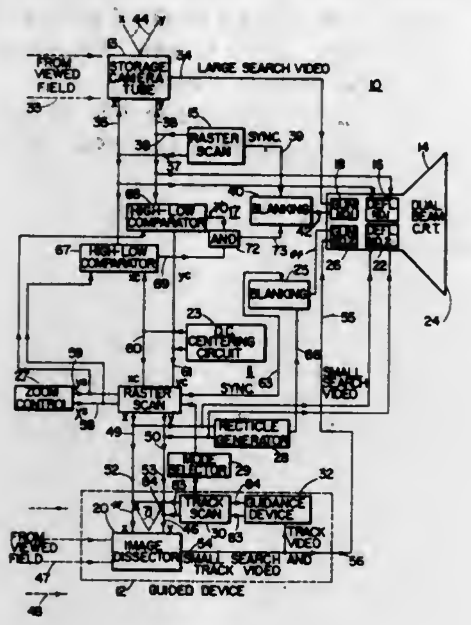
Edward H. Eberhardt, Fort Wayne, Ind., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Jan. 28, 1970, Ser. No. 6,630

Int. Cl. H04n *5/22, 7/18*

U.S. Cl. 178—6.8 **27 Claims**

A search and tracking television system and method in which a storage-type camera tube is employed for searching a large field of view for a desired target, the image of the field viewed by the storage camera tube being displayed by one gun of a dual beam cathode ray tube. An image dissector-type camera tube is employed for viewing a smaller included field, and ultimately for tracking a desired target, and the image of the smaller field viewed by the image dissector tube is displayed by the other gun of the dual beam cathode ray tube. The image dissector tube is electronically and/or mechanically gimballed selectively to move the image of its field of view on the screen of the dual beam cathode ray tube so as to display the image of a desired target which appears in the field of view of the storage camera tube in the field of the image dissector tube. Once the target image has been so displayed, the image dissector tube is switched to its tracking mode so as to track the target thus acquired in its field of view.



3,652,791

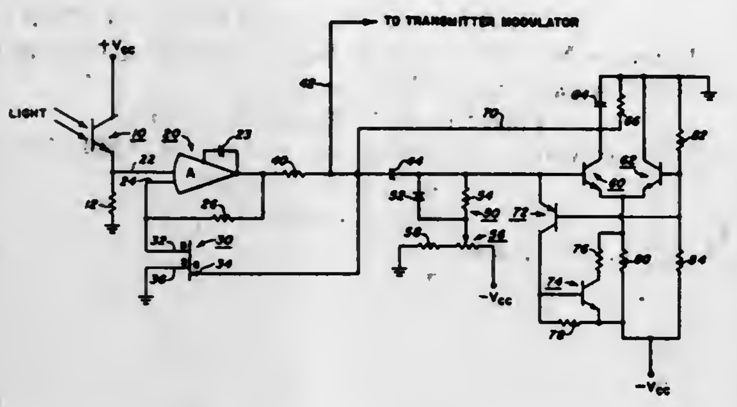
CIRCUITRY FOR DISTINGUISHING BETWEEN BACKGROUND AND INTELLIGENCE AREAS ON A DOCUMENT

David R. Shuey, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of application Ser. No. 789,867, Jan. 8, 1969. This application May 6, 1970, Ser. No. 35,048

Int. Cl. H04n *5/19;* **H01j** *39/18;* **H03g** *3/30*

U.S. Cl. 178—7.1 R **8 Claims**



In a facsimile system, apparatus for automatically adjusting the gain of a circuit connected to a document scanning photoreceptor so that information signals may be readily separated from the various shades of background reflected from the document being scanned. The apparatus includes an operational amplifier, the feedback loop of which, in a first embodiment, includes a field effect transistor. The gain of the operational amplifier is adjusted so that its output is at one of two levels, representing information or background signals, by controlling the signal applied to the gate electrode of the field effect transistor. In a second embodiment the effective load resistor of the photoreceptor is varied by interposing a field effect transistor between the photoreceptor and the input of the operational amplifier. The amplitude of the output signal of the operational amplifier is adjusted by controlling the signal applied to the gate electrode of the field effect transistor.

3,652,792

AUTOMATIC SENSITIVITY CONTROL CIRCUIT FOR IMAGE PICKUP CAMERA

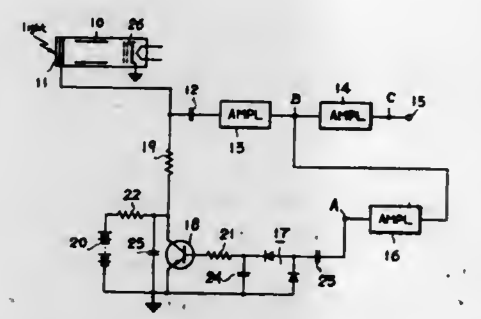
Koji Usagawa, Tokyo, Japan, assignor to Victor Company of Japan, Limited, Yokohama-City, Japan

Filed Sept. 3, 1969, Ser. No. 854,850

Claims priority, application Japan, Sept. 4, 1968, 43/63064

Int. Cl. H04n *5/14*

U.S. Cl. 178—7.2 R **13 Claims**



An automatic sensitivity control circuit for image pickup camera having an amplifier provided in a control roop for controlling an output signal of a vidicon, said amplifier having a photoconductive element varying its resistance value in response to the scene illumination. By the variation of the gain of said amplifier in response to the variation of resistance value of said element, the output signal of said vidicon is controlled to small when the illumination is low and large when the illumination is high.

3,652,793

FACSIMILE APPARATUS HAVING PLURAL RECIPROCATING SCANNING HEADS

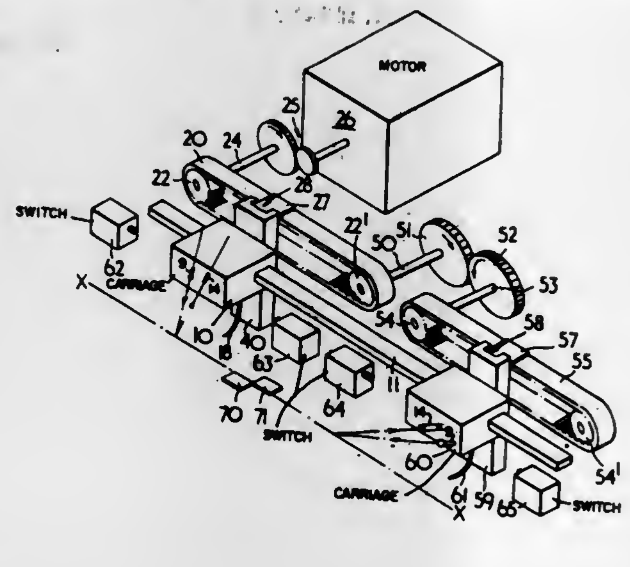
Gerald Farr, Sanderstead, Surrey; Frances M. Anderson, Beckenham, Kent, and Eric Thomas Arthur Phillips, Bromley, Kent, all of England, assignors to Muirhead Limited, Beckenham, Kent, England

Filed Mar. 25, 1969, Ser. No. 810,111

Claims priority, application Great Britain, Mar. 29, 1968, 15,400/68; 15,401/68; 15,402/68

Int. Cl. G01d *15/24;* **H04n** *1/14, 1/22*

U.S. Cl. 178—7.6 **10 Claims**



Facsimile apparatus is provided with a scanning assembly which is reciprocated back and forth by a drive imparted to it from forward and return runs of at least one flexible belt loop continuously driven in one direction only by a constant speed motor. Such a drive can be cheaply and compactly manufactured and also lends itself readily to driving simultaneously and in synchronism several scanning heads which are each responsible for scanning a unique section of a line. The scanning assembly is usable in a facsimile transmitter, a facsimile receiver, or a facsimile transreceiver.

3,652,794

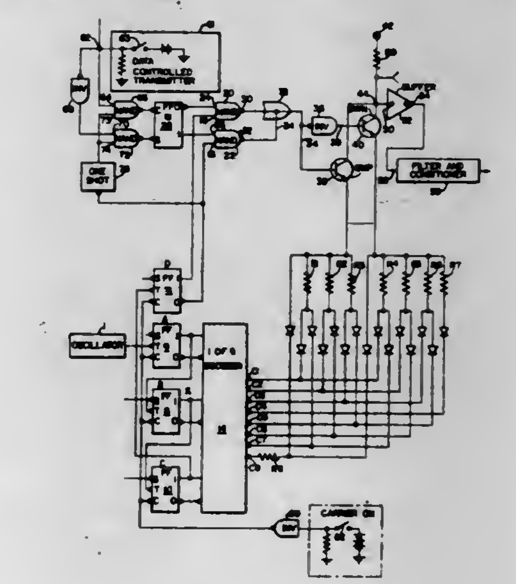
APPARATUS AND METHOD FOR TRANSMITTING INTELLIGENCE WITH STEPPED WAVES

Gyorgy I. Vancsa, Newark, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 30, 1970, Ser. No. 33,429

Int. Cl. H04l *27/24*

U.S. Cl. 178—67 **9 Claims**



A fast operating phase-shift-controlled system for transmitting information in which a simulated sine wave is generated digitally and in which the phase of the generated wave is shifted solely at the 0° and 180° points to eliminate "ringing" and thereby increase the speed at which data may be transmitted.

3,652,795

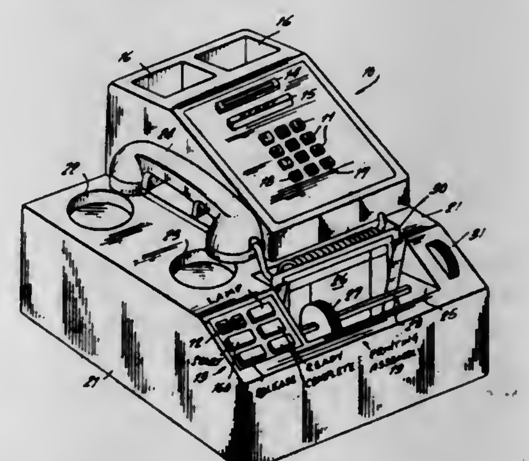
TELEPHONE TRANSACTION SYSTEM

Arnold M. Wolf, Brooklyn, and John G. Richter, Yonkers, both of N.Y., assignors to Electrospace Corporation, Westbury, N.Y.

Continuation-in-part of application Ser. No. 806,446, Mar. 12, 1969, now abandoned. This application Nov. 25, 1970, Ser. No. 92,554

Int. Cl. H04m *11/06*

U.S. Cl. 179—2 DP **7 Claims**

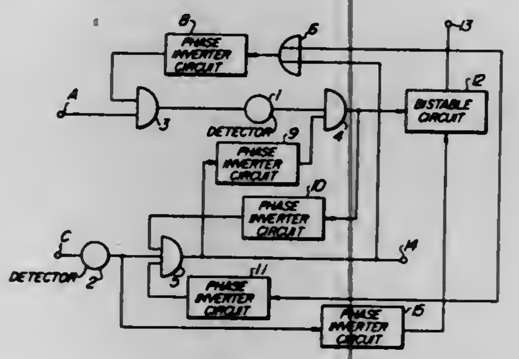


A system is described for buying materials or services by transferring funds in a bank from a buyer's deposit account to a seller's account. The transfer of funds is accomplished by means of a "touch-tone" telephone receiving set equipped with a first decoding and printing means. A computer at the bank receives coded signals from the telephone set and, after decoding the signals, records the transaction at that location. Each purchaser is provided with a secret purchaser number on a telephone operating card and the entire operation is performed in the presence of the purchaser and a representative of the seller or store.

3,652,796
MEANS FOR DISCRIMINATING BETWEEN ORIGINATING AND TERMINATING CALLS

Eiji Kezuka, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 16, 1969, Ser. No. 858,280
Claims priority, application Japan, Sept. 20, 1968, 43/69027
Int. Cl. H04m *15/38*
U.S. Cl. 179—7.1 R **5 Claims**

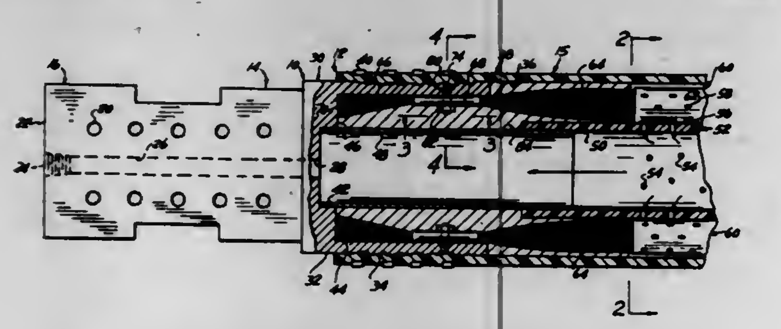


A discriminator with which the traffic of telephone circuits may be discriminated with respect to originating calls and terminating calls individually and such discrimination may be readily accomplished without interfering with the telephone rules and regulations.

3,652,797
SAFETY ANCHORED MULTICONDUCTOR CABLE FOR ELECTRIC ARC FURNACES

Daniel J. Goodman, 23236 Westbury Ave., St. Clair Shores, Mich.

Filed Aug. 13, 1970, Ser. No. 63,405
Int. Cl. H01b *7/34*
U.S. Cl. 174—15 C **7 Claims**

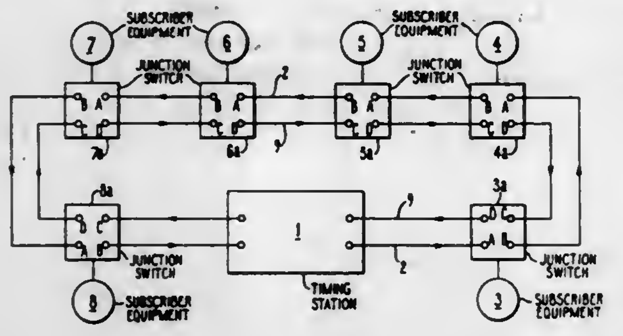


This multiconductor water-cooled electric arc furnace cable has the majority of its conductors secured within the terminal cup by means of solder. In order to prevent the conductors from dropping out of the terminal cup upon a failure of the water-cooling system causing the solder to melt, two of the conductors are additionally bolted to the inner side of the outer wall of each of the terminal cups. This bolted anchorage prevents the cable from leaving the terminal cup and dropping upon melting of the solder and provides the maximum space for the largest possible central tubular cooling water conduit. It consequently prevents serious damage to the furnace or surroundings and possible injury or deaths of workmen resulting from their coming into contact with the high-voltage high-amperage current thus released, since the conductors still remain connected to the transformer.

3,652,798
TELECOMMUNICATION SYSTEM

Joseph Hood McNeilly, Harlow, and Ryszard Kitajewski, Nazeing, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 8, 1970, Ser. No. 44,396
Claims priority, application Great Britain, July 28, 1969, 37,764/69
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AL **9 Claims**

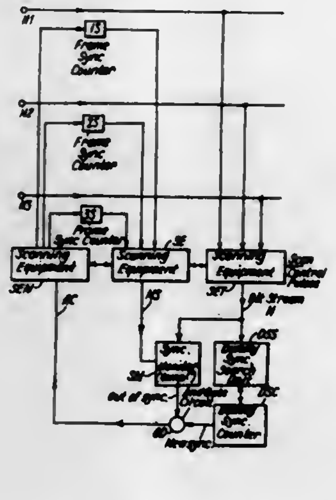


A timing station provides time division multiplex channel signals on a first closed loop unidirectional transmission line interconnective in tandem subscriber stations, each of which may gain access to an unused channel signal for communication with an idle subscriber station. To protect against failure of the entire system due to a break in the line or failure in one of the subscriber stations, a second closed loop unidirectional transmission line is connected to all stations transmitting signals in a direction opposite to that on the first line. Each subscriber station can detect an error and transfer the communication signals on the first line to the second line. The subscriber station before the break transfers the communication signal to the second line and the subscriber station after the break transfers the communication signals back to the first line to form a new, but continuous closed loop. When communication signals are on the second line and a fault occurs, the transfer of communication signals will be similarly performed to provide still another new, but continuous closed loop by passing the fault. Two embodiments to detect a fault and control the transfer of communication between the two lines are disclosed.

3,652,799
FRAME SYNCHRONIZATION SYSTEM

David M. Thomas, Bayshore, Ottawa, Canada, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 29, 1970, Ser. No. 76,407
Claims priority, application Great Britain, Sept. 30, 1969, 48,096/69
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BS **10 Claims**

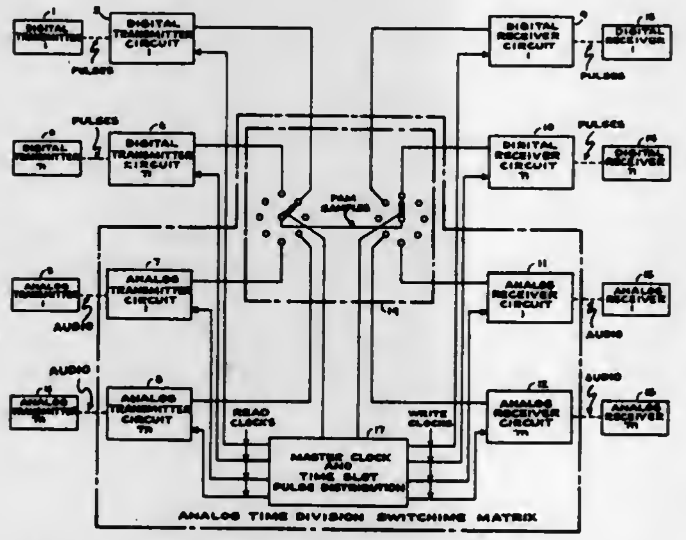


An incoming TDM bit stream, containing synchronization signals in one or more time positions of each TDM frame is monitored by a first circuit to test the stream synchronization signal versus local synchronization signal. While this is in progress a second circuit looks for the stream synchronization signal in bit stream. If the first circuit shows that synchronization is O.K., then there is no change. However, if the first circuit shows that synchronization is lost, then the synchronization signal detected by the second circuit is used as a new local synchronization signal. The concurrent operation of the first and second circuit enables rapid resynchronization when synchronization is lost.

3,652,800
DIGITAL PULSE TRANSMISSION THROUGH AN ANALOG TDM SWITCHING SYSTEM

Gerald F. Dooley, Galion, Ohio, assignor to North Electric Company, Galion, Ohio

Filed May 27, 1970, Ser. No. 40,826
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BA **15 Claims**



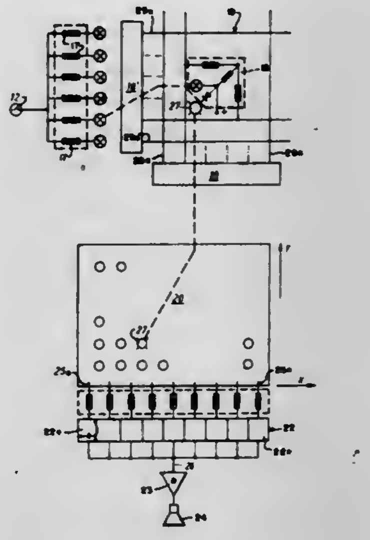
A time division multiplex switching system for transmission of digital pulses from asynchronous pulse transmitters in which each incoming data stream is buffered until the occurrence of an assigned time slot. During such assigned time slot, either the data pulses or stuff pulses are transmitted across the switching matrix in a three level code. The data pulses are then detected, separated from the stuff pulses, and buffered. The original input pulse rate is regenerated and the data pulses are transmitted to the digital receiver at approximately such rate.

3,652,801
CIRCUIT ARRANGEMENT FOR SYNTHESIS OF ACOUSTIC ELEMENTS

Walter Tscheschner, Dresden, and Siegfried H. E. Fuchs, Coswig, both of Germany, assignors to Veb Elektronische Rechenmaschinen, Karl-Marx-Stadt, Germany

Filed Apr. 7, 1969, Ser. No. 813,948
Int. Cl. G10l *1/00*
U.S. Cl. 179—1 SA **3 Claims**

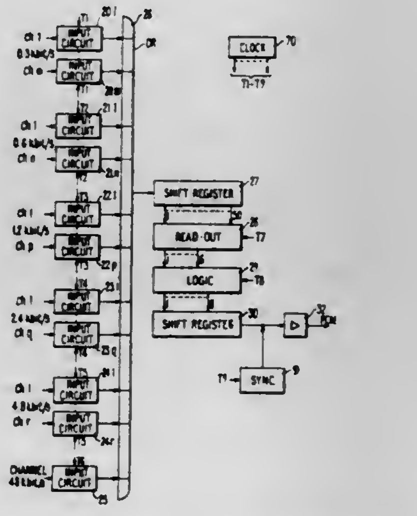
The artificial speech initiating electrical signal is in the form of periodic triangular vibrations or of a noise signal. The signal is selectively applied through a coordinate control matrix to input or excitation points of a conventional speech synthetizing potential field device which distributes the potentials of the signal along a number of output electrodes. Each of the electrodes is connected with a band-pass filter, respectively, and the output spectral portions are combined into the shaped spectrum of the desired articulated sound.



3,652,802
METHOD OF TRANSMITTING DATA OVER A PCM COMMUNICATION SYSTEM

Arnold Albert Schellenberg, Wettswil, Switzerland, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,645
Claims priority, application Switzerland, Dec. 11, 1968, 18449/68
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BS **6 Claims**



Either one data channel having a high data rate, or several data channels of the same or mixed lower data rate or rates are transmitted in a channel of a TDM-PCM system having a high data rate. The data transmission is performed in synchronism with the PCM system. This is accomplished by having the data frame of the lower data rates related by a multiple to the PCM frame and by adding bits to the data code words to cause equality between the bits of the data code words and the bits of the PCM code words. Further the data is stored in a buffer store, where the bit addition is accomplished, and is read out continuously in the proper channel time slot of the PCM system. To protect against false data frame synchronization due to data code words simulating the data frame synchronization signal, the added bits of certain of the data code words are employed to form a data frame synchronization code word. It is taught herein that conversion from binary coded bits to binary coded ternary code words provides an advantage in transmission of data in a PCM system.

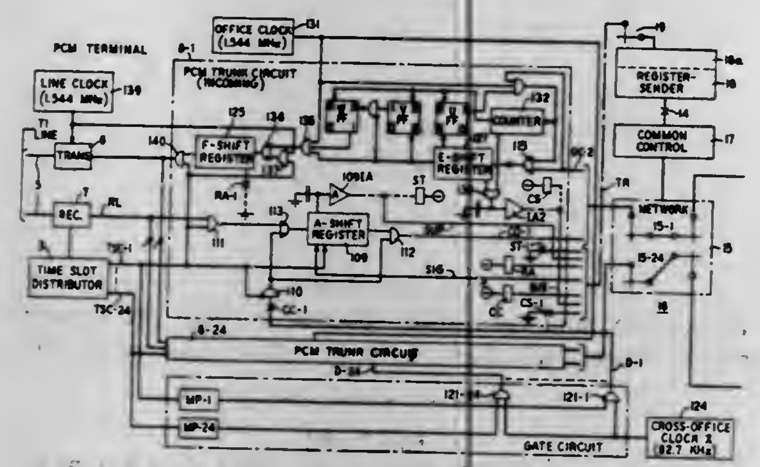
3,652,803
SWITCHING OF TIME DIVISION MULTIPLEX LINES THROUGH TELEPHONE CENTRAL OFFICES

Amos Edward Joel, Jr., South Orange, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 30, 1970, Ser. No. 59,532

Int. Cl. H04j *3/00*

U.S. Cl. 179—18 J **9 Claims**



The communications channels or time slots of time division multiplex lines are enabled to be switched through a conventional common control telephone switching office by providing each line with a plurality of digital trunks, one for each time slot in a frame, extracting call signaling information from the time slots and establishing cross-office connections for each digital trunk. To avoid excessive crosstalk, the contents of each time slot, registered in its respective digital trunk, is outpulsed cross-office at a pulse repetition rate less than the characteristic rate of the time division multiplex line but in a time interval substantially less than the interval occupied by a complete frame of time slots.

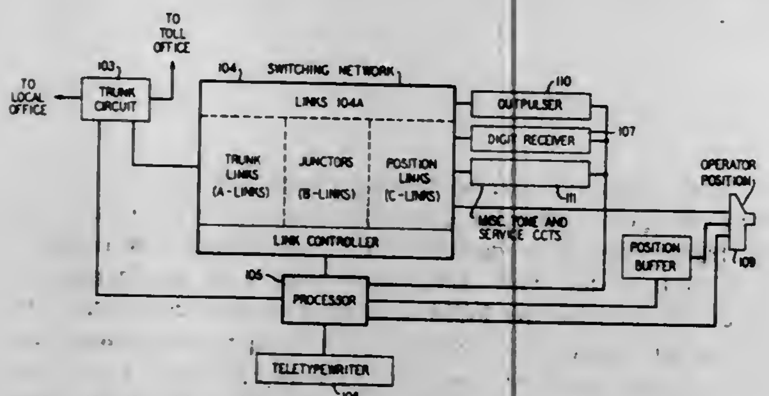
3,652,804
MAINTENANCE BUSY LINK MAP MARKING IN A STORED PROGRAM CONTROLLED SWITCHING SYSTEM

William K. Comella, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 24, 1969, Ser. No. 869,122

Int. Cl. H04q *3/54*

U.S. Cl. 179—18 ES **12 Claims**



A stored program processor controlled switching system is disclosed wherein links of the switching network are busied for both maintenance and communication purposes. The busy or idle state of a link is recorded in a processor link map. A separate maintenance map records the particular links which are busy for maintenance purposes. When a link is made maintenance busy, a link map work defining a link group containing that link is marked with an index to a maintenance map word which contains information as to which link of the link group is maintenance busy. An audit program periodically checks the link map with the actual communication paths through the network and is directed to the proper maintenance map word so that it can reconcile discrepancies between the link map and the communication paths through the network.

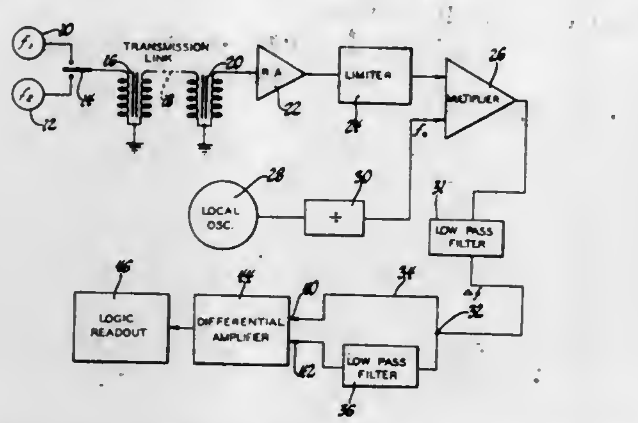
3,652,805
BINARY FREQUENCY IDENTIFICATION SYSTEM

Daniel A. Wisner, Detroit, Mich., assignor to Information Control Systems, Inc., Ann Arbor, Mich.

Filed Oct. 10, 1969, Ser. No. 865,354

Int. Cl. H04m *1/50*

U.S. Cl. 179—84 VF **7 Claims**



A binary frequency identification system in which an input signal is simultaneously applied to two channels, one of which includes a low-pass filter selected to attenuate only the higher of the two possible input signal frequencies. The channels are connected to respective inputs of a differential amplifier such that the low frequency input signal produces a small differential output and the high frequency signal produces a large differential output. Logic levels are generated in response to the outputs of the differential amplifier.

3,652,806
TRANSPORTABLE TELEPHONE EXCHANGE APPARATUS

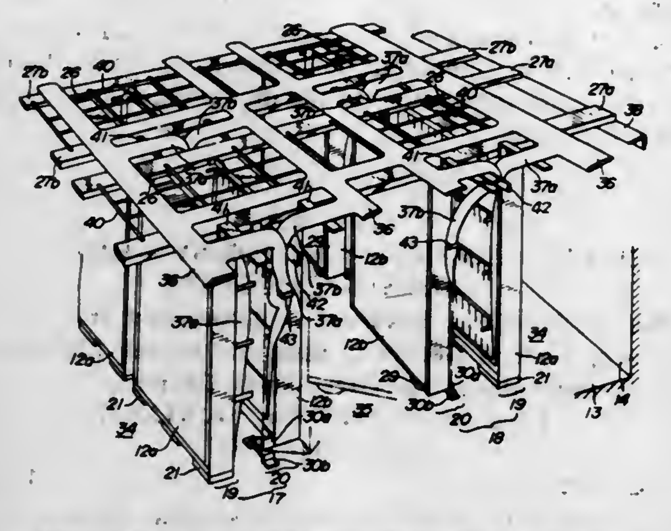
Norihiko Nakagami, Matsuyama-shi; Yasuyuki Tanaka; Katsuhiro Kotaka, and Masamitsu Seki, all of Yokohama, Japan, assignors to Hitachi, Ltd. and Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed July 11, 1968, Ser. No. 744,003

Claims priority, application Japan, July 14, 1967, 42/45037

Int. Cl. H04m *1/00*

U.S. Cl. 179—99 **1 Claim**



A transportable telephone exchange apparatus that can be moved to a district to deal with a temporary shortage of subscriber lines in that district. In the apparatus, a row of stationary bays and a row of movable bays are arranged in a back-to-back relationship with each other to form a bay block, and there are at least two bay blocks in which the movable bays in the different rows face each other while the stationary bays face the side walls of the casing of the apparatus so as to define at least two maintenance passages of sufficient width within the apparatus.

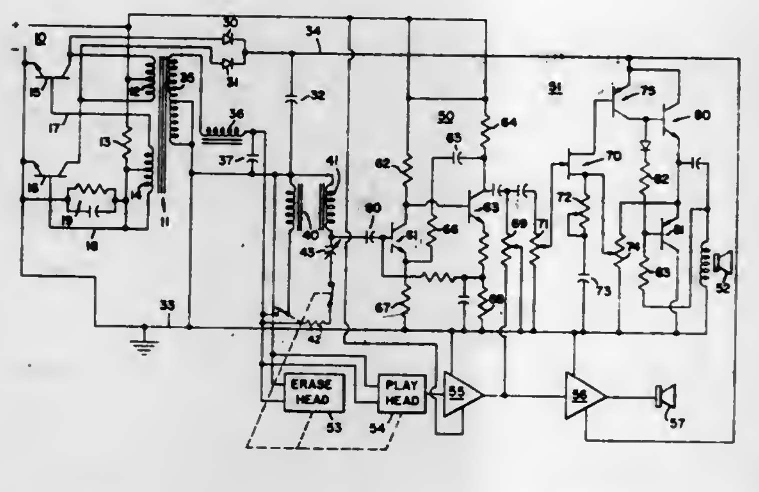
3,652,807
MAGNETIC TAPE RECORDING AND PLAYBACK SYSTEM DESIGNED FOR LOW VOLTAGE DC POWER SOURCES

Robert A. Kusich, Walnut Creek, Calif., assignor to Wesley C. Keys; Wesley G. Schirman; Milton C. Johnson and Audio Research Manufacturing Co., San Francisco, Calif.

Filed Apr. 2, 1970, Ser. No. 25,071

Int. Cl. G11b *5/44*

U.S. Cl. 179—100.2 R **8 Claims**



A magnetic tape recording and playback system designed to be powered from low voltage DC sources includes its own integral power supply that supplies a high voltage alternating output of a frequency of 30 kHz. to 100 kHz. to drive the bias and erase circuits and also supplies a DC voltage higher than the DC source voltage for powering the pre-amplifiers and power amplifiers in the system. It is particularly adaptable to systems employing integrated circuits (ICs) in the amplifier circuits, such as are now being sold for installation in automobiles.

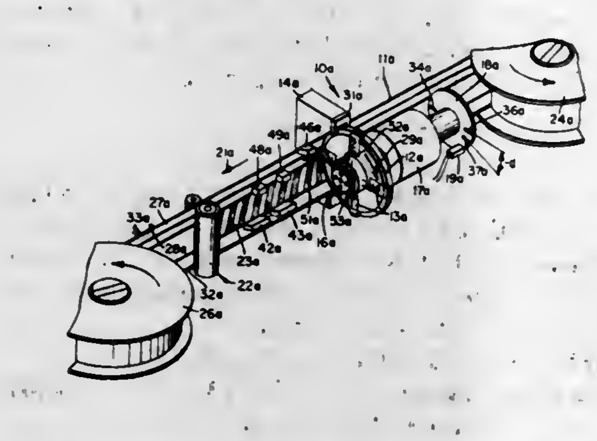
3,652,808
APPARATUS AND METHOD FOR REVERSE RECORDING A MASTER TAPE FOR CONTACT DUPLICATION OF MAGNETIC TAPES

Daniel David Esterly, Fremont, and Larry Michael Jacob, Redwood City, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Nov. 20, 1969, Ser. No. 878,512

Int. Cl. G11b *5/86, 15/44*

U.S. Cl. 179—100.2 E **13 Claims**



In a wideband, transverse scan magnetic tape recording system, such as used for video signals, a standard transport is modified for recording high resolution and magnetically durable master tapes to be used in making multiple copies thereof by a contact duplicating process in which a blank tape is brought into face-to-face contact with the master tape. In particular, the transport for recording the master tape is arranged to record the transverse magnetic tracks in a pattern having a reflected or mirror image relationship with the tracking format carried by tapes adapted for playback on a standard transverse scan transport. The contact duplicate of the master thus receives the proper magnetic image for playback on standard machines. The modifications which are made to the standard recording mechanism are such that a single transport unit may be employed for recording of the master tape, playback of the contact duplicate tapes made therefrom, or recording and playback of other standard tapes, by interchanging a few component parts and making certain minor adjustments to the standard unit depending on the desired use.

3,652,809
SYSTEM FOR REPRODUCING MECHANICALLY STORED SIGNALS INCLUDING CARRIER HAVING DEFORMABLE MEANS COACTING WITH PRESSURE-SENSITIVE PICKUP MEANS

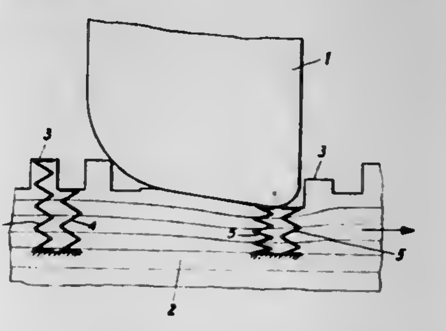
Gerhard Dickopp; Hans-Joachim Klemp; Horst Redlich, and Eduard Schuller, all of Berlin, Germany, assignors to Telefunken G.m.b.H., Berlin and Teldec Telefunken-Decca Schallplatten G.m.b.H., Hamburg, Germany

Filed Feb. 12, 1969, Ser. No. 798,709

Claims priority, application Germany, Feb. 13, 1968, P 15 74 489.5

Int. Cl. G11b *3/10*; **H04r** *15/00, 17/00*

U.S. Cl. 179—100.4 R **25 Claims**



Apparatus for reproducing a mechanically recorded signal which includes a storage element and a signal pickup device. The signal is mechanically recorded on the storage element by means of a series of deformations in the surface thereof. According to the invention, the pickup device is arranged to apply a compressive force against these deformations and to sense the variations in this compressive force resulting from relative motion between the pickup device and the surface of the storage element.

3,652,810
MICROPHONE HAVING A PROTECTIVE CAP

Bernhard Weingartner, Mauerberg, Austria, assignor to Akustische U. Kino-Gerate Gesellschaft m.b.H., Vienna, Austria

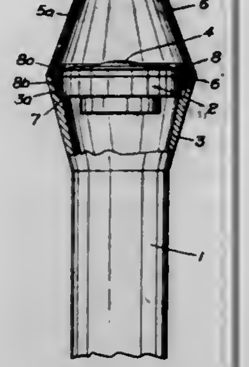
Continuation of application Ser. No. 542,419, Apr. 13, 1966, now abandoned. This application May 1, 1970, Ser. No. 31,863

Claims priority, application Austria, Apr. 23, 1965, A3742/65

Int. Cl. H04r *1/08*

U.S. Cl. 179—184 **9 Claims**

A microphone includes a microphone housing having a sound transducer therein. A cover of substantially cup-shaped configuration fits over one end of the housing above the transducer and it is made of a material which comprises a plurality of particles which are sintered together or fused together in a manner to define tortuous passages therebetween and to define hollow spaces remaining between the particles, and which hollow spaces are interconnected, thus forming irregular channels which assure the sound permeability of the cap but are impenetrable by dust or other air pollutants.



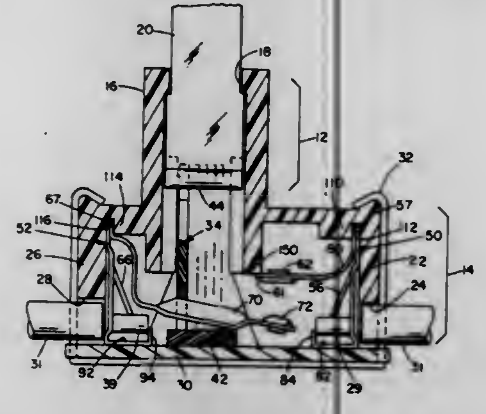
3,652,811
LAMINATED LOCKING SLIDER MULTIPLE CIRCUIT PUSHBUTTON SWITCH ASSEMBLY WITH IMPROVED CONNECTORS FOR PLUG-IN WIRES

Charles Azel Barney, Stow, Mass., assignor to Ark-Les Switch Corporation, Watertown, Mass.

Filed Aug. 17, 1970, Ser. No. 64,373

Int. Cl. H01h *9/26*

U.S. Cl. 200—5 EB **7 Claims**



A pushbutton actuated multiple slide switch adapted for use with push-in wire connectors, having a housing providing two series of discrete openings and containing a plurality of fixed and cooperating movable integral terminal elements adjacent the openings, each element comprising a retaining portion providing a resilient locking tongue and a cooperating contact portion opposed to the tongue for retaining a conductor wire inserted through the opening.

3,652,812
TAP CHANGER SWITCH WITH RADIAL PRESSURIZED MOVABLE CONTACT STRUCTURE

Donald J. Ristuccia, Athens, Ga., assignor to Westinghouse Electric Company, Pittsburgh, Pa.

Filed Sept. 28, 1970, Ser. No. 75,916

Int. Cl. H01h *19/56*

U.S. Cl. 200—8 R **10 Claims**

A tap changer switch for mounting within the casing of an electrical transformer, and operable from outside the casing. An insulating base member carries a plurality of stationary contacts, adapted for connection to the transformer winding, and a shaft member is disposed through an opening in the insulating base member such that it extends outwardly from both sides thereof. One outwardly extending portion of the shaft member carries a movable contact assembly which selectively shorts two adjacent stationary contacts, and the other outwardly extending portion of the shaft member is adapted to extend through the wall of the casing of the associated transformer, and it includes a handle for rotating the shaft and selecting the two stationary contacts to be shorted.

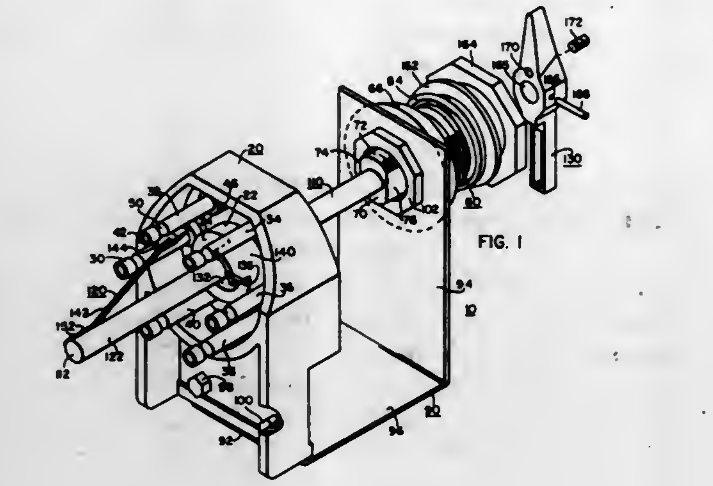


FIG. 1

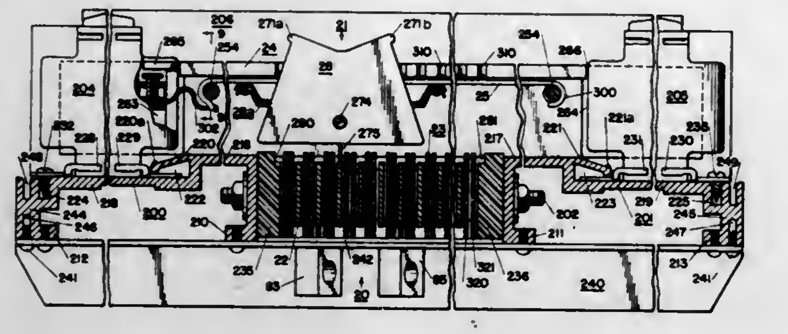
3,652,813
CORDLESS ELECTRIC CROSS CONNECT PANEL WITH IMPROVED RECIPROCATING CONTACT ASSEMBLY

Ariel R. Davis, 3476 Fleetwood Drive, Salt Lake City, Utah

Filed Jan. 13, 1971, Ser. No. 106,085

Int. Cl. H01h *15/00*

U.S. Cl. 200—16 D **13 Claims**



A cross connect or patch panel has a bus bar supply section, a cross connect load section and a support frame for the supply and load sections. The thin bus bars of the supply section are spaced by insulating strips and thin separators between the strips and bars. The support frame has two supports extending longitudinally along opposite edges of said supply section. The load sections have individual modules with load rails fastened thereto. Circuit breakers are, respectively, attached to opposite ends of the modules and the supports. The supports also function as heat sinks. The load rails of the modules are respectively connected to the circuit breakers by flexible leads and may be flat or L or U shapes. The modules have notches corresponding to respective bus bars and the contact assemblies have indexing keys fitting in the slots so that the conductive blades of the contact assemblies are definitely fitted in the desired grooves.

3,652,814
RECIPROCATING AND ROTATABLE CAM ACTUATING MEANS FOR ELECTROMECHANICAL TIMERS

Kozaburo Kanazawa; Eiji Kawakami, both of Tokorozawa, and Yasuo Kamiyama, Yokohama, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

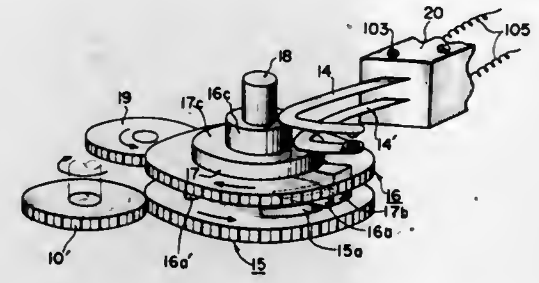
Filed May 22, 1970, Ser. No. 39,751

Claims priority, application Japan, May 23, 1969, 44/40075

Int. Cl. H01h *43/18*

U.S. Cl. 200—33 B **2 Claims**

In a timer switch for a timepiece the two spring biased contacts are maintained in spaced relation by means of two concentric rotatable cam members which normally bear against the flat upper surface of a timing plate having spaced-apart slots therein. Upon rotation of the cam means by the conventional time keeping gear train, the cam supporting the uppermost spring contact will drop into the spaced slots first allowing the upper spring contact to move into engagement with the lower spring contact to close the switch. Continued movement of the time keeping gear train allows the second cam supporting the lower spring contact to drop into the slot means and allow the lower spring contact to separate from the upper spring contact. Continued rotation of the cams will lift both of the cams simultaneously out of the spaced slots to restore the spring contacts to their original position while maintaining them in spaced-apart relation.



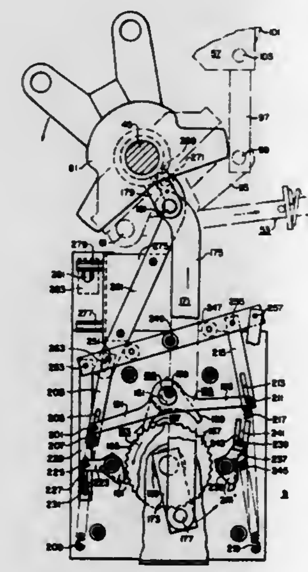
3,652,815
CIRCUIT INTERRUPTER WITH MOTOR OPERATED SPRING CHARGING MEANS INCLUDING TWO RATCHETS AND TWO PAWLS

Norman Davies, Trafford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 14, 1971, Ser. No. 106,330

Int. Cl. H01h *3/30, 3/34*

U.S. Cl. 200—153 SC **11 Claims**



A motor operated circuit interrupter comprises an overcenter spring structure operable to a spring-charged closed position to prepare the circuit interrupter for a spring opening operation and to a spring-charged open position to prepare the circuit interrupter for a spring closing operation. Releasable latch means latches the overcenter spring structure in both of the spring charged positions. A motor operating mechanism comprises ratchet means operated by a motor and operable to operate the circuit interrupter to both of the spring-charged positions. The ratchet means comprises two ratchets and two pawls, one pawl and ratchet set engageable to charge the spring in one position, and the other pawl and ratchet set engageable to charge it in its other position.

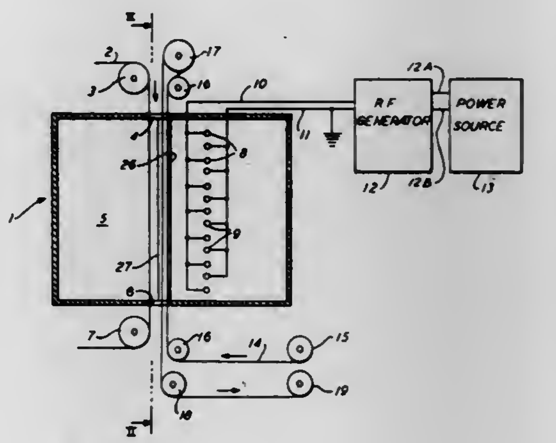
3,652,816
SELF CLEANING DIELECTRIC HEATER

Mark Preston, New Ipswich, N.H., assignor to Litton Business Systems, Inc., New York, N.Y.

Filed Apr. 13, 1970, Ser. No. 27,615

Int. Cl. H05b *5/00, 9/06*

U.S. Cl. 219—10.61 **4 Claims**



High frequency heating apparatus including means for generating a high frequency electromagnetic field, means for exposing a material to be heated to said electromagnetic field, a barrier web or sheet between said electrode means and said material so as to collect matter expelled by the material as it is being heated, means for continuously moving the barrier so as to continuously remove the expelled matter from the apparatus, the barrier having a low dielectric loss factor so as to not consume field energy.

3,652,817
ELECTRICALLY HEATED ROLLER ARRANGEMENTS

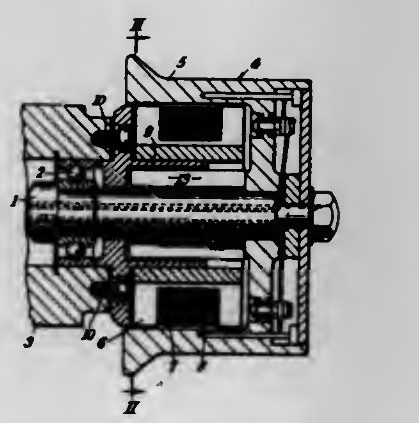
Joseph France, Harwood, near Bolton, England, assignor to T.T.M. (Research) Limited, Oldham, Lancashire, England

Filed Dec. 14, 1970, Ser. No. 97,970

Claims priority, application Great Britain, Dec. 15, 1969, 61,021/69

Int. Cl. H05b *5/00, 9/06*

U.S. Cl. 219—10.61 **8 Claims**

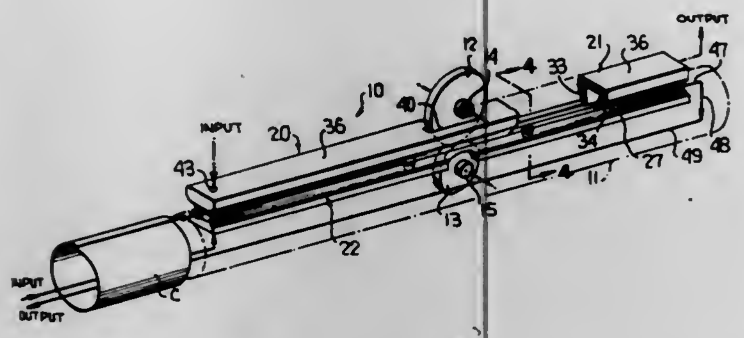


An electrically heated roller has an electric coil mounted in the core member of the assembly. The core has a plurality of slots extending inwardly from the periphery of the core member in a radial direction with respect to the coil, and parallel to the axis of the coil. The slots serve to reduce local eddy currents, and to provide air cooling passages.

3,652,818
INERT ATMOSPHERE SEAM WELDER

Paul M Erlandson, Palos Park; Anton A. Aschberger, Oak Lawn; Donald J. Roth, Chicago Heights; John T. Cary, Markham, and George F. Bartimes, Chicago, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed July 31, 1970, Ser. No. 59,938
Int. Cl. B23k *9/16*
U.S. Cl. 219—72 **12 Claims**

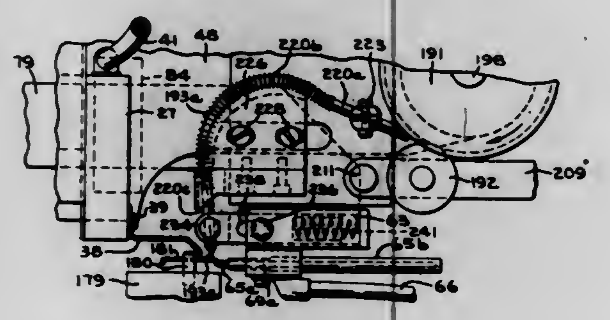


This disclosure relates to a resistance seam welder for welding lapped sheet material, particularly can bodies, and includes means for effecting inert gas flow between roller electrode surfaces and the interface of the lapped can body edge portions, the flow effecting means being in the form of a manifold into which is introduced inert gas while flexible sealing means are provided for sealingly contacting opposite surfaces of the can body edge portions. In one embodiment of the invention the manifold is formed of two hollow bodies having pairs of walls in sealing contact with at least one pair of the walls being flexible to permit the passage of the lapped edges therethrough as the can body blank is moved along an associated horn. In an alternative embodiment the walls are relatively rigid and each carries flexible seals to permit the passage of can body blanks therethrough. In a final embodiment, the manifold is defined by a plurality of radial ports formed in the roller electrodes with each electrode carrying a pair of annular seals for localizing the inert gas at the seam as it is being welded.

3,652,819
SOLDERING APPARATUS WITH VARIABLE FEED

Archie F. Kerr, Noblesville, and Karl R. Lagler, Indianapolis, both of Ind., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Jan. 7, 1971, Ser. No. 104,671
Int. Cl. B23k *3/06*
U.S. Cl. 219—85 **15 Claims**

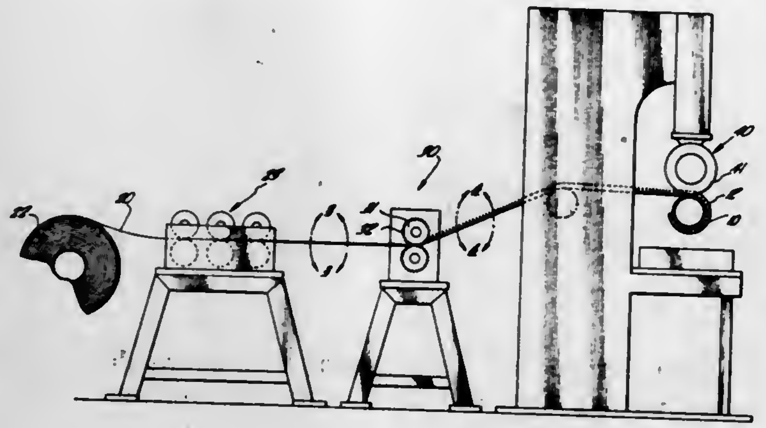


A soldering apparatus comprising automated mechanisms for positioning solder heating electrodes in contacting relationship with successively aligned areas of piece parts to be soldered, and a solder feed mechanism including a resilient, energy storing portion for advancing solder, in wire form, to the heated areas at a rate which may vary so as to continuously match the melt-off rate of the solder.

3,652,820
METHOD OF MANUFACTURING A TWISTED SEGMENTED FINNED TUBE

Robert Carl Boose, Pryor, Okla., assignor to Escoa Fintube Corporation, Pryor, Okla.

Filed Jan. 26, 1970, Ser. No. 5,782
Int. Cl. B23k *9/02, 11/02, 11/04*
U.S. Cl. 219—107 **4 Claims**

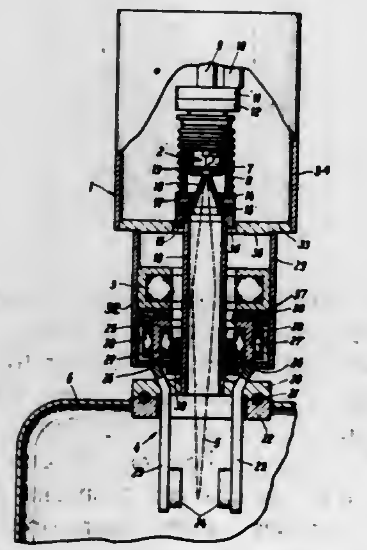


A method of manufacturing a twisted segmented finned tube is disclosed in which the method comprises the steps of feeding a continuous strip of flat coil stock from a roll onto a three-stage roll former which progressively bends the one edge of the flat stock to form an L-shaped strip having a major fin portion and a continuous base portion oriented perpendicular thereto. The L-shaped strip is then fed into an apparatus which simultaneously cuts and twists the major fin portion of the stock to form segmented twisted fins thereon. The stock is then helically wound onto a tube with the base portion being continuously welded thereto by a weld wheel.

3,652,821
ELECTRON GUN FOR HEATING MATERIALS IN AN EVACUATED CONTAINER

Walter A. Dietrich, Hanau am Main, and Helmut G. M. V. Dellery, Grossauheim am Main, both of Germany, assignors to Leybold-Heraeus Verwaltung GmbH, Cologne-Bayental, Germany

Filed Feb. 25, 1970, Ser. No. 14,008
Claims priority, application Germany, Nov. 6, 1967, P 19 55 846.4
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 EB **2 Claims**

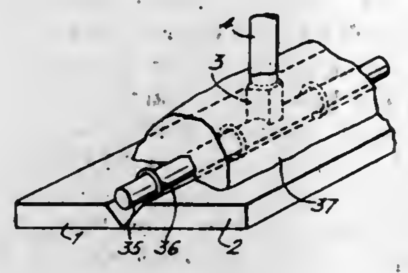


An electron gun for heating materials in vacuo, including an electron beam source, an electron lens, a deflector, yoke means connecting the deflector and winding means.

3,652,822
ELECTRODE HOLDER FOR CONTINUOUS SUBMERGED SELF-ARC WELDING

Hajime Nakamura, Tokyo, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 18, 1970, Ser. No. 47,442
Claims priority, application Japan, June 24, 1969, 44/49805
Int. Cl. B23k *9/18*
U.S. Cl. 219—130 **4 Claims**

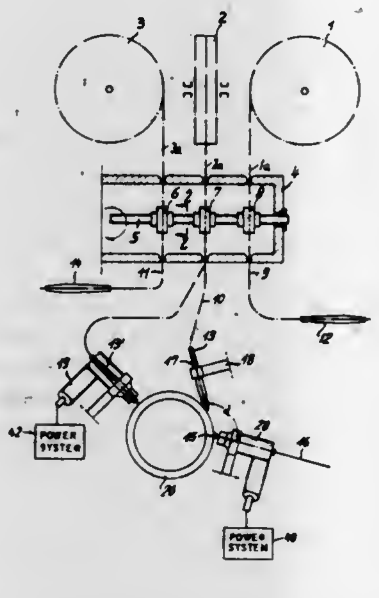


A contact member holder for continuous submerged self-arc welding in which the contact member is movably mounted so as to press against a welding electrode when extended and to move away from the welding electrode when a trigger wire positioned forwardly of the electrode is burnt out by the welding heat.

3,652,823
INTERCHANGEABLE PLURAL ELECTRODE GUIDES FOR ELECTRIC ARC WELDING

Kurt Clemens, Dieringhausen, and Hans Klein, Bunghausen, both of Germany, assignors to L. & C. Steinmuller GmbH, Gummersbach Rhld, Germany

Filed Oct. 6, 1969, Ser. No. 864,032
Claims priority, application Germany, Oct. 29, 1968, P 18 05 737.9
Int. Cl. B23k *9/00*
U.S. Cl. 219—130 **8 Claims**

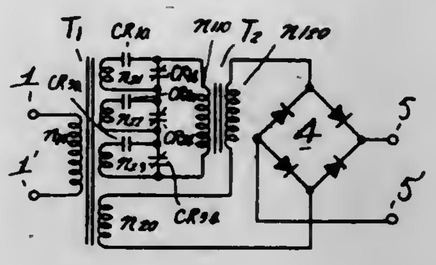


A device for the continuous mechanical welding of hollow bodies such as tubes includes a mounting means for one or more welding nozzles, and a plurality of welding wire feed nozzles which may be interchangeably engaged in the mounting means in a position such that they may feed the welding wire directly to the workpiece at a desired angular orientation. Each tubular feed nozzle is associated with a supply of welding wire from a reel supply and means are provided for feeding the welding wire to the associated nozzle. The wire feed nozzles can be used selectively as cold wire or as current nozzles depending on the welding method which is employed.

3,652,824
DC ARC WELDER

Toshiyuki Okada, Osaka, Japan, assignor to The Osaka Transformer Co., Ltd., Osaka, Osaka-Prefecture, Japan

Filed Dec. 9, 1969, Ser. No. 883,447
Claims priority, application Japan, Dec. 13, 1968, 43/90932
Int. Cl. B23k *9/01*
U.S. Cl. 219—131 WR **1 Claim**

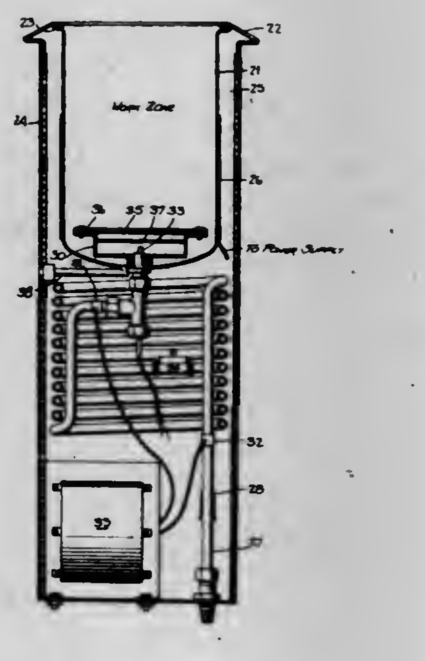


A DC welding system wherein DC power is applied to an electrode through a rectifier and the output of the rectifier is controlled by a transformer tap-changing system supplying power from a supply transformer through a second transformer in series with the rectifier. The tap changing system is controlled by selectively applying power to controlling relay coils through a diode matrix.

3,652,825
LAMINAR GAS FLOW RINSING AND DRYING VESSEL

Howard M. Layton, Ossining, N.Y., assignor to Interlab Inc., Pleasantville, N.Y.

Original application Apr. 30, 1968, Ser. No. 725,408, now Patent No. 3,543,776, dated Dec. 1, 1970. Divided and this application May 22, 1970, Ser. No. 39,660
Int. Cl. F27d *7/02*
U.S. Cl. 219—373 **5 Claims**



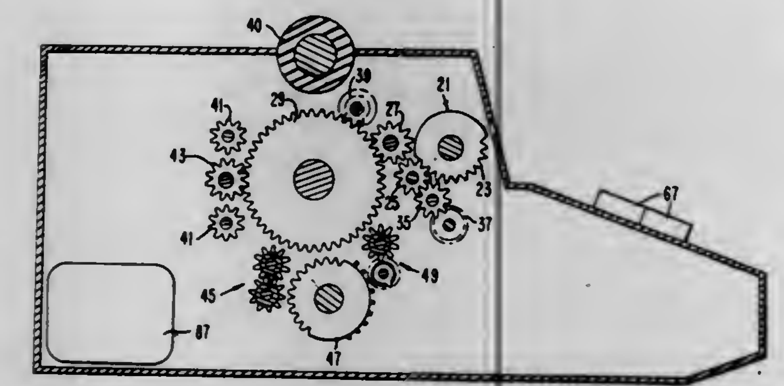
A process vessel for rinsing or drying small parts with an inert gas, the vessel being formed by an open tank having a work zone on which the parts are treated and a container therebelow covered by a porous membrane to serve as a flow impedance. The gas is fed into the container which acts as a pressure chamber, the gas passing through the impedance into the work zone to produce a laminar flow therein.

3,652,826

BINARY ENTRY APPARATUS FOR A CALCULATING MACHINE

Rene Chekroun, Montrouge, and Jean-Claude Ragot, Sevran, both of France, assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 9, 1970, Ser. No. 1,627
Claims priority, application France, Dec. 19, 1969, 6917808
Int. Cl. G06c *9/00, 17/00*
U.S. Cl. 235—61 PE **29 Claims**



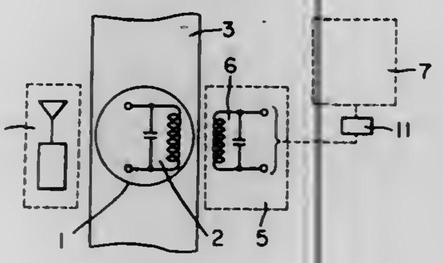
Decimal values are entered in a selector carriage of a calculating machine by means of a driving shaft, a plurality of friction clutches, and the controlled activation of a driven shaft and a gear wheel associated therewith. Control of the driven shaft and its associated gear wheel is provided by means of a plurality of slides responsive to key depression, four of said slides being separately activatable in the entry of decimal values 1, 2, 4 and 8 and activatable in selected combinations in the entry of values 3, 5, 7 and 9. A fifth slide provides for the controlled activation of a gear wheel associated with the driving shaft each time a key is depressed, to thereby effectuate a one unit translation of the selector carriage preparatory to the entry of the next lower order digit of the amount being entered.

3,652,827

DISCRIMINATING DEVICE APPLICABLE FOR UNMANNED TICKET EXAMINATION, AUTOMATIC SLOT MACHINE AND THE LIKE

Shigejiro Inoue, Himeji, and Masayuki Iguchi, Tatsuno, both of Japan, assignors to Kabushiki Kaisha Kokuei Kikgi Seisakusho, Himeji-shi, Hyogo-ken, Japan

Filed Apr. 15, 1970, Ser. No. 28,714
Int. Cl. G06k *7/01*
U.S. Cl. 235—61.11 F **3 Claims**



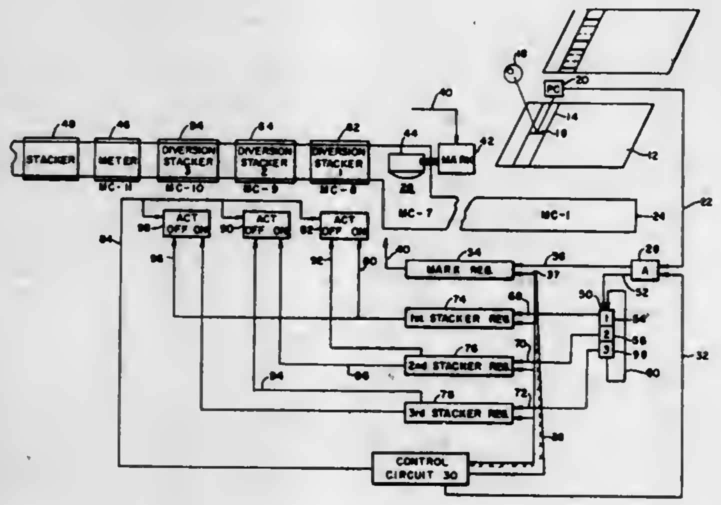
A discriminating and identifying device which is simple in its structure and permits no forgery in the cases when said devices are utilized for unmanned ticket examination apparatus, automatic slot machines and the like, said device comprising a member to be discriminated, an electric oscillating circuit provided in said member, a passage adapted to pass said member therethrough, and at least one detecting means which is provided in the vicinity of said passage and which cooperates with said oscillating circuit so as to produce an electric signal adapted to operate an assorting mechanism included in said apparatus or machine.

3,652,828

SELECTIVE INSERTION MACHINE HAVING SELECTIVE DOCUMENT MARKING

Eugene Sather, Washington; Lester H. Stocker, Phillipsburg, both of N.J., and Kenneth A. Hams, Easton, Pa., assignors to Bell and Howell Company, Phillipsburg, N.J.

Continuation of application Ser. No. 859,603, July 17, 1969, now Patent No. 3,570,840, which is a division of application Ser. No. 657,721, July 14, 1967, now Patent No. 3,484,100. This application Oct. 20, 1969, Ser. No. 867,701
Int. Cl. G06k *7/10*
U.S. Cl. 235—61.11 E **13 Claims**



A control document for an insertion machine has a mark placed on a predetermined portion thereof to indicate that the insertion material associated with that particular control document is to be mailed to an addressee having a different ZIP Code from the immediately preceding packet of documents on the insert track. This mark is sensed and a signal representative thereof is delivered to a shift register which controls a marking device for marking the envelope into which the related packet of documents is stuffed.

In an alternative embodiment, ZIP Code change signals are also delivered sequentially to stacking shift registers which control integral stackers for diverting the various document packets from the insert track. In this respect, only one such diversion stacker is operative at any given time because a means is provided for sequentially activating the diversion stackers in response to sequential ZIP Code change signals.

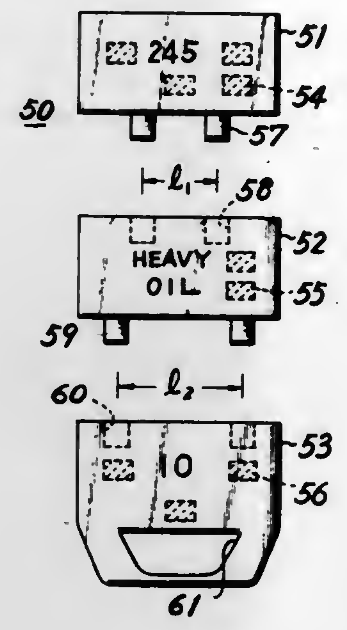
3,652,829

DISCRIMINATION CARD FOR CARD READER

Ken Hayakawa, Yokohama, and Mitsuaki Tamada, Sagamihara, both of Japan, assignors to Tokico Ltd., Kawasaki-Kanagawa-Ken, Japan

Filed July 2, 1970, Ser. No. 51,774
Claims priority, application Japan, July 3, 1969, 44/52942; Oct. 18, 1969, 44/99288
Int. Cl. G06k *19/04*
U.S. Cl. 235—61.12 M **5 Claims**

A discrimination card for card reader has plural and different information codes incorporated therein. The information codes can be variably and desirably set up in one card. The discrimination card cooperates with a single card reader



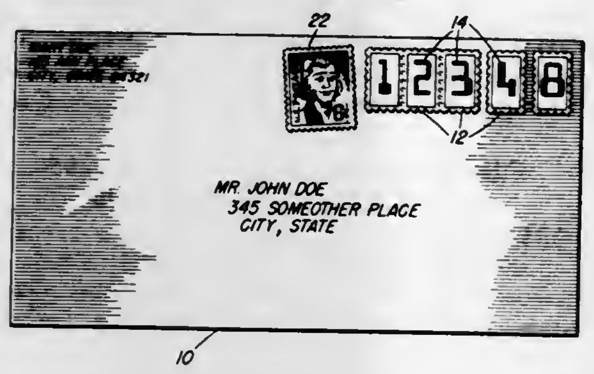
which is capable of reading each information code and has a single card insertion slot.

3,652,830

MAGNETICALLY OR ELECTROSENSITIVE INKED NUMERALS IN PLACE OF STANDARD POSTAGE STAMPS

Henry F. Kessler, 1125 Sulphur Spring Road, Baltimore, Md.

Filed Sept. 17, 1969, Ser. No. 858,752
Int. Cl. G06k *19/06*
U.S. Cl. 235—61.12 N **5 Claims**



Stamps with a machine readable numeral component of the zip code are provided. Purchased and used as postage, these stamps are applied to the mail in plurality for optimum machine sorting by the combinations thus made. The sender in this way provides for complete machine handling at the post office.

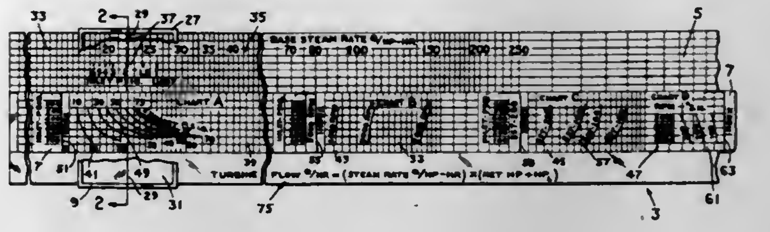
3,652,831

CALCULATING DEVICE FOR ESTIMATING TURBINE STEAM RATES

David M. Lehmann, Narberth, Pa., assignor to Worthington Turbine International, Inc., Wellsville, N.Y.

Filed Jan. 8, 1971, Ser. No. 104,993
Int. Cl. G06g *1/02;* **G06c** *3/00*
U.S. Cl. 235—70 R **5 Claims**

A slide rule-type calculating device for estimating steam consumption in single curtis stage steam turbines. The device includes a casing having a steam rate scale, a slide member movable endwise in the casing and carrying a series of graphical plots indicative of steam rate variation with respect to selected operating variables, and a hair-line slide. Appropriate displacement of the slide member and hair-line slide serves to effectively combine coordinate values on said



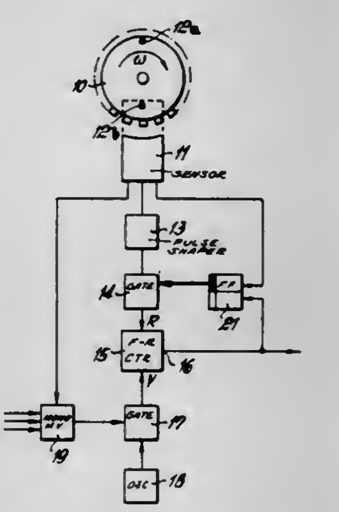
plots to yield a final steam estimate readable on the steam rate scale.

3,652,832

ARRANGEMENT FOR CONTROLLING PROCESSES WHICH ARE DEPENDENT UPON THE ANGULAR POSITION OF A ROTATING MEMBER

Gunther Baumann, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 26, 1970, Ser. No. 14,513
Claims priority, application Germany, Feb. 26, 1969, P 19 09 525.1
Int. Cl. G06m *1/274, 3/14*
U.S. Cl. 235—92 MP **11 Claims**



In a motor vehicle a rotating disk has marking which are sensed, converted to pulses and applied to a counter which has been reset. The counter furnishes a control signal when the counted number of pulses is equal to the preset number. The counter is preset by applying pulses from an oscillator during the time a monostable multivibrator is in the unstable state. This depends upon at least one operating parameter of the motor vehicle.

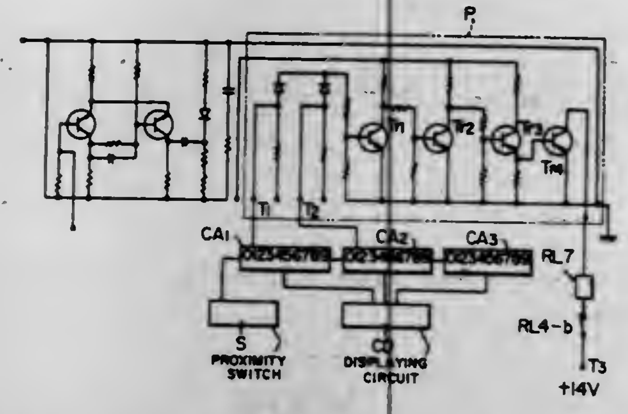
3,652,833

SHEET COUNTER CONTROL CIRCUIT

Hideto Shigemori, and Akio Yamamoto, both of Tokyo-to, Japan, assignors to Kabushiki Kaisha Kokuei Kikai Seisakusho, Hyogo-ken and Glory Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed June 23, 1970, Ser. No. 49,020
Claims priority, application Japan, June 30, 1969, 44/51376
Int. Cl. G0bm *9/00*
U.S. Cl. 235—92 SB **4 Claims**

A control circuit for sheet-counting apparatus of the type having a plurality counting heads using vacuum, comprising a plurality of digital counter circuits for supplying a lower or a higher voltage depending on whether the count of the digits included in each of the digital counter circuits does coincide or not with preset values, a comparator circuit receiving voltages from selected digital counter circuits and operating to give an output when any one of the input voltages is of a higher level, a first relay energized when the sheets are counted, and a second relay operated through a contact of the first relay from the output of the comparator circuit, whereby the second relay is energized only after the counting operation of the apparatus is completed and when the counted result does not coincide with the preset value.



3,652,834

SHEET COUNTER

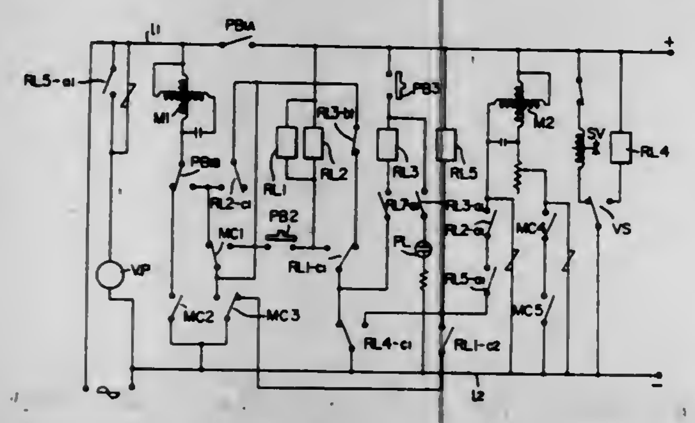
Hideto Shigemori, and Akio Yamamoto, both of Tokyo-to, Japan, assignors to Kabushiki Kaisha Kokuei Kikai Seisakusho, Himeji-shi, Hyogo-ken and Glory Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed June 23, 1970, Ser. No. 49,022

Claims priority, application Japan, June 30, 1969, 44/61241; 44/61242; 44/61243; 44/61244; July 18, 1969, 44/56913

Int. Cl. G06m *9/00*

U.S. Cl. 235—92 SB **5 Claims**



A sheet counter in which sheets such as bills are inserted in a openable holder, and wherein a counting operation is started by depressing a designated button, and upon completion of counting the number of sheets a comparison between a counter value on a counter display and a set pre-value is made, and depending upon the comparison, opening and closing operation of the holder are controlled, thereby to actuate the lamp display, whereafter the counter display is reset; and further the resetting circuit and the vacuum pump operating circuit for said sheet counter are described.

3,652,835

AIRCRAFT GLIDE SLOPE COUPLER SYSTEM

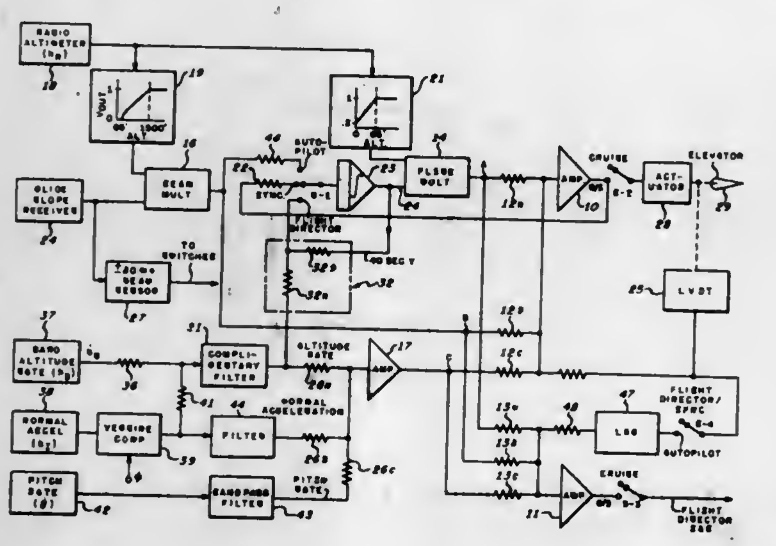
Bernard T. Devlin, and William F. Poland, both of Phoenix, Ariz., assignors to Sperry Rand Corporation

Filed May 14, 1970, Ser. No. 37,073

Int. Cl. G06g *7/78;* **G01s** *1/18*

U.S. Cl. 235—150.22 **14 Claims**

A glide slope coupler adaptable to both Autopilot and Flight Director modes for guiding an aircraft to a landing along a radio defined glide slope beam. An integrator common to both modes effectively memorizes the aircraft descent rate and provides a signal representative thereof for summation with glide slope beam displacement and altitude rate signals in respective amplifiers coupled to drive the pitch actuators and Flight Director Indicator bar. A synchronizing mode is included for coupling the pitch actuator driver amplifier output to the integrator input to obtain a desired descent rate signal while flying in a cruise mode prior to intercepting the glide slope beam. Upon intercepting the beam either the Autopilot or Flight Director mode is activated as chosen by the pilot and the selected system then operates to reduce the beam displacement signal to zero with flight path damping being provided by the altitude rate signal. During the descent the beam displacement signal is modified as a function of altitude to compensate for the convergence of the glide slope beam. At a predetermined flare altitude the beam displacement signal is rendered ineffective and thereafter the integrator output signal is modified as a function of altitude to control the flare in accordance with the memorized value of the descent rate at the commencement of the flare maneuver.



3,652,836

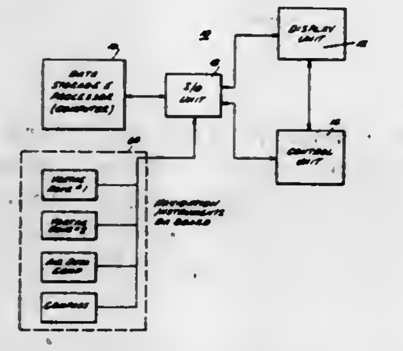
NAVIGATION DIRECTOR SYSTEM

Donald W. Richardson, Woodland Hills; Stanley N. Roscoe, Los Angeles, and Edward Streeter, Woodland Hills, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 22, 1968, Ser. No. 715,205

Int. Cl. G06f *15/50;* **G01s** *7/46*

U.S. Cl. 235—150.26 **55 Claims**



A navigation system is disclosed in which a displayed map is continuously and accurately controlled during flight of an aircraft to display the true relation between the aircraft and the terrain over which it passes. The displayed map is automatically selected from a plurality of stored maps for display, in response to pilot-initiated signals. A cockpit control panel is provided with manually actuable controls for the selection of a start point and a destination which define a direct great circle route therebetween. A route segment indication is displayed of the selected direct route or at a manually-selected offset course. The indication is displayed at a distance from an aircraft symbol which corresponds to the flight path error. A vernier deviation indication is displayed to provide a magnified presentation of the flight error. A series of indicators provides supplementary operating and status data to the pilot. The indicators include a Dead Reckoning indicator which indicates that the system is navigating in a dead reckoning mode, and an Off Chart indicator to indicate that the aircraft position is not on the selected navigation map.

3,652,837

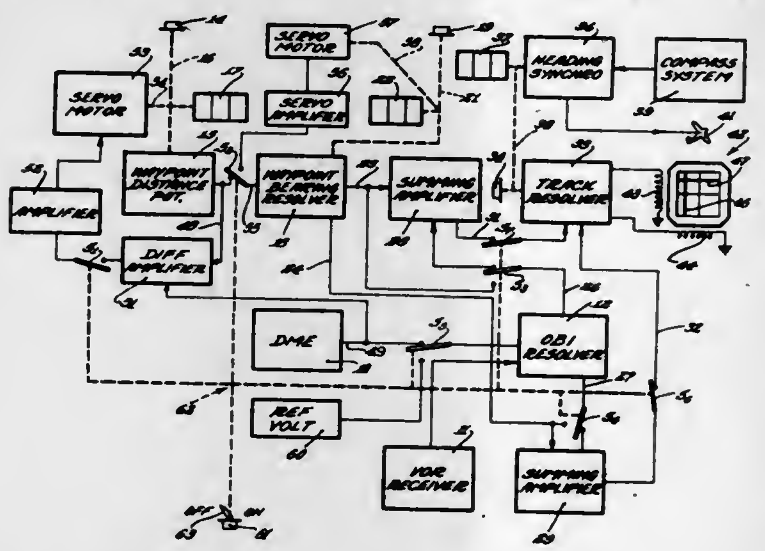
AUTOMATIC WAYPOINT

Earl Stuart Perkins, Oak Brook, Ill., assignor to Butler National Corporation, Oak Brook, Ill.

Filed May 13, 1969, Ser. No. 824,164

Int. Cl. G06g *7/78*

U.S. Cl. 235—150.27 **14 Claims**



An area navigation system which allows a waypoint to be set at any time to determine its bearing and distance from TACAN or VORDME station. When the automatic waypoint circuitry is on the coordinates of the aircraft are indicated in the rho and theta indicators at all times. When the pilot desires to set in a waypoint he can turn off the automatic waypoint circuitry and the area navigation system will operate with the coordinates of the waypoint set in at the time of switching and the position of the aircraft will then be indicated relative to the waypoint at all times.

3,652,838

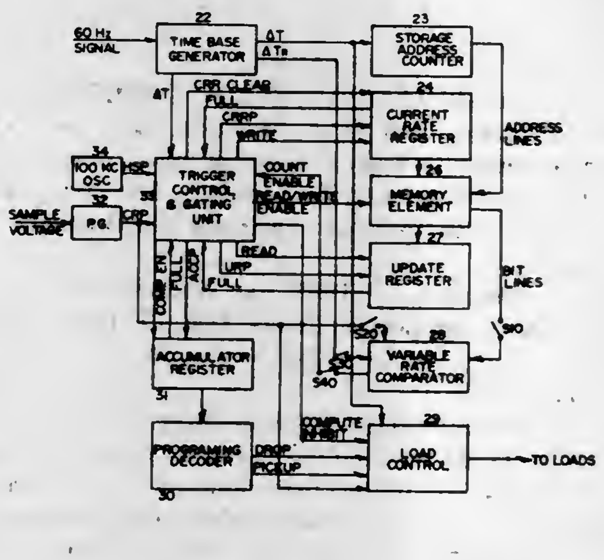
DEMAND AUTOMATED COMPUTER

Vearl Joseph Dillon, Chicago, and Walter M. Threewitt, Carpentersville, both of Ill., assignors to Edac Company, Chicago, Ill.

Filed Mar. 2, 1970, Ser. No. 15,348

Int. Cl. G06f *15/56*

U.S. Cl. 235—151.31 **3 Claims**



A computer and controls system which monitors the application of power or other quantities subject to demand in which increased costs results due to periodic periods of high demand and controls loads on the system so that the cost is minimized while maintaining the desired service. This invention also allows continuous demand monitoring on industrial processes which are necessary for a specific application.

3,652,839

PULSE ALLOTTING SYSTEM OF CURVE TRACING EQUIPMENT

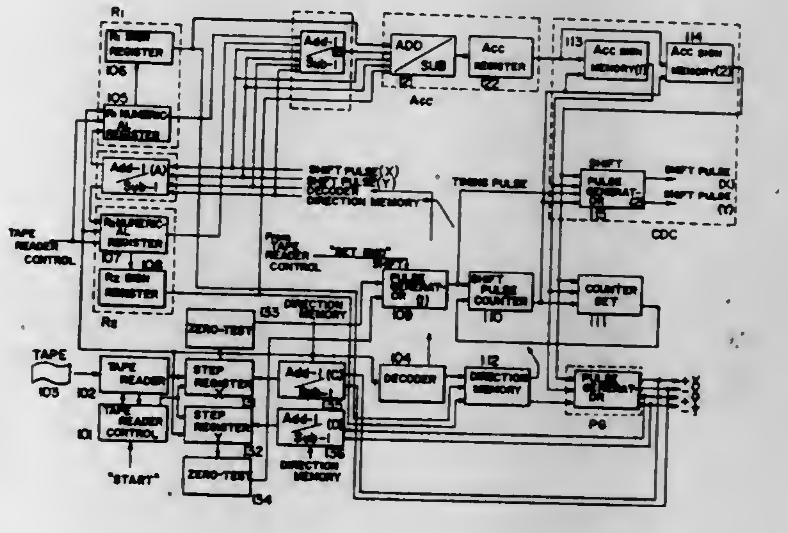
Takasumi Maekawa; Ryoichi Yoshida, both of Tokyo, and Minoru Nishihara, Yokohama, all of Japan, assignors to Toyo Denki Seizo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of application Ser. No. 575,816, Aug. 29, 1966, now abandoned. This application Mar. 6, 1970, Ser. No. 17,277

Claims priority, application Japan, Sept. 7, 1965, 40/54428

Int. Cl. G06f *7/38, 15/46*

U.S. Cl. 235—152 **24 Claims**



A pulse allotting system for use in a pulse allotter of a curve tracing equipment such as a numerical control system, wherein a curve is traced by allotting pulses having components corresponding to X and Y axes. The allotment is based on a series of judgements each of which selects a judging point having coordinates displaced by $(\Delta x/2, \Delta y/2)$ from a point having coordinates x and y and where Δx and Δy are increments of x and y, said point x y being either an initial starting point or a point by which the curve is traced and to judge whether said judging point is situated in a positive region or a negative region of the curve to be traced. The system comprises a means to effect allotment of a series of pulses each of which corresponds to the increment of Δx and Δy along a direction parallel to the X axis or to the Y axis based upon the judgement at said judging point according to whether the corresponding judging point is situated in a positive region or a negative region of the curve to be traced.

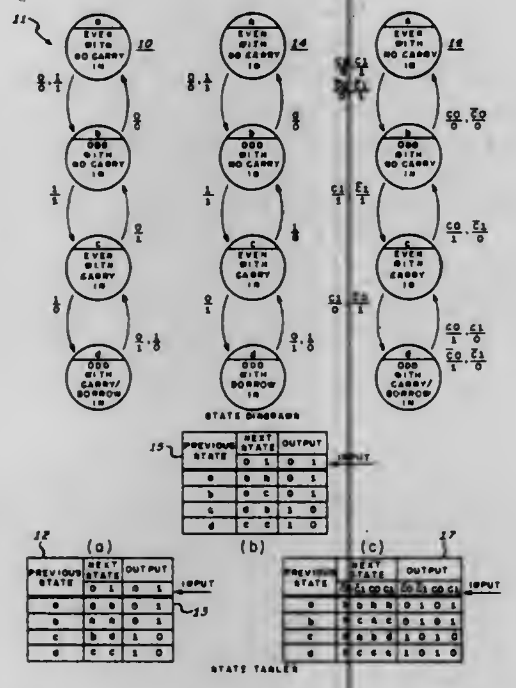
The system can afford further improvement in addition to the above mentioned initial judgement by selecting a second judging point in each of the judgements in accordance with the result of the initial judgement, in which said second judging point has co-ordinates displaced by either $(\Delta x, \Delta y/2)$ or $(\Delta x/2, \Delta y)$ according to the initial judgement from an initial starting point or from a point by which the curve is traced. The system includes means to effect allotment of a series of pulses each of which corresponds to an increment of Δx or Δy along the X axis or the Y axis or both X and Y axes based upon the above two judgements. According to the system a great improvement in tracing accuracy can be obtained while using a very simple construction.

3,652,840
APPARATUS FOR CONVERTING NUMBERS BETWEEN POSITIVE AND NEGATIVE RADICES

Walter C. Lanning, Plainview, N.Y., assignor to Sperry Rand Corporation

Filed June 23, 1970, Ser. No. 49,440
Int. Cl. G06f *5/02*

U.S. Cl. 235—155 **8 Claims**



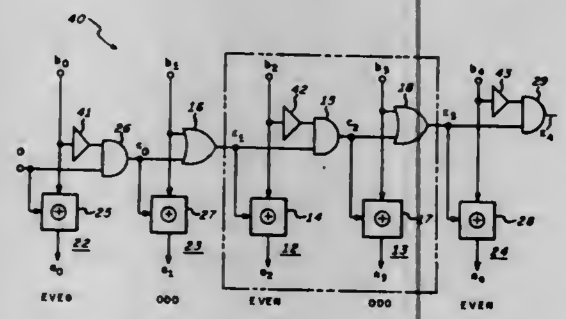
Apparatus for converting numbers between positive and negative radices comprising a first bistable element for providing signals representative of the odd and even orders of the number to be converted. Gating means responsive to the signals from the first bistable element and the digits of the number to be converted provides signals to the inputs of a second bistable element. An EXCLUSIVE OR logic circuit coupled to the output of the second bistable element and responsive to the digits of the number to be converted provides the converted digits of the number. Means are included to preset the first and second bistable elements to predetermined states, respectively, independently of the signs of the numbers to be converted.

3,652,841
APPARATUS FOR CONVERTING NUMBERS BETWEEN POSITIVE AND NEGATIVE RADICES

Walter C. Lanning, Plainview, N.Y., assignor to Sperry Rand Corporation

Filed June 23, 1970, Ser. No. 49,211
Int. Cl. H03k *13/243*

U.S. Cl. 235—155 **6 Claims**



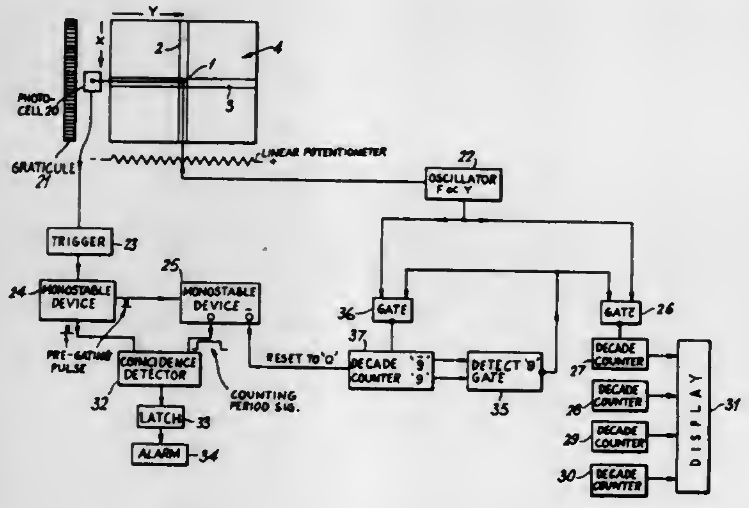
Apparatus for converting numbers between positive and negative radices comprising a plurality of EXCLUSIVE OR logic circuits responsive to the digits of the numbers to be converted, respectively. A plurality of AND logic gates responsive to the digits of the even orders of the numbers, respectively, and a plurality of OR logic gates responsive to the digits of the odd orders of the numbers, respectively, are included. Each AND gate and each EXCLUSIVE OR circuit associated with a particular even order is responsive to the output of the OR gate associated with the odd order preceding the particular even order. Each OR gate and each EXCLUSIVE OR circuit associated with a particular odd order is responsive to the output of the AND gate associated with the even order preceding the particular odd order.

3,652,842
AREA MEASUREMENT

John Ernest Lewin, 30 Lyndhurst Ave., Mill Hill, London, N.W. 7, England

Filed Feb. 5, 1970, Ser. No. 8,805
Int. Cl. G06g *7/18*

U.S. Cl. 235—183 **5 Claims**



Apparatus for measuring an unknown area within a predetermined area, comprising: a pointer movable over the predetermined area by an operator to track the boundary of the unknown area; first and second means movable with the pointer to define co-ordinates for the pointer position within the predetermined area, the first such means generating first electrical signals at regularly spaced intervals along one coordinate axis to represent a graticule, and the second such means generating second electrical signals proportional to the spacing of the pointer position along the other co-ordinate axis from a reference position; means for interrogating the second signals in response to each of the first signals as the unknown area boundary is tracked; and means for summing the interrogated second signals to indicate the unknown area.

3,652,843
SETUP SYSTEM IN ANALOG COMPUTER

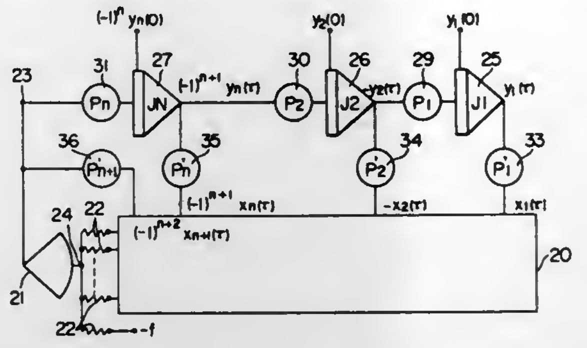
Kazuo Kurokawa, and Ikuo Matsuda, both of Tokyo-to, Japan, assignors to Kogyo Gijutsuin (also known as Agency of Industrial Science and Techonology, Ministry of International Trade and Industry, Japanese Government, Tokyo-to, Japan

Filed Dec. 29, 1969, Ser. No. 888,246
Claims priority, application Japan, Dec. 27, 1968, 43/95342
Int. Cl. G06g *7/18, 7/36*

U.S. Cl. 235—183 **5 Claims**

A setup system in an analog computer wherein a group of potentiometers are inserted in the input sides of an integrator provided in the computer corresponding to the variables in an equation to be solved, and another group of potentiometers are inserted in the output sides of the integrators so that the factors for the time and amplitude employed for the variables can be controlled separately and in a unitary manner.

In another aspect of the invention, a dummy variable is introduced by an additional provision of an integrator, whereby the solution of an equation having a coefficient which tends to be infinitive at a time instant within a range for which the equation is to be solved is much facilitated.

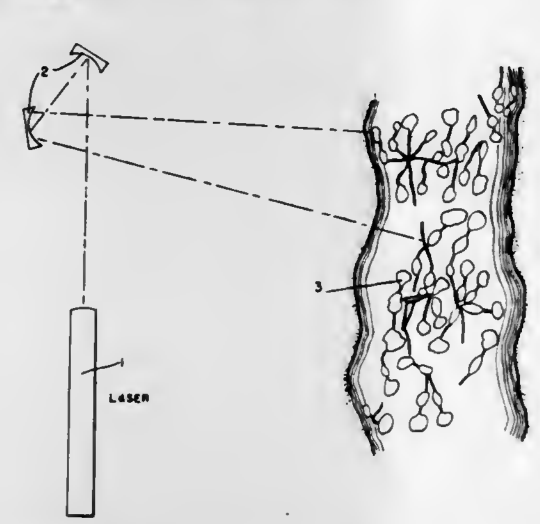


3,652,844
LASER PLANT CONTROL

Ralph A. Scott, Jr., 2819 Elsmine St., Fairfax, Va.

Filed Feb. 9, 1970, Ser. No. 9,779
Int. Cl. F21

U.S. Cl. 240—1 **9 Claims**



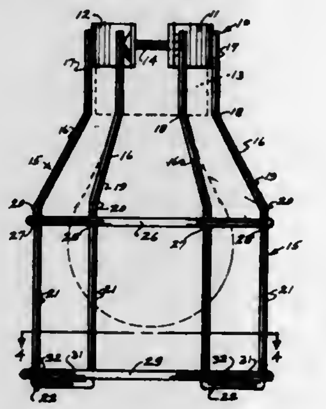
A method and apparatus for destroying weeds and other obnoxious plants by the selective application of laser energy. The apparatus includes a pulsed laser and a system for dispersing the laser beam to provide adequate coverage of the target area.

3,652,845
LAMP GUARD

Frank W. Thomas, 100 Dairy Road, Parkton, Md.

Filed June 17, 1970, Ser. No. 47,052
Int. Cl. F21v *15/00*

U.S. Cl. 240—54 R **2 Claims**



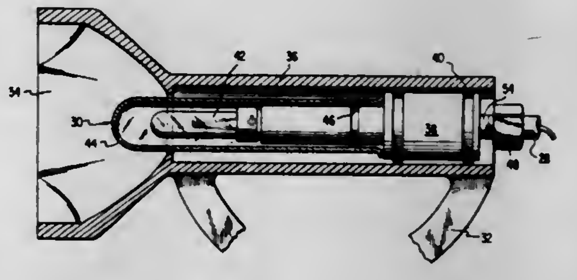
A lamp guard having a clamping band for securing the same to a lamp socket, a plurality of substantially U-shaped wire members having the free ends of the legs thereof integrally secured to the clamping band and extending to one side of the clamping band and adapted to enclose and protect a lamp; and a pair of rings, one integrally joined to the legs of the wire members at an intermediate point thereon and the second integrally joined to the bight portions of the U-shaped members.

3,652,846
UNDERWATER HAND LIGHT

Walter A. Starck, II, P. O. Box 592, Big Pine Key, Fla.

Original application Mar. 14, 1968, Ser. No. 713,114, now Patent No. 3,500,037. Divided and this application Jan. 12, 1970, Ser. No. 7,433
Int. Cl. F21l *11/00*

U.S. Cl. 240—10.63 **1 Claim**



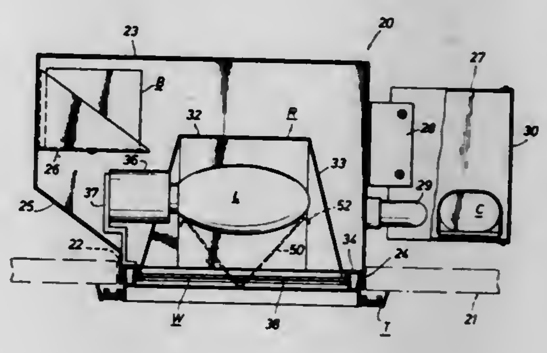
The invention described hereinafter relates to an electric hand-type light especially adapted for underwater use. The new lamp is unique in several respects, especially in that the light source is adapted to be slidably positioned relative to its co-operating reflector; and, it is also easily slidably removable from its reflector association for independent use. A special light source is employed which also forms a part of the invention. The light source is of the quartz-iodide type and by reason of particular mounting features, it is rendered especially adapted for underwater use, particularly as regards its light-giving life.

3,652,847
RECESSED CEILING LIGHT FIXTURE

Ralph M. McFarlin, Pasadena, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed Apr. 8, 1970, Ser. No. 26,705
Int. Cl. F21s *1/00;* **F21v** *17/00;* **F21s** *3/00*

U.S. Cl. 240—78 HA **17 Claims**



A light fixture having a housing which fits closely within the lower end of a recess in a ceiling, and a reflector which has a frame about its open lower end for fitting closely within the lower end of the recess. The frame is releasably attached to the housing when so fitted to permit it to be moved through the lower end thereof, whereby access may be had to the interior of the housing above the reflector from beneath the ceiling.

3,652,848

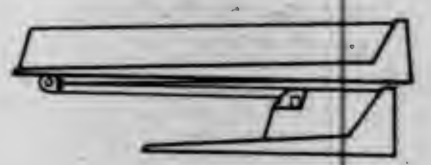
FLUORESCENT LIGHTING FIXTURES

Jack V. Miller, and Ronald W. Froelich, both of c/o Mentos Corp., 401 Agostine Road, San Gabriel, Calif.

Continuation-in-part of application Ser. No. 620,806, Mar. 6, 1967, now abandoned. This application Aug. 21, 1968, Ser. No. 777,209

Int. Cl. F21s *1/12*

U.S. Cl. 240—81 C **2 Claims**



A fluorescent lighting fixture for use in conjunction with relatively small fluorescent tubes employed in portable lamps, desk lamps and vehicle interior lamps. The fluorescent tube is mounted within a simple, elongated housing. The housing is a multisided shell which has a trough or recess formed in one of its sides, the recess being both the support and reflector for the fluorescent tube mounted therein. The lamp housing is adapted to fasten directly to a wall or ceiling in one embodiment, and is adapted to being supported by a cantelevered arm and base for desk or table use in another embodiment.

3,652,849

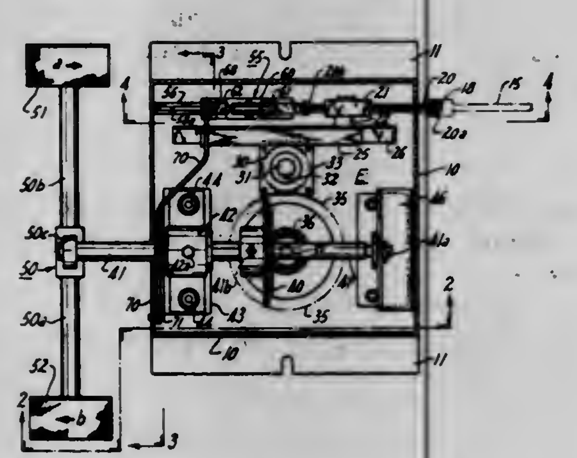
FOOT OPERATED TRACK SWITCH

Raymond J. Kleppick, 2035 Osgood St., Pittsburgh, Pa.

Filed Mar. 13, 1970, Ser. No. 19,298

Int. Cl. B61l *5/02*

U.S. Cl. 246—393 **14 Claims**



A manual switch operating device for a railway track has a switch-connected lever that is normally locked in either one of two positions and that is easily and quickly moved from one position to another by an end-mounted foot-pressure-operated arm. The foot-operated arm has means for simultaneously unlocking and holding the device in an unlocked position during movement from one position to another and upon reaching the other position to cause an automatic locking of the switch.

3,652,850

MEASUREMENT OF OPTICAL DENSITY

Ronald Briggs, Stevenage, England, assignor to National Research Development Corporation, London, England

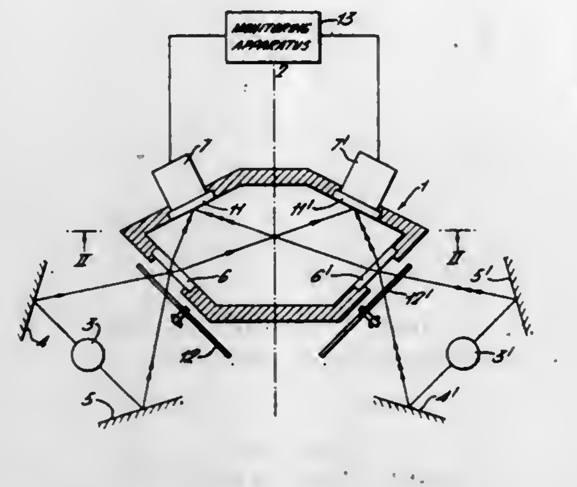
Filed Mar. 6, 1970, Ser. No. 17,223

Claims priority, application Great Britain, May 22, 1969, 26,287/69

Int. Cl. G01n *21/26*

U.S. Cl. 250—43.5 R **21 Claims**

Method and apparatus for determining the optical density for radiation within a predetermined range of wavelengths in which a first signal is produced related to the attenuation of radiation over a known path length in the fluid, a second signal is produced related to the attenuation of the radiation over the same path length by solid matter suspended in the fluid and the second signal is utilized to correct the first signal for the presence of the suspended solid matter in the fluid.



3,652,851

PATIENT'S COUCH FOR RADIOLOGICAL RADIATION

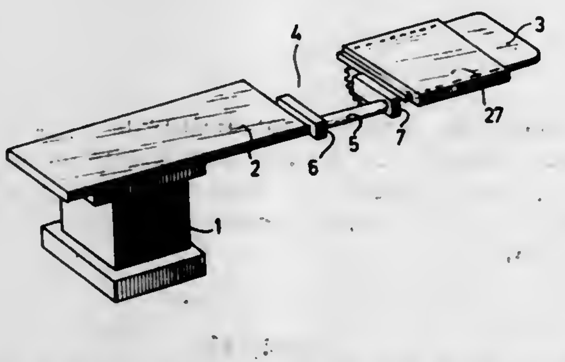
Willem Zaalberg, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 14, 1969, Ser. No. 841,236

Claims priority, application Netherlands, July 18, 1968, 6810132

Int. Cl. G03b *41/16*

U.S. Cl. 250—54 **7 Claims**



A table for supporting a patient during radiological treatment, the table having first and second surfaces longitudinally spaced apart defining between them a transverse gap, and a beam connecting and supporting the second surface with the first surface, the beam being movable between different transverse positions in the gap area to provide unimpeded radiation.

3,652,852

METHOD OF SUPERIMPOSING THE RADIATION EMISSION FROM A RADIOACTIVE TRACER ON AN X-RAY IMAGE

Tatsuo Miyazawa, and Masashi Sato, both of Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

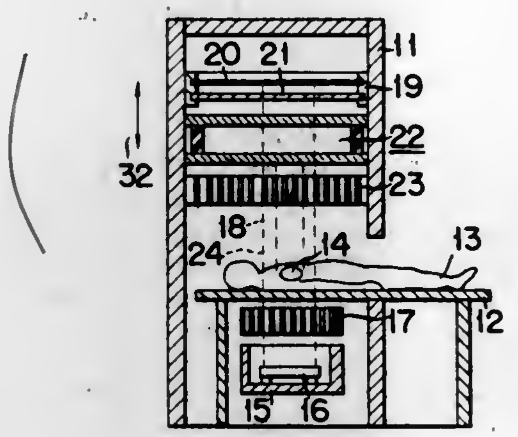
Filed Apr. 2, 1969, Ser. No. 812,688

Claims priority, application Japan, Apr. 5, 1968, 43/22138; 43/22141

Int. Cl. G03b *41/16*

U.S. Cl. 250—65 R **2 Claims**

A system for taking a radiograph of a foreground subject in which a radioactive material is distributed on a film by an X-ray radiographic apparatus having a spark chamber. The radiograph consists of an X-ray transmission image of said subject and a discharge image indicating the distribution of said radioactive material. Said both images have the same scale and are superposed on each other.



3,652,853

X-RAY CASSETTE

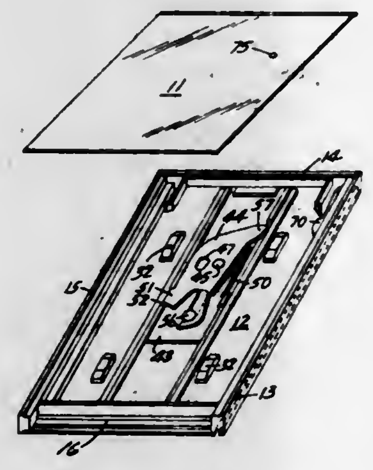
Mario Williner, Ferrania, and Enzo Breschi, Savona, both of Italy, assignors to Minnesota Mining and Manufacturing Company

Filed Mar. 26, 1970, Ser. No. 22,764

Claims priority, application Italy, Mar. 29, 1969, 36086 A/69

Int. Cl. G03b *41/16*

U.S. Cl. 250—66 **9 Claims**



An X-ray cassette which is loaded with film and unloaded automatically by cassette-handling apparatus. The cassette comprises an exterior case having an opening to receive actuating means from the casette-handling apparatus, film-carrying panels within the exterior case adapted to hold film while it is radiographically exposed, and control means operatively connected to the film-carrying panels and adapted to be engaged by the actuating means from the casette-handling apparatus. The control means applies the movement of the actuating means to the film-carrying panels to move the panels between film-exposure and film-load-unload positions. In one embodiment the actuating means is a pin that undergoes forward and return movements and the control means includes a slide member and a control lever pivotably mounted on the slide member, both the slide member and the control lever being apertured to receive the actuating pin. During film-exposure, a portion of the control lever engages a lock member within the cassette to lock the slide member, control lever and film-carrying panels in their film-exposure positions.

3,652,854

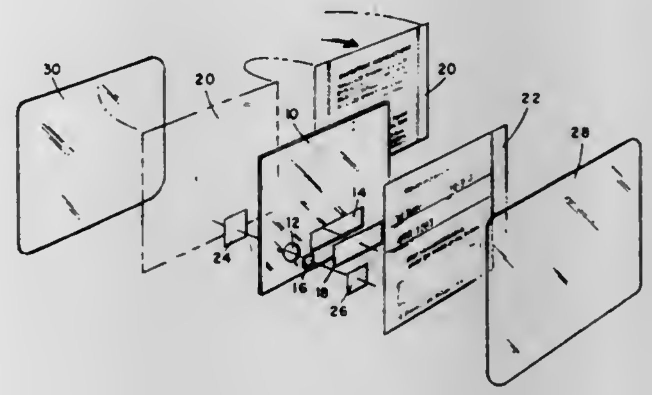
CARD-FORMAT PERSONNEL DOSIMETER

Robert V. Wheeler, Lemont, Ill., assignor to Technical Operations, Incorporated, Burlington, Mass.

Filed Dec. 9, 1970, Ser. No. 96,664

Int. Cl. G01t *1/11*

U.S. Cl. 250—71 R **10 Claims**



A dosimeter in the form of a laminate card is depicted. More specifically, a dosimeter card is shown which comprises a stiff but flexible backing plate having apertures for holding one or more materials sensitive to high energy radiation. Adhesive-backed stickers carrying identification and/or instructional information are adhered back-to-back on the plate, securing the radiation sensitive materials in their respective apertures. The plate and stickers are encapsulated between heat-bonded polyester and Mylar sheets.

3,652,855

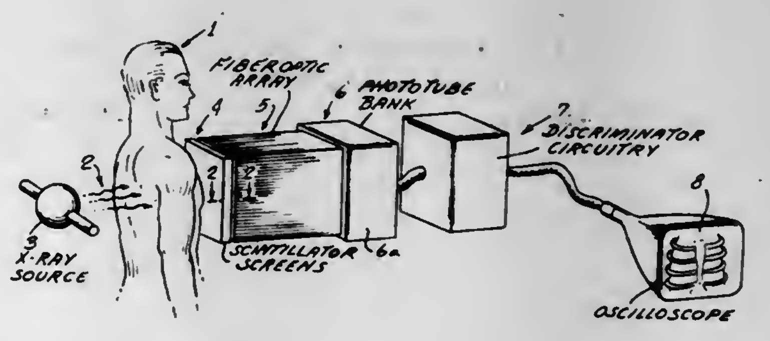
RADIATION IMAGE AMPLIFIER AND DISPLAY COMPRISING A FIBER OPTIC MATRIX FOR DETECTING AND CODING THE RADIATION IMAGE PATTERN

John Armin McIntyre, 2316 Beistol St., Bryan, Tex., and Dwight Proffer Saylor, 1220 Westover St., College Station, Tex.

Filed May 26, 1969, Ser. No. 827,759

Int. Cl. G01t *1/20;* **G02b** *5/14*

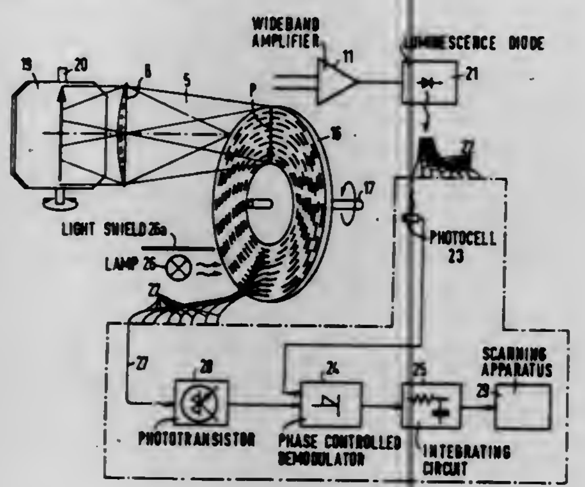
U.S. Cl. 250—71.5 S **14 Claims**



A radiation image amplifier is disclosed comprising a fiber optic matrix for detecting and coding the radiation image pattern and photosensitive amplifying means for converting the coded image into electrical signals which are amplified and then utilized by decoding to produce an enlarged and intensified image display. The fiber matrix is coded in such manner as to minimize the size of the photosensitive amplifying means.

3,652,856
APPARATUS AND METHOD FOR IMAGE CONVERSION OF INFRARED RADIATION

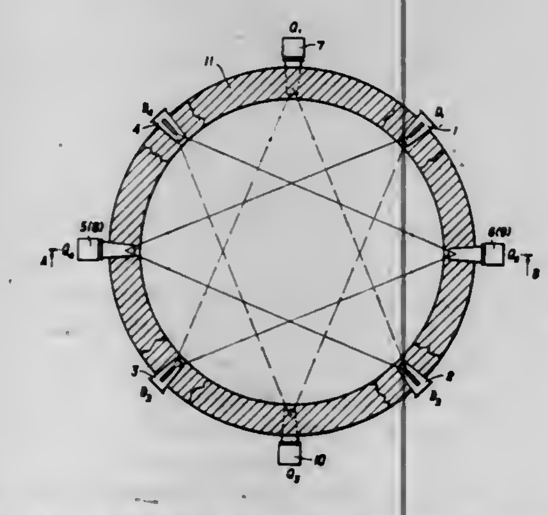
Bernt Paul, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Mar. 18, 1970, Ser. No. 20,697
Claims priority, application Germany, Mar. 25, 1969, P 19 15 048.2
Int. Cl. G01j *1/02*
U.S. Cl. 250—83.3 HP **59 Claims**



A radiation detector produces a control signal in accordance with radiation impinging thereon. An optically effective modulator comprising a chopper directs radiation from a specimen section to the surface of the radiation detector in a manner whereby the surface is marked with various image points in a predetermined geometrical arrangement at various carrier frequencies. The radiation detector produces a signal which is the sum of all the image intensity pulses impressed upon the various carrier frequencies. A separator coupled to the radiation detector separates the image point pulses in accordance with their carrier frequencies. Storers coupled to the separator individually store the separated image point pulses. A scanner coupled to the storers scans the stored image point pulses in accordance with the sequence of the marked image point in order to provide a suitable control signal.

3,652,857
ARRANGEMENT FOR DETERMINING THE AVERAGE HEIGHT AND THE THREE-DIMENSIONAL PROFILE OF NONWOVEN SURFACES

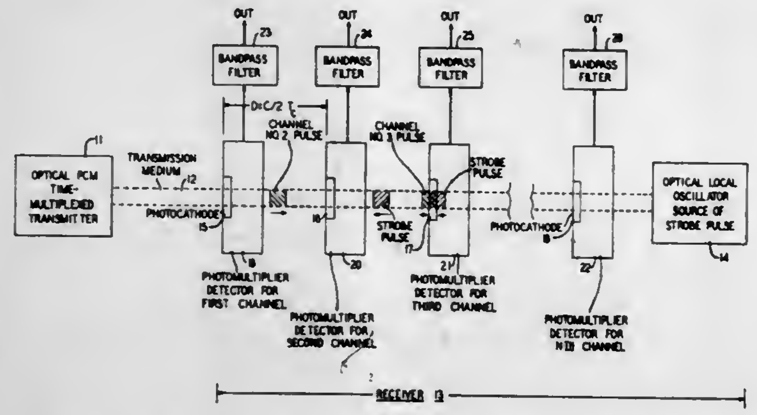
Erich Frevert, Vienna, Austria, assignor to Osterreichische Studiengesellschaft fur Atomenergie Ges. m.b.H., Vienna, Austria
Filed Feb. 3, 1969, Ser. No. 804,732
Claims priority, application Austria, Feb. 2, 1968, A 1041/68
Int. Cl. G01n *23/10*
U.S. Cl. 250—43.5 FL **10 Claims**



An arrangement for checking the depth of the charge and for determining the profile of the surface comprises radiation sources and radiation detectors in different planes. he sources are arranged above the uppermost plane of the detectors and the sources of different planes are displaced with respect to each other. Source and detectors are placed at the corners of an octagon. The chronological control is effected by a comparison arrangement compensating the decay of the activity of the radiation sources.

3,652,858
OPTICAL HETERODYNE TIME-DIVISION DEMULTIPLEXER EMPLOYING STROBED ASSIGNMENT OF CHANNELS AMONG A TANDEM SEQUENCE OF HETERODYNING ELEMENTS

Tracy Stewart Kinsel, Bridgewater Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 25, 1970, Ser. No. 75,543
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **5 Claims**


OUT
23
24
25
28
BANDPASS FILTER
D=C/2
CHANNEL NO 2 PULSE
CHANNEL NO 3 PULSE
STROBE PULSE
11
OPTICAL PCM TIME-MULTIPLEXED TRANSMITTER
TRANSMISSION MEDIUM
12
PHOTOCATHODE
15
16
17
18
19
20
21
22
PHOTOMULTIPLIER DETECTOR FOR FIRST CHANNEL
PHOTOMULTIPLIER DETECTOR FOR SECOND CHANNEL
PHOTOMULTIPLIER DETECTOR FOR THIRD CHANNEL
PHOTOMULTIPLIER DETECTOR FOR NTH CHANNEL
OPTICAL LOCAL OSCILLATOR SOURCE OF STROBE PULSE
14
RECEIVER 13

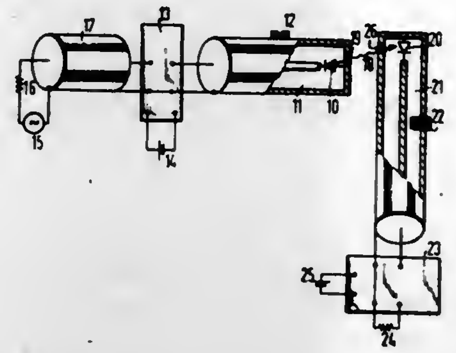
There is disclosed a receiver for a time-division-multiplex optical PCM communication system in which demultiplexing is achieved without power-division losses by directing the received pulse trains recurring at a multiple of the channel bit rate and the local oscillator or strobe pulses at the channel bit rate in opposite directions and sequences through aligned heterodyning elements, such as semitransparent photocathodes of photomultiplier detectors for the individual channels. The received pulses and local oscillator pulses have differing optical frequencies; and the coincidences of these pulses are sensed at the channel detectors to separate the channels. Illustratively, the coincidences at the photomultipliers are sensed by electrical filters having a passband including an upper cutoff frequency lower than the channel bit rate and means for disabling the output of the filter in time for reception of a signal in the next time slot for that channel.

3,652,859
AMPLIFIER DEVICE USING EMISSION AND PHOTO DIODES

Hans-Norbert Toussaint, Munich, Germany, assignor to Siemens & Halske Aktiengesellschaft, Berlin and Munich, Germany
Continuation of application Ser. No. 355,121, Mar. 26, 1964, now abandoned. This application Aug. 26, 1968, Ser. No. 778,355
Claims priority, application Germany, Apr. 1, 1963, S 84504; Dec. 20, 1963, S 88823; S 88824
Int. Cl. H01j *15/00*
U.S. Cl. 250—211 J **1 Claim**

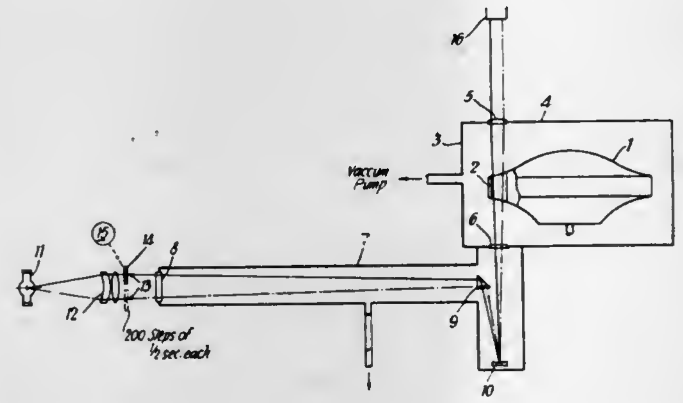
An electro-optical amplifier for oscillations, particularly in the range of very short electromagnetic waves comprising an amplifier input circuit including at least one emission diode, a direct current source connected to the emission diode for biasing the emission diode in a flow direction, the emission diode being operative to transform the electrical signal oscillation into an optical signal, at least one photodiode optically connected with the emission diode, an output amplifier circuit operatively connected with the photo diode, the photodiode being operative to transform the received optical signal into electrical oscillation signals, and the amplified

signals appearing at the output of the amplifier output circuit. The emission diode of the photodiode is arranged in sections of coaxial conductors which are closed at the end and which have windows disposed adjacent to the diodes to allow light to be transmitted between the two diodes.



3,652,860
RADIATION SENSITIVE ANALYTICAL CENTRIFUGE

Peter Martin Brabazon Walker, Lasswade, Scotland, assignor to MSE Holdings Limited, Sussex, England
Filed June 29, 1970, Ser. No. 50,426
Claims priority, application Great Britain, June 27, 1969, 32741/69
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 **11 Claims**

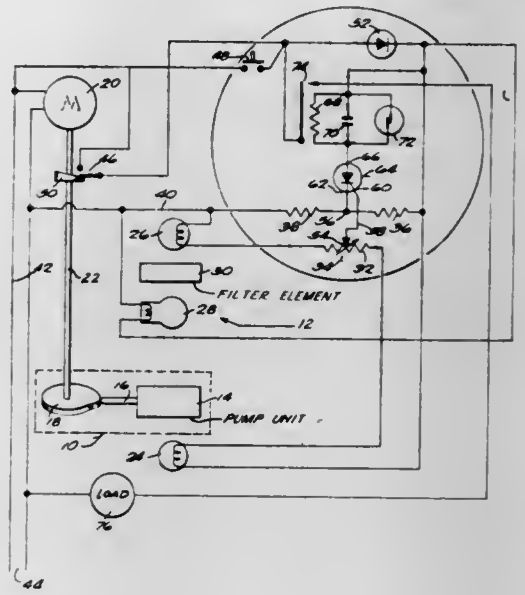


An analytical centrifuge comprises a cell scanning system having a radiation input arrangement having a slit defining a beam of radiation of elongate section directed at a cell so that the length direction of the section is at right angles to the rotor radius, there being means for displacing the beam stepwise for radiating successive radially displaced zones of the cell.

3,652,861
APPARATUS FOR DETECTING THE HARDNESS LEVEL OF WATER

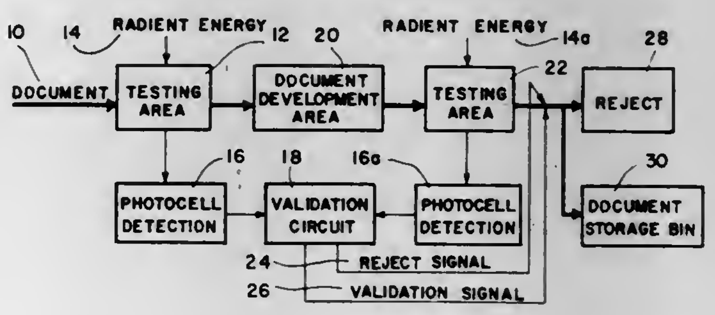
Richard K. Engholdt, Wauwatosa, Wis., assignor to Erie Manufacturing Company, Milwaukee, Wis.
Filed Apr. 1, 1969, Ser. No. 812,086
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 **5 Claims**

A control including a sampling means for periodically extracting a sample of water from a water system and a detection means for determining the hardness level of the sample. The sample is mixed with a reagent adapted to cause the sample to change color at a predetermined hardness level. The color of the sample is compared with that of a filter element by means of a pair of photoconductive cells connected in series in one leg of a bridge circuit. A difference in color between the sample and filter element indicating a hardness level above a give level will cause the bridge circuit to become unbalanced. A silicon controlled rectifier is connected across the bridge and will fire when the bridge becomes unbalanced causing a relay to be energized and thus provide power to initiate the regeneration cycle of a water softener apparatus.



3,652,862
METHOD AND APPARATUS FOR DOCUMENT VALIDATION

Jack E. Bayha, 11753 Sperry Road, Chesterland, Ohio
Filed Feb. 4, 1970, Ser. No. 8,476
Int. Cl. G01n *21/30*
U.S. Cl. 250—219 DR **9 Claims**



The invention provides a unique method and apparatus to validate documents. Particularly, the method comprises forming a developable area on the surface of a paper document, scanning the surface before development, causing development, and then scanning the same surface after development so that a before and after scanning must meet predetermined signal acceptance criteria to provide a validation. The development is achieved by some external force or media acting on the document, with the document responding to such force or media to change its physical characteristics. The apparatus to achieve this sequence of method steps consists of appropriate testing areas incorporating radiant energy sources and appropriately responsive photocells, or other detectors, plus the development area and a validation circuit, all operating in cooperation to measure the surface appearance or characteristics before and after development of one or more portions of the document. Development normally is contemplated to be by heat, pressure, moisture, fumes, electric current, or the like.

3,652,863
DETECTION OF FAULTS IN TRANSPARENT MATERIAL USING LASERS

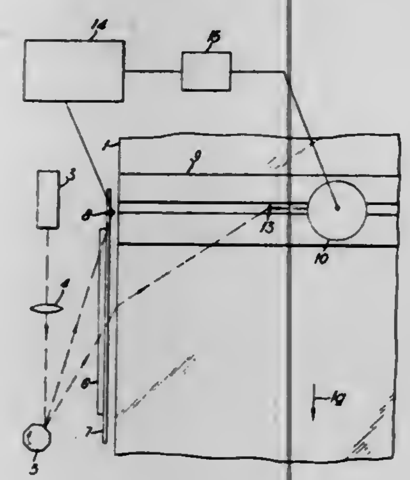
Philip Hedley Gaskell, Preston, and Derek Lowe, Rainford, both of England, assignors to Pilkington Brothers Limited, Liverpool, England

Filed May 18, 1970, Ser. No. 38,242

Claims priority, application Great Britain, May 21, 1969, 25,996/69

Int. Cl. G01n *21/32*

U.S. Cl. 250—219 DF **11 Claims**



Apparatus for inspecting transparent sheet material for internal defects comprises a laser, a scanning device for scanning the laser beam across the sheet, and a light detector for detecting light scattered by internal defects. Analysing apparatus is used to analyze signals from the scattered light and thereby identify the nature of the defects. A reference light detector is positioned adjacent the edge of the sheet so that the time interval between detection of the beam by the reference detector and the detection of a defect gives a measure of the position of the defect.

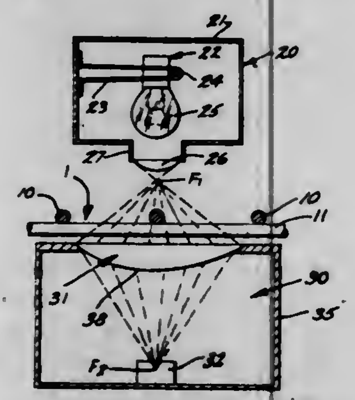
3,652,864
MEASURING LENGTH OF WIRE FABRIC BY COUNTING ONLY STRANDS NORMAL TO DIRECTION OF MOTION

Gustav B. Person, Allegan, Mich., assignor to W. E. Dunn Mfg. Co., Holland, Mich.

Filed Sept. 29, 1970, Ser. No. 76,521

Int. Cl. G01n *21/30;* **G06f** *7/38;* **G06g** *7/00*

U.S. Cl. 250—219 LG **11 Claims**



Parallel wire strands of wire fabric having a first set of parallel strands perpendicular to a second set of parallel strands are counted as the fabric is moved through a beam of light. The beam is expanded by a projection lense such that its projection area on the wire fabric includes a dimension parallel to the strands being counted which is greater than the thickness of those wire strands perpendicular to the strands being counted such that only a portion of the beam can be blocked by such a strand. On the opposite side of the fabric, the light is received by a refocusing lense having an elongated receiving surface, oriented parallel to the strands being counted and having a width less than or equal to the thickness of one of the strands being counted. That portion of the light which is received at said receiving surface is refocused by the lense onto a photoelectric cell which thereby detects the passage of one of the strands to be counted as a result of that strand blocking the passage of light to the receiving surface of the receiving lense as it passes.

3,652,865
ELECTRICAL SYSTEMS FOR ROAD VEHICLES

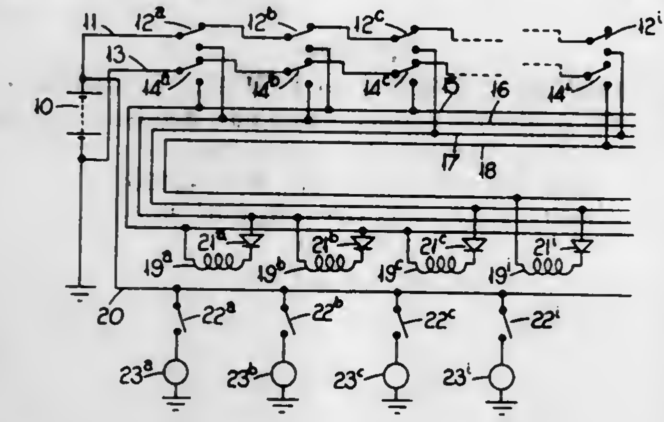
William David Holt, Colne, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Apr. 21, 1970, Ser. No. 30,562

Claims priority, application Great Britain, July 28, 1969, 37,708/69

Int. Cl. H02g *3/00*

U.S. Cl. 307—10 R **2 Claims**



An electrical system for a road vehicle has a pair of electrical loads and a pair of switches controlling the loads, together with a pair of feed lines. One switch makes one feed line positive with respect to the other and the other switch makes said one feed line negative with respect to the other. Polarity sensitive switching means are then provided for controlling the loads when the switches are operated.

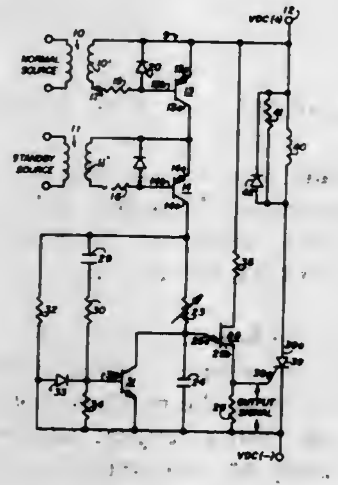
3,652,866
IN-PHASE MONITOR FOR DETERMINING IN-PHASE CONDITION OF TWO SEPARATE ALTERNATING CURRENT SOURCES

William A. Moakler, Basking Ridge, and Ralph H. Ringstad, Whippany, both of N.J., assignors to Automatic Switch Company

Filed Sept. 14, 1970, Ser. No. 71,694

Int. Cl. H02j *3/00*

U.S. Cl. 307—80 **10 Claims**



An in-phase monitor including two switch means, e.g., transistors, each connected to a different AC source. One transistor conducts during alternate half cycles of its respective power source, and the other transistor conducts only when the first transistor is conducting and when the voltages of the power sources are of the same sign. When both transistors conduct, a capacitor is charged, and if the charge becomes high enough a third transistor becomes conductive causing production of an output signal from the monitor. A transfer switch includes a coil and contacts for alternatively connecting a load to one or the other of the power sources, and a circuit for controlling energization of the coil includes a relay responsive to the output signal from the monitor.

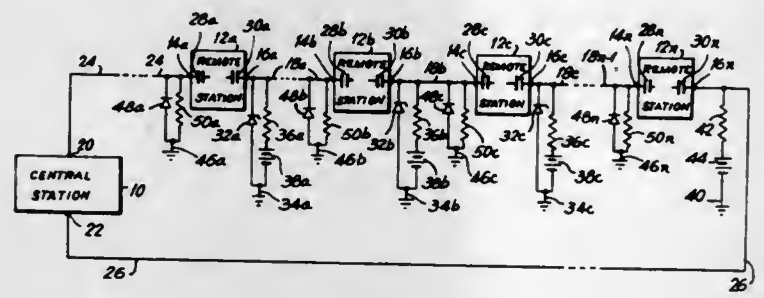
3,652,867
DEVICE FOR CONNECTING A SUBSTITUTE CURRENT PATH IN CASE OF LINE BREAK

Leon Zinn, Syosset, N.Y., assignor to Milton Bocin, Teaneck, N.J. and AFA Protective Systems, Inc., New York, N.Y.

Filed May 28, 1970, Ser. No. 41,433

Int. Cl. H02j *3/00;* **G08b** *25/00*

U.S. Cl. 307—86 **11 Claims**



A system for providing a path between two series-connected devices should the line therebetween break including a bypass switch means for interconnecting the output of a first of said devices to the input of a second of said devices through ground upon such a break. The system is particularly adapted for application to central station alarm systems.

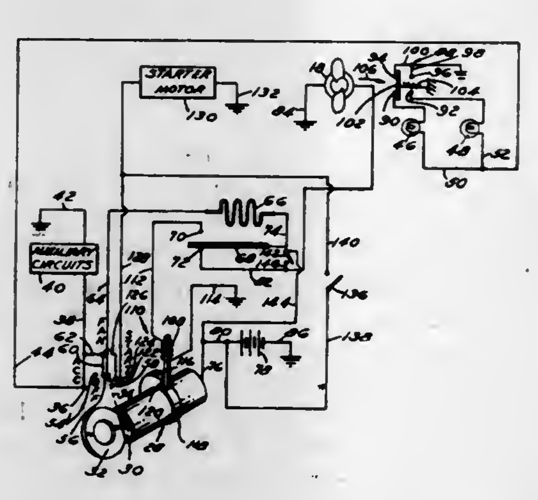
3,652,868
SAFETY EXHAUST SYSTEM FOR THE ENGINE COMPARTMENT OF A BOAT

Harold P. Hunt, 432 Madison Road, County Club Acres RR1, Delray Beach, Fla.

Filed Feb. 4, 1970, Ser. No. 8,587

Int. Cl. H01h *35/00*

U.S. Cl. 307—116 **13 Claims**



Two basic embodiments of the safety exhaust system are provided. In one embodiment, switch means are provided in the fuel inlet to the gas tank of the engine. These switch means are actuated by removal of the gas cap to start a blower fan motor in the engine compartment to exhaust any fumes which collect therein during a fueling operation. The blower fan is deenergized upon replacement of the gas cap. In the other embodiment, the blower fan is energized by the ignition switch in one position to exhaust any fumes from the engine compartment before the engine is started. Means are provided to prevent energization of the engine starter motor until the blower fan has run for a preselected time interval to thereby assure proper ventilation of the engine compartment before the engine is started. The two embodiments may be integrated into a single safety exhaust system.

3,652,869
ELECTRICAL CONTROL SYSTEMS

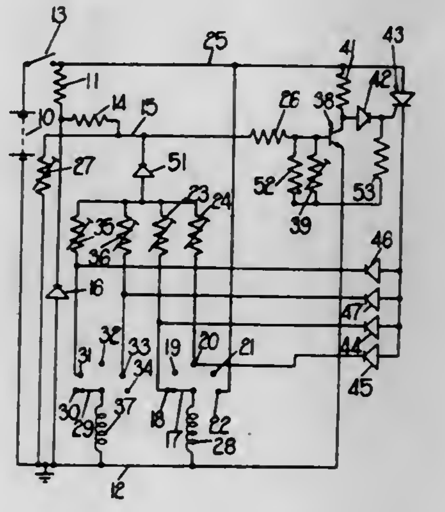
William David Holt, Colne, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Jan. 6, 1971, Ser. No. 104,234

Claims priority, application Great Britain, Jan. 17, 1970, 2,369/70

Int. Cl. H01h *47/26*

U.S. Cl. 307—117 **1 Claim**



An electrical control system, particularly for a choke cable on a vehicle, includes a pair of electromagnets, each of which when energized moves the choke cable back from its operative position to its inoperative position. The first electromagnet is energized when the engine temperature rises to a predetermined value, moves the choke cable back, and brings the second electromagnet into the circuit in series with a resistor which determines when the second electromagnet is energized. When the second electromagnet is energized, it moves the choke cable back further, and brings the first electromagnet back into the circuit in series with a resistor which determines the engine temperature at which the first electromagnet is energized again. This sequence continues until the choke cable returns to its rest position. Other parameters can be controlled in a similar way.

3,652,870
TIMER CONSTRUCTION MEANS AND SYSTEM UTILIZING THE SAME OR THE LIKE

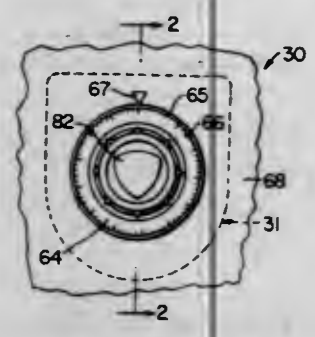
Emil Niemand, Waterbury, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed June 17, 1970, Ser. No. 47,011

Int. Cl. H01h *7/16*

U.S. Cl. 307—133 **32 Claims**

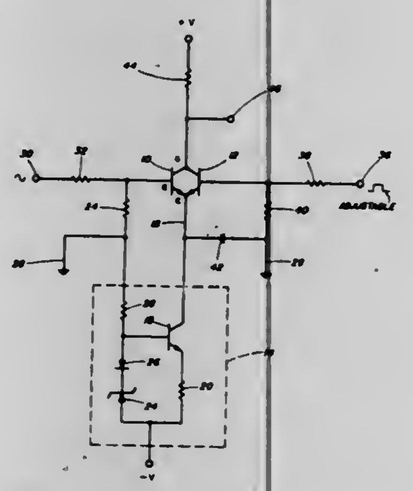
A timer construction having a frame means carrying a timer motor. A time selector is carried by the frame means for selecting a desired time period that the timer motor is to operate. An actuator is operatively associated with the timer motor to initiate the operation thereof after a desired time period has been selected by the time selector. The time selector is adapted to selectively increase or decrease the selected time period during the operation of the timer motor as long as the new selected time period is not less than the initial lapse of time of the initial time period at the time the new time selection is made by the time selector. The actuator can comprise a push button means which indicates the amount of time lapsing during the operation of the timer.



3,652,871
EXPONENTIAL ATTENUATOR-AMPLIFIER CIRCUIT

Arthur D. Delagrange, Sykesville, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 19, 1970, Ser. No. 3,656
Int. Cl. H03k *7/00*
U.S. Cl. 307—230 **3 Claims**

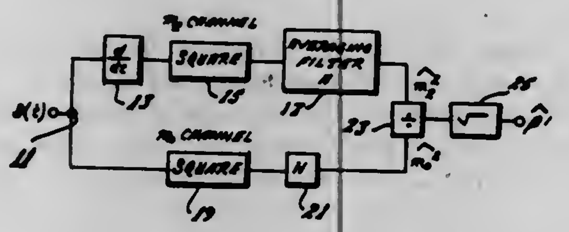


An exponential attenuator-amplifier circuit having a pair of transistors coupled back-to-back in a modified common emitter configuration as its principal active components. This arrangement utilizes the logarithmic current-voltage characteristic of the base-emitter diode of one of the transistors so that it operates as a logarithmic voltage amplifier, while a DC voltage applied to the other transistor sets the voltage bias level and controls the voltage gain of the pair. A current source is included in the emitter circuit of the transistor pair to render circuit current independent of bias voltage changes.

3,652,872
VIDEO BANDWIDTH ANALYZER

Kenneth H. Miller, Reston, Va., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Apr. 2, 1970, Ser. No. 25,061
Int. Cl. H03k *5/20*
U.S. Cl. 307—233 **1 Claim**

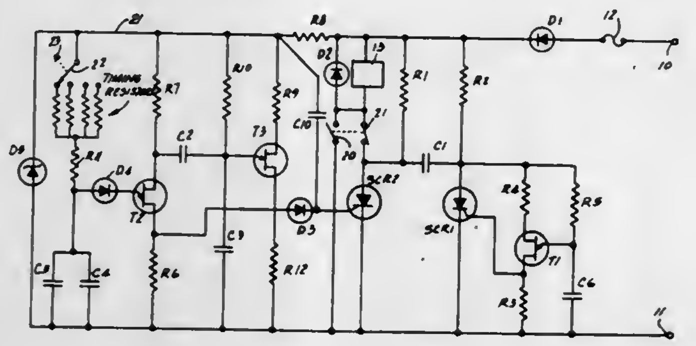


Bandwidth measurement using direct time domain measurement of second moment bandwidth signals is achieved by feeding the unknown signal into parallel channels and then dividing one channel by the other and taking the square root thereof. The first channel has a differentiating circuit followed by a squaring circuit and then an averaging filter while the second channel has a squaring circuit followed by an averaging filter.

3,652,873
DIRECT CURRENT TIMER

Robert D. Roberts, Streetsboro, Ohio, assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed July 1, 1970, Ser. No. 51,567
Int. Cl. H03k *17/28, 17/30, 17/72*
U.S. Cl. 307—252 M **2 Claims**

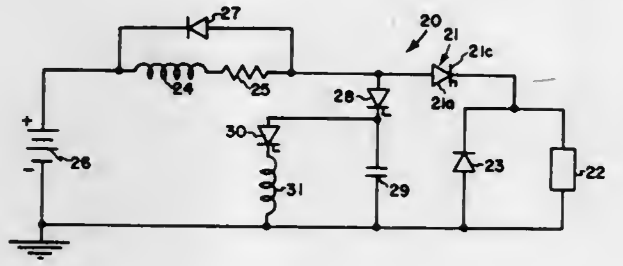


An automatic timing circuit for controlling a pump solenoid valve or other device which may be adjusted over a wide range of cycles per hour and which may be manually energized if desired.

3,652,874
CIRCUIT FOR CONTROLLING THE CONDUCTION OF A SWITCHING DEVICE

Donald F. Partridge, 1036 Harlan Drive, San Jose, Calif.

Filed July 30, 1970, Ser. No. 59,521
Int. Cl. H03k *17/04, 17/72*
U.S. Cl. 307—252 M **23 Claims**



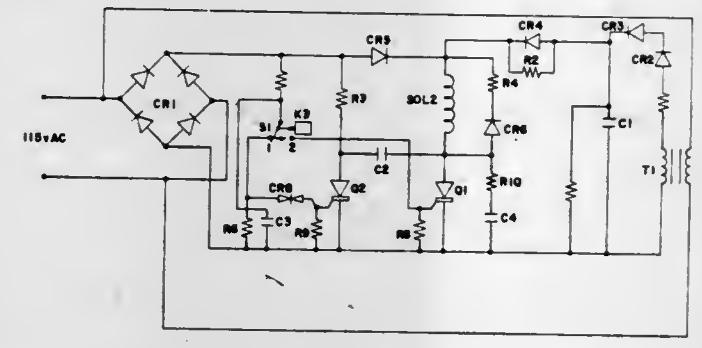
A circuit for controlling the conduction of a switching device, such as a silicon controlled rectifier, Thyratron tube, mercury-arc tube and the like, which turns on and off the switching device so as to produce a load voltage with a fast rise time, a fast fall time and a wide range of pulse widths at a high repetition rate. To obtain a fast rise time of the load voltage, the switching device is turned on in series with a direct current source with all elements interconnecting therebetween electrically decoupled. To obtain a fast fall time for the load voltage, a direct current voltage is applied in series with the switching device which is of a polarity opposite from the polarity of the direct current source used to furnish power to the load. This reverse voltage is of an appropriate magnitude and time duration for turning off the switching device, and in addition thereto, electrically decouples the load from any direct current source at the same time as the switching device is reversed biased.

Toward this end, a reactive element is disposed in series with the direct current source and the switching device. It has been found that energy is stored in the reactive element during the turning off or the commutation period of the switching device. Such stored or trapped energy in the reactive element inhibits the succeeding application of the appropriate magnitude and time duration of reverse voltage to the switching device for turning off the switching device. Consequently, such stored trapped energy is a detriment to commutating the switching device in succeeding commutation intervals. Thus, one embodiment of the present invention is to dissipate the trapped energy stored in the reactive element before the next commutation period. Another embodiment of the present invention is to inhibit the accumulation of trapped energy in the reactive element. Both embodiments have a small commutation interval, and are therefore capable of high switching rates.

3,652,875
CONTROL CIRCUIT FOR DRIVING STAPLING MECHANISM

William P. Kukucka, Henrietta, and James E. Summers, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 9, 1970, Ser. No. 70,832
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 M **5 Claims**

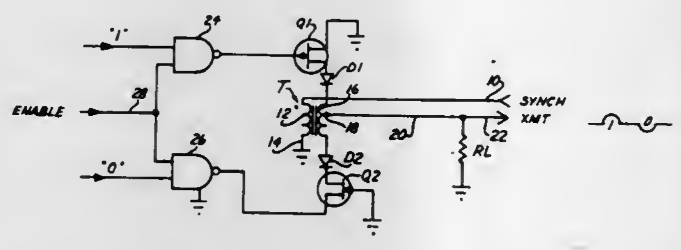


A control circuit for driving a staple forming and punch apparatus incorporating an inductance coil, a first circuit coupled to the inductance coil including an SCR device and a second circuit including a second SCR device and DIAC device. A control energizes the DIAC device to fire at predetermined intervals so that said second SCR device may be turned on and the first SCR device turned off.

3,652,876
DATA TRANSMISSION SYSTEM, UTILIZING AC LINE FREQUENCY AS CLOCK

Elliot Baum, Dix Hills, and Harry R. Loewengart, New York, both of N.Y., assignors to Quasar Microsystems, Inc., Brentwood, N.Y.

Filed Apr. 30, 1970, Ser. No. 33,294
Int. Cl. H03k *1/12, 17/60*
U.S. Cl. 307—262 **10 Claims**

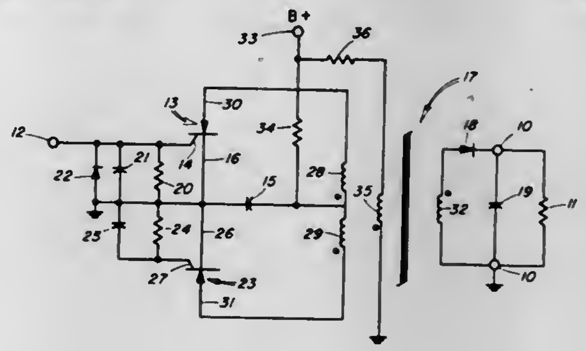


A data transmission system is described in which bipolar data signals are derived from an AC signal. The system comprises a transformer having a primary winding receiving the AC signal and a secondary winding. The ends of the secondary winding are respectively connected to switch means the control terminals of which receive data signals. The bipolar signal derived at the center tap of the secondary winding reflects the data signal inputs to the switch means.

3,652,877
RADIATION COMPENSATION CIRCUIT

Richard A. Smith, Ellicott City, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 14, 1969, Ser. No. 824,634
Int. Cl. H03k *3/31, 3/37*
U.S. Cl. 307—308 **1 Claim**

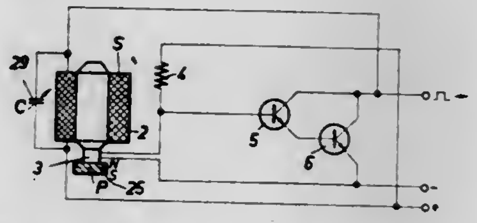


A radiation hardened circuit utilizing an energy storage capacitor to supply power to a load via a magnetic coupler. Triggered unidirectionally conductive active circuit elements connected between the capacitor and the magnetic coupler provide a discharge path for the capacitor to transfer power to the load during normal operation but provide another discharge path for the capacitor, inhibiting transfer of power to the load, when the circuit is exposed to radiation.

3,652,878
ELECTROMAGNETICALLY CONTROLLED RELAY APPARATUS HAVING NO MECHANICAL CONTACT MEMBERS

Karl Schmidt, Achern, Germany, assignor to GEHAP Gesellschaft fuer Handel und Patentverwertung mbH & Co.

Filed Mar. 11, 1969, Ser. No. 806,240
Claims priority, application Germany, Mar. 18, 1968, P 15 62 171.3
Int. Cl. G05d *1/00*
U.S. Cl. 307—309 **6 Claims**



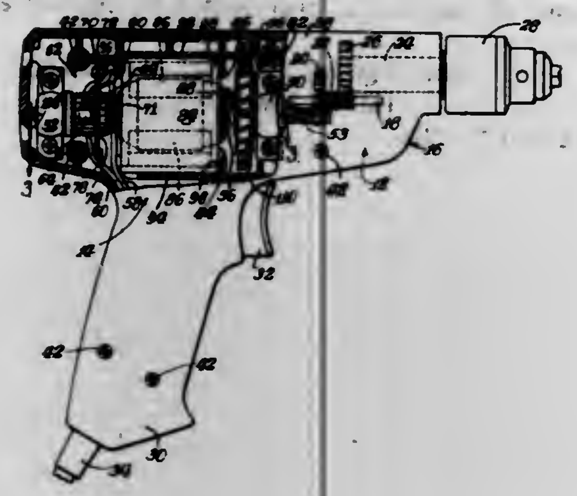
A contactless relay with an electromagnetic control circuit and with either one or several electronic switching circuits, comprising within the range of the magnetic field of at least one relay coil of the electromagnetic control circuit a relay mechanism without any mechanical contact elements which is controllable by means of the magnetic field and in operative engagement with at least one controllable semiconductor system.

3,652,879
ELECTRIC POWER TOOL

Larry E. Plunkett, Montgomery, and Spencer C. Rees, Aurora, both of Ill., assignors to Thor Power Tool Company, Aurora, Ill.

Filed July 22, 1970, Ser. No. 57,176
Int. Cl. H02k *7/14*
U.S. Cl. 310—50 **8 Claims**

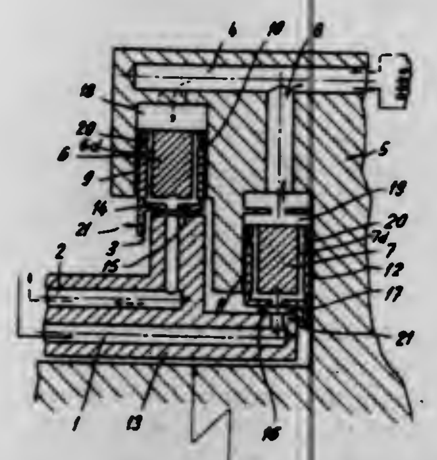
An electric power tool having a housing, a fan and a motor including brushes, a commutator, an armature, and a stator. The brushes are mounted on a brush board which fits closely adjacent the commutator. The stator comprises a shell and circumferentially spaced permanent magnet segments secured to the shell, air passages being formed by the spaces between the segments. Openings are provided in the housing to permit air to be drawn in by the fan, the air being channeled by the housing and the brush board over the commutator and through the passages in the stator, thus effectively cooling the commutator and the armature of the motor.



3,652,880
ARRANGEMENT FOR SUPPLYING ROTOR OF AN ELECTRICAL MACHINE WITH A LIQUID COOLANT

Mihailo Starcevic, Ennetbaden, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Nov. 30, 1970, Ser. No. 93,708
Claims priority, application Switzerland, Dec. 4, 1969, 18062/69
Int. Cl. H02k *9/00*
U.S. Cl. 310—54 **10 Claims**

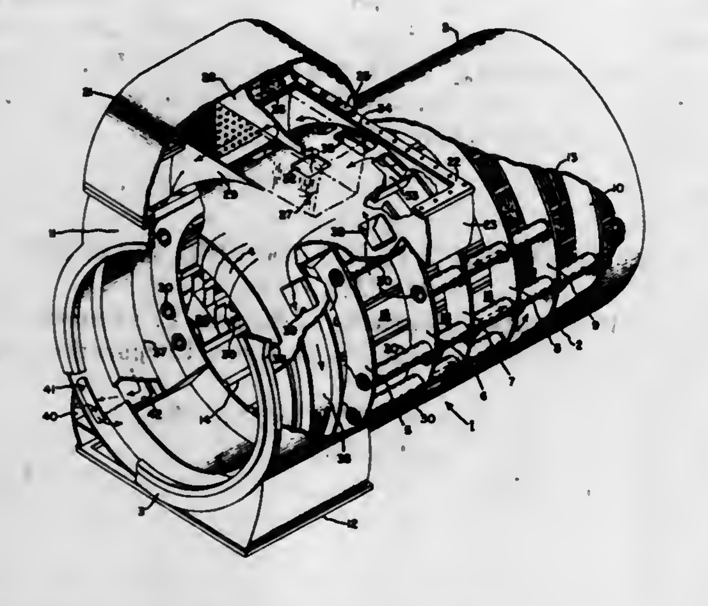


An arrangement for circulating a liquid coolant through a tubular conductor structure on the rotor of an electrical machine includes a stationary feed part provided with feed and discharge channels leading to feed and discharge rings through which the liquid coolant is fed to and discharged from liquid guide channels at one end of the rotor which are connected to the tubular conductor structure. The liquid coolant enters the discharge ring from the rotor at a point on the rotor which is farther outside — as seen radially — than the point at which the coolant enters the feed ring to flow into the rotor.

3,652,881
GENERATOR VENTILATION DOME AND COOLER CASING CONSTRUCTION

Donald R. Albright, Scotia; James B. Archibald, Schenectady, and Sterling C. Barton, Scotia, all of N.Y., assignors to General Electric Company

Filed Oct. 15, 1970, Ser. No. 81,036
Int. Cl. H02k *9/08*
U.S. Cl. 310—57 **2 Claims**

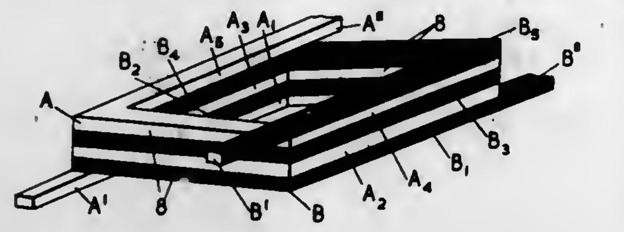


In a gas cooled dynamoelectric machine, a heat exchange apparatus is mounted transversely above the stator core and is enclosed by a detachable dome which is also mounted transversely to the axis of the stator core. The stator core has a plurality of axially spaced circumferential section plates which define cooling sections in combination with a cylindrical wrapper. Hot and cold gas pipes of varying lengths provide equal gas distribution and recovery throughout the stator core while recirculation and cooling is accomplished through dome first and second annular chambers communicating with said pipes through holes in the wrapper plate.

3,652,882
DYNAMO-ELECTRIC MACHINE ROTORS HAVING INTERNALLY COOLED ROTOR WINDINGS

Joseph Merelle Elliott, Newcastle-upon-Tyne, England, assignor to Reyrolle Parsons Limited, Hebburn Co., Durham, England

Filed Aug. 25, 1970, Ser. No. 66,697
Int. Cl. H02k *3/22*
U.S. Cl. 310—61 **5 Claims**

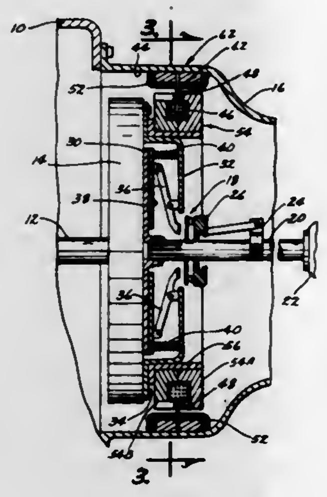


A dynamo-electric machine cylindrical rotor having in its surface, slots housing conductors of an internally cooled rotor winding, the conductors being cooled by direct contact between a coolant and the conductor material, with the winding having its conductors formed in coils with successive turns of each coil occupying the same pair of slots symmetrically disposed, one on each side of a pole face of the rotor, successive coils occupying successive pairs of slots on respective sides of the pole face, each coil being formed of at least two coil portions, each coil portion comprising helical turns which are so arranged and interleaved with one another that, for at least some of the turns of a coil portion, the coil side in one slot is displaced in a radial direction by at least one conductor thickness from the coil side in the other slot.

3,652,883
VEHICLE POWER GENERATOR

William H. Cone, 733 Russell Road, Waterloo, Iowa

Filed Sept. 18, 1970, Ser. No. 73,496
Int. Cl. H02k *7/02*
U.S. Cl. 310—74 **4 Claims**

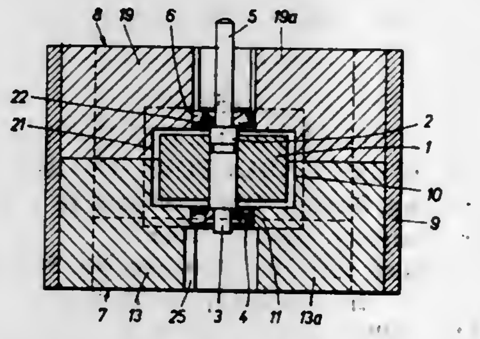


An electrical power generator for a vehicle having an engine including a clutch bell housing having a clutch means mounted therein. The clutch means includes a plate cover secured to the engine flywheel for rotation therewith. A field means is mounted in the clutch bell housing and is adapted to create a magnetic field. A stator means is mounted on the inner periphery of the clutch bell housing and includes an electrical output means in the said magnetic field and adapted to be connected to an electrical load. A rotor means is secured to the plate cover for rotation therewith within said clutch bell housing. The rotor means is provided with a plurality of spaced apart teeth on the periphery thereof whereby the rotation of the rotor means by the plate cover will cause the teeth to vary the permeance of the magnetic field to induce an alternating electromotive force in the output means.

3,652,884
ELECTRIC MOTOR FOR WATCHES

Georges C. Vuffray, La Chaux-de-Fonds, Switzerland, assignor to Girard-Perregaux S.A., La Chaux-de-Fonds, Canton of Neuchatel, Switzerland

Filed Oct. 12, 1970, Ser. No. 79,753
Claims priority, application Switzerland, Oct. 13, 1969, 15381/69; Apr. 10, 1970, 5353/70
Int. Cl. H02k *21/12*
U.S. Cl. 310—156 **14 Claims**

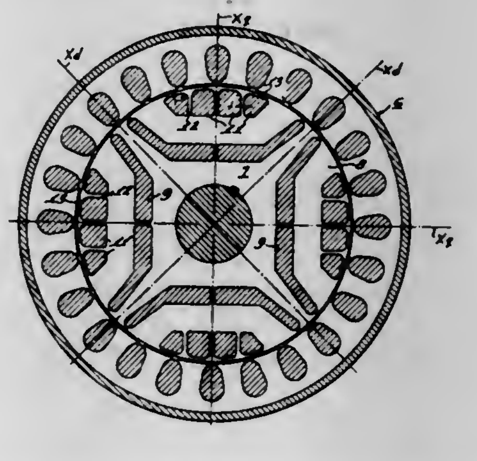


The present invention concerns an electric motor for watches, composed of a rotor with permanent magnetization, a stator winding without core and with even spirals which presents a symmetrical plane parallel to the spirals and containing the axle of the rotor, a winding support made of nonmagnetic material and an annular yoke made of a ferromagnetic material with high permeability and low remanence surrounding the support.

3,652,885
SYNCHRONOUS RELUCTANCE MOTOR

Vernon B. Honsinger, Cincinnati, Ohio, assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Continuation of application Ser. No. 825,790, May 19, 1969, now abandoned. This application Sept. 16, 1970, Ser. No. 72,892
Int. Cl. H02k *19/00*
U.S. Cl. 310—163 **5 Claims**

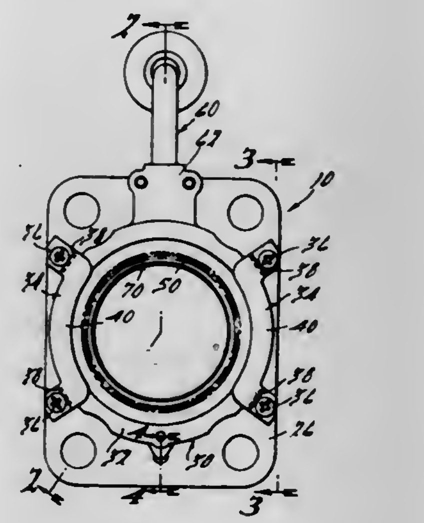


A synchronous reluctance motor having a rotor with a plurality of circumferentially spaced quadrature axis slots near the surface of the rotor and across the quadrature axes. The bridges across the outer end of the quadrature axis slots and the teeth between adjacent quadrature axis slots define a flux path that is so proportioned to cause saturation thereof at the motor pullout torque condition whereas they are unsaturated at the motor no-load condition.

3,652,886
SELF-ALIGNING SENSOR

Hugh E. Riordan, Wyckoff, and Malcolm D. Jones, Belleville, both of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Continuation of application Ser. No. 741,687, July 1, 1968, now abandoned. This application May 1, 1970, Ser. No. 31,853
Int. Cl. H02k *17/42*
U.S. Cl. 310—168 **15 Claims**



An electrical rotational speed sensor constructed to provide an electrical signal indicative of the rotational speed between a pair of members one of which is supported for rotation relative to the other and having a rotor connected to the rotatable member and a stator connected to the other stationary member and having a mounting structure for the rotor and stator whereby one of the rotor and stator can move radially in response to radial movement of the other of the rotor and stator as a result of relative movement between the two members.

3,652,887

PULSE GENERATOR

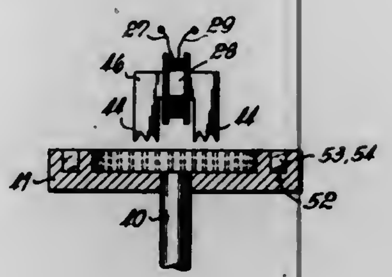
Berad Taubitz, Pforzheim, and Karl Bachle, Schwieberdingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 7, 1970, Ser. No. 78,675

Claims priority, application Germany, Oct. 8, 1969, P 19 50 647.9

Int. Cl. H02k *19/24*

U.S. Cl. 310—168 **9 Claims**



A magnetizable U-shaped core is surrounded by an energized winding so that stray flux is produced at the core ends. A rotary wheel has a circular recess in the region of the core ends in which alternate magnetizable and non-magnetizable parts are fixedly secured so that during rotation of the wheel, the flux passed alternately by said magnetizable and non-magnetizable parts is varied so that pulses are generated in the winding.

3,652,888

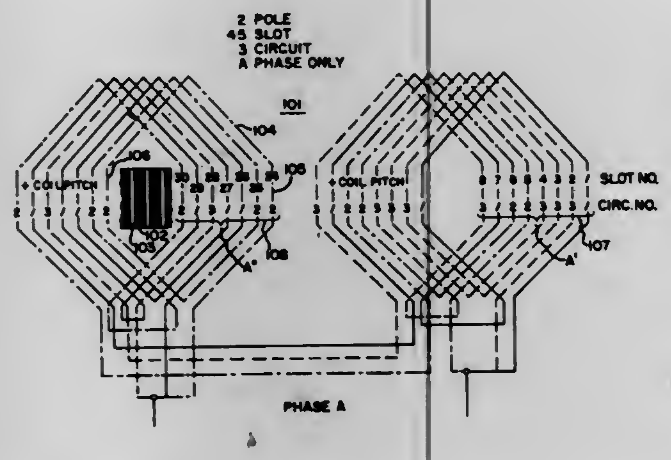
TWO POLE, 45 SLOT, THREE CIRCUIT DYNAMOELECTRIC MACHINE WINDING PATTERN

Dean B. Harrington, Ballston Lake, N.Y., assignor to General Electric Company

Filed Mar. 18, 1971, Ser. No. 125,479

Int. Cl. H02k *3/00*

U.S. Cl. 310—198 **3 Claims**



Winding patterns for two pole, three phase, dynamoelectric machines having 45 slots and three parallel connected circuits per phase, and arranged to reduce voltage and phase unbalance between circuits.

3,652,889

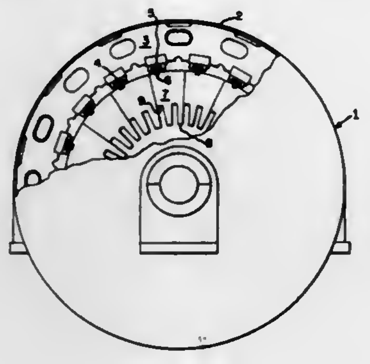
LAMINATED DYNAMOELECTRIC MACHINE CORE AND METHOD OF STACKING

Paul Reece, Scotia, and Peter H. Graham, Schenectady, both of N.Y., assignors to General Electric Company

Filed Jan. 18, 1971, Ser. No. 107,342

Int. Cl. H02k *1/12*

U.S. Cl. 310—259 **3 Claims**



A dynamoelectric machine core is built up of laminations or punchings supported on longitudinal keybars, the laminations being asymmetrical with respect to the tooth and slot portions on the inner ends. Alternate layers of laminations are reversed and arranged so that the possibility of overheating due to induced voltage between keybars is minimized.

3,652,890

X-RAY TUBE WITH ROTARY ANODES

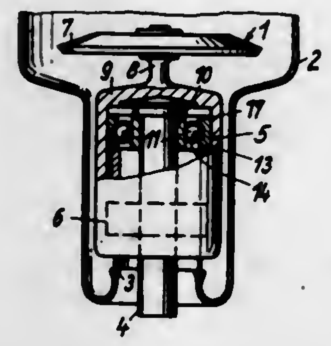
Gunther Appelt, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Feb. 16, 1970, Ser. No. 11,439

Claims priority, application Germany, Mar. 28, 1969, P 19 15 958.1

Int. Cl. H01j *35/10*

U.S. Cl. 313—60 **8 Claims**



X-ray tube with rotary anodes wherein the axis of the anode runs in ball bearings the casings of which consist of metal sheets joined by straps, is particularly characterized in that one sheet of casing has molded straps and consists of a hardenable material while the other sheet consists of a material providing a lubricating coating.

3,652,891

PLASMA DISPLAY PANEL HAVING DISPLAY AND COUNTER CONDUCTORS ON ONE PLATE

John L. Janning, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed July 20, 1970, Ser. No. 56,396

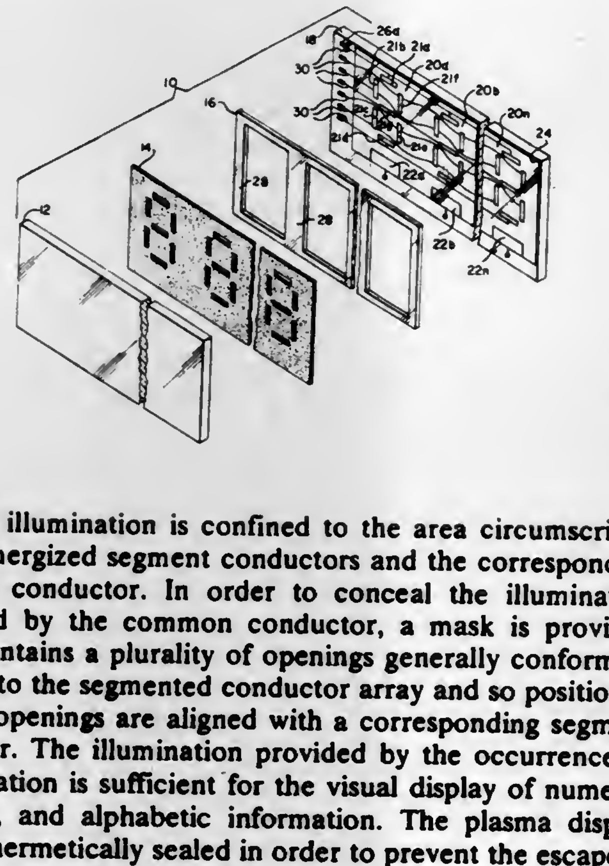
Int. Cl. H01j *61/30, 61/64*

U.S. Cl. 313—109.5 **4 Claims**

A plasma display panel of the gas discharge type comprising a plurality of discrete electrically excitable gas-containing cells. Associated with each cell is a conductor array comprising a plurality of segments and a corresponding common conductor all positioned on the same surface. A transparent

dielectric film is deposited over each segment conductor array and each corresponding common conductor, so that all the conductors are capacitively coupled, but physically isolated from the excitable gas.

A particular character is displayed on the plasma display device by alternately energizing a selected one of the segment conductors comprising the segment conductor array and the corresponding common conductor. The excitable gas immediately adjacent the energized segment conductors and the corresponding common conductor is ionized, with a resulting illumination which is visible to the human eye. The resulting illumination is confined to the area circumscribed by the energized segment conductors and the corresponding common conductor. In order to conceal the illumination generated by the common conductor, a mask is provided which contains a plurality of openings generally conforming in shape to the segmented conductor array and so positioned that the openings are aligned with a corresponding segment conductor. The illumination provided by the occurrence of the ionization is sufficient for the visual display of numeric, symbolic, and alphabetic information. The plasma display panel is hermetically sealed in order to prevent the escape of any of the excitable gas into the atmosphere.



3,652,892

ILLUMINATING LAMP HAVING CONCAVE SEGMENTS ON EXTERIOR BULB SURFACE

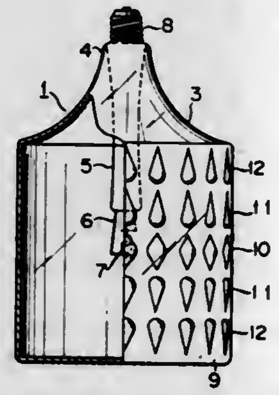
Naoyoshi Nameda, and Tetsuhiro Kano, both of Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Nov. 3, 1969, Ser. No. 873,517

Claims priority, application Japan, Nov. 4, 1968, 43/80252; Nov. 11, 1968, 43/97517

Int. Cl. H01j *5/16;* **H01k** *1/30*

U.S. Cl. 313—116 **6 Claims**



An illuminating lamp wherein the bulb is fabricated into a complicated form characterized by a large number of surface irregularities so as to disperse light from a luminous source without losing its original brilliance and afford comfortable ornamental illumination by projecting light over a broad area from the various convex and concave segments of the bulb surface utilizing the primary refraction caused by the lenticular and prismatic action of said segments.

3,652,893

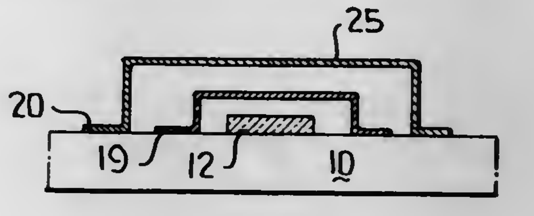
VACUUM TUBE HAVING ALL ELEMENTS SECURED TO A COMMON SUBSTRATE

Hyman Hurvitz, 1220 East West Highway, Silver Spring, Md.

Filed Nov. 20, 1970, Ser. No. 91,309

Int. Cl. H01j *1/88, 19/48, 19/08*

U.S. Cl. 313—268 **5 Claims**



A non-coplanar miniature vacuum tube triode, having its elements all formed by photo-resist techniques, and all secured to a common substrate, the cathode being formed directly in contact with the substrate over its surface, and the grid and anode being formed as crossovers, one for the cathode and the other for both cathode and grid, in parallel planes, leaving free space between each pair of the electrodes, and inherently providing intertube isolation and high gain per tube.

3,652,894

INDIRECTLY HEATED HOT-CATHODES WITH PINK RUBY INSULATOR

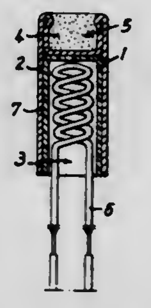
Walter Held, Gunzburg, Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt, Germany

Filed June 30, 1970, Ser. No. 51,298

Claims priority, application Germany, July 1, 1969, P 19 33 309.6

Int. Cl. H01j *1/24, 19/18*

U.S. Cl. 313—340 **3 Claims**



An indirectly heated hot-cathode has a metallic cathode sleeve having inner walls defining a cavity. An electric heating element is arranged in the cavity defined by the cathode sleeve. The necessary electrical insulation between the heating element and the cathode sleeve is maintained by an insulating member shaped to conform to and arranged to at least partially cover the inner walls of the cathode sleeve, and constructed of a material selected from the group consisting of ruby, quartz and sapphire.

3,652,895

SHADOW-MASK HAVING GRADUATED RECTANGULAR APERTURES

Asahide Tsuneta, Kawasaki; Hiroshi Tanaka, Fukaya, and Yoshifumi Kiriake, Morioka, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

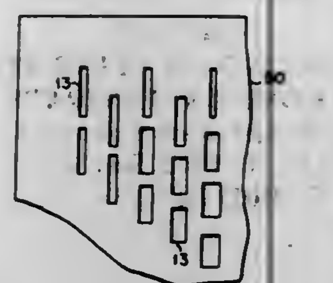
Filed May 21, 1970, Ser. No. 39,382

Claims priority, application Japan, May 23, 1969, 44/47136; Sept. 2, 1969, 44/83080

Int. Cl. H01j *29/06, 31/20*

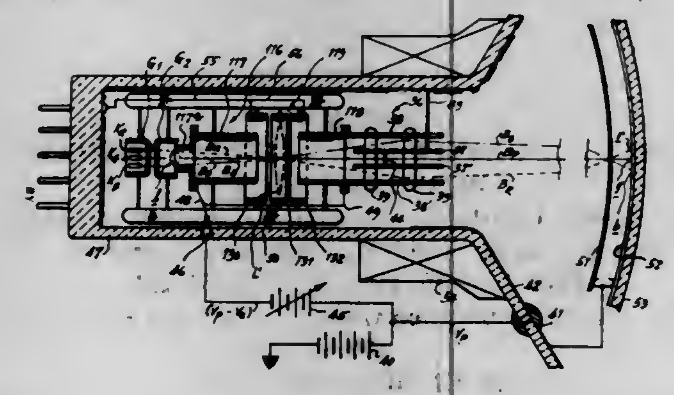
U.S. Cl. 313—85 S **6 Claims**

A shadow-mask for color television cathode-ray tubes, which has rectangular electron-beam-passing openings graduated in size and pitch from the center to the peripheral portion of the mask plate so that the ratio of the area occupied



by the openings over the entire area of the plate is greater in the central portion than in the peripheral portion.

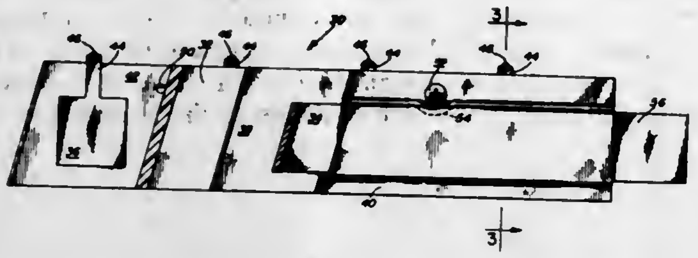
3,652,896
CATHODE-RAY TUBE
Senri Miyaoka, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 26, 1969, Ser. No. 853,169
Claims priority, application Japan, Dec. 19, 1968, 43/93590
Int. Cl. H01j *29/56*
U.S. Cl. 315—31 TV **7 Claims**



In a cathode ray tube, for example, a color picture tube in which a plurality of electron beams are made to converge or cross each other substantially at the optical center of an electrostatic focusing lens by which the beams are focused on the electron-receiving screen of the tube; the focusing lens includes first and second axially spaced, annular electrodes extending around the tube axis and being at the same potential, and a third annular electrode assembly extending between the first and second electrodes and which includes an axial array of at least three annular electrode portions, the electrode portions at the ends of the axial array being at a different potential than the first and second electrodes to establish the focusing electric field and at least one of the electrode portions intermediate the end portions being at a potential that deviates from the potential of the end electrode portions in a direction toward the potential of the first and second electrodes to modify the electric field so that its equivalent optical lens has relatively flatter surfaces for further reducing aberrations of the beam or beams focused thereby.

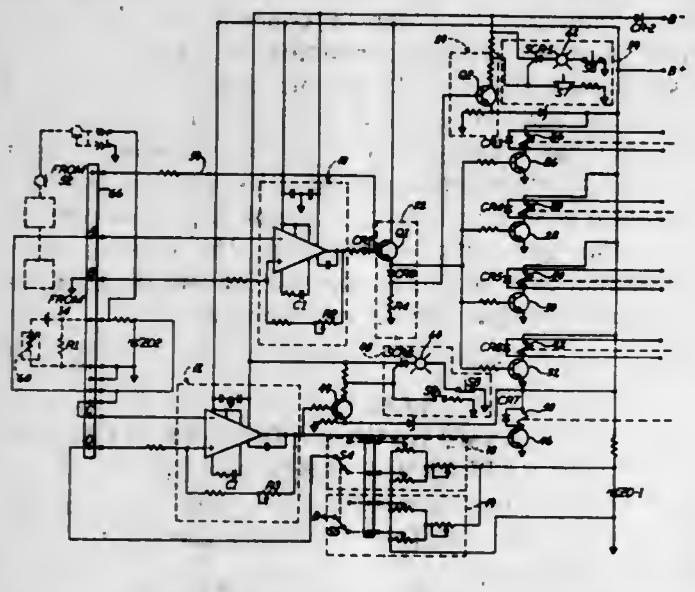
3,652,897
LAMINATED STATIC CHARGE SUPPRESSOR AND METHOD OF MAKING SAME
Michael F. Iosue, Danielson, and Robert E. Sanders, Saybrook, both of Conn., assignors to Rogers Corporation, Rogers, Conn.
Filed Sept. 9, 1970, Ser. No. 70,781
Int. Cl. H01t *19/04;* **H05f** *3/00*
U.S. Cl. 317—2 F **10 Claims**

A laminated static charge suppressing bus which is composed of a strip of insulating material to which a conducting strip and a plurality of ionizing elements are mounted. The conducting strip is mounted on one side of the insulating strip and the plurality of ionizing elements are mounted serially along the other side of the insulating strip directly opposite the conducting strip. The ionizing elements are capacitively coupled to the conducting strip and contain pointed



emitting tips extending beyond the edge of the insulating strip. When the ionizing elements are excited, the emitting tips establish a corona discharge in gas around the tips for removing static charges from paper, plastic webs and sheet-like textile materials.

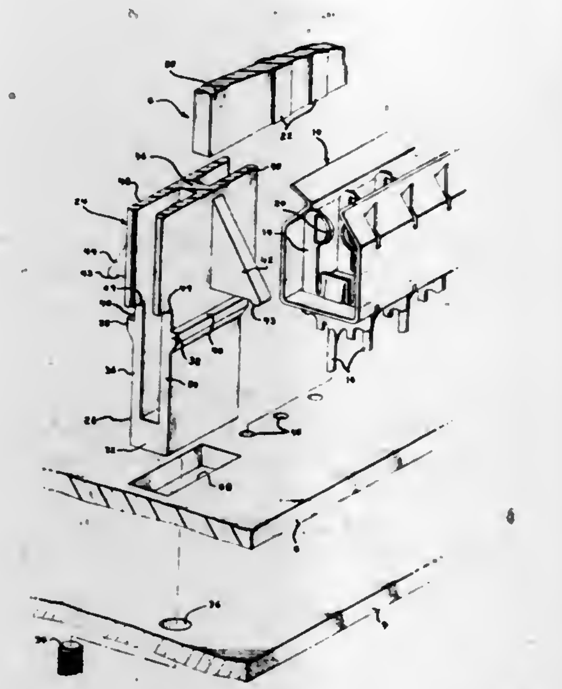
3,652,898
DUAL CHANNEL MONITORING APPARATUS
Linda A. Steeves, Endicott, N.Y., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 27, 1968, Ser. No. 787,318
Int. Cl. H02h *3/28*
U.S. Cl. 317—27 **9 Claims**



A two channel bistable trip circuit, each channel including a variable reference voltage source and voltage comparator circuit. An input signal commensurate with a variable being monitored is delivered to the comparator in each channel and, when the variable reaches preselected levels commensurate with the reference voltages selected for each channel, control signals will be provided. Means are also provided for isolating the control signal of one channel from apparatus normally responsive thereto under certain conditions.

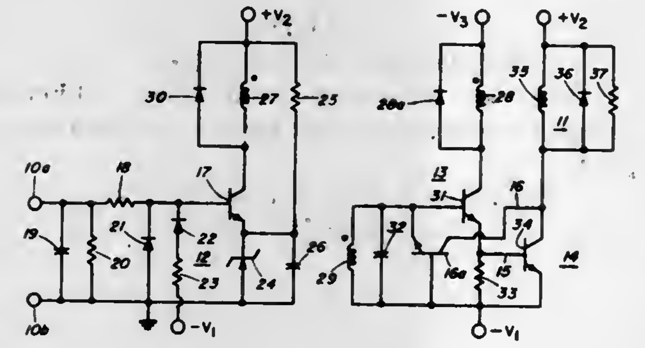
3,652,899
SUPPORT MEMBER FOR ELECTRONIC PACKAGING
Homer Ernst Henschen, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation-in-part of application Ser. No. 771,541, Oct. 29, 1968, now abandoned. This application Dec. 5, 1969, Ser. No. 882,574. The portion of the term of this patent subsequent to Oct. 6, 1987, has been disclaimed.
Int. Cl. H02b *1/02*
U.S. Cl. 317—101 DH **13 Claims**

Plastic member, such as connector housing or printed circuit board supporting member, has mounting means thereon comprising spaced-apart parallel surfaces which are flexible towards each other and capable of undergoing resilient buckling in their own planes. A boss is provided on each surface intermediate its ends and has one side facing one end of the surface. Each boss has a projection extending beyond the one side and towards the one end of the surface. A shoulder is formed adjacent to the end of each surface in opposed rela-



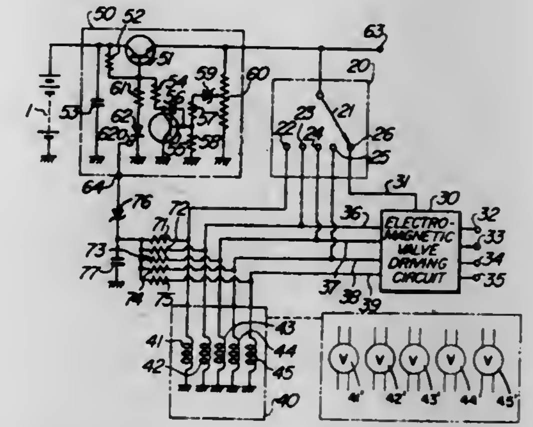
tionship to the boss, these shoulders being spaced from the projections on the bosses by a distance equal to the thickness of the thinnest panel on which the member is to be mounted. If the member is to be mounted on a thicker panel, the surfaces buckle to accommodate the increased thickness.

3,652,900
RADIATION TOLERANT RELAY CONTROL SYSTEM
Theodore H. Evers, Highland, and Eric K. Pritchard, Adelphi, both of Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed Aug. 19, 1969, Ser. No. 851,413
Int. Cl. H01h *47/32*
U.S. Cl. 317—148.5 R **2 Claims**



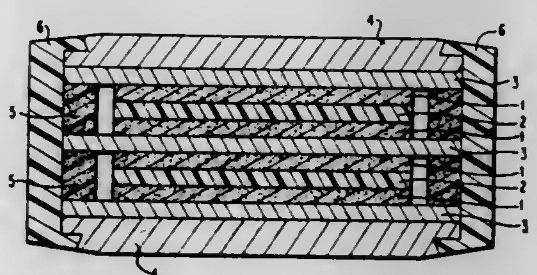
A radiation tolerant relay control system having a threshold amplifier, blocking oscillator and relay driver for actuating a relay winding. A flyback path from the blocking oscillator to the relay winding augments the duty cycle to insure that a predetermined number of input pulses occurring within a time period will energize the relay winding and effect relay operation.

3,652,901
DEVICE FOR PREVENTING SIMULTANEOUS ENERGIZATION OF ELECTROMAGNETIC COILS IN AN AUTOMATIC SPEED CHANGE CONTROL SYSTEM FOR AUTOMOBILES
Hisato Wakamatsu, Kariya; Akira Kitano, Nagoya, and Hisasi Kawai, Toyohashi, all of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Japan
Filed Mar. 16, 1970, Ser. No. 19,780
Claims priority, application Japan, Apr. 28, 1969, 44/32999
Int. Cl. H01h *47/00;* **F16h** *57/06*
U.S. Cl. 317—136 **4 Claims**



A device for preventing the simultaneous energization of electromagnetic coils used for driving the speed change gears in the automatic speed control system for an automobile, which device comprises resistors having one end thereof connected with the positive terminal of electromagnetic coils of electromagnetic valves, the other ends of the resistors being connected in common with the magnetic pole of a constant-voltage diode, and a power control circuit provided between a battery and a load, the positive pole of the constant-voltage diode being connected with the control signal input terminal of the power control circuit, whereby when two or more of the electromagnetic coils are about to be energized simultaneously, a current is passed through the constant-voltage diode to the control signal input terminal of the power control circuit to thereby cut off a current in the power control circuit and therefore the current to electromagnetic coils. The device is simple in circuit arrangement and free of the malfunction resulting from the qualitative irregularity of electrical components in use, or from variations in the ambient temperature or the source voltage.

3,652,902
ELECTROCHEMICAL DOUBLE LAYER CAPACITOR
Burt E. Hart, Red Hook, and Richard M. Peekema, Woodstock, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1969, Ser. No. 837,600
Int. Cl. H01g *9/04*
U.S. Cl. 317—230 **1 Claim**



An electrolytic double layer capacitor having low series resistance, high capacitance, and low inductance characterized by activated carbon plates of very high true surface to geometric volume ratio separated by a highly porous inert spacer as thin as 0.0005 inch, impregnated with highly concentrated electrolytes such as KOH or H_2SO_4.

3,652,903

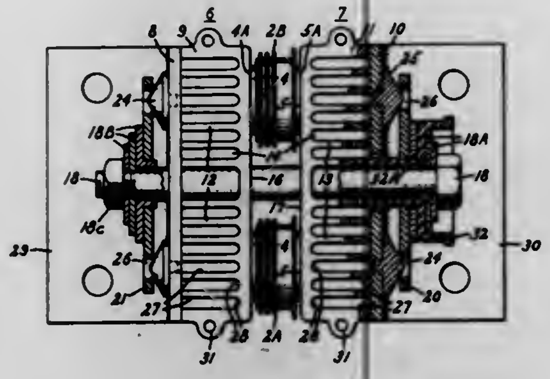
FLUID COOLED PRESSURE ASSEMBLY

Lars O. Eriksson, West Chester, and Daniel B. Rosser, Springfield, both of Pa., assignors to General Electric Company

Filed Feb. 1, 1971, Ser. No. 111,237

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **4 Claims**



Disclosed is a cooled pressure assembly for applying clamping pressure to a plurality of semiconductor rectifiers and for electrically connecting them in parallel. The pressure is applied via a pair of heat dissipating electrodes disposed on opposite sides of the rectifiers. Each electrode contains a plurality of heat dissipating fins which make up a plurality of cooling fluid ducts immediately adjacent the rectifiers. Clamping force exciting means are provided to center the clamping forces axially on the rectifiers and to apply them through the electrodes and the fins therein contained to the rectifiers.

3,652,904

SEMICONDUCTOR DEVICE

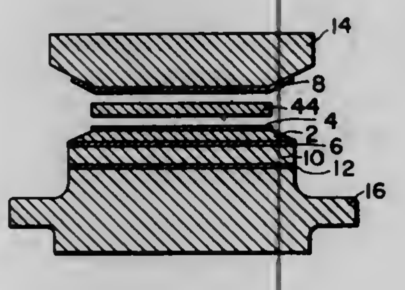
Kazusaburo Takahashi; Takeshi Sasaki; Hisauke Takeuchi; Keiichi Morita, and Tadatoshi Toda, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 31, 1970, Ser. No. 24,146

Claims priority, application Japan, Mar. 31, 1969, 44/23840

Int. Cl. H01l *5/02*

U.S. Cl. 317—234 M **24 Claims**



A semiconductor device comprising a semiconductor wafer, a base electrode soldered to one face of the wafer, a first conductive block secured to the base electrode, a second conductive block being in slidable contact with the other face of the wafer, an annular insulator soldered to the first conductive block, a flexible sheet being so secured to the annular insulator as to seal the wafer off from the atmosphere, and means for compressing the conductive blocks to the wafer, characterized in that a hard and thin metallic film is formed on the surface of the second conductive block, whereby a sticking caused between the second conductive block and the wafer can be prevented.

3,652,905

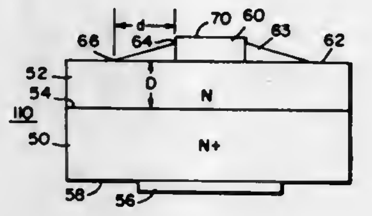
SCHOTTKY BARRIER POWER RECTIFIER

Derrick J. Page, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 26, 1970, Ser. No. 40,625

Int. Cl. H01l *9/00*

U.S. Cl. 317—234 R **5 Claims**



This disclosure relates to a Schottky barrier semiconductor device in which the anode contact is surrounded by a tapered layer of a high resistivity, high work function material.

3,652,906

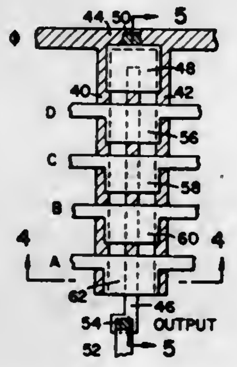
MOSFET DECODER TOPOLOGY

Alton O. Christensen, 8906 Valley View Lane, Houston, Tex.

Filed Mar. 24, 1970, Ser. No. 22,195

Int. Cl. H01l *11/14, 19/00*

U.S. Cl. 317—235 **5 Claims**



The internal capacitance of parallel-gate IGFET structures such as FARMOST NOR gates is substantially reduced by giving the gated area of the substrate a U-shaped configuration so that each gate electrode extends from one leg of the source or drain diffusion to the other leg of the same diffusion across the other diffusion and two gated substrate areas, forming in effect a pair of parallel-connected IGFETS. The reduced capacitance permits the use of much smaller devices requiring much less drive current for the same output current.

3,652,907

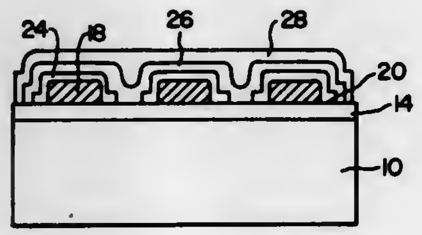
THIN FILM POWER FET

Derrick J. Page, and Thomas P. Brody, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 5, 1970, Ser. No. 34,842

Int. Cl. H01l *11/14*

U.S. Cl. 317—235 R **5 Claims**



This disclosure is concerned with a thin film, power field effect transistor having a power dissipation capability of 80 watts/cm.^{2}. The transistor has a thin film interdigitated source and drain used in conjunction with a thick film source and drain leads. The thick film source and drain leads essentially eliminates negative feedback resulting from a voltage drop in the source and drain.

3,652,908

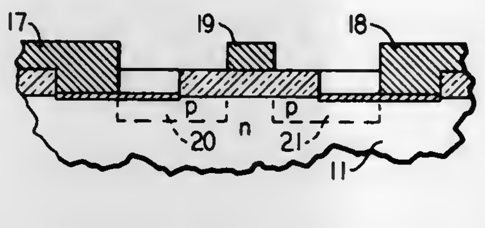
FABRICATION OF INSULATED GATE FIELD-EFFECT TRANSISTORS INVOLVING ION IMPLANTATION

Martin P. Lepselter, New Providence, and Alfred U. MacRae, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original application Feb. 4, 1969, Ser. No. 796,404, now Patent No. 3,590,471, dated July 6, 1971. Divided and this application Sept. 21, 1970, Ser. No. 73,719

Int. Cl. H01l *11/14*

U.S. Cl. 317—235 **3 Claims**



An insulated gate field-effect transistor is made which utilizes both Schottky barrier connections and ion-implanted zones. The resultant structure incorporates source and drain zones, which are formed by ion implantation and whose spacing is fixed by the gate electrode, and source and drain electrodes which make ohmic connection to the implanted source and drain zones and rectifying connections to unimplanted material.

3,652,909

BRUSHLESS STEPPING MOTOR

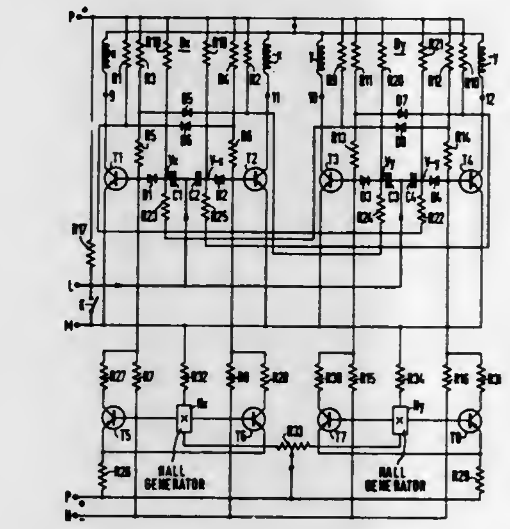
Erich Rainer, Duisburg-Grossenbaum, and Gerhard Kroger, Veitsbronn, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Apr. 15, 1970, Ser. No. 28,868

Claims priority, application Germany, Apr. 17, 1969, P 19 19 442.4

Int. Cl. H02v *29/00*

U.S. Cl. 318—254 **1 Claim**



Each of a plurality of switching transistors is connected to a corresponding one of the rotor windings of a brushless stepping motor. A control circuit coupled to the windings controls the windings so that the rotor rotates stepwise and supplies control pulses to the transistors. The switching transistors are mutually displaced by 180° and are connected in a pair of bistable multivibrator circuits which change their condition alternately after each of the control pulses. The control circuit switches the bistable multivibrator circuits to a preferred condition corresponding to the instantaneous position of the rotor after an interruption of the supply voltage.

3,652,910

AUTOMATIC CONTROL DEVICE FOR THE REGENERATION OF ION-EXCHANGE RESINS

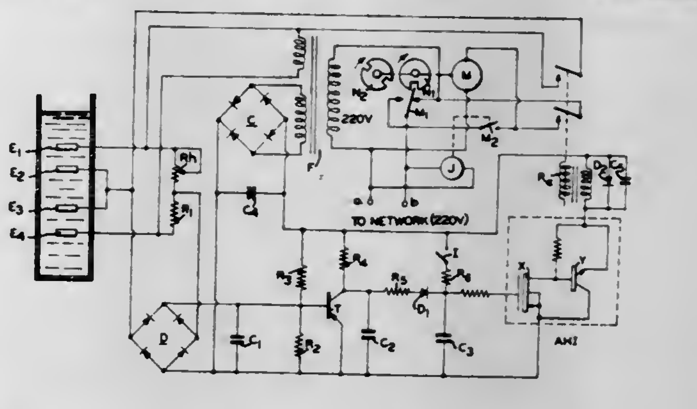
Jean Louis Urbain, 33 rue du Bierchamps, Marcinelle, Belgium

Filed Sept. 11, 1969, Ser. No. 857,143

Claims priority, application Belgium, June 18, 1969, 75,521; Sept. 23, 1968, 721,240

Int. Cl. B01d *15/04, 15/06*

U.S. Cl. 318—445 **6 Claims**



A device for automatically controlling the regeneration of an ion-exchange resin. Two pairs of electrodes are spaced in the resin, one above the other. A variation in capacitance or resistance between the pairs, due to change in ion content of the resin actuates a relay which initiates regenerization. A diode and a strong capacitor retard the relay to avoid the accumulation of false information.

3,652,911

SWITCHGEAR FOR ELECTRICALLY OPERATED WINDOWS OF VEHICLES, ESPECIALLY MOTOR VEHICLES

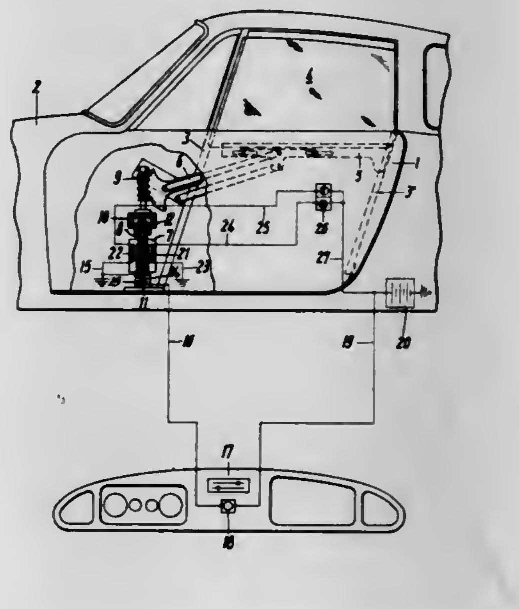
Wolfhelm Gorissen, Stuttgart, Germany, assignor to Firma Dr.-Ing.h.c.f. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed June 9, 1970, Ser. No. 44,700

Claims priority, application Germany, June 19, 1969, P 19 31 169.4

Int. Cl. H02p *7/00*

U.S. Cl. 318—474 **11 Claims**

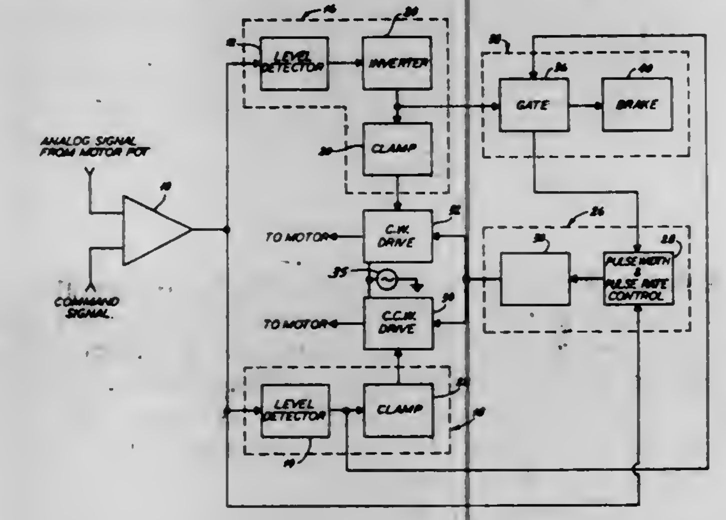


Switchgear for electrically operated windows of vehicles, especially motor vehicles, wherein the drive motor is controlled by means of a switch arranged within the passenger compartment. The switchgear includes a slipping clutch provided with a safety device which reacts to an unacceptably high friction or resistance to the movement of the window by interruptions of the driving force. The switchgear amplifies the moment of movement of the windows through a safety switch arranged on an instrument panel in the vehicle. The slipping clutch is arranged between the drive shaft of the drive motor and the window-lifting linkage. The slipping clutch is capable of clutching through a bridging member controlled by a relay which is, in turn, controlled by the safety switch.

3,652,912
MOTOR CONTROLLER

Michael P. Bordonaro, Middletown, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 22, 1969, Ser. No. 887,156
Int. Cl. G05f ***1/08*****; G05b** ***5/01***
U.S. Cl. 318—599 **15 Claims**

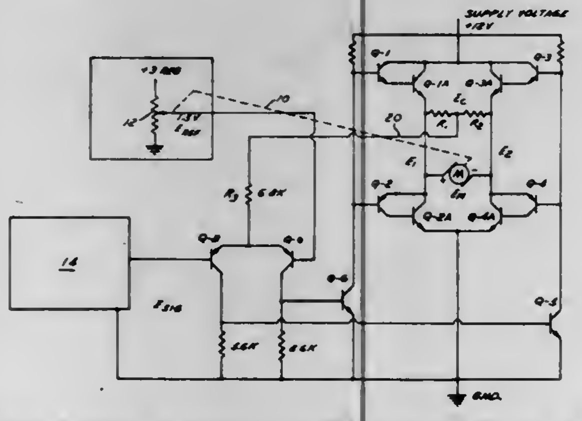


A polyphase bidirectional control system suitable for use with AC motors of the squirrel cage type. In response to applied actual and desired position signals, the present invention generates a position error signal and a motor speed control signal; the speed control signal having a variable pulse width and pulse repetition rate. The control signal is employed to supervise the application of power to the motor to be controlled while the position error signal is employed to control the direction of operation of the motor.

3,652,913
CONTROL SYSTEM INCLUDING COMMON MODE FEEDBACK

Robert D. Leland, Southfield, Mich., assignor to George M. Holley, Jr., Grosse Pointe Shores, Mich.

Filed July 1, 1970, Ser. No. 51,627
Int. Cl. G05f ***1/00***
U.S. Cl. 318—678 **6 Claims**

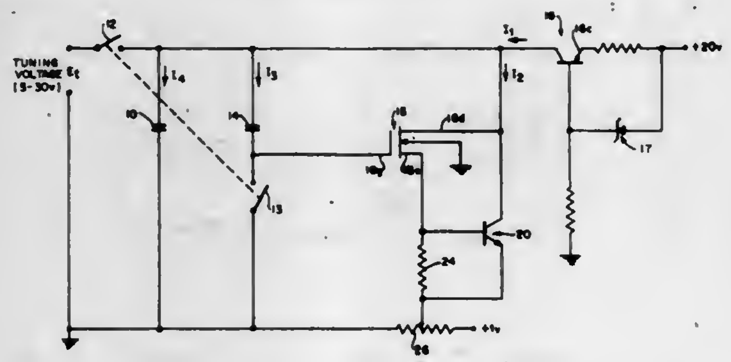


In a differentially operating control system a common mode feedback circuit is described which provides automatic compensation of the quiescent operating point despite variations in component values and semiconductor parameters. The circuit is illustrated in a control system for differentially operating a load, such as a DC motor, in accordance with the difference between a pair of input signals to accurately position the shaft of the motor in respect of such difference.

3,652,914
VARIABLE DIRECT VOLTAGE MEMORY CIRCUIT

Friedrich Johann Krausser, Jericho, N.Y., assignor to Emerson Electric Co., St. Louis, Mo.

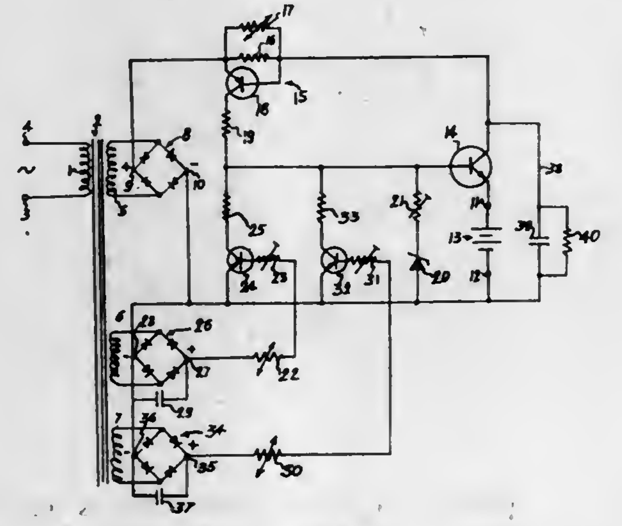
Filed Nov. 9, 1970, Ser. No. 87,901
Int. Cl. G11c ***11/24***
U.S. Cl. 320—1 **2 Claims**



A variable direct-voltage memory circuit comprises a storage capacitor which can be connected in parallel by a switch with a reference capacitor having an extremely long time constant. When the switch is open, the difference in voltage between these two capacitors can be determined and used to control a shunt current regulator to regulate the flow of current to the storage capacitor.

3,652,915
BATTERY CHARGING SYSTEM WITH MEANS FOR SENSING CURRENT, VOLTAGE, GASSING AND TEMPERATURE

Klaus Eberts, 4, Grunwaldtrg, Budingen/Hessen, Germany
Continuation-in-part of application Ser. No. 752,220, Aug. 13, 1968, now abandoned. This application Apr. 2, 1970, Ser. No. 25,045
Int. Cl. H02j ***7/04***
U.S. Cl. 320—31 **4 Claims**

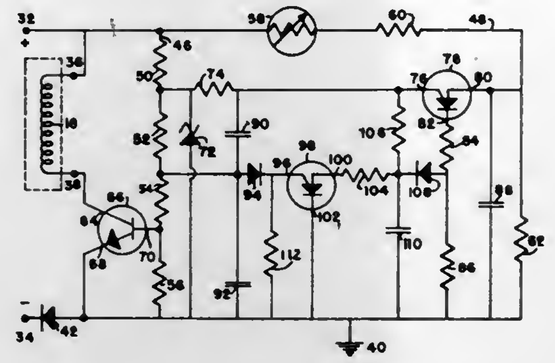


A battery charging system has electronic control means for reducing the charging current in response to attainment of a predetermined battery terminal voltage, a predetermined temperature of the battery and/or a predetermined gassing rate of the battery, and for terminating the charging current when same falls below a predetermined low limit.

3,652,916
BATTERY CHARGE PROGRAMMERS

Gray C. Ballman, St. Louis County, Mo., assignor to Chargematic, Inc.

Filed May 28, 1970, Ser. No. 41,423
Int. Cl. H02j ***7/04***
U.S. Cl. 320—35 **6 Claims**

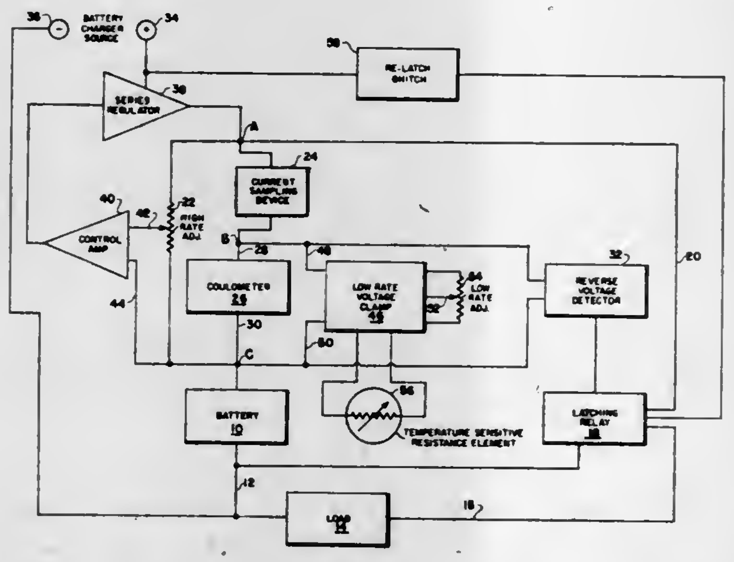


The disclosure relates to Battery Charge Programmers which permit automatic charging of batteries by regulating the overcharge time of the battery being charged and which contain an overriding charge time limiter, to limit the total amount of time the battery is charged, independently of the state of charge.

3,652,917
BATTERY CHARGING SYSTEM USING A COULOMETER AS A LOGIC DEVICE

Carl E. Biggs, Niagara Falls, N.Y., assignor to Textron Inc., Providence, R.I.

Filed Feb. 24, 1970, Ser. No. 13,624
Int. Cl. H02j ***7/00***
U.S. Cl. 320—45 **10 Claims**

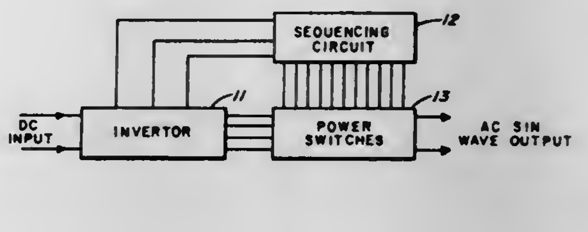


A rechargeable storage battery power supply system in which a coulometer is used as a logic device to provide transition between high charge rate and low charge rate. During battery discharge, the coulometer may act as a logic device to disconnect the load from the battery after a predetermined time integral of current is drawn from the battery. The charging current is applied in reverse direction through the coulometer and when the coulometer reaches its high impedance state in the charging direction a trickle charge is bypassed to the battery. The trickle charge control includes a thermistor responsive to battery temperature. An additional circuit is provided which acts to provide constant voltage float charge after the battery has been fully charged, and which additional circuit also uses the coulometer as a logic element.

3,652,918
SWITCHING INVERTER WITH SINE WAVE OUTPUT

Joseph M. Marzolf, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the United States Navy

Filed Sept. 30, 1970, Ser. No. 76,910
Int. Cl. H02m ***1/12***
U.S. Cl. 321—9 R **2 Claims**

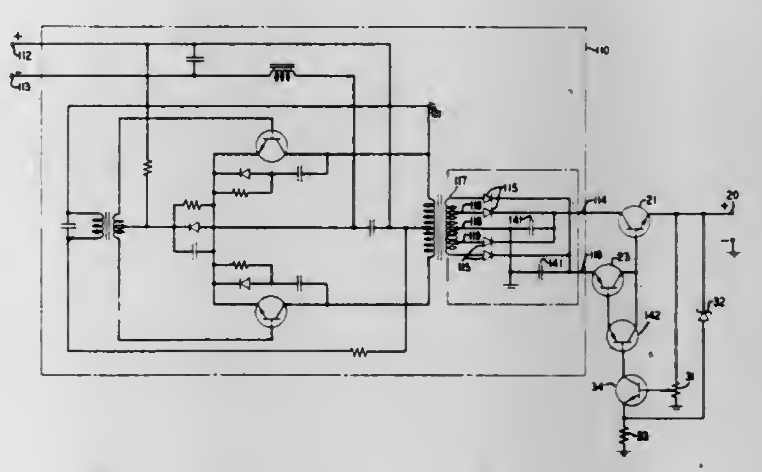


A technique of producing a sine wave output from a solid state inverter using Triacs as switches to supply the sine wave output from a DC input.

3,652,919
BASE REACH-THROUGH ACTIVE SERIES VOLTAGE REGULATOR

Thomas George Harrigan, Denville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 30, 1971, Ser. No. 129,349
Int. Cl. H02m ***7/20***
U.S. Cl. 321—18 **5 Claims**



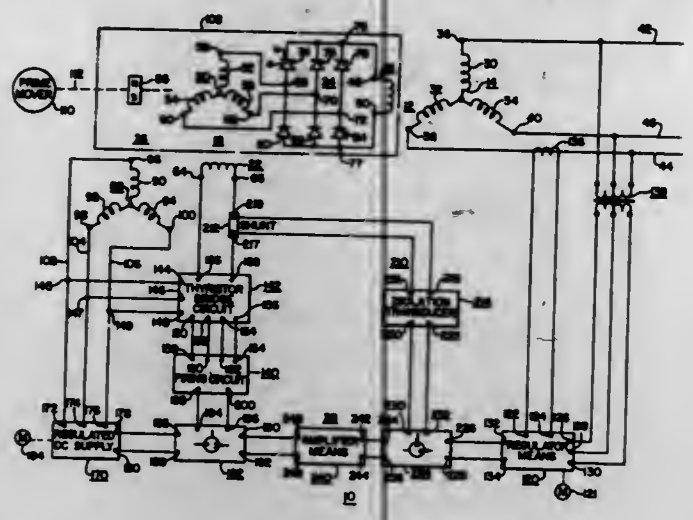
The pass transistor of this series regulator supplies current at a regulated voltage only slightly below its unregulated supply voltage. The driver transistor, driven by the feedback loop, is supplied from a higher voltage source. During periods when the pass transistor cannot supply the load because its source voltage is too low, the driver transistor supplies the load through the base-emitter junction of the pass transistor without affecting the regulation.

3,652,920
REGULATED EXCITER-GENERATOR ELECTRICAL POWER APPARATUS RESPONSIVE TO EXCITER FIELD CURRENT

William H. South, McKeesport, and Frederick W. Keay, Irwin, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

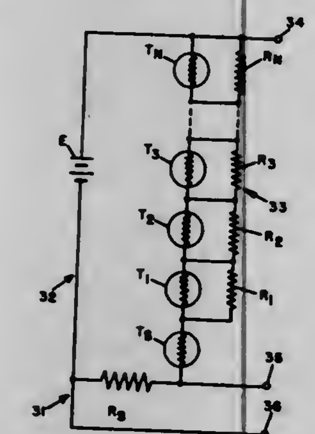
Filed Dec. 3, 1970, Ser. No. 94,844
Int. Cl. H03p ***9/14***
U.S. Cl. 322—19 **7 Claims**

Regulated electric power apparatus including a dynamoelectric machine and exciter. A control feedback loop responsive to the parameter to be regulated is modified by a supplementary negative feedback loop responsive to the exciter field current, which forces current into the field and reduces the effective exciter time constant.



3,652,921
LINEARIZED THERMISTOR NETWORKS

Lloyd N. Nye, 363 Concord Street, Framingham, Mass.
Filed July 2, 1970, Ser. No. 51,995
Int. Cl. G05f *3/00*
U.S. Cl. 323—69 **21 Claims**

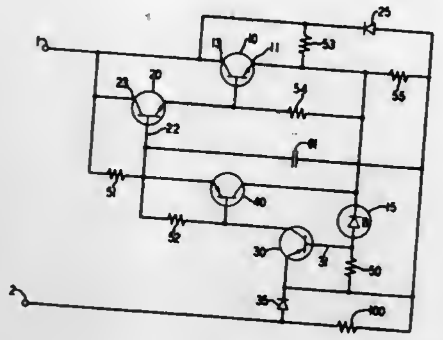


Disclosed are thermistor networks for providing highly linear temperature response. Also disclosed are critical ranges of component value ratios that optimize performance linearity. Particularly described is a network composed of an electrical energy source and source resistor R_s connected across a thermistor circuit including a single thermistor connected in series with another thermistor shunted by a fixed value resistor R_1. Optimization is achieved for an important segment of operating temperatures by employing a ratio of R_1/R_s in the range between one and four.

3,652,922
CONSTANT CURRENT SERIES REGULATOR WITH CONTROL OF BIAS CURRENT ENERGIZING CONTROL CIRCUIT OF THE REGULATOR

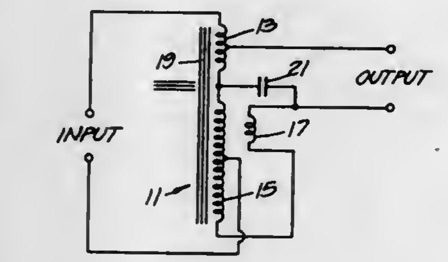
Robert Joseph Healey, Morris Township, Morris County, and Helmut Stocker, Randolph Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 18, 1970, Ser. No. 90,731
Int. Cl. H02j *1/04;* **G05f** *1/56*
U.S. Cl. 323—4 **5 Claims**

The regulation of the current output of a series type current regulator is significantly improved by closely regulating the bias currents required by the control and reference elements of the regulator. These regulated bias currents may be coupled to the output circuit and form part of the output load current. The regulated bias currents are utilized to energize a reference voltage source and a voltage comparison circuit which in turn control the series regulating device of the current regulator.



3,652,923
TRANSFORMER-COUPLING CIRCUIT

Clarence B. Knudson, Inglewood, Calif., assignor to Hughey & Phillips, Inc.
Filed Oct. 12, 1970, Ser. No. 80,061
Int. Cl. G05f *3/06*
U.S. Cl. 323—6 **5 Claims**

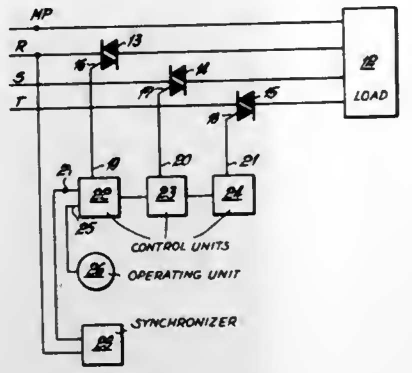


An electrical circuit for coupling flashing light equipment to the series lighting circuit of an airport runway so as to obtain power for the operation of the flashing light. The circuit utilizes a series lighting ferro-resonant autotransformer of suitable power rating and having three windings to provide the desired power transfer.

3,652,924
ARRANGEMENT FOR CONTROLLING THE CURRENT OF AN AT LEAST TWO-PHASE LOAD WITH CONSTANT FREQUENCY SUPPLY VOLTAGE

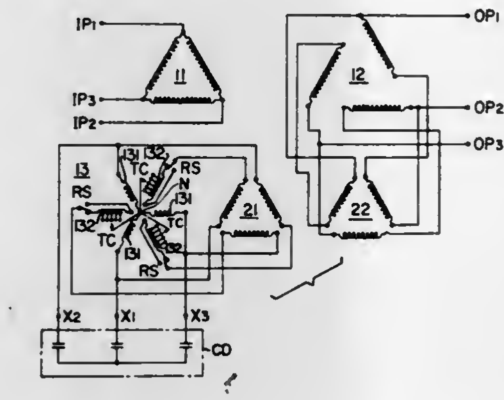
Manfred Dieterich, Stuttgart-Zuffenhausen; Gunter Schirmer, Leinfelden; Gerhard Conzelmann, Leinfelden-Unteraichen; Walter Harlin, Stuttgart-Kaltental; Gerhard Haustein, Leinfelden-Unteraichen, and Wilhelm Ocker, Bonlanden, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Feb. 20, 1970, Ser. No. 13,135
Claims priority, application Germany, Feb. 21, 1969, P 19 08 726.4
Int. Cl. G05f *1/56*
U.S. Cl. 323—24 **17 Claims**

An arrangement for the operation of a polyphase load from an alternating current source through the control of triacs. One triac is connected in each phase of the source connected to the load. The control electrodes of the triacs are controlled through a primary stage having a variable time delay in the form of a monostable multivibrator with RC network of variable resistance. A synchronizing device is connected between the primary stage and one phase of the alternating current source. Secondary control stages with fixed time delay elements receive signals from the primary stage or from other secondary stages to control the firing of the triacs. The firing pulses are generated through resetting of the monostable multivibrators present as the time delay elements in the control stages.



3,652,925
POLYPHASE TRANSFORMER DEVICE WHOSE TAPS ARE CHANGEABLE WHEN LOADED

Masaki Yamana, Kawasaki, Japan, assignor to Fuji Denki Seizo Kabushiki Kaisha, Kawasaki-shi, Japan
Filed Nov. 30, 1970, Ser. No. 93,705
Claims priority, application Japan, Nov. 28, 1969, 44/95517
Int. Cl. G05f *3/04*
U.S. Cl. 323—43.5 R **2 Claims**

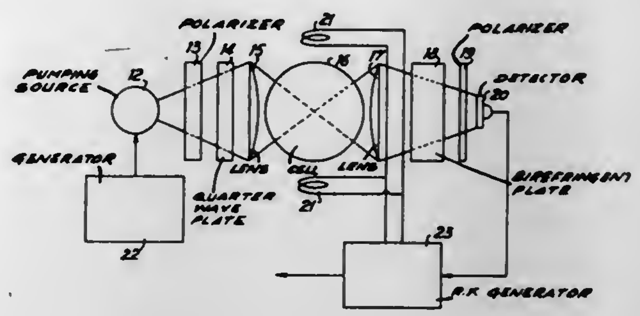


A polyphase regulating transformer device has a main transformer, a tertiary winding in the main transformer and a series transformer with its secondary winding connected in series with the output of the main transformer. The tertiary winding is connected to excite the primary of the series transformer, and is itself composed of a fixed winding section and a tapped winding section both being connected in series at a neutral point through a tap changer; the primary phase windings of the series transformer are not provided with any interphase connections and are insulated from one another. A condenser bank is connected for power factor improvement across terminals of the fixed winding section of the tertiary.

3,652,926
OPTICAL PUMPING MAGNETOMETERS

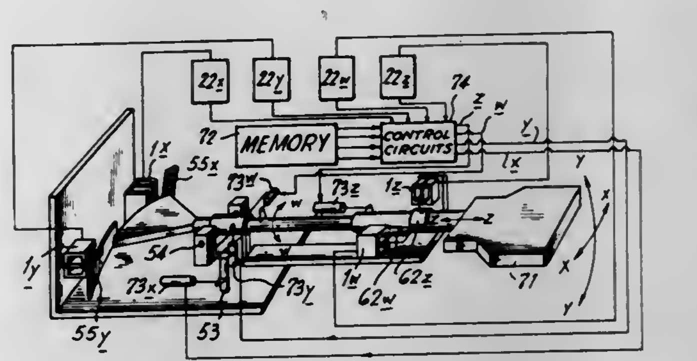
Henri Brun, Paris, France, assignor to Thomson-CSF
Filed Feb. 25, 1970, Ser. No. 13,970
Claims priority, application France, Mar. 6, 1969, 69/06240
Int. Cl. G01r *33/08*
U.S. Cl. 324—0.5 R **5 Claims**

The invention relates to optical pumping magnetometers, wherein an alkali vapor filling an absorption cell is optically pumped by means of a pumping source which provides light having two spectrum lines building up a doublet. The magnetometer according to the invention uses a cell whose walls are internally lined with a layer preserving the alignment of the alkali atoms. Improved detection of the R.F. lines is carried out with a birefringent plate converting said two spectrum lines radiations supplied by said cell with the same circular polarization into radiations rectilinearly polarized in mutually perpendicular directions.



3,652,927
VECTOR DISPLACEMENT DEVICE

Saburo Uemura, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 24, 1970, Ser. No. 22,280
Claims priority, application Japan, Apr. 9, 1969, 44/27883
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 D **5 Claims**

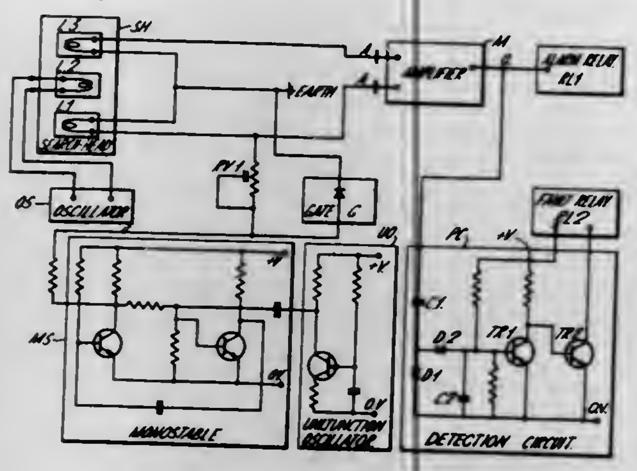


A device for detecting relative displacements of two members in first and second right-angularly related directions has first and second dual-gap magnetic flux responsive heads fixed relative to one of said members with the directions across the gaps of the first and second heads being respectively parallel to the first and second directions of relative displacement, first and second magnets fixed relative to the other member and being disposed adjacent the first and second heads with each magnet being magnetized in the direction across the gaps of the adjacent head, and circuits connected with the heads to provide electrical outputs that are characteristic of the magnetic flux received by the respective heads from the adjacent magnets and hence correspond in magnitude and polarity to relative displacements of the members in the first and second directions from a predetermined position.

3,652,928
METHOD AND APPARATUS FOR TESTING ELECTRICAL DETECTION SYSTEMS

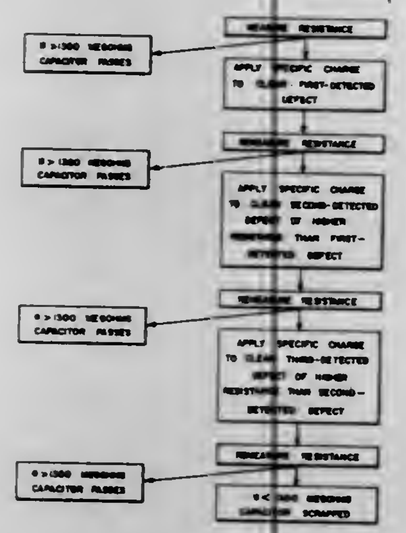
John William Brian Mansfield, 144 A Commercial Way, London S.E. 15, England
Filed July 7, 1969, Ser. No. 839,507
Claims priority, application Great Britain, July 10, 1968, 32,917/68
Int. Cl. G01r *35/00*
U.S. Cl. 324—34 R **15 Claims**

A method of testing a detection system having inductively coupled primary and secondary coils with a switching device connected to the output. An impedance is switched into the secondary coil circuit to cause a change in output which is insufficient to actuate the switching means and an alarm senses any absence of change in output, indicating that there is a fault in the detection system.



3,652,929
METHOD FOR HEALING SHORT CIRCUITS IN CAPACITORS

Robert Holbrook Cushman, Princeton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Feb. 9, 1970, Ser. No. 9,582
Int. Cl. G01r *31/02, 27/26*
U.S. Cl. 324—51 **4 Claims**

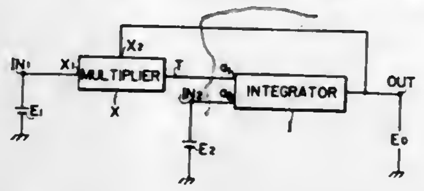

MEASURE RESISTANCE
R >1300 MEGOHMS CAPACITOR PASSES
APPLY SPECIFIC CHARGE TO CLEAR FIRST-DETECTED DEFECT
CAPACITOR SCRAPPED

Resistance of self-healing capacitors is measured to detect short circuits of lowest resistance. Electrical charge of relatively high current for relatively short time is applied to burn out lowest resistance short circuits. Resistance is again measured to detect short circuits of higher resistance. Electrical charge of relatively lower current for relatively longer time is applied to burn out higher resistance short circuits. Resistance is again measured to detect short circuits of still higher resistance. Electrical charge of relatively still lower current for relatively still longer time is applied to burn out still higher resistance short circuits.

3,652,930
RATIO MEASURING APPARATUS

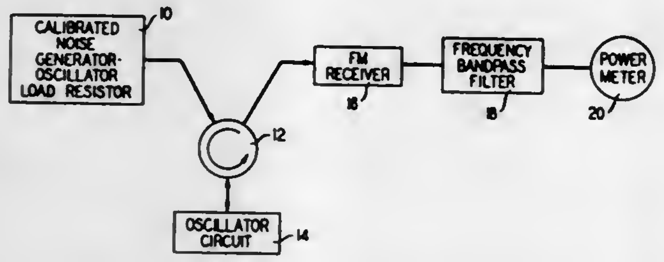
Takashi Sugiyama; Satoshi Kurata, and Hisao Nakane, all of Tokyo, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan
Filed Mar. 2, 1970, Ser. No. 15,500
Claims priority, application Japan, Mar. 6, 1969, 44/17060; 44/17061; Sept. 26, 1969, 44/76784
Int. Cl. G01r *27/00;* **G06g** *7/16*
U.S. Cl. 324—57 **7 Claims**

Ratio measuring apparatus adapted to measure various parameters of impedance elements is comprised by a multiplier energized by a divisor signal, and an integrator supplied with a dividend signal and the output from the multiplier. A portion of the output from the integrator is fed back to the multiplier so that the integrator provides an output proportional to the ratio between the dividend signal and the divisor signal.



3,652,931
INNATE OSCILLATOR NOISE DETERMINATION

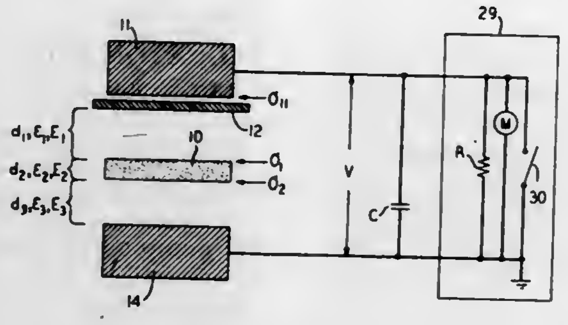
James Gross Josenhans, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.
Filed Oct. 2, 1970, Ser. No. 77,658
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 **8 Claims**


CALIBRATED NOISE GENERATOR-OSCILLATOR LOAD RESISTOR
10
FM RECEIVER
16
FREQUENCY BANDPASS FILTER
18
POWER METER
20
12
OSCILLATOR CIRCUIT
14

A calibrated noise generator is coupled through a circulator to an oscillator circuit which contains the active negative resistance device having innate noise characterized by M_e. The oscillator is coupled through the circulator to an FM receiver whose output is directed to a frequency bandpass filter. The frequency bandpass filter is coupled to a power measuring meter. A measurement of the output power of the oscillator waveform after it is processed through the FM receiver and frequency bandpass filter is made with essentially no external noise power applied to the oscillator circuit. The noise signal from the noise generator is then increased until the output power meter reading is double the initial measurement. At this point the innate noise, M_e, of the active negative resistance device is known.

3,652,932
METHOD AND APPARATUS FOR MEASUREMENT OF SURFACE CHARGE OF AN ELECTRET

Gerhard Martin Sessler, Summit, and James Edward West, Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 30, 1970, Ser. No. 59,531
Int. Cl. G01n *31/02*
U.S. Cl. 324—72 **12 Claims**



Electret surface charge is measured accurately and in a reproducible fashion by supporting an electret between fixed electrodes positioned at a finite distance from the electret, one at ground potential and the other employed as a voltage probe. A conductive shutter is interposed between the electret and the probe. A capacitor connecting the electrodes is discharged and the shutter opened to induce a charge on the probe. This charge is drawn from the capacitor and the voltage thus generated across the capacitor is measured with an electrometer. Since electrode spacing is fixed, repeated measurement yields the same measure and the charges on different samples are directly comparable.

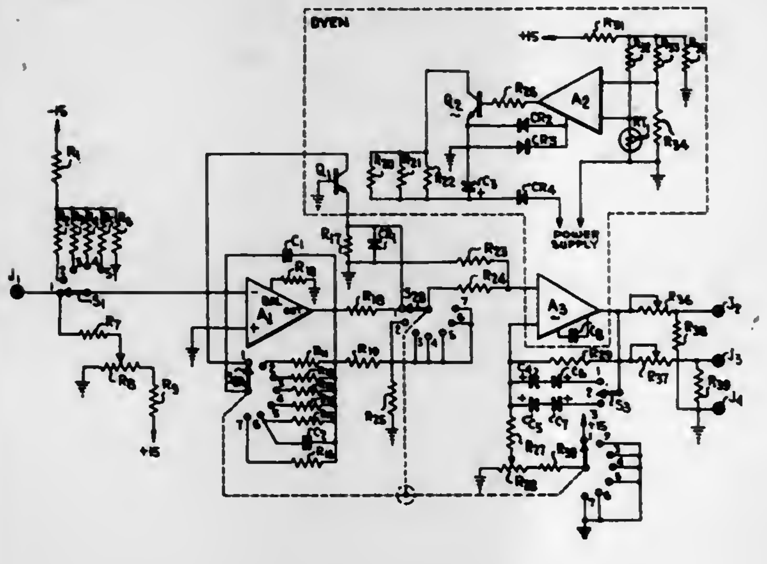
3,652,933
APPARATUS FOR PRODUCING A SIGNAL WHEN A SELECTED PHASE RELATIONSHIP EXISTS BETWEEN TWO ALTERNATING CURRENT VOLTAGES OF DIFFERENT FREQUENCIES

Tibor Rubner, Pittsburgh; Andre Wavre, Monroeville, and John H. Bednarek, Murrysville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Original application Jan. 4, 1968, Ser. No. 695,684. Divided and this application Dec. 23, 1969, Ser. No. 889,824
Int. Cl. G01r *23/00, 25/00*
U.S. Cl. 324—82 **6 Claims**

A signal is produced when a selected phase relationship exists between two alternating current voltages of different frequencies by converting the alternating current waveforms to square waves, combining the square waves to produce a rectangular waveform, and utilizing the rectangular waveform to produce a triangular beat frequency signal having a linear relationship between phase difference and time, and a level detector has the triangular beat frequency signal applied thereto and produces an output signal when the triangular beat frequency signal exceeds in amplitude a selected level in the level detector.

3,652,934
LOG/LINEAR ELECTROMETER

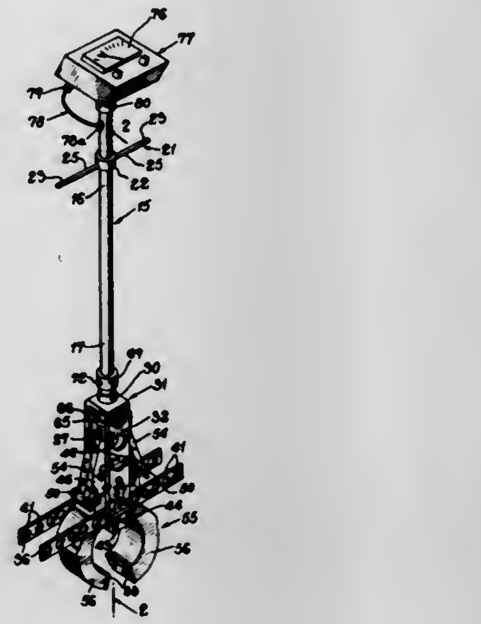
Joseph W. Paljug, Falls Church, and Samuel S. Brody, Springfield, both of Va., assignors to American Standard Inc., Falls Church, Va.
Filed Aug. 5, 1969, Ser. No. 847,694
Int. Cl. G01r *15/08, 15/10*
U.S. Cl. 324—115 **12 Claims**



A high impedance, solid state log-linear amplifier (electrometer) of drift free repeatable character includes a multiple range linear amplifier and a logarithmic amplifier continuously adjustable to accept several decades of input current. The overall unit includes an internal calibration source and has a pair of output ports which are separately adjustable relative to the input current to provide dual readout for a single input as where one readout is to be interfaced into a computer while the other readout is to provide a visual entry on a strip chart recorder.

3,652,935
ELECTRICAL CURRENT MEASUREMENT AND RAPIDLY LOCATING AND POSITIVELY IDENTIFYING CATHODES HAVING ABNORMAL ELECTRICAL CONDITIONS ASSOCIATED THEREWITH IN AN ELECTROLYTIC COPPER REFINING PROCESS TANKHOUSE

Frank D. Shaw, Rumson, N.J., assignor to American Smelting and Refining Company, New York, N.Y.
Filed Jan. 7, 1970, Ser. No. 1,108
Int. Cl. G01r *1/22, 33/00*
U.S. Cl. 324—127 **35 Claims**

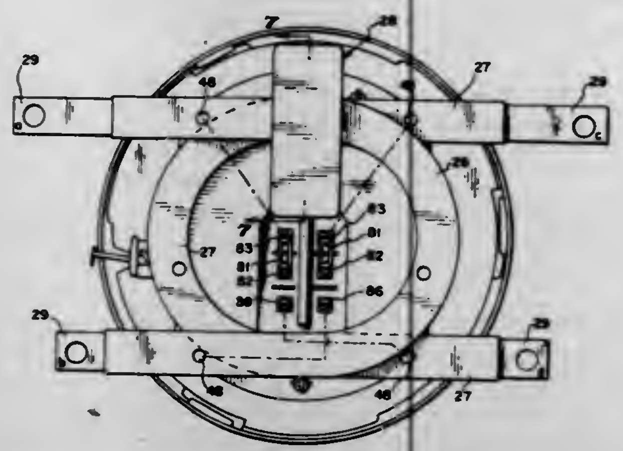


Cathodes having abnormal electrical conditions associated therewith in an electrolytic copper refinery tankhouse are rapidly and positively identified to enable the early remedying of the abnormal condition or conditions, for instance short circuited cathodes or poor contacts, by closing the normally open, cathode bar receptive, pivotally mounted, automatically closeable and automatically openable jaws of a sensing head of an electrical current measuring instrument, or of the sensing heads of a plurality of current measuring instrument units depending from a common supporting means of a current measuring apparatus, about one or more of a plurality of spaced apart cathode bars in the tankhouse and from which the cathodes are suspended and immersed in the electrolyte. The sensing head jaws are closed about the cathode bars by lowering the instrument or apparatus whereby shoes of the instrument's operating mechanism are forcefully applied against the cathode bar or bars due to the weight of instrument or apparatus parts, thereby automatically closing the jaws of the sensing head or heads to substantially encompass the cathode bar or bars. The current passing through each cathode bar is measured by utilizing the magnetic field created by the current passing through the cathode bar to induce a measurable e.m.f. and a measurable electrical current in conductive coils on nonmagnetic cores of the sensing head jaws in a preferred embodiment. The current measurement value for the cathode bar or each of the cathode bars is compared with a predetermined desired current measurement value for its suspended cathode thereby positively identifying any cathode or cathodes having an abnormal electrical condition or conditions associated therewith.

3,652,936
SELF-CONTAINED WATT-HOUR METERS FOR EXCEEDINGLY HEAVY LOADS

George N. Burkhart, Jr., Brookston, Ind., assignor to Duncan Electric Company, Inc.

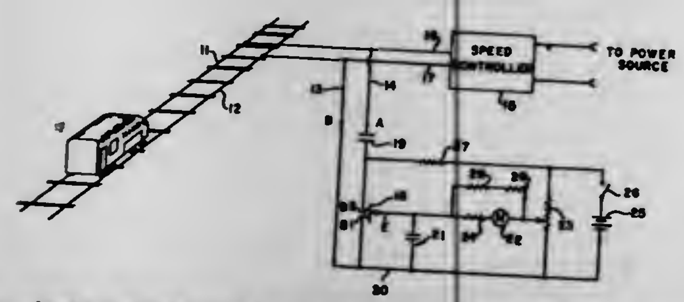
Filed Dec. 4, 1969, Ser. No. 882,013
Int. Cl. G01r *11/02, 35/04*
U.S. Cl. 324—137 **14 Claims**



A watt-hour meter has in its base the circular core of a current transformer, wound with the secondary coil, this coil being connected to the current coil of the meter driving unit. The heavy load-carrying conductors extending through this core as its primary winding are carried by the base and are in the form of oppositely facing "U" bars. A special meter box and terminal block facilitates the connecting of this combination in the circuit being measured. Alternatively it may be mounted at a different position, not in the circuit, in which case closing the cover causes the display of words indicating that it is not in service. Shiftable connection links reverse voltage connections in case the supply and load conductors are interchanged from the more usual arrangement, and also facilitate testing. The service connectors are especially suited for very heavy service conductors. Calibration is of the total self-contained meter, i.e., with current transformer as a part thereof.

3,652,937
SPEED AND FAULT INDICATOR FOR A MODEL VEHICLE

William L. Garrott, 2119 S.W. 44th Avenue, Gainesville, Fla. Continuation-in-part of application Ser. No. 795,176, Jan. 30, 1969, now abandoned. This application Nov. 2, 1970, Ser. No. 86,255
Int. Cl. G01p *3/48*
U.S. Cl. 324—168 **10 Claims**

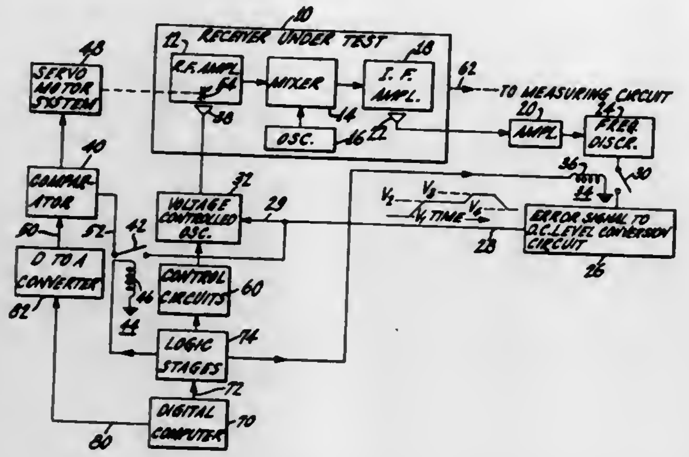


A visual indicator is provided which monitors the operating conditions of a model track system having electrically propelled vehicles and simultaneously provides an indication of the speed of the vehicle on the trackway and of any faulty conditions that may exist along the tracks. A semiconductor transistor circuit separates ripple voltage produced by commutation in the electrical motor that propels the vehicle from the full wave rectified voltage of the energizing source of the model system. Operation of the transistor circuit in response to ripple voltage drives a meter instrument calibrated to indicate speed of the vehicle, while deflections due to faults provide an indication of a fault at the location of the vehicle on the track.

3,652,938
DUAL LOOP RECEIVER TUNING AND FREQUENCY TRACKING SYSTEM

Larry Joe Byers, Indianapolis, Ind., and James Maurice Keeth, Columbus, Ohio, assignors to RCA Corporation, New York, N.Y.

Filed June 9, 1970, Ser. No. 44,781
Int. Cl. H04b *1/16*
U.S. Cl. 325—363 **6 Claims**

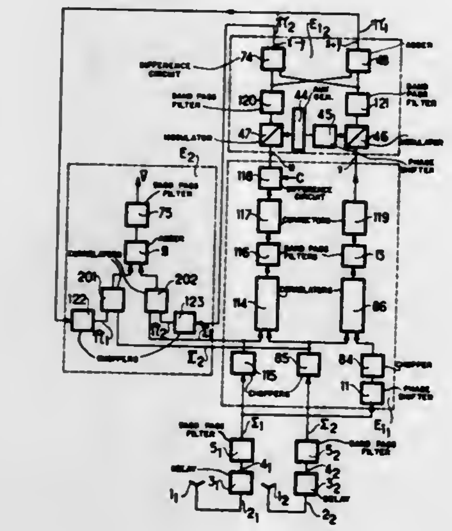


A first servo loop responsive to the beat frequency produced in a receiver automatically tunes an oscillator coupled to the input circuit of the receiver to the receiver frequency. A second servo loop then tunes the receiver to desired frequencies within the receiver band, while the oscillator automatically tracks this tuning. The second loop may include a comparator for comparing voltages indicative of the frequencies to which it is desired to tune the receiver with a voltage employed for tuning the oscillator.

3,652,939
APPARATUS FOR IMPROVING THE SIGNAL TO NOISE RATIO OF SIGNALS RECEIVED AT TWO ANTENNAS

Georges Levasseur, La Talmouse Par Goussainville, France, assignor to C.I.T.-Compagnie Industrielle Des Telicommunications, Paris, France

Filed Nov. 7, 1969, Ser. No. 874,943
Claims priority, application France, Nov. 7, 1968, 172984
Int. Cl. H04b *1/18, 15/00*
U.S. Cl. 325—367 **11 Claims**

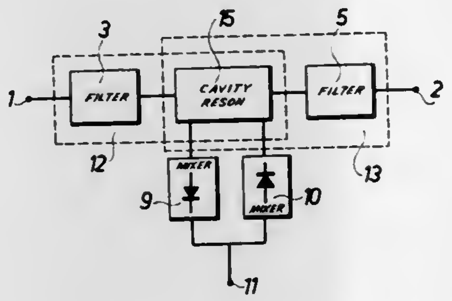


Device for improving the signal/noise ratio S + B_1 and S + B_2 coming from two aerials, comprising two correlators with polarity coincidence, whose first inputs receive chopped tensions $x + y$ and $x - y$, x and y being sinusoidal voltages depending respectively on the correlation coefficients of noise B_1, B_2 and of the said noise put in phase coincidence, and whose second inputs receive chopped tensions S + B_1 and S + B_2, the required signal being collected at the output of an adder whose inputs are connected to the outputs of the said correlators.

3,652,940
MICROWAVE BALANCED RECEIVER MIXER

Gyorgy Reiter; Sandor Szenasi; Bela Toth, and Ferenc Rakosi, all of Budapest, Hungary, assignors to Tavkozlesi Kutato Intezet, Budapest, Hungary

Filed Feb. 17, 1970, Ser. No. 12,016
Claims priority, application Hungary, Feb. 27, 1969, TA-1007
Int. Cl. H04b *1/06*
U.S. Cl. 325—446 **5 Claims**



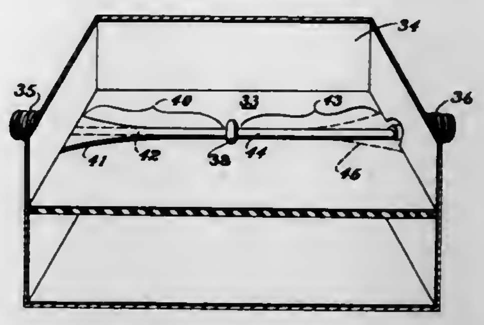
The microwave balanced mixer includes two band-pass filters tuned to the frequencies of an input signal and local oscillator signal with means to feed the input and local oscillator signals into a cylindrical cavity resonator as two electromagnetic fields having relative perpendicular polarizations. Means are also provided to couple the cavity resonator to two diode mounts, theses diode coupling means being located on the cylindrical wall of the cavity resonator so that a plane determined by the center of a first of said diode coupling means and the cavity resonator longitudinal axis and a plane determined by the center of a second of said diode coupling means and the cavity resonator longitudinal axis will be perpendicular to each other and to the means for feeding the input and local oscillator signals. The cavity resonator operates in the TE_{111} or TE_{112} modes and includes tuning rods placed in the polarization planes of the two perpendicular modes of the resonator to tune the resonant frequencies to these modes to the frequencies of the input electromagnetic fields. The positions of the polarization planes of the two perpendicular modes of the cavity resonator excited inside the cavity of the resonator by the two electromagnetic fields are chosen so that they will be at angles of substantially 45° to the perpendicular planes of the first and second diode coupling means.

3,652,941
DOUBLE BALANCED MICROWAVE MIXER USING BALANCED MICROSTRIP BALUNS

Donald Neuf, Wantagh, N.Y., assignor to RHG Electronics Laboratory, Inc., Farmingdale, L. I., N.Y.

Filed Feb. 24, 1970, Ser. No. 13,436
Int. Cl. H04b *1/06*
U.S. Cl. 325—446 **19 Claims**

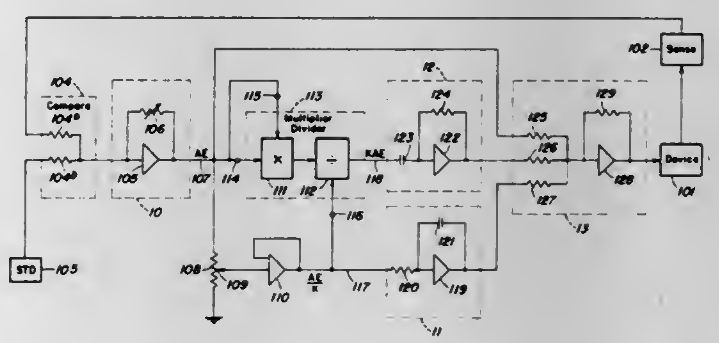
A microwave mixer using a double balanced diode bridge arrangement, provided with a signal input, a local oscillator input and an output. Microstrip baluns, having their ground plane metallic strip tapered, are connected between the inputs and the bridge. The diode bridge is assembled in a package wherein all the connections are of substantially identical lengths, and is placed in a substrate which is suspended in air within a housing.



3,652,942
FEEDBACK CONTROL SYSTEM

Ward F. O'Connor, Deanville, N.J., and William George Van Vliet, Greenwich, Conn., assignors to The Lummus Company, Bloomfield, N.J.

Filed Jan. 18, 1971, Ser. No. 107,029
Int. Cl. G06g *7/18*
U.S. Cl. 328—127 **21 Claims**



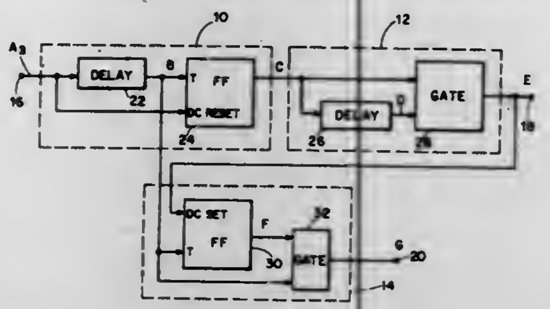
A feedback control system including differentiating means and integrating means is disclosed in accordance with the teachings of the present invention wherein the effective time constants of the differentiating means and the integrating means are simultaneously modified in accordance with a single adjusting means such that said time constants maintain a constant relationship with respect to each other. The single adjusting means includes variable proportioning means for producing a signal proportional to an input signal such that the ratio of proportionality between the produced signal and the input signal is adapted to be altered, and reciprocal means supplied with said input signal such that said relationship is equal to the reciprocal of said ratio of proportionality. The produced signal and the generated signal are applied to the differentiating means and the integrating means whereby the effective time constants thereof are modified in accordance with said ratio of proportionality. The sensitivity of the feedback control system may be modified by second adjusting means.

3,652,943
APPARATUS INCLUDING DELAY MEANS FOR DETECTING THE ABSENCE OF INFORMATION IN A STREAM OF BITS

Albert T. Piccirilli, Medfield; Frederick P. Cochrane, Needham, and Eugene S. Redner, Framingham, all of Mass., assignors to Honeywell Inc., Minneopolis, Minn.

Filed May 4, 1970, Ser. No. 34,285
Int. Cl. H03k *5/18*
U.S. Cl. 328—120 **20 Claims**

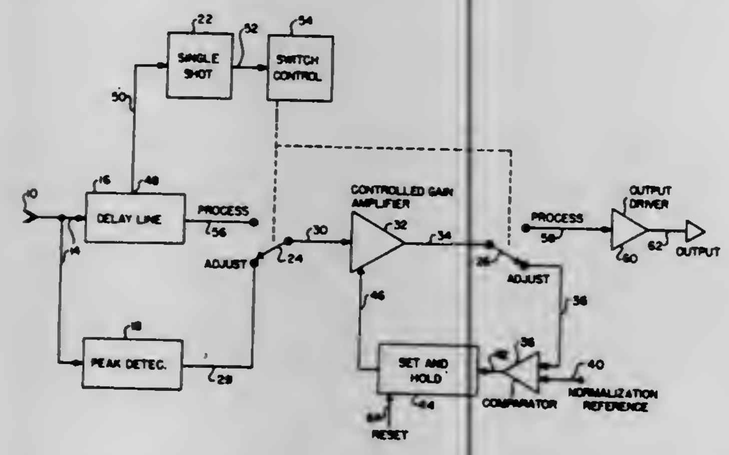
Herein is revealed a missing information bit detector which is utilized in reading either double frequency or phase encoded information. A first circuit receives the information stream of clock and data bits and generates a series of pulses whose width is dependent on the delay of the first circuit, the time between successive bits and the duration of such bits received at its input. A low pass digital filter is coupled to receive such pulses and generates an output signal indicative



of a missing bit when the width of such pulses in greater than a specified value. Also revealed is a means for separating the clock and data bits while maintaining a selected phase relationship therebetween.

3,652,944
PULSE-CHARACTERISTIC MODIFYING CIRCUIT
Lester Richard Querry, Laurel, Md., assignor to The Bunker-Ramo Corporation, Canoga Park, Calif.

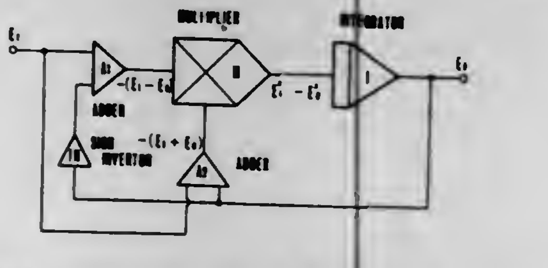
Filed May 19, 1969, Ser. No. 825,650
Int. Cl. H03b *3/02*
U.S. Cl. 328—168 **6 Claims**



A circuit for utilizing a first characteristic pf a single pulse to control the modifying of a second characteristic of the pulse without causing any pulse distortion. The pulse is delayed while a pseudo-pulse is generated having the same first characteristic as the pulse and the pseudo-pulse is utilized to set a second-characteristic modifying means. When the modifying means has been set the delayed pulse is applied through the modifying means.

3,652,945
CIRCUITS FOR CONVERTING THE EFFECTIVE VALUE OF INPUT ELECTRIC SIGNALS INTO DC VOLTAGES
Hisao Nakane, and Akihisa Hashimoto, both of Tokyo, Japan, assignors to Yokogawa Electric Works, Limited, Tokyo, Japan

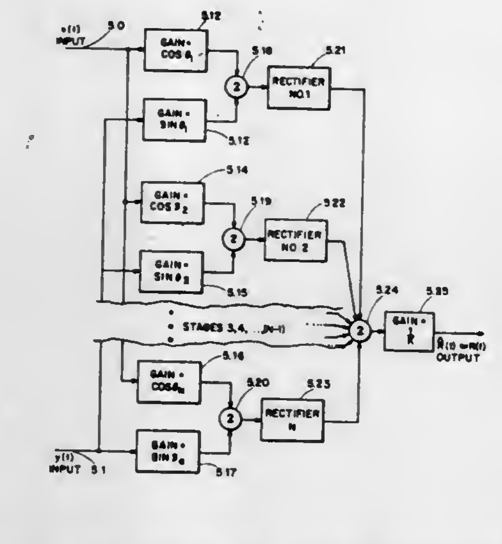
Filed Feb. 4, 1971, Ser. No. 112,665
Claims priority, application Japan, May 12, 1970, 45/40309
Int. Cl. G06g *7/18;* H03k *5/00*
U.S. Cl. 328—150 **8 Claims**



A circuit for converting the effective value of an input electric signal into a DC voltage comprises an integrator for producing a DC output voltage, a first means for adding the input signal to a signal fed back from the output side of the integrator, a second means for subtracting the signal fed back from the output of the integrator from the input signal, and means for multiplying the output from the first means with the output from the second means for applying the product to the input of the integrator.

3,652,946
COMPLEX ENVELOPE DETECTOR
William F. Acker, St. Petersburg, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

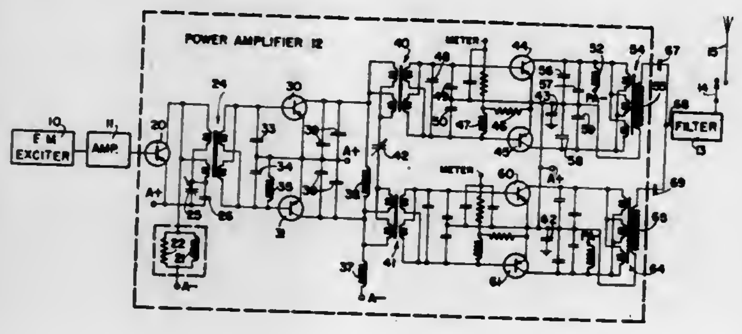
Filed July 2, 1970, Ser. No. 52,035
Int. Cl. H03d *1/08*
U.S. Cl. 329—192 **17 Claims**



A substantially phase insensitive complex envelope detector for continuously detecting on an analog basis the amplitude $R(t)$ of a time varying complex vector whose baseband voltage quadrature signals $x(t)$, $y(t)$ are of the form $R(t)=x(t)+jy(t)$. An approximation technique utilizes circuits which project the $x(t)$, $y(t)$ components parallel to vectors at angles θ_1 through θ_n, and summing circuits which combine these projections to give the approximate complex vector $R(t)$. For a high order of n angles the error of $R(t)-R(t)$ is small.

3,652,947
POWER AMPLIFIER INCLUDING PLURALITY OF PUSH-PULL AMPLIFIER SECTIONS HAVING OUTPUTS COUPLED IN PARALLEL
Gale C. Hollingsworth, Addison, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 24, 1970, Ser. No. 13,322
Int. Cl. H03f *3/26*
U.S. Cl. 330—15 **6 Claims**

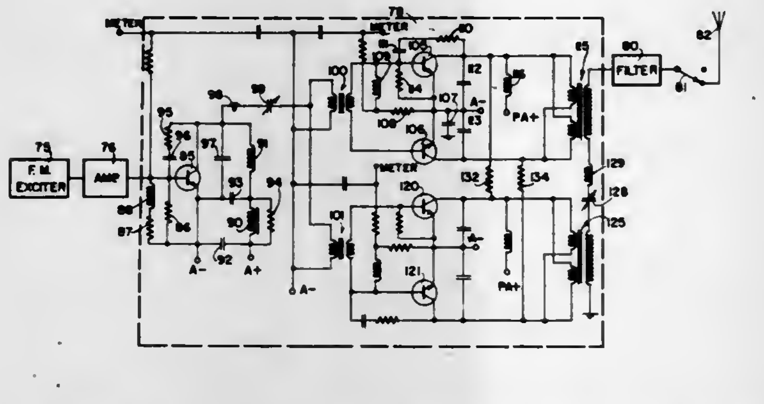


A high power semiconductor amplifier, which may be used as the power amplifier of a radio transmitter, includes a plurality of push-pull amplifier sections cooperating to provide the required output power. The amplifier sections are coupled by broadband transformers having ferrite cores and a plurality of inter-wound coils. This affords direct current

isolation of the sections and a high degree of coupling as required for broadband operation and provides stable high gain operation with the signals in the two amplifier sections being in very close phase relationship so that they can be combined in-phase for maximum efficiency. The coupling circuit at the output of the sections includes the secondary windings of the transformers connected in parallel circuit branches extending from the reference potential to the output line to reduce the effect of stray reactances. The amplifier is usable over a wide range of frequencies with a minimum of adjustment.

3,652,948
POWER AMPLIFIER INCLUDING PLURALITY OF PUSH-PULL AMPLIFIER SECTIONS COUPLED BY FERRITE MATCHING TRANSFORMERS
Gary N. Fierstien, Skokie, and Paul A. Talvensaari, Addison, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 24, 1970, Ser. No. 13,466
Int. Cl. H03f *3/26*
U.S. Cl. 330—15 **12 Claims**

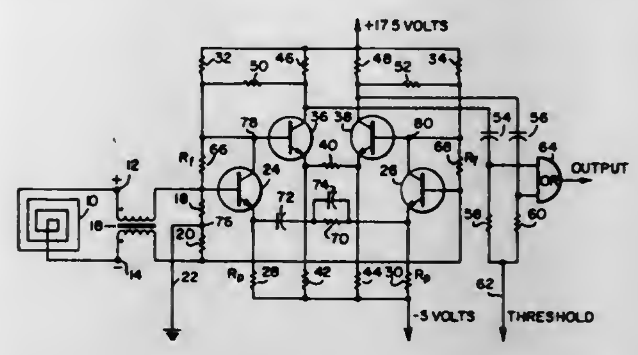


A high power semiconductor amplifier, which may be used as the power amplifier of a radio transmitter, includes a plurality of push-pull amplifier sections cooperating to provide the required output power. The amplifier sections are coupled by broadband transformers having ferrite cores and a plurality of inter-wound coils. This provides direct current isolation of the sections and a high degree of coupling as required for broadband operation, and also results in stable operation and signals in the two amplifier sections which are in close phase relationship so that the outputs thereof can be combined in-phase for maximum efficiency. The coupling circuit at the input and/or the output of the sections includes windings of the transformers in series with a variable reactance element for tuning the same. The amplifier is usable over a wide range of frequencies with a minimum of adjustment.

3,652,949
DIFFERENTIAL AMPLIFIER WITH COMMON MODE REJECTION
Andras I. Szabo, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 16, 1969, Ser. No. 885,406
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 D **8 Claims**

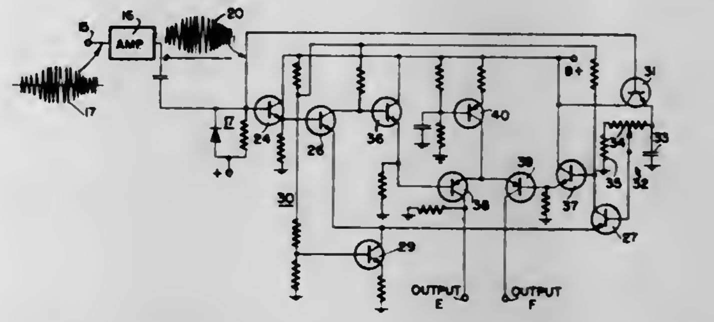
Described is a differential amplifier, particularly adapted for use as a sense amplifier for computer core memory units, which has a high common-mode voltage rejection factor. This is accomplished in a symmetrical amplifier configuration, without the need for a constant current source, by applying differential voltages to the bases of a pair of transistors having resistors connected in shunt with their collector-base junctions, resistors connecting their collectors to a common course of potential, resistors connecting their emitters to a common source of potential, and a low impedance path between the emitters of the transistors. By properly proportioning the resistors, the voltages at the collectors of the transistors will remain constant for all common-mode voltages; but, because of the aforesaid low impedance path, will



be different when different voltages are applied to both bases of the transistors.

3,652,950
SIGNAL RECONSTRUCTION CIRCUIT
Francis H. Hilbert, River Grove, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

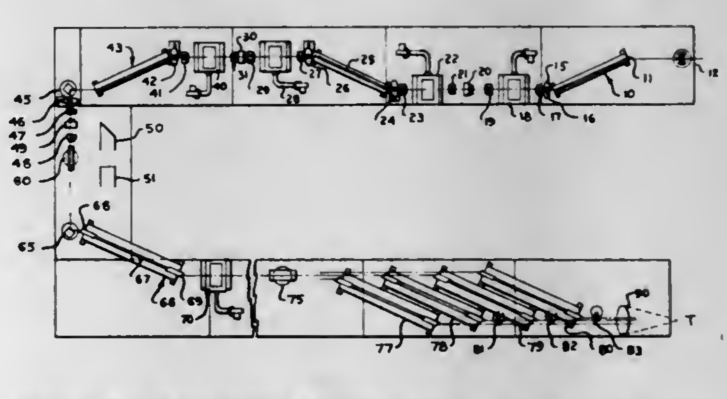
Filed Mar. 9, 1970, Ser. No. 17,436
Int. Cl. H03f *3/68;* H03k *5/00*
U.S. Cl. 330—30 D **7 Claims**



A signal reconstruction circuit for rectangular-wave signal trains is provided in the form of a differential amplifier switching circuit, with an input signal being applied directly to one of the two inputs of the differential amplifier and being applied to a peak detector which establishes a reference voltage. A portion of the reference voltage is applied to the other input of the differential amplifier, thereby varying the switching level of the differential amplifier in accordance with the input signal strength; so that the reconstructed wave form is relatively independent of input signal strength variations.

3,652,951
METHOD OF PRODUCING LASER OUTPUT ENERGY PULSES OF DESIRED PULSE WIDTH
Edgar O. Dixon, Wayland, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Apr. 28, 1969, Ser. No. 819,660
Int. Cl. H01s *3/02*, *3/09*
U.S. Cl. 330—4.3 **6 Claims**

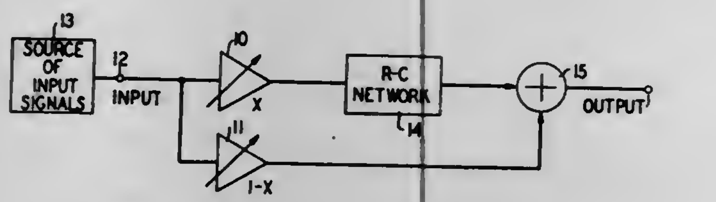


A system for generating amplified fluorescent energy output pulses of desired width, especially those intermediate in width between those of long and short pulse modes of operation. The system comprises a low power generator, a means for shaping the generator output into the desired pulse shape and width, a power amplifier, and stabilizing means for the generator-amplifier system, so that undesired oscillations are not permitted to begin.

3,652,952
ELECTRONICALLY VARIABLE LINE BUILD-OUT NETWORK

William I-Hsuan Chen, Laurence Harbor, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 19, 1970, Ser. No. 38,752
Int. Cl. H03f *3/60*
U.S. Cl. 330—57 **5 Claims**

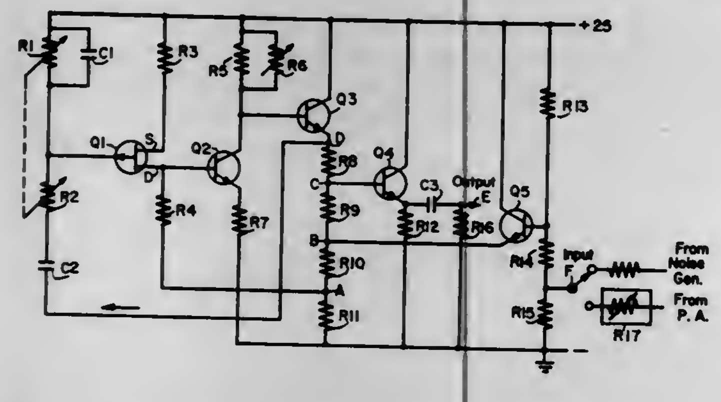


A variable line build-out network for simulating cable lengths from substantially zero feet to L feet having at least two parallel paths each having a different transmission loss characteristic. In a two path line build-out network embodying the invention, the first path has an amplifier having gain X followed by a section of cable of length L, or an RC network to simulate the characteristics of such a section of cable but having no delay, and produces in response to an input pulse an output having two components; the first being identical in shape to the input pulse but of reduced amplitude (X < 1) and the second component representing the distortion introduced by a section of cable of length XL. The second path has an amplifier of gain 1 − X and where a section of cable was employed in the first path, a pure delay circuit in series therewith. When the outputs of the two paths are combined, the result is a pulse whose shape is identical to that which would have been produced if the input pulse had been transmitted through a cable of length XL.

3,652,953
AUDIO OSCILLATOR FOR GENERATING EITHER C.W., DAMPED WAVE TRAINS, OR NARROW BAND NOISE

John A. Victoreen, 350 N. Maitland Ave., Maitland, Fla.

Filed Feb. 27, 1970, Ser. No. 15,093
Int. Cl. H03b *5/26, 29/00*
U.S. Cl. 331—78 **9 Claims**

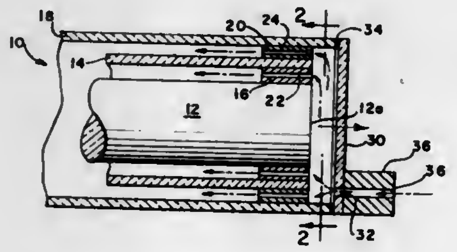


A signal generator is provided for generating audible C.W., damped wave trains, narrow band noise pulses. It includes an RC coupled oscillatory circuit, the frequency of which may be controlled in the audio frequency range and the gain of which may be controlled to cause it either to oscillate or bring it close to the oscillation point. Signal injector and removing means is connected to the oscillator circuit input and output, these portions being so connected and proportioned and the phase being such that the injected exciting signal is cancelled from the output signal. The signal generated within the oscillatory circuit is a composite of the injected signal and the signal generated by the oscillatory circuit. The injected signal may be a sawtooth shaped wave which will then cause a damped wave train to appear in the output. It can also be a white noise signal which results in a narrow band noise signal occurring in the output. The band width of the noise signal in the output is determined by the Q of the oscillatory circuit. The Q of the circuit can be measured by generating damped wave signals and measuring the decrement of the signal produced, and therefore the value of the band width of the noise signals passed by the circuit can be determined.

3,652,954
LASER DEVICE

Elias Snitzer, 177 Hampshire Road, Wellesley, Mass.

Filed July 10, 1970, Ser. No. 53,895
Int. Cl. H01s *3/02, 3/04, 3/05*
U.S. Cl. 331—94.5 **4 Claims**

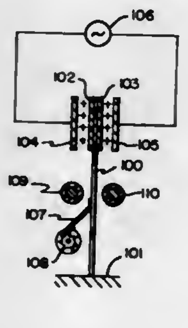


A laser device comprising a laser active component in the form of a rod and a sensitizer component in the form of a tubular cladding. The laser active component is mounted within the sensitizer component, and at least one surface of the sensitizer component is cooled to provide a more efficient device.

3,652,955
ELECTROMECHANICAL OSCILLATOR USING ELECTRET COUPLING

Richard E. Cruger, Peekskill, N.Y.; Wilmer C. Anderson, Greenwich; David Earls, Norwalk, and Robert W. Windebank, Fairfield, all of Conn., assignors to General Time Corporation, Phoenix, Ariz.

Filed July 30, 1970, Ser. No. 59,653
Int. Cl. H03b *5/30*
U.S. Cl. 331—116 M **14 Claims**

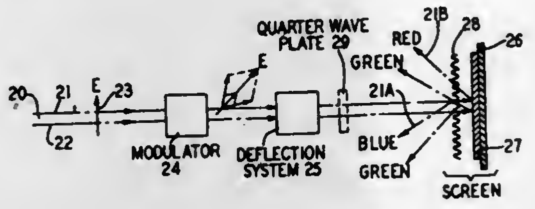


An electrically driven oscillator device is provided with one or more electrets for establishing electrostatic coupling between a mechanical oscillating element and an electrical drive. The mechanical oscillating element can comprise a reed, a tuning fork, a pendulum, or a hair-spring balance wheel. The electrical drive can be an AC voltage source or an electronic feedback circuit. In electrically driven devices, electrets can be used in both the pickup and driving circuits to eliminate hysteresis. Alternatively, in order to isolate the pickup circuit from the driving circuit, electrets can be used in only one of these circuits and magnetic arrangements can be used in the other.

3,652,956
COLOR VISUAL DISPLAY

Douglas Arthur Pinnow, Berkeley Heights, and Le Grand Gerard Van Uitert, Morris Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Continuation-in-part of application Ser. No. 827,624, May 26, 1969, now abandoned. This application Jan. 23, 1970, Ser. No. 5,324
Int. Cl. H01s *3/10*
U.S. Cl. 332—7.51 **21 Claims**

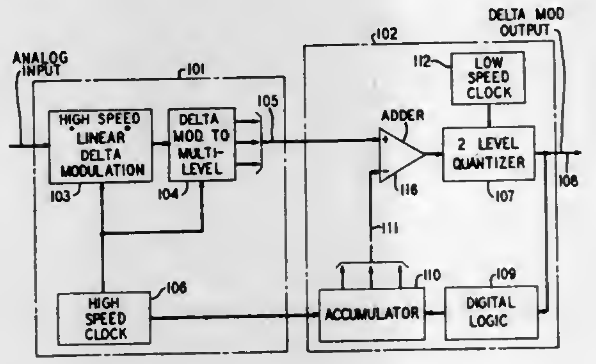


A projection visual display system utilizes at least one laser output line in the blue portion of the spectrum together with a phosphor coating which emits at least one additional color. Means for selectively reflecting laser light on the one hand and absorbing it within the phosphor so as to produce phosphor emission on the other hand are described.

3,652,957
ADAPTIVE DELTA MODULATOR

David Joel Goodman, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 16, 1970, Ser. No. 98,693
Int. Cl. H03k *13/22*
U.S. Cl. 332—11 D **7 Claims**



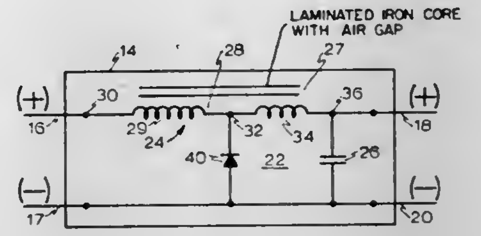
Analog signals are converted in a fixed step size, high-speed linear delta modulator, and the linear delta modulator signals are accumulated in an up-down counter, or the like. The counter output is conveyed to one terminal of the digital adder of a digital delta modulator. The other adder terminal receives signals from an accumulator connected in the feedback loop of the digital delta modulator. Sequential logic responsive to the adaptive delta modulator output digitally varies the count of the accumulator.

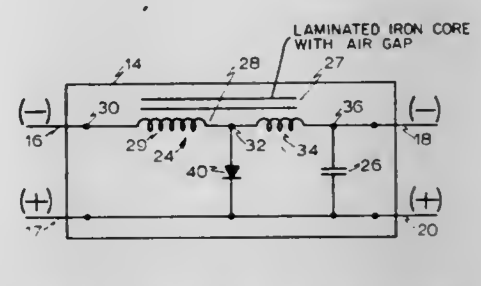
3,652,958
LOAD FILTER NETWORK

William B. Zelina, Edinboro, Pa., assignor to General Systems, Inc., Erie, Pa.

Filed Apr. 23, 1969, Ser. No. 818,538
Int. Cl. H03h *7/14*
U.S. Cl. 333—79 **4 Claims**

A new and improved filter circuit arrangement wherein the instantaneous current demand from an ON-OFF voltage source is kept below the current requirements of the load by storing energy in the magnetic circuit of the filter inductance during the ON-time of the source and recovering this stored energy and delivering it to the load during the OFF-time of the source and at a lower voltage and higher current level than that at which is was stored. To accomplish this a shunt rectifier device is connected with an intermediate tap of the filter inductance and is poled to block current flow from the source.

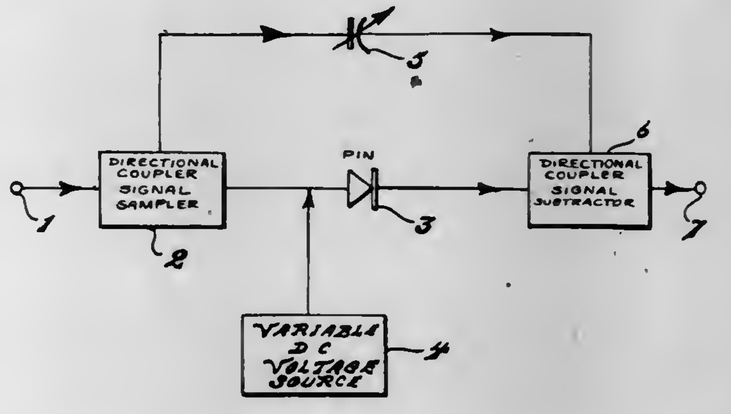




3,652,959
ELECTRONICALLY VARIABLE RF ATTENUATOR

Hugh W. Denny, Decatur, Ga., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Jan. 26, 1971, Ser. No. 109,865
Int. Cl. H01p *1/22*
U.S. Cl. 333—81 R **4 Claims**


5
6
PIN
DIRECTIONAL COUPLER SIGNAL SAMPLER
DIRECTIONAL COUPLER SIGNAL SUBTRACTOR
1
2
3
7
VARIABLE DC VOLTAGE SOURCE
4

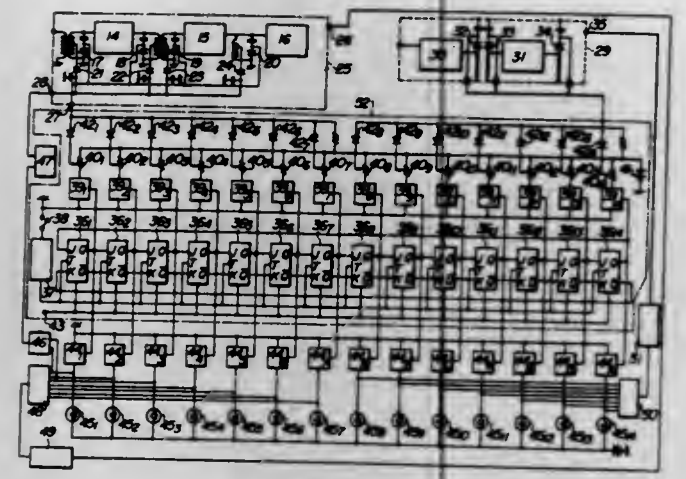
An electronically variable RF attenuator is provided in which a pin diode is used as the variable resistance element to control the amplitude of very high frequency signals with essentially a zero degree phase shift over a wide frequency range. Cancellation of the phase-producing reactive components of the pin diode is accomplished by taking a small portion of the signal at the input to the diode, adding $\pi/2$ radians phase shift to the sample and subsequently subtracting the shifted sample from the diode output signal.

3,652,960
VARIABLE CAPACITANCE DIODE FREQUENCY SELECTOR UTILIZING A PLURALITY OF FLIP-FLOPS

Yoichi Sakamoto, Toyonaka, and Eisuke Ichinohe, Osaka, both of Japan

Filed May 13, 1970, Ser. No. 36,921
Claims priority, application Japan, May 20, 1969, 44/40064; 44/40065; 44/40066
Int. Cl. H03h *5/12*
U.S. Cl. 334—15 **4 Claims**

A tuning system for selecting, for instance, stations or broadcasting television channels, wherein the tuning can be made totally electronically by impressing the output of a digitally controlled voltage generator upon variable capacitance coupled elements and the component parts are

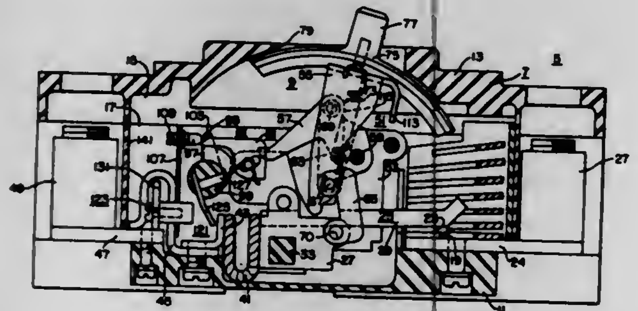


reduced in number to facilitate integration of the circuit of the system.

3,652,961
CIRCUIT BREAKER WITH ELECTROMAGNETIC TRIP MEANS

John G. Salvati, Beaver Falls, and Eugene J. Walker, Beaver, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 24, 1970, Ser. No. 75,200
Int. Cl. H01h *69/01*
U.S. Cl. 335—176 **9 Claims**



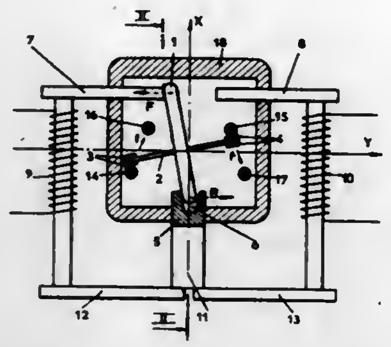
A circuit breaker with electromagnetic trip means comprises a stationary magnetic part and pole-piece means adjustably mounted on the stationary magnetic part to provide adjustment of the air gap between a stationary magnetic structure and a movable armature. The circuit breaker is a multi-pole circuit breaker with the armatures being mounted on a common trip bar.

3,652,962
SWITCHING DEVICE WITH MOVING PARTS IN THE FORM OF A CROSS

Roger G. Preux, 27, rue d'Eaubonne, St. Gratien, France

Filed Sept. 23, 1970, Ser. No. 74,741
Claims priority, application France, Sept. 29, 1969, 6933124
Int. Cl. H01h *47/12*
U.S. Cl. 335—203 **6 Claims**

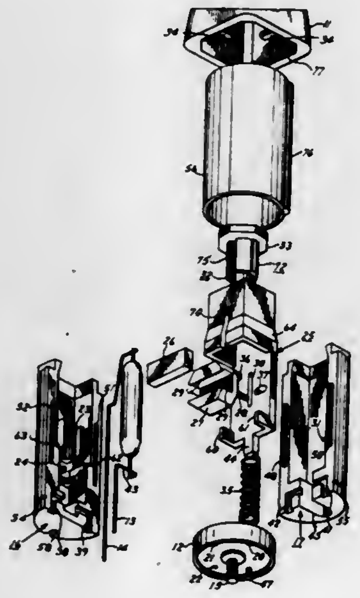
An electromagnetic switching device having a built-in unit consisting of a cross-shaped magnetic circuit element adapted to selectively cooperate with the poles of at least two magnetic circuits and having at least one contact element which may be driven by the magnetic circuit element towards one of two positions so as to selectively close at least two corresponding electrical circuits.



3,652,963
PUSH BUTTON SWITCH

Dean H. Fox, Golden, Colo., assignor to Hathaway Instruments, Inc., Denver, Colo.

Filed Nov. 19, 1970, Ser. No. 91,060
Int. Cl. H01h *3/12, 13/52*
U.S. Cl. 335—205 **8 Claims**



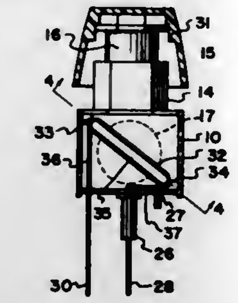
A push button switch of the magnetic reed type is provided with a rotatable actuating magnet to close the reed contacts in one position of the magnet and to open them in another. The magnet is rotatably mounted on the switch housing adjacent the reed switch on a stationary axis transverse to the longitudinal axis of the switch and is rotated from one position to the other by a linearly movable spring biased low inertia slide connected to rotate the magnet by operation of a crank pin and lost motion slot connection. The switch housing is a longitudinally split cylinder, provides a bore for the slide and is held in assembled relationship by a cylindrical sleeve and a closure cap.

3,652,964
PUSHBUTTON SWITCH AND ASSEMBLY

Harold B. Chamberlain, Denver, Colo., assignor to Hathaway Instruments, Inc., Denver, Colo.

Filed Jan. 15, 1971, Ser. No. 106,786
Int. Cl. H01h *13/00, 13/14*
U.S. Cl. 335—205 **7 Claims**

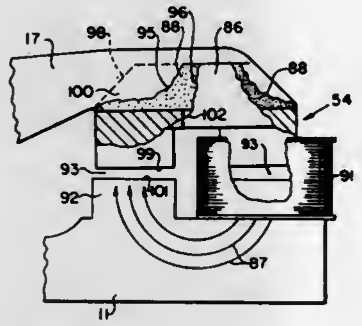
A push button switch having a spring biased slidably movable actuator is provided with a magnetically actuated reed switch of the sealed enclosure type. A permanent magnet is mounted in a cylindrical block rotatably mounted about its periphery in a cylindrical bearing in a fixed block adjacent the actuating slide. The magnet is rotated by a pin on the cylindrical block seated in a lateral slot in the slide. The switch is of a modular design and a plurality of the switches may be physically interlocked and mounted to constitute a keyboard assembly. The switch housings can accommodate integrated circuit components to incorporate features of a full circuit assembly.



3,652,965
RESILIENT MAGNETIC COUPLING

Frederick G. Krebs, Dayton, Ohio, and Samuel A. Redman, Garden City, N.Y., assignors to The National Cash Register Company, Dayton, Ohio

Filed Oct. 6, 1969, Ser. No. 863,812
Int. Cl. H01f *1/00*
U.S. Cl. 335—277 **22 Claims**

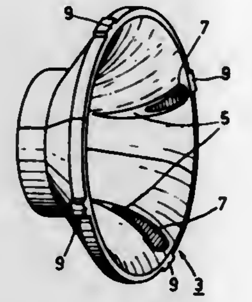


An elastic coupling made from moldable curable material having both magnetic permeability and desirable mechanical properties, including resilience, flexure tolerance, and large-area contact with metallic members, is disclosed. Application of the coupling in a bonded junction between lightweight fast-acting fatigue-stress-susceptible members which are connected between acceleratable masses in a magnetic-solenoid-excited data-processing peripheral is shown.

3,652,966
DEFLECTION YOKE HAVING COIL LOCATING PROJECTIONS

Nicolass Frederik Meier, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 11, 1970, Ser. No. 45,325
Claims priority, application Netherlands, June 19, 1969, 6909344
Int. Cl. H01f *7/00*
U.S. Cl. 335—210 **3 Claims**

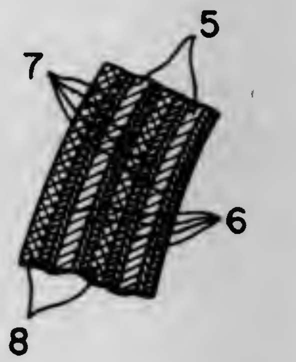


Deflection coil unit having at least one pair of saddle-type coils surrounded by the flaring inner surface of a ferromagnetic yoke ring provided with ridge-shaped internal projections ground to fit the flaring outer surface of the pair of saddle coils.

3,652,967
SUPERCONDUCTIVE MAGNET

Eihachiro Tanaka; Yutaka Onodera, both of Sendai; Takeji Fukuda, Kanuma; Tsutomu Yamashita, Sendai, and Shoji Kuma, Hitachi, all of Japan, assignors to The Research Institute for Iron, Steel and Other Metals of the Tohoku University, Sendai, Japan

Filed Feb. 12, 1970, Ser. No. 10,971
Claims priority, application Japan, June 9, 1969, 44/44615
Int. Cl. H01f *7/22*
U.S. Cl. 335—216 **3 Claims**

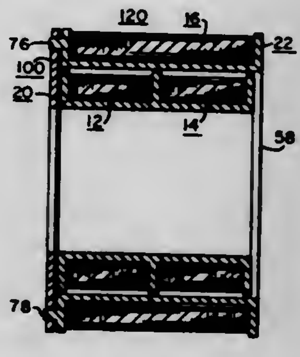


A superconductive magnet comprises superconductive coiled layers; diffusion shielding coiled layers, between which the superconductive coiled layer is put; stabilizing conductor coiled layers, between which the diffusion shielding coiled layer is put; and a normal conductor acting as a superconductive insulation between the superconductive coiled layers. Said superconductive magnet is produced by laminating thin sheets of metal or alloy to constitute the superconductive material in such a ratio that a superconductive alloy or intermetallic compound is formed, superposing thin sheets of metal or alloy shielding diffusion against the former thin sheets and thin sheets of metal or alloy stabilizing the superconductivity on both the surfaces of the laminated sheets respectively, coiling the formed sheets on a core sheath in multilayer, covering the resulting coiled body with an outer sheath, subjecting the assembly to a diameter reducing treatment to adhere the layers and heating the adhered layers until the superconductive alloy or intermetallic compound is formed.

3,652,968
TELESCOPED ELECTRICAL WINDINGS AND METHOD OF MAKING SAME

Ralph W. Johnston, Sharon; Donald S. Stephens, Sharpsville; Robert W. Miller, Grove City; Clarence W. Hunt, Transfer, and Frank J. Kleckc, Sharon, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

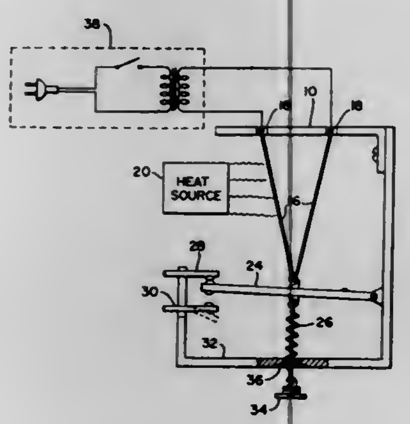
Filed Jan. 26, 1971, Ser. No. 109,801
Int. Cl. H01f *27/30*
U.S. Cl. 336—170 **13 Claims**



An electrical winding structure having first and second concentrically disposed, radially adjacent bobbins, each having at least one electrical coil wound thereon. The outer bobbin provides layer insulation between the coils disposed on the bobbins. A method of constructing the winding is disclosed which includes the steps of winding coils on first and second bobbins, telescoping the first bobbin into an opening in the second bobbin, against a stop, and securing a retainer cap to an end of the second bobbin, to retain the first bobbin in assembled relation with the second bobbin, between the retainer cap and stop.

3,652,969
METHOD AND APPARATUS FOR STABILIZING AND EMPLOYING TEMPERATURE SENSITIVE MATERIALS EXHIBITING MARTENSITIC TRANSITIONS

James R. Willson, Garden Grove, and Donald W. Carey, Anaheim, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.
Filed May 27, 1969, Ser. No. 828,243
Int. Cl. C21d ; H01h *37/50, 71/18*
U.S. Cl. 337—140 **10 Claims**

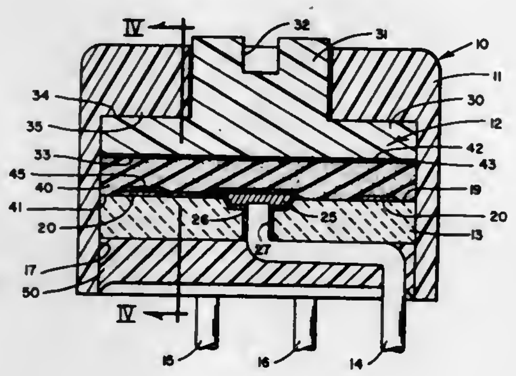


A method and apparatus for stabilizing and employing temperature sensitive material exhibiting martensitic transitions for use in control and work performing devices. The method includes subjecting the martensitic-transition material to a greater unit stress than the material would be required to work against in its application to thereby stretch the material beyond its expected deflection, and subsequently completing a number of temperature cycles while the material is in such overstressed condition, through which it is heated to a point above its transition temperature and cooled back to its annealed temperature. After treatment the material operates through complete work cycles with no loss of dimension stability. In one embodiment, the apparatus defines a temperature sensitive switch including a load to apply an increased stress to the material during the initial stabilization temperature-cycling period and a reduced workload stress during periods of in-service operation.

3,652,970
VARIABLE RESISTOR HAVING AN IMPROVED WIPER MEMBER

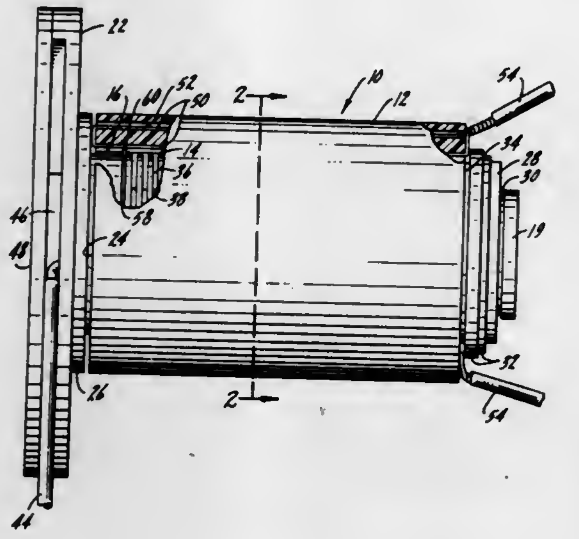
Gustav Hubert, San Gabriel, Calif., assignor to Spectrol Electronics Corporation, City of Industry, Calif.
Filed Feb. 25, 1971, Ser. No. 118,750
Int. Cl. H01c *1/12*
U.S. Cl. 338—174 **7 Claims**

A variable resistor of the rotary type is illustrated having a rotatable wiper member, a substrate member carrying an arcuate resistance element and a collector element, all coaxially secured in a cylindrical housing. The wiper member comprises a relatively rigid carriage element having a screw driver slot therein for rotating the wiper member from the exterior of the housing. A resilient pad element is adhesively secured to the carriage element. A flexible contact element is secured to the face of the pad element facing the resistance and collector elements so that the contact element makes electrical contact between the collector and the desired location on the resistance element. The spacing between the substrate member and the carriage member within the housing is less than the uncompressed thickness of the pad element so that the pad urges the contact element into firm engagement with the resistance and collector elements. The resistor may be designed so that the pad element physically wipes the resistance element to keep it relatively clean and free of foreign material. Preferably, the variable resistor is designed so that a portion of the pad element forms a seal with the substrate member to prevent the passage of contaminates to the resistance element.



3,652,971
SELF-ALIGNING SLIP RING CAPSULE

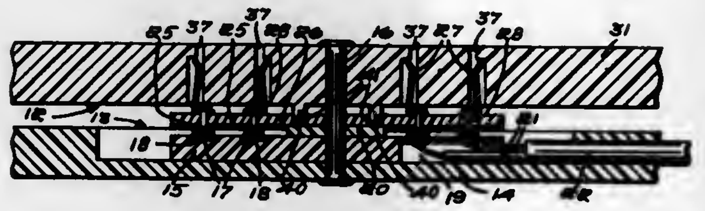
Kenly C. Bugg, Fort Wayne, Ind., assignor to Kendick Manufacturing Company, Fort Wayne, Ind.
Filed Feb. 11, 1970, Ser. No. 10,500
Int. Cl. H01r *39/40*
U.S. Cl. 339—8 **20 Claims**



A self-aligning rotary electrical contact assembly for concentric relatively rotatable members having an annular recess in the first member, a linear recess in the second member, the linear recess being transverse to the annular recess, a first electrical conductor disposed within the annular recess forming an arcuate conducting element, a second electrical conductor linearly disposed within the linear recess, and a brush member disposed in the annular recess having a portion thereof projecting into the linear recess wherein the brush member is in rotatable contact with the arcuate conducting element and is in slidable contact with the second electrical conductor, thereby causing the brush member to be automatically positioned.

3,652,972
TURNTABLE DEVICE

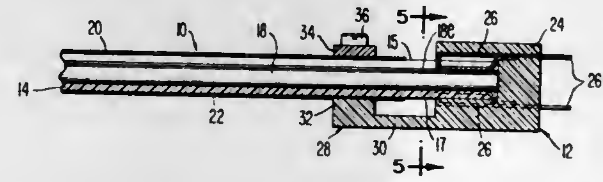
James W. Kreider, 18 Russell Road, Newton, Mass.
Filed Jan. 25, 1971, Ser. No. 109,592
Int. Cl. H01r *39/10*
U.S. Cl. 339—8 PB **8 Claims**



A turntable device for supporting a plurality of household appliances and including electrical plug receptacles maintained in a continuous state of energization during rotational movement of the device.

3,652,973
MULTICONDUCTOR BELT AND CONNECTOR

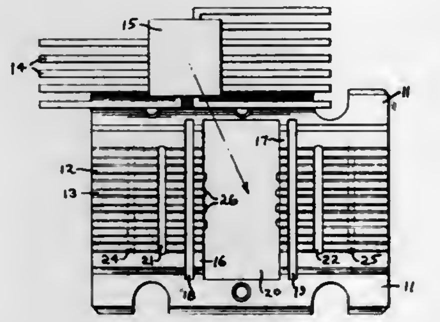
Frederic C. Doughty, Valley Forge, Pa., assignor to Burroughs Corporation, Detroit, Mich.
Filed Dec. 21, 1970, Ser. No. 100,174
Int. Cl. H05k *1/00*
U.S. Cl. 339—17 F **4 Claims**



An electrical cable and a receptacle connector into which the cable is plugged. The cable is in the form of a belt, with the insulation on both sides readily removable for access to the conductor contact surfaces. The connector is provided with a releasable clamping means for securing the belt in the connector.

3,652,974
INTEGRATED CIRCUIT CARRIER

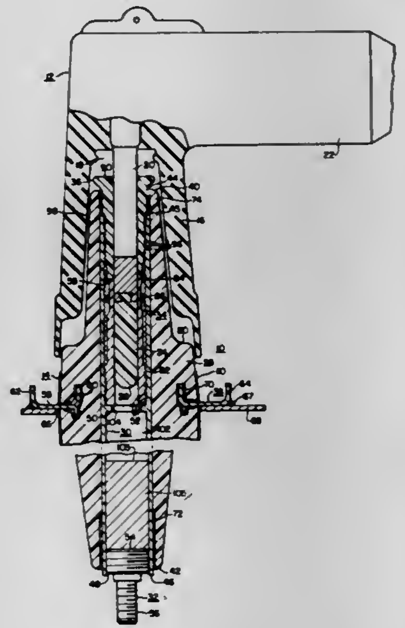
Adam Tems, Philadelphia, Pa., assignor to Milross Controls, Inc., Southampton, Pa.
Filed Feb. 10, 1970, Ser. No. 9,683
Int. Cl. H01r *13/44, 13/52;* **H05k** *1/02*
U.S. Cl. 339—36 **33 Claims**



A one-piece electronic or electrical component module carrier having two parallel widthwise extending beams of resilient material formed integrally with a base member and spaced apart a distance slightly greater than the length of the component module to form a central opening with beam carried retaining elements which overlie the component module once it has been located within the central opening and which prevent the component module from falling or being vibrated out of the central opening. The beams are spread for insertion of the component module therebetween, and as the beams resiliently return to their normal positions, the component module is held by the overlying retaining elements. The base member has a plurality of channels formed lengthwise therein to accommodate the leads of the component module and lead access apertures are provided at any desired location in the carrier body. Additionally, support shelves are provided or the beams carry shelf members to support the component module on its lower surface and thereby eliminate all bending stresses on the leads where they emerge from the body of the module. The underlying support shelves and overlying retainers capture the component module and hold it securely but in a generally unstressed state.

3,652,975
ELECTRICAL CONNECTOR ASSEMBLY

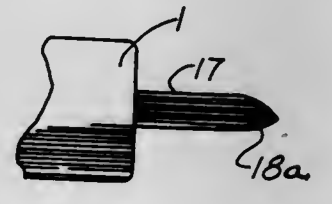
August I. Keto, Sharpsville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 9, 1970, Ser. No. 1,827
Int. Cl. H01r *13/52*
U.S. Cl. 339—111 **11 Claims**



A load break electrical connector assembly, including a bushing and a plug-in cable connector or termination. The bushing and plug-in cable connector include cooperative sleeve and rod members, respectively, formed of arc confining and extinguishing electrical insulating materials, with at least one of the cooperative insulating members being composed essentially of methyl methacrylate polymer, having a glass filter filler.

3,652,976
THERMOCOUPLE CONNECTOR CONSTRUCTION

John Tymkewicz, c/o Marlin Mfg. Corp. 12404 Triskett Road, Fairview Park, Ohio
Filed Dec. 21, 1970, Ser. No. 99,767
Int. Cl. H01r *13/64, 11/22*
U.S. Cl. 339—184 R **5 Claims**



The disclosure hereof is that of thermocouple connector construction, wherein it is desired to maintain the differentiation between positive and negative contacts, which are included in the usual pair of connector members, designated male and female, so that it will be impossible to reverse the contacts and thus connection of positive and negative contacts improperly made, and in addition to effectuate a much more complete area of contact between the respective contact members so that accurate readings in thermocouple meters will be provided since the area of contact is maintained to a much greater extent than would otherwise be the case by reason of the fact that uniform pressure is exerted upon such contacts substantially over the length thereof.

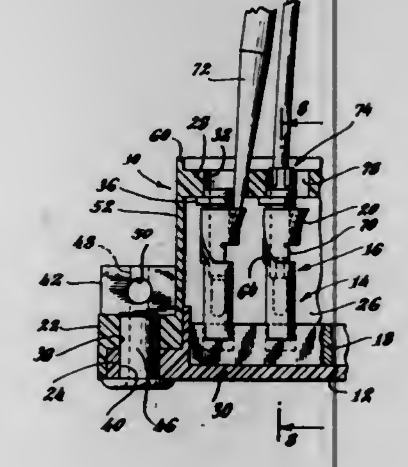
3,652,977
ELECTRICAL JUNCTION ASSEMBLY

Leonard H. Feldberg, Spring Valley, N.Y., assignor to Burndy Corporation

Filed May 28, 1970, Ser. No. 41,288

Int. Cl. H01r *11/22*

U.S. Cl. 339—198 R **5 Claims**



An assembly for providing a common electrical connection between a number of separate external conductors. A plurality of electrically coupled socket contacts are mounted within a two-part insulating housing. Each socket contact is provided with an encircling spring element, having a detent extending into the exterior of the socket and a radially projecting spout portion on the exterior. The detent locks the socket to an inserted pin contact attached to an external conductor, and the spout receives a lever tool which deflects the spring element so as to disengage the detent. Contact openings and access openings in the housing are aligned respectfully with the sockets and the spout portions.

3,652,978
ECHO-RESPONSIVE APPARATUS

William Halliday, London, and Roy William George Haslett, Ilford, both of England, assignors to Smiths Industries Limited, London, England

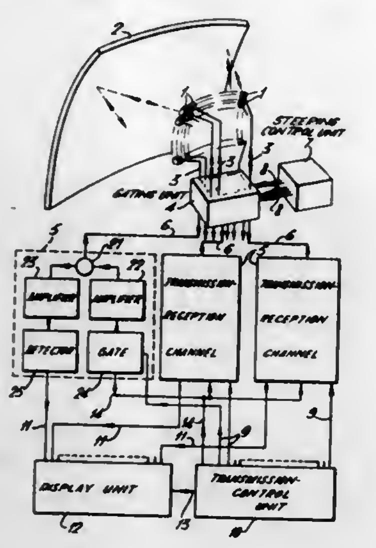
Filed Dec. 19, 1969, Ser. No. 886,664

Claims priority, application Great Britain, Dec. 20, 1968, 60,652/68

Int. Cl. G01s *9/68*

U.S. Cl. 340—3 R **7 Claims**

A ship-borne sonar system includes a two-dimensional array of electromechanical transducers mounted on, or near, the focal surface of a concave spherical reflector to transmit and receive acoustic pulses in respective directions throughout a sideways sector of surveillance from the ship. A gating unit couples only some of the transducers to respective transmission-reception channels, the particular combination of transducers selected being controlled by a steering unit to stabilize or otherwise steer the transmission-reception direction within the surveillance-sector. Each detected echo is displayed with a directionality dependent upon which of the channels detected that echo.


2
STEERING CONTROL UNIT
GATING UNIT
AMPLIFIER
AMPLIFIER
DETECTOR
GATE
TRANSMISSION-RECEPTION CHANNEL
TRANSMISSION-RECEPTION CHANNEL
DISPLAY UNIT
TRANSMISSION-CONTROL UNIT
12
13
10

3,652,979
INSTALLATION FOR THE TRANSMISSION OF MULTIPLEXED SEISMIC SIGNALS

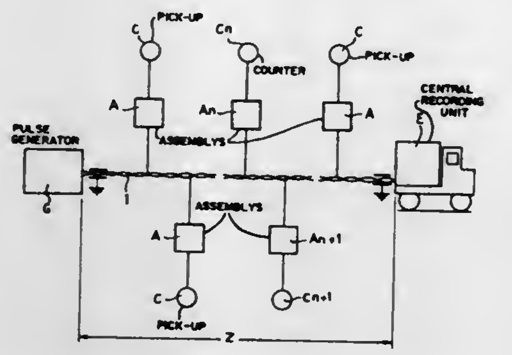
Philippe Angelle, Thouare, France, assignor to Compagnie Generale De Geophysique, Paris, France

Filed Mar. 5, 1970, Ser. No. 16,704

Claims priority, application France, Mar. 5, 1969, 6906077

Int. Cl. G01v *1/34*

U.S. Cl. 340—15.5 MC **10 Claims**



The electrical signals from different seismological pick-ups are recorded at a central recording unit by switching the units in succession to a single two wire transmission line. Switching is controlled by pulses transmitted on the line and by coding the pulses appropriately, e.g., pulse number coding or pulse pattern coding, the pick-ups can be switched at times such that the signals therefrom arrive at the central unit in any desired time sequence.

3,652,980
METHOD AND APPARATUS FOR SEISMIC SIGNAL PATTERN DISCRIMINATION

Pierre L. Goupillaud, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

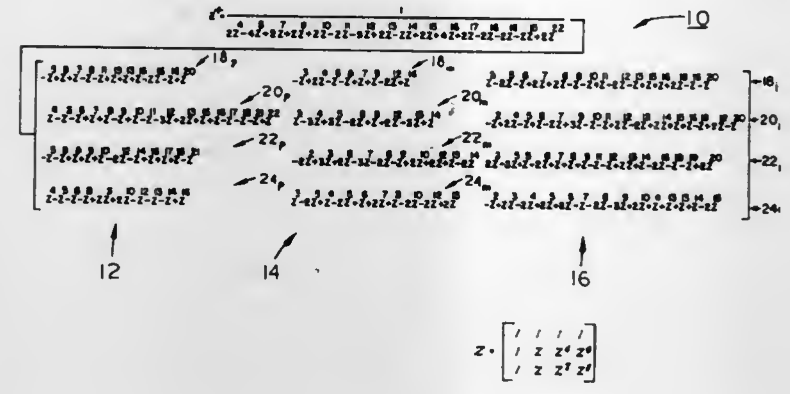
Filed Aug. 11, 1969, Ser. No. 848,777

Int. Cl. G01v *1/16, 1/28*

U.S. Cl. 340—15.5 **10 Claims**

A method for extracting predetermined types of seismic data from an overall composite of seismic information, the method consisting of constructing an ideal filter for each of selected primary, multiple and/or interference components of a seismic tract group, such filter construction being carried out by determining the pseudoinverse or generalized inverse of a polynomial matrix as determined for the particular

seismic traces to be examined, with application of the polynomial matrix for preadjustment of a multichannel pattern discriminating filter which, when energized by the input seismic traces under examination, will produce separately the requisite primary, multiple and interference outputs which represent the respective components present. Apparatus for carrying out the method may consist of plural channels of time domain filters connected in series with a weighting device for convolving respective plural seismic traces; each of the convolution filters is adjusted to function at predetermined times and amplitudes in accordance with the matrix function or operator determined for primary, multiple and interference trace functions of a particular group of seismic traces.



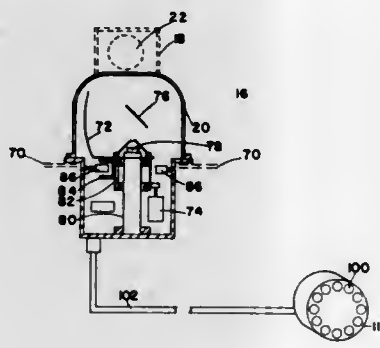
3,652,981
PROXIMITY WARNING AND COLLISION AVOIDANCE SYSTEMS

Angelo J. Campanella, 3201 Ridgewood Drive, Columbus, Ohio

Filed Apr. 13, 1970, Ser. No. 28,353

Int. Cl. G01j *1/28*

U.S. Cl. 340—25 **7 Claims**



This is an inflight aircraft warning system of advising a pilot of relative danger of collision with another aircraft. Sensor and display means are provided for indicating the presence, direction, and the rate of closeness of an approaching aircraft.

3,652,982
TRAFFIC SIGNAL CONTROL SYSTEM FOR ADJACENT INTERSECTIONS

Hideto Todaka, and Hisao Nakatani, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

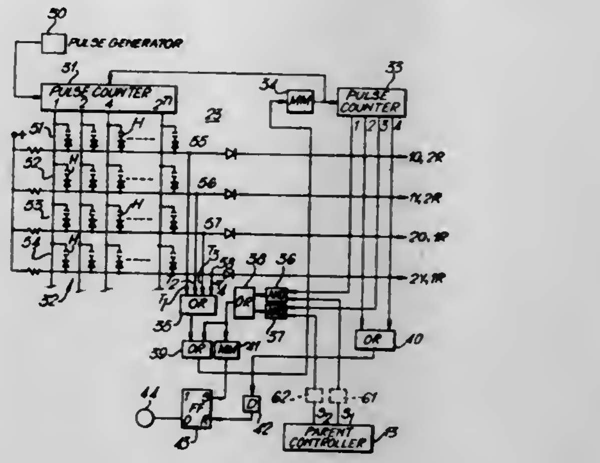
Filed Jan. 5, 1970, Ser. No. 628

Claims priority, application Japan, Feb. 16, 1969, 44/3083

Int. Cl. G08g *1/085*

U.S. Cl. 340—35 **4 Claims**

A traffic signal control system which includes a parent controller for controlling the traffic signal at a first street intersection and at least one associated controller for controlling the traffic signal at a second street intersection adjacent to the first intersection in a manner associated with the signal control by the parent controller. Normally, the associated controller operates keeping its association with the parent controller. When the association has been broken for one cause or another, the associated controller controls the traffic signal in accordance with a predetermined control pattern of its own independently of the parent controller so as not to cause any confusion to the traffic about the intersections. Means may be provided to indicate whether the associated controller is operating in association with the parent controller or independently thereof.



3,652,983
TRAFFIC SIGNAL CONTROL SYSTEM

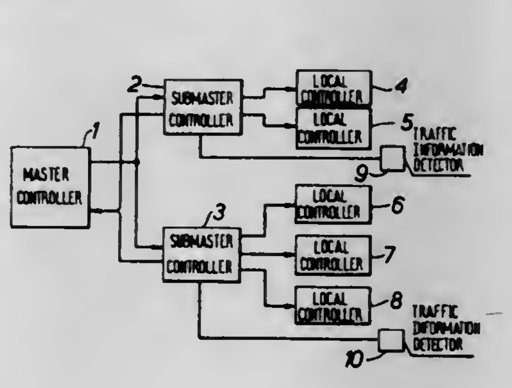
Tadao Endo, and Mitubisa Hosika, Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Ukyo-ku, Kyoto, Japan

Filed Feb. 11, 1970, Ser. No. 10,403

Claims priority, application Japan, Feb. 21, 1969, 44/13442; Mar. 8, 1969, 44/17685

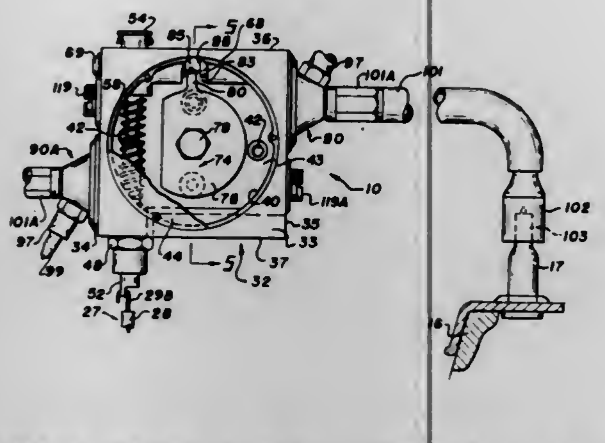
Int. Cl. G08g *1/00*

U.S. Cl. 340—40 **4 Claims**



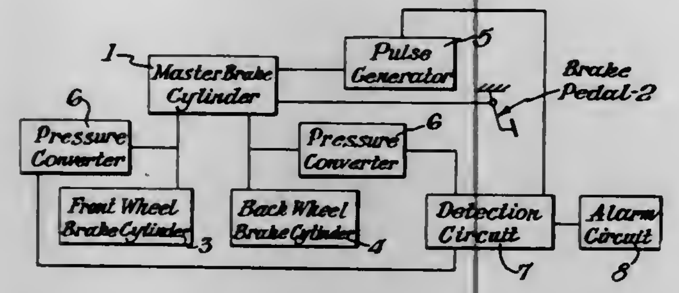
A system for controlling the traffic signals within a relatively wide district divided into a plurality of subdistricts, in each of which there are distributed many traffic signals at different places. A submaster controller coordinately controls many local controllers within each subdistrict, and a master controller controls all the submaster controllers within the wide district. The master controller gives the same cycle pulses and the same series of synchronizing pulses, but different offsets, to different submaster controllers, and each submaster controller provides a second series of synchronizing pulses, which are displaced in time from the first series of synchronizing pulses by the offset time given to the submaster controller, to the local controllers belonging to the submaster controller, so that the local controllers control their respective traffic signals on the basis of the synchronizing pulses received from the submaster controller. Thus, with proper different offsets given to the different submaster controllers, all the traffic signals in the wide district are coordinately controlled in accordance with the actual traffic conditions in the different subdistricts for establishment of smooth traffic flows throughout the wide district.

3,652,984
PRESSURE SIGNALLING APPARATUS FOR TIRES
Leslie H. Jordan, 2021 East Broadway, Vancouver, British Columbia, and John Arden, 6049 Portland Avenue, Burnaby, British Columbia, both of Canada
Filed Jan. 15, 1970, Ser. No. 3,076
Int. Cl. G08b *21/00*
U.S. Cl. 340—58 **3 Claims**



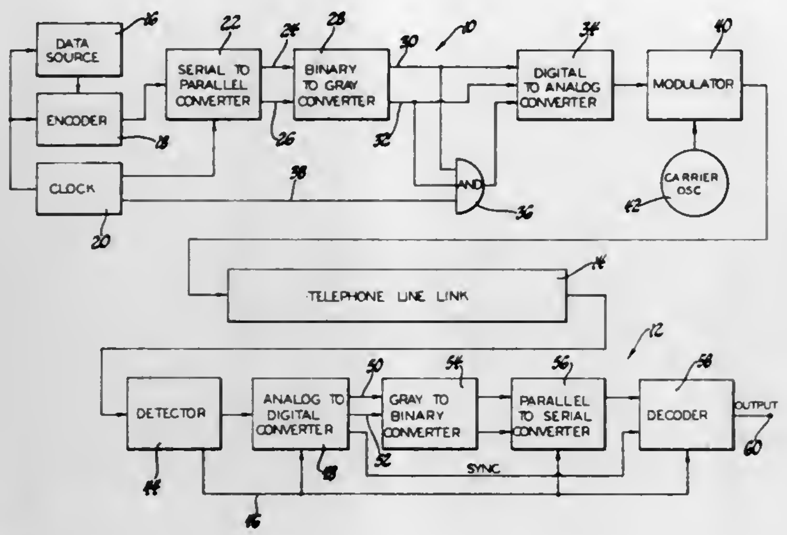
Apparatus having a bolt movable from a normally retracted position to a released signal operating position. A latch normally holds the bolt in the retracted position and a trigger arrangement controls the latch. An air gauging device, associated with a valve through which a tire is charged to a selected air pressure, is coupled to the trigger to operate same thereby actuating the latch and releasing the bolt when air pressure in the tire falls a predetermined amount below the selected level.

3,652,985
ALARM SYSTEM FOR VEHICLE HYDRAULIC PRESSURE CIRCUIT
Toru Toshioka, and Toshinobu Kuroyama, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Aichi, Japan
Filed Aug. 5, 1970, Ser. No. 61,046
Claims priority, application Japan, Aug. 6, 1969, 44/61943; Sept. 23, 1969, 44/75457
Int. Cl. G08b *21/00*
U.S. Cl. 340—60 **4 Claims**



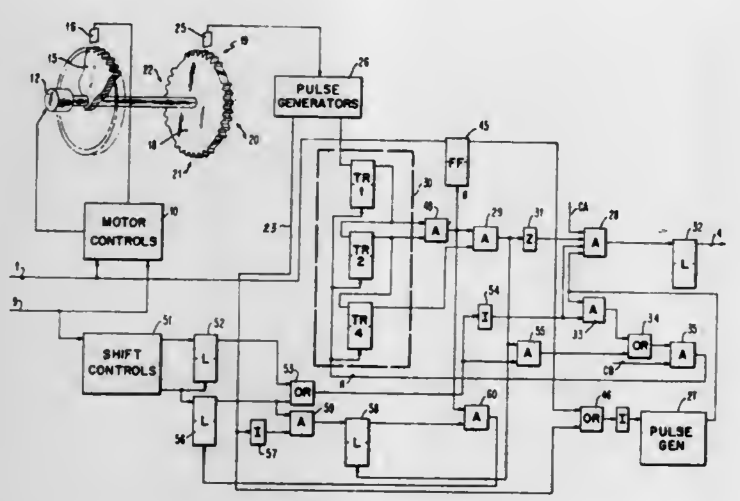
Alarm system for hydraulic pressure circuit provides warning regarding functional deterioration or failure in hydraulic pressure circuit such as oil pressure circuit of hydraulic brake system of vehicle. System comprises pulse generator for periodically obtaining hydraulic pressure pulses representative of pressure in hydraulic pressure circuit. Pressure converter located in hydraulic pressure circuit changes hydraulic pressure pulses into electric pulses, and detecting circuit detects difference between waveform of electric pulses obtained by pressure converter and waveform of electric pulses representative of pressure in hydraulic pressure circuit when circuit is normal. Alarm device connected to detecting circuit is energized when waveform of electric pulses from pressure converter differs from waveform of electric pulses representative of pressure in hydraulic pressure circuit when circuit is normal.

3,652,986
ERROR CONTROL TRANSCEIVER
Kenneth E. Monroe, Ann Arbor, Mich., assignor to Datamax Corporation, Ann Arbor, Mich.
Filed Feb. 9, 1970, Ser. No. 9,585
Int. Cl. H04b *3/46*
U.S. Cl. 340—146.1 R **8 Claims**



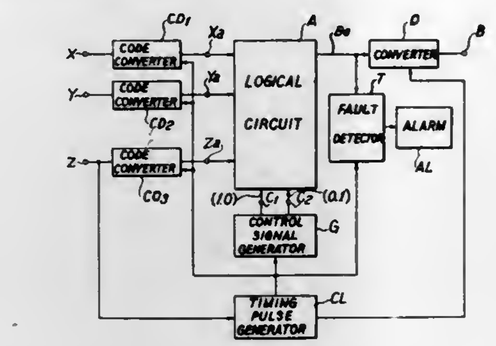
An asynchronous data communication system wherein the transmitted signal represents two bit types, it being necessary to segregate the bit types at the receiver. To accomplish the segregation in the proper phase, a selected randomly occurring bit group is combined with a sync signal and converted to a special analog level which uniquely represents the simultaneous selected bit group and sync signal occurrence. The receiver decodes the special analog level back into the bit group and the sync signal and ensures that the bit type segregating unit is in the phase determined to be proper by the original bit type organization established in the transmitter.

3,652,987
SYNCHRONIZATION VERIFYING SYSTEM
Justin H. McCarthy, Jr., Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 29, 1970, Ser. No. 50,684
Int. Cl. G08c *25/00*
U.S. Cl. 340—146.1 **9 Claims**



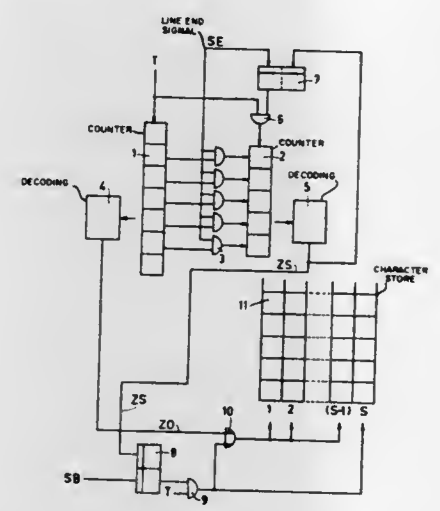
Emitter pulses generated in groups are checked to determine whether or not the correct number are present in each group. The pulses are introduced to a counter, the contents of which is inspected by appropriately timed gating whenever a count equivalent to a full pulse group should be present. The inspection circuitry is controlled so as to accommodate acceptable odd spacing in the pulse groups.

3,652,988
LOGICAL SYSTEM DETECTABLE OF FAULT OF ANY LOGICAL ELEMENT THEREIN
Hideo Yamamoto, Sagamihara, and Teruji Watanabe, Niza-Machi, both of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan
Filed July 14, 1970, Ser. No. 54,685
Claims priority, application Japan, July 16, 1969, 44/55740
Int. Cl. G08c *25/00*
U.S. Cl. 340—146.1AB **4 Claims**



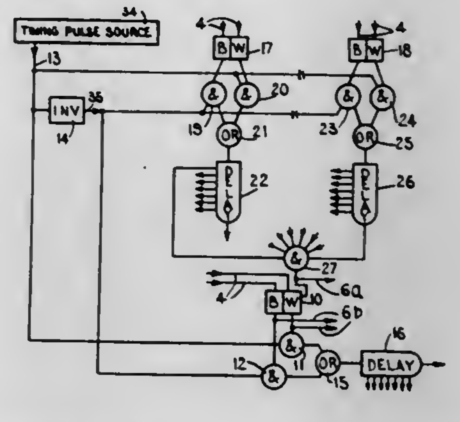
A logical system provided with a logical circuit using at least one logical element, in which the logical element performs a first logical function in response to a first control binary information and a second logical function in response to a second control binary information. Input pair signals (1,0) and (0,1) which are successive binary signal elements different from each other are applied to the logical circuit as input signals while control binary information is applied to the logical element so as to alternately perform the first logical function and the second logical function. Faults of the logical element can be detected by detecting at the output of the logical circuit a fault pair signal (1,1) or (0,0) which are successive signal elements of the same binary information.

3,652,989
SENSING ARRANGEMENT FOR USE WITH APPARATUS FOR AUTOMATIC CHARACTER RECOGNITION
Dieter Poddig, Hamburg, and Hans Hoffmann, Friedrichsgabe Post Harksheide, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 13, 1968, Ser. No. 775,392
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 H **3 Claims**



A character recognition device for use with printed characters and designed to indicate the character at a plurality of interrogation positions. A storage device is included which will store information relating to a plurality of position digitized signals of a single vertical line element. The information of the vertical line element is modified within the storage device so as to provide an indication of the center of the vertical line element in accordance with one of the interrogation positions.

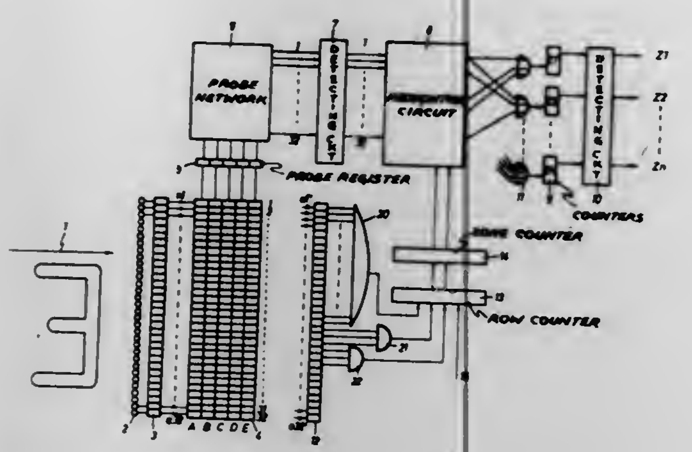
3,652,990
APPARATUS FOR THE RECOGNITION OR ANALYSIS OF PATTERNS
George Pember Darwin, London, England, assignor to International Computers Limited, London, England
Filed Feb. 17, 1970, Ser. No. 12,066
Claims priority, application Great Britain, Feb. 25, 1969, 10,025/69
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3AC **9 Claims**



Data processing apparatus for the recognition or analysis of patterns, which may, for example, be character representations requires that the pattern to be processed be divided into elementary areas arranged in a matrix. The matrix of areas is scanned by a corresponding matrix of detecting elements, such as photocells, and the resultant signals are applied as inputs to a plurality of logic units. Each logic unit is, for example, primarily associated with a specific elementary area of the pattern but connections are also provided to the unit from those detecting elements scanning other pattern areas having a particular positional relationship to the primarily associated one. These other pattern areas are typically those immediately surrounding the primarily associated one. A standard timing waveform is applied to the logic units and is modified according to the states of and positional relationships of the pattern areas whose detectors are connected to the logic unit, so that the output of the logic unit has a time relationship to the standard timing waveform which is dependent on these positions and states. For example, the areas with which a logic unit is associated may produce varying delays to the standard waveform and the various waveforms derived in this way may again be recombined. Typically, the states of the areas may produce a half-cycle delay in the waveform and the positional differences of the various areas may produce appropriate phase delays in the waveform. The resultant output waveform may be that made to indicate such features of the pattern as it is desired to recognize, such as, for example, the direction of a line, or the existence of a curve or junction in the line.

3,652,991
ARRANGEMENT FOR CHARACTER RECOGNITION OF CHARACTERS WHICH ARE BROKEN UP INTO CHARACTERISTIC SHAPE ELEMENTS
Walter Dietrich, Pforzheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Aug. 17, 1970, Ser. No. 64,217
Claims priority, application Germany, Aug. 29, 1969, P 19 44 073.4
Int. Cl. G06k *9/13*
U.S. Cl. 340—146.3 J **15 Claims**

The present invention relates to automatic character recognition, in which the characters are broken up into their characteristic shape elements, and in which the scanned and electrically stored shape elements are detected by probes corresponding to the shape elements. The shape elements are successively fed to the probes, and the probe most similar to the particular shape element, is detected by a first extreme value detecting circuit. The detected probe is assigned to the relevant character on the basis of its location in the character area, and the number of probes for each character is stored, so that the character with the largest number of assigned



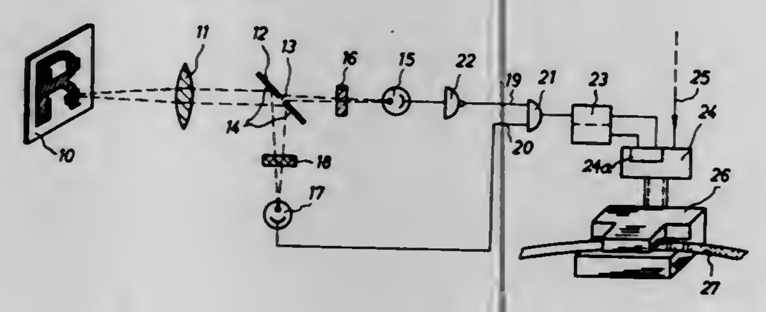
shape elements is determined and recognized by a second extreme value detecting circuit.

3,652,992

METHOD AND APPARATUS FOR QUANTIZING A CHARACTER OR TEST PATTERN PREFERABLY FOR THE PURPOSE OF GAINING CONTROL DATA FOR ELECTRONIC PHOTO COMPOSITION

Roman Koll, Kiel-Wellingdorf, Germany, assignor to Dr.-Ing. Rudolf Hell

Filed Oct. 20, 1969, Ser. No. 867,580
Claims priority, application Germany, Nov. 2, 1968, P 18 06 559.3
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 B **11 Claims**



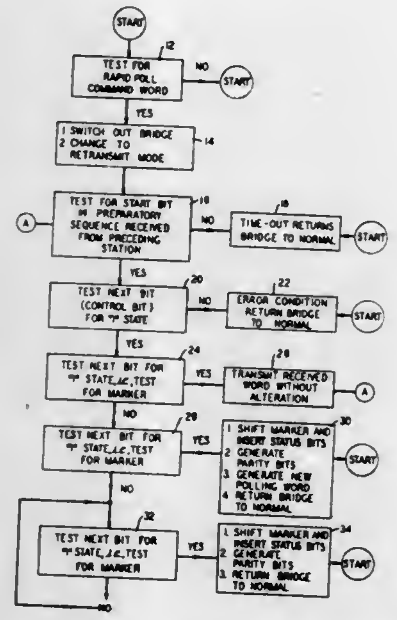
The edges of a test pattern which lie along the direction of scanning are provided with companion tapes of a contrasting color which causes the generation of a signal during scanning to prevent undesired operation of recording equipment in response to undesired alterations of dark and light data due to distortion of the character or misalignment of the character with respect to the scanning direction. The sensing apparatus employs means for point-by-point and area-by-area outer-field sensing of data from the character and means for permitting storage of the data so sensed in accordance with an outer-field scan of areas immediately adjacent the scanned points. The sensing apparatus includes an apertured diaphragm for direction the information of the point-by-point or sharp scanning to a registration control circuit and the information derived from outer-field scanning to the registration control circuit for preventing the registration of information detected due to flaws or inadvertent irregularity of character contours.

3,652,993

RAPID POLLING METHOD FOR DIGITAL COMMUNICATIONS NETWORK

John Dewey Bridwell, Little Silver, and Donald van Zelm Wadsworth, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 24, 1970, Ser. No. 58,002
Int. Cl. H04q *9/00*; **H04j** *3/00*
U.S. Cl. 340—147 R **10 Claims**


START
TEST FOR RAPID POLL COMMAND WORD
NO
START
YES
1 SWITCH OUT BRIDGE 2 CHANGE TO RETRANSMIT MODE
TEST FOR START BIT IN PREPARATORY SEQUENCE RECEIVED FROM PRECEDING STATION
A
NO
TIME-OUT RETURNS BRIDGE TO NORMAL
START
YES
TEST NEXT BIT (CONTROL BIT) FOR "1" STATE
NO
ERROR CONDITION RETURN BRIDGE TO NORMAL
START
YES
TEST NEXT BIT FOR "1" STATE, i.e., TEST FOR MARKER
YES
TRANSMIT RECEIVED WORD WITHOUT ALTERATION
A
NO
TEST NEXT BIT FOR "1" STATE, i.e., TEST FOR MARKER
YES
1 SHIFT MARKER AND INSERT STATUS BITS 2 GENERATE PARITY BITS 3 GENERATE NEW POLLING WORD 4 RETURN BRIDGE TO NORMAL
START
NO
TEST NEXT BIT FOR "1" STATE, i.e., TEST FOR MARKER
YES
1 SHIFT MARKER AND INSERT STATUS BITS 2 GENERATE PARITY BITS 3 RETURN BRIDGE TO NORMAL
START
NO
12
14
16
18
20
22
24
26
28
30
32
34

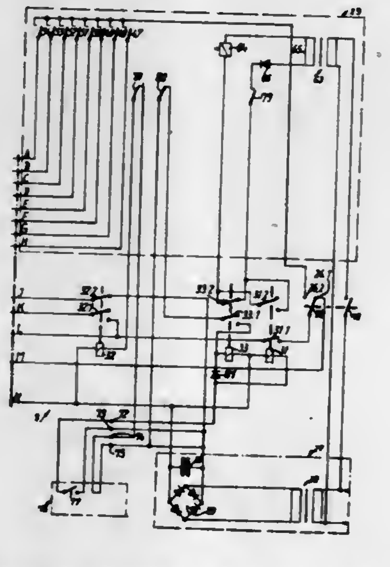
All of the remote stations to be rapidly polled are connected in a series loop with the control station, which transmits a rapid polling word containing several information bits followed by a marker bit. Each remote station, while retransmitting the word to the following station in the loop, advances the marker one or more bit positions and inserts its own status information in those positions. The remote stations recognize a full word by the position of the marker and ignore it. The remote stations may also be programmed to alter error checking parity bits in accordance with the alterations made in the information bits.

3,652,994

SELECTIVE CONTROL SYSTEM FOR SLIDE PROJECTORS

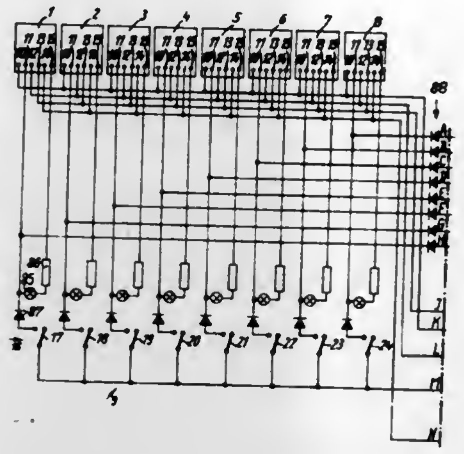
Josef Scheibel, Ober-Morlen, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 23, 1969, Ser. No. 868,816
Claims priority, application Germany, Oct. 26, 1968, P 18 05 384.4
Int. Cl. H04q *9/00*
U.S. Cl. 340—147 R **21 Claims**



A selector switch is furnished for each of a plurality of slide projectors. The switch may be closed either manually or

through a corresponding feeler operating in conjunction with a punched tape. This causes the selective slide projectors to be set for a slide change. A control signal then causes all



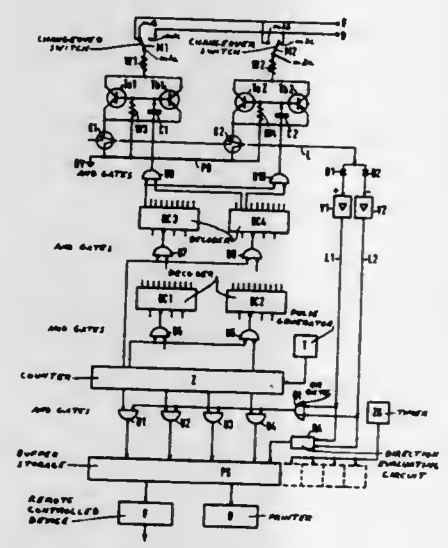
selected slide projectors to change slides simultaneously. A synchronizing system is furnished for synchronizing the transport of the tape to the end of the control signal for an automatically controlled slide show.

3,652,995

INPUT CIRCUIT FOR A SIGNALLING SYSTEM WHICH CYCLICALLY SCANS A PLURALITY OF SIGNALLING STATIONS UNDER COUNTER CONTROL

Hans-Ulrich Amberg, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed July 8, 1970, Ser. No. 53,227
Claims priority, application Germany, July 11, 1969, P 19 35 235.3
Int. Cl. H04q *3/00, 9/00, 5/00*
U.S. Cl. 340—167 **5 Claims**



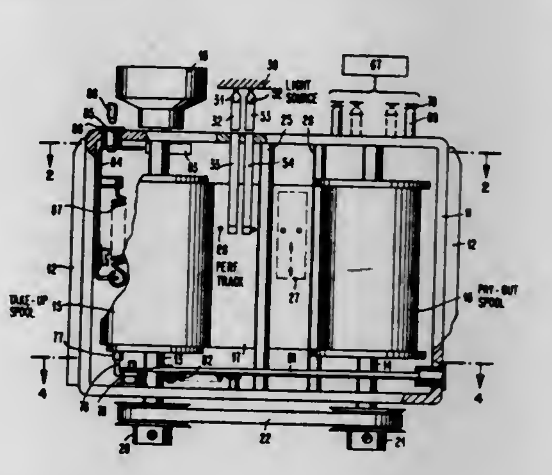
Each of a plurality of changeover switches is provided at a corresponding one of a plurality of signalling stations and has a first contact terminal connected to the positive polarity terminal of a DC voltage source and a second contact terminal connected to the negative polarity terminal of the DC voltage source. Each of the plurality of transistor circuits is provided at a corresponding one of the signalling stations. Each transistor circuit comprises a PNP type transistor and an NPN type transistor connected in parallel with each other and connected to the fixed terminal of the switch arm of the corresponding one of the changeover switches. Each transistor circuit is electrically connected to a bus bar for applying a potential between the potentials of the terminals of the DC voltage source via the control winding of the corresponding one of the magnetic cores. Each transistor of each transistor circuit has a base electrode coupled to a counter via a decoder. The counter is controlled by a pulse generator.

3,652,996

INFORMATION RETRIEVING ARRANGEMENT

Klaus Schlickelser, Boll near Hechingen, Germany, assignor to Dipl. Ing. Walter Buhmann Elektro-Apparatebau GmbH, Hechingen, Hohenzollern, Germany

Filed Feb. 9, 1970, Ser. No. 9,783
Claims priority, application Germany, Feb. 7, 1969, P 19 06 136.0
Int. Cl. G11b *7/00*
U.S. Cl. 340—172.5 **12 Claims**



Tape units are provided each including a pair of spaced rotatable spools accommodated in a casing, a multiple-track magnetic tape trained about the spools for advancement in a predetermined path. A device for using these tape units is arranged to cooperate with them and includes a magnetic head displaceable transversely to the path of the magnetic tape, advancing means for advancing the tape in the path in incremental steps of identical length each corresponding to a bit of retrievable information on the tape, a plurality of optically detectable indicia on the tape successively spaced at intervals corresponding to the length of one of the steps, detecting means for optically detecting successive ones of the indicia in response to incremental stepwise advancement of the tape, and for producing a recognition signal, storage means actuatable in response to detection of successive ones of the indicia for storing the recognition signals, and retrieving means for selecting a recognition signal corresponding to a predetermined bit of information which it is desired to retrieve, and for cooperating with the storage means nd the advancing means in a sense advancing the tape until correspondence of the predetermined bit of information with the magnetic head.

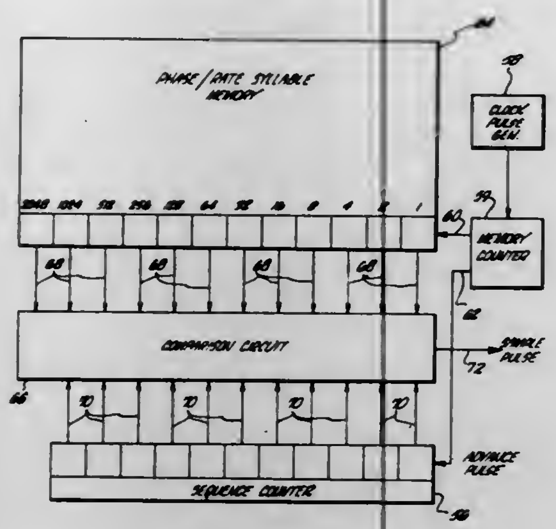
3,652,997

CONTROL SYSTEM FOR MULTIPLE SIGNAL CHANNELS

Ralph G. Cromleigh, P.O. Box 751, La Canada, Calif.

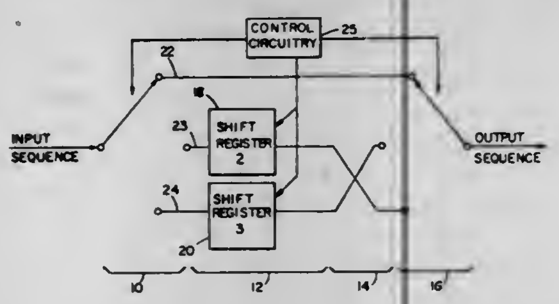
Filed Feb. 25, 1970, Ser. No. 13,927
Int. Cl. G06f *5/06*; **H04l** *7/00*
U.S. Cl. 340—172.5 **13 Claims**

A digital data processing system for controlling the sampling of data from, or the distribution of data to, a plurality of information channels is disclosed. The processing system includes a memory which serves to store a plurality of multibit binary syllables. Each of these multibit binary syllables includes a predetermined number of ones and zeros which define a sampling rate and a phase. The most significant bit appearing as a one defines the sampling rate, while all of the lesser significant bit positions, relative to the most significant bit appearing as a one, define the phase. A comparison circuit is employed to compare the contents of a digital counter, which is advanced at a predetermined rate, with each of the multibit binary syllables. Each valid comparison results in the generation of a sample signal by the comparison circuit, which sample signal enables the data available over a predetermined input information channel to be retrieved, extracted or otherwise sampled.



3,652,998
INTERLEAVERS

George David Forney, Jr., Lexington, Mass., assignor to Codex Corporation, Watertown, Mass.
Filed Mar., 1970, Ser. No. 17,417
Int. Cl. G06f *13/02, 7/00*
U.S. Cl. 340—172.5 **17 Claims**

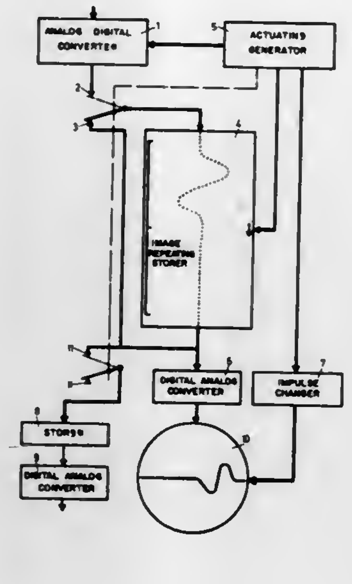


Interleavers, which spread the bits in a group of length B in the input sequence so that any pair are at least N bits apart in the output sequence, in which delaying circuitry (e.g., one or more shift registers) cooperates with control circuitry to define a plurality of delay paths, each of which is of constant length, the number of such paths being equal to the period, P, of the interleaver (where 2 P<BN/2). The control circuitry classifies any P successive bits of the input sequence to the P different delay paths, the bits being classified to any such path being spaced P bits apart. The output sequence is derived by sequentially selecting bits from the various delay paths.

3,652,999
DEVICE FOR VISUALIZING MEASURED QUANTITIES

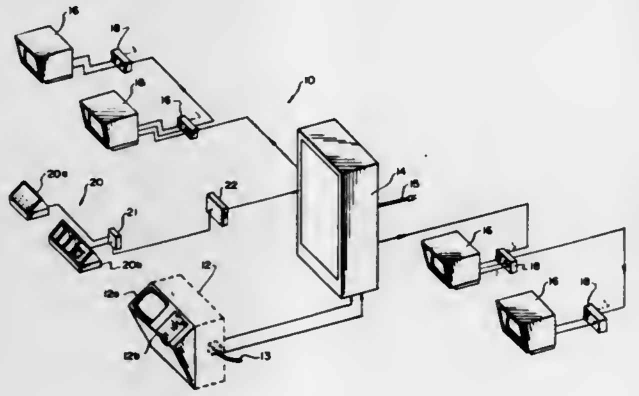
Bo Hjort, Sollentuna, and Kurt K. H. A. Berglund, Solna, both of Sweden, assignors to Siemens Aktiengesellschaft, Erlangen, Germany
Filed Apr. 13, 1970, Ser. No. 27,878
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **10 Claims**

A device for making visible analogous time dependent measured quantities, for example, of an electrocardiogram by an electronic ray upon a screen, uses an analog digital converter to produce derived digital measured values. The device also uses at least one image repeating storer in which is stored a predetermined amount of measured quantities as individual digital measured values. These values are obtained from the storer in cycles and are delivered through a digital analog converter and a time deflecting device synchronized with the storer. The deflecting device periodically deflects the electronic ray with reference to the time axis of the screen. The present invention is particularly characterized in that the individual digitally stored measured values after conversion are transmitted as deviating voltage perpendicularly to the time axis upon a cathode ray oscillograph inscribing with brightness which remains uniform. The inscribing ray is key-darkened during its guided return to the initial position by the time deflecting device.



3,653,000
DATA STORAGE AND DISPLAY SYSTEM

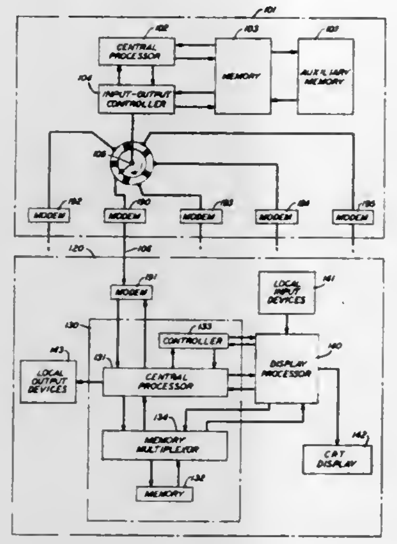
Kenneth Kielar, Norridge, and William Milleker, Chicago, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed June 9, 1970, Ser. No. 44,714
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **18 Claims**



A data storage and display system utilizing a memory register for receiving names of personnel in response to coded cards having indicia corresponding to alphanumeric characters and storing the information indicative of each alphanumeric character and displaying the same on a display screen in alphabetical order to indicate to other personnel the names of those registered. A permanent memory in combination with a memory register and shift register operate cyclically to insert new names in the memory in alphabetical order automatically upon insertion of a particular coded card into a card reader.

3,653,001
TIME-SHARED COMPUTER GRAPHICS SYSTEM HAVING DATA PROCESSING MEANS AT DISPLAY TERMINALS

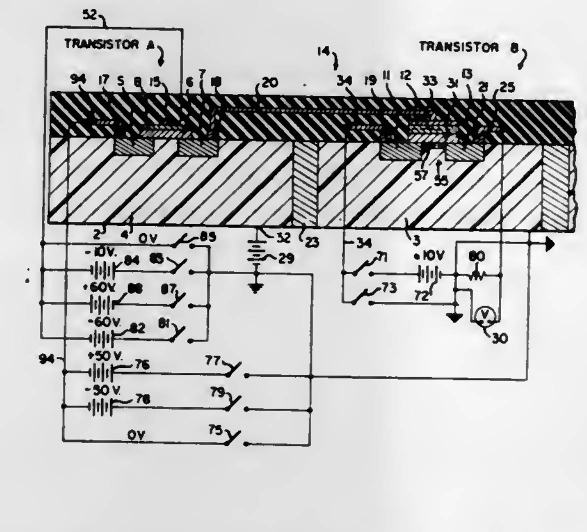
William H. Ninke, Millington, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Nov. 13, 1967, Ser. No. 682,280
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **23 Claims**



An interactive computer-driven CRT display system is described. This system features at least one local console for interacting with a large time-shared central computer. Each console includes a small general purpose computer, special purpose display hardware and software, and several input means, including a light pen. The special purpose hardware includes a display processor for performing many processing steps independently of the small computer. Means are also provided for detecting violations of the boundaries of a display device and for controlling signals applied to the display device in response thereto. Processing and display functions proceed concurrently and share computer capabilities on an interrupt basis. Means are also provided for performing data transformations on a cumulative basis.

3,653,002
NONVOLATILE MEMORY CELL

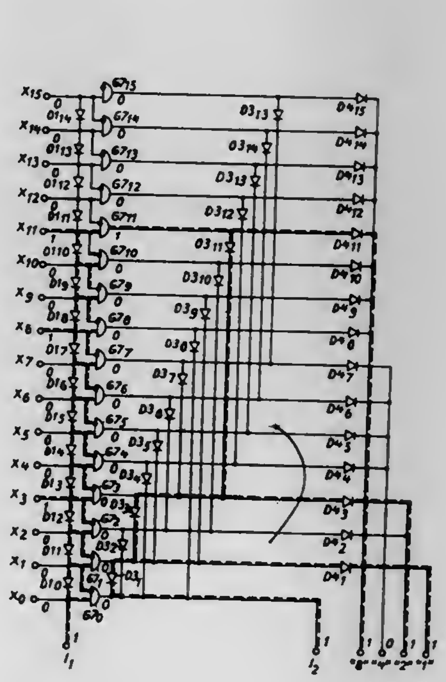
James A. Goffee, Cambridge, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed Mar. 2, 1970, Ser. No. 15,632
Int. Cl. G11c *11/38*
U.S. Cl. 340—173 **4 Claims**



The present invention relates to a nonvolatile memory cell having an MOS control transistor electrically connected to the gate electrode of an MNOS memory transistor. The nonvolatile memory cell may be set by momentarily applying a set potential to the MNOS memory transistor using the MOS control transistor, to which a pass potential is applied. The nonvolatile memory cell may be reset by momentarily applying a reset potential to the MNOS memory transistor using the volatile MOS control transistor, to which a pass potential is applied.

3,653,003
APPARATUS FOR IDENTIFYING THOSE MEANS OF A PLURALITY OF MEANS WHICH HAVE CHANGED STATE

Goran Anders Henrik Hemdal, Bollmoravagen, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed May 1, 1970, Ser. No. 33,642
Claims priority, application Sweden, May 29, 1969, 7573/69
Int. Cl. G11c *15/00, 9/00*
U.S. Cl. 340—173 R **8 Claims**

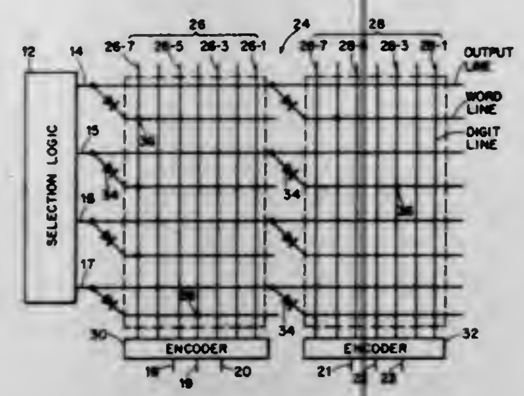


Apparatus for identifying those means of a plurality of means which have changed their binary state. A reference is sequentially obtained to only those means which have changed their state without spending unnecessary work sifting off the remaining means. The arrangement is particularly applicable in telecommunication systems, more especially such systems which have a central control, e.g., program store controlled systems in which the arrangement makes it possible to reduce considerably the idle load of a controlling computer.

3,653,004
READ-ONLY MEMORY ORGANIZATION

William F. Jordan, Jr., Wellesley, Mass., assignor to Honeywell Inc., Minneapolis, Minn.
Filed May 25, 1970, Ser. No. 40,019
Int. Cl. G11c *17/00*
U.S. Cl. 340—173 SP **17 Claims**

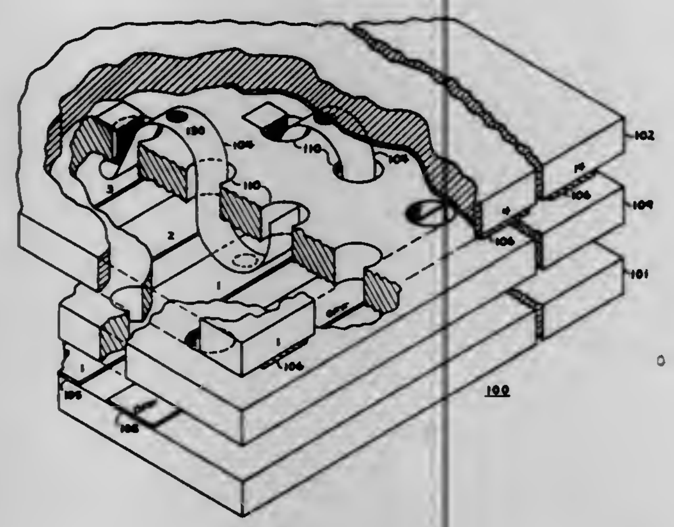
A read-only memory organization having a plurality of matrices, each of the matrices including digit lines and word lines orthogonal thereto. The word lines are coupled to the output lines of word selection means by coupling means such as diodes or transistors. Information is stored in the memory by selectively interconnecting the digit lines and the word lines in each of the matrices, the interconnections being a maximum of one for each word line. The number of coupling means is equal to the number of word lines in each of the matrices. An encoder is provided for each of the matrices to encode the information stored at the interconnections.



3,653,005
MECHANICAL STORAGE MEANS FOR REPERTORY DIALER

Warren Wesley Porter, Galion, Ohio, assignor to North Electric Company, Galion, Ohio

Filed Aug. 25, 1969, Ser. No. 852,662
Int. Cl. G11c *17/00*
U.S. Cl. 340—173 SP **3 Claims**



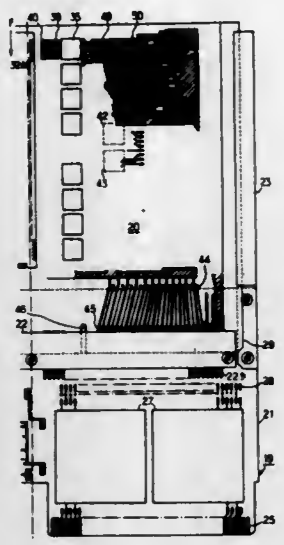
Mechanical storage apparatus for a repertory dialer including a pair of conductor bearing boards with contacts selectively interconnecting the conductors on one board with the conductors on the other providing a preestablished set of paths for routing successive pulses representing the digits and digital values of a stored directory number to succeeding circuitry which generates corresponding digital signals for use in setting up a communication path.

3,653,006
ASSEMBLAGE ELEMENT FOR FUNCTIONAL UNIT

Bernard Claude Kohler, Paris; Gerard Philippe Manoussi, Creil, and Serge Auguste Touron, Bagnolet, all of France, assignors to Societe Industrielle Honeywell Bull, Paris, France

Filed Dec. 24, 1969, Ser. No. 887,940
Claims priority, application France, Dec. 27, 1968, 181105
Int. Cl. G11c *11/00*
U.S. Cl. 340—173 SP **12 Claims**

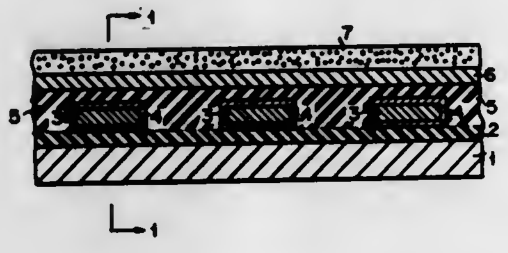
A read-only memory wherein a complete unit thereof is fabricated as a pluggable circuit board, the board being adapted to function with different storage components by supporting the storage components in a removable pluggable fashion, the board proper holding in fixed form those elements and circuits which are invariant for different storage components.



3,653,007
FLAT TYPE MAGNETIC THIN FILM MEMORY

Yoshio Murakami, Yokohama; Iwao Higashinakagawa, Kawasaki; Nobuaki Yasuda, Zushi, and Motoharu Sato, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Feb. 19, 1970, Ser. No. 12,781
Claims priority, application Japan, Feb. 19, 1969, 44/11764; May 14, 1969, 44/36686
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF **9 Claims**



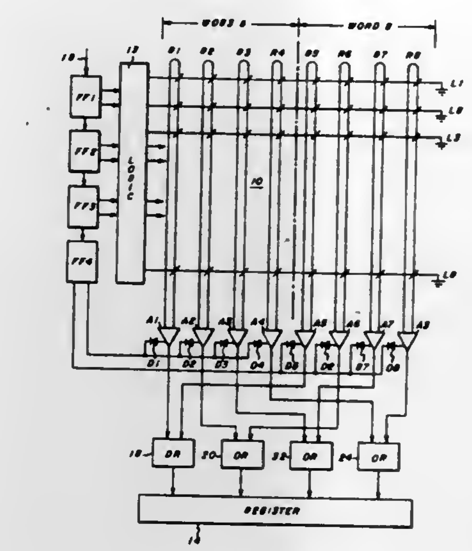
A flat type magnetic thin film memory comprising a metal substrate, at least one group of drive lines each provided with a magnetic thin film to define a magnetic circuit and extending over and parallel with the substrate and an insulation layer of a polyimide resin intervening (i.e., interposed) between the substrate and the drive line group.

3,653,008
SENSE AMPLIFIER SYSTEM FOR READ-ONLY COMPUTER MEMORY BANK

William W. Beydler, Laurel, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 4, 1970, Ser. No. 43,530
Int. Cl. G11c *7/06, 9/00, 11/00*
U.S. Cl. 340—174 M **6 Claims**

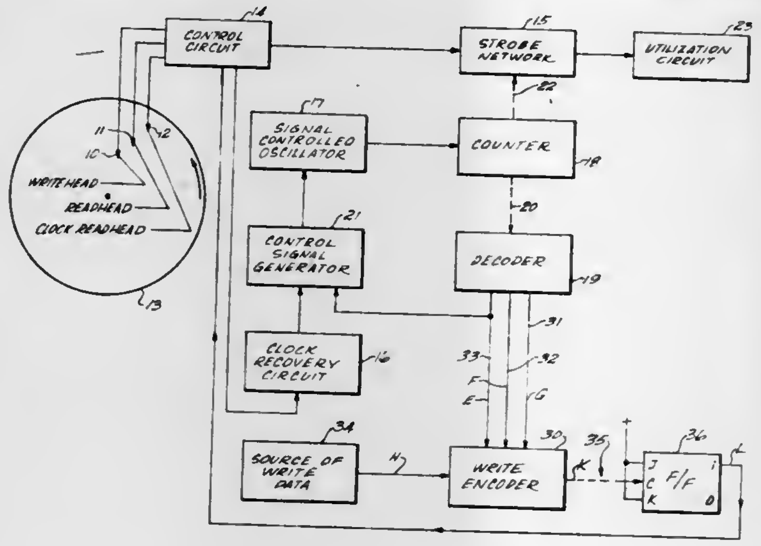
Described is a sense amplifier system for read-only computer memory banks having a bipolar output to distinguish "ones" and "zeros." The system is characterized in that each bit of a memory word consisting of several computer words can be read out with the use of only two integrated circuits, an operational amplifier and a gate. At the same time, the system provides for interfacing with various logic voltage levels. This is accomplished by connecting a diode to the output of the operational amplifier for each bit for strobing purposes and by using an emitter coupled logic gate both as a gating device and as a voltage level translating device.



3,653,009
CORRECTION OF ASYNCHRONOUS TIMING UTILIZING A PHASE CONTROL LOOP

Peter L. Krause, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 12, 1970, Ser. No. 80,092
Int. Cl. G11b *5/02, 5/44*
U.S. Cl. 340—174.1 A **16 Claims**

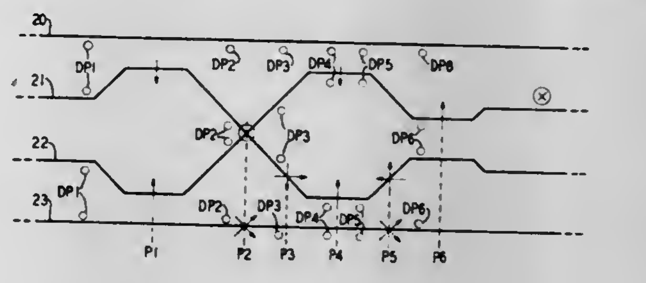


Binary data is stored on a moving magnetic medium as data transitions occurring at multiples of a nominal time interval and pairs of control transitions are recorded on the medium between successive data transitions whenever data transitions occur at some given multiple of the nominal time interval that is larger than one. The time interval between the pair of control transitions is substantially smaller than the nominal time interval. Variations in the speed of the medium during recording are sensed and the time of occurrence of the pair of control transitions is adjusted as the speed of the medium varies to maintain a predetermined spacing relative to the successive data transitions between which the pair of control transitions is recorded. An oscillator synchronized to a multiple of the frequency of occurrence of clock transitions on the medium and a counter responsive to the oscillator are employed both to retrieve and to store data. During retrieval, the states of the counter provide a group of successive strobe pulses, the sum of the durations of which remain equal to the period between clock transitions as the speed of the medium varies. During storage, the data and control transitions are recorded on the medium responsive to selected states of the counter to maintain the predetermined spacing between data and control transitions as the speed of the medium varies.

3,653,010
MAGNETIC DOMAIN LOGIC ARRANGEMENT

John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 12, 1970, Ser. No. 88,691
Int. Cl. G11c *21/00*
U.S. Cl. 340—174 TF **10 Claims**

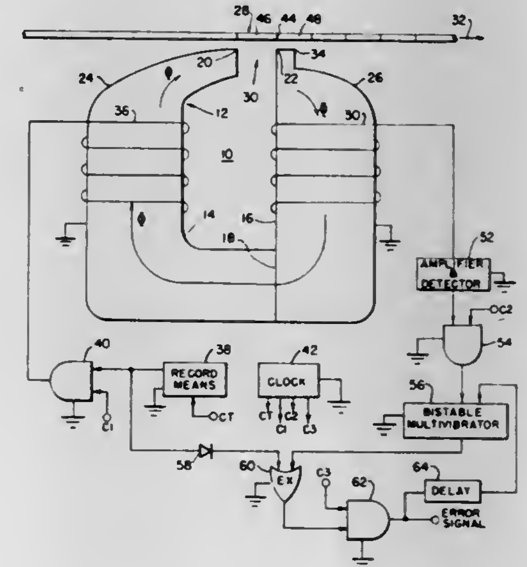


A strip of magnetically soft material of proper geometry defines stable positions to either side thereof for single wall domains moving therealong in a sheet of magnetic material. An opening in the strip has been found to produce an inversion function and an opening in two strips where they intersect similarly provides a crossover for information moving along the rails.

3,653,011
THREE POLE TIP READ AFTER WRITE TRANSDUCER

James P. Donohue, Fairborn; Donald A. Bange, Dayton, both of Ohio, and John J. Miyata, Monterey Park, Calif., assignors to The National Cash Register Company, Dayton, Ohio

Filed Apr. 15, 1970, Ser. No. 28,873
Int. Cl. G11b *5/22, 5/46, 27/36*
U.S. Cl. 340—174.1 B **10 Claims**



A magnetic recording head is provided with a pair of pole tips separated by a high-reluctance gap, and the pole tips are coupled together by a low-reluctance path. The head is further provided with a third pole tip. A magnetic medium, such as a tape, is passed over the head in such a manner that any point on the medium passes over the gap and thereafter over the third pole tip. A pair of coils are wound around the low-reluctance coupling path, one of which is used to cause a magnetic field to exist in the gap and thereby be applied to the medium, and the other of which is used to detect any change in the direction of the magnetic field on the medium as it passes in the vicinity of the third pole tip. Means are further provided to determine whether the signal provided by the detecting coil corresponds to an expected signal.

3,653,012

MAGNETIC HEAD WITH GAPS SPACED AS A FUNCTION OF THE DISTANCE BETWEEN RECORDED LINES OF INFORMATION

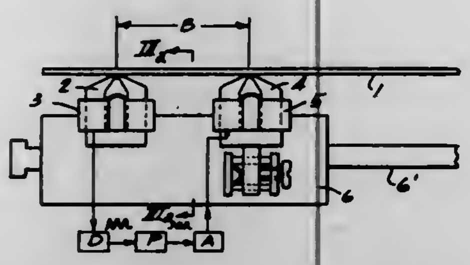
Saburo Uemura, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of application Ser. No. 732,248, May 27, 1968, now abandoned. This application Oct. 2, 1970, Ser. No. 77,717

Claims priority, application Japan, May 31, 1967, 42/35111

Int. Cl. G11b *5/86, 5/02*

U.S. Cl. 340—174.1 P **5 Claims**



An apparatus for the magnetic recording of gradient information wherein a magnetic gradient of given length is reproduced on a magnetic medium. A readout magnetic head is provided for sensing the recorded gradient information and a writing head is used to reproduce the gradient information onto an extended portion of a magnetic member containing the gradient information. Either the readout head or the writing head is provided with means for adjusting the distance between the two heads. The readout head and the writing head may be positioned opposed from one another so as to sense gradient information on a master copy of magnetic material and reproduce the gradient information on a magnetic member used for positioning machine tools or the like.

3,653,013

ARRANGEMENT FOR RESOLUTION AND DIGITAL DISPLAY OF WEIGHING RESULTS

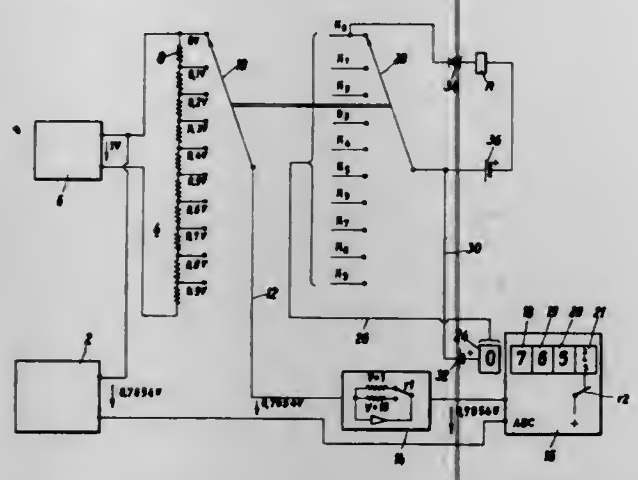
Erich Emil Knothe, Gehrenring 21, 34 Gottingen-Geisnar, and Franz Josef Melcher, Auf der Lieth 32, Gottingen-Nikolausberg, both of Germany

Filed Oct. 21, 1969, Ser. No. 868,176

Claims priority, application Germany, Oct. 25, 1968, P 18 05 049.2

Int. Cl. G01r *19/00;* **G08b** *21/00*

U.S. Cl. 340—177 **14 Claims**



An arrangement on an electrical weighing balance for the digital display of weighing results. The balance has an output voltage analogous to the load. An analogue-digital converter having several digit display units is connected to the output of the balance. There is an additional digit display unit and a voltage compensating circuit and an amplifier with selectable amplifying factors of 10 and 1 which can be switched in between the output of the balance and the input of the ADC, and voltages from 0 to 9/10 of their input voltages are selectively adjustable in stages of respectively one-tenth on the voltage compensating circuit, whereby initially the output voltage of the balance is fed to the ADC, bypassing the compensating circuit and with an amplifying factor 1 of the amplifier, the highest place displayed digit can then be adjusted on the additional DDU, a compensating voltage of which can be adjusted on the compensating circuit and the amplifier can be changed over to the amplifying factor 10. The additional unit may be replaced by two additional units and the amplifier will have an amplifying factor of 100.

3,653,014

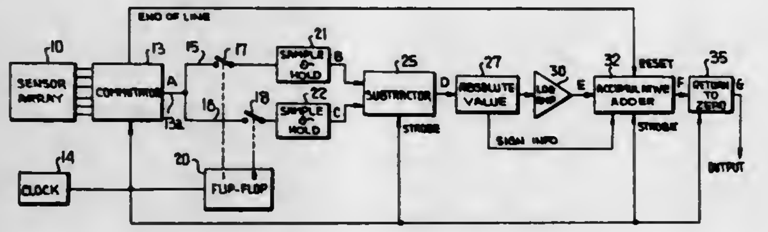
SIGNAL VARIATION ENHANCEMENT SYSTEM

William F. List, Linthicum, and Roland A. Anders, Baltimore, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 24, 1969, Ser. No. 887,861

Int. Cl. G08b *29/00*

U.S. Cl. 340—203 **9 Claims**



Apparatus is disclosed for enhancing small signal information level variations detected by an array of sensors. The sensors convert detected energy, such as light, to a form suitable for processing, e.g., representative electrical signals. The signals are sequentially sampled according to a predetermined sequence of scanning of the sensing element array, and are processed in parallel channels on a synchronized element-by-element basis to detect variations in sample levels. The detected variations are converted to logarithmic form to emphasize small signal variations from element to element.

3,653,015

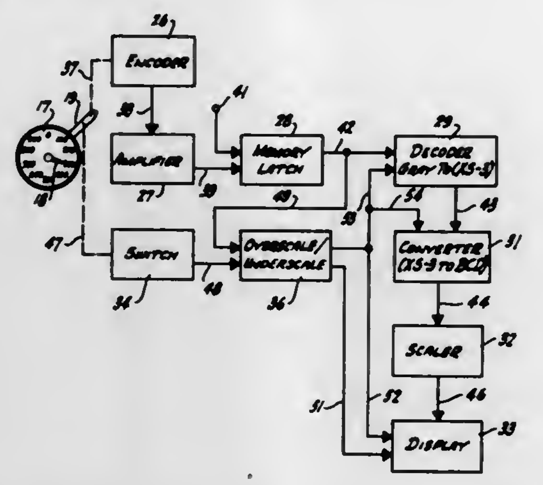
DIGITAL SCALE AND METHOD

Frank C. Rock, Santa Rosa, Calif., assignor to National Controls, Inc., Santa Rosa, Calif.

Filed June 1, 1970, Ser. No. 41,877

Int. Cl. G08c *19/16*

U.S. Cl. 340—204 **18 Claims**



Digital display system and method for weighing scales wherein an encoder provides a digital signal indicative of the

position of the dial pointer of the scale. The digital signal is converted to binary coded decimal form, multiplied by a scale factor to provide a reading in the desired increments of measure, and displayed by visual display elements such as Nixie tubes. When the scale is operating above its normal range, an overscale signal is produced which causes an overscale digit to be displayed. Below the normal range, an underscale signal causes the compliment of the digital signal to be displayed together with a minus sign.

3,653,016

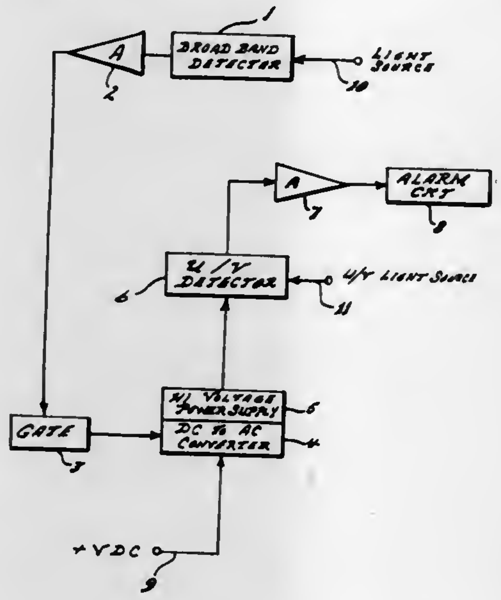
COMBINATION VISIBLE LIGHT DETECTOR AND ULTRAVIOLET DETECTOR COACTING AS A FIRE DISCRIMINATION SYSTEM

Arthur R. Cormier, Uxbridge, Mass., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Sept. 9, 1970, Ser. No. 70,705

Int. Cl. G08b *17/12*

U.S. Cl. 340—228 **1 Claim**



A combination visible light and ultraviolet flame detector is provided wherein a broad band solar cell senses the presence of a visible light source in a surveyed area, and a coacting ultraviolet detector confirms or negates the presence of any ultraviolet component in the visible light, thereby indicating whether the response signifies occurrence of fire, explosion, or merely a false alarm.

3,653,017

LIQUID LEVEL INDICATOR SYSTEMS

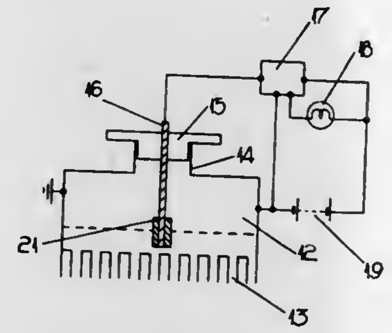
Eric Bernard Parkes, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 3, 1969, Ser. No. 881,761

Claims priority, application Great Britain, Dec. 20, 1968, 60,802/68

Int. Cl. G08b *21/00*

U.S. Cl. 340—244 C **2 Claims**



A liquid level indicator system for indicating the level of a conductive liquid in a reservoir includes a probe, at least a portion of the probe which is immersed in the liquid when the liquid level is at or above a predetermined level being coated with a layer of material which is absorbent to the conductive liquid so that a true indication of the liquid level in the reservoir is obtained.

3,653,018

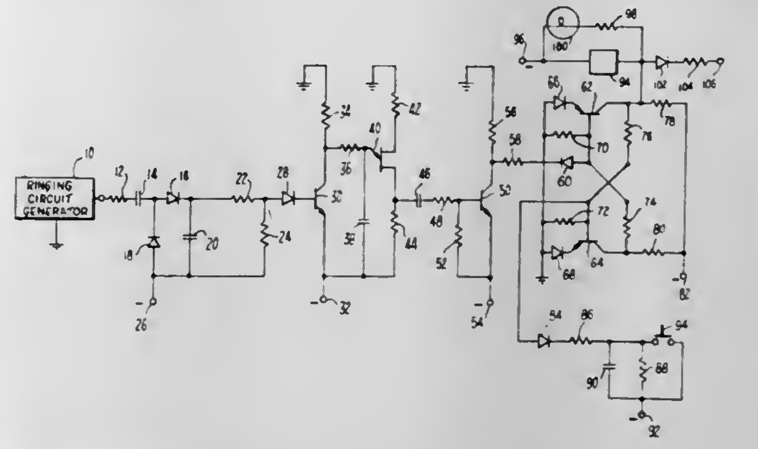
MONITOR CIRCUIT

Ignas Budrys, Fairport, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed June 8, 1970, Ser. No. 44,182

Int. Cl. G08b *21/00*

U.S. Cl. 340—248 P **8 Claims**



The circuit of the invention monitors the amplitude, duration, and repetition rate of telephone ringing bursts. When the ringing bursts are of proper magnitude and form, a bistable circuit is maintained in a reset condition. Should the amplitude, and/or repetition rate, and/or duration, of the ringing bursts fall below specified limits, a signal developed by an integrator circuit is insufficient to prevent a pulse generator from switching the flip-flop circuit into an alarm condition.

3,653,019

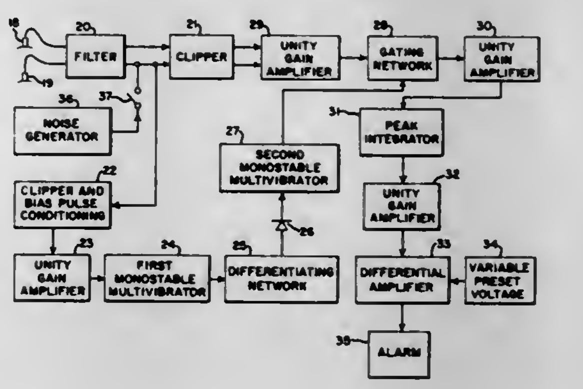
SIGNAL MONITORING SYSTEM

Sterling C. Barton, and Fred H. Sawada, both of Scotia, N.Y., assignors to General Electric Company

Filed July 28, 1970, Ser. No. 58,902

Int. Cl. G08b *21/00*

U.S. Cl. 340—248 P **18 Claims**

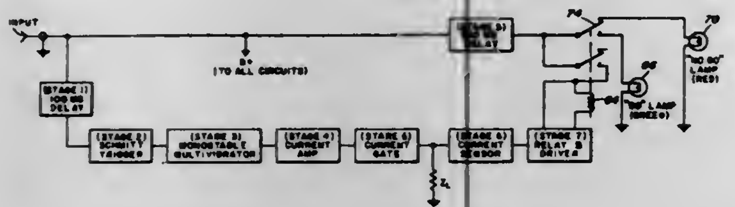


A signal processing system for monitoring the brush arcing potential at the slip rings of a generator supplied through the brushes with a field potential having recurring high-energy noise spikes in the same frequency band as the signal to be monitored, and to give an alarm when the brush arcing potential exceeds a certain critical value. The system eliminates the noise spikes by gating the signal for a preset time at a predetermined time after the occurrence of a noise spike.

3,653,020
CURRENT MONITOR FOR THRESHOLD DETECTION

Billy B. Gullion, Reistertown, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 6, 1970, Ser. No. 61,525
Int. Cl. G08b *21/00*
U.S. Cl. 340—253 P **9 Claims**

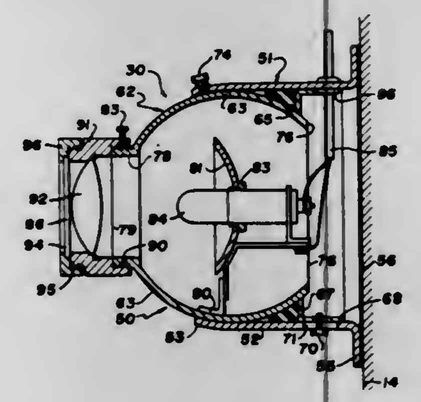


A device for monitoring the current supplied to a missile and its firing mechanism which gives a GO-NO-GO indication during flight line checkout and thereby an alert to any existing malfunctions. A Schmitt trigger fires a monostable multivibrator which activates a current amplifier to trigger a power transistor with 5.9 ohms of load resistance connected to the emitter thereof. This load resistance simulates the actual missile firing mechanism. The current developed through the load resistance is applied to a current sensor that triggers a driver and relay. If the current is of sufficient magnitude, the relay is energized and a green lamp will illuminate indicating a "GO" condition. If insufficient current is applied to the device, the relay will not energize and a red lamp will illuminate indicating a "NO-GO" condition.

3,653,021
UNIVERSALLY ADJUSTABLE AND FOCUSABLE ALARM APPARATUS AND ELECTRIC CIRCUITRY THEREFOR

Charles Litman, 4438 Narvaez Crescent, and Earl N. Lehna, 320 Bessborough Avenue, both of Victoria, British Columbia, Canada

Filed Dec. 18, 1969, Ser. No. 886,176
Claims priority, application Canada, Apr. 14, 1969, 048,571
Int. Cl. G08b *13/18*
U.S. Cl. 340—258 B **4 Claims**

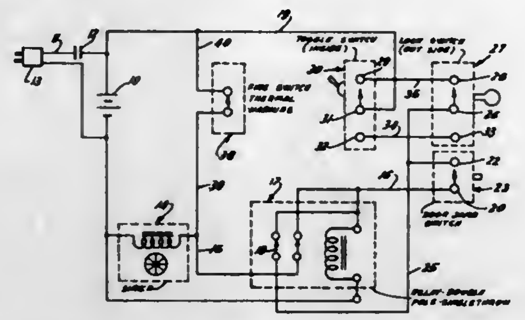


Apparatus having a base attachable to a surface. A hollow holder is universally supported by the base and an electric element of a light beam transmitting and receiving circuit is mounted in the holder. The light beam travels through an outer end opening of the holder and fitted to the holder to extend across the outer end opening are a light focusing lens and a light filter. A rheostat is provided in the circuit to adjust the intensity of the light beam. The apparatus has an alarm circuit which is energized when the light beam is broken by an object of a predetermined size and the alarm circuit includes an audible and a visual signalling device as well as a two-way switch for selectively and alternatively controlling the two devices.

3,653,022
BURGLAR AND FIRE ALARM SYSTEM

Murry Tall, 7435 S. W. 104th Street, Miami, Fla.

Filed May 9, 1969, Ser. No. 823,384
Int. Cl. G08b *13/22*
U.S. Cl. 340—274 **1 Claim**

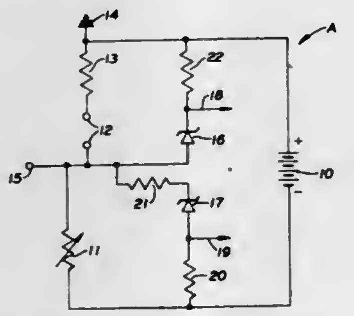


A self-contained burglar alarm system having an audible alarm operated by a low voltage battery, the circuit of the alarm being energized upon opening of a door or window only after being set by a switch which is closed by a key operated from the outside of the door or window. Once energized upon opening of the door, the alarm circuit remains energized upon closing of the door, and is broken only by manual opening of a concealed switch inside the door. A parallel fire alarm circuit operates the same alarm device independently of the burglar alarm circuit.

3,653,023
RESISTANCE-BRIDGE SECURITY SYSTEM DETECTING RESISTANCE CHANGES IN EITHER DIRECTION

Roy O. Hall, Jr., 2273 7th Street, Coyahoga, Ohio

Filed Dec. 11, 1969, Ser. No. 884,120
Int. Cl. G08b *13/00*
U.S. Cl. 340—285 **2 Claims**



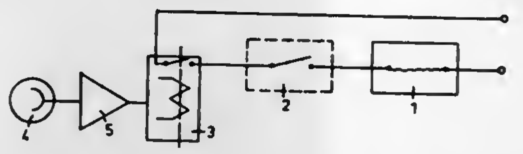
An electronic security system capable of monitoring a plurality of stations for an intrusion. A current balancing unit consists of two balanced electronic detection systems which can recognize an increase or decrease of resistance at any of said stations, said increase and/or decrease in resistance created by an intrusion. Upon such a detection, the electronic system becomes unbalanced and a current will flow to operate periphery equipment which sounds an alarm or otherwise warns of the intrusion.

3,653,024
METHOD OF SELECTED CONVERGING COMMUNICATION AND THE COMBINATION THEREOF WITH SELECTED DIVERGING COMMUNICATION BETWEEN A GROUP OF POPULATION TO A REMOTE CENTER, AND A SYSTEM FOR CARRYING OUT THE METHOD

Claes Erik Gunnar Lundgren, Stora Tvargatan 36, and Istvan Janos Antal Lichtneckert, Fjellevagen 23, both of Lund, Sweden

Filed Aug. 18, 1969, Ser. No. 850,948
Claims priority, application Sweden, Aug. 22, 1968, 11,329/68
Int. Cl. H04q *1/00, 3/00*
U.S. Cl. 340—310 **8 Claims**

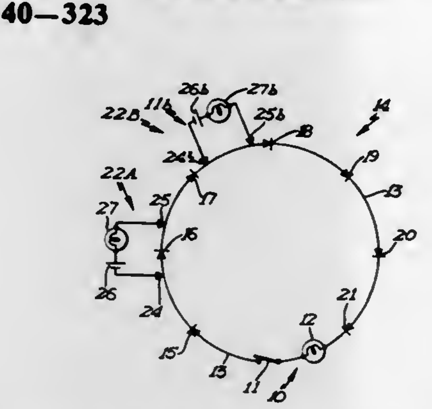
A voting system for compiling a vote on alternative questions distributed by a mass medium. A vote is placed by the manual connection of a load to a public supply system, by a voter at an instant and during a period determined by a control signal transmitted from a remote center. The total load measured during this period is compared with the background load measured immediately before and/or after the period, so that the relationship of the two measurements is a measure of the number of votes. In a simple form, the device for voting may be a small box comprising the load in series with the manual switch, and a photocell controlling a relay having a switch in series with the manual switch and the load. The control signals are transmitted by television and displayed on the screen of the television receiver to activate the photocell so that the load is automatically connected to the supply if the manual switch is on.



3,653,025
SIGNALLING SYSTEM

Theodore N. Busch, Minneapolis, Minn., assignor to Caswell Equipment Company, Incorporated, Minneapolis, Minn.

Filed Aug. 4, 1969, Ser. No. 847,127
Int. Cl. G08b *5/00*
U.S. Cl. 340—323 **1 Claim**

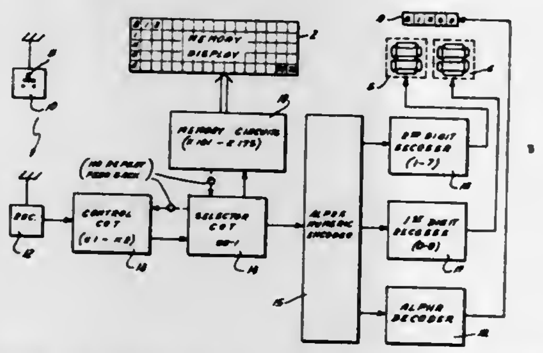


A loop communicating system in which the loop is conductors alternated with diodes. A partial loop electrical circuit has brushes that contact the loop so as to complete the partial loop using a single conductor of the loop or, by contacting two conductors of the loop, incorporated the diode between two conductors into the partial loop. The differences between these two arrangements electrically is used to signal the changes in position of the partial loop on the loop.

3,653,026
RANDOM SELECTION SYSTEM FOR BINGO AND THE LIKE

Frederick A. Hurley, 1204 Ali Baba Avenue, Opa Locka, Fla.

Filed June 3, 1970, Ser. No. 42,964
Int. Cl. G08b *5/36*
U.S. Cl. 340—323 **9 Claims**



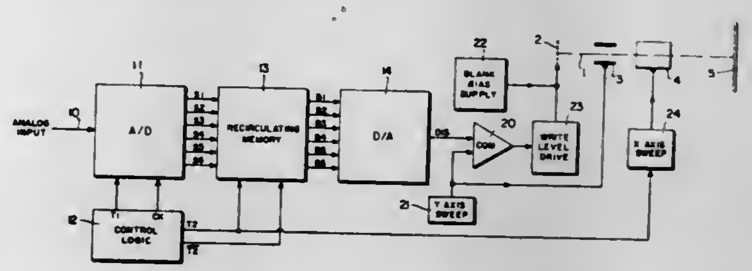
A random selection system including a repeating selector operating for a randomly varied period of time following each successive actuation. The random period of time is achieved through a capacitor timing circuit by means of a variable charging time, and changes in capacitance and other circuit parameters.

A memory circuit keeps track of the selected numbers and is coupled to the selector control circuits to prevent a repeat selection of any number.

3,653,027
PRECESSING ANALOG TRACE DISPLAY

David W. Scheer, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 15, 1970, Ser. No. 46,233
Int. Cl. H01j *29/70*
U.S. Cl. 340—324 A **4 Claims**

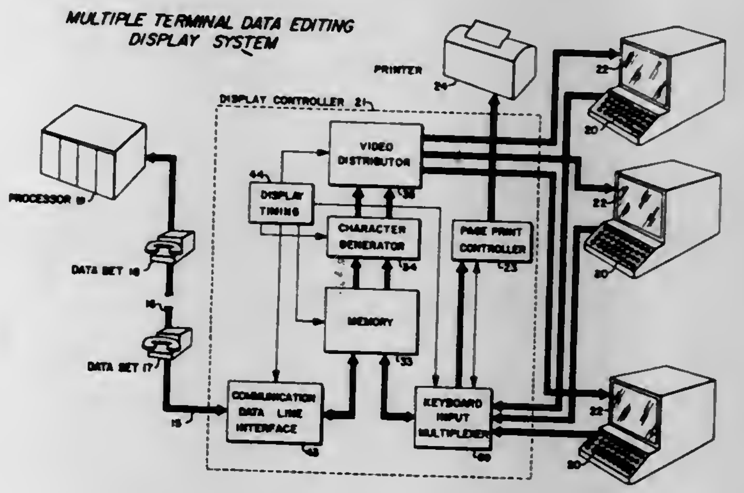


A signal display circuit includes an analog to digital converter, a recirculating memory, a digital to analog converter, and a CRT display means. The memory and the display means are synchronized so that a bright spot representative of the information contained in one location of the memory is produced on the display means for each shifting of information in the memory. New information replaces existing information in the memory at a rate less than the shifting rate of the memory so that the displayed signal appears to move across the viewing screen at a variable speed and with a constant brightness. When no new information is fed into the memory, the display means will continue to show the position of the signal as represented by the data stored in the memory.

3,653,028
CODE CONVERSION DEVICE FOR MULTIPLE TERMINAL DATA EDITING DISPLAY SYSTEM

Allen B. J. Cuccio, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc.

Filed Aug. 29, 1967, Ser. No. 664,057
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **12 Claims**

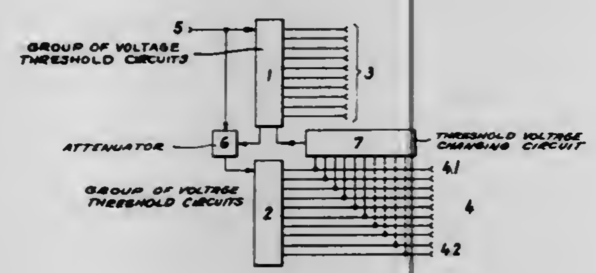


A network system utilizing a data processor and a plurality of remotely located visual display terminals for random access and data editing display of coded information.

3,653,029
ANALOGUE TO DIGITAL CONVERTER

Joachim Kuhlmann, Heilbronn-Bockingen, Germany, assignor to Licentia, Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Feb. 17, 1970, Ser. No. 12,013
Claims priority, application Germany, Feb. 22, 1969, P 19 09 032.5
Int. Cl. H03k *13/175*
U.S. Cl. 340—347 AD **13 Claims**

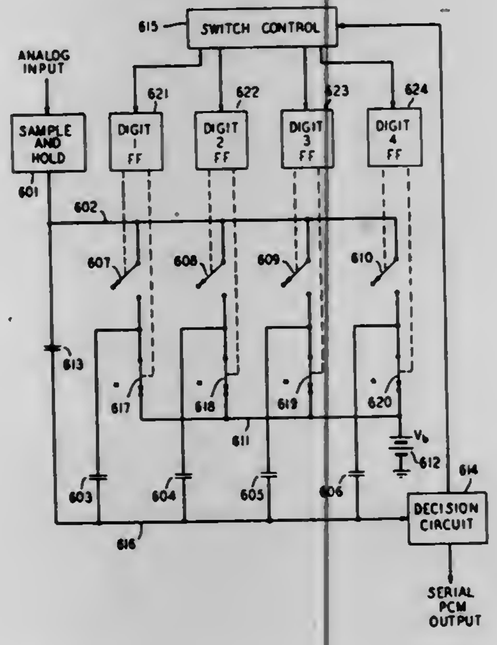

5
GROUP OF VOLTAGE THRESHOLD CIRCUITS
1
3
ATTENUATOR
6
7
THRESHOLD VOLTAGE CHANGING CIRCUIT
41
GROUP OF VOLTAGE THRESHOLD CIRCUITS
2
4
42

An analogue-to-digital converter has an input for an analogue signal and a plurality of signal outputs each associated with a different voltage threshold, direct voltage signals being produced at a signal output when the analogue signal exceeds the associated voltage threshold, the threshold associated with at least one signal output being variable between upper and lower values in the same sense or direction as variations in amplitude of the analogue signal and being abruptly changed in the opposite sense between these values when the analogue signal reaches a predetermined intermediate value.

3,653,030
SWITCHED DIVIDER PCM CODERS AND DECODERS

Robert Lawrence Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 3, 1970, Ser. No. 25,519
Int. Cl. H03k *13/10*
U.S. Cl. 340—347 AD **1 Claim**

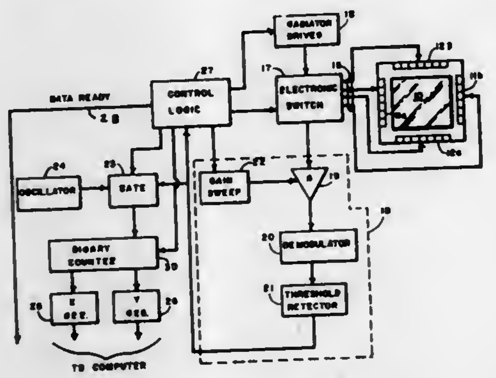


A plurality of weighted impedances is used in a switched divider configuration to produce self-compressing PCM encoders and self-expanding PCM decoders. For the encoders, the analog sample voltage is used as a reference voltage and the divider voltage is compared with a zero volt decision level for subsequent switch operation. For the decoders, a DC reference is used, and after the switches have been set in response to digital information, the divider voltage represents an analog sample voltage.

3,653,031
TOUCH-SENSITIVE POSITION ENCODER

Alvin M. Hlady; William C. Brown, and John W. Brahan, all of Ottawa, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed May 25, 1970, Ser. No. 39,986
Claims priority, application Canada, June 13, 1969, 54287
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **9 Claims**

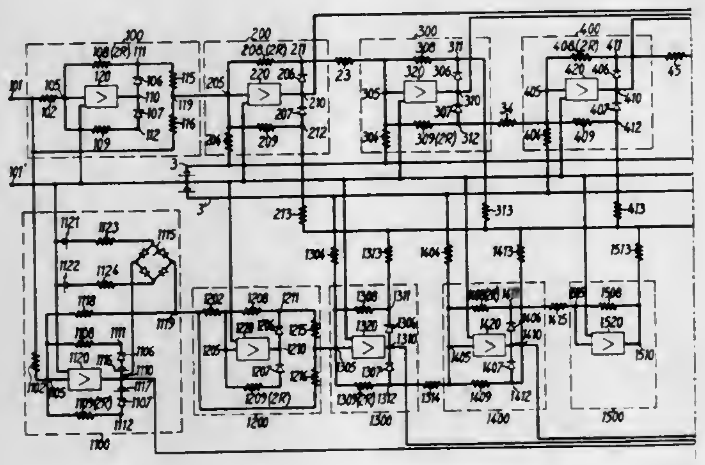


A touch-sensitive position encoder for computer input in which transducers for the propagation and reception of elastic surface waves are positioned at the edges of a sheet of transparent material preferably glass. A finger or stylus placed at a position on the sheet will reflect the surface waves. Detecting and timing circuitry connected to the transducers determine the position of the finger or stylus in geometrical co-ordinate terms.

3,653,032
COMPRESSING CONVERTER FOR TRANSLATING ANALOG SIGNAL SAMPLES INTO PULSE CODE MODULATION SIGNALS

Gilbert J. Le Fort, 28 Residence Corlay, Lannion, France

Filed Oct. 20, 1970, Ser. No. 82,420
Claims priority, application France, Oct. 29, 1969, 6937201
Int. Cl. H03k *13/06*
U.S. Cl. 340—347 AD **3 Claims**

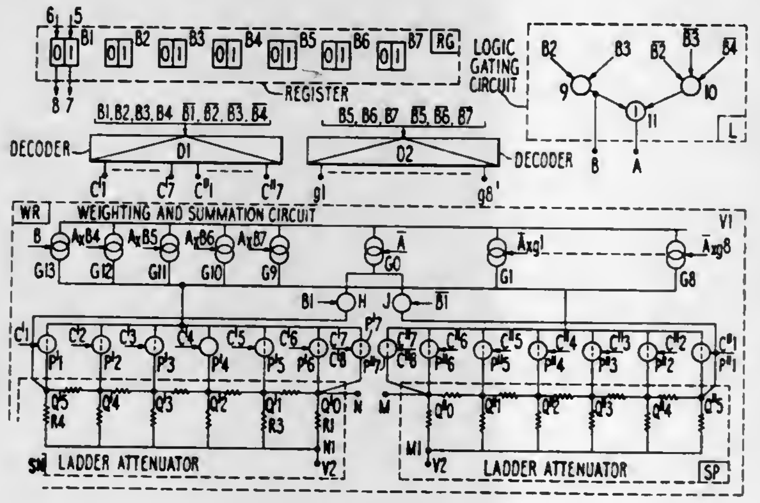


A device for converting analog signal samples into PCM signals, comprising means for successively comparing to a predetermined reference voltage the amplitude of each sample and the successive products thereof by increasing powers of two. At each comparison showing said amplitude of one of said products to be smaller than said reference voltage, a binary digit of a given signalling condition is generated, while a binary digit of the other signalling condition is generated as soon as a comparison shows one of said products to exceed said reference voltage. A remainder signal derived from the latter comparison is transmitted to a linear PCM coder, which delivers a first sequence of PCM signals, while a computer translates the sequence formed by the above-said digits into a second sequence of PCM signals. The assembly of both sequences constitutes the ready-to-be-transmitted PCM signal groups. The device is further characterized in that it makes use, for the successive comparisons, of a plurality of cascaded circuits, each of which includes a difference amplifier with two negative feedback paths, one including a diode having its conduction direction from the output to the input of the amplifier and series connected with a resistance, and the other including a diode having the reverse conduction direction and series-connected with another resistance equal to half or twice the preceding one according to the even or odd rank of the amplifier in the cascade. Thanks to this arrangement, the difference signal resulting from each comparison is multiplied by 1 or 2 according to its polarity, this allowing to use a common reference voltage for all stages of the cascade.

3,653,033
NON-LINEAR DECODER WITH LINEAR AND NON-LINEAR LADDER ATTENUATORS

Robert Raoul Charles Bonami, Paris; Claude Paul Henri Lerouge, Maurepas, and Didier Charles Strube, Garches, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 23, 1969, Ser. No. 842,074
Claims priority, application France, June 25, 1968, 156404
Int. Cl. H03k *13/04*
U.S. Cl. 340—347 DA **6 Claims**

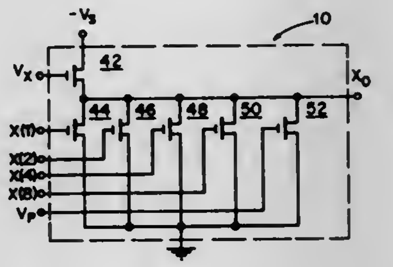


A PCM word decoder has a characteristic curve which is symmetrical with respect to zero abscissa point. Starting from the zero abscissa point, the curve comprises a linear part corresponding to the eight first codes, a logarithmic part corresponding to 40 following codes and a linear part corresponding to the 16 last codes. This is accomplished by two identical ladder attenuators and two sets of current generators. One attenuator and set of generators correspond to the logarithmic part, and the other to the linear part.

3,653,034
HIGH SPEED DECODE CIRCUIT UTILIZING FIELD EFFECT TRANSISTORS

William M. Regitz, Franklin, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 12, 1970, Ser. No. 10,828
Int. Cl. H03k *17/00;* **G06f** *5/02*
U.S. Cl. 340—347 DD **11 Claims**

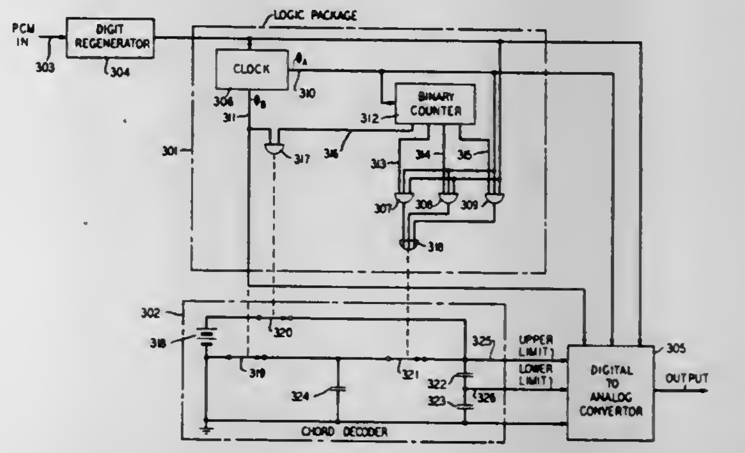


Herein is revealed a high speed decode circuit having low power consumption, which does not require complementary input signals and which employs transistors preferably of the MOS (Metal Oxide Semiconductor) field effect type. The illustrated embodiment is a decode circuit having a binary input and one of 16 outputs. A plurality of subcircuits are included in the decode circuit, each of which subcircuits includes at least one transistor in a series arrangement connected to at least one transistor in a parallel arrangement, the connection therebetween forming one of the outputs. A select signal is generated on one of the outputs of a particular subcircuit when each of its transistors in series arrangement are conductive and when each of its transistors in parallel arrangement are nonconductive.

3,653,035
CHORD LAW COMPANDING PULSE CODE MODULATION CODERS AND DECODERS

Robert Lawrence Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 24, 1970, Ser. No. 31,489
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 C **4 Claims**



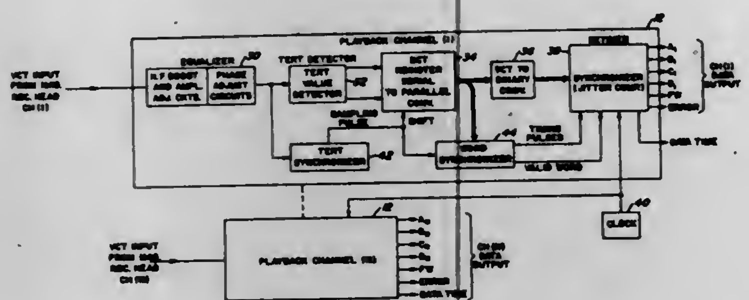
Capacitive voltage division and capacitive charge redistribution techniques are used in a pulse coding arrangement which selects a segment of the signal range in which an analog sample occurs. The charge on a series divider is periodically compared with the analog sample, and stored charge is subsequently redistributed in accordance with the comparison results. The invention produces a chord law characteristic, and is suitable for operation with PCM coders or decoders.

3,653,036
INFORMATION HANDLING SYSTEM ESPECIALLY FOR MAGNETIC RECORDING AND REPRODUCING OF DIGITAL DATA

John S. Whiting, Ontario County, N.Y., assignor to General Dynamics Corporation

Filed Nov. 14, 1969, Ser. No. 876,973
Int. Cl. H03k *13/24*

U.S. Cl. 340—347 DD **4 Claims**



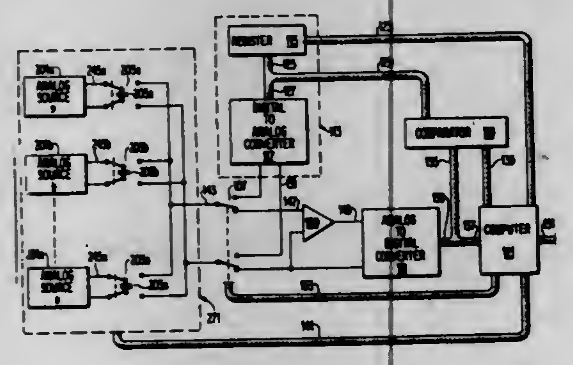
A system for storage on a magnetic record medium (tape or disc) of data with an extremely high packing density is described. Binary input information is encoded into a ternary signal for recording. That ternary signal has spectral properties which facilitate recording with extremely high bit packing density. The ternary signal also contains timing information. On playback the signal is decoded into binary coded ternary form. Timing information with respect to words of ternary data, as well as the individual terts which make up the words, is also derived. The system includes mans for synchronizing the reproduced data in accordance with the timing information derived from the data itself, as well as with an external clock, and decodes the data into the original binary form.

3,653,037
APPARATUS AND A METHOD FOR AUTOMATICALLY TESTING A SYSTEM WHICH RECEIVES AN ANALOG INPUT SIGNAL

Brian G. Utley, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,440
Int. Cl. H03k *13/02*

U.S. Cl. 340—347 AD **3 Claims**



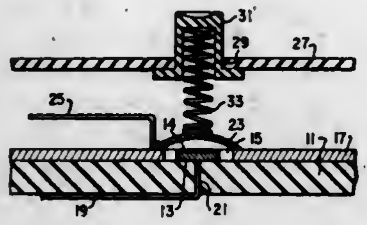
A testing system which periodically applies an analog test signal to an input storage capacitor and converts the value of the voltage stored on the capacitor to a digital number which is compared with an original digital test signal. Failure of the capacitor, an analog-to-digital converter or an intervening amplifier is detected by the comparator because the two signals will not agree. An error signal is generated by the comparator in the event of such a failure.

3,653,038
CAPACITIVE ELECTRIC SIGNAL DEVICE AND KEYBOARD USING SAID DEVICE

James R. Webb, and Richard C. Webb, both of Boulder, Colo., assignors to United Bank of Denver National Association, Denver, Colo.

Filed Feb. 20, 1970, Ser. No. 13,091
Int. Cl. G08c *5/00*

U.S. Cl. 340—365 **30 Claims**



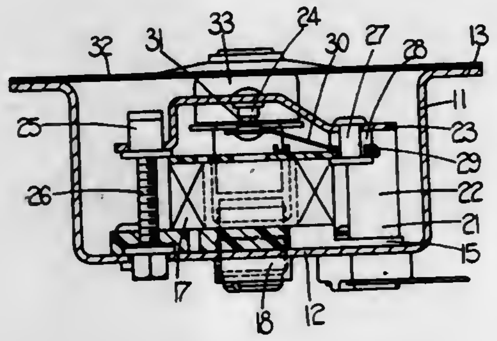
This disclosure describes electric signal devices of a capacitive nature. A metallic target which may or may not have a permanently charged dielectric material mounted on its upper surface is located beneath a semi-hemispherical dome spring. Located above the dome spring is a push button or key element which, when depressed, changes the separation distance between the dome spring and the target in a "-snap" action manner. This action causes a rapid decrease in the voltage between the target and the dome spring which decrease is in the form of a signal pulse. This disclosure also describes splitting the target into two or more segments and connecting the segments to a plurality of electrical signal devices in a matrix arrangement. The keys or push button elements are mounted in a keyboard arrangement such that when individual keys are depressed coded symbols which represent information about the depressed key are generated. The coded symbols are suitable for direct entry into digital data systems, displays and/or computers.

3,653,039
ELECTRO-MAGNETIC HORNS

John Edward Hoare, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Nov. 5, 1969, Ser. No. 874,252
Claims priority, application Great Britain, Dec. 2, 1968, 57043/68
Int. Cl. G08b *3/00*

U.S. Cl. 340—388 **2 Claims**



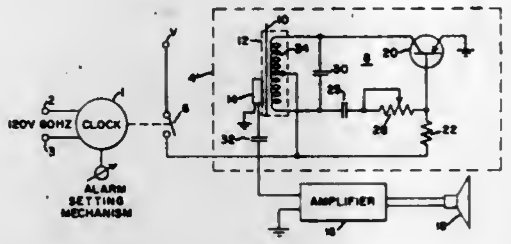
An electromagnetic horn has a cup-shaped housing the base of which is flat. Supported on the base is an electromagnet in circuit with which is a contact assembly supported by the housing. Both the contact assembly and the electromagnet are within the housing, and a diaphragm closes the upper part of the housing and carries the armature of the electromagnet, which in use is attracted and operates the contacts to deenergize the electromagnet in the usual way.

3,653,040
ELECTRONIC CHIME ALARM

Yates M. Hoag, Utica, N.Y., assignor to General Electric Company

Filed Jan. 30, 1970, Ser. No. 6,993
Int. Cl. G04c *21/28;* **G10k** *10/00*

U.S. Cl. 340—392 **13 Claims**



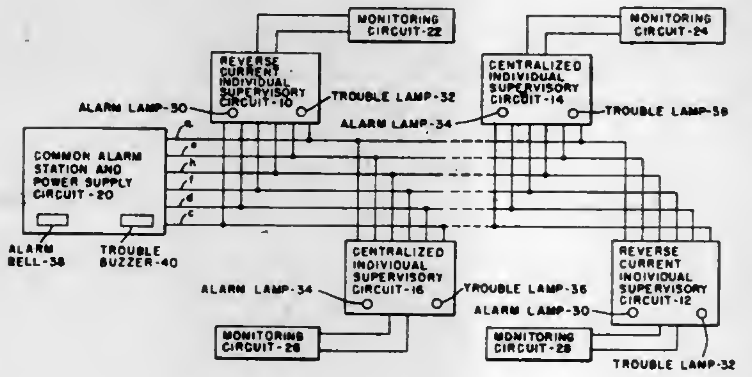
An electronic chime alarm includes a Hartley oscillator having a center-tapped coil which is electromagnetically coupled to a magnetic reed. The reed is supported at one end thereof by a yoke arrangement. By design, the oscillator may pulse the reed at a frequency lower than the reed's resonant frequency. The resultant reed vibrations, which include harmonics dependent upon reed structure, of which a number of examples are shown, may be coupled to an amplifier and a speaker by either a nonmagnetic transducer or by a filter circuit connected across the coil. In addition, various examples of an oscillator unit structure including the reed, yoke, coil and transducer are illustrated. Finally, various switching arrangements which enable the chime alarm to be used with standard synchronous motor clocks or with clock-radios are described.

3,653,041
ANNUNCIATOR SYSTEM

William W. McGrath, Holliston; Robert B. McLeod, Clinton, both of Mass.; Philip L. Reichle, deceased, late of Mass., and Dorothy K. Reichle, administratrix, Acton, Mass., assignors to Gulf & Western Systems Company, New York, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,479
Int. Cl. G08b *29/00*

U.S. Cl. 340—409 **24 Claims**


MONITORING CIRCUIT-22
MONITORING CIRCUIT-24
REVERSE CURRENT INDIVIDUAL SUPERVISORY CIRCUIT-10
CENTRALIZED INDIVIDUAL SUPERVISORY CIRCUIT-14
ALARM LAMP-30
TROUBLE LAMP-32
TROUBLE LAMP-38
ALARM LAMP-34
COMMON ALARM STATION AND POWER SUPPLY CIRCUIT-20
ALARM BELL-38
TROUBLE BUZZER-40
CENTRALIZED INDIVIDUAL SUPERVISORY CIRCUIT-16
REVERSE CURRENT INDIVIDUAL SUPERVISORY CIRCUIT-12
ALARM LAMP-34
TROUBLE LAMP-36
ALARM LAMP-30
MONITORING CIRCUIT-26
MONITORING CIRCUIT-28
TROUBLE LAMP-32

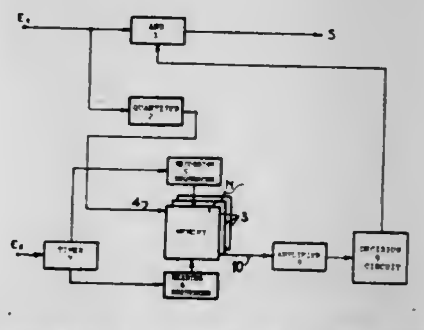
There is provided an annunciator system for indicating that an alarm condition exists at any of a plurality of remote station monitoring circuits having a like plurality of supervisory circuits, each associated with one of the monitoring circuits, and a central station common circuit which is coupled to each of the supervisory circuits. An alarm signal, indicative of an alarm condition at the remote station, is detected by an associated supervisory circuit, which in turn actuates an alarm indicator in the supervisory circuit and in the central station common circuit. A disruption in the circuit connection between one of the remote station monitoring circuits and the associated supervisory circuit is detected by the associated supervisory circuits, which in turn actuates a trouble indicator in the supervisory circuit and in the central station common circuit. The supervisory circuits are compatible with both remote station monitoring circuits which provide an alarm signal by increasing the magnitude of a current flowing in the monitoring circuit, and remote monitoring circuits which provide an alarm signal by changing the direction of a current flowing in the monitoring circuit.

3,653,042
DIGITAL SIGNAL-PROCESSING SYSTEM

Fred Molho, 12 Rue de la Marseilleise, Paris 19, France

Continuation of application Ser. No. 376,883, June 22, 1964, now Patent No. 3,386,077. This application Feb. 27, 1968, Ser. No. 708,537. The portion of the term of this patent subsequent to May 28, 1985, has been disclaimed.
Int. Cl. G01s *9/00*

U.S. Cl. 343—5 DP **1 Claim**



In a radar installation or the like, incoming multidigit signals are registered in a memory having as many stages as there are digital positions in a signal. In order to discriminate against parasitic signals, correspondingly positioned digits of an incoming signal and a preceding signal already registered in the memory are compared; to compensate, however, for unavoidable delays in the registration of each incoming digit, the digits of the preceding signal are read out from memory stages that are staggered with reference to the stages in which the incoming digits are concurrently inscribed, the offset between the inscribed and the readout stages being equal to M<N where N is the total number of stages. Advantageously, M is chosen to provide a readout delay equaling the time lag introduced by the recording equipment in the inscribing operation; in certain instances, however, the delay may be chosen to exceed the time lag.

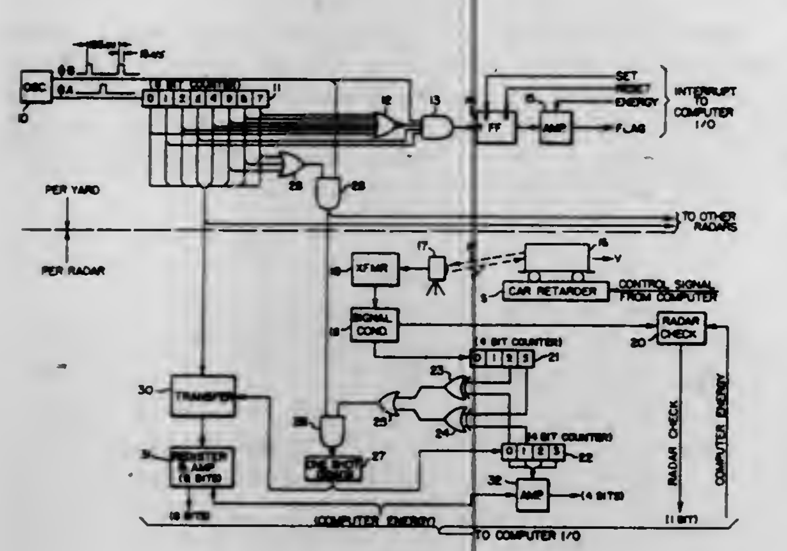
3,653,043
DIGITAL RADAR INTERFACE

John H. Auer, Jr., Fairport, and Jerry P. Huffman, Rochester, both of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Feb. 6, 1970, Ser. No. 9,257
Int. Cl. G01s *9/44;* **B61l** *3/00*

U.S. Cl. 343—8 **7 Claims**

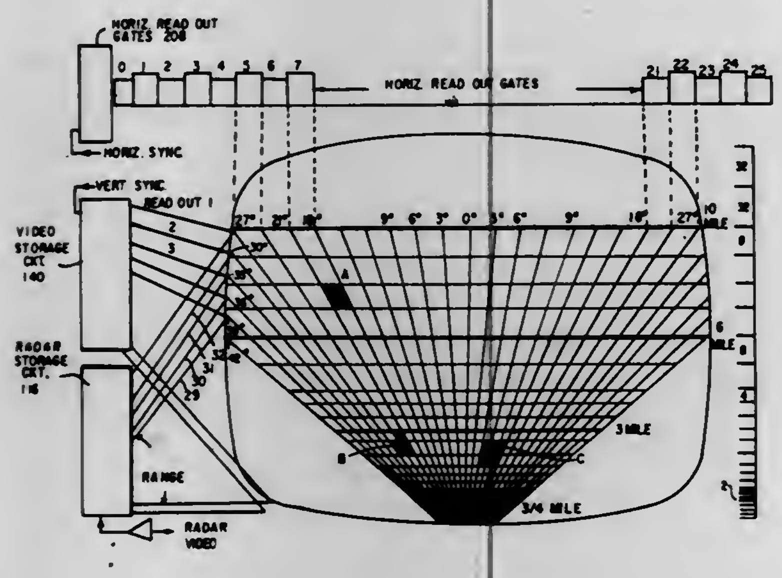
Registry apparatus for generating digital output signals to a computer representing parameters necessary for computing the speed of a vehicle has been provided. The registry apparatus responds to radar apparatus which provides doppler shift frequency signals representative of the velocity of the moving vehicle. The improvement in the present invention includes an accumulator means responsive to the doppler pulses for producing a count signal representative of the number of pulses at prescribed counts. Timing cycle means coupled to the computer produces a pulsed output and generates a scan signal to the computer over a selected interval of the cycle while synchronizing means responds to the accumulator means and the timing cycle means producing a register pulse at the prescribed counts. Output means coupled to the computer stores the total accumulator count signal and the timing cycle pulses for each registered pulse since the previous scan signal and provides an output to the computer for processing the differences between the previous count signal and the present count signal and the time over which that difference occurred during the selected interval of the computer scan.



3,653,044
DISPLAY SYSTEM FOR PROVIDING RADAR PLAN POSITION INFORMATION ON A RASTER DISPLAY

Eric G. Breeze, Los Altos, and John O. Sabel, Sunnyvale, both of Calif., assignors to Kaiser Aerospace & Electronics Corporation, Oakland, Calif.

Filed Sept. 22, 1969, Ser. No. 859,809
Int. Cl. G01s *7/10*
U.S. Cl. 343—5 SC **29 Claims**

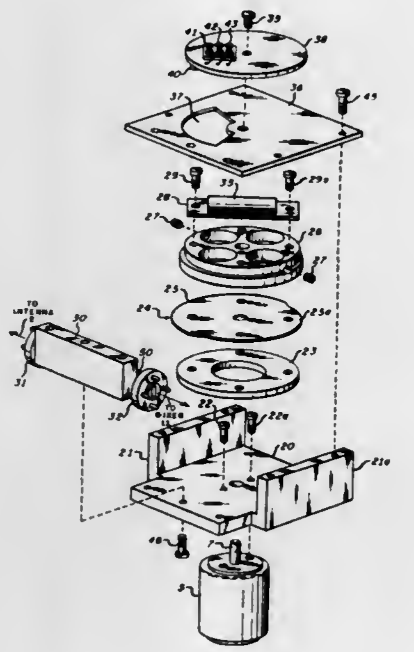


A display system for use in the presentation of radar plan information on the same display device used for television camera video and radar profile presentation. Radar video provided by a conventional radar set is gated into temporary storage registers for selective gating to a storage matrix made up of multibin registers, each of which registers stores the radar information detected along a given azimuth, the different bins of each register storing the information for different ranges along the azimuth represented by the register. Readout from the storage matrix is by a nonlinear vertical clock train which provides higher resolution for closer ranges and horizontal pulses of different widths for different vertical raster positions which result in radial sectors which become progressively narrower at the bottom of the display to further increase resolution for closer ranges. The radar plan information is converted to a raster format to permit the display thereof on the same cathode ray tube with other information required in aircraft presentations.

3,653,045
RADIOMETER MODULATOR-DEMODULATOR SYSTEM

Robert S. Roeder, Dunedin, Fla., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed June 3, 1970, Ser. No. 43,055
Int. Cl. G01k *11/00*
U.S. Cl. 343—100 ME **8 Claims**

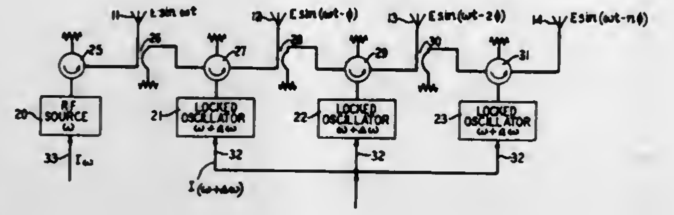


An improved microwave radiometer of the comparison type features simplified construction through the employment of a unitary modulator-demodulator system operating on the high frequency signal to be investigated by cyclically sampling and exposing the signal to be investigated and a reference signal to synchronous demodulation by a demodulator element constructed integrally with the high frequency sampling switch or chopper.

3,653,046
ELECTRONICALLY SCANNED ANTENNA ARRAY

Bernard Glance, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 9, 1970, Ser. No. 44,716
Int. Cl. H01q *3/26*
U.S. Cl. 343—100 SA **7 Claims**

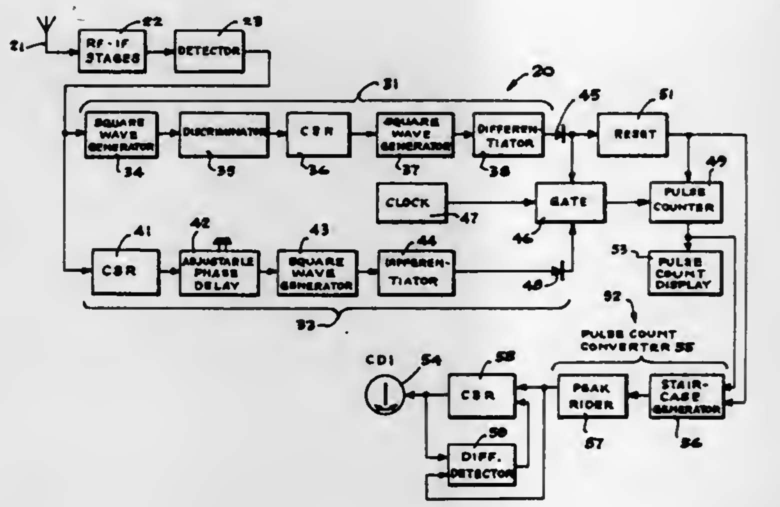


A phased array antenna system in which the phase of successive radiating elements is produced by a series of injection locked oscillators each driven by or locked to the signal fed to the preceding elements. Since the phase of an injection locked oscillator depends upon the difference between its natural frequency and its injected frequency, the array may be scanned either by varying the injected frequency or the natural frequency. IMPATT diode oscillators are preferred because of the ease with which they can be injection locked and/or varied in frequency.

3,653,047
AIRCRAFT NAVIGATION RECEIVER APPARATUS

Myron L. Anthony, La Grange, Ill., assignor to Thomas E. Dorn, Clarendon Hills, Ill. and Statistical Services, Inc., Chicago, Ill., a part interest to each

Continuation-in-part of application Ser. No. 713,786, Mar. 18, 1968, now abandoned. This application Dec. 18, 1969, Ser. No. 886,054
Int. Cl. G01s *1/46*
U.S. Cl. 343—106 R **20 Claims**

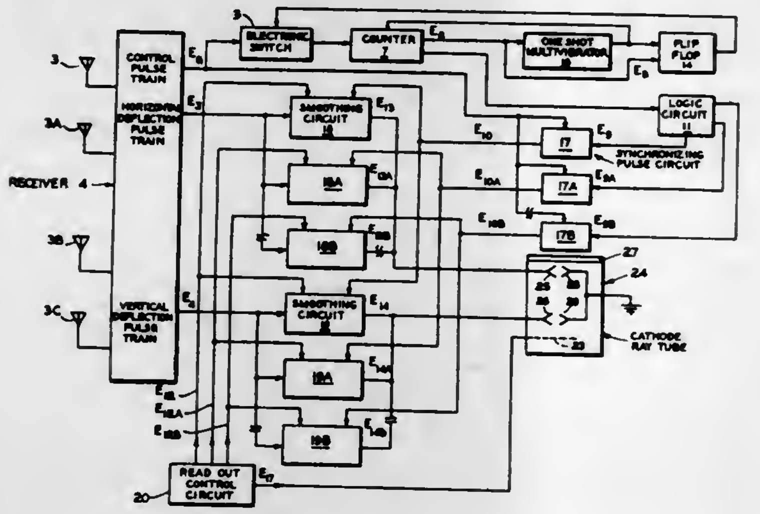


A digital aircraft navigation receiver for comparing two constant-frequency received signals to determine the aircraft orientation, in which the received signals are differentiated to produce two gating signals; the gating signals are used to open and to close a gate that applies high-frequency clock pulse signals to a pulse counter, the counter being reset to zero in each cycle of one of the gating signals. The count in the counter determines the aircraft orientation.

3,653,048
SYSTEM FOR STABILIZING A VISUAL DISPLAY

Hayes B. Steinhauser, Lincoln Park, N.J., assignor to The Bendix Corporation

Filed June 25, 1969, Ser. No. 836,352
Int. Cl. G01s *5/08*
U.S. Cl. 343—112 **11 Claims**



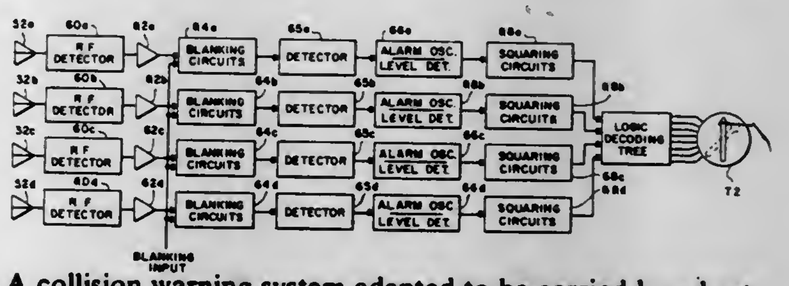
A circuit for stabilizing the display on a cathode ray tube representing the position of transmitting beacons outlining the runway of an airport on which an aircraft is about to land. The beacons transmit pulses which are received by a receiver in the aircraft. Some of the transmitted pulses reflected from the ground are received simultaneously with the transmitted pulses and cause the display to bounce. The stabilizing circuit includes averaging circuits for averaging the transmitted and reflected pulses from each beacon to reduce the effect of the reflected pulses and stabilize the display.

A read out control circuit periodically applies the averaged pulses to deflection means of a cathode ray tube. A synchronizing circuit controls the averaging circuits so that only the pulses from a single beacon are applied to the averaging circuits associated with the beacon.

3,653,049
COLLISION WARNING SYSTEM

Patrick T. Thayer, and Robert V. Munson, both of Antonio, Tex., assignors to Marquart Industrial Products Co., Cucamonga, Calif.

Filed Dec. 5, 1969, Ser. No. 882,534
Int. Cl. G01s *3/22*; **G08g** *5/04*
U.S. Cl. 343—112 CA **25 Claims**

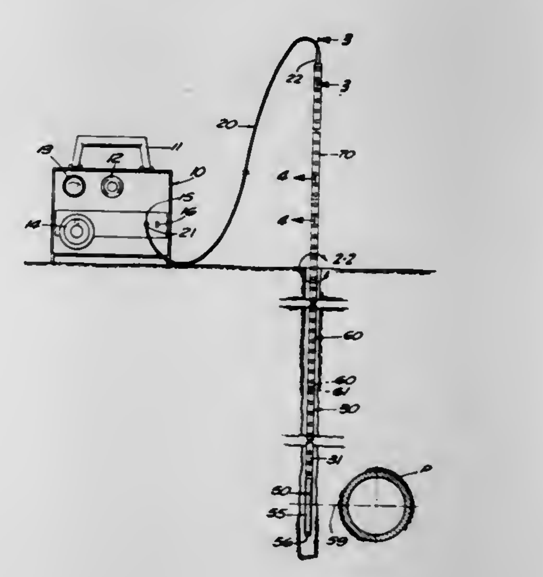


A collision warning system adapted to be carried by a host aircraft and which detects the radio frequency transmission from an intruder aircraft in its vicinity. The antenna arrangement provides information as to the compass quadrant of the other aircraft while changes in the intensity of the received radio frequency signals are displayed to provide an indication of the closure rates between the two aircraft.

3,653,050
PIPE LOCATOR METHOD AND APPARATUS

Herbert L. Eggleston, Jr., Glendale, Calif., assignor to The Goldak Company, Inc., Glendale, Calif.

Filed Dec. 29, 1969, Ser. No. 888,445
Int. Cl. G01s *11/00*
U.S. Cl. 343—112 D **10 Claims**



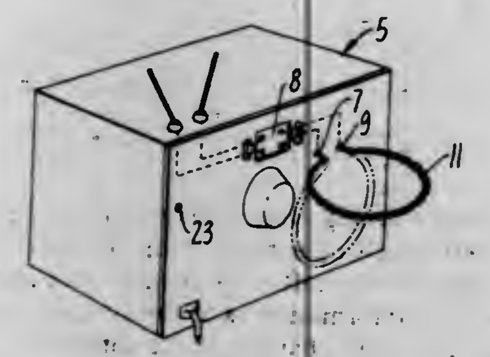
A method is disclosed of measuring the depth of an underground pipe by drilling a vertical hole which extends below and beside the pipe, transmitting electromagnetic energy into the pipe, coupling a small antenna to a receiver which is tuned to the frequency at which the pipe is energized, dropping the antenna down into the hole, and observing the maximum signal indicated by the receiver as the center of the antenna reaches the depth of the pipe.

Also disclosed is a receiver having a flexible cable connected to its input, the other end of the flexible cable being connected to the upper end of a handle member, the handle member having a small antenna attached to its lower end as an extension thereof, and including conductor means carried by the handle member which electrically connects the antenna to the flexible cable. More specifically, the antenna is disclosed as a small ferrite rod antenna, and the handle member as a metallic tube having an insulated coaxial conductor carried within its interior, the upper end of the handle member being threaded for the threaded attachment of a superimposed handle member extension and also having a jack for connection of the flexible cable.

3,653,051

ADJUSTABLE CONFIGURATION UHF LOOP ANTENNA

David J. Wu, 7672 Greenback Lane, Citrus Heights, Calif.
Filed May 20, 1970, Ser. No. 39,001
Int. Cl. H01q *11/12*
U.S. Cl. 343—702 **3 Claims**

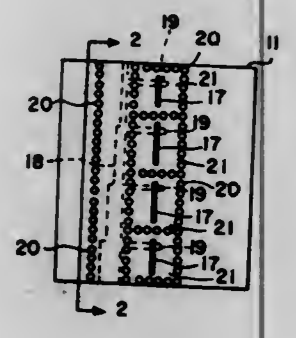


A built-in television antenna, particularly suitable for use as a UHF antenna, is made of a loop of convoluted metal tubing.

3,653,052

OMNIDIRECTIONAL SLOT ANTENNA FOR MOUNTING ON CYLINDRICAL SPACE VEHICLE

Thomas G. Campbell, Crittenden, and Meredith W. Appleton, Yorktown, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Sept. 18, 1970, Ser. No. 73,310
Int. Cl. H01q *13/10*
U.S. Cl. 343—708 **9 Claims**

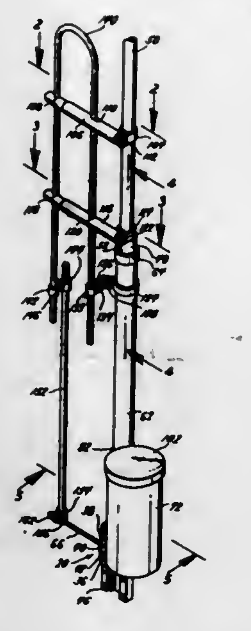


An extremely thin microwave array antenna which is bonded, circumferentially to the outside surface of a spacecraft and coated with a dielectric for thermal protection. This antenna was designed for a specific payload application in the S-band (2,200 to 2,300 MHz.) frequency range and provides an omnidirectional radiation pattern in the plane of the array and a near-omnidirectional pattern in the planes perpendicular to the array.

3,653,053

MULTI-BAND MONOPOLE ANTENNA WITH ADJUSTABLE TUNING

Wallace E. St. Vrain, and Gerald H. French, both of St. Louis, Mo., assignors to Mosley Electronics Inc., Bridgeton, Mo.
Filed June 15, 1970, Ser. No. 46,269
Int. Cl. H01q *9/00*
U.S. Cl. 343—745 **16 Claims**

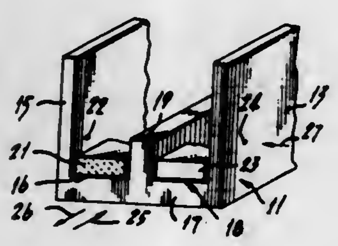


An antenna, which has a plurality of coaxial, generally cylindrical portions interconnected by a plurality of parallel-resonant traps to enable it to transmit or receive signals at one or more relatively high frequencies, is connected to a transmission line by a fixed capacitor, a fixed inductor, and an adjustable inductor which are connected in parallel with each other. That capacitor, fixed inductor and adjustable inductor are located adjacent the lower end of that antenna; and they enable that antenna to continue to transmit or receive signals at the said one or more relatively high frequencies, while also enabling that antenna to receive or transmit signals at a lower frequency — without increasing the overall length of that antenna.

3,653,054

SYMMETRICAL TROUGH WAVEGUIDE ANTENNA ARRAY

Cheng Paul Wen, Trenton, N.J., assignor to RCA Corporation
Filed Oct. 28, 1970, Ser. No. 84,821
Int. Cl. H01q *13/00*
U.S. Cl. 343—772 **9 Claims**

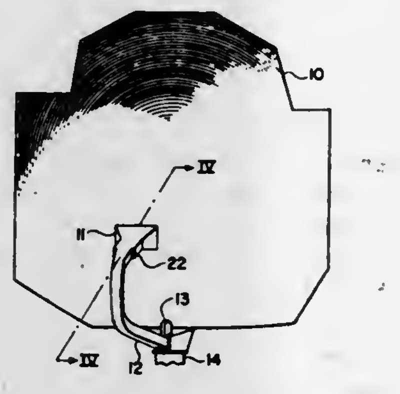


A symmetrical trough waveguide antenna array is provided wherein a section of trough waveguide has spaced radiating mode conversion portions. Each of the radiating mode conversion portions includes a member of gyromagnetic material spaced between the center fin and one of the side walls of the trough waveguide and a member of dielectric material spaced between the center fin and the opposite side wall. When an appropriate DC magnetic field is applied to the gyromagnetic member, signals propagating in one direction along the trough waveguide are converted from the even to the odd mode and consequently radiation of some of the signals occurs at the spaced portions of the waveguide. The section of trough waveguide further includes phase shifter portions. Each of the phase shifting portions includes a pair of members of gyromagnetic material with one of the pair between the center fin and one side wall and the other of the pair between the center fin and the side wall opposite the one side wall. When appropriate DC magnetic field bias is applied to the pair of gyromagnetic members associated with the phase shifter portion, a difference in phase occurs between the spaced radiating mode converting elements.

3,653,055

MICROWAVE HORN-PARABOLOIDAL ANTENNA

Chuang-jy Wu; John Andrew Roth, and Allison Eugene Shankowski, all of Ottawa, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed Aug. 12, 1970, Ser. No. 63,977
Int. Cl. H01q *19/24*
U.S. Cl. 343—781 **5 Claims**

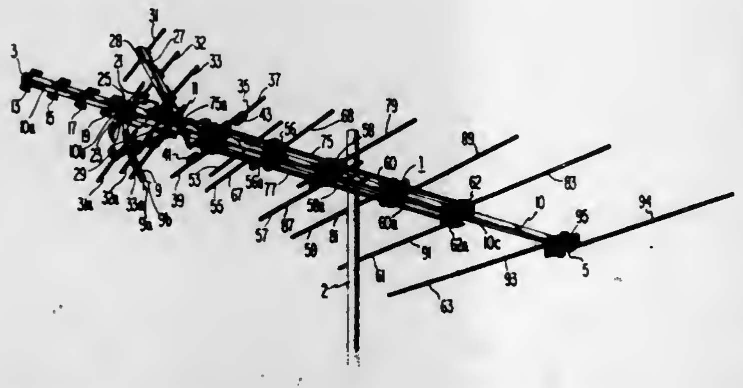


A horn-paraboloidal antenna in which a discontinuity is introduced into the feed horn so as to excite higher-order modes from the dominant mode. The various modes are phased in order to radiate a main lobe and side lobes from the horn. The latter lobes reflect from the paraboloid out-of-phase with the main lobe so as to produce a far field radiation pattern having a more uniform signal strength for a given beam angle.

3,653,056

COMBINED VHF-UHF DIPOLE ANTENNA ARRAY

Donald William Peterson, Maple Shade, N.J., assignor to RCA Corporation
Filed May 27, 1970, Ser. No. 40,862
Int. Cl. H01q *21/12*
U.S. Cl. 343—795 **20 Claims**

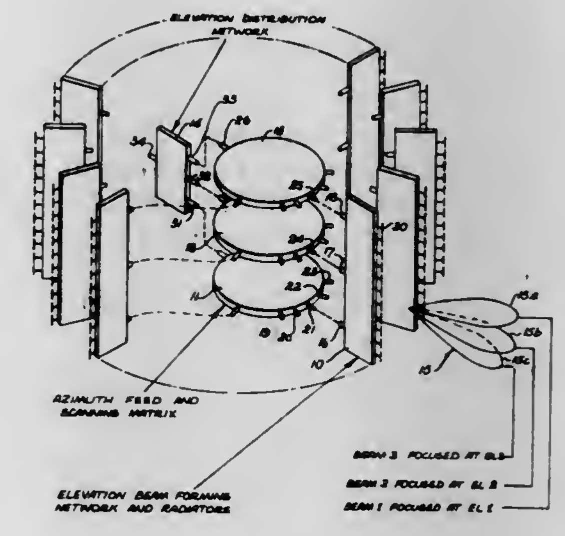


A plurality of center fed dipole elements with the center portions of the dipole elements connected to each other by a transmission line feed. Each center fed dipole element has two conductive rodlike half portions which overlap near the center feed portion and extend in opposite directions from the center feed. One of the center fed dipole elements has a length determined so as to be full wave resonant at a frequency within the high VHF television frequency band. Another one of the center fed dipole element has a length determined to be half wave resonant at the low VHF television frequency band and has two conductive rodlike half portions which overlap near the center feed to provide increased performance of the combination of center fed dipoles over the entire high VHF television frequency band.

3,653,057

SIMPLIFIED MULTI-BEAM CYLINDRICAL ARRAY ANTENNA WITH FOCUSED AZIMUTH PATTERNS OVER A WIDE RANGE OF ELEVATION ANGLES

Gregory G. Charlton, Calabasas, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Dec. 24, 1970, Ser. No. 101,300
Int. Cl. H01q *3/26*
U.S. Cl. 343—854 **8 Claims**


ELEVATION DISTRIBUTION NETWORK
AZIMUTH FEED AND SCANNING MATRIX
ELEVATION BEAM FORMING NETWORK AND RADIATORS
BEAM 3 FOCUSED AT EL 3
BEAM 2 FOCUSED AT EL 2
BEAM 1 FOCUSED AT EL 1

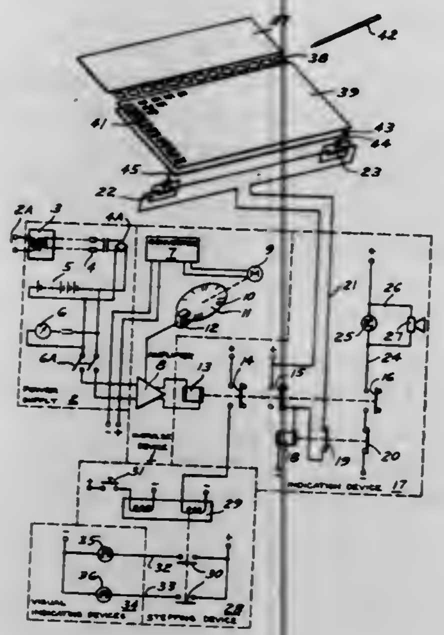
A simplified multi-beam cylindrical array antenna system in which the feed and scanning system is simplified. Radiator elements grouped into columns are fed by a beam-forming matrix which has a number of input ports, each corresponding to a discrete elevation beam angle. The ports of the beam-forming matrix are grouped together in zones, each zone being fed by a combining network having a single common or input terminal. In this way, a smaller number of azimuth scanning feed matrices corresponding to the number of combining networks is required. Thus, a fan-shaped beam (in elevation) is formed and may be scanned in azimuth. The focusing quality of the said fan beam is better than obtainable with the prior art "separable" technique and approaches that of the "independent" technique, while requiring comparatively little additional equipment than necessary in the simpler, so-called "separable" technique.

3,653,058

APPARATUS FOR FREQUENCY STUDIES USING PUNCHED CARDS OR PUNCHED TAPES

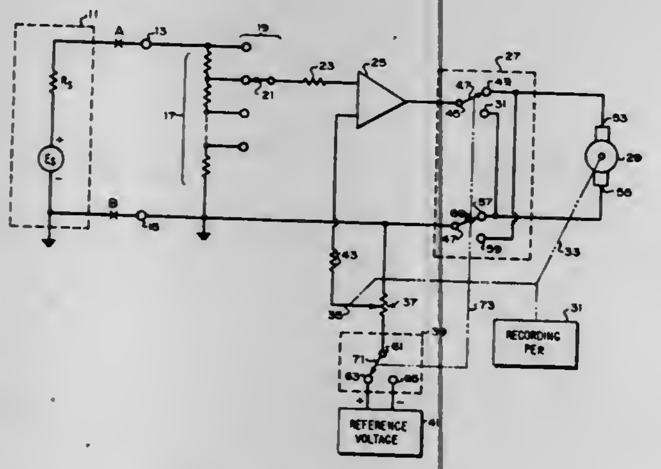
Carl A. Sundberg, Kallhall, Sweden, assignor to AB Konsulterna For Industri Och Handel, Djursholm, Sweden
Filed May 4, 1970, Ser. No. 34,451
Claims priority, application Sweden, May 5, 1969, 6295/69
Int. Cl. G01d *1/00*
U.S. Cl. 346—17 **8 Claims**

An apparatus for performing frequency studies by employing punched cards includes a randomly occurring impulse generator wherein each impulse initiates an alerting signal. The alerting signal indicates to an operator that he should punch the card at a position indicated by the one of a plurality of lamps which is energized by a stepping device. When the operator punches the card, a circuit means terminates the alerting signal thereby ending the recording cycle.



3,653,059
POLARITY REVERSING MEANS FOR MOVING PEN GRAPHICAL RECORDER

John M. Wade, Poway, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Apr. 23, 1971, Ser. No. 136,827
Int. Cl. G01d *3/06*
U.S. Cl. 346—32 **3 Claims**

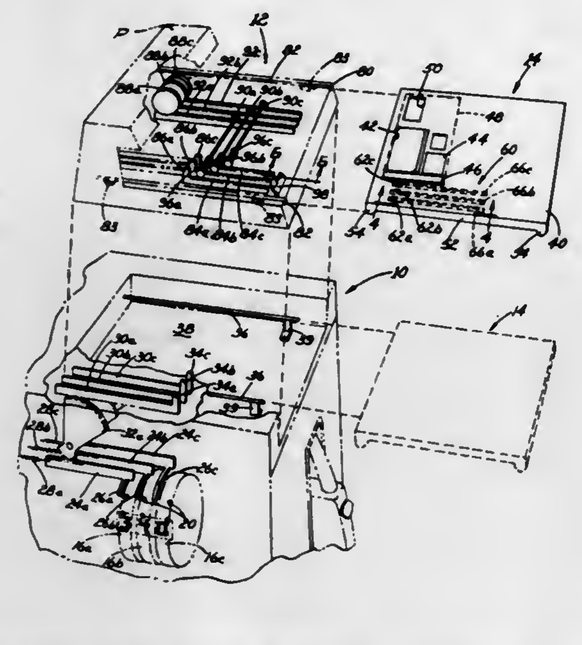


A circuit for a moving pen graphical recorder has a first polarity reversing switch coupled between a servoamplifier and a servomotor which drives the pen, and a second polarity reversing switch coupled between a reference voltage source and a variable position feedback potentiometer responsive to pen movements.

3,653,060
SYSTEM AND COMPONENTS FOR GENERATING, STORING AND RECORDING VARIABLE DATA

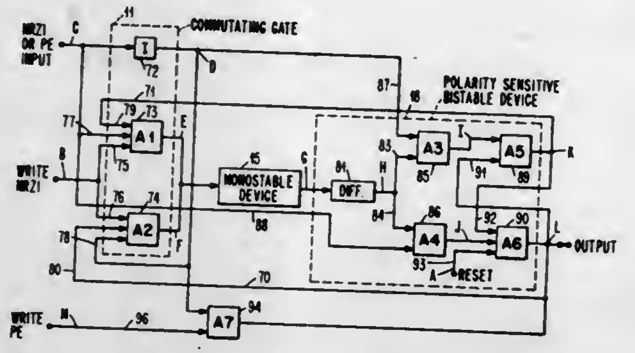
Fritz A. Deutsch, Euclid, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed Jan. 30, 1970, Ser. No. 7,049
Int. Cl. B67d *5/24*
U.S. Cl. 346—43 **16 Claims**

A system is provided which incorporates apparatus for sensing and generating as linear rod positions the amount registered on the indicia wheels of dispensing pumps, a date receiving and storing device adapted to be inserted into the pump for receiving and storing the data from the data generating device as linear positions of slide means, and a data recording device adapted to receive the data receiving and storing device and record the data retained by the receiving and storing device. The linearly positionable rods are coactable with stop means on the surface of the indicia wheels to provide a linear position corresponding to the data on the indicia wheels; the data receiving and storing device includes detented slide means adapted to sense the position of the linearly positionable rods on the generating device and retain said positions are corresponding positions of the slide means; the data recording device includes means to sense the position of the slide means on the data receiving and storing device and print characters corresponding to the position thereof. Preferably the data recording device is adapted to function either independently of or mounted on the pump and in conjunction with the operation of the data generating device.



3,653,061
DIGITAL DATA WRITE DESKEWING MEANS

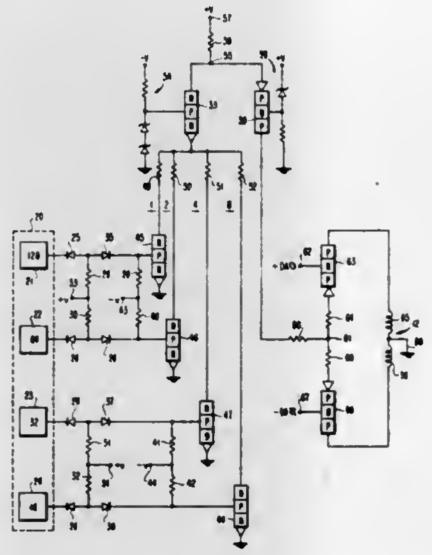
Lewis S. Frauenfelder, and Judson A. McDowell, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 20, 1970, Ser. No. 57,382
Int. Cl. G11b *5/06, 5/44, 23/18*
U.S. Cl. 346—74 M **9 Claims**



An electrical circuit is adapted to receive a plurality of data signals having time coincidence relationship, and is constructed and arranged to produce, as an output, a plurality of similar data signals arranged out of time coincidence in a predetermined manner in accordance with the gap scatter pattern of an associated multiple gap magnetic transducer; the electrical circuit including a plurality of individual circuits, each of which includes a commutating gate, a monostable device having a timing interval which is shorter than the shortest period between transition of the data signal, and a bistable device connected to the output of the monostable device and responsive only to the trailing edge of its output pulse, the output of the bistable device being connected to control the commutating gate and also constituting a time delayed output data signal.

3,653,062
INFORMATION STORAGE RECORDING SIGNAL AMPLITUDE CONTROL

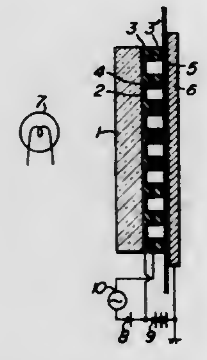
Carl P. Holistein, Jr., San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of application Ser. No. 770,171, Oct. 24, 1968, now abandoned. This application Dec. 11, 1970, Ser. No. 97,363
Int. Cl. G11b *5/02, 5/44, 5/82*
U.S. Cl. 346—74 M **5 Claims**



Apparatus which compensates for certain recording characteristics of a magnetic disk file by varying the amplitude of the recording signal supplied a magnetic transducer. The plurality of concentric tracks of a disk are arbitrarily considered as being divided into groups or bands. Logic means responds to the address of the track being written to determine the position of the head among the predetermined bands of tracks and to accordingly control the amplitude of the recording signal by increasing the write current as the outermost band of tracks is neared and reducing the write current as the center-most band of tracks is neared.

3,653,063
ELECTRONIC PRINTING DEVICE COMPRISING AN ARRAY OF TUNNEL CATHODES

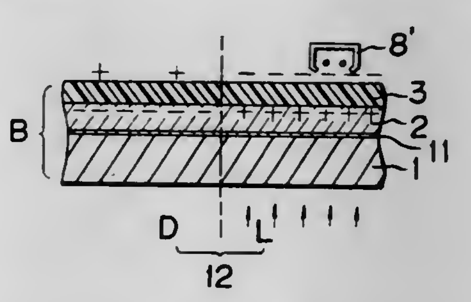
Eiichi Miyazaki, Tokyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 20, 1968, Ser. No. 785,633
Claims priority, application Japan, Dec. 28, 1967, 43/125; 43/133; 43/164
Int. Cl. G01d *15/06*
U.S. Cl. 346—74 EB **4 Claims**



A solid-state electronic printing device which is compact and does not require the use of a high voltage, wherein the movement of electrons emitted into the atmosphere from a tunnel cathode or a photo-cathode is controlled by the potential of a control electrode disposed in the vicinity of said cathode, thereby said electrons being deposited, directly or in the form of a corresponding amount of ink, on a recording medium according to said potential of said control electrode.

3,653,064
ELECTROSTATIC IMAGE-FORMING APPARATUS AND PROCESS

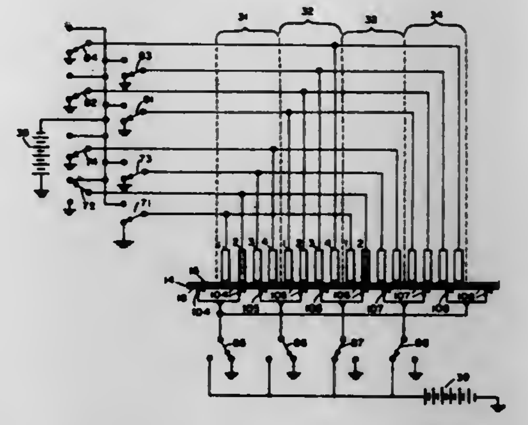
Eiichi Inoue; Keizo Yamaji; Hiroshi Tanaka, and Takashi Saito, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 20, 1969, Ser. No. 800,962
Claims priority, application Japan, Feb. 25, 1968, 43/11875; 43/12739; 43/12740
Int. Cl. G03g *5/02, 13/00, 15/00*
U.S. Cl. 346—74 ES **17 Claims**



An electrostatic image-forming process using a plate comprising a substrate, a photoconductive layer and an insulative layer includes the steps of placing an insulative recording member in contact with the insulative layer, the recording member either being previously charged or being charged while in position on the insulative layer, and applying a voltage to the plate and simultaneously irradiating the photoconductive layer with a pattern of image radiation. Apparatus is also disclosed for use in such process and particularly for conversion of electron beams to provide the pattern of image radiation.

3,653,065
ELECTROGRAPHIC RECORDING SYSTEM WITH INTERLEAVED ELECTRODE GROUPS

Arling Dix Brown, Jr., Cleveland Heights, Ohio, assignor to Clevite Corporation
Filed Oct. 22, 1969, Ser. No. 868,394
Int. Cl. G03g *13/00, 15/00;* **H04n** *1/24*
U.S. Cl. 346—74 ES **11 Claims**



Recording electrodes of a coincidence voltage type electrographic recorder are divided into arrays. Arrays are divided into two or more groups and are interleaved so that no array is adjacent another array of the same group. Like-numbered electrodes of each array in a group are connected together. Complementary electrodes are disposed adjacent to the arrays. Each is adjacent to only one array of a group and is spaced from all other arrays of the same group. A latent image is formed at one selected recording electrode when suitable voltage is applied to that electrode, and in coincidence therewith, suitable voltage is applied to complementary electrode means adjacent to the selected recording electrode.

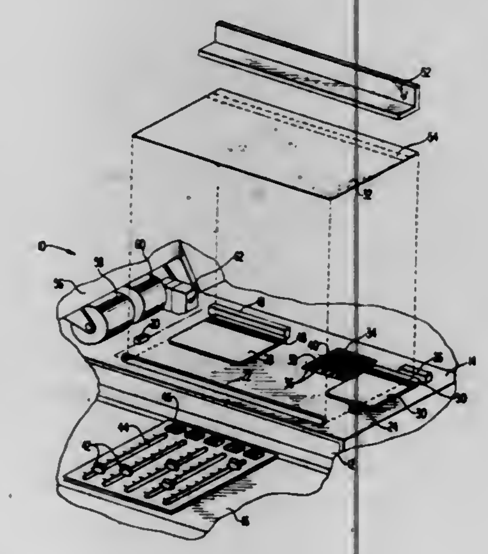
3,653,066
MAGNETIC TRANSFER IMPRINTER

David Royse, and Guenther K. Machol, both of Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,622

Int. Cl. G11b *5/16;* **G01d** *15/12*

U.S. Cl. 346—74 MP **1 Claim**



A terminal is provided for recording fixed and variable transaction data in both human and machine readable form from a credit card having an encoded magnetic stripe or track and embossed identification data and from settable means having an encoded magnetic portion and an embossed portion for keying in the variable transaction data. The magnetic copy stripe or track on a record form is held in contact with the magnetic stripe on the credit card and the encoded portions of the settable means. The remainder of the form is placed over the embossures on the settable means and on the credit card. A transfer magnet head and a pressure roller are moved along the form to transfer the magnetic information to the magnetic stripe on the record form and to imprint the embossed information on the remainder of the record form. The transfer encoded ticket thus prepared is compatible with a direct recorded ticket.

3,653,067
HIGH-SPEED PRINTING APPARATUS

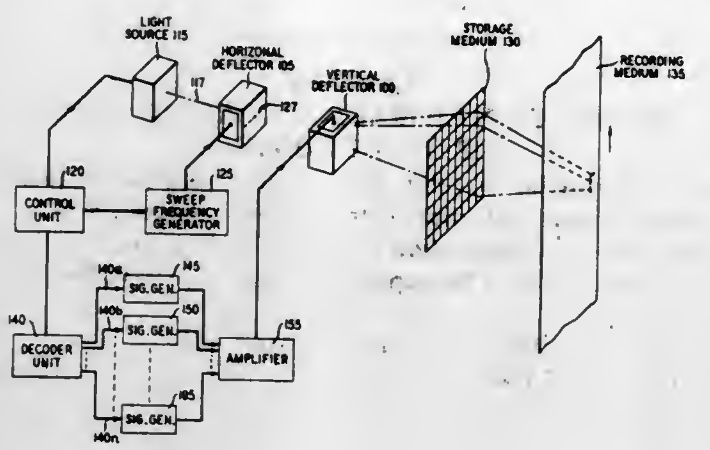
Lawrence Keith Anderson, Stirling, and Martin Feldman, Springfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 16, 1970, Ser. No. 98,741

Int. Cl. B41b *21/24*

U.S. Cl. 346—108 **8 Claims**

A high-speed printer includes a prerecorded compressed font stored, for example, in holographic form. The constituent parts (for example, bars) of a set of characters to be printed are stored in the hologram. By means of acousto-optic deflection techniques, an incident light beam is directed to illuminate simultaneously the plural areas of the hologram which store the constituent parts of a character selected to be printed. In turn, representations of the parts stored in the illuminated areas are imaged onto a suitable recording medium where recombination and printing of the selected character take place.



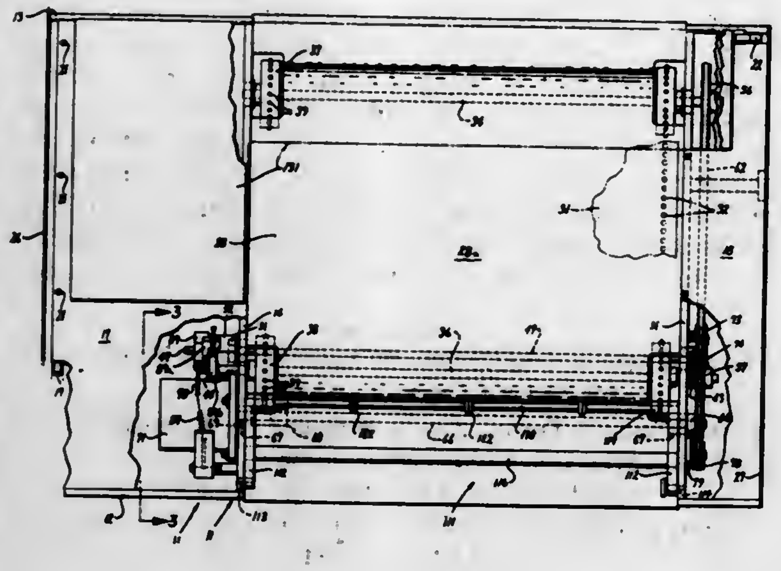
3,653,068
GRAPHIC RECORDER WITH PAPER TENSIONING MECHANISM

James Franklin Gordon, Saratoga, Calif., assignor to Zeta Research, Inc., Lafayette, Calif.

Filed Jan. 18, 1971, Ser. No. 107,161

Int. Cl. G01d *15/24;* **B65h** *23/18*

U.S. Cl. 346—136 **8 Claims**



Graphic recorder for use with strip chart having perforations on at least one edge and having first and second sprockets which are adapted to engage the perforations in the strip chart. The first and second sprockets are secured to first and second shafts. The first shaft is rotatably mounted in the framework in a fixed position, whereas the second shaft is rotatably mounted in the framework in such a manner so as to permit pivotal movement of the second shaft toward and away from the first shaft to permit tensioning of the strip chart. Means is provided for rotating the first and second shafts which accommodates the pivotal movement of the second shaft.

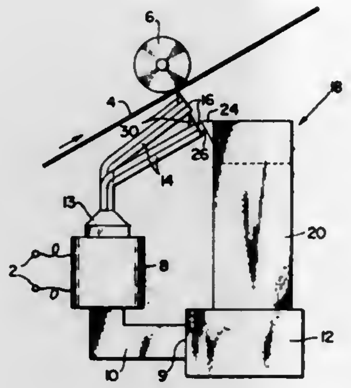
3,653,069
MULTISTYLUS RECORDING HEAD

John A. Baring, Golden, Colo., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Nov. 18, 1970, Ser. No. 90,565

Int. Cl. G01d *15/24*

U.S. Cl. 346—139 **2 Claims**



A multistylus recording head having a plurality of recording styli with each stylus incorporating a multilayer magnetostrictive structure having two adjacent layers with opposing magnetostrictive properties for producing a bending of the stylus in the presence of a longitudinally applied magnetic field. One end of each of the styli is arranged along a recording line and adjacent to a magnetic boundary displacement structure to form a magnetic flux path therewith. The magnetic displacement structure is energized by an input signal to produce a selective displacement of a magnetic null in a composite magnetic field. The magnetic null is positioned with respect to the recording styli whereby a selected stylus is arranged to be in contact with a recording medium while the remaining styli are bent out of contact with the recording medium by effect of the remaining magnetic field.

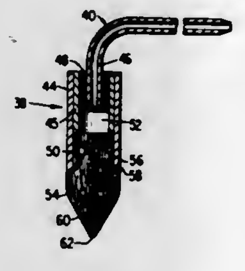
3,653,070
NESTED SLEEVE RECORDING PEN HEAD

Aubrey R. Tullos, and Leslie H. Creed, both of P.O. Box 2373, Odessa, Tex.

Filed Feb. 3, 1970, Ser. No. 8,246

Int. Cl. G01d *15/16*

U.S. Cl. 346—140 **14 Claims**



Special construction of a recording pen for use with capillary tubing in an inking pen system. The pen includes a stainless steel capillary tube terminating in the pen head construction which includes a removable recording pen tip made of a suitable material providing passage for flow of ink to a recording surface. The head includes several coaxial nesting sleeves cooperating to form a small head reservoir located immediately adjacent the pen tip. The end of the capillary tubing is secured to the pen head by bonding between the end of the capillary tubing and at least the outer one of the coaxial sleeves.

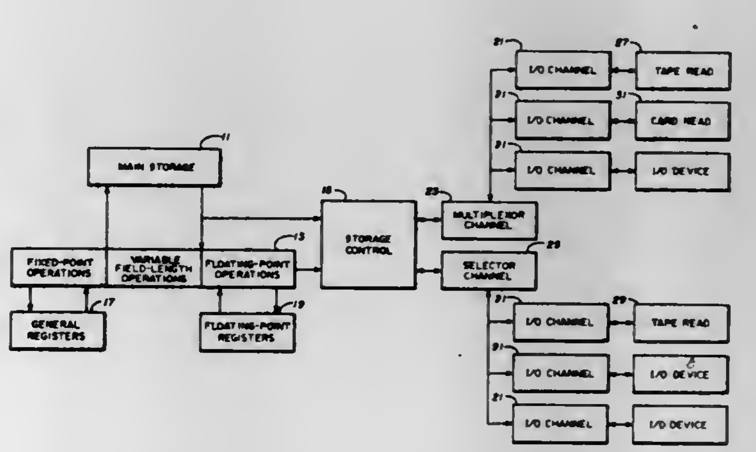
3,653,071
PROCESS FOR PRODUCING CIRCUIT ARTWORK UTILIZING A DATA PROCESSING MACHINE

John W. Hill, Richardson, and Charles L. Satterwhite, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 8, 1970, Ser. No. 1,346

Int. Cl. G06f *15/46*

U.S. Cl. 444—001 **36 Claims**



Artwork for a logic circuit to be fabricated by printed circuit board techniques is produced by a data processing machine programmed to run a packaging routine, a placement routine, and a routing routine, in addition to check routines. All logic elements for a particular circuit are coded and identified prior to carrying out any of the machine run routines. This circuit diagram information, along with mechanical criteria of the printed circuit board on which the circuit is to be fabricated, are supplied as input data to the data processing machine. The data processing machine first takes the coded circuit diagram information and checks it for errors. It then packages the individual logic elements into multi-element units (integrated circuits). Upon completion of the packaging routine, the data processor places the multi-element units within the limits of the mechanical criteria supplied as input data. After the packaging and placing routines have been completed, the machine routes interconnections between the terminal pins of the multi-element units using a numbered ordered maze restrained to proceed within pre-established limits.

3,653,072
PROCESS FOR PRODUCING CIRCUIT ARTWORK UTILIZING A DATA PROCESSING MACHINE

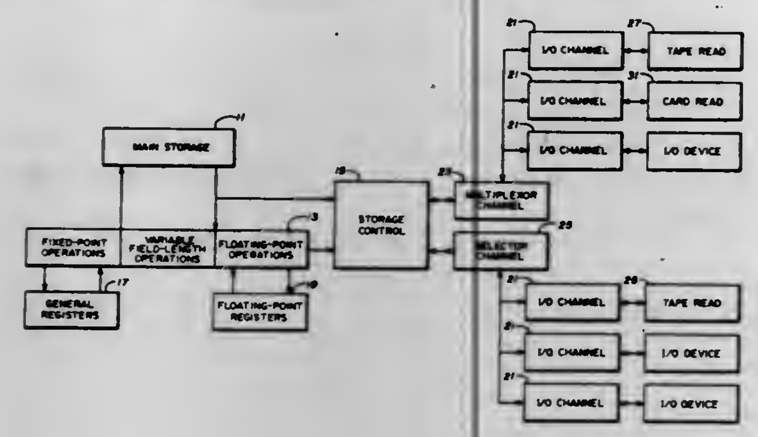
Joseph A. Ballas, Dallas, and Robert A. Penick, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 8, 1970, Ser. No. 1,366

Int. Cl. G06f *15/46*

U.S. Cl. 444—001 **24 Claims**

Artwork for a logic circuit to be fabricated by printed circuit board techniques is produced by a data processing machine programmed to run a packaging routine, a placement routine, and a routing routine, in addition to check routines. All logic elements for a particular circuit are coded and identified prior to carrying out any of the machine run routines. This circuit diagram information, along with mechanical criteria of the printed circuit board on which the circuit is to be fabricated, are supplied as input data to the data processing machine. The data processing machine first takes the coded circuit diagram information and checks it for errors. It then packages the individual logic elements into multi-element units (integrated circuits). Upon completion of the packaging routine, the data processor places the multi-element units within the limits of the mechanical criteria supplied as input data. After the packaging and placing routines have been completed, the machine routes interconnections between the terminal pins of the multi-element units using a numbered ordered maze restrained to proceed within pre-established limits.



3,653,073

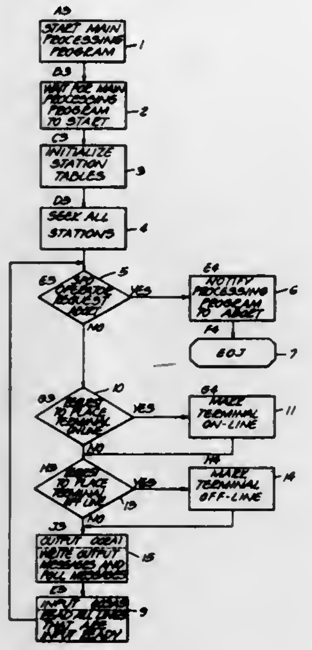
HANDLER PROGRAM FOR REMOTE INPUT MANAGEMENT SYSTEM

Ralph L. Carpenter, Oakland, and Richard C. Zuchowski, San Francisco, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation

Filed Aug. 19, 1969, Ser. No. 851,370

Int. Cl. G06f *9/18*

U.S. Cl. 444—1 **13 Claims**



A digital computer program in the ALGOL language for interfacing between remote hardware terminals and a program entitled Main Processing Program. This program passes all data to and from the remote terminals and the Main Processing Program.

DESIGNS

MARCH 28, 1972

223,186

FILE HANDLE

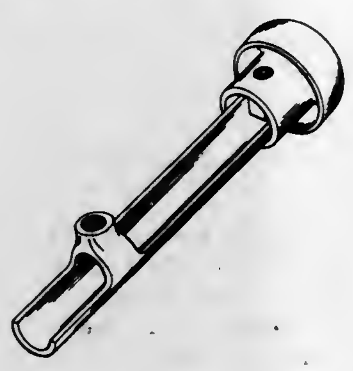
William J. Menser, Baroda, and Fritz G. Hoffmann, St. Joseph, Mich., assignors to Triple C Co., Baroda, Mich.

Filed Aug. 13, 1970, Ser. No. 24,477

Term of patent 14 years

Int. Cl. D8—*05*

U.S. Cl. D8—94



223,187

NUT

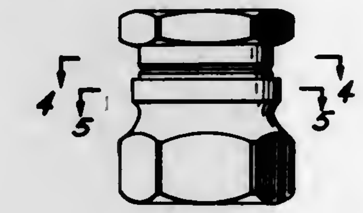
George S. Wing, Palos Verdes Estates, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.

Filed June 22, 1970, Ser. No. 23,598

Term of patent 14 years

Int. Cl. D8—*10*

U.S. Cl. D8—273



223,188

BOTTLE OR SIMILAR ARTICLE

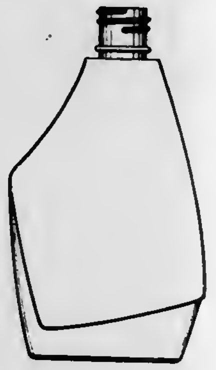
Elliott E. Blank, 2920 Dartmouth Drive, Midland, Mich. 48640

Filed Dec. 4, 1970, Ser. No. 26,278

Term of patent 14 years

Int. Cl. D9—*01*

U.S. Cl. D9—60



223,189

FOIL PACKAGING TRAY

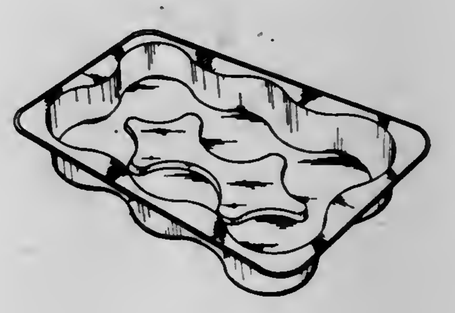
David T. Dittman, Atlanta, Ga., assignor to Pet, Incorporated, St. Louis, Mo.

Filed Apr. 3, 1968, Ser. No. 11,287

Term of patent 14 years

Int. Cl. D9—*03*

U.S. Cl. D9—219



223,190

AUTOMOBILE VEHICLE BODY

Michel Tixier, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, Hauts-de-Seine, France

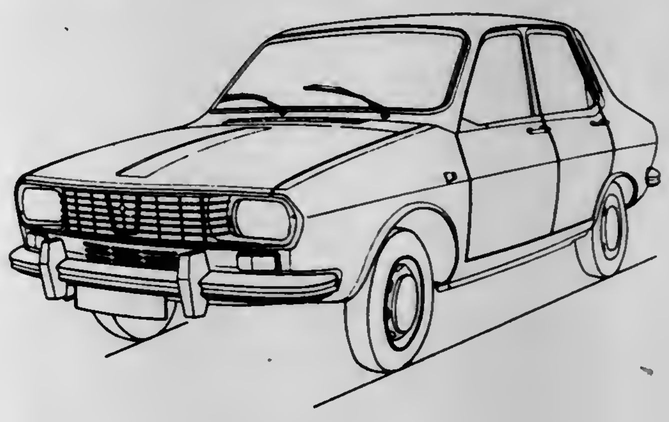
Filed Nov. 17, 1969, Ser. No. 20,151

Claims priority, application France May 16, 1969

Term of patent 14 years

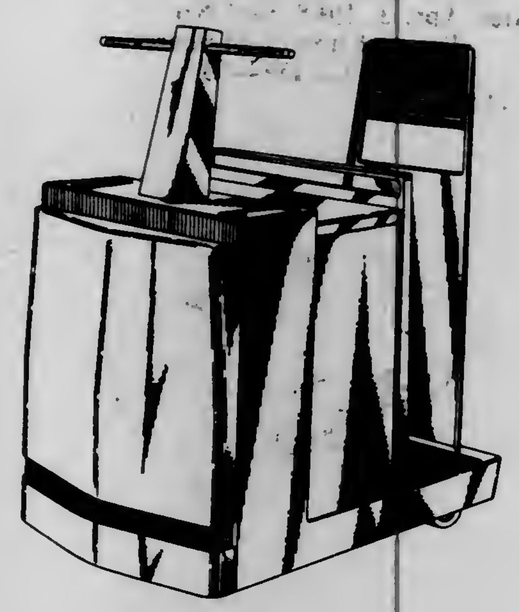
Int. Cl. D12—*08*

U.S. Cl. D14—3



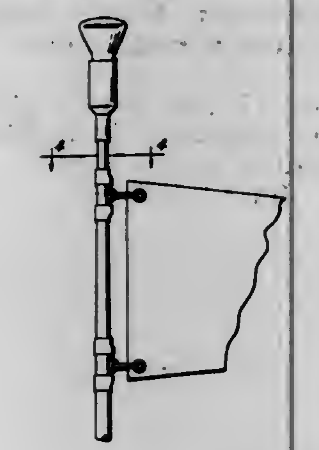
223,191
TOWING VEHICLE

Rigsby C. Satterfield, Chalfont, Pa., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed July 9, 1970, Ser. No. 23,878
Term of patent 7 years
Int. Cl. D12—*09*
U.S. Cl. D14—3



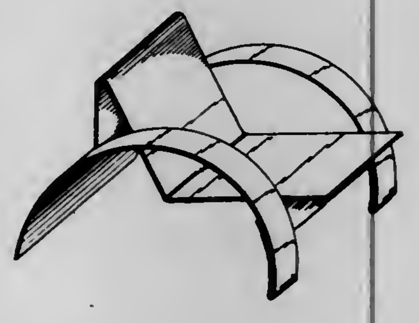
223,192
DUNE BUGGY DISPLAY

Bernard Harold Gertler, 914 W. 17th St., Costa Mesa, Calif. 92627
Filed Dec. 29, 1969, Ser. No. 20,668
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



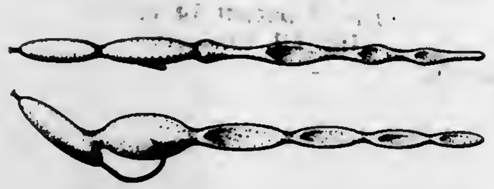
223,193
CHAIR

Ching-Yu Chang, Manoa Park Apts. E115, 400 Glendale Road, Havertown, Pa. 19083
Filed Apr. 22, 1970, Ser. No. 22,550
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D15—1



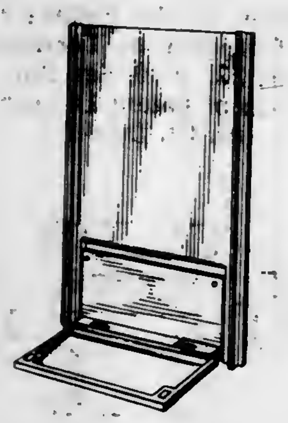
223,194
FISHING LURE

David L. Goforth, 613 W. Kemp Road, Greensboro, N.C. 27410
Filed Nov. 4, 1969, Ser. No. 19,942
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



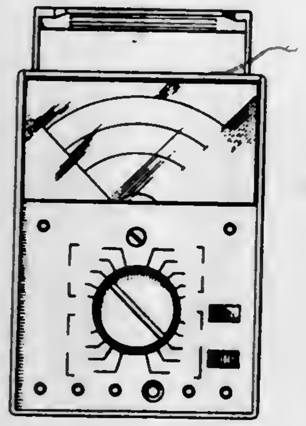
223,195
COMBINED WALL UNIT AND SEAT FOR A BATHTUB OR THE LIKE

Raymond Wallace Young, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.
Continuation-in-part of design application Ser. No. 18,369, July 24, 1969. This application July 20, 1970, Ser. No. 24,037
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



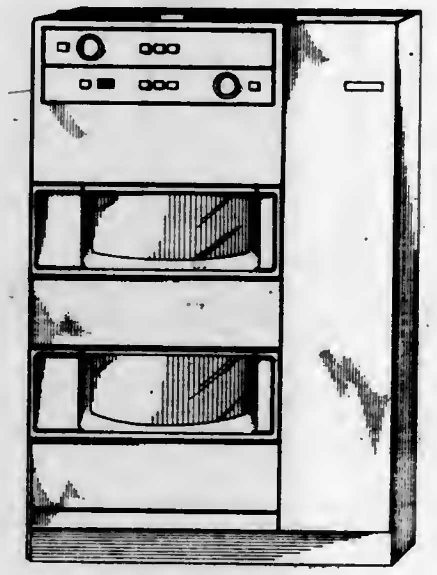
223,196
MULTIMETER

Joseph R. Andreaggi, Short Hills, and George Zenuch, Edison, N.J., assignors to Weston Instruments, Inc., Newark, N.J.
Filed Dec. 10, 1970, Ser. No. 26,384
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D26—1



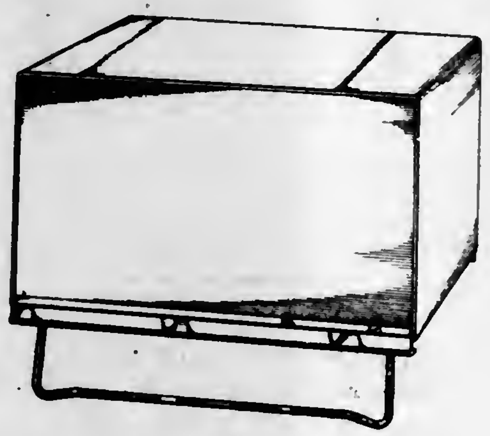
223,197
DISK STORAGE FILE

Clifford B. Bisch, Palo Alto, Edward D. Lacey, Los Gatos, Howard S. Noel, Cupertino, and Peter A. Ronzani, Sunnyvale, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 31, 1970, Ser. No. 22,336
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



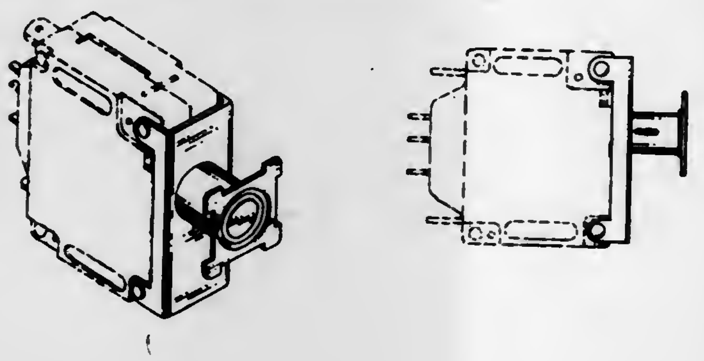
223,198
STACKABLE HOUSING UNIT FOR ELECTRONIC EQUIPMENT

Karl Lang, Uerikon, and Hans Steiner, Greifensee, Switzerland, assignors to Mettler Instrumente AG, Zurich, Switzerland
Filed Sept. 10, 1970, Ser. No. 24,936
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



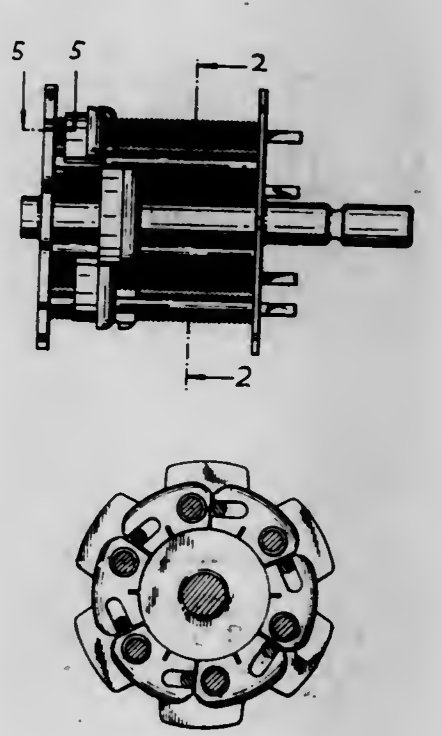
223,199
ADAPTER FOR A CIRCUIT BREAKER

Ronald Nicol, Trenton, N.J., assignor to Heinemann Electric Company, Trenton, N.J.
Filed Jan. 22, 1970, Ser. No. 21,039
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



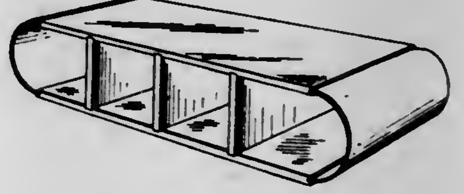
223,200
ROTOR ASSEMBLY FOR A DETENT TUNING MECHANISM FOR A TELEVISION TUNER

John Michael Minden Carter, Sutton Coldfield, England, assignor to William Bailey (Birmingham) Limited, Willenhall, England
Filed June 1, 1970, Ser. No. 23,226
Claims priority, application Great Britain Dec. 4, 1969
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—14



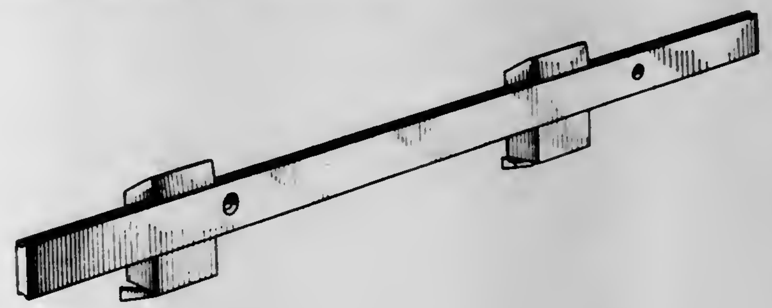
223,201
SHELF UNIT

Hans P. Jorgensen, 1931 Raby Road, Haslett, Mich. 48840
Filed Apr. 14, 1970, Ser. No. 22,501
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D33—3



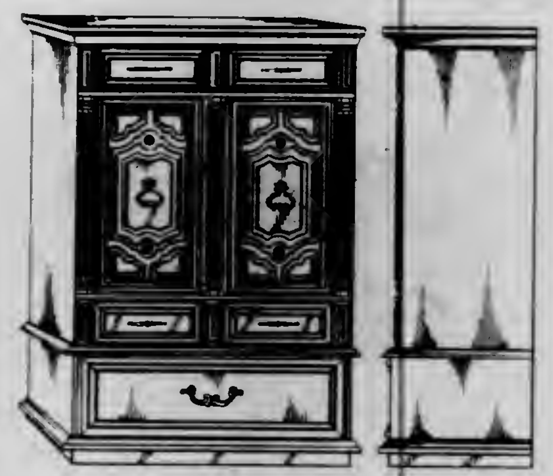
223,202
SUPPORT RACK FOR MEDICAL IMPLEMENTS

Morten E. Nyrop, Lyngby, Denmark, assignor to Simonsen & Weels Eftr. A/S, Albertslund, Denmark
Filed June 17, 1970, Ser. No. 23,533
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D33—3



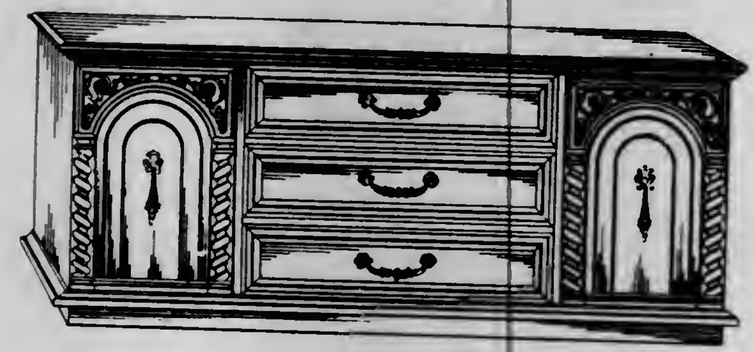
223,203
CHEST OF DRAWERS OR THE LIKE
Joseph E. Adkinson, 3807 Leland St.,
Chevy Chase, Md. 20015
Filed Apr. 17, 1970, Ser. No. 22,482
Term of patent 7 years
Int. Cl. D6—*04*

U.S. Cl. D33—6



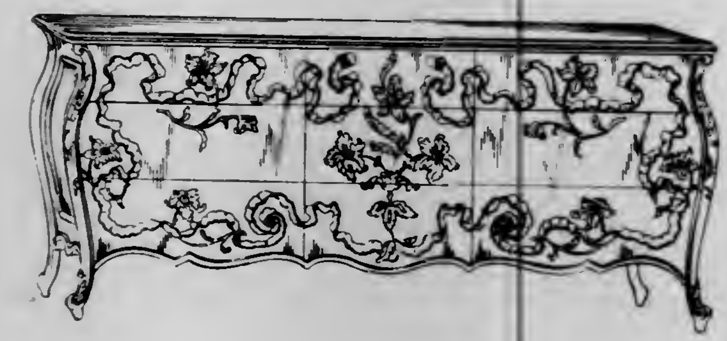
223,204
DRESSER OR THE LIKE
Joseph E. Adkinson, 3807 Leland St.,
Chevy Chase, Md. 20015
Filed Apr. 17, 1970, Ser. No. 22,484
Term of patent 7 years
Int. Cl. D6—*04*

U.S. Cl. D33—6



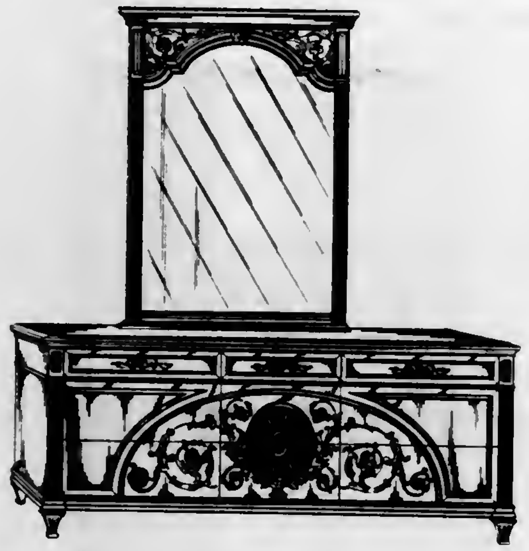
223,205
DRESSER OR THE LIKE
Joseph E. Adkinson, 3807 Leland St.,
Chevy Chase, Md. 20015
Filed Apr. 20, 1970, Ser. No. 22,525
Term of patent 7 years
Int. Cl. D6—*04*

U.S. Cl. D33—6



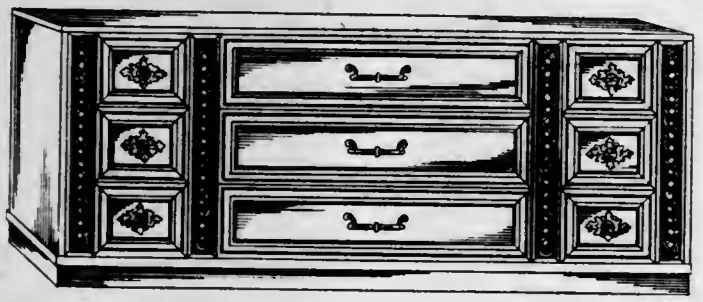
223,206
DRESSER OR THE LIKE
Joseph E. Adkinson, 3807 Leland St.,
Chevy Chase, Md. 20015
Filed Apr. 20, 1970, Ser. No. 22,526
Term of patent 7 years
Int. Cl. D6—*04*

U.S. Cl. D33—6



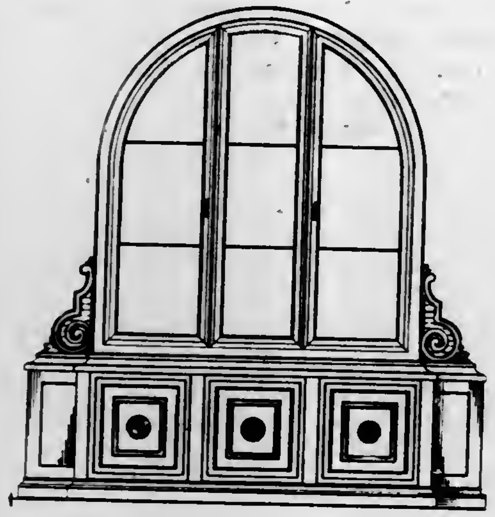
223,207
DRESSER OR THE LIKE
Joseph E. Adkinson, 3807 Leland St.,
Chevy Chase, Md. 20015
Filed Apr. 20, 1970, Ser. No. 22,527
Term of patent 7 years
Int. Cl. D6—*04*

U.S. Cl. D33—6



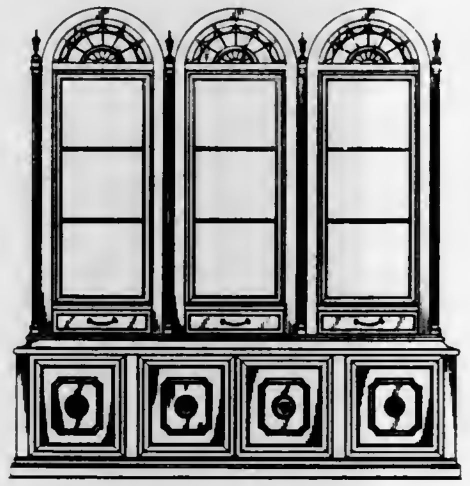
223,208
BREAKFRONT OR THE LIKE
Joseph E. Adkinson, 3807 Leland St.,
Chevy Chase, Md. 20015
Filed Apr. 17, 1970, Ser. No. 22,483
Term of patent 7 years
Int. Cl. D6—*04*

U.S. Cl. D33—13



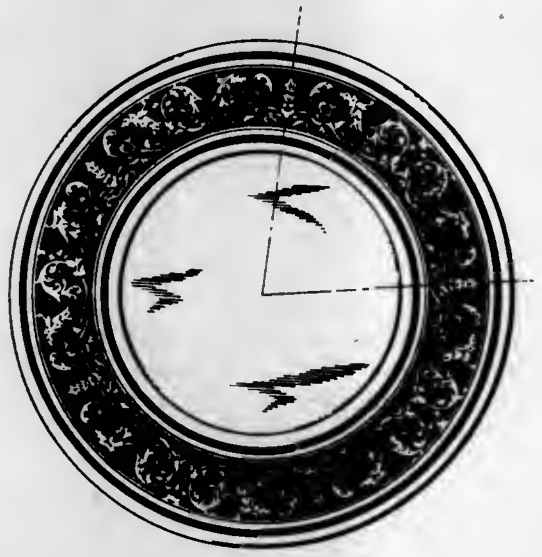
223,209
BREAKFRONT OR THE LIKE
Joseph E. Adkinson, 3807 Leland St.,
Chevy Chase, Md. 20015
Filed Apr. 20, 1970, Ser. No. 22,524
Term of patent 7 years
Int. Cl. D6—*04*

U.S. Cl. D33—13



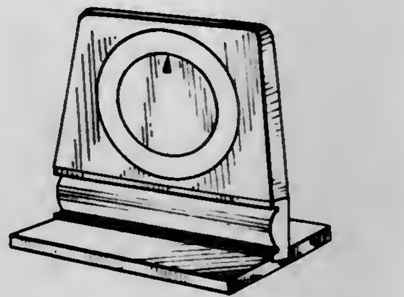
223,210
PLATE OR SIMILAR ARTICLE
Edward J. Bennett, Weston, Conn., and Ronald M. Johnson, New York, N.Y., assignors to Owens-Illinois, Inc.
Filed Nov. 20, 1967, Ser. No. 9,463
Term of patent 14 years
Int. Cl. D7—*01*

U.S. Cl. D44—15



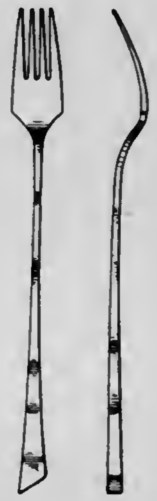
223,211
THERMOMETER OR SIMILAR ARTICLE
Clayton A. Laughlin, Minneapolis, Minn., assignor to Arthur Salm Inc., Chicago, Ill.
Filed June 1, 1970, Ser. No. 23,235
Term of patent 14 years
Int. Cl. D10—*03*

U.S. Cl. D52—7



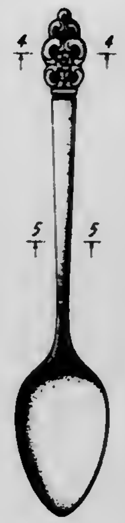
223,212
FORK OR SIMILAR ARTICLE
Stephen H. Berni, 673 Pelham Road,
New Rochelle, N.Y. 10022
Filed Feb. 11, 1970, Ser. No. 21,373
Term of patent 14 years
Int. Cl. D7—*03*

U.S. Cl. D54—12



223,213
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Apr. 13, 1970, Ser. No. 22,391
Term of patent 14 years
Int. Cl. D7—*03*

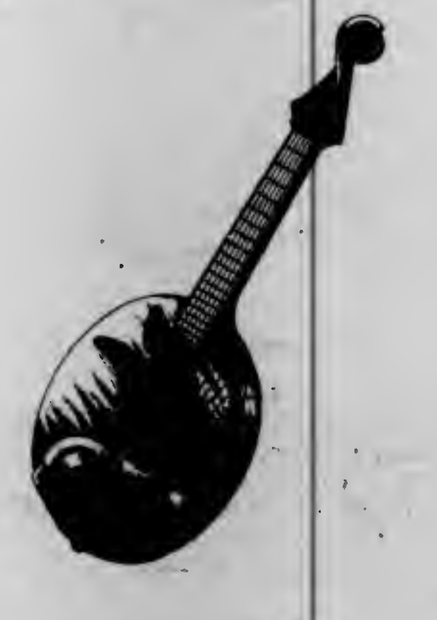
U.S. Cl. D54—12



223,214

STRINGED MUSICAL INSTRUMENT, SPECIFICALLY A UKRAINIAN BANDURKA

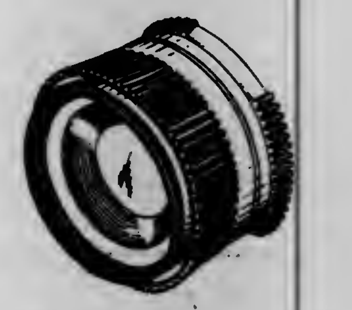
Walter J. Pelensky, 19C Mannheim Gardens, Philadelphia, Pa. 19144
Original design application Mar. 28, 1968, Ser. No. 11,179, now Patent No. 216,331, dated Dec. 16, 1969. Divided and this application June 3, 1969, Ser. No. 17,505
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1



223,215

INTERCHANGEABLE CAMERA LENS

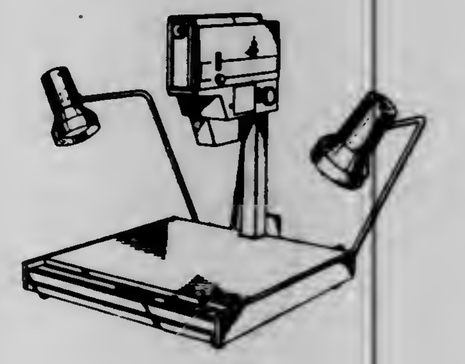
Denkichi Takata, Tokyo, Japan, assignor to Mamiya Koki Kabushiki Kaisha (also known as Mamiya Camera Co., Ltd), Tokyo-to, Japan
Filed Mar. 31, 1970, Ser. No. 22,134
Claims priority, application Japan Oct. 2, 1969
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1



223,216

SLIDE PROCESSOR CAMERA

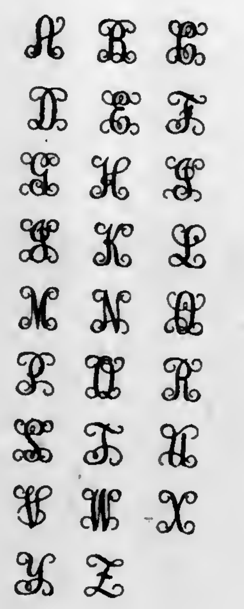
Hiroshi Saito, Osaka, Shuzo Horikoshi, Suita, Iwao Nakajima, Osaka, and Susumu Yamamoto, Moriguchi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed June 18, 1970, Ser. No. 23,549
Claims priority, application Japan Dec. 19, 1969
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1



223,217

ALPHABET FOR MONOGRAMS OR THE LIKE

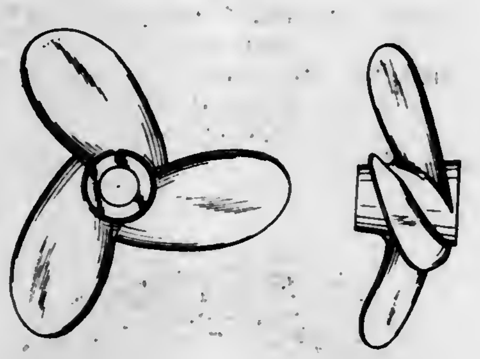
George Berlant, Bellerose, N.Y., assignor to New Hermes Engraving Corporation, New York, N.Y.
Filed Nov. 12, 1969, Ser. No. 20,033
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D64—16



223,218

PROPELLER

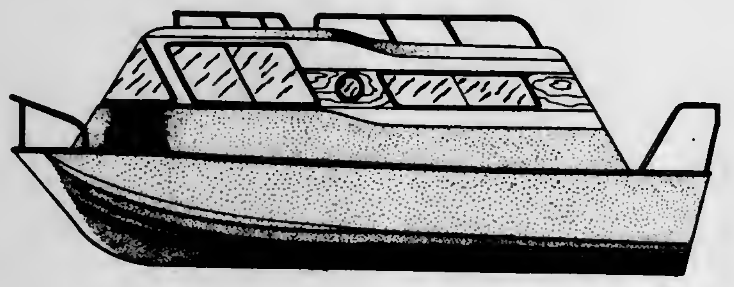
LeRoy Martens, Lake Crystal, Minn., assignor to Lar-Mar-Co. Props, Incorporated, Lake Crystal, Minn.
Filed Oct. 24, 1969, Ser. No. 19,716
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D71—1



223,219

BOAT

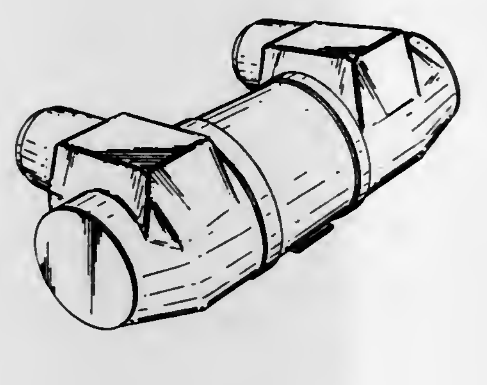
Herbert M. Piker, 611 Hickory Hill Lane, Wyoming, Ohio 45215, and Otis C. Borum, Deb Apartments, Apt. 503, 4070 Barnes St., Jacksonville, Fla. 33216
Filed Sept. 9, 1970, Ser. No. 24,897
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1

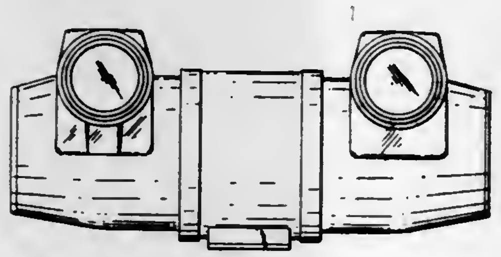


223,220

X-RAY TUBE HOUSING

William K. Johnson, Oakbrook, and Paul V. Hartman, Bellwood, Ill., assignors to Picker Corporation, White Plains, N.Y.
Filed May 27, 1970, Ser. No. 23,173
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1

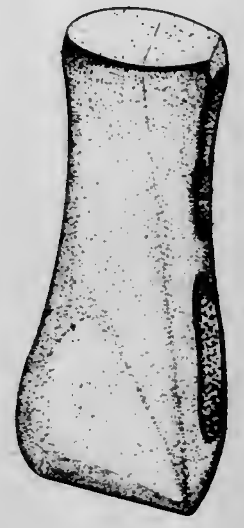




223,221

BOOT INSERT

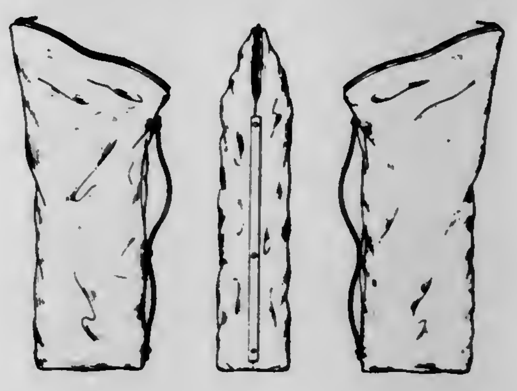
Jesse F. Wright and Blake W. Berdine, Fort Collins, Colo., assignors to Poudre Plastics, Inc., Fort Collins, Colo.
Filed July 6, 1970, Ser. No. 23,832
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D86—10



223,222

BAG

Louis J. Christen, Jr., St. Louis, Mo., assignor to J. C. Christen Manufacturing Co., St. Louis, Mo.
Filed Mar. 28, 1969, Ser. No. 16,516
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—3



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PATENTS WERE ISSUED ON THE 28TH DAY OF MARCH, 1972

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- AB Konsulterna for Industri Och Handel: *See—*
  - Sundberg, Carl A., 3,653,058.
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  - Horrom, Bruce Wayne; and Crovetti, Aldo Joseph, 3,652,670.
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- Abeck, Wilhelm; Kober, Heinrich; and Seidel, Bernhard, to Agfa-Gevaert Aktiengesellschaft. Magnetic material and method of making the same. 3,652,334, Cl. 117-236.
- Abend, Thomas, to Gurit AG. Latently reactive composition reactable under influence of moisture and its method of preparation and use. 3,652,521, Cl. 260-86.1
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- ACF Industries, Incorporated: *See—*
  - Casey, Edward H.; and Bickhaus, James T., 3,652,065.
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  - Corderoy, Henry Morgan, 3,651,614.
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- Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Circuit for rapid note passage in electronic musical instrument. 3,651,729, Cl. 84-91.17
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- Adachi, Takeshi; and Okumura, Takatosi, to Nippon Gakki Seizo Kabushiki Kaisha. Percussion keyer for an electronic musical instrument. 3,652,775, Cl. 84-1.26
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  - Hildebrandt, Hans G.; and Hilzinger, Fritz, 3,651,811.
- AFA Protective Systems, Inc.: *See—*
  - Zinn, Leon; and Bocin, Milton, 3,652,867.
- AGA Aktiebolag: *See—*
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  - Abeck, Wilhelm; Kober, Heinrich; and Seidel, Bernhard, 3,652,334.
  - Credner, Hans-Heinrich; Glockner, Hans; and Nittel, Fritz, 3,652,286.
- Ahmed, Muktar; and Mallet, Victorin. Plasticization of amino compounds with hydrolyzed copolymers of vinyl monocarboxylate and products thereof. 3,652,712, Cl. 260-837.
- Aichenegg, Paul C.: *See—*
  - Emerson, Carl D.; and Aichenegg, Paul C.,3,652,653.
- Air Reduction Company, Incorporated: *See—*
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- Aisin Seiki Kabushiki Kaisha: *See—*
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  - Nakano, Tatsumi, 3,652,030.
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  - Hatanaka, Yoshihiro; Abe, Masahiro; Oshima, Takeo; and Akioka, Toshio,3,652,081.
- Aktiebolaget Motala Verkstad: *See—*
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- Aktiebolaget Vallenbyggnadsbyran: *See—*
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- Aktiengesellschaft Brown, Boveri & Cie: *See—*
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  - Weingartner, Bernhard, 3,652,810.
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- Albert, Donald J., to Eastman Kodak Company. Loading mechanism improvement. 3,651,838, Cl. 141-284.
- Albrecht, Leonard N.: *See—*
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- Albright, Donald R.; Archibald, James B.; and Barton, Sterling C., to General Electric Company. Generator ventilation dome and cooler casing construction. 3,652,881, Cl. 310-57.
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- Alinari, Carlo. Depth-measuring instrument. 3,651,693, Cl. 73-300.
- Allander, Claes G.: *See—*
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  - Honsinger, Vernon B., 3,652,885.
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- Amberg, Hans-Ulrich, to Siemens Aktiengesellschaft. Input circuit for a signalling system which cyclically scans a plurality of signalling stations under counter control. 3,652,995, Cl. 340-167.
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  - Albright, Jay Donald; and Shepherd, Robert Gorden, 3,652,555.
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  - Tsu, Kin Hsueh-Yuan, 3,652,654.
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- American Home Products Corporation: *See—*
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  Loeffler, Herbert H.; and DiMauro, Sebastian B., 3,652,187.
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  Farr, Gerald; Anderson, Frances M.; and Phillips, Eric Thomas Arthur,3,652,793.
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Andres, John P., to Tenneco Inc. Multi-pass muffler. 3,651,888, Cl. 181-53.
Andress, Harry J., Jr.; and Capowski, Julius, to Mobil Oil Corporation. Liquid hydrocarbon fuels containing alkylamine salts. 3,652,242, Cl. 44-71.
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Appel, David W., to Kimberly-Clark Corporation. Contracting preslice flow distributor for papermaking machine headbox. 3,652,392, Cl. 162-343.
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Araki, Shunji: *See—*
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- Charkey, Allen; and Brooks-Smith, Derryk, to Yardney International Corporation. Electrochemical system comprising layered silicate film separator. 3,652,338, Cl. 136-146.
- Charlton, Gregory G., to International Telephone and Telegraph Corporation. Simplified multi-beam cylindrical array antenna with focused azimuth patterns over a wide range of elevation angles. 3,653,057, Cl. 343-854.
- Chase, Raymond Burt, to Dow Chemical Company, The. Method of repairing a ceramic lined nozzle. 3,651,558, Cl. 29-401.
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- Chayes, Norman C., to Combustion Engineering, Inc. Sonic vibration baffles. 3,651,788, Cl. 122-4.
- Chekroun, Rene; and Ragot, Jean-Calude, to Burroughs Corporation. Binary entry apparatus for a calculating machine. 3,652,826, Cl. 235-61.
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- Chen, William I-Hsuan, to Bell Telephone Laboratories, Incorporated. Electronically variable line build-out network. 3,652,952, Cl. 330-57.
- Cheney, Lee C.; Godfrey, John C.; Crast, Leonard B., Jr.; and Luttinger, Joyce R., to Bristol-Myers Company. Esters of 6-aminopenicillanic acid. 3,652,546, Cl. 260-239.1
- Cheshire, Alan G., to Lucas, Joseph, (Industries) Limited. Liquid atomising devices. 3,652,016, Cl. 239-424.5
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  - Sweeney, William A.; and Woo, Gar Lok, 3,652,662.
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- Chibata, Ichiro; Tosa, Tetsuya; Sano, Ryujiro; and Ando, Katsuko, to Tanabe Seiyaku Co., Ltd. Asparaginase having anti-tumor activity and process for preparing the same. 3,652,402, Cl. 195-66.
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- Choquette, Henry T.; Gobble, Lawrence T.; Studebaker, James B.; and Whittier, John D., to Wilfley, A. R., and Sons, Inc. Centrifugal pump and seal means therefore. 3,652,180, Cl. 415-113.
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- Lockhart, Ian Moyle, to Parke, Davis & Company. 1-(p-Oxyphenethyl)-3(m-oxyphenyl)pyrrolidine compounds. 3,652,587, Cl. 260-326.3
- Lodge, John Ewart, to Imperial Chemical Industries Limited. 9,9-Bisamino alkyl fluorene sulphonic acids and metal salts thereof. 3,652,661, Cl. 260-510.
- Loebel, Wolf, to Motoren- und Turbinen-Union Munchen GmbH. Installation for the support of pivotal guide blades. 3,652,177, Cl. 415-110.
- Loeffler, Herbert H.; and DiMauro, Sebastian B., to Amicon Corporation. Pump. 3,652,187, Cl. 417-393.
- Loesch, Raymond W. System for maintaining laterally spaced vehicles longitudinally abreast. 3,651,882, Cl. 180-14.
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- Lozio, Battista. Device for fixing labels to a supporting body. 3,652,004, Cl. 227-67.
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  - Thomas, David; and Seager, James Barry, 3,651,699.
- Lucien, Rene. Control devices for landing gear and hatchdoors with mechanical-hydraulic sequences. 3,652,039, Cl. 244-102.
- Ludvik, Borivoj, to Vyzkumny ustav zuslechtovaci. Method and apparatus for continuously measuring the concentration of a reactant in a liquid carrier. 3,652,223, Cl. 23-230.
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- Lundgren, Claes Erik Gunnar; and Lichtneckert, Istvan Janos Antal. Method of selected converging communication and the combination thereof with selected diverging communication between a group of population to a remote center, and a system for carrying out the method. 3,653,024, Cl. 340-310.
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LIST OF DESIGN PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF MARCH, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Adkinson, Jooseph E. Chest of drawers or the like. 223,203, 3–28–72, Cl. D33—6.

Adkinson, Joseph E. Dresser or the like. 223,204, 3–28–72, Cl. D33—6.

Adkinson, Joseph E. Dresser or the like. 223,205, 3–28–72, Cl. D33—6.

Adkinson, Joseph E. Dresser or the like. 223,206, 3–28–72, Cl. D33—6.

Adkinson, Joseph E. Dresser or the like. 223,207, 3–28–72, Cl. D55—6.

Adkinson, Joseph E. Breakfront or the like. 223,208, 3–28–72. Cl. D33—13.

Adkinson, Joseph E. Breakfront or the like. 223,209, 3–28–72, Cl. D33—13.

American Standard Inc. : *See—*
Young, Raymond W. 223,195.

Andreaggi, Joseph R., and G. Zenuch, to Weston Instruments, Inc. Multimeter. 223,196, 3–28–72, Cl. D26—1.

Bailey, William, (Birmingham) Ltd. : *See—*
Carter, John M. M. 223,200.

Bennett, Edward J., and R. M. Johnson, to Owens-Illinois, Inc. Plate or similar article. 223,210, 3–28–72, Cl. D44—15.

Berdine, Blake W. : *See—*
Wright, Jesse F., and Berdine. 223,221.

Berlant, George, to New Hermes Engraving Corp. Alphabet for monograms or the like. 223,217, 3–28–72, Cl. D64—16.

Berni, Stephen H. Fork or similar article. 223,212, 3–28–72, Cl. D54—12.

Bisch, Clifford B., E. D. Lucey, H. S. Noel, and P. A. Ronzani, to International Business Machines Corp. Disk storage file. 223,197, 3–28–72, Cl. D26—5.

Blank, Elliott E. Bottle or similar article. 223,188, 3–28–72, Cl. D9—60.

Borum, Otis C. : *See—*
Piker, Herbert M. 223,219.

Carter, John M. M., to William Bailey (Birmingham) Ltd. Rotor assembly for a detent tuning mechanism for a television tuner. 223,200, 3–28–72, Cl. D26—14.

Chang, Ching-Yu. Chair. 223,193, 3–28–72, Cl. D15—1.

Christen, J. C., Mfg. Co. : *See—*
Christen, Louis J., Jr. 223,222.

Christen, Louis J., Jr., to J. C. Christen Mfg. Co. Bag. 223,222, 3–28–72, Cl. D87—3.

Dittman, David T., to Pet, Inc. Foil packaging tray. 223,189, 3–28–72, Cl. D9—219.

Eaton Yale & Towne, Inc. : *See—*
Satterfield, Rigsby C. 223,191.

Gertler, Bernard H. Dune buggy display. 223,192, 3–28–72, Cl. D14—6.

Goforth, David L. Fishing lure. 223,194, 3–28–72, Cl. D22—27.

Hartman, Paul V. : *See—*
Johnson, William K., and Hartman. 223,220.

Heinemann Electric Co. : *See—*
Nicol, Ronald. 223,199.

Hi-Shear Corp. : *See—*
Wing, George S. 223,187.

Hoffmann, Fritz G. : *See—*
Menser, William J., and Hoffmann. 223,186.

Horikoshi, Shuzo : *See—*
Saito, Hiroshi, Horikoshi, Nakajima, and Yamamoto. 223,216.

International Business Machines Corp. : *See—*
Bisch, Clifford B., Lucey, Noel, and Ronzani. 223,197.

Johnson, Ronald M. : *See—*
Bennett, Edward J., and Johnson. 223,210.

Johnson, William K., and P. V. Hartman, to Picker Corp. X-ray tube housing. 223,220, 3–28–72, Cl. D83—1.

Jorgensen, Hans P. Shelf unit. 223,201, 3–28–72, Cl. D33—3.

Lang, Karl, and H. Steiner, to Mettler Instrumente AG. Stackable Housing unit for electronic equipment. 223,198, 3–28–72, Cl. D26—5.

Lar-Mar-Co. Props, Inc. : *See—*
Martens, Le Roy. 223,218.

Laughlin, Clayton A., to Arthur Salm, Inc. Thermometer or similar article. 223,211, 3–28–72, Cl. D52—7.

Lucey, Edward D. : *See—*
Bisch, Clifford B., Lucey, Noel, and Ronzani. 223,197.

Mamiya Camera Co., Ltd. : *See—*
Takata, Denkichi. 223,215.

Mamiya Koki Kabushiki Kaisha (a.k.a. Mamiya Camera Co., Ltd.) : *See—*
Takata, Denkichi. 223,215.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 223,213, 3–28–72, Cl. D54—12.

Martens, LeRoy, to Lar-Mar-Co. Props, Inc. Propeller. 223,218, 3–28–72, Cl. D71—1.

Matsushita Electric Industrial Co., Ltd. : *See—*
Saito, Hiroshi, Horikoshi, Nakajima, and Yamamoto. 223,216.

Menser, William J., and F. G. Hoffmann, to Triple C Co. File handle. 223,186, 3–28–72, Cl. D8—94.

Mattler Instruments AG : *See—*
Lang, Karl, and Steiner. 223,198.

Nakajima, Iwao : *See—*
Saito, Hiroshi, Horikoshi, Nakajima, and Yamamoto. 223,216.

New Hermes Engraving Corp. : *See—*
Berlant, George. 223,217.

Nicol, Ronald, to Heinemann Electric Co. Design of an adaptor for a circuit breaker. 223,199, 3–28–72, Cl. D26—13.

Noel, Howard S. : *See—*
Bisch, Clifford B., Lucey, Noel, and Ronzani. 223,197.

Nyrop, Morten E., to Simonsen & Weels EFTF. A/S Medical implements. 223,202, 3–28–72, Cl. D33—3.

Oneida Ltd. : *See—*
Manderfield, Ellen B. 223,213.

Owens-Illinois, Inc. : *See—*
Bennett, Edward J., and Johnson. 223,210.

Pelensky, Walter J. Stringed musical instrument specifically a Ukrainian bandurka. 223,214, 3–28–72, Cl. D56—1.

Pet, Inc. : *See—*
Dittman, David T. 223,189.

Picker Corp. : *See—*
Johnson, William K., and Hartman. 223,220.

Piker, Herbert M., and O. C. Borum, Boat. 223,219, 3–28–72, Cl. D71—1.

Poudre Plastics, Inc. : *See—*
Wright, Jesse F., and Berdine. 223,221.

Regie Nationale des Usines Renault : *See—*
Tixier, Michel. 223,190.

Ronzani, Peter A. : *See—*
Bisch, Clifford B., Lucey, Noel, and Ronzani. 223,197.

Saito, Hiroshi, S. Horikoshi, I. Nakajima, and S. Yamamoto, to Maatsushita Electric Industrial Co., Ltd. Slide processor camera. 223,216, 3–28–72, Cl. D61—1.

Salm, Arthur, Inc. : *See—*
Laughlin, Clayton A. 223,211.

Satterfield, Rigsby C., to Eaton Yale & Towne, Inc. Towing vehicle. 223,191, 3–28–72, Cl. D14—3.

Simonsen & Weels EFTF. A/S : *See—*
Nyrop, Morten E. 223,202.

Steiner, Hans : *See—*
Lang, Karl, and Steiner. 223,198.

Takata, Denkichi, to Mamiya Koki Kabushiki Kaisha (a.k.a Mamiya Camera Co., Ltd.). Interchangeable camera lens. 223,215, 3–28–72, Cl. D61—1.

Tixier, Michel, to Regie Nationale des Usines Renault. Automobile vehicle body. 223,190, 3–28–72, Cl. D14—3.

Triple C Co. : *See—*
Menser, William J., and Hoffmann. 223,186.

Weston Instruments, Inc. : *See—*
Andreaggi, Joseph R., and Zenuch. 223,196.

Wing, George S., to Hi-Shear Corp. Nut. 223,187, 3–28–72, Cl. D8—273.

Wright, Jesse F., and B. W. Berdine, to Poudre Plastics, Inc. Boot insert. 223,221, 3–28–72, Cl .D86—10.

Yamamoto, Susumu : *See—*
Saito, Hiroshi, Horikoshi, Nakajima, and Yamamoto. 223,216.

Young, Raymond W., to American Standard Inc. Combined wall unit and seat for a bathtub or the like. 223,195, 3–28–72, Cl. D23—69.

Zenuch, George : *See—*
Andreaggi, Joseph R., and Zenuch. 223,196.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 28TH DAY OF MARCH, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Atlas Chemical Industries, Inc. : *See—*
Long, William P., Jr. T896,054.

Bard, Charleton C., and J. O. Kleffner, Retouching colored photographic images. T896,053, 3–28–72, Cl. 96—56.

Carter, Andrew P., Jr. : *See—*
Decker, William D., Carter, and Lewis. T896,049.

Decker, William D., A. P. Carter, Jr., and C. R. Lewis. Modified bobbin chuck. T896,049, 3–28–72, Cl. 242—18.

Du Pont de Nemours, E. I., and Co. : *See—*
Hamlin, Arthur H., Kilkson, and Wood. T896,051.
Long, Victor C. T896,055.

Fairfield, John M., M. Joshi, and G. H. Schwuttke, to International Business Machines Corp. Method for making semiconductor junction devices. T896,048, 3–28–72, Cl. 148—188.

Hamlin, Arthur H., H. Kilkson, and H. P. Wood, to E. I. du Pont de Nemours and Co. Process for forming colloidal polymeric dispersions for making microporous materials. T896,051, 3–28–72, Cl. 260—29.2.

Hercules Inc. : *See—*
Zimmerman, Gerald H. T896,052.

Hoar, Donald W. : *See—*
Olson, Floyd C., and Hoar. T896,050.

International Business Machines Corp. : *See—*
Fairfield, John M., Joshi, and Schwuttke. T896,048.

Joshi, Madhukar : *See—*
Fairchild, John M., Joshi, and Schwuttke. T896,048.

Kilkson, Henn : *See—*
Hamlin, Arthur H., Kilkson, and Wood. T896,051.

Kleffner, Joseph O. : *See—*
Bard, Charleton C., and Kleffner. T896,053.

Lewis, Charles R. : *See—*
Decker, William D., Carter, and Lewis. T896,049.

Long, Victor C., to E. I. du Pont de Nemours and Co. Coordinated ionic hydrocarbon copolymers. T896,055, 3–28–72, Cl. 260—88.1.

Long, William J., Jr., to Atlas Chemical Industries, Inc. Plasticizers for hydroxypropyl cellulose. T896,054, 3–28–72, Cl. 106—188.

Meline, Robert S. Ammonium polyphosphate solutions from super wet acid. T896,056, 3–28–72, Cl. 71—34.

Olson, Floyd C., and D. W. Hoar. Comminuted meat composition containing undenatured water-soluble lactalbumin. T896,050, 3–28–72, Cl. 99—108.

Schwuttke, Guenter H. : *See—*
Fairchild, John M., Joshi, and Schwuttke. T896,048.

Wood, Harry P. : *See—*
Hamlin, Arthur H., Kilkson, and Wood. T896,051.

Zimmerman, Gerald H., to Hercules Incorporated. Wire and cable wrapping material. T896,052, 3–28–72, Cl. 161—123.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF MARCH, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bendix Corp., The : *See—*
Granger, Cyrus M., Slavin, Carp, and Manson. Re. 27,324.

Blake, George E. : *See—*
Platt, William G., and Jacks, Re. 27,323.

Briggs, Eugene C., to Koehring Co. Oil burner. Re. 27,321, 3–28–72, Cl. 431—352.

Ecodyne Corp. : *See—*
Tischler, Edward J. Re. 27,317.

Fujii, Kiichi, M. Oda, J. Arita, M. Takeda, and K. Sakai, to Tanable Seiyaku Co., Ltd. Isolation of threonine and allothreonine from their mixture. Re. 27,322, 3–28–72, Cl. 260—534.

Gensheimer Joseph R., to Lord Corp. Dock fender. Re. 27,318, 3–28–72, Cl. 61—48.

Granger, Cyrus M., M. Slavin, R. W. Carp., and P. St. C. Manson, to The Bendix Corp. Automobile speed control. Re. 27,324, 3–28–72, Cl. 180—105.

Jacks, Roy T. : *See—*
Platt, William G., and Jacks. Re. 27,323.

Koehring Co. : *See—*
Briggs, Eugene C. Re. 27,321.

Loeb, Sidney : *See—*
Manjikian, Serop, Loeb, and McCutchan. Re. 27,319.

Lord Corp. : *See—*
Gensheimer, Joseph R. Re. 27,818.

Manjikian, Serop, S. Loeb, and J. W. McCutchan, to The Regents of the University of California. Method of preparing a semipermeable membrane. Re. 27,319, 3–28–72, Cl. 264—41.

Manson, Peter St. C. : *See—*
Granger, Cyrus M., Slavin, Carp, and Manson. Re. 27,324.

Oda, Mutsuo : *See—*
Fujii, Kiichi, Oda, Arita, Takeda, and Sakai. Re. 27,322.

Platt, William G., and R. T. Jacks; assignors to G. E. Blake, and R. J. Youngblood, Jr., a fractional part interest to each. Chuck. Re. 27,323, 3–28–72, Cl. 279—2.

Polaroid Corp. : *See—*
Tiffany, Douglas B. Re. 27,320.

Sakai, Kango : *See—*
Fujii, Kiichi, Oda, Arita, Takeda, and Sakai. Re. 27,322.

Slavin, Michael : *See—*
Granger, Cyrus M., Slavin, Carp, and Manson. Re. 27,324.

Tanable Seiyaku Co., Ltd. : *See—*
Fujii, Kiichi, Oda, Arita, Takeda, and Sakai. Re. 27,322.

Tiffany, Douglas B., to Polaroid Corp. Photographic processing apparatus. Re. 27,320, 3–28–72, Cl. 95—18.

Tischler, Edward J., to Ecodyne Corp. Timer. Re. 27,317, 3–28–72, Cl. 74—3.5.

University of California, The Regents of the : *See—*
Manjikian, Serop, Loeb, and McCutchan. Re. 27,319.

Youngblood, Raymond J., Jr. : *See—*
Platt, William G., and Jacks. Re. 27,323.

LIST OF PLANT PATENTEES

Ball, Geo. J., Inc. : *See—*
Klupenger, Joseph H. 3,086.

Costich, Peter E., to Treesearch. Dogwood tree. 3,090, 3–28–72, Cl. 51.

Ecke, Paul, Inc. : *See—*
Hegg, Thormod. 3,082.

Hegg, Thormod, to Paul Ecke, Inc. Poinsettia plant. 3,082, 3–28–72, Cl. 86.

Klupenger, Joseph H., to Geo. J. Ball, Inc. Azalea plant. 3,086, 3–28–72, Cl. 55.

Lewis, Helen H. : *See—*
Lewis, Hubert B. and H. H. 3,089.

Lewis, Hubert B. and H. H. Lewis. Azalea plant. 3,089, 3–28–72, Cl. 56.

Marshall Nurseries : *See—*
Schlapfer, Richard E. 3,088.

McGredy, Samuel. Rose plant. 3,091, 3–28–72, Cl. 20.

Moore, Ralph S. Miniature rose plant. 3,083, 3–28–72, Cl. 10.

Moore, Ralph S. Miniature rose plant. 3,084, 3–28–72, Cl. 9.

Schlapfer, Richard E., to Marshall Nurseries. Ash tree. 3,088, 3–28–72, Cl. 51.

Toy, St. Joseph. Almond tree. 3,085, 3–28–72, Cl. 30.

Treesearch : *See—*
Costich, Peter E. 3,090.

Zaiger, Chris F. Nectarine tree. 3,087, 3–28–72, Cl. 41.

CLASSIFICATION OF PATENTS

ISSUED MARCH 28, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

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103	3,651,678
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CLASS 95	
10CT	3,651,744
11.5	3,651,745
13	Re.27,320
19	3,651,746
31R	3,651,747
64D	3,651,749
64R	3,651,748
CLASS 96	
1.5	3,652,268
	3,652,269
	3,652,270
1.8	3,652,271
33	3,652,272
36	3,652,273
36.3	3,652,274
48PD	3,652,276
48	3,652,275
50PT	3,652,277
61	3,652,278
64	3,652,279
	3,652,280
76	3,652,281
	3,652,282
84R	3,652,284
84	3,652,283
90PC	3,652,285
100	3,652,286
108	3,652,287
129	3,652,288
139	3,652,289
CLASS 98	
85	3,651,750
CLASS 99	
28	3,652,290
	3,652,291
71	3,652,292
	3,652,293
83	3,652,294
91	3,652,295
94	3,651,768
109	3,652,296
140R	3,652,297
141	3,652,298
144	3,652,299
154	3,652,300
275	3,651,751
357	3,651,752
358	3,651,753
CLASS 100	
91	3,651,754
96	3,651,755
CLASS 101	
147	3,651,756
350	3,651,757
	3,651,758
395	3,651,759
CLASS 102	
70.2A	3,651,760
80	3,651,761
CLASS 104	
12	3,651,762
25	3,651,763
149	3,651,764
CLASS 105	
61	3,651,765
136	3,651,766
448	3,651,767
CLASS 106	
5	3,652,301
47R	3,652,302
52	3,652,303
57	3,652,304
58	3,652,305
	3,652,306
65	3,652,307
103	3,652,308
110	3,652,309
120	3,652,310
	3,652,311
176	3,652,312
193J	3,652,313
CLASS 108	
56	3,651,769
CLASS 110	
8A	3,651,771
8R	3,651,770
CLASS 111	
1	3,651,772
CLASS 112	
77	3,651,773
CLASS 113	
113R	3,651,774
CLASS 114	
66.5H	3,651,775
71	3,651,776
208A	3,651,777
235R	3,651,778
CLASS 115	
35	3,651,779
CLASS 116	
115.5	3,651,780
CLASS 117	
2	3,652,314
17.5	3,652,315
22	3,652,317
33.3	3,652,318
37LE	3,652,319
46	3,652,320
50	3,652,321
73	3,652,316
93	3,652,322
97	3,652,323
106	3,652,324
107	3,652,325
126GE	3,652,326
132B	3,652,327
138.8UA	3,652,328
139.5CQ	3,652,329
201	3,652,330
	3,652,331
212	3,652,332
218	3,652,333
236	3,652,334
CLASS 118	
7	3,651,781
411	3,651,782
505	3,651,783
636	3,651,784
CLASS 119	
5	3,651,785
17	3,651,786
51	3,651,787
CLASS 122	
4R	3,651,788
32	3,651,789
182R	3,651,790
CLASS 123	
32EA	3,651,791
	3,651,792
102	3,651,793
120	3,651,794
149A	3,651,795
CLASS 126	
215	3,651,796
263	3,651,797
CLASS 128	
2.05S	3,651,798
2.06R	3,651,799
12	3,651,800
53	3,651,801
82	3,651,802
88	3,651,803

145.6	3,651,804
188	3,651,805
214E	3,651,806
214.4	3,651,807
232	3,651,808
290	3,651,809
295	3,651,810
303.1	3,651,813
303.17	3,651,811
303.18	3,651,812

CLASS 130

27K	3,651,814

CLASS 131

2	3,651,815
144	3,651,816
237	3,651,817
257	3,651,818
261B	3,651,819

CLASS 132

5	3,651,820
53	3,651,821

CLASS 134

66	3,652,335

CLASS 135

24	3,651,822

CLASS 136

60	3,652,336
134R	3,652,337
146	3,652,338
161	3,652,339
168	3,652,340
176	3,652,341

CLASS 137

72	3,651,823
83	3,651,824
240	3,651,825
247.35	3,651,826
351	3,651,828
469	3,651,827
529	3,651,829
565	3,651,830
588	3,651,831
615	3,651,832
625.65	3,651,833

CLASS 140

3R	3,651,834
149	3,651,835

CLASS 141

103	3,651,836
128	3,651,837
284	3,651,838

CLASS 143

32R	3,651,839
88	3,651,840
133R	3,651,841

CLASS 144

3D	3,651,845
136R	3,651,842
198R	3,651,843

CLASS 145

31	3,651,844

CLASS 146

2C	3,651,846

CLASS 148

6.35	3,652,342
31.57	3,652,343
127	3,652,344
134	3,652,345
154	3,652,346
187	3,652,347

CLASS 149

36	3,652,348
42	3,652,349
109	3,652,350

CLASS 150

28R	3,651,847
38	3,651,848

CLASS 156

2	3,652,351
62.4	3,652,352
	3,652,353
73	3,652,354
151	3,652,355
179	3,652,356
203	3,652,357
218	3,652,358
224	3,652,359
244	3,652,360
272	3,652,361
321	3,652,362
357	3,652,364
361	3,652,363
381	3,652,365
443	3,652,366
463	3,652,367
501	3,652,368
566	3,652,369

CLASS 157

1.1	3,651,849

CLASS 160

77	3,651,850
135	3,651,851
172	3,651,852
216	3,651,853
374.1	3,651,854

CLASS 161

2	3,652,370
36	3,652,371
39	3,652,372
50	3,652,373
57	3,652,374
158	3,652,375
159	3,652,376
166	3,652,377
182	3,652,378
183	3,652,379
255	3,652,380

CLASS 162

2	3,652,381
3	3,652,382
4	3,652,383
19	3,652,384
23	3,652,385
25	3,652,387
65	3,652,386
	3,652,388
275	3,652,389
303	3,652,390
343	3,652,391
	3,652,392

CLASS 164

7	3,651,855
82	3,651,856
283	3,651,857
286	3,651,858
291	3,651,859
339	3,651,860

CLASS 165

1	3,651,861
5	3,651,862
11	3,651,863
20	3,651,864
80	3,651,865
107	3,651,866

CLASS 166

99	3,651,867
307	3,651,868

CLASS 169

38	3,651,869

CLASS 172

44	3,651,870

CLASS 173

21	3,651,871
24	3,651,872
29	3,651,873
91	3,651,874

CLASS 174

11R	3,652,777
15C	3,652,797
28	3,652,778
45R	3,652,780
67	3,652,781
73R	3,652,782

CLASS 175

45	3,651,875
323	3,651,876

CLASS 176

1	3,652,393
86R	3,652,394

CLASS 177

114	3,651,877
230	3,651,878

CLASS 178

5.2R	3,652,783
	3,652,784
5.4R	3,652,785
	3,652,786
	3,652,787
6.6SF	3,652,788
6.7R	3,652,789
6.8	3,652,790
7.1R	3,652,791
7.2R	3,652,792
7.6	3,652,793
67	3,652,794

CLASS 179

1SA	3,652,801
2DP	3,652,795
7.1R	3,652,796
15AL	3,652,798
15BA	3,652,800
15BS	3,652,799
	3,652,802
18ES	3,652,804
18J	3,652,803
84VF	3,652,805
99	3,652,806
100.2E	3,652,808
100.2R	3,652,807
100.4R	3,652,809
184	3,652,810

CLASS 180

5R	3,651,879
	3,651,881
6R	3,651,880
14R	3,651,882
68.5	3,651,883
69.1	3,651,884
79.2R	3,651,885
91	3,651,886
105R	Re.27,324

CLASS 181

33G	3,651,887
53	3,651,888

CLASS 184

55A	3,651,889

CLASS 186

1A	3,651,890

CLASS 187

9	3,651,891
29R	3,651,892
94	3,651,893

CLASS 188

19	3,651,894
71.6	3,651,895
71.8	3,651,896
72.2	3,651,897
72.5	3,651,898
77R	3,651,899
181A	3,651,901
181T	3,651,900
269	3,651,902
290	3,651,903

CLASS 192

4A	3,651,904
17A	3,651,905
35	3,651,906
43	3,651,907
45.1	3,651,908
88A	3,651,909

CLASS 193

17	3,651,910
35	3,651,911

CLASS 194

4R	3,651,912

CLASS 195

28N	3,652,395
28	3,652,396
30	3,652,397
31R	3,652,398
62	3,652,399
66A	3,652,402
66R	3,652;400
	3,652,401

CLASS 197

36	3,651,913
49	3,651,914
53	3,651,915
54	3,651,916
98	3,651,917

CLASS 198

11	3,651,918
16R	3,651,919
21	3,651,920
34	3,651,921
127	3,651,922
168	3,651,923
189	3,651,924
218	3,651,925

CLASS 200

5EB	3,652,811
8R	3,652,812
16D	3,652,813
33B	3,652,814
153SC	3,652,815

CLASS 201

33	3,652,404
39	3,652,403

CLASS 202

216	3,652,426

CLASS 204

1T	3,652,427
28	3,652,428
35N	3,652,429
72	3,652,430
129	3,652,431
141	3,652,432
152	3,652,433
158S	3,652,434
159.15	3,652,435
159.21	3,652,436
164	3,652,437
181	3,652,438
195	3,652,439
228	3,652,440
273	3,652,442
280	3,652,441
298	3,652,443
	3,652,444

CLASS 206

1R	3,651,926
42	3,651,927
45.14	3,651,928
45.33	3,651,929
	3,651,930
47A	3,651,931
	3,651,932
57	3,651,933
65R	3,651,934
66	3,651,935

CLASS 208

6	3,652,445
10	3,652,446
11	3,652,447
87	3,652,448
111	3,652,449
146	3,652,450
	3,652,451
321	3,652,452

CLASS 209

74M	3,651,936
75	3,651,937
78	3,651,938
121	3,651,939
125	3,651,940
139R	3,651,941

CLASS 210

10	3,652,405
11	3,652,406
27	3,652,407
140	3,651,942
242	3,651,943
265	3,651,944
324	3,651,945
387	3,651,946
474	3,651,947
502	3,651,948

CLASS 211

177	3,651,949
	3,651,950

CLASS 212

17	3,651,951
84	3,651,952

CLASS 213

43	3,651,953

CLASS 214

1BB	3,651,958
1BC	3,651,957
1BE	3,651,956
1P	3,651,955
1Q	3,651,954
2.5	3,651,959
6DK	3,651,961
	3,651,962
6G	3,651,963
17DB	3,651,960
36	3,651,964
75R	3,651,965
147G	3,651,966
307	3,651,967
	3,651,968
515	3,651,969
	3,651,970
768	3,651,971

CLASS 215

11B	3,651,973
41	3,651,972

CLASS 219

10.61	3,652,816
	3,652,817
72	3,652,818
85	3,652,819
107	3,652,820
121EB	3,652,821
130	3,652,822
	3,652,823
131WR	3,652,824
373	3,652,825

CLASS 220

1.5	3,651,974
4R	3,651,975
23.4	3,651,976
30	3,651,978
31S	3,651,983
41	3,651,979
54	3,651,980
60R	3;651,981
97B	3,651,977
111	3,651,982

CLASS 221

3	3,651,984
10	3,651,985
12	3,651,986
13	3,651,987

CLASS 222

3	3,651,988
14	3,651,989
94	3,651,990
144.5	3,651,991
153	3,651,992
	3,651,993
160	3,651,994
211	3,651,995
385	3,651,996
402.16	3,651,997
488	3,651,998

CLASS 223

88	3,651,999
116	3,652,009

CLASS 224

42.01	3,652,000

CLASS 226

65	3,652,001
172	3,652,002

CLASS 227

10	3,652,003
67	3,652,004

CLASS 229

40	3,652,005
55	3,652,006
73	3,652,007
85	3,652,008

CLASS 235

50	3,652,012
60R	3,652,010
61PE	3,652,826
61.11E	3,652,828
61.11F	3,652,827
61.12M	3,652,829
61.12N	3,652,830
70R	3,652,831
92MP	3,652,832
92SB	3,652,833
	3,652,834
104	3,652,011
150.22	3,652,835
150.26	3,652,836
150.27	3,652,837
151.31	3,652,838
152	3,652,839
155	3,652,840
	3,652,841
183	3,652,842
	3,652,843

CLASS 239

132.3	3,652,013
287	3,652,014
338	3,652,015
424.5	3,652,016
453	3,652,017
490	3,652,018
682	3,652,019

CLASS 240

1	3,652,844
10.63	3,652,846
54R	3,652,845
78HA	3,652,847
81C	3,652,848

CLASS 241

74	3,652,020
172	3,652,021
185	3,652,022
275	3,652,023

CLASS 242

1	3,652,024
18R	3,652,025
86.5R	3,652,026
96	3,652,027
129	3,652,028
157.1	3,652,029
201	3,652,030
219	3,652,031

CLASS 244

1SA	3,652,033
1SS	3,652,042
3.1	3,652,034
12CW	3,652,035
53B	3,652,036
56	3,652,037
100R	3,652,038
102A	3,652,039
104R	3,652,040
152	3,652,041

CLASS 246

393	3,652,849

CLASS 248

1	3,652,043
23	3,652,044
62	3,652,045
205R	3,652,046
230	3,652,047
235	3,652,032
243	3,652,048
310	3,652,049
429	3,652,050
444	3,652,051

CLASS 249

27	3,652,052

CLASS 250

43.5FL	3,652,857
43.5R	3,652,850
54	3,652,851
65R	3,652,852
66	3,652,853
71R	3,652,854
71.5S	3,652,855
83.3HP	3,652,856
199	3,652,858
211J	3,652,859
218	3,652,860
	3,652,861
219DF	3,652,863
219DR	3,652,862
219LG	3,652,864

CLASS 251

38	3,652,053
65	3,652,054
67	3,652,055

CLASS 252

8.8	3,652,419
12	3,652,408
	3,652,409
19	3,652,414
32.7E	3,652,410
34.7	3,652,411
36	3,652,415
62.3	3,652,421
62.59	3,652,416
62.9	3,652,412
	3,652,413
73	3,652,418
80	3,652,417
101	3,652,420
135	3,652,422
180	3,652,423
182	3,652,424
194	3,652,425
358	3,652,453
373	3,652,454
415	3,652,455
431N	3,652,456
442	3,652,457
454	3,652,458
455Z	3,652,459
475	3,652,460
511	3,652,461
518	3,652,462
519	3,652,463

CLASS 254

94	3,652,056
139.1	3,652,057
190	3,652,058

CLASS 256

1	3,652,059
19	3,652,060

CLASS 259

4	3,652,061
9	3,652,062
109	3,652,063
	3,652,064

CLASS 260

2BP	3,652,465
2R	3,652,464
2.3	3,652,466
	3,652,467
2.5AM	3,652,468
18N	3,652,469
22CB	3,652,470
	3,652,472
22R	3,652,471
23H	3,652,473
27EV	3,652,474
29.1SB	3,652,484
29.1B	3,652,475
29.1R	3,652,476
29.3	3,652,477
29.4UA	3,652,478
	3,652,479
29.6TA	3,652,480
29.6WB	3,652,481
29.7UP	3,652,483
29.7	3,652,482
31.2N	3,652,485
32.6R	3,652,486
33.6AQ	3,652,487
37SB	3,652,488
40R	3,652,489
41A	3,652,490
41C	3,652,492
41	3,652,491
45.7R	3,652,493
45.85	3,652,494
	3,652,495
45.9R	3,652,496
47CP	3,652,498
47UA	3,652,497
49	3,652,499
65	3,652,500
75N	3,652,501
75R	3,652,502
	3,652,503
77.5AA	3,652,508
77.5AB	3,652,506
	3,652,507
77.5AQ	3,652,505
77.5A	3,652,504
78UA	3,652,511
78A	3,652,510
78R	3,652,509
79.5B	3,652,512
80.3	3,652,513
80.78	3,652,514
	3,652,515
83.7	3,652,516
85.1	3,652,517
85.3	3,652,518
	3,652,519
86.1	3,652,520
	3,652,521
87.5R	3,652,522
88.3A	3,652,523
92.8W	3,652,524
	3,652,525
	3,652,526
93.7	3,652,527
94.3	3,652,528
	3,652,529
112B	3,652,530
112.5	3,652,531
187	3,652,532
203	3,652,533
207	3,652,534
210E	3,652,537
210R	3,652,535
	3,652,536
211.5R	3,652,538
231R	3,652,539
232A	3,652,540
233.3R	3,652,542
233.3	3,652,541
239BB	3,652,543
239BD	3,652,754
239A	3,652,544
239B	3,652,545
239.1	3,652,547
	3,652,548
239.3A	3,652,549
	3,652,552
	3,652,553
239.3D	3,652,551
239.3	3,652,550
239.55	3,652,554
240D	3,652,555
242	3,652,556
247.2A	3,652,558
247.2B	3,652,557
247.5R	3,652,559
248AS	3,652,560
248CS	3,652,561
250A	3,652,562
251A	3,652,564
251R	3,652,563
256.4C	3,652,566
256.4N	3,652,565
256.4Q	3,652,567
268BZ	3,652,568
268PE	3,652,569
288R	3,652,570
289R	3,652,571
294.9	3,652,572
295S	3,652,573
296A	3,652,574
297R	3,652,575
	3,652,576
306.7	3,652,546
	3,652,577
308B	3,652,578
309	3,652,579
309.2	3,652,580
	3,652,581
309.5	3,652,582
309.7	3,652,583
310	3,652,584
319.1	3,652,585
326.15	3,652,591
326.16	3,652,592
326.3	3,652,586
	3,652,587
	3,652,588
326.5M	3,652,589
	3,652,590
332.3H	3,652,593
338	3,652,594
340.5	3,652,595
340.9	3,652,596
343.2R	3,652,597
346.3	3,652,598
348R	3,652,600
349	3,652,599
380	3,652,601
391	3,652,602
396R	3,652,603
397.4	3,652,604
	3,652,605
397.5	3,652,606
401	3,652,607
408	3,652,609
410.6	3,652,610
413	3,652,611
	3,652,612
429R	3,652,613
	3,652,615
	3,652,616
	3,652,617
429	3,652,614
429.7	3,652,618
429.9	3,652,619
439R	3,652,620
448AD	3,652,622
	3,652,623
448A	3,652,621
448.2E	3,652,625
	3,652,626
448.2N	3,652,624
	3,652,627
	3,652,629
448.2R	3,652,628
453R	3,652,630
	3,652,631
455B	3,652,632
456R	3,652,633
463	3,652,634
464	3,652,635
465D	3,652,636
465G	3,652,637
465.3	3,652,638
465.4	3,652,639
465.7	3,652,640
465.8D	3,652,642
465.8	3,652,641
468R	3,652,643
471R	3,652,644
	3,652,645
473G	3,652,646
475FR	3,652,648
475PR	3,652,649
475P	3,652,647
482R	3,652,650
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483	3,652,652
485H	3,652,653
486AC	3,652,655
486D	3,652,654
486R	3,652,608
488R	3,652,656
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490	3,652,658
498	3,652,659
507R	3,652,660
510	3,652,661
513R	3,652,662
514N	3,652,663
515	3,652,664
520	3,652,665
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524M	3,652,667
524R	3,652,668
534M	Re.27,322
538	3,652,669
558D	3,652,670
561N	3,652,671
566R	3,652,672
570.5P	3,652,673
586A	3,652,674
600	3,652,675
604HF	3,652,676
606.5F	3,652,677
606.5P	3,652,678
609E	3,652,680
609F	3,652,679
610D	3,652,681
612D	3,652,682
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617R	3,652,684
624C	3,652,685
633	3,652,686
648R	3,652,688
651R	3,652,689
652R	3,652,690
653.3	3,652,691
653.7	3,652,692
662R	3,652,693
668A	3,652,694
	3,652,695
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668B	3,652,696
669	3,652,698
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672T	3,652,700
674WC	3,652,701
681	3,652,702
683D	3,652,703
	3,652,704
683.15B	3,652,706
	3,652,707
683.15D	3,652,687
	3,652,705
683.62	3,652,708
683.68	3,652,709
823	3,652,710
825	3,652,711
835	3,652,722
836	3,652,723
837PV	3,652,712
860	3,652,713
	3,652,714
	3,652,715
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861	3,652,717
863	3,652,718
873	3,652,719
876B	3,652,720
	3,652,725
876R	3,652,721
	3,652,726
	3,652,727
877	3,652,724
878R	3,652,728
	3,652,729
	3,652,730
879	3,652,731
880B	3,652,732
884	3,652,733
897B	3,652,734
926	3,652,735
940	3,652,736
944	3,652,737
946	3,652,738
948	3,652,739
949	3,652,740
956	3,652,741
957	3,652,742
982	3,652,743

CLASS 261

39R	3,652,065
109	3,652,066

CLASS 263

.7	3,652,067
50	3,652,068

CLASS 264

.5	3,652,744
	3,652,745
14	3,652,746
41	Re.27,319
	3,652,747
45	3,652,748
63	3,652,749
67	3,652,750
99	3,652,751
117	3,652,752
177F	3,652,753
219	3,652,755
228	3,652,756
244	3,652,757
249	3,652,758
289	3,652,759
310	3,652,760

CLASS 266

25	3,652,069
32	3,652,070
36P	3,652,071
	3,652,072
38	3,652,073

CLASS 267

137	3,652,074

CLASS 269

21	3,652,075
24	3,652,076
322	3,652,077

CLASS 270

58	3,652,078
	3,652,079
61R	3,652,080

CLASS 271

27	3,652,081
36	3,652,082
39	3,652,083
41	3,652,084

CLASS 272

82	3,652,085

CLASS 273

1R	3,652,086
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26E	3,652,088
103	3,652,089
104	3,652,090
131B	3,652,091
134C	3,652,092
169	3,652,093
171	3,652,094
176AA	3,652,095

CLASS 274

4F	3,652,096
37	3,652,097

CLASS 277

59	3,652,098

CLASS 279

1B	3,652,099
2	Re.27,323
51	3,652,100

CLASS 280

6.1	3,652,101
11.13L	3,652,102
33.99C	3,652,103
96.2R	3,652,104
301	3,652,105
405R	3,652,106

CLASS 285

3	3,652,107
165	3,652,108
176	3,652,109
328	3,652,110
382	3,652,111

CLASS 292

210	3,652,112
216	3,652,113
281	3,652,114

CLASS 294

27H	3,652,115
82	3,652,116
87R	3,652,117
89	3,652,118

CLASS 296

23C	3,652,119
23R	3,652,122
24	3,652,120
26	3,652,121
28D	3,652,123
146	3,652,124

CLASS 297

61	3,652,125
284	3,652,126
372	3,652,127
408	3,652,128

CLASS 299

4	3,652,129
86	3,652,130

CLASS 302

28	3,652,131

CLASS 303

21BE	3,652,136
21CF	3,652,135
21CG	3,652,132
	3,652,133
	3,652,134
	3,652,137

CLASS 307

10R	3,652,865
80	3,652,866
86	3,652,867
116	3,652,868
117	3,652,869
133	3,652,870
230	3,652,871
233	3,652,872
252M	3,652,873
	3,652,874
	3,652,875
262	3,652,876
308	3,652,877
309	3,652,878

CLASS 308

4A	3,652,138
174	3,652,141
187	3,652,139
219	3,652,140

CLASS 310

50	3,652,879
54	3,652,880
57	3,652,881
61	3,652,882
74	3,652,883
156	3,652,884
163	3,652,885
168	3,652,886
	3,652,887
198	3,652,888
259	3,652,889

CLASS 312

8	3,652,142
27	3,652,143

CLASS 313

60	3,652,890
85S	3,652,895
109.5	3,652,891
116	3,652,892
268	3,652,893
340	3,652,894

CLASS 315

31TV	3,652,896

CLASS 317

2F	3,652,897
27	3,652,898
101DH	3,652,899
136	3,652,901
148.5R	3,652,900
230	3,652,902
234M	3,652,904
234R	3,652,903
	3,652,905
235R	3,652,907
235	3,652,906
	3,652,908

CLASS 318

254	3,652,909
445	3,652,910
474	3,652,911
599	3,652,912
678	3,652,913

CLASS 320

1	3,652,914
31	3,652,915
35	3,652,916
45	3,652,917

CLASS 321

9R	3,652,918
18	3,652,919

CLASS 322

19	3,652,920

CLASS 323

4	3,652,922
6	3,652,923
24	3,652,924
43.5R	3,652,925
69	3,652,921

CLASS 324

.5R	3,652,926
34D	3,652,927
34R	3,652,928
51	3,652,929
57	3,652,930
	3,652,931
72	3,652,932
82	3,652,933
115	3,652,934
127	3,652,935
137	3,652,936
168	3,652,937

CLASS 325

363	3,652,938
367	3,652,939
446	3,652,940
	3,652,941

CLASS 328

120	3,652,943
127	3,652,942
150	3,652,945
168	3,652,944

CLASS 329

192	3,652,946

CLASS 330

4.3	3,652,951
15	3,652,947
	3,652,948
30D	3,652,949
	3,652,950
57	3,652,952

CLASS 331

78	3,652,953
94.5	3,652,954
116M	3,652,955

CLASS 332

7.51	3,652,956
11D	3,652,957

CLASS 333

79	3,652,958
81R	3,652,959

CLASS 334

15	3,652,960

CLASS 335

176	3,652,961
203	3,652,962
205	3,652,963
	3,652,964
210	3,652,966
216	3,652,967
277	3,652,965

CLASS 336

170	3,652,968

CLASS 337

140	3,652,969

CLASS 338

174	3,652,970

CLASS 339

8PB	3,652,972
8	3,652,971
17F	3,652,973
36	3,652,974
111	3,652,975
184R	3,652,976
198R	3,652,977

CLASS 340

3R	3,652,978
15.5	3,652,979
	3,652,980
25	3,652,981
35	3,652,982
40	3,652,983
58	3,652,984
60	3,652,985
146.1AB	3,652,988
146.1R	3,652,986
146.1	3,652,987
146.3AC	3,652,990
146.3B	3,652,992
146.3H	3,652,989
146.3	3,652,991
147R	3,652,993
	3,652,994
167	3,652,995
172.5	3,652,996
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	3,652,998
	3,652,999
	3,653,000
	3,653,001
173SP	3,653,004
	3,653,005
	3,653,006
173R	3,653,003
173	3,653,002
174TF	3,653,007
	3,653,010
174M	3,653,008
174.1A	3,653,009
174.1B	3,653,011
174.1P	3,653,012
177	3,653,013
203	3,653,014
204	3,653,015
228	3,653,016
244C	3,653,017
248P	3,653,018
	3,653,019
253P	3,653,020
258B	3,653,021
274	3,653,022
285	3,653,023
310	3,653,024
323	3,653,025
	3,653,026
324A	3,653,027
	3,653,028
347AD	3,653,029
	3,653,030
	3,653,031
	3,653,032
	3,653,037
347DA	3,653,033
347DD	3,653,034
	3,653,036
347C	3,653,035
365	3,653,038
388	3,653,039
392	3,653,040
409	3,653,041

CLASS 343

5DP	3,653,042
5SC	3,653,044
8	3,653,043
100ME	3,653,045
100SA	3,653,046
106R	3,653,047
112CA	3,653,049
112D	3,653,050
112	3,653,048
702	3,653,051
708	3,653,052
745	3,653,053
772	3,653,054
781	3,653,055
795	3,653,056
854	3,653,057

CLASS 346

17	3,653,058
32	3,653,059
43	3,653,060
74EB	3,653,063
74ES	3,653,064
	3,653,065
74MP	3,653,066
74M	3,653,061
	3,653,062
108	3,653,067
136	3,653,068
139	3,653,069
140	3,653,070

CLASS 350

3.5	3,652,144
	3,652,145
86	3,652,146
113	3,652,147
150	3,652,148
160R	3,652,149
179	3,652,150
222	3,652,151
252	3,652,152

CLASS 351

14	3,652,153

CLASS 352

141	3,652,154

CLASS 353

25	3,652,155

CLASS 355

8	3,652,156
49	3,652,157
91	3,652,158

CLASS 356

4	3,652,159
	3,652,160
5	3,652,161
71	3,652,162
115	3,652,163
125	3,652,164
	3,652,165
138	3,652,166

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215	3,652,168
244	3,652,169
246	3,652,170
CLASS 401	
12	3,652,171
106	3,652,172
110	3,652,173
143	3,652,174
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46	3,652,175
CLASS 415	
9	3,652,176
110	3,652,177
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111	3,652,179
113	3,652,180
117	3,652,181
168	3,652,182
170	3,652,183
181	3,652,184
CLASS 416	
134	3,652,185
CLASS 417	
370	3,652,186
393	3,652,187
511	3,652,188
CLASS 418	
15	3,652,189
54	3,652,190
125	3,652,191
	3,652,192
CLASS 424	
12	3,652,761
60	3,652,762
181	3,652,763
235	3,652,764
282	3,652,765
322	3,652,766
	3,652,767
	3,652,768
325	3,652,769
327	3,652,770
329	3,652,771
340	3,652,772
CLASS 425	
214	3,652,193
CLASS 431	
9	3,652,194
21	3,652,195
202	3,652,196
326	3,652,197
352	Re.27,321
CLASS 444	
1	3,653,071
	3,653,072
	3,653,073

CLASSIFICATION OF DESIGNS

Class	Subclass	Design
D 8—	94	223,186
	273	223,187
D 9—	60	223,188
	219	223,189
D14—	3	223,190
		223,191
	6	223,192
D15—	1	223,193
D22—	27	223,194
D23—	69	223,195
D26—	1	223,196
	5	223,197
		223,198
	13	223,199
	14	223,200
D33—	3	223,201
		223,202
	6	223,203
		223,204
		223,205
		223,206
		223,207
	13	223,208
		223,209
D44—	15	223,210
D52—	7	223,211
D54—	12	223,212
		223,213
D56—	1	223,214
D61—		223,215
		223,216
D64—	16	223,217
D71—	1	223,218
		223,219
D83—		223,220
D86—	10	223,221
D87—	3	223,222

CLASSIFICATION OF PLANTS

Class	Subclass	Plant
P. —	9	3,084
P. —	10	3,083
P. —	20	3,091
P. —	30	3,085
P. —	41	3,087
P. —	51	3,088
P. —		3,090
P. —	55	3,086
P. —	56	3,089

DEFENSIVE PUBLICATIONS APPLICATIONS

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Class	Subclass	Number
71—	34	T896,056
96—	56	T896,053
99—	108	T896,050
106—	188	T896,054
148—		T896,048
161—	123	T896,052
242—	18R	T896,049
260—	29.2TN	T896,051
	88.1R	T896,055

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

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Alaska	2
American Samoa	3
Arizona	4
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Colorado	8
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Delaware	10
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Florida	12
Georgia	13
Guam	14
Hawaii	15
Idaho	16
Illinois	17
Indiana	18
Iowa	19
Kansas	20
Kentucky	21
Louisiana	22
Maine	23
Maryland	24
Massachusetts	25
Michigan	26
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

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3,651,957
3,651,969
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5 : 3,651,717
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6 : Re.27,319
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PLANT PATENTS

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DEFENSIVE PUBLICATIONS APPLICATIONS

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